HARVEST PRESSURE AND ENVIRONMENTAL CARRYING CAPACITY: AN ORDINAL-SCALE MODEL OF EFFECTS ON UNGULATE PREY

Steve Wolverton

Zoarchaeological studies that demonstrate long-term changes in human foraging efficiency generally cite one of two factors as causal: (1) fluctuations in prey availability that relate to human harvest rates (sensu Broughton 1999; Casson 2000, 2003; Nagaoka 2002a, 2009b; Stiner et al. 1999, 2000), or (2) changes in prey availability that relate to inferred habitat fluctuations, such as those related to climate change (Byers and Broughton 2004; McMillan and Klippel 1981; Wolverton 2005). The conclusion that human harvest rates affected prey availability through time (e.g., exploitation depression) can be strengthened by determining that changes in prey choice, diet breadth, and/or prey mortality fail to correlate with prehistoric climate changes using independent environmental datasets, such as pollen records and oxygen isotope data (e.g., Broughton 1999; Stiner et al. 1999). The gold standard with which to study long-term changes in foraging efficiency has been taxonomic abundance data derived from zoarchaeological assemblages. It is possible, however, for the zoarchaeologist to approach these same issues with additional lines of evidence from within zoarchaeology without relying solely on independent environmental datasets. There are important ecological parameters of prey, ungulates in particular, that can be used to distinguish human harvest impacts on prey populations from those caused by fluctuations in food availability related to environmental change. A model of the interrelationships of prey mortality and prey body size provides greater analytical potential than either variable does on its own for studies of foraging efficiency in subsistence hunting economies.

Morphometric data (sensu von den Driesch

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THE MEXICAN CONNECTION AND THE FAR WEST OF THE U.S. SOUTHEAST

Nancy Marie White and Richard A. Weinstein

New World archaeologists have long agreed that there was prehistoric cultural interaction between the southeastern United States and Mesoamerica, but seldom are the details of such potential relationships discussed, especially recently. The fur- ther westward extent of Southeastern cultural influences, as shown through the distributions of fiber-tempered pottery, Architectural and Woodland mounds, later platform mounds, ceramic styles, and other material culture, seems to be an asset Texas. Only a few Mexican artifacts have been found at the edges of the Southeast—artefacts at Tyas and coastal Texas, especially pottery extending northward from Mexico into southern Texas—though general ideological connections, not to men- tion the sharing of native agriculture, seem obvious. In northeast Mexico, outside the Mesoamerican heartland, Mexican people made artifacts similar to types in the Southeast. But long-distance interactions overlaid or via the Gulf of Mexico were apparently sporadic, despite some common cultural foundations. Strong Southeastern cultural identities plus the pres- ence of the north Mexico South Texas desert may have disengaged movement into the Southeast of many important Mesoamer- ican traditions, such as cotton growing and beer drinking.

Por mucho tiempo arqueólogos del Nuevo Mundo han estado de acuerdo en que hubo influencia prehispánica entre el Sudeste de los Estados Unidos y Mesoamérica, pero poca vez se han ahucado las detalles de estas relaciones, especialmente en los últimos años. La escasa del uso el influjo cultural del Sudeste es el lado este de Texas, mostrando por las dis- tribuciones de los cerámicas muy tempranas tempranas del filo de pisos, montículos muy tempranos del artefacto y otros formas de material cultural. A los margenes del llano oriental se encuentran varios artefactos mesoamericanos—ofrendas de Moctezuma y Quetzalcoatl en Oklahoma y en la cuenca de Téjas—cerámicas sefarditas en el sur de Téjas—aparentemente que las conexiones ideológicas general y de agricultura de la parte norte están presentes. En el noreste de México, afuera del corazón mesoamericano, la gente hizo algunas pequeñas ofrendas al tipo de Señor, como paja y concha gusano. Pero interacciones de larga distancia, por tierra o por el Golfo de México, fueron extremadamente episódicas, a pesar de que había evidencias culturales en común. Las identida- des culturales en el Sudeste, y además la presencia del desierto en el norte de México y el sur de Téjas, probablemente impiden la entrada en el Sudeste de tradiciones Mesoamericanas más importantes, como la producción de algodón y bebidas fermentadas.

Archaeologists have long been interested in the possibilities of prehistoric cultural interaction between the U.S. Southeast and Mesoamerica, but seldom are the nature and processes of such interactions discussed; the issue is sometimes seen as a "fringe" topic. There is tantalizing evidence of such interaction, but there also are glaring absences of evidence. To examine the issue, we must understand the western boundaries of the southeastern and also discuss eastern Texas, an area considered outside the Southeast, and northeastern Mexico, an area similarly beyond the Mesoamerican heartland. Besides material culture "traits," specific socioeconomic systems, cultural practices, and the geographic potential for movement and interaction must all be considered. We presented some of these ideas at a 2001 Society for American Archaeology symposium on circum-gulf archaeology that has now become a book, Gulf Coast Archaeology (White, ed. 2005), with contributions from many researchers. This article extends the discussion, cites new evidence, and examines the topic from the specific viewpoint of the Southeast and its westernmost extent. We suggest that

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there were common cultural and environmental foundations and sporadic long-distance interactions between the Southeast and Mesoamerica, with closer relationships and interaction between the lower Texas coast and northeastern Mexico.

History of the Discussion

Connection between the Southeast and Mesoamerica is an old topic in American archaeology, with a venerable, sometimes wildly speculative history, from the time of the earliest descriptions of mounds (e.g., Brackenridge 1862:186–191 [1914]; von Humboldt 1814:28) to later evaluations by professionals in archaeology (e.g., Bennett 1943, 1944; Benson 1977; Griffin 1944, 1949, 1966; Kelley 1952; Phelps 1969; Phillips 1940; Willey 1966, 1985; etc.), art history (e.g., Covarrubias 1954), and other disciplines. While we explore in detail here all the colorful arguments over the decades that drive Southeastern cultures from Mesoamerica or postulate other relationships. Most traditional treatments of the issue simply state that there must have been some connection, given general similarities in mounds, iconography, and maize agriculture, and that it must have been trade. Little has been said on the topic in recent years (though there are increasingly more discussions of Mesoamerican relationships with the U.S. Southwest [e.g., Erickson and Baugh 1993; Foster and Guernsey 2000; Guernsey 1994; Hirs et al. 2000; Kohoe 1999; Lekson and Pirgerine 2004; McGuire et al. 1994; Pirgerine and Lekson 2006; Reymond 1995; Riley 1987, 2005; Schaufaum 1999; Schaufaum and Riley 1999; Tachau 2000; Weigand and Garcia de Weigand 2000; Woosley and Ravesloot 1993], but it is generally recognized as a continuing topic of interest in the Southeast (Wahon 1990).

Typical discussions use the label “cultural contact,” suggesting temporally limited episodes between previously isolated groups, as opposed to regular interaction among groups well aware of each other. For example, the once-famous Spiroden (1917) hypothesis combined agriculture and pottery styles from southeastern and mounds of the Mississippi basin, the so-called “Q complex” of Mesoamerican ceramic styles believed to be found in the Mississippi Valley (Ford 1969:1), and Kroeber (1930) and others worked out common cultural, especially agricultural, foundations for all the Americas.

Philip Phillips (1940) appears to have been the first to look comprehensively at Mesoamerican influences specifically in the Southeast, noting mound-plaza combinations with directional orientation and surrounding stockades as one complex of traits seen in common. Other traits of lithic, ceramic, and shell artifacts and artistic motifs showed similarities, though they were never identical in both regions. Bennett (1944) tried to go further, treating the historical and functional problems of such trait lists, noting Mesoamerican influences in the Southeast but, significantly, not items of Mexican manufacture. He dealt awkwardly with differing levels of cultural complexity in the two regions, saying that Southeastern Early Woodland cultures needed to be sedentary and more complex than their Mesoamerican counterparts. It may be that Mesoamerica had to have had such ideas to become that way in the first place.

Both professional and popular literature continued in this vein. For example, Vaillant (1949:104) noted that Mixteca-Puebla expansion out of Middle America provided “religious elements” affecting the Southeast. Radin (1949:152–202) derived mound builders of the eastern United States from proto-Mayan invaders who set out by sea from Veracruz and landed in the Lower Mississippi Valley (their degenerate descendants being the Choctaw and Natchez). Dealing specifically with the Southeast Cult or Southeastern Ceremonial Complex, a late prehistoric manifestation of particular images and artifact types (Galloway 1989; King 1987; Reilly and Garber 2007; Waring and Holder 1977) now call it the Mississippian Iconographic Interaction Sphere) that offers the best comparative material, Kriger (1945:201) provided probably the most valuable insights: first, the few elements that are generally comparable in the two regions are seldom in strict correspondence; second, the Southeastern elements that might indicate contact and borrowing do not consistently fall together in any particular culture complex; and third, no definite connections are shown with Mesoamerican peoples or their material traditions.

Most other treatments remained as statements of trait lists, usually invoking either general diffusion or real movements of peoples. This was especially true for late prehistoric Mississippian culture, in the Mississippi Valley and across the Southeast, which was variously derived from visits by Mexican traders (Silverberg 1968:296), intermittent contact and occasional immigration (Caldwell 1958:61; 1964:65; Mark 1960), or outright Mesoamerican inva-
ditions, if not Missouri or Arkansas native visits more southerly destinations and returning with vivid impressions of things they tried to copy at home (e.g., Ford 1969:24–25). Mesoamerican specialists similarly discussed diffusion of stylistic ele-
ments and various other traits othwithstanding (e.g., Cote 1962:145; Weaver 1972:281–283), and many acknowledged common continental cultural foun-
dations.

The mid-century was a time of intense interest in “cultural contact” situations. A typology of these was established, with two major classifications: “site-units,” or “trait-site units” (the former obviously more intense), each broken down into four subtypes depending on how much of the original culture was retained or fused with the new (Willey et al. 1956). There were problems with such a typolo-
y, from the value judgments and implications inherent in the terminology to the lack of quantifi-
cation or any way to operationalize the classifica-
tions. In addition, as a product of its time, the typology was missing many logical categories, such as a situation where neither the “intruding” nor the “received” culture ended up dominant. There were only general diffusion mechanisms, from trade to conquest, but did not entertain any other possible explanations (scavenging, for example [Park 1903]). While this typology has gone out of fashion, we still do not model cultural interactions in ways that can generate testable hypotheses. Interaction means that either people move, or things or ideas move, or some combination thereof. Ideas of course being the most mobile. But it is too hard to trace even ideas when they are altered during movement and when mater-
ial items are out of context.

There have been occasional noteworthy attempts to compare cultures by examining not individual traits but integrated structural complexes or systems. Muller (1971) emphasized looking beyond similarity of form to see, arrangement, and context. A good example of this approach is Wicke’s (1965) study of Mesoamerican influences on Southeastern temple mounds. He compared architectural plans, arrangements, shapes, and east-
ward orientations of mounds and their relation-
ships with plazas, building stages, ramps or terraces, or otherwise analogous steps, and temple forms. Also notable along these lines is Griffin’s (1966) discussion of Mesoamerican-Southeastern contacts through the “weaving of the nets.” He (1966:129) compared items such as pots, bottles, and ceremonial knives and specifically noted some found human teeth around Cahokia whose manufac-
ture or use was obviously Mesoamerican but individuals must have had their dental work done
in Mexico. Griffin also criticized other researchers who used unstable devices such as boats for postulating migration, but Wicke notes that "the prowess of the American Indian as a navigator has been grossly underestimated" (1967-87).

The most astounding diffusionary approach is James A. Ford's A Comparison of Formative Cultures in the Americas. Diffusion or the Psychic Unity of Man (1969), packed with foldout charts of comparable traits across North and South America. The movement of influences that produced material similarities in all the ear spools, effigy vessels, ceramic decorations, and other material items through some variety of migration/diffusion is of course not an explanation at all. To his credit, Ford tried to place the different traits within cultural systems, but he did have them moving around a lot, across seas and elsewhere, with little discussion of routes, means, or reasons for the diffusion.

Migration/diffusion theories of the earlier twentieth century went out of favor with scientific archaeology but now are reappearing with historical and postprocessual approaches, even with scientific treatments for some areas (e.g., Jones and Klar 2005 for transpacific contact). But the subject of prehistoric relationships between the Southeast and Mexico is still somewhat taboo (Kehoe 2002; Peregoy and Lekson 2006). Here we summarize current information and discuss natural environments and potentials and then look at cultural culture and the westernmost extent of the Southeast culture area around the Gulf of Mexico. It is important to see what connections can be drawn as well as what expected ones appear to be missing. A problem we have noted before (White 2005) is modern national boundaries, which delimit languages, present-day political geography, and archaeological practice. Archaeologists in the southeastern United States and Mexico seldom communicate with each other. Basic comparisons of site data, settlement, subsistence, or other cultural systems from one region to the other are rarely attempted, even around the Gulf, where it should be easy.

Geography, Environments, and Subsistence

Water and Land Travel

Northeast Mexico is considered archaeologically remote from the Mesoamerican heartland, and the Texas coast is similarly thought to be beyond the U.S. Southeast (Figure 1), except for the upper portion (Aten 1984). The latest synthesis on all of northern Mexico (Hens et al. 2000) deals predominantly with relationships to the U.S., Southwest, California, and Texas. But both the land and water connections on the east side, around the Gulf of Mexico, need to be better investigated.

The Gulf is warm, circumscribed, shallow, and usually friendly to navigate, except during storms and hurricanes. Its geographic setting could be seen to foster human interaction (e.g., Gutiérrez Valencia 2005). The marine continental shoreline from the southern tip of Florida to the Yucatan Peninsula is about 5,000 km, but the total tidal shoreline is some 27,300 km long when all the bays, inlets, and other features are included (Gore 1992;53). Such features provide both sheltered passageways and abundant resources, especially in the highly productive estuaries. The Loop Current carries things around the Gulf, in opposite directions seasonally, sometimes with unpredictable spin-off effects (Gore 1992). Archaeologist Anthony Andrews (personal communications 1999, 2006) tells us of firsthand experience with this phenomenon: a boat moving off the Yucatan coast can easily get caught in the current and end up in the Florida Keys or New Orleans or be stuck in the endlessly circling gyre of the Loop. One kayaker was documented in 1998 paddling 900 km from the eastern Yucatan coast across the Gulf to New Orleans in 20 days (Cantar 2005). Palm-log canoes from Mexico or beyond have washed up on the Louisiana coast (Gresham 2002).

We know even more about Gulf currents now because of modern events and politics. Experts evaluating proposed new oil drilling have noted how the conveyor-belt effect of the current could carry slicks from spills around to the northern Gulf at different times (Wheeler 2006). Three weeks after Hurricane Katrina, toxic plumes and debris from New Orleans were being swept by the Loop Current into two paths, one toward the Florida panhandle and the other past the Florida Keys toward the Atlantic (Associated Press 2005). Because barrier islands, mangrove lagoons, and other coastal features are such dynamic landscapes, and prehistoric settlement on them was thus probably ephemeral and intermittent, the potential evidence may now be deeply buried or obliterated.

At the western margin of the Southeast the for-
abundant turtles in complex food webs (Nature Conservancy 2005). However, recent work in southeastern Texas (Kilger 1994, 2005a) has demonstrated that it was usually an indigestible area, with sparse prehistoric human occupation. The Gilmore Corridor was further inland, including the prairie and alluvial streams, along routes that were used by historic natives (Foster 1997:23-24; Krieger 1948). Thus it would seem to be a far better choice for a pathway by which Mesoamerican influences, especially maize, reached the Southeast. Yet evidence of prehistoric food production remains lacking for most of this corridor (Kilger 2005b). Furthermore, there are few other known traits, unlike the extensive trail system that linked the Southwest to Mexico and from there into the western edges of the Southeast through north Texas and Oklahoma (Riley 2005:107-109).

However, with easier, faster movement by water, we can see through desert or prairie? A central community, communication, transportation, and organizational arteries, the many large southeastern rivers offer entrance far into the interior. As early as Olmec times, major sites along the Mexican Gulf Coast were situated along networks of rivers and other streams not far from the coast (Diedrich 2004; Pool 2007). Even if water routes are longer than overland paths, boats can sit and carry more cargo.

Coastal natives would have known sea currents well, and river travel is easier. A canoe could go from Veracruz all the way up the Mississippi River and over to Spero, Oklahoma. Well-informed, well-traveled Southeastern natives knew the landscape over enormous distances, being aware of the Great Lakes, the Great Plains, and probably Southwest and Caribbean areas (Tanner 1989). Waelseik (1989) documents an early-eighth-century map by a Chickasaw headman who described geographical knowledge as far west as Texas and Kansas and as far east as New York and Florida. Maya traders traversed a wide network of waterways to exchange commodities, including salt, though many of their sites may now be underwater (McKillop 2005; Sabloff 1977). Aboriginal traders worked off the north Honduran coast, with men, women, children, copper, cacao, pottery, cotton, obsidian, and other stone, in canoed boats some 2-3 m wide (Morley et al. 1983:257). Coastal Mayas were used by merchants controlled trade from Tabasco around to Belize and Honduras during the

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The Pascolish (Sabloff and Rothf 1975). On this second voyage, Columbus saw near Jamaica a dugout that was nearly 30 m long and 2.4 m wide, and another that described could carry 70 to 80 people (L. R. Krieger 1994). The Pas is waterborne socioeconomic interaction between the west coasts of Mexico and Ecuador (Anawalt 1997). Early Sympatry is recorded in mainlanders visiting the Bahamas (Stuever 1996:189). Relationships between Olmec and Chavin imply intercontinental transport. Though the penetrability of boats means there is little evidence for water travel, more canoes are becoming known in the Southeast, some possibly designed for larger, rougher bodies of water, running the brace and steering with the oars. Wheeler et al. (2003), and Kehoe (2005) have noted parallels between Mesoamerican and U.S. South- east canoe paddler symbolism.

Food

Subsistence studies in the coastal Southeast emphasize shell middens sites, which are less investigated on Mexican coasts, limiting comparative study. For the continental interior, food production has always been paramount in discussions of Southeast-Mesoamerican relations. We now know that hunting-culture dominated independently in the rich alluvial valleys of the U.S. Midwest and MidSouth (Smith 1998), with local woody species such as cheropepo and amaranth, so we need no longer postulate the clever idea of food production originating in Mesoamerica and diffusing northwest. The earliest domesticated plant in the Southeast, appearing some 5,000 years ago, seems to be a gourd squash. Cucurbita pepo, whose ancestor grew wild along the Gulf Coast from Tamaulipas to Florida at the end of the Pleistocene (Fitzhugh 1965). But the later crops themselves, the types of maize, beans, and Cucurbita argyrosperma squash, were all domesticated in Mexico and had to be introduced to work on the southern Mexican Gulf Coast (Lente et al. 2001; Poli et al. 1996; Polli et al. 2001; Pope et al. 2001) documents very early cultivars in the Gari- jala River Delta near La Ventan; maize at over 5000 cal B.C., manioc at about 4600 B.C., and cotton and sunflower by 2500 B.C. The sunflower remains were large enough to suggest that this plant was already domesticated, leading these researchers to challenge the notion that it was domesticated in the eastern United States, even independently; they think the major crops might all have been imported into the eastern United States from a Mexican Gulf hearth of domestication.

Maize appeared in the eastern United States over 2000 years ago (Riley et al. 1994). It was already in the Southeast between 4000 and 3500 years ago, though about 2000 more years were needed for it to change from a casual or supplemental resource to a staple crop. Genetic studies suggest that southwestern maize was carried eastward across the Plains to become ancestral to the eastern forms. But in the Southeast there is greater genetic variability in the different strains of maize (Fitzhugh 2000:235-236), possibly indicating more recent introductions with Mississippian varieties. No mat- ter how it arrived, maize had to be brought to the Southeast in human hands (Kelooe 2002:25, 2005:263).

At southeastern Florida’s Pineland site, remains of squash, chili pepper, and papaya have been recovered from a waterlogged midden dating to about A.D. 50-100 (Karen J. Wallert, personal communications 2004, 2007, based on the work of Lee Newsom and Margaret Scarry); they are being interpreted as natives, but it might not be surprising to find tropical cultivars in Florida. The Florida Strait has been considered a major divide between aboriginal cultures, yet boat travel over this short distance is not difficult. Today people regularly make it to Miami from Cuba floating in inner tubes or other marginal craft. Similarities are seen between native languages of Florida and South America (Granberry 1941), but south Florida is also considered culturally outside the prehistoric Southeast, and such connections have not been explored in detail.

Material Culture and Symbolism

There is a long history of documenting similarities in artifact design motifs, iconography, symbols, and styles between Mesoamerica and the Southeast (Krieger 1945 remains one of the best). Some cooperation and general traits (e.g., Griffo 1980; Neumann 1994; others note specific artifacts or designs, for example, Chacoan-style pots in the Mississippi Valley (Phillips et al. 1951:167) or iconography at Etowah mounds in Georgia (Nut- tall 1932). Carved in shell, ceramics, or other materials, these include scroils, spirals, snakes, feathered serpents, cross- overs or sweatshirts in circle, beaded forelocks and hair knots, trophy shields, winged dancers, long- nosed gods, bird animals, and many additional designs. Common artifacts and features have included copper ear ornaments, pipes, caninated vessels, negative painting, similar burial customs including skull crashes, fronto-lomboidal cranial deformation, shell gorgets, effigy vessels, col- umen umbilicus and other shell jewelry, green- stone celts, and, of course, truncated pyramids and plazas. Since the work of Ekholm (1944a, 1944b) and MacNeish (1947, 1949, 1956), researchers have looked specifically at material similarities between the Huasteca area of northeastern Mexico and the Caddo region of the Southeast (northeast Texas, northwest Louisiana, southeast Arkansas, southeast Oklahoma) to hypothesize direct cultural connections. We do not offer here an extensive review of all such past comparisons (but see Cobb et al. 1999) or interpretations of what the imagery or designs mean or how closely they may all be associated. One frequent comparison is of the winged beings or bird dancers from Spiro and Veracruz, both engraved on shell (Neumann 1992:Figure 7; Phillips and Brown 1973:192-128; Waring and Holder 1977). Many other birds or plumed human forms in the Mississippian Southeast can be compared with similar but not identical Mesoamerican counterparts (Figure 2). Huastecan artifacts and designs in northeast Mexico make a better specific case for resembling Southeastern elements combinations. Besides feathered human costumes there are many other motifs; for example, the so-called sun circle with a cross inside (Figure 3). One we noticed only recently is the rectangular ladder-shaped design painted on plaster floors in the Huasteca area (Díaz Villica 2005:Figure 4.7) and carved into stone pin- nacles in the Brownsville complex of the Southeast (Kibler 2005a:Figure 7.3). Common designs com- bined with an artifact form itself is even stronger evidence: Huastecan shell discs have long been known to resemble Mississippian shell disc gorgets (Díaz Villica 1997b, 2007b, 2000; Kaplan 1959; Willey
MISCELLANEOUS

Mississippian and Huastec cultures are contemporaneous; other comparisons have temporal problems. For example, platform pipes, both in simple monochrome shapes and with animal effigy bowls, from the San Luis Potosí region of north-eastern Mexico (Figure 3) are likely late prehistoric (Dávila 2005:101–103; Dávila and Zaragoza 1991; Delgado 1991), perhaps 1,000 years later than examples from Hopewell-related sites. Even harder to justify are the many comparisons of Olmec and Mississippian motifs or practices, such as the widespread symbolic use of greenstone; the 2,000+ years of time separation is possibly greater distance than the 2,000+ mi of space, unless, as Webb has quipped, “it was a slow trip north” (1989:283).

These areas of investigation are ripe for new research. Many Southeastern artifacts look as if they walked right out of Mexico, yet they are made of local materials. More detailed study of common stylistic elements might profit from the techniques of art history and structural analysis, to see associations that are clear after the local interpretive and iconoclastic factors are taken into account. For example, winged serpents or trophy heads can be compared but also the design elements composing them, the contexts in which they appear, and how these transforms as they move through space and time. Individual elements, even seen in context, can still be ambiguous, of course. For example, could the long oars or ballotins issuing from the mouths of some Southeastern Ceremonial Complex figures (e.g., Phillips and Brown 1975–1982), suggested to represent regurgitation of the black drink (nonuchi 1979:110–113), be related to Mesoamerican speech sounds? Weisbrod (1984; 2000:171) notes a piece of obsidian from Poverty Point in northeast Louisiana—a squashed flake about 3 mm thick, possibly a snapped blade misfit, with retoch. It found in 1988 off the end of Ridge Street in the northern section of the Poverty Point ridge, where the eroding bluff line on Bayou Macon had cut into the ridge. As to sourcing, he has learned that it resembles Wyoming material but is definitely not from Yellowstone (one major source of Hopewellian and earlier obsidian in the Ohio/Midwest/Upper Mississippi Valley region, other sources being in Idaho (Davis et al. 1999; Hughes 2006; Stoltman and Hughes 2004). Poverty Point is well known for having stone and other materials brought from distant locations (Gibson 1904a; Samuel O. Brookins (personal communications 2003, 2004, 2006) provided information on the first known obsidian occurrences in Mississippi. One is a poorly made stemmed point from the Parker Bend site on Bayou III site in west-central Mississippi. Traced to Obsidian Ridge in the Jemez Mountains of northern New Mexico (Bruce 2003; Peacock and White 2007; Skinner and Trancher 2002), it may have arrived via Iberia or Arkansas, or perhaps it went down the Rio Grande into the Gulf and up the Mississippi. The second specimen, from the Myer site in Coahula County, west-central Mississippi (Peacock and White 2007), is a corner-rounded point sourced to Malad, Idaho. Brookes notes that both points look Woodland in age, though the former is from a site recently suggested to be associated with Poverty Point culture (Underwood et al. 2006). A bipedal obsidian flake also traced to Malad, Idaho, was found at the Brown Bluff site in northwest Arkansas (Hughes et al. 2002), but a later investigator, now reporting and analyzing all the site data, shows this specimen to have been in a shallow, disturbed zone (Gaundling 2007). A Middle Woodland obsidian flake from southeast Missouri has been traced to Yellowstone (Lopatin 2003:28) and perhaps arrived in the Mississippi Valley along the same cross-continental routes as those traveled by the Myer site piece and the Hopewellian obsidian.

Some obsidian made it even farther into the Southeast. Matt Norton (2005) has traced a flake from western Tennessee to Nevada; a diamond-shaped Archaic point from central Tennessee to the Napa Valley; and two points from north Alabama to the Napa Valley and Oregon. Ham-
merstedt and GlascocK (2006) have analyzed two pieces from Moundville, in west-central Alabama: a large, black and red, heavily steamed point that best matches a source in northern California, and a small conical-base point that best matches an obscure source in Highland Guatemala. Concerning the latter, they now think (Scott W. Hamerstedt, personal communication 2007) that the Guatemala source is not as secure as they would like and are sending the specimen to another laboratory. All these obsidian occurrences in the Southeast are shown in Figure 4 (which does not reflect the reliability of the data) and summarized in Table 1.

Additional obsidian may become known in the Southeast as researchers become more familiar with it; even as we write this, various colleagues are contacting us about possibilities. However, caution is needed in interpreting some finds. One Florida specimen turned out to be only dark gray chert (White 2005:9). The Spiro scraper and Moundville items are from unreported old collections, which could be suspect. Another Moundville specimen turned out to be black glass, and the red and black point may have been purchased and included in the collections (Hamerstedt and GlascocK 2006). The Arkansas piece is clearly modern and intrusive (Randall L. Gaufling, personal communication 2007). We have heard of undocumented finds, such as pieces brought up from the Gulf in fish and shrimp nets or reported by collectors. But modern people transport stone for knapping or collecting, and stories of site contamination are not uncommon. However, some obsidian items now known were indeed brought in prehistorically. Water transport on the gulf and up rivers probably accounts for much of small obsidian distribution in the Southeast, even as it may account for obsidian movement from the West to the Hopewellian Midwest.

The important facts in the Southeast are that there are just a few isolated finds of obsidian, their distribution shows great discontinuity, and the variety of sources suggests relatively short-distance, down-the-line movement. As for a Mesoamerican connection, the Spiro specimen is the only example close to the Southeast outside of south Texas. This opinion is confirmed by Jeffrey R. Ferguson (personal communication 2007; Per-

Figure 4. Locations of obsidian finds in the eastern U.S., with source locations.

genson and Skinner 2006), who is also tracking down obsidian blades within the United States and finds that all other known Mesoamerican obsidian cases in the United States, from the Plains and Southwest (which are outside the scope of the present article), might be explained by the movements of early Spanish explorers and their accompanying Mesoamericans. Hamerstedt and GlascocK (2006) point out how all the obsidian items so far known in the Southeast appear unremarkable and utilitarian, as opposed to elaborate Hopewellian obsidian artifacts in the Midwest. Notably, they are also all distributed on the west and north sides of the Southeast—except that there is a reported piece from Town Creek, North Carolina, for which a source remains to be determined (Scott W. Hamerstedt, personal communication 2007). In sum, however, there is very little obsidian in the Southeast; it is everyday stuff, and none of it is securely tied to prehistoric Mesoamerica except for items in south Texas.

Ceramics

Southeastern ceramics show many resemblances to Mexican styles and designs, but they were apparently all made at home. Wanting a complex-society heartland from which innovation diffused to less impressive, constituent societies, archaeologists used to see pottery making spreading northward from Mesoamerica. Now we know there is no Mexican pottery as early as the 4,500-year-old fiber-tempered ceramics in the Southeast, which occur from Louisiana eastward to Florida (Saunders and Hays 2004). Later fiber-tempered pottery, dating to c. 3300 B.P., extends far westward into north-
east and south-central Louisiana but not far west as Arkansas or Texas. Figure 5 shows the westernmost known sites with this pottery, including the Meche Wilkes and Ruth Canal sites in southwest Louisiana (Gibson 1976, 1990b; Gibson and Melançon 2004; Hays and Weinstein 2004:164) and Poverty Point in northeast Louisiana (Gibson 2000:117; Hays and Weinstein 2004; Webb 1982). Because of their similarity to Wheeler ceramics in northwest Alabama and northeastern Mississippi (Sassaman 1993; Saunders and Hays 2004), fiber-

Figure 5. Distribution of fiber-tempered ceramics (hatched area). In the Southeast, with selected westernmost individual sites identified. This is the earliest pottery in North America when it appears on the east coast. Though it is much later on the west side of the Southeast.

tempered ceramics in southern Louisiana are thought to have arrived there by way of the Tombigbee River, Mobile Bay, and the Mississippi Gulf Coast, particularly through the Claiborne site at the mouth of the Pearl River (Biltz and Munn 2000:20; Jenkins et al. 1986-55; Webb 1982, Weinstein 1995). Similarly, the fiber-tempered pottery at Poverty Point and other more northerly locales is thought to have originated in the Wheeler heartland but to have spread westward from the Tombigbee River drainage to sites in the Yazoo Basin (e.g., Tecot Creek, McCary, and Jaketown) and then to northern Louisiana (Coranaway et al. 1977:88-89; Ford et al. 1955:65-66; Hays and Weinstein 2004:163; Weinstein 1995; Williams and Brain 1983:354-356).

The ceramics known as Altamira, Santa Latina, and Son Lorenzo are the earliest along the Mexican Gulf Coast, in north, central, and south Veracruz, respectively. They are at least 2,600 years later than Southeastern fiber-tempered wares and are already elaborate (e.g., Garcia Cook 1998;
<table>
<thead>
<tr>
<th>Location</th>
<th>Artifact</th>
<th>Source</th>
<th>Culture</th>
<th>Reference</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spies, NE Oklahoma</td>
<td>scraper</td>
<td>Pachuca, Hidalgo, Mexico</td>
<td>Mississippi</td>
<td>Baker et al. 2002</td>
<td>previously unreported old collection in Smithsonian from Craig mound in 1955</td>
</tr>
<tr>
<td>McDalton Beach site, upper Texas coast</td>
<td>contracting-stem dart point</td>
<td>Hidalgo, Mexico</td>
<td>Archaic</td>
<td>Hester et al. 1992</td>
<td></td>
</tr>
<tr>
<td>central Texas coast</td>
<td>Clovis point</td>
<td>?</td>
<td>Paleo-Indian</td>
<td>Hester 1988a</td>
<td></td>
</tr>
<tr>
<td>S Texas coast, Rio Grande valley</td>
<td>various</td>
<td>Queretaro and Hidalgo, Mexico</td>
<td>Paleo-Indian through Late Prehistoric, mostly Brownsville complexes</td>
<td>Kiiler 2005a</td>
<td></td>
</tr>
<tr>
<td>W Texas plains and central plateau</td>
<td>various</td>
<td>Malad, Idaho; Yellowstone, Wyoming, James, New Mexico</td>
<td>end of Late Archaic through Late Prehistoric</td>
<td>Kiiler 2005b</td>
<td></td>
</tr>
<tr>
<td>Kansas Rockshelter, S-central Texas, S edge of plateau</td>
<td>dart point</td>
<td>Queretaro, Mexico</td>
<td>Late Paleo-Indian</td>
<td>Hester 1988a</td>
<td></td>
</tr>
<tr>
<td>Chor Lake, NW Louisiana</td>
<td>spurred uniface</td>
<td>?</td>
<td>Clovis through Cahokia components</td>
<td>Hester 1988a; Jonas 1984</td>
<td></td>
</tr>
<tr>
<td>Poverty Point, NE Louisiana</td>
<td>retouched flake</td>
<td>?</td>
<td>Late Archaic</td>
<td>Gibbons 2000</td>
<td>resembles Wyoming material but not Yellowstone</td>
</tr>
<tr>
<td>Parker Bayou II site, W-central Mississippi</td>
<td>stemmed point base</td>
<td>James, New Mexico</td>
<td>Woodland or Late Archaic</td>
<td>Bruce 2003; Pruess and White 2007; Underwood et al. 2006</td>
<td></td>
</tr>
<tr>
<td>Myer site, NW Mississippi</td>
<td>corner removed point</td>
<td>Malad, Idaho</td>
<td>Woodland?</td>
<td>Peacock and White 2007</td>
<td></td>
</tr>
<tr>
<td>Brown Bluff rock shelter site, NW Arkansas</td>
<td>bipolar flake</td>
<td>Malad, Idaho</td>
<td>?</td>
<td>Hughes et al. 2003; Guadagnini 2007</td>
<td>probably modern, intrusive</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Location</th>
<th>Artifact</th>
<th>Source</th>
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<th>Comments</th>
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<tr>
<td>southeast Missouri</td>
<td>flake</td>
<td>Yellowstone, Wyoming</td>
<td>Middle Woodland</td>
<td>Lopatin 2003</td>
<td></td>
</tr>
<tr>
<td>W Tennessee</td>
<td>flake</td>
<td>Nevada</td>
<td>?</td>
<td>Norton 2005</td>
<td></td>
</tr>
<tr>
<td>central Tennessee</td>
<td>diamond-shaped point</td>
<td>Napa Valley, California</td>
<td>?</td>
<td>Norton 2005</td>
<td></td>
</tr>
<tr>
<td>N Alabama</td>
<td>2 points</td>
<td>Napa Valley, California; and Oregon</td>
<td>?</td>
<td>Norton 2005</td>
<td></td>
</tr>
<tr>
<td>Moundville, W-central Alabama</td>
<td>large black and red stemmed point</td>
<td>N California</td>
<td>Mississippi?</td>
<td>Hamannstrick and Glasscock 2006</td>
<td>in previously unreported old collection, possibly purchased and included there</td>
</tr>
<tr>
<td>Towe Creek, North Carolina</td>
<td>?</td>
<td>?</td>
<td>?</td>
<td>Scott W. Hamannstrick, personal communication, 2006</td>
<td>not verified; not shown on Figure 4</td>
</tr>
</tbody>
</table>
Wilkerson 1981). Willey (1966:336; and see Garcia Payán 1971; Griffin 1966) noted that Archaic and Woodland rock-stamped pottery and figurines in the Southeast that resemble Mesoamerican forms might just be simple ideas that could have high- 

generated independently many times in many places. We do know of figurines of clearly Mi-

can origin found at four separate locations in south Louisiana, photos of which are on file at Louisiana State University (Robert W. Neuman, personal communication 2006), but they were all reported by nonprofessionals, and the circumstances of their discovery are unknown. They could be colonial trade items, such as the figurines and kistknobs found on the Nuevo Convento, a Spanish vessel wrecked on the Louisiana coast in 1766 (Perron and Hoffman 1995:189-190).

Other ceramic attributes, from painting and negative painting to potted supports, and many styles and shapes, such as compound or double-bodied pots, carpeted bowls, rim effigies, depictions of personages wearing feathers or elaborate head-
dresses and holding staffs or trophy heads, and so forth, might be general New World notions. Both

simple ideas, such as running-scroll designs, and complex vessel shapes may indicate sharing of ideas (Figure 6). For example, though the stirrup-
spouted vessels from the Mississippi Valley (Phillips et al. 1951:172) and northwest Florida (Moore 1903:64) are surely the result of concepts imported from as far away as South America (Weber 1971) or Mesoamerica (Phillips et al. 1951:452), they were manufactured with local clay and decoration (Figure 6). Also, they are late pre-
historic, possibly even postcontact, whereas the stirrup-spout form is something like 2,000 years older in the Valley of Mexico and far older in South America.

The use of asphalt (crude petroleum or chuponpote) is known from the Mexican coast north-
ward into Texas (Ricklis and Weinstein 2005), at least as a pottery decoration. This natural tar seeps out of the ground and the seashore and washes up on the beaches. It was used prehistorically in Mex-
ico in construction, possibly also in paint, and for coating into tar for roof and floor surfaces. The black-stained sherds that Sanders (1978) reports from the Tampico area compare well with asphalt-
painted Rockport ceramics and could have occurred in the Texas coast as far north as Matagorda and Galveston bays (e.g., Gadu et al. 1999; Weinsteins 1991:144). Asphalt has even been reported on tar-

de shell and guish shells from the central Texas coast (Weinstein 1994), and its use is known at least as far south as southern Veracruz (e.g., Stark 1978:231) on Formative and Clasico Clases cera-

monuments in Louisiana and Mississippi that date between 6000 and 5000 B.P. (Saunders et al. 2005:662). Many more date to the later Poverty Point period (c. 2500-1800 B.P.) (Ford and Webb 1956; Gibson 1994; and Shinkel 1988:12-13; Ruso 1993:46:1, but none have yet been confirmed for the intervening Late Archaic period (Saunders et al. 2005:663), although they almost certainly exist. Locations of these early earthen constructions are shown in Figure 8. They do not extend very far west of the Mississippi Valley.

One of the best known of the early mound sites is Watson Brake (Feathers 1977; Jones 1985; Sau-
ders 1998, 2000; 2004; Saunders and Allen 1997; Saunders et al. 1994; Saunders et al. 1997; Sau-
ders et al. 1998; Saunders et al. 2005). It consists of 11 conical or oval mounds, the tallest of which is over 7 m high, arranged in a circle atop a low ridge. The mound itself is a deposit that is also circular. The entire complex sits on the edge of a Pleistocene terrace overlooking the Ouachita River Valley; it is well dated at between 5500 and 4900 B.P. (Saunders et al. 2005:640-648, Tables 1-2, Figure 8). French-

man's Bend, another important early mound site 30 km north of Watson Brake, is also at the edge of a Pleistocene terrace overlooking the Ouachita Valley. It consists of at least five conical or oval mounds, with the tallest measuring about 5 m high (Saunders et al. 1994:Figure 3). A hearth found beneath a 3-m-high oval mound yielded a cali-

briated age of 6200 ± 232 B.P., while another hearth about midway up in the mound produced a cali-

briated age of 6309 ± 140 B.P. Another early site is Hedgepeth, with two conical mounds (6 m and 1 m high), on the upper reaches of Bayou D'Ar-

boe. Testing by Saunders and Allen (1994) uncovered a hearth beneath Mound A that pro-

duced a calibrated age of 4828 ± 100 B.P., plus numerous artifacts similar to those from Watson Brake and Frenchman's Bend. The westemmost of all the early mound sites is Kieffer, situated along Saline Bayou in northwest Louisiana. It consists of three, low conical mounds less than 1.5 m high and 20 m in diameter (Gibson 1964:18-15; Gibson and Shinkel 1988:10). Although no radiocarbon dates are available for it, Archaic projectile points (including the Evans type, a diagnostic Middle Archaic form) (Saunders and Allen 1997:4-18, Figure 3; Saunders et al. 1994) and tubular and barrel-

shaped stone beads were found associated with one of the mounds when it was leveled in 1964 (Gib-

son 1968:14).

The function of these early mounds sites is unknown. Most are located adjacent to lowland riverine and shoreline environments. While they could demonstrate the need for dry space during flood conditions, the notion that these landscape elevations served a purely utilitarian purpose than proven otherwise is a minor variation (White 2004:19). Many see in these mound evidences for sociocultural complexity, even hierarchy, and civi-

lizational symbiosis, by about 4000 B.C.C. (Clasen 1996; Gibson and Carr 2004; Saunders 2004). Rebecca Saunders (1994:133) notes that the tallest of the Middle Archaic mounds occur at Monte Sano Bayou (Coastal Environments, Inc. 1977:1237; Gibson and Shinkel 1988: Haag 1992; Saunders 1994:120-122, Figures 2) and L.C. Campus Mound sites (Hemborg 1991, 1992; Saunders 1994:122-123), atop prominent bluffs overlooking the Mississippi River in Baton Rouge, where they were focal points for information, trade, and social cere-

macy over a larger area. Russo and Fogelman
(1996:153) similarly speculate that the Stelly Mounds, at the edge of a Pleistocene terrace remnant within the Mississippi River floodplain, may have served some symbolic purpose.

Joe Saunders et al. argue that mounds at Watson Brake were not for human burial but, rather, for "daily secular events" (2005:665). However, data from the two mounds at Monte Sano Bayou, the only fully excavated mounds dating to this early time period, suggest just the opposite. Mound A, a conical structure 6 m high, was built in a single construction episode and covered a low platform that measured 8.5 by 6.5 m. This platform had served as the base for several cremations, one of which yielded a radiocarbon age of 6290 ± 140 cal B.P. (Gibson and Shook 1988:Table 1-1). The pyramidal platform, in turn, had been built atop a pre-mound structure represented by a square, single-pit pattern that measured about 10.5 m on each side (Gibson and Shenkel 1988:9; Saunders 1994:120-122, Figure 2). The other mound (B) yielded only a few "pillow-sized" Mcches" of white material on the original ground surface, possibly ash from other cremations. Then, for Monte Sano Bayou, and possibly the nearby, almost identical, LSU Campus Mounds, these early structures had been built to mark those places where cremations of (select?) individuals had occurred. More work is needed to determine precise ceremonial, utilitarian, social, and other purposes of the early mounds (e.g., Clark 2004; Sassaman and Heckenberger 2004; Saunders et al. 2005). The Archaic populations who engineered them were hunter-gatherer-fishers and presumably not completely sedentary. They also had not yet begun to make ceramics, an innovation once so closely tied into the definition of "formative" cultures.

Nothing like these early mound constructions appears in Mesoamerica until over a millennium later (though there is a considerable amount of early monumental construction in South America). Clark and Knoll (2005) trace the patterns of the emergence of mound building, maize, maize, and ceramics in the entire New World and find that they do not vary together but, rather, behave independently in time and space. And yet, Clark (2004) has suggested that the earliest mound builders in the Southeast, Mesoamerica, and South America may all have used the same measurement system and units, perhaps from shared knowledge indicating historic relationships.

Woodland Mounds

By Woodland times there are conical burial mounds and additional earthworks such as berms, walls, and enclosures throughout the eastern United States (e.g., Mann 1988a, 1988b; Mann and Sullivan 1998), including peninsular Florida. Figure 9 shows their westernmost extent in the Southeast. But connections between these and the early monumental architecture of northern Mexico or Mesoamerica are unknown. Again there are temporal differences, and when Mesoamerican monumental construction begins, it is often along very different site plans and encompasses the use of stone (although often over an earlier core). Classic examples of Southeastern Woodland mounds, complete with Hopewellian-like log tomb elite burials, are Mound 4 at Marksville in central Louisiana (Fowke 1927, 1928; Setzler 1933a, 1933b, 1934; Tooh 1974, 1988; Veselius 1957) and Mounds B and C at Helena Crossing, Arkansas (Ford 1963). Examples of other conical mounds, often built in stages and
sometimes containing up to several hundred individuals, are Mound A at the Crooks site (Ford and Willey 1940; Toth 1988) and Mound 1 at the Lafayette Mounds (Ford and Quiriny 1945:21-24; Gibson 1974, 1976; Weinstock 1986:15-17; Plate 9-O), both in Louisiana. Mounds with a large number of burials may have held the remains of the general population, the bones of which may have been kept in charnel houses prior to interment (Ford and Willey 1940:41-42).

Of the mound sites shown in Figure 9, two are worth additional discussion because they represent the best known of the westernmost Woodland examples. These are Coral Snake and Jonas Short (McClurkan et al. 1980; Story 1990:279-289). Coral Snake Mound was a conical structure on the east side of the Sabine River in Louisiana (McClurkan et al. 1966). It was surrounded at its base by the remains of a shallow borrow pit and apparently had been built in three stages (Jensen 1968). The first stage entailed excavation of a depression 1.2 m deep and 6 m in diameter into the existing floodplain sands. Several in situ cremations were put in the basin; then it was filled, and a low primary mound was added as the second stage. This mound measured 1 m high and 12 to 15 m in diameter and included 10 secondary burials, the remains of 27 cremations (all secondary deposits), and at least two "artifact caches" probably once associated with other burials that did not survive. In the third stage a secondary mantle of sand was placed over the entire primary mound, forming a final conical mound 3 m high and 30 m in diameter. Within this mantle were two additional secondary burials and up to seven artifact caches that also likely represent burials. Significant artifacts that point to an early Marksville age (c. A.D. 1-200) include two whole vessels of Marksville Stamped, Gary and Kent dart points, boatstones, and copper items such as ear spools, a pendant, and rolled beads, two with twine attached. Uncorrected radiocarbon dates of 20 ± 10 B.C., A.D. 180 ± 20, and A.D. 300 ± 20 also support an early Marksville age (Jensen 1968:39).

"Coral Snake Mound" (Jels 1965), on the first terrace above the Atchafalaya River in east Texas, had a truncated cone-shaped mound 30 m in diameter and 2.5-m tall. A shallow depression, originally about 1.3-m deep and 4.5-m wide, completely encircled the mound and probably had served as the source of soil for its construction. This mound was also built in three stages, similar to Coral Snake. The first stage was a shallow, saucer-shaped depression that contained the cremated remains of at least two individuals and a copper bracelet. This depression was then filled, and a primary mound of light gray sand was built over it to a height of c. 1.8 m. Three "artifact caches," again almost certainly representing burials, were found within the mound fill. A final building stage of stiff clay then was added, bringing the total height of the structure to about 2.5 m. These additional artifact caches were found within this stage. Artifacts include two horizonte boatstones, a perforated quartz pendant, 10 quartz crystals, a reed-shaped copper gorget, several stemmed chariot knives, and Gary and Kent dart points of silicified wood (Jels 1965:34-44). Although no reasonable radiocarbon dates are available for Jonas Short, it appears to be a Middle Woodland burial mound similar to the at Coral Snake (Gay 1990:63; McClurkan et al. 1980; Shaffer 1975; Story 1981, 1990). These westernmost mounds are not very different from their Woodland counterparts all over the Southeast.

Truncated Pyramidal or Platform Mounds

The resemblance between Mexican stone pyramids and flat-topped earthen mounds is easy to see (e.g., Wick 1985), and was one of the major reasons for originally deriving Mississippi cultures from direct Mexican invasion. There are flat-topped platforms or truncated pyramidal mounds all over the Southeast, along the Gulf Coast and far into the interior, but none is located farther west than east Texas (Figure 10). During Early and Middle Woodland times conical mounds predominated, but we now know that platform mounds appeared in the Lower Mississippi Valley and elsewhere long before the Mississippi period (Asdron 1998; Jeffries 1994; Willey 1966, 1999). Probably the earliest Woodland platform mounds known are at the Batteau Mounds in northwest Mississippi (Holcomb 1994; Holland-Lilly 1996; Johnson et al. 2002), where at least two were dated to the late Tchula period, an Early Woodland manifestation in the Lower Mississippi Valley. The large Middle Woodland Pisces mound site near Jackson, Tennessee, also has low platform mounds (Mainfort 1980, 1986, 1988a, 1988b; Mainfort, ed. 1988), while Mounds 2 and 6 at Marksville most likely represent similar Middle Woodland structures (Tott 1974:28-31, 38-40, Vesselinov 1957). Late Woodland platform mounds are even more numerous (e.g., Milinich et al. 1997).

Woodland platforms may not all have been for supporting important buildings but could have been structures on their own. Furthermore, they are at diverse sites with variable architectural composition, sometimes with plazas, sometimes with conical burial or other mounds. Some may have bridged the transition from Woodland to Mississippian (Willey 1966:289), but whether they were directly ancestral to those of the Mississippi period or even served similar functions is still unclear (e.g., Jeffries 1994). The same can be said for plazas, which may have evolved independently from or earlier than mounds (e.g., Kidder 2004). The more mundane house mounds seen not only to the Mississippian heartland but also along the Mexican Gulf Coast (e.g., Garcia Payón 1971:2523), built for flood protection, elite residence, or both, are either not present in the Southeast, not widely distributed outside of Lower Mississippi Valley mound centers, or not well recognized. Occasionally, Southeastern platform mounds are circular instead of rectangular. One example is at the George C. Davis site (Caddo Mounds State Historic Site) in east Texas (Newell and Krueger 1949), one of the southeasternmost mound complexes in the Southeast. Comparison is invited with circular earthen platforms of northeastern Mexico (discussed below).

By Mississippi times or earlier, the classic temple mound centers had single or multiple truncated pyramids with ramps leading to ceremonial or elite structures on the summit, typically arranged around a plaza (Loius and Stout 1998; Payne 2004). This was also a Mesopotamian pattern, seen too along
the Mexican Gulf Coast, where mounds were also sometimes made of earth. Southeastern sites (Figure 11) are seldom shown in ways facilitating comparison with Mesoamerican pyramids; their earthen cores are usually rounded from centuries of soil slump. But the shapes are the same as those of stone pyramids, and if they are squared up on their site maps (not a new idea [see Morgan 1980; 1999; Williams and Brain 1983]), they could fit comfortably in Mesoamerican archaeology books. Many Mexican archaeologists are as unaware of such site architecture to the north as Southeasternists are of Mesoamerican and especially northeastern Mexican prehistory.

Construction Materials and Design

Mound-building materials simply consist of whatever was available. The Southeast has fewer mountainous or other rock sources than Mesoamerica. There are some mounds made of stone or covered with boulders from the Woodland period in north Georgia and the southern Appalachians (Jeffries 1976, 1979; Kelly 1979; Willey 1966:287). Large and small rocks were incorporated into mound fill at more southerly sites as well, for example, at Kolomoki (Floyd 1903:60-65) and within the Walter F. George Reservoir area (Knight and Mstovich 1984:99-100) in southwest Georgia. (One small earthen mound, never published but observed by White along the Lower Chattahoochee River near that reservoir, is circular, with radii of rocks on top, forming a large asterisk in the forest.) If the limestone bedrock in parts of the Southeast was more accessible and not so soluble and friable, it might have been used for construction. Indeed, where it is the only thing available and soil is scarce, it was used: late prehistoric mounds of limestone rock are known in the Florida Keys (Goggins 1949). Newman and Tesar (1997) have investigated on Key Largo one such rock mound that has several construction strata composed of earth midden, with faunal remains and Glades ceramics, and limestone rocks up to 45-cm in diameter. It was roughly kidney shaped, about 30m long and over 2.5-m high, with a ramp and possibly other accompanying rock features such as a long wall and even a causeway.

Other mounds in the Florida Keys are faced with large conch shells (Fusuburk and Foreman 1997:106), carrying through the theme of using whatever works (not to mention what ritual associations might also be present).

The pattern of accretional construction of Southeastern mounds includes individual building stages and sometimes burned layers created by new floors or mound caps, often of colorful clay or other soil (red, yellow, gray, black, even blue [e.g., Walker 1936:21, 25]) that would have been distinctive and visible from afar in the green forest. Such floors or caps are comparable to the plastered, painted surfaces of Mesoamerican pyramids. Kehoe (2005:275) points out that comparisons are more difficult today because original pyramid surfaces are gone, replaced by grass or weathered stone. Southeastern mounds of many ages may have other elements in common with Mesoamerican mounds, such as compound shapes and staircases, as at Etowah (King 2003:72) or Troyville (Walker 1936).

Comparisons of Mesoamerican architectural layouts with the astronomical alignments and engineering designs of mound centers in the eastern United States from many time periods (e.g., Schodol and Robinson 1987), as well as the possibility of common systems of measurement in the New World (Clark 2006), suggest an ancient set of core design and engineering systems. A part of these systems might be ceremonial deposits—ceremonial burial or artifacts of sacrifices during mound construction and at the repeated rebuilding or termination episodes of these monuments all over Mesoamerica. Such deposits are like modern ribbon-cutting ceremonies, a material demarcation of grand events, and there is no reason not to expect them in the Southeast, though this concept is only rarely emphasized (e.g., Phillips 1945:530). Certainly the ritual burning and destruction of the temple at the death and burial of an important person, followed by construction of a new temple, was a common New World event.

Northeast Mexican Mounds

There are no mounds within the somewhat desolate arid zone of south Texas and extreme north-east Mexico, but earthen architecture picks up again around 100 km north of Tampico in the Huasteca region. The Pánuco River has many earthen pyramids and house mounds, often in groups around plazas (Eldholm 1944c; Murr 1926; Sanders 1978), roughly contemporaneous with Mississippian sites in the Southeast. The platform mounds
South Texas and Extreme Northeastern Mexico: The Area In Between

Both archaeological and ethnographic data can help illuminate relationships between settled farmers of the Southeast and Mesoamerica and mobile hunter-gatherers in coastal Texas and northern Mexico. One problem in understanding such relationships is that descriptions of the latter come from the former or from outsiders, and the early historic sources (chroniclers, missionaries) are of course biased (Chapa 1997:1630-1695; Hess et al. 2000:17). In addition, we try to understand the northern Mexican cultures through the traditional culture-historic framework that includes not only newly organized interconnections but also the implicit assumptions about cultural evolution. The path from Formative/Preclassic through Classic and Postclassic—from hunter-gatherer to village farmer to urbanite—is stereotyped as a trajectory with increasing complexity, sedentism, and local ideological. The problem with this is that even in the middle of Mesoamerica this narrative, conflating, hypothetically sequence of cultural periods with value-laden names is not crystal clear, and it certainly does not fit with archaeological evidence from northern Mexico, where farmers sometimes returned to foraging, cities were ephemeral, and the frontier fluctuated through time (Escobar Chumovite 1998; Hess and de los Dolores Soto 2000:40). The same can be said for the other side of that pesky modern international border, where the general time lines of southeastern U.S. prehistory (Archaic, Woodland, Mississippian)—at least the terms themselves do not conjure up rises, falls, or cultural climaxes as do the Mesoamerican ones—do not fit the archaeological record of many of its subregions very well. They certainly do not work in south Texas, where the sequence goes from Archaic directly to Late Prehistoric. The transition is somewhere between A.D. 200 and 700, from a post-Preclassic foraging lifestyle to a more sedentary (perhaps), gardening (perhaps) adaptation characterized by social and ritual elaborations and technological change, including the earliest pottery and the introduction of the bow and arrow (Story 1990:243). Simultaneously, in conch shell tools, engraved shell gorgets, and asphalt-painted pottery of southern and central Texas, one must relate to the Guadalupe Bay site is another valley-marginal locale within a series of extensive earth and shell middens on the east side of San Antonio Bay (Ricklis and Weinstien 2005:134-149, Weinstien 2002). Although no evidence of contact with exotic groups was found here, the site is important for its data relative to changes in local subsistence patterns and the range of pottery (Ricklis and Weinsten 2002). Examples of sites on barrier islands include the Late Archaic to protohistoric midden and cemetery complex at Mitchell Ridge on Galveston Island (Ricklis 1994) and the Late Archaic/Late Prehis-
toric shell midden at Ingleside Cove (Storey 1968). As with the Allen Creek burial, the late prehis-
toric and prehistoric burials at Mitchell Ridge showed evidence of contact with groups to the east,
the late prehistoric subsistence data from the Brownsville-Cove
foreshore the later findings at Guadalupe Bay
and elsewhere and help form the basis for the area's
aboriginal settlement model proposed by Rackliff
Rackliff and Weinstein 2003).

On the lower Texas coast are sites of even less
complexity than those of the upper and central
coasts. Sites of the Rio Grande Delta, for instance,
 consist simply of scattered artifacts and shellfish
 remains found along the margins of bays and
 lagoons or atop relics natural levees or the numer-
 ous clay dunes (commonly referred to as "lomas")
 that are ubiquitous across the region. Most of
 these sites had been grouped previously into a somewhat
 nebulous "cultural historical" construct termed the
"Brownsville complex" that was thought to date
generally to the Late Prehistoric period (c. after
A.D. 1400 [Black 1989; Bowersox et al. 1990; Hes-
Rackliff 1999b; Rackliff and Weinstein 2005]).
 Recent research by Tennyson (2005) and Weinstein
(2005) indicates that some Brownsville-com-
 plex sites have a much greater time depth than
 originally estimated and that many shell tools and
 ornaments normally associated with the complex
 can occur in Late Archaic contexts in the area. Gen-
 erally, the area is very poorly known and needs
 archaeological research.

Perhaps the only sites in the Rio Grande Delta
 area to receive anything more than a cursory exami-
nation are the aboriginal cemeteries at Ayala and
 Floyd Morris. Ayala was found in 1948 when exca-
vation of a sewer trench revealed human remains
 on a farm just south of McAllen, Texas. The ceme-
tery was located on a pronounced rise above a ridgetop
 channel of the Rio Grande (Campbell and Fritzeil
 1949; Hester and Rackeung 1969:147-148, Figure 1).
 Initial investigations revealed 11 Late Prehis-
toric Brownsville-complex burials that contained
 15 individuals, all almost buried and placed in cir-
cular pits that had intended into a thick A horizon
midden. Artifacts with the burials include Olivo
 shell beads, disc-shaped beads of shell or conch
 shell, and tubular bone beads (Hester and Rack-
eung 1969:147). Several burials had red pigment.

In 1952 seven more burials were encountered; as
 many as 44 burials may actually have been present
 (Hester and Rackeung 1969:155). Again, all the
 burials were flexed and in circular pits and included
 with the burials was a distinct subsistence in a
 Oliva shell beads and tinklers; conch or whelk dis-
s napped beads; perforated canine teeth; tubular bar-
bs; and perforated rectangular bone pendants,
 some with engraved lines filled with asphalt, and
 one perforated, large triangle whelk or conch
 pendant. Although such items may be part of the
 Brownsville complex, similar artifacts have been
 found in unquestionable Late Archaic contexts far-
ter up the Texas coast at both the Emerent Witta and
 Guadalupe Bay sites (Dietis 2002:480, Figure 9-
 12d-e; Hail 1981:201-202, Figure 47).

Floyd Morris was examined in 1966 after human
 remains were uncovered during land-leveling op-
erations just north of Harington, Texas. On a slight
 rise adjacent to a probable relic Rio Río site in
 nel, the site included the remains of 18 burials (11
 fairly intact, seven badly disturbed), plus a few iso-
lated individual artifacts and small clusters of fun-
 al material (Collins et al. 1969:121, Figure 2).
 There may once have been 75 to 100 burials; they
 consisted of single flexed interments in shallow
 pits, although a few contained multiple flexed indi-
 viduals. As with Ayala, a few had red pigment.

 In one instance (Burial 11), an initial flexed interment
 of an adult had been disturbed by a subsequent
 bundle burial that included three individuals (an
 adult male, a young female, and a newborn infant
 or fetus). The bones of the initial individual were
 highly mineralized, while those of the bundle bur-
 al were not, suggesting that a significant period of
time had elapsed between the two interments
 (Collins et al. 1969:126-133, Figure 5). Other bur-
 als at the site showed the same pattern: some min-
 eralized, and others not. Given the presence of an
 Archaic dart point, plus a wealth of items associ-
 ated with the Late Brownsville complex (shell disc
 beads, tubular beads, Oliva and perforated
 Noota shells, Marginella beads, a Matamoros
 point, and a small end scraper), it has been argued
 that Floyd Morris was used as a cemetery for ordi-
 narily a long period of time (Collins et al. 1969:121).
 Of particular interest for Mexican-U.S. connec-
tions is a large, tubular jadeite bead found by the
 landowner near whom one of the burials was sub-
 sequently discovered. This bead must be a trade
 item from the Huasteco area; it matches quite well
 a large jade bead noted by Ekholm (1941:487, Fig-
 ure 54) from burials at the Lalo Flores site. Collins
 et al. (1969:137) also cite MacNeish (1947:7) as
 having noted two other Huasteco-like jadeite items
 (a large spherical bead and a small celadon-like object)
 found at other Brownsville complex sites in south
 Texas.

Northwest Mexico

Further south, well over the border, the historic
 Huasteca (or Huasteca or Tarasco) were Maya-
 speaking hunter-gatherers and farmers (Ariel de
 Vidas 2004; Sandstrom and Garcia Valencia 2005)
in a zone sometimes labeled as a buffer between
 Mesoamerica and the provinces of the Southeast.
 It is unclear what a buffer is supposed to
 be or why one was needed. The coastal Huasteca
 held ceremonial centers during the Early Postclassic (the earthen mounds described above). Their monumental stone sculp-
tures depict important people during the Late Post-
 classic, and their unique black-on-white Panuco-phase pottery was traded north to the "wild
 tribes, some of whom carried it as far as southern
 Texas" (Willey 1966:170). Their carved circular
 shell gorgets may have inspired similar artifacts in
 Mississippian cultures, though, as mentioned, the
 influence actually may have moved from north to
 south (Zaragoza 2005), as tobacco may have done
 in earlier times (tobacco might also have originated
 in South America [von Gernet 1995], or there may
 have been stronger tobacco varieties in Mexico, which
 then moved north [J. Brown 2004:685];
 Panuco-style pieces illustrated by Merino Carrion
 and Garcia Cook (1987:Figure 12) for the Tlaxcala
 phase (A.D. 600-900) in the Panuco Valley appear
 similar to slightly later Mississippian ceramic types
 (see Figure 6).

North of the Huasteca, Willey (1966:229-331)
 includes northern Tamazunchale as part of the Río
 Sota in Mestiza and all the Texas coast in a culture area
 that also extended into Nuevo Leon, Coahuila, and
 eastern Chihuahua and was characterized mostly by
 what is today northern Southeast, the South-
 west, or the Plains, or Mesoamerica, or the
 Huasteca, the major culture areas that surrounded
 it, not suitable for agriculture, with only scrubby
 vegetation; not characterized by elaborate cultural
 development, just the general Desert Archaic. Tay-
 lor (1966) notes how archives show that historic
 Indians of this region traveled a great deal and
could easily have influenced reciprocal cultures. Griffin
 (1966) describes similarities in Archaic points and
 other stone tools from south Texas to Tamaulipas
 but notes the absence in Mexico of distinctive
 Southeastern Archaic artifacts such as bone ornaments
 and copper implements. The riber coastal envi-
rnments in this region, with their great-sized river
 valleys and wetlands, must be distinguished from the
 surrounding arid physiography. The coastal
 plain is narrow in the Mexican portion of this area,
widening in Texas, but not all sandy wasteland.
 Those lagoons behind barrier island formations have
 bountiful murrellines (less so in the salty Lena
 Madre, as noted). We know that bison traded in to
 the central Texas coastal zone during prehistoric
 times (e.g., Hester and Parker 1970; Pevett and
 1995c:55, Figure 31, 1996; Schmedding 1979; Sheaf-
 er 1989) and were present across south Texas in
 the nineteenth century (e.g., DeLyke 1974). They
 must have been in Mexico as well as parts of the
 whole region had other faunal resources besides
deer, fish, and reptiles. However, as stereotyped as
 it sounds, it may be the case that cultural com-
 plexity only "picks up" close to the Mississippi or
 Panuco rivers.

The Chichimeca Connection

Hunter-gatherer-fishers north and northwest of the
 Huasteca are described as "nomads or semi-nomads
 of a rather low culture" (Stresser-Féon 1971:385)
 and were called Chichimeca or "dog people" in
 Mexico. The word was used not only for specific
 ethnic groups inhabiting the northern Mesoameri-
can frontier and occasionally invading southwest
 but also for any mobile barbarian-type folks (in a
 very Western sense) who sometimes produced lin-
 eages that took over (compare Rome, A.D. 476).
 They were characterized as "wild" people, not
 bound by the bonds of written history, but also
 slightly earlier, in original native chronicles. They
 were "uncivilized," possibly cannibals, but nonetheless
 just as much apparently ancestral to Tlaxcalteca, Aztecs,
 and others (Weaver 1993). Similar to the Vandals of Europe,
 whose name is now a generic term for people
 behaving badly, Chichimeca became a term for uncivilized
 groups of the borderlands.

Hers and de los Dolores Soto (2000:42) explain
that, from the sixteenth century to the present, chichimec has been used to mean a specific time, a "level" of cultural development, an ethnic group, a geographic place, a savage barbarian, and a personification of the unknown or "the other," and one civilized Mestizos. Most of this comes from the one-sided descriptions of Chichimecas given by their contemporaries. But the Tarasals were a specific Germanic ethnic group, with origins that can be traced to some degree, it is probably also true of the Chichimecas. Hes de los Dolores Soto (2000:42), expanding the work of Beate Brauf (e.g., 1993), note that we should not envision a Chichimeca culture as a single great unsettled ethnic group aparently occupying all of north Mexico. Instead, archaeology and ethnography here can investigate the symbiosis or other relatioships of foragers with more sedentary villages, the movement from one means of production to the other on the ground, and the instances of mutualism as between the two that may have fostered peaceful conditions, and not just conflict (Hes de los Dolores Soto 2000:43).

Chichimecas were usually located in southwestern Mexico and the U.S. Southwest. The area considered the Mesoamerican frontier is sometimes not pictured extending as far east as the Gulf of Mexico, and it also fluctuated through time, with the northern border as far south as the Pánuco River by A.D. 1500 (Brauf 1993:67). In discussing the dynamics of sociocultural interaction along the northern frontier, Weigand and Garcia de Weigand (2000:120, and see Weigand and Harrell 1993) show many long routes for the exchange of turquoise, for example, running from central Mexico to a large north-western arca into Arizona and New Mexico. One lone route heads eastward from there to Spio, then south-southwest to the northeastern Mexican Gulf Coast, before concluding the return trip to the center of Mexico. A branch of it (with question marks) moves from New Mexico south-southwest, along the southern Texas border (the Rio Grande), to join the route from Spio to northeast Mexico. None of these routes includes the Southeast proper. Even those that do may have facilitated a great deal of sociocultural interaction, whether they were raiding or trading, moving minerals or ideas, though it is still unclear to whom they all were or where they went. Most descriptions appear to be based on the accounts of the colonial Spanish, where the word chichimeca was picked up to use as an ethnic label, to mean general untamed natives (perhaps much as an early Agatha Christie mystery novel uses apache). One fascinating possibility comes from some of the earlier histories of the colonial Southeast, where Spanish as early as the 1620s (Hans 2006:12) applied the name Chichimeco (or Chichamaco) to a native group with a fierce reputation as warlike savages (Hans 1988:411-412, 2006; McEwan 2000) who attacked Oñate, Apalachee, and other native provinces. Mission-period and later documents record the Chichimeca as early as 1661 possibly coming from Virginia and moving around coastal Georgia and northwest Florida, often preying on mission settlements, slave raiding, and even practicing cannibalism. Though the Spanish or their Mexican Indian associates in Florida may not have understood them well for savages, the term may also have referred to a distinct ethnic group (Hans 1988, 1996, 2006). The Chichimeco of the Spanish documents were apparently the same as the Westo or Richahere/Rickhahre of English records on the Atlantic coast, Virginia, and the central Georgia area, who apparently originally derived from the Erie of northern Ohio (Browne 2005; Hans 1996:67-68, 2006:12, 52-68; Worth 1995). Mobile historic groups may point to more connections than we realize; Keehoh (2005) has postulated Mesoamerican relationships of the Powhatan, the historic native leader of Virginia. The detailed Spanish description of the ball game played by the Apalachee (Hans and McEwan 1995) and other native cultures in Florida and Georgia shows that it may have close connections with the Mesoamerican ball game, not only in procedures and social and ritual associations but also in terminology (Williams 2005). Though tenuous, such connections merit further investigation.

Disconnections: What Is Missing?

Theoretical Frameworks

To this point, we have discussed both evidence and potential evidence and conditions needed for interaction between the U.S. Southeast and Mesoamerica in the northeastern Mexican Gulf Coast becomes increasingly bolstered for "development," has not turned up much so far, and it would be unlikely that only perishables were exchanged. As the risk of being accused of using "bird and switch" tactics (as one reviewer suggested), after listing so much possible evidence, we must explain why it is just not enough to establish the case. Like good detectives asking why the dog did not bark in the night, we must understand where clues lead.

Materials and Technologies

Of the obidion coming to light in the Southeast recently, none from Mexican sources has yet been found east of the Mississippi, only at the edges of the Southeast. The Moundville place may not even be from Guatemala; either way, it would fit comfortably into a picture of a few odd, mostly utilitarian obidion items scattered around the Southeast and obtained from long distances, most probably by individual and idiosyncratic means. The remains of tropical plants in south Florida, just like the continued connections between South Florida and Caribbean native languages, are beyond the scope of this book. The heartland Southeast, and these plants did not move north from there. Items from Mexico that moved into the western United States might not be present in the Southeast because equivalents were already available. For example, the western exchange in macaw feathers may have been unnecessary in the Southeast, where the green and red Carolina parakeet (extinct), ivory-billed woodpecker (extinct?), and other colorful birds were abundant. Mexican jaguar, so distinctive with their spotted coats and so important in Mesoamerica, ranged prehistorically only as far north as southern Texas (McCarthy 2004), but the cougar or panther once native to the entire United States (now remaining only in the West and in south Florida) probably served equally well as prey. Southeastern cat imagery. While ceramic similarities have been mentioned, there are too many discontinuities in time, style, and other characteristics to see definitive connections. For example, there are relatively few clay figurines in the Southeast as compared with the northeast Mexican Gulf Coast, with its stunning Totonac figurines and small, wheeled pottery figures, not to mention mold construction of ceramic artifacts. Northeast Mexican ceramic styles from many time periods are similar to many found farther south in Middle America and northern South America, but apparently there was not much spread northward. Metallurgical techniques in the Southeast did not include using molds, as was common (especially along the Gulf Coast), technological expertise in water travel, and the great knowledge of the landscape that aboriginal peoples would have had. But this approach also requires empirical demonstration of material connections through testable hypotheses. So far, unquestionable empirical evidence is scant except along the Texas coast and the Rio Grande. Showing more sustained and widespread cultural interaction between these regions requires more. To Muller's (1971) framework of comparing not just individual traits but integrated functional and structural complexes, we add the need for demonstrated material connections (through trace analyses or other scientific means) and also for evidence of important traditions that would be expected to move easily between regions. A less-than-rigorous scientific framework will be, we feel, inadequate. Structural analyses of design motifs are useful, but in prehistoric time we can never see their clear references. The difficult and long-standing iconographic issues are hard to resolve when we do not know if similarities derive from common origins or convergence or something else. Indeed, by historic time, when actual meanings might have been recorded, most of the Southeast and Mesoamerican aboriginal cultures were either extinct or so altered as to be less useful ethnographic examples for comparison. Shared practices for which there is unmistakable evidence, from the taking of trophy heads to the incising of interlocking scroll motifs on pottery, are also known as far away as Oregon, for example, so there is no need to invoke contact across one continent for explanation. The several points made so far (some requiring a bit of intellectual gyration) support the idea of cultural interaction only in the borderland region. Even then, one could hypothesize long-distance traders, intermarriages, political alliances, or other interaction mechanisms, but designing ways to test for each would be more elusive. Yes, the expected and necessary hard evidence for more sustained and longer-distance interaction may be either gone or yet to be found. But the rapidly expanding archaeological record, especially as the Gulf Coast becomes increasingly bolstered for "development," has not turned up much so far, and it would be unlikely that only perishables were exchanged. As the risk of being accused of using "bird and switch" tactics (as one reviewer suggested), after listing so much possible evidence, we must explain why it is just not enough to establish the case. Like good detectives asking why the dog did not bark in the night, we must understand where clues lead.
in Mesoamerica, or indeed anything beyond cold hammering raw metals. Other technologies that seem as if they would have been easy to pick up from neighbors around the Gulf apparently did not spread either, such as making bark paper, which is recorded for the Huastec (Stresser-Péan 1971:589–590), or burned-shell plaster, also done in the Huasteca and throughout Mesoamerica. With standard dash-covered houses and so much shell available in the coastal Southeast, why did mound houses not end up with plastered floors or walls? Inexplicably absent in the prehistoric Southeast is cotton, an important Mesoamerican crop known on the Mexican Gulf Coast as early as 1500 B.C. (Griffin 1980:15). No cotton artifacts, not to mention evidence for the entire labor-intensive production system, have been found. Historically, of course, cotton was enormously abundant and important in the Southeast, but prehistoric fabrics were made only from grasses, hair, and other fibers. The only known cotton occurrence is a fragment from Spiro that is considered to be an exchange item from the Southwest, where it was grown and woven on looms (Brown and Rogers 1999:146; Drooker 1992:201–202). Once cotton was introduced in historic times it quickly became ubiquitous for native use in the Southeast (Minter 1936; Whifflord 1946:11). Perhaps there were cultural barriers to its acceptance earlier, or perhaps like obsidian and other things, it just did not matter that far away from Mexico like maize did. There is no archaeological evidence of which we are aware for looms in the Southeast, and the possibility of spindle wheels is so far limited and tentative (Alt 1999; Drooker 2001:180). Wild cotton (Gossypium hirsutum) does grow in south peninsular Florida (e.g., Widmer 1976:10) beyond the heartland Southeast; it was apparently not used aboriginally.

Alcohol and Other Drinks and Drugs

The greatest mystery in an archaeologist is the absence of any prehistoric alcoholic drink in the Southeast (and indeed most of North America north of Mexico). There is neither archaeological nor ethnographic evidence for it; a tentative case has been made for maize beer in Kentucky caves (Schoenwetter 2001). The salsa of the Creek and other versions of cracked corn soups may have been allowed to sour or ferment slightly (Hudson 1976:305), but apparently this was just for taste. No tradition of alcohol production or consumption has been identified: no maize beer, and no wine, despite the fact that any fruit or starchy grain food left for just a short time easily starts fermenting in the warm temperate South (sometimes in the field camp refrigerator). Prehistoric Mesoamericans (and Central and South Americans) were infilling great quantities of maize beer and pulque, as well as alcoholic drinks made from fermented fruits, palms, and baked mescal (not to mention mushrooms, morning glory, datura, psilocybe, and other mind-altering substances that were also apparently not used in the Southeast).

The fermentation process was likely known long before food production (Braman 2000:60). The tradition of making beer in the New World is thought to have originated with the Olmec or even earlier (Braman 2000). Though both palm wine and pulque (fermented juice of the agave or maguey plant) were made by the Huastec in northeastern Mexico, and pulque may even have originated there, the best agaves do not grow there (Braman 2001:63–64). The Mexican highlands have been suggested for the early origin of pulque, but maguey imagery is prominent at places such as El Tajin (Figure 12) on the Gulf Coast (Sheehy 2001:254–255). Stresser-Péan (1971:586–587, 589) notes the strong associations of pulque with the Huastec, who were known for a ritual of drunkenness associated with male nudity, fertility, and magic. Coastal Mayans in north-central Mexico and possibly south Texas made mescal from agave (and also ingested peyote) and had all-night dance feasts (Newcomb 1961:41, 55). How could all of this not move across the Gulf Coast into the Southeast?

The tradition of alcoholic beverages in general apparently did not even reach all the way to extreme northeastern Mexico. A possible reason is the hypothesized prehistoric absence of suitable microorganisms for the fermentation process (Braman 2000:109), which may also have been true in the U.S. Southeast. Without them the liquid would just sit, roil, and rot. Or perhaps the lack of alcohol is related, again, to the remoteness of the entire Gulf Coast from the central Mesoamerican plateau, where several traditions of producing alcoholic converges (Braman 2000:7–11). It is also possible that coastal environments somehow prevented the introduction natural or cultural conditions for fermentation, or for the right species of plants, or for the acceptance of alcoholic use.

The "black drink," caffeine-packed tea made from yaupon holly, appears to have been the only substance of psychochemical effect regularly used in the prehistoric Southeast, though there were other medicinal brews, many powerful tobacco varieties (some of which may have been hallucinogenic [von Gernet 1995]), and apparently datura or jimsonweed at Cahokia, at least (Emerick 2003). The black drink was often taken from cups of large Gulf Coast shell, which are often found archaeologically in ceremonial contexts. The holly leaves were dried or parched to make the tea, though one account suggests that in historic times some leaves were slightly fermented (Staunest 1979:155). Yaupon is the holly species known as Ilex vomitoria, after its enigmatic properties when infused and drunk in large quantities. It grows along the entire northern Gulf Coast extending as far west as central Texas (Merrill 1979:42) and was used all over the eastern United States for this sacred, socially significant drink from probably Archaic through recent times (Hudson 1979). Related species of Ixs occur along the Mexican Gulf Coast and inland in Chiapas and Hidalgo (Hudson 1979). We therefore might ask why cayotes in these areas of Mexico did not take up the custom of making black drink; but then, they had so much else to ingest.

One of the other Mexican drinks is cacao, another missing element in the Southeast, whether as the plant, the drink, or the associated complex of customs and material culture. Chocolate was extraordinarily important in Mesoamerican value systems, for ritual, payment of tribute, and drinking by elites. The preparation of the frothy drink is well documented. One account of "black drink" preparation among the Kamloops of coastal Texas notes that the process occasionally included stirring the tea with a whisk until a yellowish froth covered the top of the liquid, at which point it was passed around and drunk (Merrill 1970:69). This sounds very much like the preparation of chocolate, but it must be a coincidence. There appears to be no connection between the special tea brewed along the northern Gulf and a drink made from the beans of an

Figure 12. Bas-relief on South Bull Court at El Tajin, on the central Mexican Gulf Coast, showing possibly Tlaloc, the rain god (seated, at right center), practicing bloodletting self-sacrifice and giving drink to Rah-helmoted figures in a small pool (at left center); a maize plant at lower left celebrates the source of the alcoholic drink pulque; central face at top, connected to two bodies) may be happy from the effects of the pulque ceremony (photo by N. White, 1999).
intensely cultivated tree in Mexico. Cassia does require intensive labor and the year-round humidity of a tropical climate (Sandor 1971:548; Weaver 1993:214–245), and the plant does not survive too far north of the Mesoamerican heartland. However, the sturdy bean could have been traded far; yauta yello grows mostly on the coast but was traded far inland because of its importance. Meanwhile, we might ask how Southeastern natives had interesting spiritual, physical, or social experiences facilitated only by tea and tobacco.

Other Cultural Systems

Continuing along the social-rural-spirituality continuum, perhaps it is too much to ask for the same kind of Mesoamerican ball game in the Southeast if there are no rubber trees for balls or stone for courts. The world’s earliest teams played sports by men and women with rubber balls developed along the Mexican Gulf (Fox 1996; Scarborough and Wilcox 1991; Whittington 2001), but the distribution of rubber beyond the tropics as a manufactured product may not have reached far northward, even though the game spanned many time periods, types of societies, and regions beyond Mesoamerica proper. There were equivalent sports, such as the Southeastern ball game mentioned above. Perhaps real ball courts are going unrecognized in the Southeast because researchers are unfamiliar with them. In the Southeast, a ball court may survive as merely a couple of parallel earthen berms and little else, and in the Huasteca region there are traces of small, simple, prepared ball fields (Stresser-Péan 1971:590).

The study of salt procurement and exchange as a mechanism of socioeconomic interaction may illuminate possible Mexican–Southeastern connections around the Gulf of Mexico, though so far this potential is untapped, and the archaeological evidence for salt-making activity is very diverse. Besides mineral resources, salt is needed for preserving fish and meat. Ian Brown’s (1980, 1981, 2004) study of prehistoric salt-making on the northwestern Gulf points to the need to compare methods, technologies, and accompanying, for example, mortuary culture along the whole coast. Andrews (1983) and McKillop (2002) focus on Yucatan but mention sources both there and on the Pacific coast. Kibler (2005a) suggests salt procurement as a factor in the occupation of areas on the south Texas coast and interior. Again, the evidence may be of the kind with which archaeologists in the Southeast are less familiar.

Water Management

Another type of integrated system that appears to be absent in the Southeast is irrigation. Investigations of prehistoric water management usually focus on the larger, more visible systems of complex states or arid areas, but now it is clear that they existed even in areas with abundant water, such as the Maya Lowlands (Duch 1985; Davis-Salazar 2003; Fedick 1996; Scarborough 2003), so there is no reason they could not have been constructed prehistorically in the Southeast. Irrigation canals and raised fields for agricultural intensification, as well as wells and reservoirs for obtaining and managing still water (not to mention aquaculture of fish and shellfish), are well known and documented in Mesoamerica and the Southwest. But little of this was apparently included in Southeastern food production. Perhaps it was not needed, since double cropping was not possible in a region subject to winter frosts, or else the ideas just did not occur or move into the region. Another possibility is that the lack of irrigation was associated with the maintenance of matrilineal kinship and the division of labor by gender that meant that women were the farmers. In the historic aboriginal eastern United States, women usually did the farming, in systems that have been labeled “simple” (nonmechanized) farming (Boseup 1970) or even horticulture (Martin and Voorhies 1975), though they were intensive agriculturalists with large maize fields. Mesoamerican and north Mexican labor, kinship, and social systems took a different direction, involving men in farming and also in building and maintaining irrigation systems and other intensification.

Discussion of prehistoric water management includes asking whether central authority was needed or community-level labor was sufficient (e.g., Scarborough 2003). Either way, extensive irrigation systems were possible for nonstate societies in the Southeast, and maize arrived there early along with early irrigation (e.g., Dunning 2002). Southwestern groups were also matrilineal, and women did agricultural labor, but of course there was little water available without cultural assistance. But interestingly, maize/beans/squash cropping in the Southeast seems to have been confined to river floodplain meander belts and dependent on rainfall and consequent flood to renew soil nutrients and bring water (e.g., Smith 1978:880–890). These agricultural achievements have been seen as environmentally circumcised, that such population growth brought increased competition and conflict in later Mississipian times (Smith 1978:483). This interpretation leads to the question of why further intensification through irrigation was not then a natural development, even if rainfall agriculture was productive. There is just as much rainfall along the normal Mexican Gulf Coast (Sandors 1971; Siemens 1998), where irrigation systems became well developed. The difference may be in the scheduling of growing season coordination with rainy seasons.

But perhaps Southeasternists do not recognize raised fields and irrigation channels because we are not looking for them. Large rivers in the eastern United States can change course and dump many meters of alluvium over the centuries that might hide evidence of old canals and drainage ditches. Raised fields and irrigation canals in Mexico have often been discovered by chance, such as during unusual flooding (Danner et al. 2005) or air reconnaissance (Siemens 1998). Several other kinds of huge, human-made landscapes have been harder to discover until technology allowed or other chance events took place. The earthen rings at Poverty Point were not noticed until aerial photography became available (Gibson 2000:79). The massive center of El Patl on the Mexican Gulf Coast became known only when the thick jungle was cleared for agriculture and what looked like natural hills were investigated (Willey 1944; Wilkerson 1994).

Beyond irrigation, other water-management systems may have been present in the Southeast. Borrows pits from mound building may have been utilized as water sources. Prehistoric canals are now documented (e.g., Luer 1989, 1998; Whetler 1995, 1996) in northwest and peninsular Florida. In south Florida they were apparently for transport, as there was no agriculture there, but some may have been for aquaculture. Detailed study of their construction evidence might provide baseline data for recognition of such manufactured elements in other Southeastern landscapes. We know of other erosion-control methods, such as the channels surrounding Mississippian centers at Etowah (Georgia), Lake George (Mississippi), Bottle Creek (Alabama), and elsewhere (Brown 2003; Lewis and Stout 1998). These ditches or canals might have been for defense, transport, raising aquatic species, or simply convenient water sources. One unexpected example of protohistoric water management has been identified at the Jordan site in northeast Louisiana (Kidder 1992; Kidder and Saucier 1991).

Cultural Complexity

Sociopolitical evolutionary histories, the paths to statehood or complex chiefdoms, are crucial topics in the investigation of Mesoamerican–Southeastern interaction, though parallels or divergences are seldom specifically addressed. Years ago, Kent Flannery’s (1986) keynote address at the annual meeting of the Southeastern Archaeological Conference (SEAC) presented for comparison a fascinating study of what early Mesoamerican agricultural villages looked like; there seems to have been no research pursuing such comparisons. Similarly, other Mesoamerican specialists have addressed SEAC—George Stuart in 1995 on the Maya and David Freidel in 1999 on recognizing warfare and ritual succession events—but similarities among sociopolitical systems between the regions are rarely examined (e.g., Pool 2005). There are clear areas of comparison, such as offerings or sacrifices buried during the construction of a new mound or temple stage.

Archaeologists long ago discarded unilinear (even multilinear) and normative evolutionary trajectories that would have started with apparently similar adaptations and ended up with chiefdoms in one place and states in another. But the debates continue concerning what it does take to produce a true state. Some still ask if states would have developed in the Southeast had outside conquered not arrived or whether the region was too distant to have developed secondary states through association with or conquest by a Mesoamerican world system. Others (a minority) ask if we are misled by our training and unable to see Mississippian states or cities such as Cahokia for what they were (Kehoe 2003:270–272; O’Connor 1995; Webb 2000). There is no single teleological trajectory that the Southeast just stuck in the slow lane, since the many paths of sociopolitical development do not all end up in greater complexity. Statehood is hard to see in northeastern Mexico as well (Wilkins...
concerned. Meanwhile, complex societies emerged all over the Southeast fairly contemporaneously and independently (e.g., Rogers 1991), not what would be expected if the processes were tied to common influences.

Compared with relations between the U.S. Southwest and Mexico, which were probably more fluid and continuous and involved sparser populations, less complex social systems, and shorter distances, relationships between the Southeast and Mesoamerica might have involved some deliberate or unintentional resistance. Southeastern populations were relatively egalitarian in social organization and less agriculturally productive, in a less rich and more uncertain environment (Cobb et al. 1999; Cordell and Milner 1999:113). More populous ranked or stratified groups of the South- east, from perhaps the Late Archaic onward, were strong and complex both politically and economically. They may have meant that they could withstand or ignore large-scale interference or influence from the outside or be isolationist themselves in not exploiting beyond the geographic areas of their own control.

Conclusions and Future Directions

In the U.S. Southeast there is clear evidence of sustained long-distance interaction and movement of artifacts across what is today the Mexican border, but we agree with those who say that the same is not true for the Southeast (e.g., Cobb et al. 1999; Griffin 1980; Weaver 1993:413). Natives of the Mexican Gulf Coast, discoverers of rubber and penicillin, sports fans and players on the ball courts, users of chocolate, alcohol, cotton, and other useful items, may not have spread these innovations as far as the northern Gulf simply because of distance or perhaps because of resistance. They had near-monopolies on luxury trade items such as feathers, cotton, and cacao (Sandels 1971:549), which other consumers may have consumed elsewhere. Southeastern cultures, early potters and tobacco smokers, makers of engraved shell gorgets, might have sent just a few of their ideas and commodities toward the Northwest. Technologies such as copper working were too different and separated in space and time even to be related (early in the U.S. Midwest, later and more complex in Mexico). Sociopolitical evolution was perhaps too local to be connected on a much wider scale. Only ritual imagery and religious notions seem to have connected these regions somewhat continuously.

Common Symbolic/Ideological Foundations?

We suggest that between the Southeast and Mesoamerica there was a filtering in of occasional people and ideas—mostly down the line and sporadically through time—that has left enough archaeological traces to be suggestive but not definitive. There is too much discontinuity in the material culture and the systems that produced it to hypothesize much more at present. Many tenous similarities look like they were acquired "secondhand" (Covarrubias 1954:272) or could be attributable to common and ancient ideological foundations (e.g., Cobb et al. 1999; Muller 1999:149). These opinions are not new; Webb (1985) and others (e.g., Jackson et al. 2004:39) have pointed out that both the very old religious and iconic themes and also the independently emerging evolutionary parallels between Mesoamerica and the Southeast. We are encouraged by continuing studies of southeastern symbolism (e.g., Hall 1989, 1997; King 2007; Reilly and Garber 2007; Robbins 2005; Townsend 2004). It is not impossible that Mississippian culture was a revival of old-time religion from both Olmec and Hopewellian days, with imitation of (or even reuse of) discovered or curated artifacts from earlier times. We moderns continually reinterpret important cosmologies, such as Christianity over two millennia, so that the motifs of the cross are seen everywhere in every medium, from huge neo-classical buildings to jewelry attached to pierced body parts.

Post-American ritual and belief systems may have had common foundations renewed now and then at just those times of rare physical contact and then left to be continually locally reinvented, released from original limits. The similarities we have discussed should probably be explained through both diffusion and independent invention; symbols moved around and changed with each new generation and each group to see how someone else used them. Any individual unit of imagery can be examined chronologically and over horizontal space for its earliest manifestation and contemporary permutations. For example, the idea of conflict and taking a life required proof in the form of a decapitated human head throughout the New World (and elsewhere). It may have been both diffusion and the "psychic [psychotic?] unity of humankind," in cultures with common foundations for milking the gods, that led to the taking of trophy heads and the trophy skull motif as a crucial symbolic element throughout North and South America and elsewher.

Sporadic Specific Interaction?

Based on the distinct "smoking gun" of a piece of obscen and the more obvious similarities of Cad- doan and Huastecan cultural complexes, we could say that, over short distances, interactions among prehistoric aboriginal groups of Mexico and the U.S. Southeast certainly existed but that long-distance connections were intermittent. The Mexican obsidian in Oklahoma and Texas possibly got to those locations not in the backpack of a long-distance trader but through the line transfer of immigrants from long distances (though this is of course not yet demonstrable for the kinds of individual teeth with no other skeletal remains).

Since this original study, more cases of such dental alterations have been documented, many in old collections with inadequate recorded contexts (Milner and Larsen 1991). Most are also from the American Bottom region in west-central Missouri, around Cahokia, and are of Mississippian age and found on teeth of both sexes. In addition, a Tennessee specimen from the Mound Bottom site, from an elderly male, also of Mississippian age, is an upper incisor with both the notch and the transverse groove. Two Texas cases may be Archaic in age: a young adult female with single notches on upper and lower central incisors and an adult male with three lower incisors notched. Many or all of these individuals may have had a common origin for their mouth adornments. Milner and Larsen point out that these filled teeth "are not associated with super-ordinate status positions consistent with any puta- tive dealings with distant peoples" (1991:360-362) nor are they unusual in the context of Mexico that had filled teeth when they undertook their study of these four cases, all of which came from within a 65-km radius of Cahokia. A 25-year-old male from a Jersey County burial on the Illinois River had six 1-shaped grooves or notches filled in his upper four incisors. A single incisor from a Cahokia village area had four notches and a single transverse (horizontal) groove. Three loose upper incisors from east of Monk's Mound each had two or three shallow notches. A buff-blurred 13 km south of Cahokia had upper mediod incisors each with three notches. All these cases are apparently from Mississippian or Woodland contexts, and all have 1-shaped notches filled into the upper incisor teeth. This type of dental mutilation is typical of teeth from Michoacan and Veracruz in Mexico, as well as from Honduras and elsewhere in Central America. The horizontal groove is not typically Mesoamerican, but the authors note that horizontal grooves were also found on both central incisors of a skull at a Lauer site near Macon, Georgia. The rest of the associ- ated skeletal remains of these cases, where present, indicate apparently local people, as opposed to those wishing to be distinguished as not being of interest to people.

The filled teeth cited by Griffin (1966:120) from the Cahokia region are an example of such a possibility, and it is worth noting some aspects of the original study. Griffin recognizes these specimens as evidence that people who had been to Mesoamerica and think such dental alteration was practiced by late Mississippian dentists. Stewart and Tainter (1944) had known of only one skull (from the Pueblo region of Arizona) out of thousands examined from North America. Consequences of Mexico that had filled teeth when they undertook their study of these four cases, all of which came from within a 65-km radius of Cahokia. A 25-year-old male from a Jersey County burial on the Illinois River had six 1-shaped grooves or notches filled in his upper four incisors. A single incisor from a Cahokia village area had four notches and a single transverse (horizontal) groove. Three loose upper incisors from east of Monk's Mound each had two or three shallow notches. A buff-blurred 13 km south of Cahokia had upper mediod incisors each with three notches. All these cases are apparently from Mississippian or Woodland contexts, and all have 1-shaped notches filled into the upper incisor teeth. This type of dental mutilation is typical of teeth from Michoacan and Veracruz in Mexico, as well as from Honduras and elsewhere in Central America. The horizontal groove is not typically Mesoamerican, but the authors note that horizontal grooves were also found on both central incisors of a skull at a Lauer site near Macon, Georgia. The rest of the associ- ated skeletal remains of these cases, where present, indicate apparently local people, as opposed to those wishing to be distinguished as not being of interest to people.

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Aridion. The addition of the horizontal groove and other aspects of the dental alteration not reported in Mesoamerica might mean local variation added to the borrowed practice, as in Stewart and Tainter- t. 1992:390. Soarchaeologists have noted that the first and otherwise altered teeth in Mxico (even seen in ceramic effigies) are not necessarily associated with high-status individuals, therefore, including those at Tunita, on the Gulf coast (Romero 1970:57-58).

Some exacts such as the filled tooth, even if it could be demonstrated to indicate Mazonian travel or influence, by its rarity suggests a sporadic, not sustained, interaction. This sporadic character may be related to other factors besides more physical distance. As noted, travel by water would have been easier than that by land, but coastal dynamism may have inhibited it, or transient hydrological and geological features may have obviated the evidence. Although the rising sea levels, shifting dunes, and wandering barrier islands, countenances may have prohibited anything but ephemeral settlement for travelers or colonizers. Evidence for human settlement, let alone cultural interaction across a wide area, will necessarily be more sketchy and less well preserved under such conditions. Late prehistoric societies along the northern Gulf were constantly shifting in size, alliances, and compositions (e.g., Davis 1984), probably partly because of this environmental dynamism, and such an evolutionary history might have prevailed earlier. Indeed, if travelers from Mxico made it to the Southeast or vice versa, they would be better off paddling for upriver to avoid such coastal hazards.

Useful Models

In sum, we believe that there was so no sustained, large-scale interaction between the Southeast and Mesoamerica, only sporadic contact through the centuries, with fundamentally identical sociocultural arrangements between the regions originating in deeper time and perhaps sustained by those sporadic contacts. Rather than minimizing the achievements of ancient peoples, as one reviewer suggested, we believe we are demonstrating the great sophistication of those cultures of the Southeast in terms of their own strong traditions and resisting outside intrusion, not to mention dominance. Their incredibly dense populations and complex achievements are often overlooked because they had no stone to leave more impressive monuments and they were the first contacted and devastated by Old World invasions.

New hard data could change our conclusions. With multiple seeds just to process the data we have to be on the lookout for possible connections, not only with Mesoamerica but also across the Caribbean with South America, where a few similarities do invite discussion (Madsen et al. 2004:39). In the lushly forested Southeast, most material culture would have been of perishable substances. It is difficult to conduct a detective investigation if most of the evidence has decomposed, but the increasing research at wet sites is promising. We know that socioeconomic exchange systems extended over thousands of kilometers across the continent (e.g., Baugh and Ericson 1994). This included Southern hemisphere economies, expanding and contracting over time, perhaps, with punctuations during Poverty Point and similar Mississippian periods. Some details are so clear that we can use them to build and debate various models based on ecological factors, political economy, or other interpretative emphases (Johnson 1994). And a very few experts, such as Spiro, seem to have been hubs for such exchange, especially in summarize terms, from all directions (Lafferty 1994). Spiro is in a transition zone, west of the Mississippi River, at the edges of the Southwest, the Plains, and the Southeast, so it is not surprising to find there the tiny amounts of Mazonian obsidian, cotton, and other exotic items, even California olive shell beads (Kozuch 2002).

Our models are now so sophisticated; for example, we no longer see Mississippian cultures as derived from Mesoamerica and thus less "worthy of respect" (Carlson 1980). The old notions of culture contact and site-unit intrusions should give way to newer models that include world systems theory and core-periphery relationships, symmetrical and nonsymmetrical interactions (based on size and complexity of the societies involved), and many other means to look at biological relationships and possible movements of peoples (e.g., Find 1999) between different regions in the prehistoric past, in the way people have lately been examining the circulation and movement of the Pacific islands. DNA analysis of large burial populations throughout the New World, along with tooth and bone chemistry, to understand degrees of biological relatedness and to compare the places where individual...
Figure 13. Old-fashioned map displayed in the museum at Crystal River State Archaeological site, a muffin and a computer terminal (photo by Julie Rogers, 2006).

White & Volume (ed.) and northeastern Mexico (e.g., Ariel de Vidi) in 2004) we should look for similarities that might be traceable from prehistory.

Finally, Southeastern and Mexican colleagues should look and learn beyond regional boundaries. Language differences across continents can result in hugely different archaeological interpretations and approaches (e.g., Omelas 1993:244), but continued communication helps. Since the beginning of this research, we have been amazed at the amounts of data that remain unpublished or poorly known and at the number of colleagues who have contacted us with ideas. We hope to continue the dialogue and begin to understand why Southeastern Indians had no chocolate, no cotton, and no beer.

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On the Cover: The southeastern United States and Mexico, showing Southeast and Mesoamerican culture areas (hatched), geographic features, and selected important sites. From “The Mexican Connection and the Far West of the U.S. Southeast” by Nancy Marie White and Richard A. Weinstein, p. 231.

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