

**BISON, CORN, AND POWER:
PLAINS-NEW MEXICO EXCHANGE IN THE
SIXTEENTH AND EARLY SEVENTEENTH CENTURIES**

by
William Carter

From the time of their arrival in the Southwest and the Southern Plains in the early sixteenth century, Athabaskans (Navajos and Apaches) frequently visited New Mexico's Eastern Pueblo villages. We know that from about 1525 to 1630, Apaches occasionally raided Pueblos, and some historians have described Pueblo-Apache relations as fundamentally hostile.¹ Nevertheless, Apaches often loaded their bison products on travois tied to the backs of wolflike dogs and walked to New Mexican villages to barter for Pueblo goods.² The Pueblo villages at Taos, Picuris, and Pecos, for example, maintained amicable ties and a bustling trade with Plains Apache bands during this period.

Scholars attempting to reconstruct the nature and intensity of this exchange provide differing interpretations of its significance, both in the groups involved and broader regional developments. In assessing two of these interpretations, I have come to believe that while each offers valuable insights, none appreciates either the ideological dimensions of the exchange or the extent of this trade. Instead, I propose an alternative reconstruction of the contours and significance of this 16th century exchange, and its developments in the 17th century.

One prominent perspective of Plains-New Mexico relations emphasizes the role of ecology, particularly food products, as the central force driving the Apache-Pueblo trade. Archaeologists Katherine Spielmann and John Speth, for example, claim that a nutritional interdependency bound Plains groups to Puebloans. According to this view, the lack of reliable sources of carbohydrates on the Plains forced Plains people to trade for Pueblo corn. In addition, Puebloans had apparently over-hunted big game in New Mexico, forcing them to resort to trade with Plains Apaches in order to supplement their depleted meat resources. Moreover, with respect to Plains bison hunters, while it is possible to live on an all-meat diet, such a diet must include fat, which contains high amounts of energy that can be more easily digested than protein. During late winter and early spring—when bison were at their leanest and the energy that humans normally obtained from fatty meat or marrow proved difficult to find—the need for carbohydrates became particularly strong.³

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Although Spielmann's and Speth's model of nutritional dependency explains an important part of Apache-Pueblo trade for subsistence goods, evidence gleaned from historical documents and ecological studies suggests that exchange did not represent a nexus built on fundamental nutritional demands. In fact, throughout the 16th and early 17th centuries Spaniards frequently described an abundance of both large and small game in New Mexico, and it is clear that Pueblos hunted and ate this game.⁴

The evidence also suggests that Plains Apaches had developed strategies for acquiring the carbohydrates, fats, and other nutrients they may have craved. These Athabaskans lived on the Plains for over five hundred years and adapted themselves fully to its resources.⁵ Indeed, there is no evidence of Athabaskan interaction with sedentary farmers for this time period. Relying on traditional knowledge and ingenuity, however, Athabaskans undoubtedly discovered many nutritious plants among the hundreds of Southern Plains species.⁶ Significantly, Spaniards described Southern Plains riparian areas as cornucopias of fruits and fatty nuts in the spring and summer.⁷ In addition, warm season grasses ripened at this time, providing seeds for various traditional Apache breads or mushes.⁸ During the lean months of late winter and early spring, Plains Apaches preserved pemmican in fat. They also prized the highly nutritious carbohydrate-rich grasses and juices from the stomachs of freshly butchered bison.⁹ And it seems likely Apaches cached seeds and nuts containing carbohydrates and fats, as well as roots gathered earlier, for the hard winter months.¹⁰

So it appears Pueblos possessed a surplus of both large and small game in New Mexico. Additionally, Apaches evidently used a variety of strategies for securing carbohydrates and fats on the Plains. As a result, the nutritional or ecological model for explaining Plains-New Mexico interaction must be used with caution. Certainly the subsistence items each group offered the other made life easier by reducing the amount of labor expended on hunting and gathering. But while food probably acted as an important factor contributing to this intertribal exchange, it did not ground that relationship in necessity.

Other recent interpretations of Apache-Pueblo trade place it within the context of broader regional developments. In his *Social Change in the Southwest*, sociologist Thomas Hall argues that the exchange system between New Mexico and the Plains was "beginning to form, but hardly seemed to have stabilized" by the time Spaniards had colonized New Mexico in the early 17th century.¹¹ In reconstructing the Southwest's protohistory, Hall follows archeologists who employ variants of sociologist Immanuel Wallerstein's world-systems analysis to study diverse relationships of power and dependency of peoples or states incorporated within the capitalist economic system. Hall uses this analytic framework to explain the 14th century collapse of the precapitalist trade network linking the Southwest and Mesoamerica. The disruption of this system severed the Southwest's longstanding Mesoamerican connection and launched the region into a sea of flux.¹²

One of the many results of this systemic regional reorganization took the form of the establishment of new trade routes along east-west lines extending from the Rio

Grande Pueblos to Zuni and beyond as replacements for the once flourishing north-south trade. This fundamental realignment provided motivation for Eastern Pueblos to start looking to the Southern Plains for trade prospects. Hall argues that this caused Eastern Pueblos to incorporate Plains bison hunters into their newly formed trade networks.¹³ Puebloan trade with Plains Apaches was conducted "usually...in individual homes in Pueblo villages, indicating it was not market exchange, but trade between kin groups." He goes on to state: "Such trade [was] more than mere economic exchange, it [was] an enduring relationship among kin groups."¹⁴

In large part, Hall's argument seems reasonable and well founded. However, I find three points problematic: first, the claim that Plains-Pueblo exchange constituted an incipient, unstable stage of development; second, the assertion that Puebloans had incorporated Apaches into the Southwest network of trade; third, the view that trade operated merely at the level of kin ties. None of these propositions adequately account for the exchange, certainly not for Pecos Pueblo and its influential Plains relations. To clarify the issues, we need a fuller understanding of the position Pecos held in the 16th century Pueblo world and how the Plains Apaches fit into that picture.

The collapse of the Southwest-Mesoamerican exchange system wrought significant changes upon the Southwest. Coincidentally, it appears drought accompanied the already massive cultural and economic change. Several important consequences of these large-scale events deserve special attention. Archeologist Steadman Upham, for example, has argued that the structure and configuration of settlements in the Southwest experienced major realignment following the old exchange system's collapse. Among Western Pueblos (e.g., Hopis and Zunis), the number of major population centers dropped from sixty-seven to twelve. Similar developments occurred among Rio Grande Pueblos. As people abandoned settlements, migrants dispersed and either resettled as smaller units in more ecologically feasible locations or assimilated into surviving villages or settlement clusters. Over time, populations steadily increased in some of these clusters. A number of interdependent processes accompanied this population aggregation, including agricultural intensification, shifts in the organization of labor, and increased sociopolitical complexity. Among Western Pueblo settlements, Zuni benefitted most from the systemic realignment and its culture peaked following the widespread abandonment of much of the Western Pueblo region. It appears to me that Pecos became the most prominent Eastern Pueblo.¹⁵

With respect to protohistoric Pueblo social organization, Upham argues that within each of the growing Pueblo populations a decision-making elite coordinated the behavior of others through the powers of persuasion or accepted coercion for the perceived common good. Leadership was based on hereditary succession to office and linked to elan dominance in the village. In this context, economic, religious, and political functions were interrelated, with social stratification based on ritual knowledge. Ritual and ceremonial activity served as central integrating features of Pueblo society and also primary devices for political control. Upham asserts that the only major difference between the operation of modern Pueblo socio-political organi-

zation and its 16th century incarnation is that the latter maintained regional alliances. During the early historical period a far greater degree of political and economic coordination existed among Pueblo villages in the Southwest than today.¹⁶

Archeologist E. Charles Adams has demonstrated that an important development during and after the 14th century was the origin and spread of the kachina cult among Puebloans. Adams believes immigrants moving into occupied areas were probably obligated to negotiate with the native leadership for land and acceptance into the group. The regular sociopolitical means for organizing intergroup relations may have proven inadequate to the challenge of handling increased pressures and the complex demands of population growth. According to Adams, the sense of commonality engendered by the kachina cult crosscut the clan-based social structure of Pueblo society, providing a creative and elaborate mechanism for integrating peoples from disparate backgrounds and stabilizing large, growing populations.¹⁷

While the kachina complex bound community members ritually, it also enhanced the leaders' control of secret knowledge, the basis of their authority. In Pueblo society, access to ritual knowledge was severely restricted. Within the Pueblo political hierarchy, a theocracy of clan leaders utilized the kachina cult to magnify their power and coalesce village activities. Not surprisingly, kachina ceremony reflected and reinforced the fabric and concerns of Pueblo society. The cult's major themes emphasized ancestor worship and the afterlife, bringing rain to the fields, and a variety of issues pertaining to war, defense, and the reduction of deviant behavior within the group. Central to all of these concerns were moral prescriptions embodied in concepts denoting cooperation and equilibrium.¹⁸

Commenting on the Pueblo world view, anthropologist Alfonso Ortiz asserts that Puebloans conceive of everything in the cosmos as possessing meaning and place within a world of precise, knowable boundaries.¹⁹ Whether animate or inanimate, all things fit into an orderly framework of knowledge and moral being. Within this orderly Pueblo cosmos the notion of center or middle plays a fundamental role in structuring conceptions of the world, society, and self. Pueblo thought admits to many centers corresponding to various stable and fluctuating aspects of sacred space and all within. Along this line, the village represents one of the most important centering symbols, the middle of the universe or *axis mundi*.

Because the world is knowable and constituted by moral being, it can be controlled. Puebloans seek control to promote harmonious, reciprocal relations with other beings--animals, plants, one's fellow villagers, kachina spirits, and so forth--as well as to regulate deviance. Pueblo religion provides effective mechanisms for fostering cooperative behavior as defined by the religious leaders who control access to ritual knowledge.

During the 16th century, interest in the villages' well-being was also embedded in economic activity. For instance, as social gatherings kachina rituals attracted outsiders interested in trade. These and other ceremonies also helped the less fortunate in a village by redistributing food and wealth.²⁰ Aside from this intimate sort of exchange,

the religious elite also acted on issues involving labor organization, community surpluses in regional and long-distance trade, and the acquisition of nonlocal products. Trade goods typically included subsistence and utilitarian items (particularly food), ritual goods, and religious knowledge. A relatively few individuals monitored and enjoyed increasing access to all aspects of trade, from regional exchange of surplus agricultural production and knowledge to the long-distance exchange of such rare goods as exotic ceremonial items and esoteric knowledge. The process of developing networks of symbolic exchange linked polities through alliances that enhanced intertribal prestige in the exchange of powerful ritual items and knowledge, particularly during the period of increased ritual activity customarily believed to be associated with the spread of the kachina cult. A logical outgrowth of such alliances would have been affinal ties established between elites. Another significant consequence attending these developments took the form of the emergence of competing regional trade centers between the 14th and 16th centuries.²¹

Spaniards found New Mexico's inter-Pueblo relations less than harmonious in the 16th and early 17th centuries; many Eastern Pueblos appeared downright warlike. Piro-speakers were at war with the Southern Tiwa, who in turn found themselves locked in a hostile relationship with Pecos.²² Economics certainly played an important contributing role in the competition associated with enmity, but antagonistic relationships were often associated with and colored by religious signification. Trade, especially on large scale, fit into general perceptions of what was good for the individual pueblo and its allies. In an era of increased ritual activity and the elaboration of kachina institutions, economic activity added to a trade center's prestige and strength.

Among Eastern Pueblos in the 16th century, none exceeded Pecos in economic and political strength. Ideally situated as the famed "gateway to the Plains," Pecos received the largest share of the Plains bison products trade, which extended as far west as the northern Sinaloa coast of the Sea of Cortez.²³ Bison robes, in particular, were highly prized throughout the Southwest. These robes were elegant and their practical value was universally recognized during winters that were cold by today's standards, a time when the Rio Grande could freeze solid. In addition to robes, rawhide was utilized for shields and moccasins, while Puebloans prized meat and fat as flavorful dietary supplements.²⁴

From the 15th century until well into the 17th, Pecos remained *the* most prosperous and one of the largest Eastern pueblos. The burgeoning political, economic, and ideological power associated with the unique position held by Pecos was widely recognized. Inhabitants of Pecos, aware of their important position, boasted to the Spaniards of their strength.²⁵ One of Coronado's men described Pecos as

a Pueblo containing about 500 warriors. It is feared throughout the land. The houses are all alike, four stories high.... The people of this town pride themselves because no one has been able to subjugate them, while they dominate the pueblos they wish.²⁶

A number of Plains Apache groups were on friendly terms with Pecos throughout the 16th and early 17th centuries. After the early fall harvest and again in the winter,

Pueblos and Plains Apaches engaged in trade fairs. At these conclaves Apaches obtained corn, turquoise, cotton shawls, obsidian, bird feathers, pottery, and tobacco from Pecos.²⁷ For Pecos, the Apache trade embodied highly charged ideological meaning. The development of this Pecos-Plains exchange system contributed to the rising political and economic power of Pecos in relation to other Rio Grande Pueblos; such prominence was associated with supernatural power and therefore held valuable existential and cosmic significance. At the same time, trade with Pecos and other Puebloans helped establish Apache hegemony on the Southern Plains. To understand more fully the nature of these relations, the Apache social and conceptual world needs some exploring.

Thinly distributed over a great expanse of territory and bound by the strength and elasticity of blood and marriage ties, Apache society was more fluid than the Pueblos'. Apache individuals possessed more autonomy than Puebloans. Personal autonomy, respect, and power were almost always earned among Apaches, in contrast to some inherited Pueblo positions. Although the family occupied the core of Apache society, such activities as hunting, trade, and war brought extended relatives together.²⁸ Traditional Apache narratives (not unlike Pueblo narratives) addressed the origins of the world and the band, contracts and obligations made between certain animals and the band's ancestors, ceremonies and rituals, and included a wide repertoire of morally-tinted stories prescribing proper behavior.²⁹

As with Puebloans, morality shaped Apache perceptions of the world and moral principles complemented a conception of Athabaskan reality similar to Puebloan ontology. Supernatural mythic power suffused the cosmos, and all things animate and inanimate possessed *potential* life and volition. Beneficial or dangerous, power manifested itself in a multitude of ways. As a live, volitional force, power carried sufficient social attributes for Apaches to perceive their universe as an interacting social system of power holders. Rules governed this interaction, and human acquisition and use of power was based on an individual's knowledge of these "social" rules.³⁰

Apaches perceived degrees of order in the world as part of the constant state of balanced opposition and interaction of "persons" (human or otherwise) and their power. Entropy—the disorder or imbalance of things—resulted from neglecting or improperly interacting with the world of power holders. Balance and integrity in the world required acknowledging the potential power of "persons" and maintaining proper relations with them. Proper behavior between "persons" was based on reciprocity, honest and fair dealings, respect, and a general integrity and strength on the part of the power sources involved. Various forms of gift-giving, for example, signalled respect for, and a degree of trust in, others; yet the act of giving obligated the one receiving it to reciprocate and likewise provide a gift. Violations against rules also demanded reciprocity: mischievous children were reprimanded, adulterers had their noses sliced off, and murder obligated the victim's family to exact retribution with reciprocal killing. Traditional narratives and wisdom provided countless instances of properly balancing powers—gender roles clearly delineated male-female powers; respecting bison's gifts

of meat, hides, and so forth, entailed wasting no part of a bison's carcass; elders passed on valuable knowledge to those searching for counsel in return for tobacco; ceremonial rituals carefully orchestrated precise actions to balance all those powers at work in the ceremony.³¹

Thus according to Athabaskans, the cosmos functioned in moral ways; the natural and supernatural fused in a world of beings whose cooperation made things right and good. Given the ambiguous, dangerous world outside the immediate family, trustworthy allies were valuable. Morality *per se* centered on the participation of humans, animals, plants--and all other phenomena--in the system's equilibrium. Consequently, personal or group actions should be engineered so as to assist this equilibrium. Persons not so oriented were generally considered dangerous; if within one's own group these people might well be branded as witches.³²

Apaches and Puebloans met one another on a "middle ground" of the sort historian Richard White discusses with respect to French-Indian relations in the Great Lakes region during the 17th century. Here was a cultural frontier where each folk created a conceptual world built on misunderstandings of the other. Yet the mutually beneficial system worked as "a product of everyday life and a product of formal diplomatic relations between distinct peoples."³³ Though Apaches and Puebloans spoke entirely different languages, they were really not as culturally alien from one another as French and Algonquians were. In fact, their world views shared many fundamental similarities.

Given the circumstances surrounding the exchange between Pecos and Plains Apache, it makes sense to view the exchange as a solid alliance among power brokers who appreciated one another in religious terms, emphasizing the other's place and value in connection with what was best for or strengthened one's own people. The alliance of Pecos and Plains Apaches was set within a matrix of regional relations, forming the most interesting and powerful alliance in the Greater Southwest prior to Spanish contact. Within this context, Pecos' seasonal rendezvous were eagerly anticipated by both parties and greeted with much gift-giving, tobacco smoking, feasting, and rituals renewing friendly and powerful relations.³⁴ Food and other goods provided by each group held unique ontological status for both groups, symbolizing a complex blend of utilitarian concerns charged with the *cosmic* implications of the alliance. Both groups perceived trade goods, gifts, and rituals as aspects of powers assisting their strength and creating greater significance to their alliance.

Historical evidence suggests that the Plains-New Mexico trade was on the increase during the 16th and early 17th centuries. By 1630 Spaniards reported Apache pack trains of over 500 dogs hauling gear and bison products to New Mexico.³⁵ Spaniards, seeing the trade's lucrative side, tried to tap into and regulate it. But the Spanish conquest of New Mexico led to the subjugation of Pecos, slave raids against Plains Apaches, and ultimately the destruction of both the trade and its resulting alliance by the middle to late 17th century. The late 17th century arrival of the Comanche juggernaut on the Southern Plains eliminated any possibility of reestablishing the once-flourishing New Mexico-Plains alliance.

I have argued that the Apache-Pueblo exchange of the 16th and early 17th centuries represented a complex set of relations that scholars have not fully appreciated. More was at stake in this exchange than nutritional demands. The extent of the trade encompassed more than trade among kin. Something else was going on beyond Eastern Pueblos incorporating Apaches into a relatively new Southwest social and economic system. Apaches obtained regional political power through their monopoly of widely sought after trade items. To speak of incorporation belies an analytic framework that discounts the Plains influence on the Southwest as well as the weight that ideas carried throughout the entire region. Coming to terms with these issues is difficult and messy work, particularly when dealing with causality. But it seems likely we are moving toward a more inclusive understanding of the Southwest, the Southern Plains, and their people during the protohistoric and early historical eras.

NOTES

1. Elizabeth A.H. John, *Stornis Brewed in Other Men's Worlds* (Lincoln: University of Nebraska Press, 1975), 26, 54.

Cf. Alfred B. Thomas, *The Plains Indians and New Mexico, 1751-1778* (Albuquerque: University of New Mexico Press, 1940), 1-2; Jack D. Forbes, *Apache, Navajo, and Spaniard* (Norman: University of Oklahoma Press, 1960), 24-26; Dolores A. Gunnerson, "Man and Bison on the Plains in the Protohistoric Period," *Plains Anthropologist* 17 (1972): 1-5; Albert H. Schroeder, *A Study of the Apache Indians* (New York: Garland, 1974), ix-xi; John L. Kessell, *Kiva, Cross, and Crown: The Pecos Indians and New Mexico, 1540-1840* (Albuquerque: University of New Mexico Press, 1987 [1979]), 134-135.

2. Spanish sources note that Plains Apache dogs were "large." Since reading Dan Flores' description of Athabaskan dogs as "wolflike," I have wondered whether the wolf connection was merely assumed. I recently encountered an article lending support to the claim. Harold S. Colton, "The Aboriginal Southwestern Indian Dog," *American Antiquity* 35 (1970): 153-158. Flores' description is in his *Caprock Canyonlands: Journeys into the Heart of the Southern Plains* (Austin: University of Texas Press, 1990), 21.

3. Katherine Spielmann, "Inter-Societal Food Acquisition among Egalitarian Societies: An Ecological Study of Plains/Pueblo Interaction in the American Southwest" (PhD. dissertation University of Michigan, 1982), 248; "Late Prehistoric Exchange between the Southwest and Southern Plains," *Plains Anthropologist* 28 (Nov 1983): 257-272; "Interaction among Non-hierarchical Societies," in *Farmers, Hunters, and Colonists: Interaction between the Southwest and the Southern Plains*, edited by Katherine A. Spielmann (Tucson: University of Arizona Press, 1991), 1-17; John D. Speth, *Bison Kills and Bone Counts: Decision Making by Ancient Hunters* (Chicago: University of Chicago Press, 1983), 149-150; "Mutualistic Plains-Pueblo Food Exchange," in *Farmers, Hunters, and Colonists*, edited by Katherine A. Spielmann (Tucson: University of Arizona Press, 1991), 24-28.

W.W. Newcomb similarly argues that Plains life was a harsh, precarious hand-to-mouth existence; see his *The Indians of Texas, From Prehistoric to Modern Times* (Austin: University of Texas Press, 1961), 96-98.

4. For 1541 descriptions of deer, bear, jackrabbits, cottontail, lions, porcupines, mountain sheep, goats, boars, elk, and otters, see George Hammond and Agapito Rey, *Narratives of the Coronado Expedition* (Albuquerque: University of New Mexico Press, 1940), 173, 252. For 1599 and 1601 descriptions of "all kinds" of game, from lions and bears to wolves, ferrets, porcupines, deer, hares, and many herds of sheep, see George Hammond and Agapito Rey, *Don Juan de Oñate, Colonizer of New Mexico, 1595-1628*, Vol. I (Albuquerque: University of New Mexico Press, 1953), 483, 610, 626, 634. As late as 1630, Benavides extolled, "The abundance of game appears infinite" in New Mexico, including deer, mountain sheep, lions, bears, jackrabbits, and cottontails. See Alonso de Benavides, *The Memorial of Fray Alonso de Benavides, 1630*, trans. Mrs. Edward E. Ayer (Albuquerque: Horn and Wallace, 1965), 36-38.

Acquiring meat was not difficult, and Puebloans usually hunted game in one of two ways: individual archers and organized group surrounds. For descriptions, see Benavides, *Benavides Memorial*, 38. For specific mention of some meats (venison, rabbit, hare, and bighorn sheep) in Pueblo diet, see Hammond and Rey, *Don Juan de Oñate*, 626, 634.

5. The present paper follows Richard J. Perry's claim that the Athabaskan migration route south from Canada was along a "mountain corridor," through which the natives exploited multiple zones of both mountainous and steppe plains areas, adapting to a variety of ecological niches. Perry, *Western Apache Heritage: People of the Mountain Corridor* (Austin: University of Texas Press, 1991), 5-6, 54-100, 110-133. For additional studies addressing the multiple zone seasonal migrations of Athabaskans, see James W. VanStone, *Athabaskan Adaptations: Hunters and Fishermen of the Subarctic Forests* (Chicago: Aldine, 1974), 23-32, 37-42; Hugh Brody, *Maps and Dreams: Indians and the British Columbia Frontier* (Vancouver: Douglas & McIntyre, 1981), 190-213. Ethnographic and linguistic evidence support Perry's position. See Morris E. Opler, *Myths and Legends of the Lipan Apache Indians* (New York: J. J. Augustin, 1940), 4-8; Isidore Dyen and David F. Aberle, *Lexical Reconstruction: The Case of the Proto-Athapaskan Kinship System* (London: Cambridge University Press, 1974), 232-234.

The Athabaskan migration theory most popular among archeologists argues for a strictly Plains route. This would even more strongly support my claim for Apache adept gathering. See David R. Wilcox, "The Entry of Athapaskans into the American Southwest: The Problem Today," in *The Protohistoric Period in the North American Southwest, A.D. 200-1700*, edited by David R. Wilcox and W. Bruce Masse (Tempe: Arizona State University Press Anthropological Research Papers No. 24, 1981).

6. For discussion of Canadian River flora, which contains over 500 species of plants, see Christopher Lintz, *Architecture and Community Variability within the Antelope Creek Phase of the Texas Panhandle* (Norman: Oklahoma Archeological Survey, 1986), 60.

7. The most detailed early Spanish descriptions of Plains riparian areas focus on the Canadian River in the western New Mexico and Texas Panhandle region. Hammond and Rey, *Don Juan de Oñate*, 540, 747-748. Similar descriptions of the Canadian's wealth of fruit and nuts were reported 250 years later in 1845. Susan Delano McKelvey, *Botanical Explorations of the Trans-Mississippi West* (Jamaica Plain, Mass.: Arnold Arboretum, 1955), 935.

8. Josiah Gregg, *Commerce of the Prairies*, edited by Max L. Moorhead (Norman: University of Oklahoma Press, 1954), 61-62, 363; Kelly Kindscher, *Edible Wild Plants of the Prairie. An Ethnobotanical Guide* (Lawrence: University of Kansas Press, 1987), 229-236; Morris E. Opler, "Introduction to Mescalero and Chinichua Apache Cultures," *New Mexico University Biology Series Bulletin* 4 (1936): 48.

9. Pemmican has been known to remain in good condition for up to twenty years. For pemmican data, see Hammond and Rey, *Narratives of the Coronado Expedition*, 262; Kindscher, *Edible Wild Plants of the Prairie*, 29-32; Vilhjalmur Stefansson, *Not By Bread Alone* (New York: The Macmillan Co., 1946), 178-179, 198.

Castañeda furnishes the most detailed account of Plains Apache use and enjoyment of bison belly broth in Hammond and Rey, *Narratives of the Coronado Expedition*, p. 262. Discriminating in their tastes, grazing animals feed on grasses that contain an abundance of carbohydrates. Though grasses, forbs, and browse vegetation contain less protein, carbohydrates, and fat during winter months, many still hold vital nutrients on which bison can sustain themselves. Most of these carbohydrates are within the cellulose of grass cell-walls, requiring a complex but efficient digestive process to break down the cellulose. One result is a constant minimal amount of undigested food within the digestive tracts of grazing animals.

Historian Michael Lawson has pointed me to a similar account of natives consuming intestinal contents of ungulates, in Taylor Ealy's 1880 report from Zuñi describing how grass from sheep stomachs was chewed and eaten during early spring. "when vegetables are unseen in Zuñi." *Annual Report of the Commissioner of Indian Affairs, 1880*, (Washington, D.C.), 134-35, quoted in Norman J. Bender, ed., *Missionaries, Outlaws, and Indians: Taylor F. Ealy at Lincoln and Zuñi, 1878-1881* (Albuquerque: University of New Mexico Press, 1984), 146.

For bison feeding habits, see Douglas B. Bamforth, *Ecology and Human Organization on the Great Plains* (New York: Plenum Press, 1988), 42-43. For detailed description of ruminant digestive systems, see R. E. Hungate, "Introduction: The Ruminant and the Rumen," in *The Rumen Microbial Ecosystem*, edited by P. N. Hobson (London: Elsevier Science, 1988), 1-19.

For seasonal nutritive value of forage vegetation, see George F. Gastler, et al., "Composition of Some Plants Eaten by Deer in the Black Hills of South Dakota," *Journal of Wildlife Management* 15 (1951): 352-356; C. Wayne Cook, et al., "The Chemical Content in Various Portions of the Current Growth of Salt-Desert Shrubs and Grasses during the Winter," *Ecology* 40 (1959): 644-651; Raymond A. Demarchi, "Chemical Composition of Bighorn Winter Forages," *Journal of Range Management* 21 (1968): 385-388; B. B. Billingsley, Jr. and Dale H. Arner, "The Nutritive Value and Digestibility of Some Winter Foods of the Eastern Wild Turkey," *Journal of Wildlife Management* 34 (1970): 176-182; Bamforth, *Ecology and Human Organization*, 31-34.

10. For further discussion of the nutritional dependency model, see William Carter, "Diet and Trade among Plains Apaches and Puebloans in the Sixteenth and Seventeenth Centuries," paper delivered at the 1992 annual meeting of the American Society of Ethnohistory (Salt Lake City, Nov 13).

An additional source of Apache knowledge of edible Plains vegetation may have been other Plains Indians, such as Escanxaques, with whom Apaches occasionally associated and dined on roots and fruits with their meat. See Hammond and Rey, *Don Juan de Oñate*, 916.

11. Thomas D. Hall, *Social Change in the Southwest, 1350-1880* (Lawrence: University of Kansas Press, 1989), 47.

12. Hall, 43-45. (See Basil C. Hedrick, J. Charles Kelley, and Carroll L. Riley, "The Mesoamerican Southwest," in *The Mesoamerican Southwest: Readings in Archeology, Ethnohistory, and Ethnology*, edited by Basil C. Hedrick, J. Charles Kelley, and Carroll L. Riley (Carbondale: Southern Illinois University Press, 1974), 3-8; *Ripples in the Chichimee Sea: New Considerations of Southwestern-Mesoamerican Interactions*, edited by Frances Joan Mathien and Randall H. McGuire (Carbondale: Southern Illinois University Press, 1986).

13. Hall, 43, 47. Artifacts from Plains Caddoan sites in northern Texas and western Oklahoma attest to a viable exchange of goods with Puebloans as early as 1450. Within 75 years, Athabaskans migrating into the region displaced Caddoan traders. Christopher Lintz, "The Southwest Periphery of the Plains Caddoan Area," *Nebraska History* 60 (1979): 161-182.
14. Hall, 43, 83.
15. Steadman Upham, *Politics and Power: An Economic and Political History of the Western Pueblo* (New York: Academic Press, 1982), 106-110, 202. Upham's chief evidence, in addition to archeological findings and theory to date, consists of ceramic analysis. See also Linda S. Cordell, *Prehistory of the Southwest* (San Diego: Academic Press, 1984), 303-325, 330-340.
16. Upham, 4, 24, 18, 32-33.
17. E. Charles Adams, *The Origins and Development of the Pueblo Katsina Cult* (Tucson: University of Arizona Press, 1991), 17, 145, 151, 187. Adams bases his analysis on evidence provided by kachina iconography on ceramics and in Southwest rock art, as well as by Pueblo architectural changes associated with population aggregation and ceremonial developments (plaza areas surrounded on at least two sides by rooms, rest areas for kachinas, rectangular kivas, etc.), and kiva murals, 17. See also J. O. Brew, "On the Pueblo IV and on the Kachina-Tlaioc Relations" in *The Mesoamerican Southwest: Readings in Archeology, Ethnohistory, and Ethnology*, edited by Basil C. Hedrick, et. al. (Carbondale: Southern Illinois University Press, 1974), 66-87; Cordell, *Prehistory of the Southwest*, 343-346.
18. Adams, 8, 13, 149, 155-156. Our present postmodern social and academic climate often understands the term "hierarchy" as connoting exploitive or immorally asymmetrical power relationships. The term is also seen in structuralist parlance as constituting interdependent cognitive and behavioral aspects of society that function and are structured by certain key points of reference, categories, or habits. The former, exploitive connotation of hierarchy does not apply to Puebloans, chiefly because of the degree of cooperation and responsible decision-making that transacted within Pueblos. Pueblo leaders were perceived, above all, as powerful moral leaders. This topic is addressed further below. For further discussion of Pueblo social organization and hierarchies, see Cordell, *Prehistory of the Southwest*, 237-238, 348-352.
19. Upham and Adams (and others) argue that the base of a ProtoPueblo culture emerges in the 14th through 16th centuries. Except for a few minor issues (such as the above-mentioned absence of regional ties), the general outlines of Pueblo culture and beliefs have changed very little since contact with Spaniards. Following this assumption, I believe ethnographic material carefully used can be applied to the protohistoric and early historical periods. Alfonso Ortiz's overview of Pueblo world view and ritual is in "Ritual Drama and the Pueblo World View," in *New Perspectives on the Pueblos*, edited by Alfonso Ortiz (Santa Fe: School of American Research, 1972), 135-161.
20. Adams, 159.
21. Upham, 119-123, 164. Economic specialization--in raw materials as well as crafts--accompanied population increases and the efforts to adapt to economic realignment during and after the 14th century.
22. George P. Hammond and Agapito Rey, trans., *Obregon's History of Sixteenth Century Explorations in Western America* (Los Angeles, 1928), 17, 322; Albert H. Schroeder, "Pueblos Abandoned in Historic Times," in *Handbook of North American Indians* Vol. 9, (Washington D.C.: Smithsonian Institution, 1979), 236, 242.
23. Charles L. Kenner, *A History of New Mexican-Plains Indian Relations* (Norman: University of Oklahoma Press, 1969), 11; Albert H. Schroeder, "Pecos Pueblo," in *Handbook of North American Indians* Vol. 9 (Washington, D.C.: Smithsonian Institution, 1979), 431; John, *Storms*

Brewed, 74. For Spanish descriptions of the bison robe and shield trade in northern Sinaloa in 1539, see Niza's report in Hammond and Rey, *Narratives of the Coronado Expedition*, 67-69. 24. For descriptions of bison robes, blankets, or winter shoes in Pueblos, see Hammond and Rey, *Narratives of the Coronado Expedition*, 158-159, 173, 183, 256, 286, 299; Herbert E. Bolton, ed., *Spanish Explorations in the Southwest, 1542-1706*, (New York: Charles Scribner's Sons, 1908) 177, 182-184; Hammond and Rey, *Don Juan de Oñate*, 400, 483, 610, 626-27, 633, 644-45, 659, 1013-14; Ayer, *Memorial of Fray Benavides, 1630*, 54-56. For discussion of cold winters and the Rio Grande freezing, see Hammond and Rey, *Narratives of the Coronado Expedition*, 24, 272, 183-84; Hammond and Rey, *Don Juan de Oñate*, 481, 610, 644-45, 656, 851; Ayer, *Memorial of Fray Benavides*, 38-39, 57.

The period from approximately A.D. 1300 to 1850 comprises the climatic period frequently referred to as the Little Ice Age. Scholars argue that compared to modern climate, the earlier period featured lower annual temperatures and increased annual rainfall on a global basis. Regarding the Plains, decreases in winter temperatures during the Little Ice Age were greatest on the Northeastern Plains and progressively less toward the southwest. Summer temperatures, however, differed little, if any, from today's norms. See Hubert H. Lamb, *Climate Present, Past, and Future Vol. 2, Climatic History and the Future* (London: Methuen and Co., 1977), 461-473; Harold C. Fritts, *Reconstructing Large-scale Climatic Patterns from Tree-Ring Data* (Tucson: The University of Arizona Press, 1991), 171-178.

25. Schroeder, "Pecos Pueblo," 436. John, *Storms Brewed*, 18. For discussion on how news traveled, see Carroll L. Riley, "Early Spanish-Indian Communication in the Greater Southwest," *New Mexico Historical Review* 46 (1971): 285-314.

26. Hammond and Rey, *Narratives of the Coronado Expedition*, 256-57.

27. Hammond and Rey, *Narratives of the Coronado Expedition*, 258-261; Hammond and Rey, *Don Juan de Oñate*, 864, 870-871; Hammond and Rey, *Gallegos Relation of the Rodriguez Expedition*, 142; Kessell, *Kiva, Cross, and Crown*, 134-35; David H. Snow, "Protohistoric Rio Grande Pueblo Economies: A Review of Trends," in *The Protohistoric Period in the North American Southwest*, edited by David R. Wilcox and W. Bruce Masse (Tempe: Arizona State University Press Anthropological Research Papers No. 24, 1981), 362-365; Katherine Spielmann, "Late Prehistoric Exchange between the Southwest and Southern Plains," 257-258; Timothy Baugh, "Southern Plains Societies and Eastern Frontier Pueblo Exchange during the Protohistoric Period," *Papers of the Archaeological Society of New Mexico* 9 (1984): 158.

28. Morris E. Opler, "The Apachean Culture Pattern and Its Origins," in *Handbook of North American Indians* Vol. 10 (Washington, D.C.: Smithsonian Institution, 1983), 231-232; Dycn and Aberle, *Lexical Reconstruction*, 232-234; Grenville Goodwin, *Social Organization of the Western Apache* (Chicago: University of Chicago Press, 1942), 6-8.

29. Opler, *Myths and Legends of the Lipan Apache Indians*, 107.

30. I have found only two significant differences between Puebloan and Apache ontology: (1) Puebloans appear to view "all" of nature and space as sacred, whereas Apaches saw in nature potential sacred power. (2) Ortiz points out that Navajos view the world from a spatial orientation (as well as that of motion) that is centrifugal or outward from self to cosmos, and Pueblos have an orientation that is centripetal or inward from cosmos to self. Ortiz, "Ritual Drama and the Pueblo World View," 142-143.

For discussion of Athapaskan conceptions of power, see VanStone, *Athapaskan Adaptations*, 62-68; Richard J. Perry, "Proto-Athapaskan Culture: The Use of Ethnographic Reconstruction," *American Ethnologist* 10 (1983): 723; John R. Farella, *The Main Stalk: A Synthesis of Navajo Philosophy* (Tucson: University of Arizona Press, 1984), 37-38, 67; Lowell

John Bean. "Power and Its Application in Native California," in *The Anthropology of Power: Ethnographic Studies from Asia, Oceania, and the New World*, edited by Raymond D. Fogelson and Richard N. Adams (New York: Academic Press, 1977), 118-119.

For Apache conceptions of power, see Keith H. Basso. "The Gift of Changing Woman," *Bureau of American Ethnology Bulletin* No. 196 (Washington, D.C.: Smithsonian Institution, 1966).

31. Morris E. Opler, *Myths and Legends of the Lipan Apache Indians*, 13-37; Opler, "The Apachean Culture Pattern and Its Origins," 370-371; Peter P. Forrestal, trans., *Benavides Memorial of the 1630* (Washington, D.C.: Academy of American Franciscan History, 1954), 42-43; Basso, *Western Apache Witchcraft*, 30-31; H. Henrietta Stockel, *Women of the Apache Nation* (Reno: University of Nevada Press, 1991), 5-6; Claire R. Farrer, "Singing for Life: The Mescalero Apache Girls Puberty Ceremony," in *Southwestern Indian Ritual Drama*, Charlotte J. Frisbie, ed. (Albuquerque: University of New Mexico Press, 1980), 147-153; Farrer, *Living Life's Circle. Mescalero Apache Cosmivision* (Albuquerque: University of New Mexico Press, 1991), 26-36.

32. Keith H. Basso, *Western Apache Witchcraft* (Tucson: University of Arizona Press, 1969), 5, 31-32.

33. Richard White, *The Middle Ground: Indians, Empires, and Republics in the Great Lakes Region, 1650-1815* (Cambridge: Cambridge University Press, 1991), 52-53.

34. Kessell, *Kiva, Cross, and Crown*, 134-135.

35. Gunnerson. "Man and Bison on the Plains," 6.