



PROJECT MUSE®

---

## Mexican-Origin Foods, Foodways, and Social Movements

Peña, Devon, Calvo, Luz, McFarland, Pancho, Valle, Gabriel R.

Published by University of Arkansas Press

Peña, Devon & Calvo, Luz & McFarland, Pancho & Valle, R..

Mexican-Origin Foods, Foodways, and Social Movements: A Decolonial Reader.

Fayetteville: University of Arkansas Press, 2017.

Project MUSE., <https://muse.jhu.edu/>.



➔ For additional information about this book

<https://muse.jhu.edu/book/53052>



CHAPTER 16

## Sodbusters and the “Native Gaze”

Soil Governmentality and  
Indigenous Knowledge

DEVON G. PEÑA

*In memory of Adelmo Kaber, friend and mentor,  
who once said: “El frijol le da fuerza a la tierra.”  
(The bean gives strength to the land.)*

Wes Jackson is notable among the sustainable agriculture advocates whom I have heard recount a farmer’s joke about a legendary encounter between a young pioneer “sodbuster” and an older Native American, who some claim was from the “Sioux” Nation (Dakota-Lakota-Nakota).<sup>1</sup> The encounter memorialized presumably actually occurred somewhere in mid-nineteenth-century North Dakota, but some versions place the rendezvous in Michigan, Minnesota, or Iowa. The genealogy of the joke remains murky. I have suspicions it may have first appeared around the time Frederick Jackson Turner announced the “closing of the frontier” and white settler farmers were busy reworking the land across Indigenous territories immediately west and east of the 100th meridian.<sup>2</sup> In the versions I have heard or read, the Native observer remains an amorphous figure: Gazing from the margin, he is presumably seeing a plowed field for the first time. Unsaid is a deeper history enunciated by the Native observer, which

I am going to presume embodied the first memories of being human in that place. From the edge, the “old Sioux” eyes the sodbuster’s transmogrified perennial prairie, a land soon to be converted into uniform rows of pioneer staple wheat, corn, and barley. I imagine this moment—as it really happened somewhere in time and space—as for the observer a bearing witness to the violent refashioning of mostly wild (self-willing) land into the legible grid of furrowed disturbance. This was imposed by a newcomer’s desire for order in what was likely viewed by the settler colonist as an unimaginably threatening and unfamiliar place that required treatment as dispossessed and hostile territory. In the typical retelling of the encounter, the white man’s act of busting up the soil appears to puzzle the Native observer. From the sodbuster’s perspective, the observer is shaking his head in what is presented as a state of bewilderment. The sodbuster—sometimes he even has a name, a Mr. Christensen in one version—notices the Native standing at the edge of the freshly plowed field. He reins back the sweaty oxen team, and the “heroic” single-spade moldboard plow comes to a squeaky stop with a hollow thud on soon to be exhausted soil. He ambles over and asks, “What is it?”

“Wrong side up,” is the immediate reply as the observer points at the disturbed earth with lifted chin and a half shake of his head. From a decolonial standpoint, this signifies not bewilderment but mindful disapproval.

The conventional interpretation highlights the idea that the joke conveys a stoic and prophetic attitude. Gee whiz, the Natives had it right all along! Those sodbusters should have paid attention and recognized that soil is connected to all life and culture. Such nostalgia for the imaginary disappearance of a Native way of life essentially erases the inherently violent nature of the bloody expropriation, which Marx shrewdly called “primitive accumulation,” although he understood this as an ongoing process rather than just a crime delegated to some distant past.<sup>3</sup> In the context of the end of frontier times, when the joke was first uttered, it seems fair to surmise that it served as a racist trope. It conveyed a sense of white settler superiority gained by virtue of self-proclaimed technical prowess, a reassuring sense of manifest destiny, and a revealing necessity to draw a sharp contrast between settler colonial mental attributes and the “ignorance” of an apparently “savage” and receding way of life.

“Wrong side up.” When my colleagues retell the joke, they seem eager to illustrate that it was the sodbuster who was puzzled by this display of insight. Native soil knowledge was (and is) rooted in multiple generations of Indigenous place-based knowledge gained directly through resilient coinhabitation of ancestral territories. The sodbuster could not have understood the profound epistemological differences underlying the utterance, and so he would have failed to see that the joke was actually on him. So, we have a popular joke that seeks to teach us that the Native observer was wisely alerting the sodbuster to the idea that plowing earth, without the least restraint, bears toward agroecological catastrophe. The Native observer is said to recognize that forcing the soil out of place is an indictment of the sodbuster’s disrespect for the land. The Native observer understood that overplowing makes soil more vulnerable to the loss of fertility; it causes soil erosion and compaction, and it degrades wildlife habitat and the diversity of flora and fauna. From the settler colonist’s vantage point, the new plow-based agriculture eclipsed antecedent cultural norms. These norms remain hidden to the plow masters even today because they fail to understand the sources of spiritual and mythic obligations followed by many Indigenous peoples to sustain and protect the environment as a shared coinhabited place.<sup>4</sup>

The advent of the moldboard plow is recognized as one of the most transformative technological innovations leading to a more “modern” form of agriculture. It is also increasingly recognized as an invention that over time led to a massive increase in the scale and intensity of ecological damage associated with settler colonial and capitalist farming practices. The principal effects of overtilling were well known and avoided by Native American farmers,<sup>5</sup> and many still regard unrestrained sodbusting as a foolhardy violation of “Original Instructions” for the tender human use of land.<sup>6</sup>

Many of our interlocutors are trying to “revalue” Indigenous thought. Good enough. What they often fail to consider is how a particular racial arrogance underlies the identity location most directly tied to actual sociopolitical projects to enclose, dispossess, and displace the native inhabitants. This ideological milieu would have prevented the sodbuster from recognizing the soil knowledge of the Native observer. The sodbuster was embedded in the spirit of ecological counterrevolution of settler colonists who violently refashioned

and repurposed Indigenous ancestral lands through enclosures that enacted the policy of “Indian removal.” For the Indigenous peoples of the bioregions immediately west and east of the 100th meridian, the first wave of soil governmentality involved plowshares over agro-forestry mosaics. The sodbusting settlers made use of the Homestead Act of 1862, a law designed to impose a more “legible” form of settlement and “development.” This also provided legal cover for the homesteaders receiving title to unceded tribal lands redefined by the square grids of the cadastral surveys completed in accordance with the Land Ordinance of 1785. The sodbuster’s settler colonial imagination could not invite open counsel: The presumed superior status of the knowledge steeped in his own European-American heritage and spatial-legal order prevented openness. He likely heard the response as quaint and superstitious. I am thinking: We are not ghosts of the primitive accumulation, and centuries of aboriginal resistance are reaching a new crescendo and challenging enclosure and land degradation.

### “Digging up” Indigenous Soil Knowledge

Today the sodbuster joke is shared in restoration ecology circles more than among soil scientists or farmers. I have overheard the joke at several recent academic conferences. I sometimes feel the restoration ecologists and conservation biologists who have shared the joke are performing for my approval: They enunciate the joke as a discursive act of solidarity designed to acknowledge the legitimacy of Indigenous knowledge. Good enough again. This is exactly what a broad swath of the anthropological discourse tries to do as well.<sup>7</sup> In matters of soil knowledge, much of this research focuses on documenting local soil classification systems (ethnopedology) through Indigenous farmer input. Other studies seek to “use modern technology to fully understand and validate traditional knowledge” of ecological processes in the soil (ethnoedaphology).<sup>8</sup>

Soil knowledge is now widely recognized by ethnoecologists as a form of traditional environmental knowledge (TEK) and part of a much broader stock of *situated* knowledge related to the uses of the environment by cultures in place and, for us, *sometimes out of place*.

This includes domains of nonlawyerly customary law and practices that inform the autochthonous organization and management of common resource assets, like soil quality. This adds a dimension seldom addressed in soil sciences discourse involving the contest over *land as property* versus *land as relation*—a conflict that becomes ever more acute under the conditions of capitalist globalization with the spread of neoliberal governmental regimes. The same is true of water. The forces that have shaped what constitutes legitimate knowledge of soil biodynamics also determine the legitimacy of particular sets of soil conservation and management policies. The regimes of soil governmentality place Indigenous knowledges and practices in conflict with modernizing settler colonial state formations and capitalist power over the enactment and implementation of policies and regulations affecting what gets qualified as legitimate soil knowledge.

From the vantage of decolonial discourse, the sodbuster joke betrays a more complex history of contradictions in the production of soil knowledge and reveals contempt of the Other for possessing “dirt-poor” knowledge. In “frontier times,” the sodbuster would have likely thought that Native Americans were ignorant of agriculture. After all, they ate bugs, tubers, other wild plants, and even fungus—let’s for now forget the “de-peasantized” culinary arts and the wonders done with offal and truffles. It is only in the white colonial imaginary that one can forget how the slaughter of bison accompanied the genocidal violence of the invaders against Indigenous peoples. You would probably eat bugs too in the aftermath of a white settler zombie apocalypse like this one. This also resulted in the displacement and erasure of millions of acres of polyculture gardens and shifting agroforestry mosaics that stretched across entire bioregions of the Indigenous corn belt.<sup>9</sup> A vital corollary of this settler colonial logic: They had no plows. Ergo, they were uncivilized. It may not have occurred to Mr. Christensen that when planting corn, beans, or squash, he could have thanked Native Americans (which for me always includes Mesoamericans), who gifted these cultivars to the settler colonists. If planting lentil, wheat, or alfalfa, Mr. Christensen could thank the Syrians, Arabs, and Persians. If planting cotton, he could thank the Culhua Mexica (Aztecs) or Egyptians, and if potatoes, then the Aymara, and so on across the many settler colonial nations

that received these “gifts” from the world’s Indigenous farmers spread out across Vavilov’s centers of origin, where domesticated landrace crops grow in close interaction with wild relatives.<sup>10</sup>

Over time, the sodbusters’ misguided practices led to massive soil erosion, compaction, eutrophication, and nitrification. These problems resulted in the creation in April 27, 1935, of the Soil Conservation Service (SCS) (under Public Law 74-46), which was established to address the cumulative effects of settler colonial farming practices in the aftermath of the Dust Bowl. This “new” scientific approach ignored the destruction of perennial native plant communities by indiscriminate plowing and the spread of monoculture habits. No one paid much attention when Native Americans first warned about the consequences of turning the world upside down. Native knowledge was reduced to caricature in cartoonlike images plying at the edge of racist end-of-frontier discourses, and, perhaps worse, is still today in the romanticized projections of deep ecologists and restoration ecologists.

There are many well-intentioned scientists and sustainability advocates who have made successful careers since the 1970s urging farmers to turn the world right side up again by adopting permaculture principles. These are truly seldom recognized as having Indigenous origins and analogs: perennial and annual polycultures, crop rotations with long duration fallows, intercropping with biodynamic and allelopathic companion plants, the classification and care of soils, the preparation and application of biodynamic soil treatment concoctions—all these and many more agroecological practices are results of Indigenous knowledge created in the centers of origin and well before the arrival of the fashionable, modern, and profitable advocates of biodynamics and permaculture.<sup>11</sup>

The predominantly white male discourse retells the sodbuster joke as if it suffices to say, “the Natives had it right.” *Had* (past tense). The problem with this epistemic closure is that it ignores Indigenous peoples’ continued presence in struggles for food justice and autonomy and to restore and apply our soil knowledge to ancestral, working heritage landscapes. It is true that the polyculture garden meadows, agroforestry mosaics, and other larger-scaled cultural ecological landscapes of Native homelands have in many places melted back into the Earth. Most were abandoned under conditions of severe intergenera-

tional historical trauma that knocked people out of joint in time and space. But recovery is evident across the Indigenous corn belt in the struggle for food autonomy that is part of a broad social movement to restore Indigenous territories and regenerate eroded lands, while revaluing our place-based agroecological knowledge. Our movement seeks to relink these with associated forms of conviviality, participatory governance, and ceremony. These are biopolitical acts that create social and cultural change supportive of environmental, community, and self-healing.<sup>12</sup>

From the outside looking in, the Native gaze in the sodbuster joke presents a parallax view of our capacity to bear critical witness on matters of soil that first brought Indigenous eyes to look upon these acts of environmental violence. Today's monoculture farmers are still dreaming and waxing nostalgic in celebration of the "superior productivity" of sodbusting. They even adopt the latest models of "sustainable minimum tillage," but these models are tied to intensive fertilizer, herbicide, and pesticide treatment protocols concurrent with the use of transgenic crops. The Native gaze enunciates an uncertain fate for the settler colonial GMO farmers, for they repeatedly fail at the hands of the Gene Giants and will fare no better adopting RNA interference (RNAi) or "gene-edited" technologies. Today's sodbusters eagerly embrace remote-sensing technologies sold by the market-steered technocrats and obedient purveyors of Monsanto, Syngenta, Bayer, and DuPont "precision-farming" contracts who reside in the USDA field offices and dealers. Farmers are reduced to contract growers. The new "bio-serfs" keep voting neoliberals into office hoping they can get a bigger cut of the next round of farm bill subsidies and a shot at the next best transgenic "miracle" crops, which will surely have routine stacked-trait "events" approved by officials with ties to the very industries they "regulate."

Patrick Henry once declared, "The greatest patriot is the one who stops the most gullies."<sup>13</sup> If I may take that a bit out of context, the tragic environmental history of Euro-American agriculture was driven by white settler colonial farmers like our protagonist Mr. Christensen. His principal failing was to be possessed of a sense of superior methods combined with an utter lack of knowledge of the unanticipated and unintended effects of "modern" agricultural practices: Soil

degradation, arroyo cutting, the exhaustion of the natural fertility of topsoils, hardpan soils that break plowshares, the loss of native biodiversity, and diminished ecosystem integrity. Today's sodbusters believe GMOs will save the day. Soon they will use genetically engineered crops that can grow without topsoil, or better, on land contaminated by heavy metals. Is this our epistemological end point for soil matters? Hardly. As an act of epistemic disobedience, digging up Indigenous soil knowledge becomes the source of an agroecological revolution for worlds residing beyond the furrowed disturbances of the sodbuster's settler colonial imaginary.

## Indigenous Soil Knowledge and Epistemic Violence

In the 1980s, anthropologists and soil scientists began to center discussions around the science of soil ecology which they call "edaphology," from the Greek ἔδαφος, *edaphos* (bottom, base, ground). Cato wrote a treatise on soils circa 160 BCE, *De Agri Cultura*,<sup>14</sup> but similar knowledge was developed as early as the pre-Classic Maya period (2000–1000 BCE) and by the Mexica at Tenochtitlan-Tlatelolco (1248–1521). The Mexica classified soil into more than sixty varieties, which they described in terms of variations in the ratio of organic to stony material, depth of topsoil with recognition of distinct strata, permeability, erosive properties, compaction sensitivity, and color.<sup>15</sup> Mexica knowledge is striking because the scholar-farmers in the *calmecacs* ("line of houses," referring to higher education institutions) classified soil in a manner that anticipated the birth of soil conservation science in the United States by at least four hundred years.<sup>16</sup> Studies of Mesoamerican "folk soil taxonomy" were encouraged by a México-US team led by Barbara J. Williams and Carlos A. Ortiz-Solorio in the mid- to late 1970s.<sup>17</sup> A more recent extended discussion in 2009 hails "the incredible detail and knowledge of the Aztec soil classification system."<sup>18</sup> *National Geographic News* also published an article about a surviving ancient codex from 1540–44 pertaining to the Mexica site of Tepetlaoztoc, northeast of Texcoco.<sup>19</sup> The codex records each household and the number of members, the amount of land cultivated, and soil types as stony, sandy, or yellow. Evidence of this agroecological landscape still remains faintly imprinted on the land.

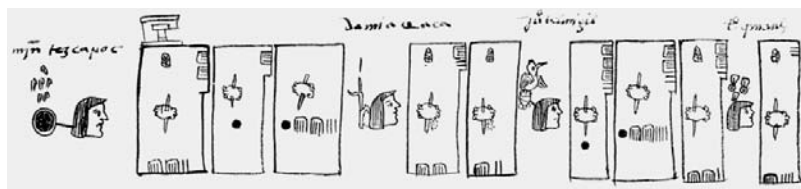


Figure 16.2. Culhua Mexica soil glyphs. Humboldt Codex Fragment VIII. Source: [http://www.wikiwand.com/es/Sistema\\_métrico\\_mexica](http://www.wikiwand.com/es/Sistema_métrico_mexica); accessed May 2, 2016.

The Tepetlaoztoc Codex has been widely examined in studies of Mexica ethnoedaphology and ethnopedology.<sup>20</sup> Few of these studies seem willing to address the extent to which Mexica teachers may have paired instruction in ethics with the practice of observing and experimenting with the biophysical and geomorphological properties of soil. Surely, serious damage had been done by the 1560s to the peoples and lands of México's Central Plateau. Accounts of the development of soil knowledge must be weighed in view of the environmental destruction and epistemic violence unleashed by coloniality. We can reasonably assume very few graduates of the *calmecacs* were still alive forty years after the fall of the Mexica Triple Alliance (1519–21). The vast bioregional infrastructure of aqueducts, dikes, dams, terraces, and erosion-control permaculture features had by the 1560s already fallen into wide disrepair. Many features were rapidly obliterated and recycled into settler colonial architectural and settlement projects wherever empire took hold. The infamous ill-advised draining of Lake Texcoco was part of this ecological apocalypse.<sup>21</sup> The knowledge relevant to the maintenance of these systems was likely compromised and degraded four decades after smallpox, measles, and Cortez's army defeated Cuauhtemoc's diminished force of Eagle warriors. This makes the Tepetlaoztoc Codex ever more precious.

Beyond antecedent status as a precursor science, Maya and Mexica soil knowledge included extensive references to human actions since these were perceived as capable of leading to uncertainty and unintended consequences, that is, “stochastic” effects in modern parlance. There is a deeper sense of respect of soils when truth is conceived as *Neltiliztli* (a well-grounded stability and well-rootedness).<sup>22</sup> This seems evident among Indigenous farmers today in the methods for

use of different soils and how these are still codified by reference to biophysical concepts like *tepetate* (hardpan).<sup>23</sup> These concepts are based on empirical observations of biophysical indicators and align with instructions that transmit awareness of the role of anthropogenic disturbances in modifying soil quality. I can easily imagine an elder Mexico soil scientist instructing calmecac students on how the piece of hardened clay in their hands was created by an abusive and greedy farmer who violated these instructions. This melded scientific study with moral instruction on matters of soil and land ethics. A recent study verifies that this level of knowledge and instruction endures in the P'urhépecha communities of Michoacán.<sup>24</sup> We need to revive agricultural calmecacs today across the Indigenous corn belt.

Well into the 1990s many anthropologists and other social and soil scientists were still peddling the myth that the Maya were victims of an ecological catastrophe provoked by an allegedly rampant and ignorant “slash-and-burn” type of agriculture, which was presumed to have led to mass deforestation and demographic collapse.<sup>25</sup> Evidence to the contrary was ignored, including compelling studies of the resilient “Maya managed mosaic.”<sup>26</sup> Such myths persist in an even more insidious form today. In a recent study on the history of soil science in México, coauthored by an anthropologist, the authors observe that

soil knowledge in the pre-Colombian era was a noticeable attribute of indigenous people in México. A Mayan soil classification for the Yucatán Peninsula has been used by local people. The Mexica and the Toltecs [before] in the Central Valleys classified soils by land use and textures. Some names still persist today.<sup>27</sup>

Despite awareness of Indigenous soil science as a living method and practice, the authors simply note how the “modern” era of soil science in México starts in 1926, when the National Commission of Irrigation (CNI) was convened. The event

brought American soil scientists to train the first agronomists on soil surveys required for the implementation of irrigation of lands. In 1929, the first Mexican scientific meeting, known as “The First Agrological College,” was held in Meoqui, Chihuahua. This meeting is considered as the first formal activity in the field of soil science in México. . . . One of the major problems in the

development of soil science in México has been the lack of communication between the farmers *and scientists*. To alleviate this problem, some researchers have suggested that the ethnopedological knowledge should be incorporated into soil maps, since, in many cases, a map generated from ethnopedological knowledge is more precise and accurate than similar technical maps for management purposes.<sup>28</sup>

The authors repeat an obvious slip of Eurocentric historical periodization by using terms like *pre-Columbian*. More severe is the notion that Maya soil knowledge was just a “noticeable attribute.” This trivializes the extent to which our ancestral civilizations invested major institutional efforts, intellectual resources, and communal labor toward matters of soil conservation and regeneration and watershed protection.<sup>29</sup> The first formal application of soil science occurred in the Mexica *calmecacs* and their Mayan antecedents, a fact routinely dismissed or overlooked.<sup>30</sup> Soil matters in the Mexica twin-island metropolis were serious enough to involve mobilization of hundreds of farmers, mathematicians, “diviners,” landscape architects, and civil engineers among other specialists in the *tequio* (collective work) required to design, construct, and repair and maintain structures like aqueducts and viaducts, terraces, check dams, dikes, canals, ponds, and mounds. In rural areas of the Yucatán Peninsula, the same labor force had to tend numerous *rejolladas* (circular, highly fertile depressions resulting from gradual sedimentary deposition after the collapse of rock walls at the top of shallow cenotes), *bajadas* (natural low-lying areas with fertile soil), *xinampas* or *chinampas* (floating gardens), and agroforestry mosaics on a rather large spatial scale.<sup>31</sup> It would seem difficult to communicate over soil matters when the belittling of local knowledge of soils dead-ends with a concern for a “lack of communication between farmers and scientists” who emphasize incorporating these into their own maps. Can these two subject locations readily understand and respect one another in an environment permeated with the presumed intellectual and managerial superiority of academics who gaze upon the lands of the Indigenous commons without relational solidarity? This is binarism at its worst, and the assumptions on display here obscure how the Indigenous farmers *are scientists*.

Even among those recognizing the depth and breadth of Indigenous soil knowledge, most accounts of folk soil taxonomies fail to consider the bedrock Mexica precept that soil is a living organism. Soil has, in modern parlance, “biodynamic” properties. While unaware of microbes, nematodes, mycorrhizal bacterial colonies, and other microorganisms, the Mexica clearly understood the importance of human respect for the health of soils. The Mexica, like other Mesoamerican peoples, practiced *regenerative* agriculture—their cultural practices regenerated the natural conditions sustaining diverse soil organisms that define the capacities and limits of agroecosystems. Recycling human, animal, and plant wastes and debris, and fiercely dedicated to protecting drinking and irrigation water quality, the Mexica produced an urban agroecological revolution by redeploying ancient Maya *xinampa* agricultural techniques and recasting these within the massive hydraulic system of the lake district of Texcoco-Chalco-Xochimilco. The productivity in corn, bean, amaranth, squash, fruits, roses, gladiolas, poinsettias, and thousands of herbs and medicinal plants accomplished by the “floating gardens” of Lakes Chalco and Xochimilco would not be matched until many decades after the 1910 Mexican Revolution.<sup>32</sup> The true tragedy in this is that México lost food and especially maize self-sufficiency by the early 1970s, a history charting the loss of food autonomy beyond the scope of this essay.

This brief ethnohistorical account indicates that much of the anthropology that has been practiced in or dealing with Mesoamerican civilizations regarding the issue of soil classification, management, and conservation needs to be decolonized and “grounded” in Indigenous voices and epistemologies. Despite the pivotal work of esteemed colleagues like Barbara Williams and her team and Narciso Barrera-Bassols and his mindful collaborators, the study of soil knowledge in México and the United States largely continues to perpetuate epistemic violence. Too many researchers are simply out and about collecting “cognitive maps” from local placemakers in acts of appropriation without solidarity. A decolonial methodology of relational accountability works from within Indigenous epistemologies to seek an understanding of how observable patterns from place-based experiences can situate truth claims based on proven knowledge of place(s). These constitute a very different epistemological trajectory from those expounded through distanced normalizing observation.<sup>33</sup>

Indigenous soil knowledge is relational and intersubjectively based on a sense of coevalness. These differences are fully revealed as extant in the contemporary politics of neoliberal regimes of soil governmentality. This regime includes not just the rules of soil knowledge, management, and conservation but the active production of the “subjects” authorized to act rationally on these matters. One of the only ways I can practice the method of an alterNative anthropology of soil is to address these issues on the lands of a historic acequia farm in Colorado’s San Luis Valley in the headwaters of the “Río Bravo del Norte” (Rio Grande).

## Devolution or Revolution in Soil Conservation?

The Acequia Institute (TAI) is a nonprofit charitable foundation dedicated to education and research to support environmental and food justice movements among Native Americans and Chican@s. The institute’s specific focus is “water democracy” and “regenerative agriculture.” The home farm of TAI is a classic *extensión* (riparian long lot) traversing the Culebra River bottomlands within the boundaries of the historic 1844 Sangre de Cristo *merced* (Mexican land grant).<sup>34</sup> Our irrigation water comes from “La Acequia de la Gente de San Luis de la Culebra,” a.k.a. San Luis Peoples’ Ditch (SLPD), which is the oldest adjudicated water right in the state of Colorado, with an appropriation date of 1852.<sup>35</sup> The Sangre de Cristo Land Grant includes uplands that were springtime hunting grounds for the Capote bands of the Mountain Ute First Nation well into the mid-1800s. Chicana/o land grant activists filed a lawsuit in 1981 seeking to reverse Jack Taylor’s 1960 private enclosure of the land grant common.<sup>36</sup>

The lands of the TAI farm were originally deeded by Don Carlos Beaubien, the grant recipient, to Dario Diego Gallegos, as the founder of the settlement of La Plaza de San Luis de la Culebra, established in 1851. The deed shows the long lot went through several generations of partible inheritance within the Gallegos family and then into new ownership by nonfamily members. My sister, Tania P. Hernández, and I acquired the 181-acre parcel in February 2006 for purposes of establishing TAI and fulfilling the philanthropic wishes of our late father, Alfonso Carlos Peña. Two previous owners were Anglo-American families. One involved two generations that established a successful

wool and mutton operation and commercial cauliflower and beer hops operation over a period of nearly four decades (ca. 1946–80). The other involved a retired Air Force colonel, who was widely regarded as an angry curmudgeon. He maintained a sheep and alfalfa-hay operation from 1984 to 1998 and was widely disliked for a stubborn disrespect of acequia (community ditch) customary practice for the sharing of irrigation water.

I knew the retired colonel well and interacted with him almost daily for more than five years when we both lived in the area. During one of our many conversations, he told me something that reminded me of the sodbuster's attitude. One morning he came by the local coffee shop after a dispute with the mayordomo (ditch boss) over the rotation schedule for the allocation of water on the SLPD. Fuming, he said, "These damn farmers. They've gotta modernize . . . Pretty backwards 'round here. Just too plain lazy. Too set in their ways . . . These ditches? Hell they date back to medieval times!"<sup>37</sup> He went on: "They should convert to sprinklers and corrugated pipe. Get more efficient. Save water by, you know, paving the canals. It's all about becoming more modern . . . It's not about race like you were asking earlier."<sup>38</sup>

I will skip dwelling on the retired colonel's apparent racial prejudices in the construct of "lazy and backwards Hispanic" farmers and dispense with the fact that some social scientists have expressed similar views in peer-reviewed journal articles.<sup>39</sup> I had an even more practical and pressing problem: The sodbusters were gone, but they left a heavy imprint on this land. There was damage from a now-removed center-pivot circle sprinkler. We had just acquired the land in 2006 from a multigenerational Hispano farmer from the Española Valley who had himself acquired the farm for an alfalfa and hay operation and supplementary grazing range in 1999. TAI inherited the curmudgeon's seventy-five-yard-long center-pivot mechanical irrigation sprinkler installed in the 1980s. We irrigated the patchy alfalfa and brome grass field remnants with the center-pivot that first season in 2006 and had significant diesel fuel, labor, and maintenance costs. The field was pockmarked with prairie dog burrows. As planned, we stopped using the sprinkler the following year (2007) during the annual April to October irrigation cycle. We have since continued doing the best we can to realign and reexcavate the abandoned and

badly damaged acequia network. I spend a lot of time “changing water” on those large meadows, an activity I cherish. We finally dismantled the six-ton mechanical centipede-on-wheels and removed the last of it in 2010. In 2009, we restored full use of acequia gravity-driven flood irrigation to the north-end *vegas* (meadows), and in 2012–14 started reseedling with organic and conventional non-GMO alfalfa; this is our principal asset as far as money-making operations go. We also have started implementing permaculture features to slow the movement of water over the land and along the lateral and *espinazo* (spinal) ditches by planting native orchard trees and brambles to reduce the potential for erosion while creating habitat and an edible landscape. Finally, we have effectively restored the cottonwood-alder riparian forest along the quarter-mile stretch of river meanders that bisect the long lot. This restoration has led to the return of native medicinal and edible plants and bushes including rose hips, wild asparagus, and oshá.

The San Acacio Culebra acequia bottomlands are resilient and not too sensitive to erosion, but flood irrigation methods present many challenges. The land still has fairly deep soil horizons ( $\geq 1.8$  m., or 6 ft.), but restoration work is affected by swales and the presence of Pleistocene streambed depositions of gravel and river stones that lie too close to the surface, especially around the former location of the old center-pivot circle. These conditions presented an opportunity for us to experiment with soil regeneration by working with the acequia gravity-driven deposition process. This process is evident across our bottomlands wherever the fields receive windswept dust from surrounding mesa-top volcanic soils or fine sediment transported from the mountain peaks and cirques through flood irrigation practice. There is little evidence of compacted clay lens (*tepetate*). We do not have any gullies. The main challenges on this northern upper-elevation half of the farm are the concentric grooves produced by the wheels of the old center-pivot sprinkler and the state of the acequia network for the alfalfa hay fields with potential for arroyo cutting, given the decades of inattentiveness and disrepair. It is a challenge to move water such a long distance to flood irrigate the furthest fields, depending solely on gravity, which of course is great renewable energy but can erode the surface of the ditches, creating gullies.<sup>40</sup>

The myriad issues with center-pivot agricultural sprinklers are

legendary. The one that reminds me the most of the steadfast arrogance of the sodbusting plow master is that in our area the sprinklers encourage prairie dogs to burrow more profusely into the irrigated fields. Flood irrigation by acequia techniques keeps burrows to a minimum. The critters tend not to locate in flood-irrigated fields because flooding makes the burrows uninhabitable. Modern sprinkler irrigation is more like a long, steady rain. I have seen prairie dogs showering under evaporating mists. Studies show that mechanical sprinklers are less efficient than acequias at delivering water to the crops because of aerial evaporation, especially in our high-altitude alpine desert environment. The differences in soil erosion control and the effectiveness of getting water to crops are rather striking.<sup>41</sup>

The retired colonel kept insisting the mechanical sprinklers were superior to acequias, and he was solidly backed up by the local agricultural establishment controlling the water and soil conservation districts across the San Luis Valley. I thought he was just too worn-out and could no longer invest the long hours and skilled labor required to master the art of flood irrigation. He belittled the methods of the “Parciantes” (farmers with water rights on a ditch). Yet, as soon as he lauded the superiority of mechanical center-pivots, he followed with complaints about rising fuel costs for diesel. He lamented how he had to run the sprinkler a lot longer than it takes for acequias to irrigate a comparable field. This created scheduling conflicts with other irrigators. He complained mightily about the high cost of maintenance and the many hours spent driving long distances to acquire expensive parts for repair jobs. Sometimes, unable to do the job himself, he was delayed because the repair mechanic couldn’t do the job in a timely manner. The sprinkler became his personal maintenance nightmare and caused all kinds of misery for the SLPD since these breakdowns disrupted the customary timing of allocations to the different irrigators. Once he claimed the sprinklers were better because they reduced soil erosion, a position echoed in much of the USDA rhetoric.<sup>42</sup>

He reluctantly acknowledged that the sprinkler, circling the field on large tractor-like wheels, was producing erosive features in concentric grooves. Wherever the wheels traced a path through the ground, after more than a decade of use, they cut deeply incised rings of compacted soil, creating channels that redirect water flow, thus causing uneven distribution.

Repairing this damage has been a major task of our work to restore healthy soil conditions by reintroducing acequia flood irrigation to these meadows. We do so without increasing the exposure of Pleistocene features wherever these are already at the top of the soil horizon. At one point, one of the local Natural Resources Conservation Service (NRCS) soil technicians recommended we “laser level” the swales. It was suggested that we should then replace the acequias and deploy corrugated pipe to irrigate on a flattened, more uniform landscape. TAI rejects uniformity as a basic permaculture principle and declined the proposal. Leveling of any sort would expose the underlying ancient riverbed gravels. This is a lesson I learned from *los animalitos* by observing the piles of Pleistocene rubble around the entrances to the prairie dog burrows. The San Luis Valley has its share of sodbusting monoculture farmers who continue to abuse the land. We don’t need to add to the load. The results of past abuse are apparent in many places on the TAI farm: It can be seen in the *barrancos* (eroded banks) along the Culebra River. Over the decades, wherever sheep and cattle trampled the ground and cleared the edges of native vegetation, riverbanks collapsed in large chunks of topsoil with rootstocks from willows, alders, and rose hip bushes. These long ago washed out into the river, leaving bare walls exposed to the river. Further out into the middle *vegas*, the effects of poorly timed grazing produced a pattern of hummocks (*cespedes* or *mogotes*). This area marks the transition from the riparian zone to *las vegas de en medio*, the middle meadows hosting native grasses and flowers watered by subirrigated flows from the upstream acequias. We are engaged in a practical battle with the ghosts of the sodbusters by repairing damaged riverbanks and restoring soil health.

## Resisting Soil Governmentality at the *Almunyah*

Our first ten-year plan (2007–17) for the lands of TAI emphasizes the restoration of riparian areas, stabilization of acequia networks, and repair of the hummocky meadows. There are numerous “invasive” species in Colorado, and our watershed is no exception. Our lands are located far down the Acequia Madre in an area not yet overwhelmed by noxious plants. In Colorado, many plants originating in the Asian steppes are the “scourge” of farmers and ranchers. At TAI, we reject

the concept of “weed” but share the concern of restoration ecologists for keeping the balance in favor of native plant associations. Among the domesticated plants, we are proponents of many “naturalized exotics” including heirloom potatoes (Mountain Rose, Sangre) and *habas* (fava beans).<sup>43</sup> Leafy spurge, Canada thistle, and Russian knapweed are some of the “noxious” plants spreading in the San Luis Valley agricultural districts and are not easily contained, let alone eradicated. These troublesome species are unwanted because they are toxic to most livestock and reduce the quality and output of alfalfa hay production. A chief concern is how these species displace native plants and thereby affect habitat for many living organisms. These noxious arrivants are prone to dominating the landscape like a settler colonial monoculture. This happens more readily in, or is in any case associated with, soils that have suffered considerable disturbance from human activities. These noxious plants are the biological baggage and ecological legacy of global sodbusting empires.<sup>44</sup> The restoration of Indigenous soil knowledge must be accompanied by active ecological restoration to “exorcize” the biological analogs of colonialism and the degradation of the land. I have approached our work by borrowing from Western scientific concepts in restoration ecology, conservation biology, and biodiversity and aligning these with antecedent Indigenous knowledge. Every day I work with irrigated land, I am acutely aware of the value of the soil knowledge of ancient Mayan, Mexica, Mixtec, P’urhépecha, Zapotec, and other ancestral Mesoamerican civilizations. This knowledge continues to shape our approach to working with the lands of our *almunyah*.<sup>45</sup>

An additional source of our epistemic disobedience rises from our objection to how these “noxious invaders” are usually treated, under the framework of a chemical “warfare”-against-weeds paradigm. For the past fifty years in our district, the USDA, through the local office of the NRCS, has announced that it was “launching an all-out war against these noxious invasive weeds.”<sup>46</sup> The “war” generally involves rapid deployment of herbicide treatments, including Monsanto’s Roundup Ready® brand formula for glyphosate. In the summer of 2007, I watched, like the Native at the edge of the sodbuster’s field, while USDA teams targeting leafy spurge sprayed the herbicide on test plots by the high school athletic fields. Acequia farmers declined the

offer of similar treatments to control willows and noxious weeds, principally Russian knapweed. We opted to use goats on a few patches and riparian strips within the perimeters of two SLPD long lots. The leafy spurge and Russian knapweed in the USDA test plots returned in 2009 as defiant fairy circles around the edges of the sprayed patches, but the entire area was recently razed to build a new public school complex. The goat treatments had the desired effect, and willow and the Russian knapweed retreated from the acequia farmers' test plots. Some NRCS technicians are warming to the use of goats, but most remain committed to the modern chemical treatment protocol. Our goats are for now gone, but the arrivants still pose the threat of reestablishing a toxic presence.

This story about weeds is suggestive of changes occurring in the relationship between the federal governmental regime (NRCS) and local acequia farmers. This entire episode reflected the top-down process of neoliberal devolution and changed discretionary planning at the local soil conservation district level. This was unimaginable two or three decades ago, when district board members and technicians were mostly white men from outside our community. Today, the local NRCS office includes a skilled multigenerational acequia farmer and has hosted a series of three progressive, sympathetic white women as technicians. All are limited by the shackles of federal policies, but the office now seems more open to acequia farmers as a unique cultural community deserving of respect for their Indigenous soil, weed, and watershed knowledge.

Permeating social interactions between acequia farmers and the NRCS is the fact that the process is subtly contested. One vision, the top-down one, allows the local NRCS some planning and design autonomy but within strict budgetary limits and subject to requiring individualized contracts in outreach with "underserved" and "underrepresented" farmers. Local farmers enter into agreements with the NRCS for acequia infrastructure projects. Acequia farmers can apply for EQIP (Environmental Quality Incentives Program) grants. The associations of *parciantes* make effective use of these to improve acequia infrastructure, like *compuertas* (ditch head gates) and other water diversion, soil erosion, and sediment control installations.<sup>47</sup> However, the restoration ecology work on the *almunyah* cannot be supported

under current federal rules for programs like EQIP. We face the continuing work of converting that meadow from sprinkler to flood irrigation. Repair work to restore compacted soil under the concentric grooves of the old sprinkler system is complete. We still must realign the network of *lindero* (perpendicular) and *sangria* (bleeding) acequias. To maintain our autonomy from governmental entities, we have so far relied on the privilege of being able to use the institute's endowment income to invest in these improvements; this is not an option for most of our neighbors.

There is another set of problems beyond the apparent current scope of these USDA soil conservation programs. We wish to rely on permaculture practices to slow down the movement of water through the more badly damaged north-side hay meadows. In our second ten-year plan, we seek to anchor and buffer the more erosive slopes and swales at the north end with a system of *ancones* (terraces), *alamosas* (cottonwood tree lines), and *bordos* (raised berms) planted with native fruit trees, like sand cherry, chokecherry, and gooseberry or oshá (*Ligusticum porteri*, a.k.a. Porter's lovage) and other medicinal and biodynamically active herbs. The plan will take time but should restore the soil horizon above the patches of ancestral riverbed gravels that have been exposed at the surface by decades of excessive plowing, inappropriate and poor irrigation practices, and overgrazing.<sup>48</sup>

There are always contested ambiguities presented by how the USDA works locally to implement programs from the top down; not least is the tendency to impose technical design criteria. These may not be entirely appropriate for acequia methods and may even undermine and weaken our commitment to local and more collective community-based approaches to problem solving. These technical designs are "Super-Sized" and inconsistent with the humbler scale of acequia form and function. Moreover, these efforts either deliberately or inadvertently inculcate a new modernist subjectivity by inducing *parciantes* to accept individual contracts; irrigators are also constantly invited to shift to drip irrigation, the use of gated pipe, and other techniques potentially at variance with sustaining acequia flood-irrigated practices.<sup>49</sup> These seemingly neutral designs can reduce our ability to act on the basis of shared norms of mutual reliance and Indigenous knowledge. It is seldom understood that collective mutual-aid inter-

ests are an alternative to the dominant individual rational actor model that dominates economic behavioral expectations in these NRCS programs. The soil conservation regime tries to define the behaviors acequia farmers must follow so they can be seen as acting effectively as land and soil managers—as subjects who can demonstrate the capacity for responsible behavior but “only to the extent that they have the managerial capacities to pursue economically ‘rational’ practices.”<sup>50</sup>

As acequia farmers we continuously juxtapose ourselves against the imposition of this neoliberal form of the governmentality of soil conservation. Many in the acequia community continue to act on the basis of collective self-provisioning and Indigenous knowledge to meet our soil conservation needs. In 1995–97, Robert Curry and I logged a small set of “soil augur” surveys to corroborate local claims that acequia farms are soil reserves. Our augur survey found evidence at the Corpus A. Gallegos Ranches and three other sites of unusually deep topsoil horizons in excess of 1.8 meters, or about 6 feet. These are among the deepest in the highland parks of the entire southern Rocky Mountain biome. We found no evidence at all of hardpan; recall the Mexica concept of *tepetate*. We took this as indicative of continued use of sound local knowledge of soil regeneration practices, since the NRCS was doing little at the time.

As a community of traditional irrigators, we remain coinhabitants of a place where too many neighbors defect to neoliberal orientations and ignore evidence of the decline of perennial native plant communities and wildlife habitat. Too many of us fail to recognize the consequences of stubborn and indiscriminate plowing and monoculture habits reflective of a sodbuster mentality. At the TAI *almunyah* we are challenging farmers who defect to selfish modernist sensibilities by emphasizing Indigenous knowledge of soil conservation and regeneration in our own practices. Not all acequia farmers are that successful, but in our context the technology of gravity-driven flood irrigation, when combined with intensive permaculture practices, carries the possibility of sustained regenerative benefits from a “disturbance ecology” with deep roots in the soil knowledge of Indigenous peoples. The best acequia farmers are like beavers. We contribute to biological and landscape ecological diversity by following original instructions as coinhabitants and active shapers of a shared ecosystem we are

allowed to transform but not ruin for use by others, including more-than-human beings. How we farm is the first step toward a politics of decolonial foods and derives from respect for the life of the soil itself as inherited from our Indigenous forbearers. In Nahuatl, *Teotlalyollotli* is the “sacred heart of the soil.”<sup>51</sup> This grounds us with humility in service to the land. After all, *Sin suelo sano, no hay maíz*. Without healthy soil, there is no maize.