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Diné Clans and Climate Change: A Historical Lesson for Land Use Today

Klara Kelley and Harris Francis

In 1994 drought took hold of Navajoland and has hung on ever since, except for a few breaks of a year or two. It was as if a switch shut off the water. Diné have been forced to sell livestock because they cannot afford to feed or haul water for them, and abandoned horses overrun the range. Elders consulted over the years have said that the early twentieth-century plentitude of grass and rain has given way to drought because Diné neglect the Holy People by forgetting their songs, prayers, and traditional ways of life.¹ Between the years of plentitude and the neglect of the Holy People is a complex history of social, political, and environmental changes linked to the system of kinship, clanship, and relatedness (“*k’éei* system”). This system distributed people and their livestock on the land in a flexible yet orderly way until federal and Navajo Nation laws replaced it with today’s regulatory system beginning in the 1930s.

This paper reviews and interprets the history of the *k’éei* system as a response to environmental and political instability, a relationship explored in detail by anthropologist Rosalie Fanale, but not widely understood.² Scholars have recognized flexibility in kin-based land use and residence rights, but not the basis of “mutual understandings” to share land. As Fanale argues, the *k’éei* system let land users with priority matrilineal rights act as gatekeepers to extend use rights to only certain classes of relatives and only temporarily, thereby controlling the number of people and livestock in one area at a time. The *k’éei* system allowed people to cope with bad conditions at home by moving elsewhere temporarily without seeking unused land, thereby preventing the “tragedy of the commons”³—grazing without regard for the sustainable use practices that sharing land of one’s relatives requires. The *k’éei* system was a flexible, yet orderly framework for distributing people and their livestock on the land in response to unstable conditions.

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Retired Diné Chief Justice Raymond Austin explains the importance of kinship to the Diné through the terms *k'é* (relatedness) and *k'éí* (clanship and kinship):

The *k'é* doctrine . . . facilitates relationships among beings in the universe. . . . The *k'é* doctrine contains values that connect Navajos to family, clan, nonrelatives, and people in general. *K'é* also encompasses connections to the natural world, including earth, plants, animals, and the rest of creation.

At the human level, the *k'é* doctrine describes the ideal relationship among everyone in the Navajo world where values maintain relationships that produce concord. In Navajo society, *K'é* reinforces the kinship system through values that include respect, kindness, cooperation, friendliness, reciprocal relations and love.⁴

And,

The *k'éí* doctrine and its emanating rules regulate domestic matters by defining Navajo identity; determining clan relatives, those a Navajo calls *shik'éí*; illuminating responsibilities, duties, and mutual obligations among clan relatives; and establishing the bounds of proper behavior among unrelated Navajos and with non-Navajos in general.

Navajos understand *k'é* and *k'éí* as closely related. . . . *K'é* applies in the course of relationships, including transactions with both clan relatives and those who are not relatives. *K'éí* refers to relationships only between clan relatives. The transactional framework relies on *k'é* values (positive attributes) to regulate the giving and sharing, usually of sustenance and emotional and spiritual support, among clan relatives (kinship cohesiveness), and the exchange and reciprocity, usually of goods, a Navajo engages with those who are not relatives, including non-Navajos.⁵

In a nutshell, for the purposes of this paper, *k'é* is about mutual giving and sharing among people and other beings, regardless of clan, whereas *k'éí* is about specific mutual rights and responsibilities among people related through specific clans. As this paper will show, when it comes to land (*k'éyah*), *k'é* is about flexible sharing, while *k'éí* brings order by prioritizing those with whom one shares. The result approaches the Diné ideal of dynamic balance.

Anthropologists have emphasized matrilineal inheritance of residence rights and have described the variable kin and clan composition of various land-using groups, which they relate in part to unstable conditions. However, most do not address the norms beyond *k'é* that, at any given time, allow people with non-matrilineal relationships to share a particular grazing area with members of a matrilineage, a manifestation of what David Aberle has called “the apparently amorphous character of Navajo kinship organization.”⁶ Jerrold Levy and colleagues are a partial exception, reporting that on the Kaibito Plateau (apparently a Diné hunting commons before Fort Sumner), a few families took refuge in Fort Sumner times, while others with clan links to them moved in later from farther east; members of at least one such family (from the southern Chuska Valley) visited back and forth.⁷ More typically, however, early twentieth-century scholars wrote that “everyone grazed his herd where

he wished,”⁸ while recognizing that “sheep owners who pasture in one area do not, as a rule, go elsewhere without first coming to some mutual understanding.”⁹ Scholars have thus recognized flexibility in kin-based land use and residence rights, but not the basis of “mutual understandings” to share land. Fanale finds that basis in clanship, the *k’ei* system, at least before the present system of permits governed by federal and Navajo Nation law began to allocate grazing rights in the 1930s. Fanale shows not only that people used networks of kin to seek help (following Louise Lamphere), but also that, at least for access to land, the clans underlying the network of kin steered people to a limited choice of places.¹⁰

Using Fanale’s insights about how clan relationships have regulated pasture sharing, this paper will offer a historical overview and examples that show how the *k’ei* system gave families two levels of use rights: a priority level of long-term rights deriving from one’s matrilineal clan (a priority on which most anthropologists and Justice Austin agree);¹¹ and a secondary level of short-term rights derived from one’s paternal clans and other relatives. In addition, this study draws on the authors’ many years of combined experience: respectively a lifetime experience of being Diné and more than forty years of working among Diné neighbors, co-workers, friends, and people consulted during cultural resource management projects in Navajoland.

An unfailingly informative experience has been to hear Diné introduce themselves in the traditional way, naming the clans of their parents and grandparents as well as the place they are “really” from. Such experiences have taught us to respect the traditional Diné system of *k’ei* infused with *k’é* values and norms, as a decentralized, egalitarian, flexible, and orderly way for people to distribute themselves and their livestock over their landscape, and as a self-sufficient social safety net. Our sources include Harris Francis’s family history, other family histories that we have been told or have reconstructed from documents and archaeology, and informal conversations with Diné.

After a brief account of environmental and political instability in Diné history from late pre-Columbian times to the present, we discuss the historical development of the Diné *k’ei* system as a framework for distributing people on the land and present concrete examples of how the *k’ei* system works. We then outline how, beginning in the 1930s, federal and Navajo Nation laws and policies that replaced the *k’ei* system have undercut the flexibility of the *k’ei* system. We conclude that the lack of flexibility in the present system could be modified to allow limited, temporary sharing of grazing areas, which Diné today are likely to accomplish through surviving *k’ei* relations.

ENVIRONMENTAL AND POLITICAL INSTABILITY IN DINÉ HISTORY

The Diné language is part of the Athabaskan language family, and therefore anthropologists assume that ancestors of the Diné moved from the north into the southwestern United States.¹² They further assume that Athabaskan speakers moved in sometime after 1300, when drought forced the village dwelling pre-Columbians, whom Diné call Anaasázi, to vacate most of present Navajoland: the Four Corners region where the states of Colorado, New Mexico, Arizona, and Utah meet. This semiarid region has experienced 550-year episodes of alternating erosion and deposition in drainages and

falling and rising water tables, as well as short-term unpredictability in moisture and temperatures in both time and space.¹³ Athabaskan speakers were present when the Spanish arrived in 1540.¹⁴

Elsewhere, we have critiqued the archaeologists' "late arrival" narrative of ancestral Diné in the Southwest, partly on the basis of Diné oral tradition.¹⁵ According to that tradition, in remote pre-Columbian times Diné and Anaasázi emerged together from lower worlds, somewhere in the mountains of southwestern Colorado, and spread southward. After monsters ravaged the Anaasázi, people from west of present Navajoland moved in, and over many centuries absorbed groups with different histories, languages, and cultures to form the people who call themselves Diné. Together, oral tradition and some recent archaeological studies and documents show that this process began in late pre-Columbian times, during the great drought of the late 1200s. This drought ushered in two hundred years of low water tables and a climate that was more variable in time and space. The assimilation of peoples into the Diné then continued, as environmental conditions improved, under the succession of colonizers from Spain, Mexico, and the United States.¹⁶

Many people who joined the emerging Diné nation were various Puebloan descendants of the Anaasázi fleeing the ravages of the Spanish colonizers. The early Diné were mobile hunter-gatherer-farmers, who in the 1600s started trading and raiding for Spanish and Puebloan livestock, mainly sheep, goats, and horses. By the late 1700s, Diné had made mobile stock-raising the centerpiece of a lifeway that still also involved farming, hunting, and gathering. By 1830, herds summering in the Chuska Mountains of central Navajoland were large enough to suppress wildfires by grazing off woodland understory.¹⁷

Oral history and documents attest that warfare with the colonizers ended in 1864 when the US Army forced at least half of all Diné to surrender and move several hundred miles from their homeland to Fort Sumner, an internment camp in eastern New Mexico. The other half remained and hid out in their homeland until 1868, when the interned Diné leaders and the United States signed a treaty. The Diné captives went back to a small Treaty reservation in the middle of their much larger earlier homeland. Most returned to their original homes, however, whether located inside the Treaty Reservation or not. Over the next few decades, therefore, the US government supplemented the Treaty Reservation with some of the land that Diné had occupied before the Fort Sumner captivity, both Treaty reservation and additions now held by the United States in trust for the Diné as a whole (Navajo Nation trust lands). In the early 1900s the United States added more land in the east and south that, before Fort Sumner, also had been held by the Diné; these 160-acre "Indian allotments" were granted to individual members of Diné families, each held in trust by the US government for the allottee and heirs.¹⁸

Nonetheless, the Diné never regained the well-watered uplands around the edges of their pre-Fort Sumner homeland, where the best hunting and gathering places were, so that they had to rely more on their herds of sheep and goats for subsistence. They also survived by trading wool and lambs to the trading posts (most run by colonizers) that appeared in their midst, especially after the transcontinental Atlantic & Pacific

Railroad crossed the southern part of their homeland in 1881–1882. For the next several decades, the US government encouraged herd growth—a time that now seems like the “classic” period of the Diné stock-raising way of life.

In the early 1930s, however, the US government reversed itself on grazing policy, with dire effects on Diné stock-raising. Soil erosion throughout the western United States, especially in the Colorado River basin, threatened hydropower and other developments to support industrialization on the west coast. The US government blamed the erosion on unregulated stock-raising throughout the western United States and quickly took control by requiring grazing permits, reducing the number of animals, and limiting the areas within which people could raise livestock. Stock reduction in Navajoland was especially draconic, as the Diné lacked the political clout of colonizer-ranchers elsewhere, who could more easily push back against the new policies.¹⁹

In Navajoland at least, the erosion was first reported in the late 1800s as a period of arroyo downcutting.²⁰ In hindsight, this erosion seems to have been part of the cycle mentioned above, which extends well back into pre-Columbian times, rather than a result of overgrazing, except perhaps in the heavily populated area around the government agency at Fort Defiance.²¹ In fact, geologist Herbert Gregory, who traveled around Navajoland between 1910 and 1913, reported evidence of overgrazing only around Fort Defiance and the neighboring southern Chuska Valley and Manuelito Plateau.²² Regardless of how erosion began, eventually the eroded land could not meet the needs of the growing number of Diné livestock, and then overgrazing began in earnest. Diné could not optimize their herd sizes and distributions on the deteriorating land, in part because the erosion was caused by forces other than overgrazing. Adding to the problem was that precipitation in Navajoland took a general downward trend from the 1930s to the present, a reflection of climate change.²³ While large-scale stock owners earned profits, small-scale stock owners who marketed wool and livestock through traders became indebted, so that many Diné tried to maximize herd size rather than optimize it to sustain the land.

By World War II, the US government had forced the Diné to give up almost half their livestock. Since then, Diné have depended increasingly on always inadequate wage work and public assistance to supplement it. No longer depending on the land for livelihood, Diné, many elders say, neglect the offerings to the Holy People needed for the land to flourish. The Diné population, which was about 40,000 in 1930, expanded to more than 300,000 by 2010, 170,000 of whom were living in Navajoland itself. Livestock numbers, however, have fallen from more than a million sheep and goats in 1940 (as well as horses and cows) to the equivalent (mostly cattle) of 700,000 sheep and goats.²⁴

DEVELOPMENT OF THE CLAN AND KINSHIP SYSTEMS IN RELATION TO LAND

In Diné tradition, all land ultimately belongs to the Holy People. Diné can only use it, and only with consent from the Holy People. Sacred places are homes of Holy People, and each time a human wants to visit, he or she must perform a ceremonial protocol to

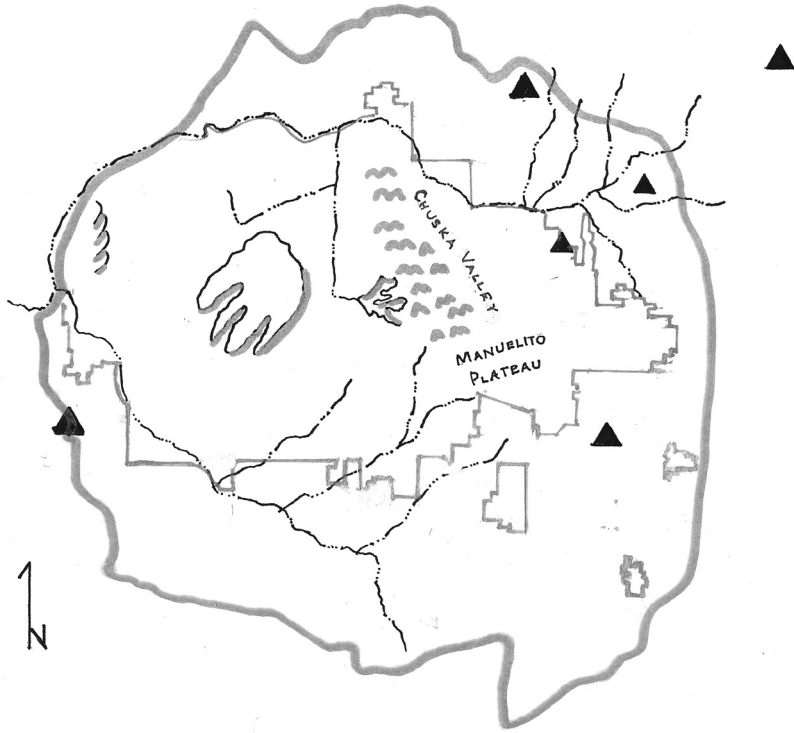


FIGURE 1. Navajo land claim area enclosing present Navajo Nation lands. Triangles represent the six sacred mountains.

gain consent from the appropriate Holy People. However, Diné have a long-standing permission from the deity Changing Woman to use one area—the land amid six sacred mountains—with the exception of certain sacred places claimed by specific Holy People. Within this area lies the traditional Diné homeland—land taken without compensation by the US government through the Treaty of 1868—that the Navajo Tribe then claimed before the US Indian Claims Commission after World War II (see fig. 1).²⁵ Diné historically have monopolized the land and have held long-lasting use and occupancy rights for their sustenance within this claim.²⁶

How did Changing Woman's gift of land come about? According to oral tradition, following cataclysmic massacres in the region among the pre-Columbian Anaasázi, Changing Woman moved to the Pacific Coast and created four or six male-female pairs.²⁷ Then she sent them back with instructions to repopulate the land amid the six sacred mountains. The Water People met others along their route, with whom they established kin-like links. The Water People became the progenitors of four or six core Diné matrilineal exogamous descent groups called *dóon'ée*, translated as "clans."²⁸ Meanwhile, other Diné oral traditions tell us that clans were forming in the upper San

Juan River basin, beginning with “cliff dwellers” from Mesa Verde around AD 1200 and continuing through the arrival of the Water People and into the 1700s.²⁹ Much farther west, towards Hopi, clans gathered around the village of Awatobi, dispersing in 1700 after a massacre by Hopis.³⁰ In addition, by the mid-1600s Spanish depredations and famine were causing Pueblos to take refuge with the Diné. Some returned home, but others were absorbed into the Diné clan system.³¹

In the centuries before livestock-raising, Diné lived by mixed hunting, gathering, and farming, probably much as Western Apaches lived in the mid- to late-nineteenth century. The Western Apache system of kinship and land use hints at what Diné kinship and land use may have been like back then.³² The Western Apaches are the Apache group perhaps most closely related to Diné,³³ and Western Apache clan histories (discussed below) suggest that the two groups may not have fully separated until after 1700. The Western Apaches had local groups consisting of many small extended families; in turn, the local groups assembled themselves into several regional bands.

To this day, Western Apaches belong to exogamous matrilineal clans that historically have controlled land use around farmlands and associated residential areas; lands farther out were commons used for hunting and gathering and open to all. There are as many as sixty clans, many of which were localized at zones of concentrated farming, for which they are named. Clan members tended to marry members of other clans in the same local group and to use lands of both spouses’ matrilineal clans at the same time. Countering these localizing kinship practices were three or four clan groups (“phratries”), each linked to an ancient clan that Western Apaches say originated among Diné around Dance Camp (Awatobi). The clans in each of these phratries are usually considered to be too closely related to intermarry. The clan groups were not localized; rather, members of each clan group were distributed among the local groups and bands.

Diné also have nine clan groups, most of which are associated with one of the four or six pairs of Diné Water People (these kinship links had been established when the Water People passed through).³⁴ Diné oral tradition says that wherever they stopped, one of the Water People would create a spring with a *gish* (cane, planting stick). These places are historically important Diné farming areas,³⁵ so perhaps Diné clan groups, as well as those of Western Apaches, helped to distribute people among premier farming zones by conferring priority farming rights on clans in the same group as the clan(s) that monopolized a particular zone. As among the Western Apaches, members of each Diné clan group have been widely distributed across the homeland.³⁶ No clan group includes more than one of the largest Diné clans, thereby evening out the distribution of people among the groups.³⁷

In the early 1900s, the Franciscan Fathers found that “in many districts [farm] land is held in severalty by members of one or affiliated *clans* to the exclusion of all others” and that men, who cleared and planted the fields, usually owned them (presumably within their matrilineal lands).³⁸ Diné elders historically have agreed on most, but not all, of the clans in each group,³⁹ and many Diné today seem unaware of the groups. The lack of complete consensus on the composition of these groups may reflect historical local differences in clans present.

Meanwhile, having gotten sheep from Spanish and Puebloans since the 1600s, Diné were raising livestock by 1700, and leaders were ranging with large herds in eastern and central Navajoland by the late 1700s.⁴⁰ By that time, under the influence of stockraising, the *kéi* system probably had taken its present form. Diné today have more than sixty clans,⁴¹ each with its own distinct history, including many with roots in various other indigenous groups, as noted above. Membership in these clans is the basis for Diné claims to durable use and occupancy rights to land. Diné inherit their clan membership from their mothers (like Western Apache), but also identify themselves with three other clans: father, mother's father, and father's father (unlike Western Apache). Moreover, some people extend rights and obligations not only to each of their four primary clans, but to the other clans in the same group. Though a few small clans each have members confined to one locality, members of most clans are scattered in local groups all over Navajoland. As both Gladys Reichard's 1920s data and a 1930s US government, reservation-wide clan census show, a clan may have many members in some localities and not in others, unlike the more evenly distributed clan groups.⁴²

The members of a clan in a particular locality are likely to know their actual genealogical connections and in this article are termed "local clan matrilineages," or LCMs.⁴³ In contrast, genealogical connections often are not known among geographically separate LCMs of a given clan, so people can be related by clan without knowing genealogical connections.⁴⁴ Some clans also claim relationship with other clans for historical reasons such as membership in the same clan group or in a clan consisting of descendants of a captive of another clan. Marriage within one's clan is strictly forbidden, and marriage into any of one's other three clans is discouraged, though in the past marriage into grandfathers' clans seems to have been more acceptable.⁴⁵ In some localities, marriage prohibitions include clans of people whose fathers are of one's clan or one's father's clan.⁴⁶ Therefore, most Diné have three generations of fairly close kin dispersed among four clans.

There is also a tendency for members of one LCM to marry those of a neighboring LCM (like Western Apache), but (unlike Western Apache) each generation must marry into other clans, preferably neighboring, resulting in a web of LCMs linked by marriages all across Navajoland and a geographically extensive network of kin for each Diné (see fig. 2). These networks give each Diné the right to use and occupy lands in various localities amid the sacred mountains. This system, in which each group of siblings has ties to a unique array of four clans, seems more flexible than the clan groups alone in distributing people on the land, and thus better adapted to rapid changes in herd sizes that characterize stock raising, as well as environmental and political instability.

Hereafter our discussion applies mainly to rangeland, within which families have maintained home sites and isolated farm fields. Large zones of concentrated farming are neglected because we have found little detailed information on historical kin-based succession among farmers in these zones.⁴⁷

Traditionally Diné have not owned grazing land, but instead have traditional residence rights and "customary use rights" to range in areas that their ancestors

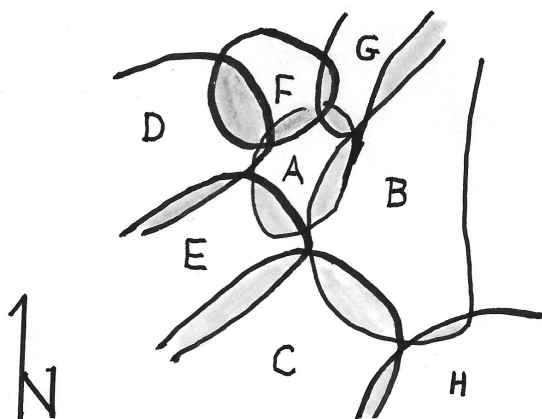


FIGURE 2. Diagram of hypothetical local clan matrilineage (LCM) land use areas. Shading indicates overlap resulting from marital links.

inhabited.⁴⁸ The tradition favoring matri/uxorilocal residence, in which a couple lives with the family of the wife’s mother, has resulted in a tendency toward matrilineal succession in customary use areas. As custom prioritizes land-use rights,⁴⁹ one’s matriline (genealogically related members of one’s own clan) has highest priority.⁵⁰ One also has lower-priority use rights through one’s mother’s father (patriline), which usually entitles one to use the lands of those relatives temporarily. Rather than being anchored to a bounded piece of land, then, Diné families traditionally would move among kin of both spouses as grazing conditions required, normally around customary use areas of the matrilineal kin (clan relatives) of each spouse.

As Fanale shows, however, during bad conditions or to let the land rest, families could move their stock elsewhere among other kin, who, in accordance with *k’éei*, expected the visiting family to reciprocate when the host family was in need. Most people would seek out genealogical relatives within their four clans or, in an extension of the practice of a couple using land of both spouses, they would seek out in-laws, as could their LCM relatives, according to Fanale’s examples. At any given time, members of the LCM, their spouses, and more distant kin living temporarily among them occupied separate scattered home sites, but shared the LCM’s customary use area, which they also defended against encroachment by others.⁵¹ Thus land tenure, with prioritized rights of use and occupancy established through the *k’éei* system, would adapt the distribution of people to the ever-changing landscape, while limiting those eligible to use a particularly good area.⁵²

In addition, for Diné and other tribes, “while fields and grazing areas were held by families, hunting and gathering areas were communal. . . . Exclusive use and occupancy thus extends to areas both of settlement and of hunting and gathering activities, provided a tribe exercised control over these areas.”⁵³ Diné thus communally

claimed hunting and gathering areas that they monopolized, but not hunting and gathering areas that other tribes also used. Use and occupancy rights to these areas have historically belonged to whole communities, or the entire Diné people, not to particular kin groups.

EXAMPLES OF CLANS AND KIN GROUPS FUNCTIONING ON THE LAND

The Chuska Valley

The Chuska Valley of central Navajoland in western New Mexico extends more than eighty miles from the Manuelito Plateau north of the railroad town of Gallup almost to the San Juan River. Bordering the valley on the west is the forested Chuska Range, whose summits reach about 9,500 feet. Drainages intermittently carry snowmelt and summer torrents from the mountain crest 3,000 to 4,000 feet down the steep eastern scarp to the open sagebrush and grasslands of the valley, then continue eastward to Chaco Wash, an intermittent southern tributary of the San Juan. Artesian water underlies much of the valley, seeping from underneath the mountains that have soaked it up. By the late 1700s, large numbers of Diné were concentrated in several farming zones in the valley and herding between Chaco Wash and the mountain crest, a distance of twenty-five miles.⁵⁴

The Chuska Valley provides a dramatic example of a long move by a large group of Diné to escape drought, and the *k'éí* and *k'é* relations that reached across not only distance but an ethnic boundary.⁵⁵ In the early 1820s, a severe drought struck the Chuska Valley. The preeminent leader Narbona moved with his followers and thousands of head of livestock westward more than 120 miles to the Dinnebito Valley beyond Hopi. According to family history, Narbona's group may have had some connection with Diné living in that area, and also Narbona may have presented "the nearest Hopi chief" with sheep and horses for use of some land.⁵⁶ We add that Narbona's clan, Masked Deities, has Hopi origins,⁵⁷ so Narbona may have had clan relatives (*k'éí*) at Oraibi, the nearest Hopi village. The drought also plagued Hopi; having experienced Diné raids during droughts,⁵⁸ the Oraibi people may have welcomed a friendly (*k'é*) and prestigious Diné leader nearby. In 1823, in the midst of the drought, the colonial Mexican officer Antonio Vizcarra led a punitive military force into the Chuska Valley and pursued a group of Diné led by Juanico to Hopi and beyond. Diné livestock were reportedly hidden among the eastern Hopi herds. The expedition also encountered Diné with much stock beyond Oraibi (probably upper Dinnebito Wash), but whether they included Narbona's people is not told.⁵⁹

Two of Narbona's sons and one daughter married Hopis; the sons stayed with their wives at Hopi, while the daughter and her husband moved back to the Chuska Valley with her father after the drought broke.⁶⁰ A Diné clan localized in the Chuska Valley and farther east is said to have originated with women from Oraibi⁶¹ and seems likely to descend from Narbona's son and his wife; the clan's Diné name is a translation of the women's Hopi clan name. This example shows that Diné seeking temporary refuge with others far away would not only invoke peaceful sharing (*k'é*) and clanship (*k'éí*), but through marriages also develop more relationships with their hosts, whether

Diné or not, thus encouraging future access and the obligation to reciprocate. This example also shows how some Diné and Hopi could have been allies through *k'é* and *k'éí*, even while other Diné and Hopi were hostile. Finally, this example shows not only how *k'é* and *k'éí* could redistribute people and livestock temporarily over long distances, but also how climate and political threats increased the diversity of clans in the Diné clan system.

The Chuska Valley also illustrates how neighboring clans tend to intermarry and thereby form an interlinked network covering a large region, as well as being connected to more distant regions by kinship relations among local leaders. These far-reaching networks of interlinked neighboring clans helped Diné gain access to widely scattered clan relatives and thereby enabled long-distance temporary moves. Traditional grazing areas have crossed the valley east-west along drainages that extend from summer range on the mountain top down to wintering grounds along the Chaco Wash. This pattern was probably well established by the early 1800s, when Narbona and his wife's clan lineage controlled such a swath (relatives with smaller herds may have held smaller areas in this swath).⁶² Their daughter married future leader Manuelito, whose mother's clan lineage was just to the north and whose father's clan lineage was farther north;

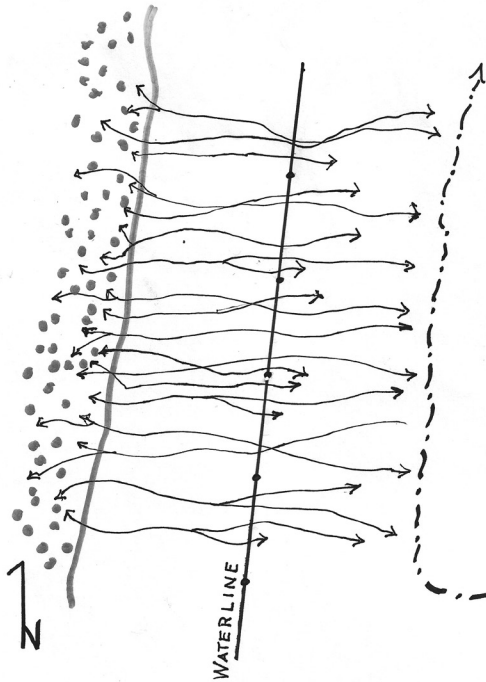


FIGURE 3. Diagram of Chuska Valley waterline reaches. For tallies of the most frequently mentioned clans in each reach, showing overlapping clan composition resulting from marital links, see table 1.

Manuelito's father was a leader in that part of the Chuska Valley, succeeded by one of Manuelito's brothers.⁶³ Manuelito and another brother, also a future leader, were born north of the San Juan River around Bears Ears, a hint that one or both parents had ties of *k'é* or *k'éí* to people there. A much younger sister married a man who was a leader in the mid-1850s; he was born west of Bears Ears and his family ranged southwest across the river around Navajo Mountain.⁶⁴ Thus, the *k'éí* (kinship) and associated *k'é* (trust) among these leaders helped them act in concert during the mid-1800s, a time of intense warfare that the new US colonizers set in motion.

A recent survey consulted Diné elders about cultural resources along a proposed water pipeline through the valley, now under construction. The survey formed a transect across traditional grazing areas (see fig. 3). As noted above, Diné conventionally introduce themselves by naming their four clans, and interviewers (including the authors) recorded this information in their field notes.⁶⁵ Here we have tallied all clans mentioned by people in a stretch of about sixty miles, as well as the four to six clans mentioned most often in each waterline segment, or reach—a crude proxy for the largest clans (clans of siblings interviewed were tallied only once). The result (table 1) shows that each reach has a distinct group of most-mentioned (presumably largest) clans (one is the clan of Narbona's wife; another, that of Manuelito; and a third, that of Manuelito's father). The clan composition of each reach overlaps with those of adjoining reaches north and south. Through *k'éi*, the local clan matrilineages are linked in a chain along the transect. Historically, within the swath crossed by each reach, people with smaller herds may not have moved the full distance between the mountains and Chaco Wash, though long moves were probably necessary before the US government water development in the 1920s and 1930s.

TABLE 1
 MOST FREQUENTLY MENTIONED CLANS IN THE NAVAJO-GALLUP WATER
 SUPPLY PROJECT SEGMENTS (REACHES) IN THE CHUSKA VALLEY, 2012–2014

	Reach 5	Reaches 6–7	Reach 8	Reach 9
Mexican People	1			
Tangled Fence	2			4
Bit'ahnii	3	1		
Walks Around		3		
Mountain Cove		5		
Red Forehead		4	1	
Red Bottom		4	4	
Bitter Water		2	5	1
Towering House			3	3
Salt	4		2	2
Red House				5

Note: Reaches are listed from north to south. Numbers show the rank of each clan within the 4–6 most frequently mentioned. Sheep Springs is on the boundary between Reaches 7 and 8.

From 1965 to 1966, Louise Lamphere mapped summer and winter locations of coresident families representing various clans around Sheep Springs (between Reaches 7 and 8).⁶⁶ Most of these families had small herds and their winter ranges did not go as far east as Chaco Wash. Coresident groups representing a particular clan did not necessarily share a contiguous area, though the noncontiguous areas shared by the largest clans tended to clump together and may have been contiguous in earlier times. Clan ties offered an individual an important network for mustering cooperation and probably access to land, which is described, but not analyzed. Descriptions of “history of movement” of members of three clans show that people often got places to live through matrilineal kin and relatives of spouses; the clans of these people are not always specified.⁶⁷

Shaped by local geography, most Diné grazing areas are not so linear, forming interlocking webs instead (compare figs. 2 and 3). Not accounted for here are the one or two interviewees in each waterline reach in the Chuska Valley who mentioned each of several other clans; these (presumably smaller) clans may indicate one or two marriages not reinforced over generations for various reasons.

The Manuelito Plateau

A closer look at changes in kinship and clanship that interlink family customary use areas comes from the Manuelito Plateau. Lying south and southwest of the head of the Chuska Valley, the plateau’s sagebrush-covered plains stretch between sandstone mesas covered with a sparse “pygmy forest” of pinyon and juniper trees at 6,800 to 7,200 feet. Water is much scarcer here than in the Chuska Valley, appearing mainly as springs and shallow wells in the beds of a few large drainages and in the sides of mesas. Unlike the Chuska Valley, the Manuelito Plateau offers little water for farming, so families have farmed isolated plots scattered around their grazing areas and watered only by runoff.⁶⁸ Diné land in most of this area consists of individual “Indian allotments,” which are interspersed with deeded land that the US government originally granted in 1866 to the A&P Railroad Company to sell or lease to settler-ranchers, and thereby finance railroad construction.

However, local commercial ranchers lacked interest in leasing (and fencing) this dry and shrubby range. The plateau thus differs from the Chuska Valley, where the US government holds the land in trust for the Navajo Nation collectively. However, until the mid-twentieth century, plateau Diné families used the entire area with little regard for boundaries between allotments and railroad lands, and thus, like the Diné of the Chuska Valley, were unhindered by formal property lines. While some families in the 1800s to the early 1900s moved seasonally over distances comparable to those of Chuska Valley families, others moved year-round within much smaller areas. A family’s regular moves throughout a normal year were around the lands of the wife’s LCM and often lands of the husband’s LCM as well.

A study in the northwest part of the Manuelito Plateau illustrates that land-use rights inherited matrilineally had priority before the 1930s, and shows what factors undermined matrilineal priority later.⁶⁹ In contrast to Fanale’s study, which

documents long-distance temporary moves of families, this study focuses on inherited land-use rights and long-term residence—thereby missing short-term, temporary, longer-distance moves that some of these families may have made. However, information was gathered about home sites and herding campsites, both archaeological and still-occupied, a few of which people identified with distant relatives for short-term use.

Oral history and archaeology suggest that before the Fort Sumner captivity, the Manuelito Plateau was a commons where people from the Chuska Valley to the north and the Black Creek Valley to the west hunted deer and antelope. Within a couple of decades after Fort Sumner, a few men in the Black Creek Valley had amassed large herds there and were also using the rugged western Manuelito Plateau for winter sheep camps.

In the following example focusing on the two neighboring LCMs (referred to as “LCM-A” and “LCM-B”), the people described used land farther east of the large Black Creek Valley stock owners, perhaps at first in winter, but soon year-round. These two LCMs were the normal occupants of areas into which the *k'éí* system could bring distant relatives. Before we describe in detail generational changes in the system for both LCMs after the Fort Sumner captivity, we first emphasize their overall significance: (1) in Generation 1 through Generation 3, matrilineal priority is evident; (2) in Generations 3 and 4, which reached adulthood in the 1930s, more sons stayed on their mothers' family lands, together with wives and children; and (3) in Generations 4, 5, and younger, the children of those sons inherited occupancy rights and used them. Thus, after the 1930s, a growing number of coresident families inherited their residence rights not through their mothers, but through their fathers.

Before Fort Sumner, Generation 1 of LCM-A lived far to the west (details that might reveal individual identities are omitted). Returning from Fort Sumner, they did not go all the way home, but rather stayed in the Black Creek Valley, where for ten years the government agency at Fort Defiance distributed rations and annuities. One or two members of this generation of LCM-A may have used the Manuelito Plateau in winter. In addition, a pair of daughters of a Generation-1 woman, Gray Woman, definitely did so, while a son and another daughter married into Black Creek Valley families. The crowding from large herds in the Black Creek Valley induced the pair of Gray Woman's daughters to move to the Manuelito Plateau, where their families soon were herding year-round.

Before Fort Sumner, members of Generation 1 of LCM-B were growing up farther north and east in the southern Chuska Mountains and probably the Chuska Valley. After Fort Sumner, a man and three or four women—Azaakai, Big Woman, Tiny's Wife, and perhaps Mescalero's Wife, who seem to have been his sisters, were using a large drainage on the northwest Manuelito Plateau east of the drainage occupied by LCM-A. Another brother seems to have married into a family in the upper Black Creek Valley. In Generation 2, daughters of Azaakai, Big Woman, and Tiny's Wife continued to use the area and were succeeded by their Generation 3 children. They moved around this area and down the wide drainage valley farther south all year (see fig. 4).

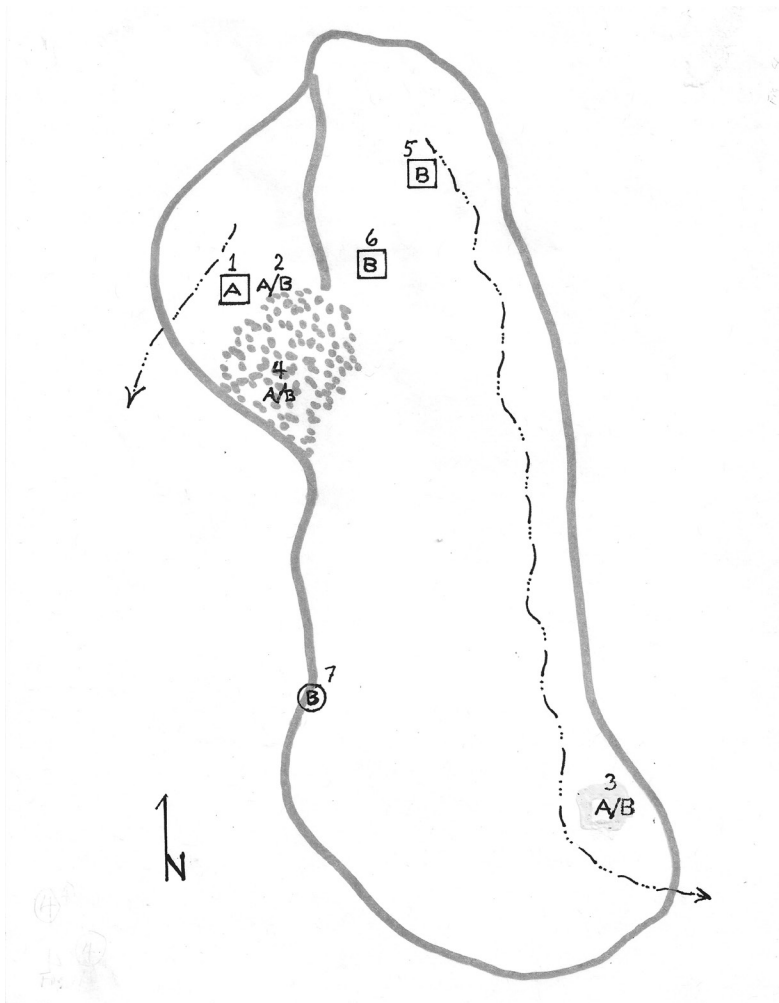


FIGURE 4. Northwest Manuelito Plateau customary use areas and main homesite areas, LCMs A and B, 1910–1918. Squares indicate female extended family heads and circles indicate males; enclosed letters identify LCM of family head. A/B indicates extended family heads of both clans (see text). LCM A and B overlap area is stippled. Note that extended family homesite areas on Figures 4–6 also include households of adult daughters and sons of the extended family head, indicated by a square or circle.

In 1910, members of both LCMs applied for allotments for themselves and many of their children and grandchildren, both male and female. The allotments were approved in 1920. Figure 4 shows the main home areas of LCM-A and LCM-B families around 1910 to 1918, the year of the flu pandemic. The home areas in Figures 4 through 6 are labeled with the clan of the senior resident with inherited use rights; each area encompasses several homesites occupied at different times. Not accounted for here are other sons and daughters in each generation, especially in LCM-B; many in LCM-B may have spread down the drainage southeast of the area shown in Figure 4.

At site 1 lived the elder of Gray Woman's daughters, Gray-Eyed Woman, together with her Generation 3, LCM-A daughter, Warrior Woman, and son-in-law, Schoolboy, whose maternal grandmother was Tiny's Wife of LCM-B. Living at site 2, in several widely dispersed dwellings, were Gray Woman's younger daughter and her father, Fuzzy Face (Gray Woman's former husband) along with his current wife Tiny's Daughter (of LCM-B and much younger). Fuzzy Face and Tiny's Daughter were the parents of Schoolboy. This coresident, blended LCM-A and LCM-B family lived where ranges of the two LCMs overlapped, an area along the divide between the drainages occupied by LCM-A and LCM-B. The family also had a home at site 3, apparently used in the warm months because of a large playa nearby; site 3 sometimes also may have housed Schoolboy and his LCM-A wife and children.

At site 4 in the overlap area lived a son (Generation 3) of Gray Woman's younger daughter with his LCM-B wife. The LCM-A husband also herded farther southwest on land of his mother's brother's in-laws; after breaking up with his LCM-A wife around 1918, he eventually married a member of this family.

Sites 5 and 6 were occupied by two Generation-1 LCM-B matriarchs, Azaakai and Big Woman, together with Azaakai's deceased daughter's children. One of these grandchildren was living with her LCM-A husband at site 4 until he left her around 1918. Site 7 was a lambing camp of a maternal grandson of a sister of the LCM-B matriarchs at Sites 5 and 6 (Mescalero's Wife?).

The first decades of the 1900s were relatively wet,⁷⁰ and these people apparently did not need to move temporarily among more distant clan relatives where range conditions were better. During these same decades, though, families farther northeast in New Mexico's San Juan Basin did make such moves.⁷¹ The San Juan Basin east of the Chuska Valley is drier than the Manuelito Plateau, and families there competed for range and water with non-Indigenous commercial ranchers. Also, as noted above, the Manuelito Plateau study focused on succession in matrilineal customary use areas and therefore probably missed short episodes when families "visited" more distant relatives elsewhere.

These first three generations on the northwest Manuelito Plateau clearly observed the priority of matrilineality. In the area described, the succession from one generation to the next favored women: of a group of brothers and sisters, the next generation of users consisted mainly of the children of the sisters. In addition, people consulted for the Manuelito Plateau study identified certain areas that individual, wealthy men with large herds dominated during this period, including the southern part of the LCM-A area (site 7). Although these men used lands of both their wives' and their mother's families, their domination did not disrupt matrilineal succession (see fig. 2 for a sketch of the general pattern).

In the 1930s, however, more children of brothers stayed on the land and the pattern of succession started to change. Figure 5 shows home areas around 1940. At site 1 lived a daughter of Gray Woman's younger daughter. Gray Woman's younger daughter herself was still living at site 2 with her son and his LCM-B wife. At site 4, Gray Woman's younger daughter's son (formerly married to Azaakai's maternal granddaughter, adopted by Big Woman) still had some kind of place, even while he herded

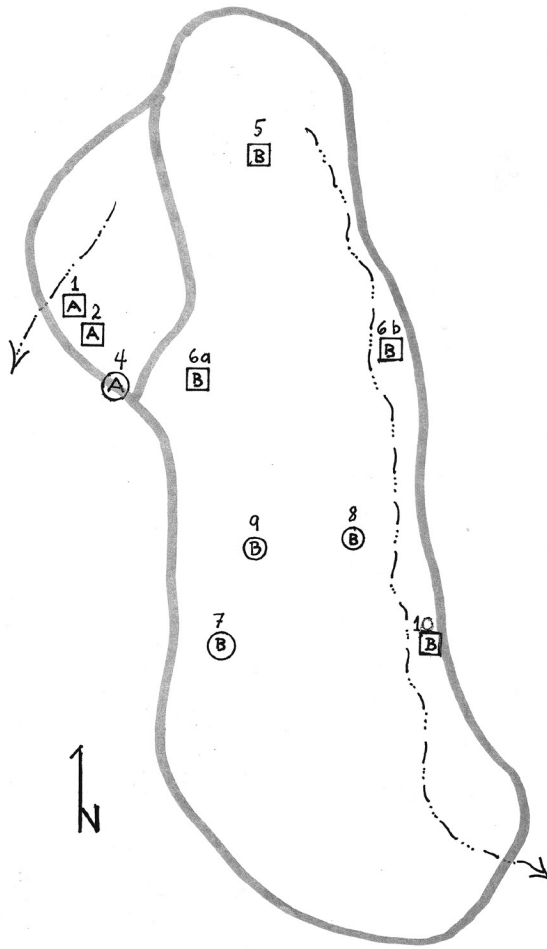


FIGURE 5. Customary use areas and main homesite areas, LCMs A and B, 1940s.

farther southwest with his maternal uncle and in-laws. Site 5 continued to house matrilineal descendants of LCM-A matriarch Azaakai. Other daughters of Azaakai's deceased daughter, adopted by Big Woman at Site 6, had grown up and budded off to sites 6a and 6b. The matriarchs' grand-nephew was still using site 7, though stock reduction had taken much of his livestock. Two sons of Tiny's Wife (sister of the two matriarchs) were living at sites 8 and 9 with their wives and children (representing neighboring LCMs C and D). The sister of the two sons was living at site 10.

Figure 6 shows the residence pattern around 1978. Site 1 was still occupied by a matrilineal granddaughter of LCM-A matriarch Gray Woman's older daughter, along with the granddaughter's grown children, some of whom also lived at site 2a. Site 2

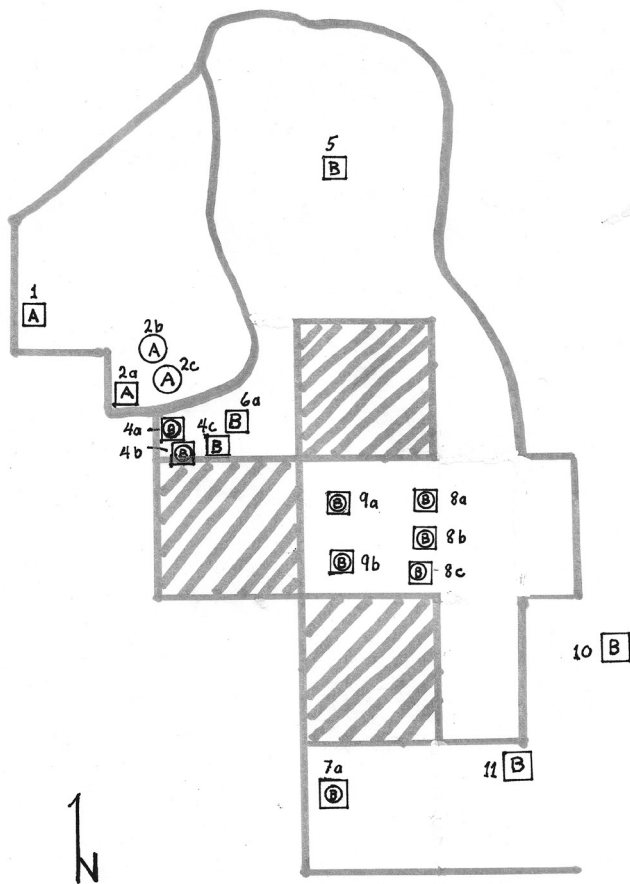


FIGURE 6. Customary use areas and main homesite areas, LCMs A and B, 1970s. Circles enclosed by squares indicate descendants of a male member of the LCM indicated (descendants are of various other clans). Hatched areas indicate deeded land withdrawn from local Diné use.

had also given rise to sites 2b and 2c. Site 2b was occupied by a son of Gray Woman's older daughter's daughter and Schoolboy, with LCM-C wife and grown children. Site 2c housed a son of the matrilineal granddaughter at Site 1. Sites 4a through 4c housed two LCM-B sons (4a and b) and a daughter (4c) of the adopted daughter of Big Woman who had married the LCM-A son of Gray Woman's younger daughter. A short distance east at site 6a lived another of Big Woman's LCM-B adopted daughters and her grown children. Site 7 had given rise to site 7a, which housed a woman whose wealthy LCM-B father had used site 7 for a lambing camp. Descendants of the LCM-B brothers at sites 8 and 9 around 1940 occupied sites 8a, 8b, 8c, 9a, and

9b (representing clans C, D, and others). LCM-B descendants of the brothers' sister occupied site 10, while a matrilineal descendant of the LCM-B matriarchs at sites 5 and 6 occupied site 11.

Figures 5 and 6 show that, from around 1940 to 1978, although more daughters than sons were succeeded by their children, the pattern of succession had become more complex and bilateral than it was before the 1930s. Nevertheless, people still used clanship to get temporary access to range land when their regular areas were unusable. For example, the household of a distant clan relative sought refuge with an LCM-A man in winters when the snow was too deep on their mountaintop range and their lower range had been taken by early strip-mining.

In the 1960s and 1970s a coal mining company had leased much of the land that these families used and in the 1980s it relocated most families from their customary use areas inside the mine. Many of these use areas extended outside the mine, however, including those of LCMs A and B, so LCM-A and B families sold some of their livestock and kept the rest on their reduced land use areas. Some may have moved their stock to customary use areas of in-laws in the Chuska Valley, or to areas of more distant clan relatives. Other younger members of the two LCMs had no livestock and relocated to a housing subdivision. These moves are supposed to be temporary, as the families will get their allotments back after mining and reclamation are over. Almost forty years later, though, this has yet to happen.

CAUSES OF CHANGE

Fanale shows that in the late 1800s to early 1900s, people did move among relatives in response to changing local conditions.⁷² She also suggests that the system could sustain the land over the long run (given an adequate amount of land) until the system “broke down” with widespread drought that seems to have increased in the twentieth century. However, we lack adequate historical information on changing range conditions throughout Navajoland before the late 1800s.⁷³ We also lack information on the ratios of people to livestock and to land, climate parameters, and other relevant factors, especially in the decades before the 1864 conquest, when the system probably reached its full bloom.⁷⁴ This was a time of high water tables, but also of political turmoil and much short-term variability in local environmental conditions.⁷⁵ In any case, as noted above, land quality began deteriorating because of erosion in the 1880s, whether because of widespread overgrazing (which seems doubtful given the massive loss of Diné livestock twenty years earlier during the Fort Sumner trauma) or because of the onset of erosion that had recurred every 550 years since pre-Columbian times (which was certainly at least a contributing factor and was noted by geomorphologist John T. Hack at the time of stock reduction).⁷⁶

The federal stock reduction program and its grazing permit system that were the eventual response to range deterioration caused the changes in Diné land tenure on the Manuelito Plateau described above.⁷⁷ Other studies and anecdotal information show that these changes also occurred in the rest of Navajoland, including the Chuska Valley.⁷⁸ In the early 1930s, the US Soil Conservation Service studied the

livestock ranges all over Navajoland, then divided the land into twenty-three grazing districts (including Hopi and outlying reservations to the southeast) and estimated the number of livestock that each district could sustain (carrying capacity was expressed in terms of “animal units,” with a cow being equal to four sheep and a horse to five). For decades, Diné had taken their herds every year to government dipping vats and had run them through a medicinal bath to kill the skin disease scabies. During stock reduction, government officials stationed at these vats identified the owners in each grazing district, divided the district’s carrying capacity by the number of owners, and enshrined the result as the maximum number of “animal units” allowed on any permit. The officials also counted the sheep and goats that each owner brought to the dip and, if the total exceeded the maximum permitted, forced the owner to sell the rest (cows and horses were also factored into the permits through visits to owners). Owners with herds under the maximum allowed were supposed to get permits not to exceed the number they actually owned, but in fact many smaller owners received permits for less and were forced to sell animals, especially goats.⁷⁹

Though women customarily owned and managed most herds, the government issued many, perhaps most, permits to men. Owners had to renew the permit every year, and the government would issue no new permits in a district except in the unlikely event that the actual number of livestock there was well below the carrying capacity. Therefore, one could only get a permit by having it transferred from another permittee or by inheriting it. A permittee could assign the permit to one or more family members, and family members had priority in inheritance. Officials of the US and Navajo tribal governments had to approve assignments and transfers. One could have a permit in only one land management district. These regulations for the most part still stand today.⁸⁰

The US government could not restrict permittees to individual grazing areas within a district or its subdivisions, however, even if the government had possessed the logistical capacity to make such maps, because grazing areas historically lacked clear boundaries. As we have discussed, traditionally, several matrilineally related families (and maybe, temporarily, another household related through other clan links) would have home sites scattered around the grazing area of their parents or maternal grandparents (see figs. 4–6), each family herding outward from its home site in various directions so as not to mingle with the herd of another family. These families also shared water sources and each was careful to move the herd to water when others were not likely to be there.⁸¹

Nevertheless, the government permit system undermined the traditional system of distributing families and their livestock on the range by restricting them to particular geographical areas (the grazing districts) regardless of range conditions in any particular year, and also by doing away with the prioritized grazing rights of family members. As use rights descending through the mother lost their priority and were no longer privileged over use rights descending through the father, men and women might find themselves competing equally in their mothers’ lands for use rights for themselves and especially for their grown children. The permit system undermined the *k’éi* system because the main way for children to get permits was (and is) by assignment by or inheritance from a parent; as we have noted, most original permittees were probably

men. The permit system also has encouraged people to think of their grazing permit areas as individual property, undermining *k'é*. It has also undermined *k'é* as a traditional social safety net by preventing families from temporarily allowing more livestock than their permitted number in their customary use area; thus, they could neither seek relief from bad local conditions by moving temporarily among relatives, nor offer relief to those same relatives. People had to look to government relief programs, so that self-sufficiency through the reciprocity of *k'é* was undermined.

On the Manuelito Plateau, another factor reinforced these effects of the grazing permit system: the allotments. As noted above, Manuelito Plateau families had moved over both allotted lands and the interstitial railroad lands with little attention to their boundaries. However, the industrialization of the western United States accelerated after World War II, and the US government took steps to ready coal, oil and gas, and other resources of Navajoland for corporate exploitation. Much of eastern Navajoland had been allotted decades earlier to individual Diné and the allotments of deceased Diné had to be probated because they or their descendants had to consent to such development. The probate courts ignored Diné matrilineal custom in favor of state laws, which treated male and female lineal descendants equally. Thus, both the permit system and probate of allotments gave men documented land-use rights of priority equal to those of women to pass on to their children.⁸² On the Manuelito Plateau, probate determined succession on the allotments, so the grazing permits were retired. At the same time, after World War II, the railroad sold to private land speculators the parcels of its 1866 federal grant situated amid the allotments. The speculators then fenced them and began selling them to ranchers, including a few Diné.

Throughout Navajoland, Diné men have used these documented rights for a variety of reasons. As mentioned, after stock reduction many Diné, especially men in the early decades, turned to wage work to support their families and themselves. The northwest Manuelito Plateau was near employment centers (the Navajo government capital of Window Rock and the railroad town of Gallup), and relatively good roads across it gave access to these places, so some men benefited from documentation of their father's rights in the area to get living space. Many Manuelito Plateau men had married women of the Black Creek Valley, long a densely populated area where a woman's mother's family might refuse to make room for her household. The same was happening elsewhere in Navajoland, with some areas newly attractive for access to wage work and becoming heavily populated for that and other reasons.⁸³

Meanwhile, since the Depression and especially in the 1950s, Diné school enrollment grew by leaps and bounds, encouraging families to seek homesites with good access to schools and leading to more marriages between people of far-apart localities, thereby upsetting the traditional tendency to marry into neighboring families. With opportunities for work and schooling around Navajoland and beyond, both men and women needed to move around—a pattern that may or may not resemble the traditional moving of livestock owing to changing local conditions. In any case, because the grazing permit system and allotment probate had disrupted the traditional ways, such moves could not be guided by them. Displacement by industrial developments such as strip-mining and agribusiness also forced families to seek new homes among

relatives of either husband or wife with residential rights passed on to children, often begrudged by relatives who had intended to make room for them only temporarily.

One might ask why one can still see the geographical interlinking of neighboring zones through clans (localized clan matrilineages) along the recent Chuska Valley waterline study. A likely reason is that most people consulted there were of middle age or older, so that the four clans they mentioned—the parents' and grandparents' clans that we have tallied here—reflect the clans present among earlier generations in the area and thus tend to exclude those of younger people.⁸⁴ Youngsters seem more likely to marry non-neighbors from school, work, and other venues outside the local community, who consequently represent a random assortment of clans.

CONCLUSION: CLIMATE CHANGE AND DINÉ GRAZING LAND USE TODAY

When the US government replaced the traditional Diné land tenure based on *k'é* and *k'éí*, including matrilineal priority of land-use rights, it replaced matrilineal succession with bilateral succession. It also offered no mechanism to replace the two tiers of land-use priority that had allowed flexible yet orderly distribution of livestock and people on the land in response to variable environmental and political conditions. Since 1958, the Navajo Nation courts have taken over probate and other adjudications concerning family land use on Navajo Nation trust (but not allotted) lands. Over time, these courts (and to some extent also the Navajo Nation Council, through legislation) have tried to integrate Diné custom into the legal and policy framework established earlier by the federal government. According to both Navajo Nation and federal law, all Navajo Nation trust lands are held by the Diné collectively, while grazing and other land-use permits, most originally issued by the US government, entitle individuals to use rights only.⁸⁵ Justice Austin describes the legal framework today as follows.

(1) animal units in grazing permits must be sufficiently large to be economically viable; (2) land must be put to its most beneficial use; (3) the most logical heir should receive land use rights; (4) use rights must not be fragmented; and (5) only those who are personally involved in the beneficial use of land may inherit it. All these land policies are designed to assure that Navajo Nation lands are used wisely and well, and that those who actually live on them and nurture them should have rights to their use.⁸⁶

Moreover, the courts view grazing and land use permits in individual names as being held “for the benefit of the family or residence group” (Navajo customary trust).⁸⁷ Since “Navajo custom holds that the maternal clan, as represented by the clan matriarch, maintains and controls land-use rights,” women are often the “most logical heirs.”⁸⁸ Nevertheless, permits can be in the names of either men or women, and either can be designated the “most logical heir.” The area managed by a permittee on behalf of the family is called a “customary use area.”⁸⁹

Today, the distribution of people and livestock on the landscape is even more out of sync with the environment because, of approximately 11,000 grazing permits, only about 7,500 are in use,⁹⁰ and among the more than 170,000 Diné living in Navajoland,

there are probably 40,000 households, most without permits. Permittees who do not use their permits for livestock are nevertheless loath to give them up. A permittee can block a would-be resident from establishing a home site on the land that the permittee would use for livestock if he or she had any, as well as other developments such as small businesses—but not large-scale developments such as coal mines or pipelines. Some developers reportedly have threatened permittees with condemnation by assertion of governmental eminent domain.⁹¹ The permit system also ties the permittee to his or her family history on the land, since the original permittee was already using the land based on traditional tenure and most permittees are lineal or collateral descendants of original permittees. The Navajo courts' term "customary use area" recognizes this type of relationship.⁹²

Present Navajo Nation law and policy privilege grazing land use in the mode originally established by federal regulations. These satisfy neither the minority of families who raise livestock, nor the majority who do not, who nonetheless need a say in land use for residences, small businesses, and the like. For livestock owners, the framework inhibits their responding to local drought conditions by moving livestock. Admittedly, drought has plagued all of Navajoland for more than twenty years, so even in a more flexible regulatory system it would be difficult for stockowners to find better grazing places. The present framework also hinders cooperation among stock-raising families to distribute livestock more flexibly on the landscape through *k'éí* and *k'é*. Moreover, by privileging grazing land use and rights of consent by permittees, the permit system inhibits multifaceted land-use planning for the needs of the majority who are not stock raisers and for the Diné public as a whole. Disputes over grazing areas are common, not least because boundaries are vague. Integrated land use planning is especially crucial in this time of climate change and shifting local water supplies.

Yet the Diné public does not vocally support grazing regulation reform. Many Diné have elders with grazing permits and consider those permits a means to a future home site on the associated land, if needed. Many are no doubt mindful of the family history in which the permit is rooted, which would be lost without the permit to keep the family and its history tied to the land. Others might like to see a radically different way of allocating land use rights, but fear that the Navajo Nation government or "Washington" will simply take control of all land through eminent domain and offer the people no use rights at all.

Proposals to reform land allocation must, as a beginning, offer everyone the means to secure different types of family land use while respecting the connections of people to their historical family customary use areas. Herein we have described the Diné traditional system of *k'éí*, kinship and clanship, held together by *k'é*, the ethic of universal relatedness, which have survived conquest, settler colonialism, and climate change. These connections are still strong among the Diné. By linking neighboring families through ties to many clans resulting from intermarriage, the *k'éí* system was, and is, a netlike structure that covers all of Navajoland. People invoke their family histories when criticizing current grazing management for failing to follow these customs. We offer this historical perspective as a context for today's pressing question: how the people can rebalance their relationship with the land in this time of climate change.

K'é and k'éí also underpin the traditional ceremonial system, as well as offering a badly needed social safety net beyond what government poverty programs can do. They may offer a way for the Navajo Nation to reintroduce orderly flexibility into grazing management. We suggest that modifying the present grazing permit system to encourage collaboration among permit holders (with or without livestock) in different places would let people move their livestock more widely in response to unstable local conditions, including the increasing variability of weather under climate change. Permittees would likely call on their still-strong kin and clan ties to make range management plans for their combined areas. People without livestock but with other interests in the grazing areas would also take part. The Navajo Nation government, including the courts, would provide coordination, technical assistance, some funding, dispute resolution, and so forth. A pilot project might show how such an arrangement could be made to work. Such cooperation might then set in motion other types of adaptive land use, and be a step toward more flexible, yet orderly and sustainable use of Navajoland.

NOTES

1. Margaret H. Redsteer, Klara Kelley, Harris Francis, and Debra Block, "Increasing Vulnerability of the Navajo People to Drought and Climate Change in the Southwestern United States: Accounts from Tribal Elders," in *Indigenous Knowledge for Climate Change Assessment and Adaptation*, ed. Dennis Nakashima, Jennifer Rubis, and Igor Krupnik (Cambridge University Press, 2018), 171–87.
2. Rosalie Fanale, "Navajoland and Land Management: A Century of Change," PhD diss., Catholic University, 1982, 126–28.
3. The "tragedy of the commons," according to economist Garrett Hardin in "The Tragedy of the Commons," *Science* 162, no. 3859 (1968):1243–48, <https://doi.org/10.1126/science.162.3859.1243>, can occur among people who use a common resource when those who "rationally" try to maximize their own gain collectively deplete the resource. Critics of this theory have shown that a community can regulate use of a common resource by its members to prevent over-use; see Elinor Ostrom, Joanna Burger, Christophe B. Field, Richard B. Norgaard, and David Policansky, "Revisiting the Commons: Local Issues, Global Challenges," *Science* 284, no. 5412 (1999): 278–82, <https://doi.org/10.1126/science.284.5412.278>.
4. Raymond D. Austin, *Navajo Courts and Navajo Common Law: A Tradition of Tribal Self-Governance* (Minneapolis: University of Minnesota Press, 2009), 84–5.
5. *Ibid.*, 137. By "clan relatives," as discussed below, Justice Austin means not only those of one's matrilineal (primary) clan, but also the several other clans to which they have ties.
6. David F. Aberle, "Navajo Coresidential Kin Groups and Lineages," *Journal of Anthropological Research* 37, no. 1 (1981): 1–7, <https://doi.org/10.1086/jar.37.1.3629511>.
7. Jerrold E. Levy, Eric B. Henderson, and Tracy J. Andrews, "The Effects of Regional Variation and Temporal Change on Matrilineal Elements of Navajo Social Organization," *Journal of Anthropological Research* 45, no. 4 (1989): 351–77, <https://doi.org/10.1086/jar.45.4.3630515>; Eric Henderson, email to Klara Kelley, June 12, 2013; Klara Kelley and Harris Francis, field notes, October 17 and 23, 2013. Levy, et al., also describe long-distance seasonal moves by wealthy stock owners over large areas that they "controlled" and imply that they used clan relationships with people also living in those areas to gain access, presumably reciprocating with sheep or employment; see 359–64.
8. W. W. Hill, "The Agricultural and Hunting Methods of the Navaho Indians," *Yale University Publications in Anthropology* 18 (New Haven: Yale University Press, 1938).

9. Berard Haile, *Property Concepts of the Navaho Indians*, The Catholic University of America Anthropological Series 17 (Washington, DC: Catholic University Press, 1954). See also Bahe Billy, "Navajo Indian Culture and Lands," in *Values and Choices in the Development of the Colorado River Basin*, ed. Dean F. Peterson and A. Berry Crawford (Tucson: University of Arizona Press, 1978), 368–69.
10. Louise Lamphere, *To Run After Them* (Tucson: University of Arizona Press, 1977), 92–105; Fanale, "Navajoland and Land Management," 133–34.
11. Levy, et al., "Effects of Regional Variation," Austin, *Navajo Courts and Navajo Common Law*, 191.
12. For details and sources of the information in this section, see Klara Kelley and Harris Francis, *A Diné History of Navajoland* (Tucson: University of Arizona Press, 2019).
13. Jeffrey S. Dean, Robert C. Euler, George J. Gumerman, Fred Plog, Richard H. Hevly, and Thor N. V. Karlstrom, "Human Behavior, Demography, and Paleoenvironment on the Colorado Plateaus," *American Antiquity* 50, no. 3 (1985), 537–54, <https://doi.org/10.2307/280320>.
14. George P. Hammond and Agapito Rey, *The Rediscovery of New Mexico, 1580–1594* (Albuquerque: University of New Mexico Press, 1966), 189; Carrol Riley, *Rio del Norte: People of the Upper Rio Grande from Earliest Times to the Pueblo Revolt* (Salt Lake City: University of Utah Press, 1995), 90, 221.
15. Kelley and Francis, *A Diné History of Navajoland*, ch. 1.
16. Washington Matthews, *Navaho Legends* (Salt Lake City: University of Utah Press, 1994 [1897]), 135–59; Deni J. Seymour, *Fierce and Indomitable: The Protohistoric Non-Pueblo World in the American Southwest* (Salt Lake City: University of Utah Press, 2017); J. Lee Correll, *Through White Men's Eyes*, vol. 1 (Window Rock, AZ: Navajo Nation Museum, 1976).
17. Melissa Savage and Thomas W. Swetnam, "Early 19th-Century Fire Decline Following Sheep Pasturing in a Navajo Ponderosa Pine Forest," *Ecology* 71, no. 6 (1990): 2374–78, <https://doi.org/10.2307/1938649>.
18. J. Lee Correll and Alfred Dehiya, *The Navajo Nation: How It Grew* (Window Rock: Navajo Times Publishing Co., 1978); Klara Kelley, *Navajo Land Use: An Ethnoarchaeological Study* (Orlando: Academic Press, 1986).
19. Marsha Weisiger, *Dreaming of Sheep in Navajo Country* (Seattle: University of Washington Press, 2009); Donald S. Parman, *The Navajos and the New Deal* (New Haven: Yale University Press, 1976); Fanale, "Navajoland and Land Management."
20. Parman, *The Navajos and the New Deal*, 10.
21. Dean, et al., "Human Behavior, Demography, and Paleoenvironment."
22. Herbert Gregory, *The Navajo Country: A Geographic and Hydrographic Reconnaissance of Parts of New Mexico, Arizona, and Utah*, US Geological Survey Water Supply Paper 380 (Washington: Government Printing Office, 1916), 22–49.
23. Redsteer, et al., "Increasing Vulnerability of the Navajo People"; Fanale, "Navajoland and Land Management."
24. Kelley and Francis, *A Diné History of Navajoland*, ch. 11. One cow equals 4 sheep in terms of how much plant cover it eats.
25. Navajo Tribe, "Proposed Findings of Fact in Behalf of the Navajo Tribe of Indians in Area of the Overall Navajo Claim" (6 vols.), Docket 229 before the Indian Claims Commission, 1967.
26. See also Austin, *Navajo Courts and Navajo Common Law*, 195.
27. According to archaeologists, the Anaasází disappeared from most of the region owing to the late 1200s great drought; see, e.g., Dean, et al., "Human Behavior, Demography, and Paleoenvironment."
28. Scott Preston, "The Clans," in *Navajo Historical Selections*, ed. Robert Young and William Morgan (Phoenix: US Bureau of Indian Affairs, 1954), 23–27, 98–101. The Water People story may be a version of a prototype epic narrative of the Western hemisphere; see Gary Urton, *The History*

of a Myth: *Pacariqtambo and the Origin of the Inkas* (Austin: University of Texas Press, 1990), with which generations of tellers have identified historical events and embedded them therein to make the events more memorable. For a discussion of this process, see David C. Rubin, *Memory in Oral Traditions* (Durham: Duke University Press, 1995).

29. Matthews, *Navaho Legends*, 135–59.

30. Grenville Goodwin, *Social Organization of the Western Apache* (Chicago: University of Chicago Press, 1942), 608, 620; Michael O'Hara, "Navajo Archaeology and Ethnohistory of the Beautiful Valley, Arizona," paper presented at the 15th Navajo Studies Conference, Durango, CO, October 22, 2004; David M. Brugge, "Traditional History of Wide Reed," in *Wide Reed Ruin: Hubbell Trading Post National Historic Site* (Professional Paper 51, Appendix I), by James E. Mount, Stanley J. Olsen, John W. Olsen, George A. Teague, and B. Dean Treadwell (Santa Fe: Southwest Cultural Resources Center, National Park Service, 1993).

31. Matthews, *Navaho Legends*, 158; David M. Brugge, "Pueblo Factionalism and External Relations," *Ethnohistory* 16, no. 2 (1969): 191–200, 192–93, <https://doi.org/10.2307/481305>; Correll, *Through White Men's Eyes*, 51.

32. Goodwin, *Social Organization of the Western Apache*; Charles R. Kaut, "Western Apache Clan and Phratry Organization," *American Anthropologist* 58, no. 1 (1956): 140–46, <https://doi.org/10.1525/aa.1956.58.1.02a00090>; David Aberle, 1961, "Navajo," in *Matrilineal Kinship*, ed. David M. Schneider and Kathleen Gough (Berkeley: University of California Press, 1961), 96–201.

33. Robert W. Young, "Apachean Languages," in *Handbook of North American Indians* 10: *Southwest*, ed. Alfonso Ortiz (Washington, DC: Smithsonian Institution, 1983), 393–400.

34. Preston, "The Clans"; Franciscan Fathers, *An Ethnologic Dictionary of the Navajo Language* (Saint Michaels: Franciscan Fathers, 1910), 428–31; Gladys Reichard, *The Social Life of the Navajo Indians with Some Attention to Minor Ceremonies* (New York: Columbia University Press, 1928), 36–50; Aberle, "Navajo," 182.

35. Leland C. Wyman, *Blessingway* (Tucson: University of Arizona Press, 1970), 457.

36. Reichard, *The Social Life of the Navajo Indians*, 50.

37. *Ibid.*, 36–39; Anonymous, "Clan Membership—Navajo Reservation," *Masayesva v. Zah*, Def. Ex. 2634 (ca. 1938; manuscript on file, Navajo Nation Justice Department, Window Rock, AZ).

38. Franciscan Fathers, *Ethnologic Dictionary*, 265.

39. *Ibid.*, 428–31; compare Evangeline Parsons Yazzie and Margaret Speas, *Diné Bizaad Bináhoo'aah, Rediscovering the Navajo Language* (Flagstaff: Salina Bookshelf, 2007), 71–72; see also Aberle, "Navajo," 182.

40. Correll, *Through White Men's Eyes*; W. W. Hill, "Some Navajo Culture Changes during Two Centuries (with a Translation of the Rabal Manuscript," in *Essays in Historical Anthropology of North America* 100, *Smithsonian Miscellaneous Collections* (Washington, DC: Smithsonian Institution Press, 1940), 395–416.

41. Robert W. Young and William Morgan, *The Navajo Language: A Grammar and Colloquial Dictionary*, rev. ed. (Albuquerque: University of New Mexico Press, 351–52).

42. Reichard, *The Social Life of the Navajo Indians*, 20–27; Anonymous, "Clan Membership—Navajo Reservation," *Masayesva v. Zah*.

43. "Local clan elements" and "LCEs" are the terms used in Aberle, "Navajo Coresidential Kin Groups."

44. See also *ibid.*, 120–21, 194; Franciscan Fathers, *Ethnologic Dictionary*, 427; compare Reichard, *The Social Life of the Navajo Indians*, 65–66, who shows 28 such marriages in a total married population of 2,013.

45. A reviewer of this paper supported this statement by citing Malcolm Carr, Katherine Spencer, and Doriane Wooley, "Navaho Clans and Marriage at Pueblo Alto," *American Anthropologist*

41, no. 2 (1939): 245–57, <https://doi.org/10.1525/aa.1939.41.2.02a00040>; Mary Shepardson and Blodwen Hammond, *The Navajo Mountain Community* (Berkeley: University of California Press, 1970); and Levy, et al., “The Effects of Regional Variation.” However, Levy, et al., conclude at 367 that marriage into grandfathers’ clans was “probably prohibited before the twentieth century.” Austin, in *Navajo Courts and Navajo Common Law*, notes at 146 the traditional prohibition of marriage into grandfathers’ clans; and in the genealogies with which we are most familiar, marriages into grandfathers’ clans are rare. Perhaps there are historical variations among different localities, influenced by, for example, one especially large clan dominating a locality and thereby limiting the marriage choices of others, especially preferred marriages with neighbors; or because in remote areas with small populations, families could not always arrange marriages with neighbors and yet avoid grandfathers’ clans.

46. Lamphere, *To Run After Them*, 87; Gary Witherspoon, *Navajo Kinship and Marriage* (University of Chicago Press, 1975), 95–96; Fanale, “Navajoland and Land Management,” 134.

47. With the exception of studies by Tracy J. Andrews, there is little information about Diné farmland use and tenure for two unique sites; see Tracy J. Andrews, “Ecological and Historical Perspectives on Navajo Land Use and Settlement Patterns in Canyons de Chelly and del Muerto,” *Journal of Anthropological Research* 47, no. 1 (1991): 39–67; and “Crops, Cattle, and Capital: Agrarian Political Ecology in Canyons de Chelly and del Muerto,” *American Indian Culture and Research Journal* 22, no. 3 (1998): 31–78, <https://doi.org/10.17953/aicr.22.3.1147021k17p5t366>. Here, we are suggesting that phratries might have provided temporary privileged access to farmland before the dominance of Diné stock-raising, with its more flexible demands for temporary range access. We were hoping that farm-related functions of phratries, if any, might have survived into more recent times in these canyons, where, according to Andrews, families historically depended far more on subsistence farming of food crops and far less on livestock raising than did Diné families in general. Andrews’s meticulous studies, however, tell little about phratries or about how, if at all, residents of the canyons (who also raised livestock on the rims and the peninsula between them) used other *k’éi* connections to get temporary access to farm land elsewhere.

48. Austin, *Navajo Courts and Navajo Common Law*, 195.

49. *Ibid.*, 191.

50. Aberle, “Navajo Coresidential Kin Groups.”

51. Aberle (*ibid.*) has called these groups “coresidential kin groups,” or CKGs.

52. Kelley, *Navajo Land Use*, 48–49; Fanale, “Navajoland and Land Management,” 87–144; see also Reichard, *The Social Life of the Navajo Indians*, 69–70.

53. Navajo Tribe, *Proposed Findings of Fact*, 1222–23.

54. Franc J. Newcomb, *Hosteen Klah: Navaho Medicine Man and Sand Painter* (Norman: University of Oklahoma Press, 1964), 5.

55. *Ibid.*, 11–12.

56. *Ibid.*, 12. Diné presence in the surrounding region before and during that time is evident in the archaeological record (see M. A. Stokes and T. J. Smiley, “Tree-Ring Dates from the Navajo Land Claim: II—The Western Sector,” *Tree-Ring Bulletin* 26 (1967):13–27); as well as in colonial documentation (see Hammond and Rey, *The Rediscovery of New Mexico*, 189).

57. O’Hara, “Navajo Archaeology and Ethnohistory of the Beautiful Valley, Arizona.”

58. Richard O. Clemmer, *Roads in the Sky: The Hopi Indians in a Century of Change* (Boulder: Westview Press, 1995), 33.

59. David M. Brugge, “Vizcarra’s Navajo Campaign of 1823,” *Arizona and the West* 6, no. 3 (1964): 223–44.

60. Newcomb, *Hosteen Klah*, 11–12.

61. Rena Martin, “Two Navajo Clan Traditions: Our Mothers, Our Fathers, Our Connections,” MA thesis, University of New Mexico, 2002, 30–31.

62. For an example of range sharing between rich and poor, see endnote 5.
63. Franciscan Fathers, Navajo genealogical records, Saint Michaels Franciscan Mission, Manu-elito record; Frank McNitt, *Navajo Wars* (Albuquerque: University of New Mexico Press, 1972), 120.
64. Navajo oral history statement 185, Navajo Land Claim Collection, Navajo Nation Library, Window Rock, AZ.
65. Field notes for Navajo-Gallup Water Supply Project, 2012–2014, by Klara Kelley and Harris Francis and by Dinéahdoo Cultural Resource Management, LLC (DCRM), 2012–2014 (ms. in author's possession and on file, DCRM, Farmington, NM).
66. Lamphere, *To Run After Them*, 98–101.
67. *Ibid.*, 193, 198, 201.
68. Kelley, *Navajo Land Use*, 17.
69. Klara B. Kelley, "Yet Another Reanalysis of the Navajo Outfit: New Evidence from Historical Documents," *Journal of Anthropological Research* 38, no. 4 (1982): 363–81; Kelley, *Navajo Land Use*.
70. Redsteer, et al., "Increasing Vulnerability of the Navajo People," 179.
71. Fanale, "Navajoland and Land Management," 108–26.
72. *Ibid.*, 117–44, 210–14.
73. Redsteer, et al., "Increasing Vulnerability of the Navajo People."
74. Kelley and Francis, *A Diné History of Navajoland*, chs. 4, 11.
75. Dean, et al., "Human Behavior, Demography, and Paleoenvironment."
76. John T. Hack, *The Changing Physical Environment of the Hopi Tribe of Arizona*, Papers of the Peabody Museum of American Archaeology and Ethnology 35, no. 1 (Cambridge, MA: Harvard University, 1942).
77. Fanale, "Navajoland and Land Management," 217–79.
78. Levy, et al., "The Effects of Regional Variation."
79. Weisiger, *Dreaming of Sheep*; Parman, *The Navajos and the New Deal*.
80. *Ibid.*; Title 25 CFR 167, "Navajo Grazing Regulation," April 2002.
81. Kelley, *Navajo Land Use*, 48–50; Aberle, "Coresidential Kin Groups."
82. In 1928 Reichard predicted that inheritance of allotments would disrupt traditional patterns of succession in land-use rights, but had no examples yet to report. See Reichard, *The Social Life of the Navajo Indians*, 93, 159.
83. Levy, et al., "The Effects of Regional Variation," 363–64.
84. The clans shown on Table 1, most of which are mentioned around Sheep Springs in the waterline study, are also prominent in a Sheep Springs census fifty years ago; see Lamphere, *To Run After Them*, 96.
85. Austin, *Navajo Courts and Navajo Common Law*, 189–98.
86. *Ibid.*, 194, quoting *Begay v. Keedah*, Navajo Supreme Court, 1991.
87. Austin, *Navajo Courts and Navajo Common Law*, 192.
88. *Ibid.*, 191.
89. *Ibid.*, 193, 195.
90. Calvert Curley, "Conditions of the Land, Public Input, NN Agricultural Plan, B IA Historical Overview, Fire Rock Casino, Church Rock, NM, July 12–14, 2012," Navajo Nation Agriculture Department, <http://www.agriculture.navajo-nsn.gov/ResourcesDocs/BIA.History.And.Summary.Grazing.pdf>.
91. Regarding eminent domain, see also Austin, *Navajo Courts and Navajo Common Law*, 196.
92. *Ibid.*, 195.