

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Great Plains Quarterly

Great Plains Studies, Center for

Winter 1982

The Cultural Landscape Of. The Pawnees

Richard White

Michigan State University

Follow this and additional works at: <https://digitalcommons.unl.edu/greatplainsquarterly>



Part of the [Other International and Area Studies Commons](#)

White, Richard, "The Cultural Landscape Of. The Pawnees" (1982). *Great Plains Quarterly*. 1676.
<https://digitalcommons.unl.edu/greatplainsquarterly/1676>

This Article is brought to you for free and open access by the Great Plains Studies, Center for at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Great Plains Quarterly by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

THE CULTURAL LANDSCAPE OF THE PAWNEES

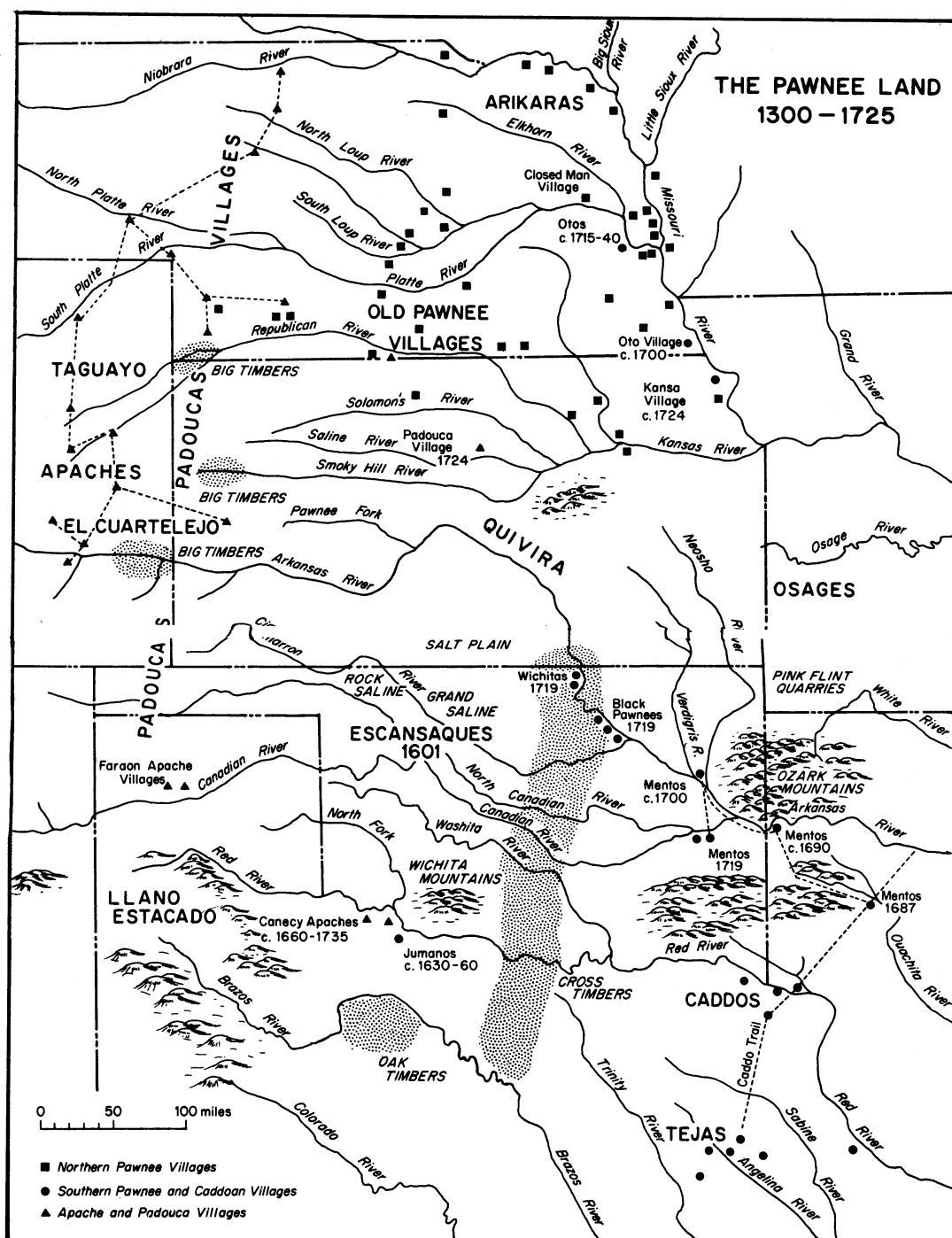
RICHARD WHITE

In June of 1871, at the Pawnee village on the Loup River, the chiefs and soldiers of the four tribes of the Pawnee Nation met in council with their Quaker agent and superintendent. The council convened in the midst of the spring ceremonies; the women had already planted the fields and the priests had performed the Young Mother Corn ritual that ended the planting cycle. As it had for centuries, the attention of the Pawnees shifted to the mixed-grass plains hundreds of miles to the west where, in the first of their semiannual hunts, they would soon seek simultaneously to find the buffalo herds and to avoid contact with the Sioux. The chiefs who met with the Quakers would, in a week or two, hold a second, far more significant ritual council in which they, personifying Tirawahat, the primal power of the universe, would acknowledge their responsibility to lead the people in search of the buffalo. Then, after the Great

Cleansing Ceremony, thousands of Pawnees with their thousands of horses and dogs would trail away from the earth-lodge village and fields to live as nomads for the summer. Although this council with the Quakers was not directly concerned with the hunt, the approaching summer journey was what concerned Peta-la-sharo, the head chief of the Chaui Pawnee, as the meeting opened.

The Quakers had often spoken against these seasonal forays onto the Great Plains. This was natural enough for persons who wanted to transform the Pawnee men from hunters and raiders into farmers. But the Quakers were primarily concerned about the safety of the Pawnees. For almost forty years, the Sioux and their allies had been constricting the Pawnee buffalo-hunting range. They had repeatedly mauled the Pawnees while on the hunt; meanwhile other Sioux bands and some of the small, desperately poor tribes burned and looted the unoccupied Pawnee villages to the east. Americans added to the turmoil. Having first driven the buffalo away from the Platte River, they were now rapidly destroying the herds. The hunt, the Quakers argued, promised few rewards. The Pawnees should be sensible; they should confine themselves to their

Richard White is assistant professor of history at Michigan State University. He is the author of Land Use, Environment, and Social Change: The Shaping of Island County, Washington (1980). His article on the Teton Sioux won the Western History Association award in 1979 for the best article in western history.



The Pawnee Land, 1300-1725. SOURCE: George E. Hyde, The Pawnee Indians (1974), pp. 10-11.

earth-lodge villages and trust to agriculture alone.

Peta-la-sharo knew the history of the last forty years well enough—the pistol he kept beside him every night was a constant reminder of conditions on the plains—but what the Quakers recommended was impossible. During the council he tried once more to explain to white men the deeper logic of the hunt. His speech survives only in a single sketchy (and almost certainly distorted) note taken by the Quaker agent, Jacob Troth. “We want to go on Buffalo hunt so long as there are any buffalo—am afraid when we have no meat to offer Great Spirit he will be angry & punish us.” The reply of Samuel Janney, the Quaker superintendent, was both condescending and uninformed; it was at once practical and irrelevant. “You must look forward,” he replied, “to the time when there will be no buffalo. We don’t give the Great Spirit meat yet he favors us—what he requires is a good heart.”¹

The brief exchange between Peta-la-sharo and Janney led nowhere. The two men talked past each other; but, ironically, their conversation is revealing for precisely that reason. It allows us to glimpse, if only fleetingly, the difference culture makes and the crucial distinction it creates between landscape and environment. Although Peta-la-sharo and Samuel Janney both recognized an environmental crisis on the plains—the destruction of the buffalo herds—they fundamentally disagreed on what it meant and what constituted an appropriate response to it. They could not agree because what *buffalo* meant to each was not an obvious and immediate corollary of the animal’s physical existence. Instead, meaning was the work of culture, and since the cultures of Janney and Peta-la-sharo differed substantially, so did the meaning they attached to the buffalo. Culture, as used here, is best defined as a plan or program for behavior. It is a symbolic ordering of the world, and actions and objects take on meaning only within such symbolic systems.² Culture translates environment into landscapes. A landscape is an environment imbued with specific cultural meaning. To understand

Pawnee actions, then, one must understand the Pawnee landscape as well as the plains and prairie environments. But how does one distinguish the Pawnee landscape from both the natural environment and other landscapes, such as that of the Americans? What was the historical relationship between the plains environment and the Pawnee landscape and what kind of influences did they exert on each other? It is these questions that are at issue here.

PAWNEE AND AMERICAN LANDSCAPES

Peta-la-sharo’s and Janney’s worlds encompassed more than the physical world their senses revealed to them. They both saw Americans, Pawnees, and Sioux; grass, cornfields, cottonwoods, and willows; rivers and streams; horses and buffalo. They could even equate Tirawahat and the Christian God. Culturally, however, each man ordered these elements in distinctive ways and gave them different meanings. Out of the same environment, they constructed different landscapes. As accurately as Samuel Janney saw the components of the Pawnee landscape, its order and meaning escaped him.

To an outside observer like Janney, the Pawnee world was not a single landscape, but a series of physical environments: the terraces along the Loup, Platte, and Republican rivers where they built, or had built, their earth lodges and planted their crops; the tall-grass prairies surrounding their villages; and the mixed-grass plains where they traveled twice a year to hunt the buffalo. Ecologically, each landscape was distinct; materially, each seemed to produce a distinctive way of life. The eastern lands—the tall-grass prairies and the lands along the rivers—were among the richest agricultural areas of the world. The western lands—the mixed-grass plains beyond the one-hundredth meridian—were the lands of the buffalo nomads. In their semiannual travels from village to buffalo grounds the Pawnees seemingly transformed themselves. Part-time sedentary farmers, part-time horse nomads, they were losing their world to specialists—the Sioux hunters and

their allies in the west and the American farmers in the east.

In Peta-la-sharo's view, by contrast, the Pawnee world was a single, coherent whole. Buffalo hunting was not an alternative to agriculture; nor was agriculture possible without buffalo hunting. Each existed because of the other and was necessary to the other's existence. This was what Peta-la-sharo tried to explain to the council. If there was no buffalo meat to be offered at the ceremonies, the ceremonies would fail; if the ceremonies failed, the crops would not grow. The Pawnees alone mediated between heaven and earth. Their ceremonies alone secured life-giving contact with Tirawahat. The buffalo, its meat pledged to all the ceremonies, was holy. The hunt "signified the entire ceremonial life."³ Not to hunt the buffalo was to guarantee the failure of agriculture. The Quaker suggestion that they give up the buffalo hunt to increase the yields and security of their agriculture made no sense to the Pawnees. The Quakers did not understand Peta-la-sharo's explanation; they thought that the Pawnees feared punishment by a vindictive God.

In the Pawnee landscape the practical and the sacred merged, giving their natural world a meaning and ambience that whites could not perceive. In the Hako Ceremony the coming of the Father's party to the village of the Son became a complex and awesome journey through time, space, and social boundaries, in which the natural world served simultaneously as sustenance, symbol, and mediator between humans and Tirawahat. The ceremony made clear that the most common natural events were also sacred events.

Mother Earth hears the call; she moves, she awakes, she arises, she feels the breath of the new-born Dawn. The leaves and the grass stir; all things move with the breath of the new day; everywhere life is renewed.

This is very mysterious; we are speaking of something very sacred, although it happens every day.⁴

The distinction whites made between practical and sacred activities thus was far less clear to a

Pawnee. Pawnees recognized that their arrows killed buffalo, but they also believed that hunters must secure the consent of the buffalo and all animals before they could be killed. Similarly, in the fields both hoeing the corn and plucking and dressing a corn plant as Young Mother Corn in the ceremony of the same name were equally necessary if the corn was to grow. Both were utilitarian acts, if by that is meant acts necessary to procure food. To a modern agronomist, however, the ceremony of Young Mother Corn appears irrelevant to the physical growth of the corn plant. A study of the ceremony would not yield much information on why and how corn grows. But for scholars who wish to understand the Pawnees, for those who wish to consider not only the physical existence of ecological systems but also their ordering into a meaningful cultural world, into a landscape, the Young Mother Corn Ceremony and the rest of the symbolic culture does matter.⁵ Janney and Peta-la-sharo drew very different meanings from the same set of physical objects because, in a sense, neither experienced the physical world directly. For both of them culture mediated between themselves and the natural world.

Culture, of course, cannot control the natural world. For example, it does not prevent starvation when crops fail repeatedly. Just as clearly, however, history is not the automatic consequence of physical events such as crop failures. People who survive famines must interpret the meaning of their experience and act accordingly, and they do this only within a given cultural context.

Describing the significance of culture and distinguishing landscape from environment does not eliminate other possible distortions of meaning. Culture and nature—landscape and environment—may be distinct, but they are not unconnected. Clearly many possibilities exist (at least theoretically) in the cultural order that would prove disastrous if acted on in the natural world. If nature does not dictate, it certainly limits.

Culture and nature are neither insulated from each other nor static. Both not only

develop according to their own internal dynamics but they are also subject to reciprocal influences. The range of connections between the Pawnee landscape and the plains and prairie environments is too vast to discuss in toto here. But an idea of the reciprocal influences at work, and a glimpse of the processes of change involved, can be obtained by looking at the adjustment the Pawnees made to a new element of their physical world that appeared among them in the early eighteenth century: the horse.

PAWNEES AND THE HORSE

Both the Pawnee ceremonial cycle and their seasonal cycle, which combined agriculture and the semiannual journey to the buffalo plains, antedate the horse. Indeed, the Pawnee eagerness for the horses appears to have arisen from the demands of this seasonal cycle. In 1724 the chief of the Skidi Pawnees informed the French that his people wanted peace with the Apaches to secure a steady supply of horses "which will help us to carry our belongings when we move to our winter grounds."⁶ Initially, the horse simply replaced the dog as a burden bearer. Indeed, the Pawnee name for the horse translates as *superdog*.⁷ The Pawnees soon discovered that the horse could do more than carry baggage. Horses quickly became critical to the buffalo hunt. Horses carried the villagers, their equipment and supplies to the plains; men rode on horses during the hunt; and horses transported the meat and hides back to the villages. By the eighteenth century participation in the buffalo hunt required horses; by the early nineteenth century the Pawnees, through gift exchanges and raiding, had increased their herds to at least six thousand, and possibly as many as eight thousand, animals.

The horse thus moved into the Pawnee landscape along available cultural avenues. The hunt, the gift exchange, and the raid were not invented because of it. The apparent ease of the animal's introduction into the landscape is, however, deceptive. The horse also created an undeniable series of stress points in the society. Each stress point, in a sense, represented friction

between the social and cultural organization of the Pawnees and the material demands or consequences of the horse. Horses, for instance, helped to individualize the communal hunt. Older methods of impounding and driving on foot gave way to the "surround" on horseback, in which those hunters with the best horses killed the most buffalo. Families without horses either had to remain at home or else play peripheral and less rewarding roles in the hunt.⁸ Since horses were unevenly distributed among the Pawnees—a rich family might have twenty or more while a poor family had two, one, or none—the horse threatened to introduce a deep and basic inequality into Pawnee society, inextricably dividing it into the rich and prosperous and the poor and marginal.

But because the Pawnee landscape was by its very nature cultural as well as material, no such drastic economic divisions seem to have emerged. The Pawnees' redistributive system, based on their symbolic organization of the world, checked many of the consequences of the uneven ownership of horses. Pawnees gave away horses at ceremonials to seek good fortune or to celebrate their own or their family's accomplishments. Horses became part of the bride price, and the Pawnees gave horses (usually mediocre ones) away at the begging dance. Commoners also gave animals as gifts to the chiefs and priests for the ceremonial knowledge and blessings that the Pawnees regarded as essential for success. This channeled the new wealth to existing elites who already had cultural obligations to validate their own status through generosity. Even more significant than this cultural exchange of horses were the Pawnee practices that ensured that individual gains from the hunt would be redistributed. Pawnee hunters, for instance, pledged much of their buffalo meat to the ceremonies, thereby ensuring redistribution. And on the hunt itself a Pawnee who butchered an animal received half the meat while the man who killed it got the other half and the hide. This last practice may well postdate the introduction of the horse, but the larger redistributive system and ceremonial cycle were created much earlier. The symbolic

order, as part of the cultural landscape, controlled the impact the horse had on Pawnee society.⁹

ENVIRONMENTAL PROBLEMS

Not all the material consequence of the introduction of the horse could be absorbed so easily along existing cultural channels. The simple necessity of feeding and protecting the herds created two other stress points. One was to reconcile the horses with the existing agricultural order at the village sites. The other concerned the feeding of the horses during the winter hunt.

Within the Pawnee villages the horses were a source of friction because the women saw them as a threat to their horticultural plots. The horses could not be allowed to graze freely in the vicinity of villages partly because they would then invite attacks by raiding parties of Sioux and other tribes, but also because the horses, if unrestrained, would wreak havoc on the basic resource of the women's domain—cultivated crops.¹⁰ This was made worse by the insistence of the men that the women and boys take care of the horses. The result was the conflict that Samuel Allis, a missionary, described: "There are more broils, jealousy, and family quarrels caused by horses than all other troubles combined. The horse frequently causes separation between man and wife, sometimes for life."¹¹

The problems of feeding the horses around the villages only compounded the animals' economic and social liabilities. The Pawnees lived in a country of seemingly limitless grass, and a scarcity of feed might seem inconceivable to visitors in late spring or early summer, when the grasses of the valleys were waist- and chest-high. After early fall, however, especially during droughts, the lack of feed was acute. Missionaries reported that during the winter the lands around the earth-lodge villages simply could not support the horse herds. Even if tall-grass species remained abundant after the Pawnee herds had grazed, by the fall they had dried in the summer sun and lost most of their nutrients. The difference between the nutritive

qualities of dry tall grass on the prairies and dry buffalo grass on the plains, which retained most of its nutrients year round, was so marked that John Charles Fremont noticed that his animals "began sensibly to fail as soon as we quitted the buffalo grass" and entered the tall-grass prairies.¹²

Because of the nature of the tall-grass prairies the difficult times for the Pawnee horse herds ranged from fall until mid-spring. During this period the grasses of the prairies had little food value since the plants stored their nutrients underground in the rhizomes for the winter. Cutting the grass in mid- or late summer and storing it as hay seemed the obvious solution to contemporary whites, and even as astute an ethnologist as Gene Weltfish expresses some surprise that the Pawnees did not begin to do so until the 1860s. But to harvest hay the Pawnees would have had to disrupt their whole economy and seasonal cycle. The tribe was absent on its summer hunts until early September and on returning both men and women labored in the fields for several weeks. There was no opportunity to cut hay while it still had value as feed unless they abridged their summer hunt, and this hunt was, after all, the economic rationale for the horse and central to the Pawnee symbolic order.¹³ At the earth-lodge villages integration of the horse thus faced serious social and ecological problems.

Another stress point was reached during and immediately following the winter buffalo hunt. This was the most dangerous time for the horses. The Pawnees worked their horses hard in the late fall during the tribal hunt, and if storms during November and December were severe, losses to the herd could be serious. When William Ashley and Jedediah Smith visited the Pawnees in winter quarters in 1824, for example, early snows had seriously diminished the Skidi horse herds.¹⁴ Moreover, if the number of horses increased, so did the danger of losses. Without large supplies of well-cured, nutritious hay (which were impossible to obtain) there was simply no way to maintain thousands of horses at one location during an entire winter.

The end of the winter led to another challenge for the Pawnees. They had to return to the earth-lodge villages before the time when tall grasses had normally begun their spring growth. To wait for the grasses would mean late planting for the crops, an alteration in the ceremonial cycle believed necessary for their growth, and an increased danger of crop loss. But to leave too early could mean the loss of many horses.

PAWNEE SOLUTIONS

The Pawnee solutions to the environmental and cultural problems that feeding the horses presented were complex and varied. They demonstrate the reciprocal influences of landscape and environment, of culture and the material world. During the fall the Pawnees compensated for the poor feed around the villages by removing their horse herds to Grand Island in the Platte River, where feed was more abundant. When the horses returned to the villages, the women fed them on nubbin ears of corn and hand-carried fresh grass from lowlands and swales. As Allis indicated, the women did not bear this increased labor without complaint. Environmental limits were culturally extended at the cost of increased social and domestic tensions.

During the winter hunt itself environmental limits forced a pronounced cultural change. The Pawnees and other plains tribes quickly discovered that cottonwood bark and small branches made excellent substitutes for hay. The horses ate cottonwood readily, even in preference to grass, but repeated winterings in a single site rapidly depleted the trees. Among the Sioux, who wintered in much smaller bands, this is what happened around their regularly used winter campgrounds. Out of necessity, the Pawnees had to move repeatedly during the winter, until by the nineteenth century white observers regarded the winter buffalo hunt as an adjustment to the needs of the horse herds as well as a search for meat. On the western streams the Pawnees could cut cottonwood bark and boughs, and on the up-

lands, when the ground was clear of snow, the horses could eat the nutritious buffalo and grama grasses.¹⁵ Almost certainly the winter patterns of the nation changed with the acquisition of the horse. They had to adjust to new environmental limits.

In early spring the Pawnees faced a final seasonal dilemma brought by the problem of feeding their herds of horses. In this case, instead of modifying their social patterns, they modified the environment itself. Already weakened by an arduous winter, the horses had to move the tribe back to the permanent villages during March or early April, when the grasses had as yet shown little growth. Obviously any way in which the Pawnees could encourage the early growth of prairie grasses would have significant benefits for the tribe and its horse herds.

For the Pawnees and other prairie tribes, fire provided the means for securing feed for their horses in early spring, the time of critical need. Much of the large body of writing concerning the fires Indians set on the plains assumes that the plains and prairie peoples, like the woodland peoples, were trying to maintain open land and increase the population of large grazing or browsing mammals. There are, however, serious problems in applying this rationale to the Pawnees and similar tribes. Burning would not increase the population of deer and elk in the already open woodlands of the Pawnee country. Indeed, by destroying trees and shrubs and encouraging grasses, the browsers would lose sources of food and probably decline in numbers. Nor would burning help the buffalo, since these animals generally inhabited the short-grass plains rather than the tall-grass prairies most often burned by the Pawnees. Occasional fires would be set by hunters to trap or control game, but the systematic burning of the tall grasslands carried out by historic tribes would seem to have little relation to the needs of local game animals.¹⁶

The prairie fires were instead directly related to the needs of the horse herds. A series of ecological studies carried out in Kansas and Nebraska have demonstrated that burning has a marked effect on the initial growth of prairie

grasses. By eliminating the previous year's growth and excessive ground mulch, fire allows the sun to warm the earth more quickly, resulting not only in spring growth that comes weeks earlier but also in significantly higher yields from March to July—exactly the period when the Pawnees needed the grasses. In one experiment burned lands had by June yielded twice as much grass as unburned, excessively mulched land had.¹⁷

Early travelers in the Pawnee country noted the difference in the rate of growth on burned and unburned land. According to Lorenzo Sawyer, who journeyed through the Platte Valley in mid-May, 1850, "Those portions of the valley which have been burnt over, are covered with fresh, though short grass, giving them the appearance of smooth shaven lawns, while the portions still covered with old grass resemble thick fields of ripe grain waving in the breeze and just ready for harvest." Visitors realized that travel in the spring through unburned prairies would result in scarcity of feed, and it is not surprising that the more knowledgeable observers, such as George Catlin, understood that the purpose of these set fires was to ensure feed for the Indian horses.¹⁸

The Pawnees appear to have burned the prairies regularly in the fall, with less frequent burning in the early spring. They set these fires both in the vicinity of their earth-lodge villages and along the routes—the Platte, Republican, Blue, and Smoky Hill valleys—to their hunting grounds. The area covered by these fires could take in hundreds of square miles, since they could burn for days at a time if no rain fell. While the Long Expedition was camped at Council Bluffs in 1819, Edwin James witnessed a fire that burned from October 24 to November 10, and Captain Howard Stansbury reported that in 1850 a three-hundred-mile-long region on the Platte had been completely burned over by autumn fires. The kind of total destruction Stansbury reported was unusual, however. Winds and topography usually influenced the course of fires so that irregularly shaped patches of various sizes escaped burning in any given year. From contemporary descrip-

tions it appears that although the Pawnees did not burn all of their territory every year, few tall-grass areas escaped at least one burning in any two- or three-year period.¹⁹

Necessary as these annual fires became for the maintenance of the horse herds, they also had less desirable ecological repercussions. Although the Indians might carefully protect trees in the immediate vicinity of the villages, the fires exacted their price in the more distant groves. During the early nineteenth century missionaries and explorers reported that large numbers of trees were destroyed each fall in prairie fires. Later, the first white settlers in the region complained vehemently about the loss of scarce timber. When the Americans won control of portions of the old Pawnee territory, a resurgence of tree growth along the streams and ravines often marked the change in sovereignty.²⁰

CULTURE AND THE LANDSCAPE

Cultural integration of the horse thus was part of a complex process. It forced social and ecological adjustment, but only within the context of the existing culture. The Pawnee world did not begin anew with the horse. Horses did not, for instance, somehow cause nomadism. Except for the Crows and Cheyennes, who appear to have been forced initially into nomadism by the Sioux, no horticultural group of the western prairies became buffalo nomads when they acquired the horse. The idea of Indians adapting to the horse as if culture is a series of Pavlovian responses confuses the question of cultural and social change and, more to the point here, distorts the relationship between landscape and environment. The changes in Pawnee life that the horse brought are not a case of environment determining culture. Instead cultural mechanisms operated within certain environmental limits, and at times altered the nature of those limits. Manipulation of the physical world was not, after all, restricted to whites.

Specifically, the horse took on meaning within Pawnee culture, and the consequences

of its adoption were dealt with in this context. If the horse encouraged unequal access to subsistence, this did not mean that the rich prospered and the poor starved. Instead, existing cultural elements—dedication of meat to the ceremonies, feasting, and, above all, redistribution—counteracted unequal access to the buffalo.²¹ Although the spring growth of grasses did not begin early enough to maintain the horses at the villages where the Pawnees planted their crops, the Pawnees were not forced to choose between horses and corn. Instead they resorted to burning the prairies, which resulted in a change in the pattern of the growth of grasses. Fire, however, also diminished the number of trees along streams and rivers, hurting other aspects of the Pawnee economy and introducing tensions into their dealings with whites. The influences between culture and nature, landscape and environment were, in short, complex and reciprocal. Without some appreciation of this complexity, human history can become either as incomprehensible to us as Peta-la-sharo's speech was to Samuel Janney, or, even worse, as simple as some current determinisms make it.

NOTES

1. "Minutes of Councils between Pawnee and Their Agents," vol. 18 (transcription), Nebraska State Historical Society, Lincoln; originals in Division of Indian Archives, Oklahoma State Historical Society, Oklahoma City. For ceremonial and seasonal cycles, see Gene Weltfish, *The Lost Universe* (New York: Ballantine Books, 1971). The standard, though biased and flawed, history of the Pawnees is George Hyde, *The Pawnee Indians* (Norman: University of Oklahoma Press, 1974). For the prehistoric plains and the early historic period, Waldo Wedel's *Prehistoric Man on the Great Plains* (Norman: University of Oklahoma Press, 1961) and his *The Direct Historical Approach in Pawnee Archeology*, Smithsonian Miscellaneous Collections, vol. 97, no. 7 (Washington, D.C., 1938), are still good, but Robert Grange's *Pawnee and Lower Loup Pottery*, Nebraska State Historical Society, Publications in Anthropology no. 3 (Lincoln, 1968), should also be consulted.
2. Clifford Geertz, *The Interpretation of Cultures* (New York: Basic Books, 1973), p. 23.
3. Weltfish, *Lost Universe*, pp. 157–58.
4. Alice C. Fletcher, "The Hako: A Pawnee Ceremony," *Twenty-Second Annual Report of the Bureau of American Ethnology to the Secretary of the Smithsonian Institution, 1900–01* (Washington, D.C.: GPO, 1904), pp. 80, 99, 106, 136, 220, 302, 331.
5. Weltfish, *Lost Universe*, pp. 333, 150–56.
6. Henri Folmer, "French Expansion Toward New Mexico in the Eighteenth Century" (M.A. thesis, University of Denver, 1939), pp. 173–74.
7. Weltfish, *Lost Universe*, pp. 168–72.
8. *Ibid.*, pp. 168–73; Charles A. Murray, *Travels in North America During the Years 1834, 1835, 1836*, 2 vols. (London: R. Bentley, 1839), 1:291–92.
9. John Dunbar, "The Pawnee Indians: Their History and Ethnology," *Magazine of American History* 4 (1880): 252, 265–66; John Dunbar, "The Pawnee Indians: Their Habits and Customs," *Magazine of American History* 8 (1882): 738; Weltfish, *Lost Universe*, pp. 169–72; Murray, *Travels*, 1:291–92; Samuel Allis, "Forty Years among the Indians and on the Eastern Borders of Nebraska," *Proceedings and Collections of the Nebraska State Historical Society* 2 (1887): 159.
10. Wm. Clark to James Barbour, December 8, 1825, Office of Indian Affairs, Letters Received, St. Louis, Microfilm 234, National Archives, Washington, D.C. (hereafter OIA, LR . . . M 234 NA); T. Harvey to L. Crawford, July 25, 1845, OIA, LR, Council Bluffs, M 234; John Henry Carleton, *The Prairie Logbooks: Dragoon Campaigns to the Pawnee Villages in 1844* (Chicago: Caxton Club, 1943), pp. 70, 75, 196; Harlan Fuller and LeRoy Hafen, eds., *The Journal of Captain John R. Bell: Official Journalist for the Stephen Long Expedition . . . 1820* (Glendale, Ill.: Arthur Clark, 1957), p. 122; Lt. J. C. Fremont, "A Report on an Exploration of the Country Lying Between the Missouri River and the Rocky Mountains," *Senate Document* 243, 27th Cong., 3d sess., ser. 416, p. 16; Gottlieb F. Oehler and David

Z. Smith, *Description of a Journey and Visit to the Pawnee Indians . . . April 22-May 18, 1851*, reprinted from the Moravian Church Miscellany of 1851-52 (New York, 1914), p. 29.

11. Allis, "Forty Years," p. 140.

12. J. E. Weaver and F. W. Albertson, *Grasslands of the Great Plains* (Lincoln: University of Nebraska Press, 1956), pp. 36-38; J. C. Fremont, "A Report of an Exploration of the Country Lying Between the Missouri River and the Rocky Mountains," *House Document* 166, 28th Cong., 2d sess., ser. 467, p. 289; J. E. Weaver, *Native Vegetation of Nebraska* (Lincoln: University of Nebraska Press, 1968), p. 63; John Dunbar, "Missionary Life Among the Pawnee," *Nebraska State Historical Society Collections* 16 (Lincoln, 1911): 281.

13. Weaver, *Native Vegetation*, p. 63; Weltfish, *Lost Universe*, p. 495. It appears that in the early 1870s the smaller tribes such as the Omahas, who were frequently driven from the plains by the Sioux, grew proportionately more hay and oats than the neighboring Pawnees. The Pawnees, by this time under severe pressure from the Sioux, also had begun growing hay. *Annual Report of the Commissioner of Indian Affairs for 1871* (Washington, D.C.: GPO, 1871), pp. 445-47, 622; *Annual Report of the Commissioner of Indian Affairs for 1874* (Washington, D.C.: GPO, 1874), pp. 115, 202.

14. Harrison Dale, ed., *The Ashley-Smith Explorations and the Discovery of a Central Route to the Pacific, 1822-1829* (Cleveland: A. H. Clark Co., 1918), p. 122.

15. Dunbar, "Pawnee Habits and Customs," p. 332; R. G. Thwaites, ed., "Edwin James' Account of S. H. Long's Expedition," *Early Western Travels*, 32 vols. (Cleveland: A. H. Clark Co., 1904-1907), 15:215-16; Dunbar, "Missionary Life Among the Pawnees," p. 281; Rufus Sage, *Scenes in the Rocky Mountains* (Philadelphia: Carey and Hart, 1846), p. 97; Lt. G. K. Warren, "Report of Lt. G. K. Warren . . . of the Sioux Expedition of Explorations in the Dakota Country, 1855," *Senate Executive Document* 76, 34th Cong., 1st sess., ser. 822, p. 17.

16. Conrad Moore, "Man and Fire in the Central North American Grassland, 1585-

1890: A Documentary History" (Ph.D. diss., UCLA, 1974). Moore found that the majority of fires set by Indians occurred in the tall-grass areas.

17. J. E. Weaver and N. W. Rowland, "Effects of Excessive Natural Mulch on Development, Yield, and Structure of Native Grassland," *Botanical Gazette* 114 (1952): 1-19; T. L. Steiger, "Structure of Prairie Vegetation," *Ecology* 11 (1930): 217; R. L. Hensel, "Effects of Burning on Vegetation in Kansas Pastures," *Journal of Agricultural Research* 23 (1923): 631-43.

18. Lorenzo Sawyer, *Way Sketches: Containing Incidents of Travel Across the Plains* (New York: Edward Eberstadt, 1926), pp. 32-33; George Catlin, *Letters and Notes on the Manners, Customs, and Conditions of the North American Indians*, 2 vols. (London: Tossell and Myers, 1841), 2:16.

19. Howard Stansbury, "Exploration and Survey of the Valley of the Great Salt Lake Including a Reconnaissance of a New Route Through the Rocky Mountains," *Senate Executive Document* 3, special session, ser. 608, p. 32; R. G. Thwaites, ed., "James' Account of Long's Expedition," 14:263, 15:139.

20. R. G. Thwaites, ed., "Maximilian, Prince of Wied's Travels in the Interior of North America," *Early Western Travels* 22:268; Sage, *Scenes in the Rocky Mountains*, 36-37; J. Dunbar to J. Hamilton, October, 1839, OIA, LR, Council Bluffs, M 234, NA; J. Ricky to G. Manypenny, December 1, 1856, OIA, LR, Otoe Agency, M 234, NA; Petition for Removal of Pawnee, January 16, 1869, Inquiry of Specie and North, December 4, 1875, OIA, LR, Pawnee Agency, M 234, NA; Lt. G. Warren, "Explorations in Nebraska," *Senate Executive Document* 1, 35th Cong., 2d sess., ser. 975, p. 658; *Explorations and Surveys for a Railroad Route from the Mississippi River to the Pacific Ocean*, vol. 2 (Washington, D.C.: GPO, 1855), pp. 12-13; Moore, "Man and Fire," p. 121.

21. Preston Holder, *The Hoe and the Horse on the Plains: A Study of Cultural Development among North American Indians* (Lincoln: University of Nebraska Press, 1970), pp. 54, 60-65; Weltfish, *Lost Universe*, p. 119.