Chapter 1:
From Prehistory to European Contact

The area that is the Guadalupe Mountains-Carlsbad Caverns region has not always been the stunning combination of desert, high elevation mountains, mesas, and range country that is pervasive there today. Almost 250 million years ago, during the Permian Period of the Paleozoic Era, which lasted from about 280 million to 225 million years ago, the portion of southeastern New Mexico and trans-Pecos Texas that would later become the Guadalupe Mountains-Carlsbad Caverns region stood partially under water. It was just off the edge of the supercontinent of Panagea, which began to split into the seven continents of today about 180 million years ago. Part of the vast Permian Sea and located much closer to the equator than today, the region was covered by three basins — the Marfa, Delaware, and Midland — and was connected to the great Permian Ocean by the Hovey Channel, a narrow inlet. The middle of the three arms of water that jutted to the edge of land, the Delaware was a basin about seventy-five miles wide and 150 miles long. A reef emerged along its edge later in the Permian Period. Known as the Capitan Reef, now one of the premier aboveground fossil reefs in the world, it traced the edge of the Delaware Basin for almost 400 miles. The reef is most visible today as what we call the Guadalupe Mountains.[1]

Behind this uplift was a formation called a backreef that geologists regard as the completion of the Guadalupe Series. The backreef consisted of a warm shallow lagoon tens of miles wide that served as a vast evaporating pan. The heat of the tropical sun concentrated the minerals as the water evaporated, and gypsum and other materials precipitated on the floor of the lagoon. Closer to the shore, the gypsum mixed with sediment that was eroding off the continent. This combination of mud, silt, sand, and gypsum formed tidal flats that stood about four feet deep at high tide. When the tide receded, channels winding through slippery mud and tidal pools became visible.[2]

Ocean currents and waves battered the face of the Capitan Reef facing the water, breaking off chunks that slid down the front of the reef. A forereef formed — a talus slope of loose rock and other materials that extended downward into the basin and comprised the debris

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[1]Robert J. Dunham. *Capitan Reef, New Mexico and Texas: Facts and Questions to aid Interpretation and Group Discussion*. Permian Basin Section. Publication 72-14, Society of Economic Paleontologists and Mineralogists. Midland, Texas: May, 1972; for a concise description, see Alfred W. Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900-1900 A.D.* (Cambridge: Cambridge University Press, 1986), 9.

[2] David H. Jagnow and Rebecca Rowher Jagnow, *Stories From Stones: The Geology of the Guadalupe Mountains* (Carlsbad, NM: Carlsbad-Guadalupe Mountains Association, 1992), 6-13.

from the reef itself. As a result, the reef grew wider as it expanded on top of its own debris. Inverted and resembling an upside-down pyramid, the reef could not support itself and large boulders, some as big as a modern house, toppled off the reef and rolled down its side to the basin below.

The proximity of the forereef and the main reef created fissures that played an important role much later in the development of the complex of caves that characterize the region. The forereef did not become as solid as the reef from which it fell, and the immense weight of the overlying reef cracked the forereef. The talus, debris that had previously fallen, shifted, and fissures in the reef opened. Marine sediments washed off the continent and became trapped in these cracks. The cracks provided a route for water and hydrogen sulfide gas that migrated upward from oil reservoirs deep beneath the reef, over millions of years initiating and then expanding the cave creation process.[3]

The oil and natural gas that formed beneath the region also stemmed from these same geological processes. In the nearly one-half mile deep Delaware Basin in front of the reef, the sediments that washed into the water later turned into thin black limestone beds separated by thicker beds of fine sandstone and siltstones. The black limestone contained organic-rich remains of plants and animals that settled deeper in the basin than other materials. As they decomposed, they used up all of the available oxygen, stopping the decomposition process. Most of the organic matter was buried or preserved. Over millions of years, heat and pressure changed this organic matter into oil and gas. These deposits today attract the attention of the industrial world, which craves fossil fuels to power its machinery.[4]

When the growth of the Capitan Reef ended near the end of the Permian Period, it closed a period in the region's geological history. As ocean access became restricted, the Delaware Sea shrank and it began to evaporate more rapidly than it could be replenished, concentrating its dense minerals until the water could no longer hold them. The minerals precipitated out, drifting to the sea floor crystal by crystal and forming thin bands of sediment, which geologists today call the Castile Formation, the gypsum desert area stretching south of Guadalupe Mountains National Park across the Delaware Basin. Thin layers of white gypsum and even finer layers of grey limestone alternated, reflecting seasonal climatic fluctuations in a typical evaporation sequence in the same manner as tree rings mark wet and dry years.[5]

At the very end of the Permian Period, the Delaware Sea had become a very shallow evaporation basin and the geological processes that created the salt and potash that would later be mined accelerated. Two salts, sodium chloride (table salt) and potassium chloride (potash), began to precipitate out. Combined with sediments that eroded from the reef, they formed bands of sandstones, siltstones, and redbed shales. Over millions of years, these became the Rustler and Salado formations,

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[3]Rachel Wood, J.A.D. Dickson and Brenda Kirkland. "New Observations on the Ecology of the Permian Capital Reef, Texas and New Mexico" *Paleontology* Vol. 39, Part 3 (August 1, 1996): 733-762.

[4] Jagnow and Jagnow, *Stories from Stones*, 14-15.

[5] Jagnow and Jagnow, *Stories from Stones*, 14.

where much later in time human beings from pre-Columbian people through United States citizens mined salt and potash. The most evident expanse of salt flats — a seventy-mile-long and five- to fifteen-mile-wide area west of today's Guadalupe Mountains National Park — is what geologists call a graben, a downthrown or sunken block filled with sediments from adjacent uplifts. These salt deposits and the accompanying alkali flats — locally called salt lakes — were a crucial resource for generations of people. For a time in the late nineteenth and early twentieth centuries, these minerals were crucial to the region's economic identity.

The gypsum plains that stretch east from the Delaware Mountains, southeast of the Guadalupe Mountains, toward the Rustler Hills, also stem from the erosion of the Permian Period's geological features. This more than fifty-mile stretch of gypsum owes its origins to the erosion of the thin bands of the Castile Formation. In it, thicker bands of gypsum alternated with thinner bands of limestone. As the sediments were buried, the water in the minerals was squeezed out and the gypsum changed to anhydrite. Over millions of years, the Castile Formation entirely eroded and the water that reached the anhydrite on the surface turned it back into gypsum, hundreds of feet in thickness. Torrential thunderstorms molded the soft and easily eroded gypsum, creating the sometimes eerie-looking landscape of the gypsum plains. Rugged draws, caves, and asymmetrical formations typify the gypsum plains.

By the time human beings came into the area more than 12,000 years ago, the geological formations begun in the Permian Period had become the region's physical realities. The entire area, and the Southwest, that surrounded it had slowly become hotter and drier, as a long-term post-Pleistocene Era trend made the area more arid and generally warmer, but the full brunt of this climatic change still lay in the future. When humans arrived, the area was more temperate that it is today. Its mountains were covered with vast Pinyon-juniper complex forests and the lowlands sported abundant grassland savannah and some trees. There is some evidence of chipped stone that lacked projectile points that seem to predate Paleo-Indian inhabitation in the larger region, but scant evidence leaves this prospect as the topic of heated debate among archaeologists. People labeled Paleo-Indians by archaeologists did inhabit the region by about 10000 B.C., hunting bison, mammoths, and other now-extinct large mammals as well as smaller game. Living near water sources at lower elevations, these Paleo-Indian people roamed the high country in search of large mammals for game. They also collected plants in a fashion typical of nomadic groups around the globe.[6]

[6] Susana R. Katz and Paul Katz, "Pecos Past: The Prehistory and History of the Brantley Project Locality," (unpublished report, Bureau of Reclamation, Southwest Regional office, 1985), 26; Susana R. Katz, "Late Prehistoric Period Environment and Economy of the Southern Guadalupe Mountains, Texas," (Ph.D. diss., University of Kansas, 1978), 14; Susan R. Katz and Paul Katz, "The Prehistory of the Carlsbad Basin, Southeastern New Mexico: Technical Report of Prehistoric Archaeological Investigations in the Brantley Project Locality," (unpublished report, Bureau of Reclamation, Southwest Regional Office, 1985), copy in Artesia Historical Museum, Artesia, New Mexico, 31; Michael S. Foster and J. Charles Kelley, "Archaeological Investigations in the Three-Mile and Sulphur Draw Watershed, Culberson County, Texas," *The Artifact 27 3* (1989), 9-14; Bob Parvin, "In Search of the First Texans," *Texas Parks and Wildlife*, October 1983, 3-7; Alan H. Simmons, Ann Lucy Weiner Stodder, Douglas D. Dykeman, and Patricia A.

Paleo-Indian people initially found an abundance of big game to hunt. Now-extinct species of mammoths offered a primary target for hunters, along with the ancient bison, two species of now-extinct horse, a rare four-horned antelope, the California condor, dire wolf, brush ox, and some camel-like creatures. They hunted with different kinds of spear points that have since been labeled Clovis, Folsom, and Plano types, suggesting that a variety of cultural groups and subgroups thrived throughout eastern New Mexico and west Texas. Blackwater Draw, to the north and east of the Guadalupe Mountains and the lower Pecos River Valley, contains an important Paleo-Indian site. Burnet Cave, west of Carlsbad, contained vegetal remains, charred logs, fossilized mammals, and spear points, offing a prime example of Paleo-Indian ways of life. In Burnet Cave, archaeologists found a Clovis-fluted projectile point, with extinct animal bones that could be 10,000 years old. Near Hueco Tanks and at sites near Van Horn, Texas, archaeologists uncovered Folsom points that also attest to the presence of slightly later Paleo-Indian peoples. Warm from the heat of their fires and satiated with meat from the kill, these people must have seen the region as a paradise.[1]

These Paleo-Indian peoples and generations of their descendants were the first humans to fall into the trap that higher elevations and the areas that surround them could be in the Southwest. To their eyes — as to the eyes of generations of Native Americans, Spaniards, Mexicans, Anglo-Americans, and others who came to the region — the place at which they arrived appeared to offer them more than the necessities their culture demanded. If the region did not always appear abundant, it at least looked as if it could provide subsistence for these Paleo-Indian peoples. Yet the Guadalupe Mountains-Carlsbad Caverns region was a trap, similar to those waiting elsewhere in the Southwest and West. The land looked abundant, and it was — for a while. But its stock of game, lush upland forests, and high grasses were living relics of an earlier epoch, one that was wetter and cooler. These resources would not replenish easily, and they certainly could not be replaced. While small nomadic groups such as the Paleo-Indians did not face this reality head-on, for each successive generation of descendants the issue became more vexing. They too were in a trap, a difference between what they saw and the ability of the land to provide it over time. They did not know that, even as they arrived in the region, climatic changes were under way that would significantly alter the realities of human life in the region.[2]

Hicks, "Human Adaptation and Cultural Change in the Greater Southwest," Arkansas Archaeological Survey Research Series no. 32, (Wrightsville, AR: U.S. Army Corp of Engineers Southwestern Division, 1989) 21-29, 35.

[1] Sunny Leigh Brockmoller, "The Identification and Classification of Projectile Points from the Plateau Complex, Van Horn, Texas," *The Artifact* Vol. 25 No. 1 (1987). Dixie L. Dominguez, "Hueco Tanks: A Vital Resource in Southwestern History." *Password* Vol. 31, No. 3 (Fall 1986): 123-136.

[2] Hal Rothman, "The Perceptual Trap? Climate and Perception in the Nineteenth-Century American West," *Halcyon: A Journal of the Humanities* 17 (1995): 127-144; Robert Caro, *The Years of Lyndon Johnson, Volume I: The Path to Power* (NY: Alfred A. Knopf, 1983): 32-60, shows one example of this phenomenon; Martin Rose, in *Donner Pass*, illustrates the perceptual problem in the instance of the Donner Party; Elliott West, *The Way to the West: Essays on the Central Plains* (Albuquerque: University of New Mexico Press, 1995), brilliantly described this process for both Cheyenne and westward-bound Anglo-

Beginning about the sixth millennium B.C., the region's climate became noticeably drier. With the general lack of water in the area already pronounced, a shift in the nature of available resources took place. Even at high elevations, forests began to shrink, depriving Paleo-Indians of sources of material as well as warmth. Drier xeric plants began to climb in elevation, taking over from the declining woodland trees and shrubs. The game became more scarce, slowly at first, but more rapidly as the animals that remained reproduced more slowly and less efficiently; the environment that sustained them became far less tolerable, and the mobile species that could migrate to more suitable places such as the Plains did so. In a typical example, the ancient bison gave way to a much closer forerunner of the modern American Bison, which was already migrating to become the Plains species that Spaniards found during Vázquez de Coronado's 1542 Plains journey and that the French found in what is now Tennessee and Alabama at the beginning of the eighteenth century. The American Bison spread from the trans-Mississippi into an ecological niche that became open as European disease, brought by the Spanish explorer Hernán de Soto during the 1530s, demolished the elaborate Indian cultures of northern Alabama and southern Tennessee. In the early 1700s, the French came to the Southeast and found it sparsely inhabited, its culture left in mounds. People nearby appeared to possess little of the sophistication and social organization that de Soto witnessed 150 years before. At about the same time, Spaniards saw significant numbers of bison close to the Gulf of Mexico along the Florida panhandle and in southern Georgia and Alabama, a remarkable journey for a species that history typically associates with the Great Plains.

The bison were fine prey for the successors of the Paleo-Indians, the Archaic people, a hunting and gathering adaptation that became evident between about 6000 and 5000 B.C. The people of the Archaic period fashioned their existence around the changing conditions of their time as well as to a different set of cultural imperatives than the Paleo-Indian peoples. The bison became coveted prey for Archaic people; the animals congregated closely together, unlike the mammoth, a relative of the elephant that roamed in smaller groups over a much wider range. Bison became more attractive prey as Archaic people hunted in larger groups. They needed to band together; the shaggy, mobile animals were hard to catch and dangerous because of their size and speed. Life became harder for Archaic people as a result of climatic change, and over time, they became adept at supplementing the plants they gathered with the meat they hunted. In the space of a few thousand years, a mere wink in geologic time, the temperate traits of the region were replaced by a more semiarid to arid ecological regime resembling that of today.[3]

American settlers in the mid-nineteenth century.

[3] Katz and Katz, "Pecos Past," 26, 29; Clifton, "An Archaeological Survey of 26 Miles of the Boundary of Guadalupe Mountains National Park, Culbertson and Hudspeth Counties, Texas," 9; Simmons, Stodder, Dykeman, and Hicks, "Human Adaptation and Cultural Change in the Greater Southwest, 39, 69;" see also Alfred Crosby, *Ecological Imperialism:* 1986), 210-20, for an account of the range of the American Bison at a later date; see also Dan Flores, "Bison Ecology and Bison Diplomacy: The Southern Plains from 1800 to 1850," *Journal of American History* 87 2 (September 1991): 465-85 and Elliott West, *The Way to the West: Essays on the Central Plains* (Albuquerque: University of New Mexico Press, 1995), 51-85, offer

The change to this new regime came rapidly by the standards of geological time. Five thousand years ago, the environment became remarkably similar to that of today; no later than 3,000 years ago, the climate and environment changed so it almost directly mirrored the modern environment. Drier, hotter conditions forced the people who remained in the region to adapt. They had to replace older food sources with new ones that required different strategies than did hunting the large animals of the Paleo-historic era. These Archaic people — whom archaeologists suspect were the forerunners of the Jornada Branch of the much later Mogollon Culture of 1000 A.D. era — increasingly emphasized the hunting of small game over large; large animals became a scarce and unreliable resource in their world. Archaeological evidence indicates that Archaic people adapted rapidly to the new environment. If something moved, Archaic people found it edible. The color green in plant life indicated the same thing to them. Often their diets consisted of rodents and a variety of cacti species. The climate change also altered their patterns of mobility. As resources became more scarce, the mobile hunting parties declined. They had little guarantee of finding game or even of being able to forage for their sustenance as they traveled. Instead, Archaic people stayed in an area that could sustain them and learned it well. Their survival depended on finding sustenance from the area immediately around them, a significant difference between them and both their Archaic ancestors and the Paleo people who preceded them. Archaic people utilized a smaller range to the utmost of their ability. With some exceptions, they did not plant food or keep animals. Instead they knew a small area intimately and used that understanding to fashion a varied diet from what it offered. This tendency to range closely but to maximize the opportunities of the region kept Archaic populations in small areas in which they were comfortable, and some scholars attribute growing population throughout the Archaic Period to this adaptability. As the people of the Archaic narrowed their reach, they considerably extended the depth of their knowledge. They continued to trade among themselves, revealed by the preponderance of similar artifacts at a wide variety of sites. Although they initially did not adopt sedentary ways, they moved closer to the rhythm of settled people.[4]

Archaeologists have divided Archaic life into four distinct phases distinguished by the traits of these peoples. The initial phase, labeled Early Archaic, lasted from roughly 6000 to 3000 B.C. and revealed the rapidly changing environmental conditions and shifting human responses to the new

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outstanding analysis of the patterns of mobility, demography, and social and reproduction characteristics of the American Bison; for a general summary of the Archaic Period, see Cordell, *Prehistory of the Southwest*, 153-80.

[4] Katz, "Late Prehistoric Period Environment and Economy of the Southern Guadalupe Mountains, Texas," 14; Clifton, "An Archaeological Survey of 26 Miles of the Boundary of Guadalupe Mountains National Park, Culbertson and Hudspeth Counties, Texas, 9;" Katz and Katz, "The Prehistory of the Carlsbad Basin, Southeastern New Mexico," 31-32; Michael E. Whalen, "Moving Out of the Archaic on the Edge of the Southwest," *American Antiquity* 59, No. 4 (Oct., 1994): 627, offers a different view of the larger trends in this period. Whalen persuasively conflates the Terminal Archaic and Late Prehistoric periods, arguing for a localized interpretation that suggests hat the Terminal Archaic phase lasts far longer in the deserts of the Southwest.

situation. The Middle Archaic period, also known as the Avalon Phase, began in around 3000 B.C. and lasted about 2,000 years. During this phase, Avalon people adapted to their new circumstances in a changing environment. Some became semi-sedentary, locating their camping places along major watercourses; the increasing use of river shellfish demonstrated the broader range of food-gathering strategies in which they engaged. The subsequent era, the Late Archaic, also known as the McMillan Phase, lasted from approximately 1000 B.C. to A.D. 100. It remains difficult to differentiate it from the predecessor Avalon Phase. Most practices and locations seem very similar, but a range of more specialized features, especially tools and structures, testify to a small but significant cultural distinction between the two eras.[5]

Cultural materials from a range of caves within the Guadalupe Mountains have offered much insight to Archaic life before 1 A.D. Dark Canyon Cave, Honest Injun Cave, Burnet Cave, Cremation Cave, Hermit's Cave, Williams Cave, Goat Cave, Anderson Canyon Cave, Wild Horse Cave North Three Forks Cave, Burial Cave, and Pratt Cave have yielded chipped stone tools including large corner-notched projectile points, various styles of scrapers, drills, choppers, and cores. Wooden fire drills, digging sticks, atlatls, darts, combs, storage tubes and wands, bone awls, basin metates and one-hand manos, woven articles of high quality such as yucca mats, coiled and twined basketry in differing colors, woven bags, fiber cordage, cloth netting, braided hair rope, woven sandals of at least four different kinds, jewelry made from shell beads, shell seeds, reed and bone segment beads, fresh water mussel shell — almost certainly from the Pecos River — turtle or tortoise shell, and bracelets made from *glycimeris* shell, originating in the Gulf of California. Structures include storage cisterns, some unlined, others constructed with stone grass, bark, twigs or some combination of these materials. This broad complement of materials offers a full picture of Archaic life.[6]

The final phase identified by archaeologists, the Terminal Archaic, shows how completely these peoples adapted to their surroundings in the course of the previous 5,000 years. In this era, the differences between the Guadalupe Mountains and the riverine environments along the Pecos River created different chronologies of inhabitation within a very small geographic area. Called the Hueco Phase in the Guadalupe Mountains, where it ended by about 200 A.D. and the Brantley Phase on the Pecos River, where it lasted until about 750 A.D., this era revealed that by this time, population had begun to grow in size and become even more localized. Pithouses flourished on the region's peripheries; archaeological evidence from the area around El Paso shows both pithouses, depressions that housed prehistoric structures, and plain brownware ceramics being used by the very end of the period.[7]

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[5] Whalen, "Moving Out of the Archaic on the Edge of the Southwest," 622-38; Katz and Katz, "Pecos Past," 35-41; for the best summary of this era in prehistory, see Cordell, *Prehistory of the Southwest*, 181-244.

[6] James E. Bradford, *Upper Dog Canyon Archaeology*: *Guadalupe Mountains National Park* (Santa Fe: National Park Service, Southwest Cultural Resources Center, 1980), 6-7.

[7] Whalen, "Moving Out of the Archaic on the Edge of the Southwest," 624-28; Katz and Katz, "Pecos Past," 41-42; Clifton, "An Archaeological survey of 26 Miles of the Boundary of Guadalupe

In the subsequent time period, labeled the Mesilla Phase by archaeologists, the patterns of the Terminal Archaic period become the dominant ways of living in southeastern New Mexico and far west Texas. Mesilla Phase sites closely resembled their Terminal Archaic predecessors, except that they grew in size and became more complex. The first appearance of burned rock rings, often called ring middens or mescal pits in the archaeological record, occurred in this era. The rings functioned as ovens for roasting plants, sometimes repeatedly, suggesting, repeated seasonal use of the same locale, a ceremonial sequence, and perhaps longer stays in numerous places. As new rocks were added to a rock ring to replace rocks that no longer held heat, the ring middens grew larger. When discovered by archaeologists, some middens were as tall as six feet. Typically, Mesilla Phase people roasted the three indigenous types of agave as well as datil and sotol in their middens. After mature agave plants, the most pleasing and nutritious ones, were harvested in late spring and early summer, the roasting took place. The people dug pits and started fires within them, then placing the agave close to the coals. The roasting area was filled with vegetation, rocks, and other materials to hold the heat, while not extinguishing the coals. When the agave was thoroughly cooked — which sometimes took days — it was taken from the pit and ground into a flour. This was a prime source of nourishment for the Jornada people, whom most archaeologists describe as the Late Prehistoric people of the Mesilla Phase.[8]

Despite the addition of foods such as agave to their regime, these late prehistoric Jornada people followed the patterns of most southwestern prehistoric peoples as they moved from preceramic hunting and gathering to agriculture. Like their predecessors in earlier phases of Archaic life, they lived along the rivers and the flood plains, even though agave was a higher-elevation plant that required that they leave the river valleys to seek. Yet compared with their predecessors, the late prehistoric Jornada appear to have chosen sedentary living — with all the intensification of economic strategies that it required — over the mobility that meant relying on hunting and gathering. They undertook a greater number of activities at a significantly larger number of locations on an evidently more consistent and recurrent basis.[9]

The Archaic people of southeastern New Mexico and trans-Pecos Texas did not acquire agriculture, which had swept north from what is now Mexico in most places by 1 A.D., until much later than others in surrounding areas. Since the end of Paleo era, the region had not looked promising for agriculture, and only specific circumstances could have propelled Archaic people to this new strategy. Some scholars believe that agriculture became a significant addition to the lifestyle of these people only around 900 A.D., when environmental circumstances in the region matched a long-standing need of its

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Mountains National Park, Culbertson and Hudspeth Counties, Texas," 9.

[8] Whalen, "Moving Out of the Archaic on the Edge of the Southwest," 624-28; Katz and Katz, "Pecos Past," 41-42; Clifton, "An Archaeological survey of 26 Miles of the Boundary of Guadalupe Mountains National Park, Culbertson and Hudspeth Counties, Texas," 9.

[9] Whalen, "Moving Out of the Archaic on the Edge of the Southwest," 625; Katz and Katz, "Pecos Past," 42-43.

people. Declining options made agriculture a necessity. The late adaptation to agriculture underscored the marginality of the east side of Guadalupe Mountains and the Pecos River region.[10]

The greatest difference between the peoples of the Mesilla Phase and their predecessors was the way they responded to winter's demands. The Mesilla Phase winter sites show a wider variety and a far greater number of tools and accouterments; its structures are larger and sunk deeper into the ground than prior sites. As the population grew throughout the early stages of the Mesilla Phase, the need for more substantive provisioning forced groups to plan for the longer term. The pattern of intensive occupation that the Mesilla Phase sites display revealed their adaptation to the needs of a greater number of people. By 500 A.D., the people of the lowlands show the traits archaeologists ascribe to the Jornada as well as significantly increased quantities of materials they stored. Using camps built during the spring and summer, the best times of the year for hunting and gathering, they stored some of their bounty within individual dwellings and even more in larger storage pits outside. The increased storage suggested that they had more mouths to feed and for longer durations.[11]

Between about A.D. 750 and 1150, during an extended period of great and rapid cultural transformation, the cultural characteristics of the people of southeastern New Mexico and far west Texas continued to follow the regional pattern. Population grew considerably, although no estimate of actual growth has yet been made. Before 750 A.D., the people of the region acquired a number of new strategies that had an important impact on the way they lived. After 900 A.D., people whom archaeologists clearly identify as Jornada Mogollon, a Late Prehistoric Mogollon culture, flourished in the area, using their characteristic brownware pottery on this very extreme eastern end of the range of Mogollon culture, which stretched into southern Arizona. Their outstanding variety and quantity of stone tools, many of which paradoxically were poorly fashioned in the rough Cochise tradition — an earlier and more basic southwestern prehistoric culture — attested to their technical sophistication in relationship to other groups of the same time. Agriculture became much more intensive; the use of cultivated plants increased as did the number of plants farmed; the large outside storage pits became more common; and the winter sites had more provisions than ever. Pithouses and pueblos, aboveground multiple dwellings, appeared within the larger region, especially to the west near the Rio Grande in what is now El Paso, providing evidence of a trend that led to sedentary living and river-basin agriculture. The bow and arrow, an acquired weapon, became part of the Jornada arsenal. Trade goods, especially ceramics such as brownware, entered the area. Some were made locally, but more typically they originated in the El Paso and Pecos areas, following a pattern of trade and cultural blending that accompanied pottery north from its origins in what is now Mexico. The pottery suggested more than local ties as well as a possibility of links to greater trade networks emerging in the Southwest and Mexico. Living on the periphery of the Mogollon realm, the Jornada people participated in this

[10] Simmons, Stodder, Dykeman, and Hicks, "Human Adaptation and Cultural Change in the Greater Southwest," 69-70; Whalen, "Moving Out of the Archaic on the Edge of the Southwest," 627.

[11] Whalen, "Moving Out of the Archaic on the Edge of the Southwest," 633.

exchange, refreshing cultural ties that could become slack with distance and acquiring new goods, rituals and traits, and sometimes food. The trade in brownware ceramics expanded until about 1150 A.D., and soon encompassed exchange with areas such as Sierra Blanca to the northeast and the Roswell area to the north. Trade relationships, nearly absent during even the last phases of the Archaic period, grew in importance as goods helped make regional life easier, qualitatively better, and culturally more consistent.[12]

Social changes accompanied these more intensive Jornada regimes that increased their ability to provide for a growing population. The creation of social structures that divided the world into people entitled to the bounty and people who were not, the figurative "us" and "them," became typical of such transformations from Australia to the Great Basin of the intermountain American West. Scholars anticipate that a formalization of rules characterized this transformation, and the discovery of communal structures as well as the rising population and the increased intensity of agriculture offers strong supporting evidence. By the end of this phase, about 1100 A.D., population pressure, more intensive subsistence activity, and more highly organized social forms and possibly decision-making processes suggested that winter camps verged on becoming semi-permanent. After more than two thousand years of wandering in southeast New Mexico and far west Texas, the Jornada people began to settle in specific places. These settlements became the precursors of the region's Pueblo Period communities.[13]

Trade and cultural interaction with the Anasazi to the north had an important impact on Mogollon culture. As they adapted to the mountainous areas they came to prefer, Mogollon people became woven into a larger network of peoples in the Southwest through trade, ritual, and other formal and semiformal relationships. These relationships accelerated their transformation from hunting and gathering roots to the agricultural base common among other southwestern prehistoric peoples and came to sustain the Jornada. It also gave them an advantage in the range of cultural and territorial disputes that cropped up with hunting and gathering peoples. While the hunters and gatherers depended almost completely on their foraging, the semi-sedentary Jornada could rely on their store of crops and their trade relationships to sustain them through crises. The realities suggested a longevity for Jornada people that hunting and gathering classes could not hope to match.[14]

Better equipped and better fed, Jornada people could experiment with new strategies of existence. As their interest grew in agriculture, particularly in the Pecos River and Rio Grande drainages and to a considerably lesser degree in the smaller river basins, it created a steady if sometimes meager bounty that could be used to support adventures aimed at new, more diverse, and even better sources

[12] Katz, "Pecos Past," 46-47; Martin, "Prehistory: Mogollon," 61-66; Whalen, "Moving out of the Archaic on the Edge of the Southwest," 633-34.

[13] R. L. Hunter-Anderson, *Prehistoric Adaptation in the American Southwest*, (NY: Cambridge University Press, 1986), 43; Whalen, "Moving out of the Archaic on the Edge of the Southwest," 635.

[14] Martin, "Prehistory: Mogollon," 71-74.

of food. The Jornada Mogollon peoples also ventured to the uplands for their dwellings as had the Paleo people of more than 6,000 years before, favoring ridges, high mesas, and bluffs that were far from main travel routes. Leaving the rivers and the flood plains, they initiated occupation of higher elevation sites at a much more rapid pace than any of their predecessors since the end of the Paleo-Indian period. Many of the upland sites where archaeologists have discovered initial habitation date from the Mogollon era; only rarely do such places show evidence of prior occupation.[15]

Agriculture offered the greatest change in patterns of living adopted by the Jornada Mogollon. As they gained knowledge, farmers exerted much greater control over their environment than could the roaming hunters who preceded them. In response to population growth and environmental conditions, by about 1100 A.D., most of the Jornada people became agriculturalists; the rest remained hunters and gatherers. The practice of semi-sedentary agriculture also may have created conflict over resources with hunting and gathering groups, even when the peoples who practiced these two different styles were closely related. Over just a very few generations, systems of living took precedence over rapidly diminishing blood or kinship ties. Agriculturalists limited the opportunities of hunters by growing crops in river valleys and by aggressive pursuit of game in localized areas, and made gathering more difficult. The river valleys favored by sedentary people were prime locations for nomads in search of plant life in a semiarid region. Simultaneously, agriculturalists engaged in forays against hunters and gatherers, presumably to protect their resources. It was a new form of the earlier division between "us" and "them." Hunters struck back, raiding the granaries and other stores of food that soon became the most heavily guarded and hardily constructed structures that the sedentary Jornada Mogollon possessed. But the agriculturalists enjoyed a distinct advantage that resulted from their crops; the ability to store food for extended periods allowed greater attention to other activities. Over time, hunting and gathering groups faced a dramatic choice: either become farmers, remain hunters and gatherers and leave the areas where sedentary people dominated the resource base, or stay and risk extinction.[16]

Agriculture came late to this periphery of the pre-Columbian world. In the Southwest, the transformation to agriculture began before 2000 B.C., and developed first throughout the core areas of the three main culture groups — the Anasazi, Hohokam, and Mogollon. Agriculture on the peripheries of these cultural groups, in places such as southeastern New Mexico and far west Texas, developed more slowly and much later in time. The Gila and Salt river basins to the west showed the earliest examples of significant reliance on agriculture, dating from as early as 300 A.D. At least one community

[15] Katz and Katz, "Pecos Past," 47; Katz, "Late Prehistoric Period Environment and Economy of the Southern Guadalupe Mountains, Texas," 16-17.

[16] Martin, "Prehistory: Mogollon," 61-66; Whalen, "Moving out of the Archaic on the Edge of the Southwest," 635; Simmons, Stodder, Dykeman, and Hicks, "Human Adaptation and Cultural Change in the Greater Southwest," 70; for a more general discussion, see Katherine A. Spielman, "Coercion or Cooperation? Plains-Pueblo Interaction in the Protohistoric Period," in Katherine A. Spielman, ed., *Farmers, Hunters, and Colonists: Interaction Between the Southwest and the Southern Plains* (Tucson: University of Arizona Press, 1991), 36-50.

from that era, Snaketown, about twenty-five miles from what is now Phoenix, Arizona, revealed occupation throughout the year instead of seasonally. After 500 A.D., the role of agriculture throughout the region rapidly grew in significance, transforming the lives of the people with whom it came in contact. The southeastern New Mexico and far west Texas area lagged behind these regional developments by as much as 200 years.[17]

Despite the great changes that took place, the people of this time of new technologies and strategies continued to share many characteristics with those who had preceded them. Agave remained a staple of their diet and the use of rock rings continued. An increasing quantity and diversity of projectile points illustrated the ongoing importance of hunting and perhaps point to a diversity of weapons such as spears used in pursuit of game. While cultural, social, and economic changes affected life, a significant number of factors in the lives of the Jornada remained constant. People from earlier eras would have recognized the lives of these Mogollon people and might very well have envied them the abundance of agriculture, trade, and hunting techniques.

By 1150 A.D., the appearance of painted ceramics, categorized by archaeologists as the El Paso Polychrome and Three Rivers Red-on-Terracotta, suggested a more integrated but also predominantly localized network of trade for the region's Jornada people. Elsewhere in the Southwest, painted ceramics were part of a growing trade network that became central to the future of the region; at Mesa Verde, Chaco Canyon and throughout northern New Mexico, an array of painted pottery representing various cultures and points of origin became common. In the far reaches of Jornada Mogollon culture, near the Guadalupe Mountains, painted pottery mixed with the traditional brownware of the region, suggesting that the people of the region had little to offer in trade in comparison with the Mogollon culture's core areas.[18]

The realities of the region have encouraged archaeologists to speculate that Archaic-style culture endured much later in this peripheral southeastern New Mexico and trans-Pecos area — perhaps until European contact. Advocates of this idea point to the common features of late Archaic life, the ways in which the practices of people in the region did not change. Those who argue against this premise point to the new adaptations of the period — agriculture, trade and local production of ceramics, and other features that suggest broader commonality with the sedentary world along the Rio Grande and in western New Mexico. Current evidence supports both perspectives, and the safest supposition is that throughout southeastern New Mexico agriculture existed in close proximity with hunting and gathering.[19]

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[17] Woodbury and Zubrow, "Agricultural Beginnings: 2,000 B.C.-500 A.D.," ; Simmons, Stodder, Dykeman, and Hicks, "Human Adaptation and Cultural Change in the Greater Southwest," 69; David E. Stuart and Rory P. Gauthier, *Prehistoric New Mexico: Background for Survey* 2nd ed., (Albuquerque: New Mexico Archaeological Council, 1984), 268.

[18] Martin, "Prehistory: Mogollon," 61-62; Katz and Katz, "Pecos Past," 47-48; Susan Marjorie Applegarth, "Prehistoric Utilization of the Environment of the Eastern Slope of the Guadalupe Mountains, Southeastern New Mexico." Ph.D. diss, University of Wisconsin-Madison, 1976.

[19] Simmons, Stodder, Dykeman, and Hicks, "Human Adaptation and Cultural Change in the Greater

Despite its peripheral status, the Guadalupe Mountains-Carlsbad Caverns region shared many traits with the rest of the pre-Columbian world. By 1350 A.D., the people of this remote region enjoyed cultural, economic, and technological ties with the core Mogollon world, and through it, to the Anasazi, Hohokam, and increasingly the hybrid Chichimecan cultural tradition that rose in northern Mexico. Yet in the region between the Pecos River and the Guadalupe Mountains, the ties were not as strong as along the Rio Grande or elsewhere within the main currents of prehistoric influence and trade. Southeastern New Mexico and far west Texas remained more isolated than other places with the Mogollon world, far from the dominant vectors of the era. Despite the appearance of many cultural adaptations, the persistence of brownware pottery offers insight into the situation. The painted pottery was more aesthetically pleasing than the plain brownware, but the imported colorful pots were either hard to obtain or beyond the economic reach of the region's inhabitants. Compared with other areas in the Southwest, the continued brownware production along the Pecos River and toward the Guadalupe Mountains illustrated both its ties to the south and how marginal the region that produced it remained.[20]

This remote region was also susceptible to the same forces that affected the core cultures that helped sustain it. The Jornada hold on survival was more tenuous in the Guadalupe Mountains than along the Rio Grande, and the complex of social organization, structures, and other features of life in the region during this phase shows considerably less diversity in the mountains than along the rivers. As a result of its peripheral status — of weaker trade ties, less desirable land and economic opportunity, and a far more scattered and loosely linked population — impact on the core areas of their culture necessarily affected the people of the periphery much more heavily than it did closer to the central institutions and locations of Mogollon culture. In the Guadalupe Mountains and along the Pecos River, the cultural ties played a significant role in defining the people as part of a larger group. The Jornada Mogollon east of the Rio Grande and away from El Paso found themselves on a weak limb of the Mogollon world. They had the ability to stave off disaster from local sources, for they could depend on the core of Mogollon culture to help. But they had little defense against problems that emanated outward from the heart of their culture.

Toward the end of this era, the relationships that sustained the region showed signs of fraying. The dual pattern of agriculturalists and hunter-gatherers began to break down around 1300 and was certainly complete by 1350. Some archaeologists suggest that this change resulted from a period of deteriorating environmental conditions such as the periodic droughts that affected other parts of the Southwest. Others believe it resulted from the decline of bison in southeastern New Mexico and trans-Pecos Texas, and their greater availability, along with other game animals, elsewhere. Archaeologists think that the greatest opportunities to hunt bison between the Pecos River and the Guadalupe Mountains occurred in two separate eras: the period between about 1250 and 1300, and the period

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Southwest," 112-14; Stuart and Gauthier, *Prehistoric New Mexico*, 259.

[20]Charles C. DiPeso, "Prehistory: Southern Periphery," 152-56; Katz and Katz, "Pecos Past," 47, indicates that painted pottery "may represent a purely aesthetic change."

beginning in about 1450 and continuing for a century. A major bison kill site, a place where prehistoric people successfully killed numerous bison, at Garnsey in the vicinity of Roswell dates from about 1450; instead of the bison cows that were the targets of such efforts on the northern plains, bulls were the focus of this endeavor. The kill occurred in the spring, the time of year when hunter-gatherers struggled to survive the end of winter and find new sources of food. The higher-fat content bulls reflect a seasonal need for more fat in the diet. The Garnsey site also suggests increasingly availability of this animal; the hunters were selective about the animals they butchered, likely an indicative that they were not worried about future sources of meat. In this later time, the three-century-long Little Ice Age had begun to cool the planet, making the once hotter climate of the southern plains more attractive to the powerful animal and its human predators.

When the entire Southwest experienced a localized series of droughts about 1300, the people of the region's peripheries experienced a tremendous impact. Agriculturalists retained great power as long as their crops continued to produce, but without a consistent yield they too were subject to the forces of the hunting and gathering world. This dislocating change in economic and most likely cultural relationships put great pressure on agriculturalists. Some certainly returned to hunting and gathering, possibly even joining extant bands of long-lost relatives, who at the time were probably venturing farther and farther to find the game that sustained them. Others withdrew back toward the core of the culture, much as had the people of the great southwestern prehistoric sites of Mesa Verde and Chaco Canyon as their world declined merely 200 years before. Climatic change may have caused this departure, but the limits of the attributes of the physical environment and of trade ties made it a reality always on the horizon. The periphery of any culture remained difficult to sustain even into the twentieth century.

While the agriculturalists departed for better land much closer to water as higher levels of rainfall ended, hunter-gatherer groups, including some recently sedentary Jornada people, responded by becoming highly nomadic hunters, living off larger and increasingly easy to find expanding buffalo herds to the north and east, acquiring greater mobility as a result of using dogs as beasts of burden, and establishing a wider range of living. In effect, environmental change and the problems it created compelled the division of the Jornada people into two groups. One presaged the nomadic Plains peoples, later given range and strength by the horses that arrived with the Spanish. The other more closely mirrored the Pueblo peoples of the Rio Grande spine and of the northern Pecos River in its sedentary living and dependence on cultivated crops. Some linguists point to this split as an explanation of the perplexing similarity of the Pueblo Towa dialect and the Plains Kiowa language. This varied form of development revealed the marginal status of the periphery of the Mogollon sphere even in the prehistoric world. Agriculture in the region simply could not sustain the number of people who inhabited it. On the margins, in the worst locations for agriculture, hunting and gathering persisted and adapted to both the growing population and long-standing trends toward a warmer, drier climate.[21]

[21] Lynne Sebastian and Signe Larralde, "Living on the Land: 11,000 Years of Human Habitation in Southeastern New Mexico," (Roswell, NM: Bureau of Land Management, 1989) Cultural Resources Series No. 6, 93-94; for the question of who hunted bison and who traded for their meat and skin, see Spielman, "Coercion or Cooperation?" 42-48. Nancy P. Hickerson, "Jumano: The Missing Link in South Plains

Agriculture as a way of life was also doomed in this peripheral region. The crops on which sedentary Jornada groups depended thrived in river valleys; there were few of these east of El Paso across the Salt Flats and in the Guadalupe Mountains, and most river valleys were too high in elevation to offer a suitable growing season. The Pecos River was the largest valley in the area and it could sustain a sizable population. Elsewhere, successful agriculture was contingent on favorable weather conditions and available water. Agriculture, even in the river basins, became a dangerous strategy as technological innovation and other changes helped foster an expanding population. With scarce resources and more people clamoring for them, the bounty of agriculture, increasingly fragile, had to be divided more and more ways. The result was greater pressure on agriculturalists and the land they used, on game animals, on water and on every other available resource in the immediate vicinity.[22]

Outside pressure also came to bear on this periphery, severing or curtailing ties to other parts of the prehistoric world. Between about 1000 and 1350, most of the Southwest experienced severe environmental change that disrupted existing communities. At Chaco Canyon during the eleventh and twelfth centuries, one form of Anasazi culture reached an apogee. A rapid decline, likely a result of changing environmental conditions, overuse of available resources such as timber, and perhaps the collapse of other locations to the north and even to the south that were tied both through trade and ceremonial relationships, followed. By 1200, the Chaco Complex was abandoned. Mesa Verde was also abandoned during the subsequent 100 years, as were many other Pueblo locations. These people retreated from these desertifying outposts and migrated closer to sources of sustenance. Some scholars attribute the development of the western pueblos and those along the Rio Grande to this retreat.

The peripheral status of southeastern New Mexico and far west Texas exacerbated the problems prehistoric people experienced in other places in the Southwest. As life became much harder on this periphery, pre-Apachean peoples about whom archaeologists know little descended the western part of the Great Plains and arrived in the region; on their heels were the Athapaskan peoples, the forerunners of the Apaches who had driven their predecessors from the plains. Archaeological evidence indicates that Rattlesnake Springs, near the mouth of Rattlesnake Canyon in the Guadalupe Mountains, served as a camping site for Apachean or at least Athapaskan peoples, and Slaughter Canyon and its pictographs show evidence of an Apache presence. Experts disagree on when the collapse of agriculture occurred in southeast New Mexico and far west Texas, but all are certain that by 1300, the agriculturalists were in hasty retreat from this area as the environment deteriorated for agriculture, as hunters and gatherers pursued proliferating buffalo onto the plains, and as other peoples pushed into the area. What the land once promised it could no longer deliver to Jornada people, and subsistence

History," *Journal of the West* Vol. 29 No. 4 (October 1990): 5-12.

[22] Michael S. Foster and J. Charles Kelley, "An Archeological Overview of the Western Trans-Pecos, Texas, With Reference to the Archeology of the Salt Basin Area," in "Archeological Investigations in the Three-Mile And Sulpher Draw Watershed, Culberson County, Texas," *The Artifact* Vol. 27 No. 3 (1989).

cultures contended with a recurring problem: finding a new place that could give them what they needed.[23]

Throughout southeastern New Mexico and far west Texas, signs of Jornada use declined after about 1150. Regional variation among peoples became more acute, as different groups sought out strategies for survival. Fewer artifacts in a smaller number of places suggest a decline in population, and the level of technological sophistication diminished. Although many of the same physical features remained, the increasing sparseness of settlement strongly suggested that the Jornada peoples were leaving the area. Trade continued with other places within the region, especially the Sierra Blanca area, closer to the Rio Grande, but it became more limited than before. All indications affirm that Jornada use of this region peaked at or before 1150, and subsequent Jornada life was part of an extended retreat from this marginal region. After 1450, almost no signs of habitation persist in formerly resource-laden areas, and the Jornada people, both agriculturalist and hunters and gatherers, canvassed elsewhere in search of new and more promising living accommodations.

After about 1450, the remnants of the sedentary Jornada people clustered around waterways and eked out their subsistence from the Pecos River and its offerings. Their range had shrunk considerably; their ability to provide declined as well. They needed the river even more than ever, looking to it as a source of food as well as sustenance. Freshwater mussels found in the river became a dietary staple. Small groups of people — most probably families or kinship networks made up of groups of families — gathered food and other necessities. A smaller population helped make survival possible, but the prospects were not very good. A tipi ring, the circle of stones typically found in locations where Native Americans erected their cone-shaped, hide-wrapped structures, found near the location of the modern Brantley Reservoir offered an anomalous piece of evidence. Difficult to date accurately, the tipi ring may demonstrate the arrival of plains nomads, cultural exchange or accretion between Jornada people and incoming plains peoples, or evidence of the changing culture of the hunter-gatherer branch of the Jornada. The tipi shows one fact of life for certain: the Jornadas were losing control of the region that sustained them.

As their departure turned into demise, greater geographic divisions existed in the region's patterns of life. Jumano people, typically understood as an outgrowth of the Jornada people or as people who "became" Jornada through close cultural links and diffusion, rose to prominence in the region. Most accounts closely link the Jumano to the Cochise group, a strain of what can be described as a generic prehistoric desert culture that existed from as early as 7,000 B.C. to as later 750 A.D., and flourished around 3000 B.C.; Jumano language was either a Tanoan dialect, similar to those of Taos, San Juan, Isleta, Jemez, and Pecos pueblos, or Caddoan, of a piece with the language of the Caddo people to the east across the Trinity River in eastern Texas whose range extended into Arkansas and

[23] Sebastian and Larralde, "Living on the Land," 95; Katz and Katz, "Pecos Past," 45-47; Katz, "Late Prehistoric Period Environment and Economy of the Southern Guadalupe Mountains, Texas,"52-53. M. Jean Tweedie "Notes on the History and Adaption of the Apache Tribes." *American Anthropologist* 70, No. 6 (December 1968): 1132-1142.

possibly Kansas and Missouri. Each scenario projects a different origin for these pivotal but obscure people. When the Spanish made contact in the early 1540s, the Tanoan language dominated much of the Rio Grande and was spoken as far south as the confluence of the Rio Grande and the Rio Concho and on into the deserts of Chihuahua; Caddoan languages extended across the plains from the Texas area toward the Pecos River, the Guadalupe Mountains, and beyond to the Rio Grande.

From whichever direction they emerged, the Jumanos first become identifiable during this era. Limits on the early Jumanos probably came from surrounding groups with different cultural traditions and languages, but over time the relations between Jumano peoples and other groups became more peaceful. The shared sense that the South Plains was open and large enough for many helped maintain the calm. In southeastern New Mexico and far west Texas, trade became the nomadic Jumano forte, as they brought bison hides and meat to the settled Tanoan villages near the Rio Grande and goods back to the plains that the Jumanos distributed among the hunters who entrusted them with hides. Material evidence of trading ties such as pottery, sandals, fabrics, weapons and projectile points, and baskets substantiates the importance of trade. Along the Canadian River in modern Oklahoma, Plains village agriculturists, perhaps Tanoan from the west or Caddoan from the east and southeast, settled, while hunters and gathers roamed the *Llano Estacado*, the staked plains of what is now west Texas. By the time of the Spanish *entrada* in 1540, the Jumanos had become a recognized force in the pre-contact world.[24]

On the plains east of the Rio Grande, other peoples fiercely contested Jumano dominance. Athapaskan peoples, the Apachean groups, splintered and became a series of distinctive regional bands on both sides of the Rio Grande. East of the river, they battled Jumano peoples for control of trade, for access to resources, and for territory. Their cousins to the west, the "Apaches du Navaho" or the Navajos of today, headed south along the western edge of the Colorado Plateau. The Apachean encroachment in the eastern Southwest started slowly from the north, in part driven by simple population expansion, in part by the appearance on the South Plains of the people who became known as the Comanches. A sequence of successive conquests began, with the Athabaskan Apachean peoples expanding southward from the central plains to the southern plains, attracted by the seemingly wealth of the region and the trade network of the Jumanos. The Comanches followed close behind. By the time the Spanish arrived, the Jumanos found their horizons challenged, at least at the northern end of the vast range they regarded as their own.[25]

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[24] Nancy P. Hickerson, "Jumano: The Missing Link in South Plains History," *Journal of the West*, 29 4 (October 1990): 5-7; Whalen, "Out of the Archaic on the Edge of the Southwest," 634-36; Sebastian and Larralde, "Living on the Land," 97.

[25] Hickerson, "Jumano: The Missing Link in South Plains History," 10-12; scholars vary widely on the question of who the Jumanos were. Some, such as Hickerson and Elizabeth A. H. John, indicate Tano roots; others perceive them as a break-off from the Caddo people. Increasingly evidence suggest Jornada Mogollon roots, and a split in the late-Archaic-proto-historic period that made some Jumano hunters and gatherers, nomads on the plains, and others agriculturalists at places such as Salinas, New Mexico. Others suggest that the Tompiro Pueblos were actually Jumano. At the moment, there is no overwhelming

Jumano contact stretched far and wide, and numerous native peoples might have had contact with those who inhabited the Carlsbad Caverns-Guadalupe Mountains region. Pueblo people such as the Hopis to the north, Zunis in what is now west-central New Mexico, the Keresan-speaking people of Rio Grande Valley, the people of Zia Pueblo, the Manso and Suma of the El Paso area, and the Piro of the fringes of the Rio Grande Valley, Kiowas from the plains, Tiguas, nomadic Apache bands who arrived in the area after Vázquez de Coronado came north, and finally the nemesis of the Apaches, the Comanches, who arrived after the Apaches. On the periphery of this region, Plains-style villages existed and interacted with the southwestern world. The southernmost known expression of this culture occurred at Antelope Creek in what is now the Texas Panhandle, where people who evinced the traits of Plains culture lived beginning about 1200 A.D., and remaining until early in the sixteenth century. Toward the end of this period, consistent and heavy trade between the people of Antelope Village and the pueblos developed, in the aftermath of the collapse of the trade center of Casas Grande in northern Mexico and as the arrival of the people of the Four Corners region along the Rio Grande spine disrupted trade networks to the north. As a result, more comprehensive patterns of trade developed — including Plains people, Jumanos, and Pueblo people. The most mobile of the groups, the Jumanos, played a valuable role in this process. Scarce resources and the Jumano trade networks drew other peoples to their regions to trade at the *rancherias,* the small homestead-like base that the Jumanos inhabited.[26]

Before the arrival of the Spanish, a complex Native world existed that sometimes occupied the Carlsbad Caverns-Guadalupe Mountains region. For Paleo and early Archaic peoples, the Guadalupe Mountains-Carlsbad Caverns region was largely bereft of the natural resources that led to levels of organization found elsewhere in the Southwest. Culture, climate, and resources offered the best measures of the way in which native peoples used their world, and their successes, measured by longevity, depended on their ability to adapt. As the more than 10,000-year trend toward a more arid and warmer climate continued, life became more difficult for people throughout the Southwest and the Southern Plains. Agriculture both solved and exacerbated existing problems; agriculture provided the constant supply food that promoted population growth, which in turn made continued survival more difficult. In the estimation of many archaeologists and anthropologists, the apex of pre-Columbian inhabitation of southeastern New Mexico and far west Texas occurred between about 700 A.D. and about 1200 A.D., just before a dramatic climatic change in the form of drought and the first arrival of Athapaskan peoples began. For the Jornada people, who most regard as the forerunners of the Jumanos and some of the Tanoan-speaking southern pueblos, these twin changes forced difficult tactical decisions on which their very survival hinged.

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preponderance of evidence; the author is most persuaded by the Jornada Mogollon to hunter-gatherer and agriculturalist argument, which accounts fro the predisposition here to regard the Jumanos as Tanoan.

[26] Christopher Lintz, "Texas Panhandle-Pueblo Interactions from the Thirteenth Through the Sixteenth Century," in Spielman, ed., *Farmers, Hunters, and Colonists*, 89-105.

The relationship of the region's people with northern Mexico remains unclear for most of the time period, and becomes especially murky after 1150, more than 300 years before the first written chronicles appear, when on-the-ground evidence diminishes greatly. Many scholars find entirely plausible the notion that before the coming of Apachean peoples, the subregion was a northern offshoot of the core areas of Mexico rather than an adjunct to the plains or northern pueblo people. The southern spread of the Tano language and its reach into Mexico as well as the power of the Chichimeca cultural tradition to the south in what is now central and northern Mexico suggest that no less than firm trading ties existed between Tanoan speakers and their southern and more powerful neighbors. Although most of the evidence in the Guadalupe Mountains region reveals more local patterns of trading, some cultural influences such as painted pottery typical of Casas Grande and the Chichimeca world show how pervasive the influence of northern Mexico had become on the Mogollon Tano-speakers.

The departure of agriculturalists from the region remains the subject of a great deal of speculation. Some scholars suggest that the region was an edge area between competing cultural groups as late as the tenth century; the competition among culture groups for the resources in the area and the prospect of war would likely meant that hunting in such places was less thorough, leaving a greater bounty for any group that eventually established control there. Yet like most semiarid edge areas, the region was fragile, its apparent bounty the result not of consistent use, but of under use. The edge-area scenario also links the region more closely to the rest of the Pueblo world. If accurate, the demolishing of the edge areas would have contributed to the end of agriculture in the region in a time frame that may also coincide with the abandonment of more famous locations such as Chaco Canyon and Mesa Verde. Clearly, changing climate, growing population, and the use of resources that did not easily replenish contributed to the near abandonment of southeastern New Mexico and far west Texas.

One result is indisputable. By 1540, when Vázquez de Coronado arrived, hunter-gatherers had returned to dominance in the region. Except for small settlements in river valleys such as the Pecos, people moved through the region in search of game and other food. Unlike in the Archaic era, when the vectors of living moved people toward sedentary agriculture, after about 1300, the peoples who passed through southeastern New Mexico and trans-Pecos Texas increasingly saw the region as a location for seasonal use. Their life comprised the many resources they gathered and for which they traded. By this time, Native Americans routinely traversed the region, deriving sustenance from it as they passed through but rarely stopping to develop any sedentary pattern of settlement. As Europeans approached, the Guadalupe Mountains-Carlsbad Caverns region was on the periphery of the Meso-American and the prehistoric southwestern world, a place people tried to settle but over time found inadequate to their needs.