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Olmec Settlement Data from La Venta, Tabasco, Mexico

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Research at La Venta, a major Olmec center on a low salt dome 12 kilometers from the Gulf Coast has revealed evidence of initial occupation (about 1750 to 1400 B.C.) along levees of the silted-in Río Barí, north of the site core in a transitional estuarine-riverine environment. Between 1400 and 1150 B.C. settlement expanded to nearby La Venta itself, which between 1150 and 800 B.C. developed into a major temple-town complex. Local development peaked at La Venta and along the river levees between 800 and 500 B.C. In this span La Venta headed a local three-tiered site hierarchy as social distinctions expanded to the peripheral Río Barí sites. New excavations show that growth in population size and density at La Venta preceded the development of sociopolitical complexity. These data contradict the traditional organizational reconstruction of Olmec society, the "vacant ceremonial center" model, and provide qualified support for a model that presents riverine resource concentration as a significant factor in the evolution of Olmec civilization.

REMAINS OF OLMEC SOCIETY, which flourished in Mexico's Gulf coastal lowlands between 1150 and 500 B.C., present an opportunity for archeological research to delineate the origins and evolution of complex human organizations. The Olmec are one of only a few known primary civilizations, having statelike organizations that evolved from less complex prototypes without input from other systems. As one of the world's first tropical lowland civilizations, the Olmec also provide a major antecedent to later Classic Maya civilization.

Although theories about the evolution of Olmec civilization have been prevalent, archeological data relevant to their evaluation have been sparse. New settlement data from research completed at one of the largest Olmec sites, La Venta, have begun to correct this disparity. Previous research at La Venta (*1*) and another major Olmec site, San Lorenzo (*2*), was aimed at monumental architectural and sculptural remains. The San Lorenzo investigations provided the first detailed cultural sequence for an Olmec site, but much was based on ceramics collected from redeposited construction fills. This highlights the lack of crucial settlement research that specifically targets evidence from undisturbed remains (primary contexts), representing the full range of ancient human activities (*3*).

Ancient occupation sites with primary contexts discovered by one of us (W.F.R.) at and adjacent to La Venta in 1986 and 1987 provide a basis for inferring patterns of population growth and density during both the Early Preclassic span (1400 to 1150 B.C.), which immediately preceded the emergence of Olmec civilization, and the Middle Preclassic era (1150 to 500 B.C.), corresponding to La Venta's major growth and occupation. These settlement data can be correlated with evidence of dynamically changing local environmental conditions and subsistence activities during the same time interval. The new findings indicate that growth in population size and density in resource-rich estuarine and riverine environments preceded local emergence of social ranking or stratification and other archeological hallmarks of civilization.

La Venta occupies a salt dome (*4*), now located 12 km south of the Gulf of Mexico amid freshwater swampland (Fig. 1). In the environmentally static traditional model it functioned as an isolated "island" religious sanctuary, surrounded by uninhabited swamp, occupied by a small group of Middle Preclassic priestly elite who ruled a dispersed population of swidden farmers in the adjacent uplands; the people periodically assembled in the center to perform labor obligations and attend ceremonies and markets (*1, 6, 8*). Although recent theories have challenged this "vacant ceremonial center" model as inadequate to explain the origins and operation of Olmec society (*5*), lack of relevant archeological data and recent disturbance by oil exploitation in the Olmec area have combined to frustrate the evaluation of both the traditional and newer models.

Previous work in the core of La Venta ("Complex A") excavated monumental construction and found huge buried caches of worked serpentine and other imports (*1*). Fourteen new test excavations placed in 1986 disclosed functionally diverse settlement features between 100 and 500 m northeast of Complex A, in areas known as complexes E and G (Fig. 2). These include house floors and storage pits [Operations (Ops.) 28, 31, 33, and 34], urn burials and large pottery offerings (Op. 29), and a serpentine artifact workshop (Op. 30-1), associated with Middle Preclassic ceramics and other artifacts. Three of these features (Ops. 29, 30-1, and 33-2) produced carbon-14 dates clustered near 700 B.C. (uncalibrated; Table 1). These findings indicate substantial Middle Preclassic occupation in the site core, contradicting the conclusion that La

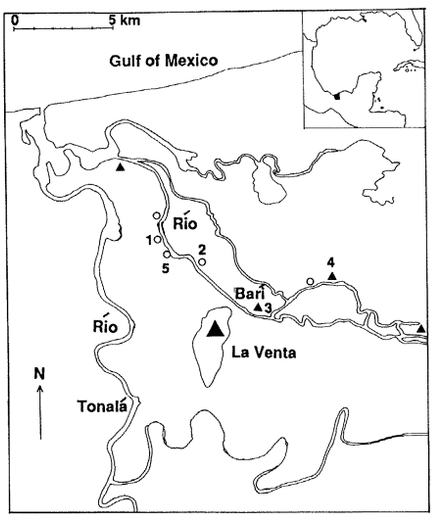

Fig. 1. Map of the La Venta region showing the nine identified levee occupational sites along the abandoned Río Barí channels. Sites marked by circles, including Isla Chicozapote (*1*), Isla Alor (*2*), and Isla Catalina (*5*) are moundless; sites marked by triangles, including Isla Yucateca (*3*) and San Andres (*4*) have central mounds.

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Venta was not used for domestic settlement (*6*). Rather than a "vacant ceremonial center," a more appropriate model for La Venta would be a "temple town" comprising a civic-ceremonial complex surrounded by permanent domestic settlement (*7*).

Survey of about 50 km^2 adjacent lowland terrain found settlement to be predominantly riverine in all periods (Preclassic through Postclassic). Surveyed samples of surrounding upland areas, predicted by previous researchers as domestic support zone (*8*), failed to find any trace of settlement contemporary with La Venta. Remains of such contemporaneous occupation were found in the swampy lowlands adjacent to the salt dome, however, contradicting the assumptions of prior investigators (*8, 9*). The first indication of this peripheral settlement came from Rust's 1986 examination of aerial photos that revealed traces of an abandoned river course immediately north of La Venta, not cited in the archeological or geological literature (*10–13*). Designated the Río Barí (Fig. 1), its twin channels once flowed northwest before they joined and emptied into the Gulf of Mexico. The silted-in channels are wet and, during the rainy season, flood adjacent cleared pastureland. Elongated former levees on both sides of these channels, visible on aerial photos, are called "islas" locally and used today for house and garden plots since they remain 1 to 2 m above high water.

Nine Preclassic settlement areas have been identified on the Río Barí islas between 2 and 12 km from La Venta (Fig. 1). Eighteen test excavations in 1986–1987 at five Río Barí sites discovered consistently dense occupational remains dating from the Middle Preclassic (1150–500 B.C.), underlying sparse Late Classic (A.D. 600–900) and Late Postclassic (A.D. 1250–1520) debris. Excavated features include house floors, postholes, refuse pits, middens, and burnt earth offerings, with associated domestic artifacts and organic remains. In addition, the deepest levels at three levee sites, and in La Venta Complex E, revealed Early Preclassic (1400–1150 B.C.) occupational evidence. These data, combined with the tests at La Venta complexes E and G, define periods of Preclassic occupation contemporary with the site's origins and apogee (Table 2).

Early Preclassic or Barí period (1750–1150 B.C.) remains reflect sporadic settlement during which a transitional estuarine-active riverine environment was colonized. The earliest Barí finds (about 1750–1400 B.C.) were found between 5.0 and 5.6 m beneath the surface at the San Andres levee site, now 13 km from the Gulf Coast (Fig. 1). This deposit produced small amounts of brushed grit-tempered Early Preclassic pottery and marine mudflat-dwelling *Cerithidea pliculosa* mollusks. This was overlain by reduced alluvial clay containing brackish water mollusks (*Rangia cuneata*), tiny mud-boring gastropods (*Puperita pupa*), and mangrove pollen (*Rhizophora* and *Avicennia*), all indicative of semisaline estuary or riverine settings markedly distinct from today's freshwater swamp environment. Pollen from this alluvial and shell layer showed high species diversity, including weedy Chenopodiaceae and Amaranthaceae taxa that often indicate human disturbance. Above this shell layer was a deposit of mangrove wood and alluvium, radiocarbon-dated at 1390 B.C. ± 60 years (Table 1). A cap of sterile alluvium, perhaps reflecting major flooding, was followed by a stratum bearing larger amounts of Barí period pottery and artifacts. This upper Barí level at San Andres (about 1400–1150 B.C.) contained thin neckless jar shards like those in the lowest levels at La Venta Complex E and two other levee sites, Isla Alor and Isla Yucateca (Fig. 1 and Table 2), along with grinding stones of imported basalt, and food residues (mollusk shells and charred palm nuts).

Materials from the Early La Venta Period (about 1150–800 B.C.), dating to La Ven-

Table 1. Radiocarbon dates from La Venta (LV).

Site	Operation	Level	Number	^{14}C date (years before present)	Calendric* (years B.C.)	Period
San Andres	3-2	10	Beta-18198	3340 ± 60	1390 ± 60	Barí
La Venta Complex G	33-1	4	Beta-17488	3020 ± 100	1070 ± 100	Early LV
La Venta Complex E	29-1	3	Beta-17484	2680 ± 90	730 ± 90	Late LV
La Venta Complex G	33-2	3	Beta-17489	2640 ± 90	690 ± 90	Late LV
La Venta Complex E	30-1	3	Beta-18200	2630 ± 90	680 ± 90	Late LV

*Not calibrated. All dates derived from charcoal samples except Beta-18198 (a 30-g wood fragment).

Table 2. La Venta occupational chronology.

Period	Date (B.C.)	Occupied loci						
		La Venta Complex E	La Venta Complex G	Isla Yucateca	Isla Alor	San Andres	Isla Chicozapote	Isla Catalina
Late La Venta	800–500	X	X	X	X	X	X	X
Early La Venta	1150–800	X	X	X	X	X	X	
Barí (Late)	1400–1150	X		X	X	X		
Barí (Early)	1750–1400					X		

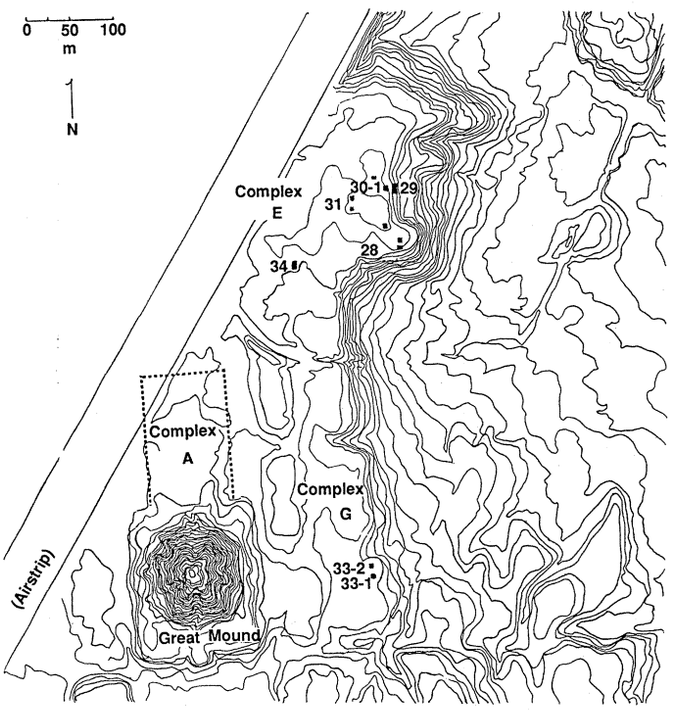

Fig. 2. Map of central La Venta locating complexes A, E, and G and excavated features (1-m contour interval; highest elevation in Complex E, 32 m above sea level).

ta's beginnings as a monumental civic-ceremonial complex, were present at all but one of the sites tested in 1986 and 1987 (Table 2). Environmental data indicate that this span followed a maximum buildup of alluvial sediments that continued after the Barí period, with expanded human settlement along newly created or augmented Río Barí levees that were up to 4 m high. This active riverine phase marked an optimum time for raft transportation of heavy stone materials used for building, caching, or monumental sculpture at La Venta. The southern channel of the Río Barí passed within 2 km of Complex A (Fig. 1), the destination for most of these important basalt and serpentine materials, and is thus a shorter route than the previously suggested Río Tonalá (4 km at its closest point today) (*17*). A large concentration of Early La Venta period occupation remains was found at Isla Yucateca, located at a key access point only 1 km north of La Venta (Fig. 1). Together, materials from this time span include innovations reflecting evolving social complexity and ceremonialism at La Venta, such as polished incised white and buff ceramics, ritual use of polished stone celts, and ceramic figurines. The latter includes types related to Middle Preclassic examples from Oaxaca and the Valley of Guatemala (*17*), indicating interaction with these highland regions.

The Late La Venta period (about 800–500 B.C.) is defined by occupation levels at all Río Barí sites and in complexes E and G at La Venta (Table 2). The Río Barí seems to have stabilized by this time, with little further accumulation of alluvium along the higher levees. Levee settlement developed into two basic patterns: sites with or without earthen mounds (Fig. 1). The extant data show a consistent dichotomy between these two peripheral site types in both subsistence resources and ceremonial materials. This in turn indicates the evolution of economic and social distinctions within populations living in the riverine periphery, reflecting the growth in overall sociopolitical complexity of La Venta society. Specifically, recovered inventories from levee sites without mounds (Isla Alor and Isla Chicozapote) have high proportions of undecorated coarse pottery vessels, few figurines or ceremonial items, utilitarian obsidian and basalt tools, and remains of local, easily accessable marine foods. Although remains of local marine resources and basalt grinding tools were also found at levee sites with central mounds (San Andres and Isla Yucateca) they furnished evidence of subsistence resources notably absent from their neighboring moundless sites, such as abundant bones of large mammals (deer and dog). Mound sites are also associated with a far greater proportion of status and ceremonial items, including incised differentially fired fine-paste pottery vessels used for offerings (caches), standard La Venta figurine types (helmeted males, ball players, and slender nude females), polished serpentine tablets, minature celts, and ornaments of jade and other polished green stone. Together, the presence of central mounds, ceremonial or status items, and a wider diversity of food remains, including protein-rich animal resources, indicates Late La Venta period occupants of these levee sites possessed enhanced economic and sociopolitical status—most explicitly manifest in their control over local rituals associated with elevated platforms that seem modeled on those of nearby La Venta itself.

The new settlement data from La Venta document for the first time the existence of Middle Preclassic domestic occupation in the civic-ceremonial core, contradicting the traditional vacant ceremonial center organizational model. The new data support the development of a local three-tiered site hierarchy, in place by the time the site reached its apogee (800–500 B.C.), with La Venta itself in control of major ceremonial construction and activity and the importation and redistribution of exotic materials for both utilitarian and ritual or status use, supported by a peripheral riverine settlement differentiated by further economic, sociopolitical, and ritual distinctions. This evidence, in turn, allows the reconstruction of a ranked or stratified society at La Venta of sufficient size and complexity to challenge the correlate of the "vacant ceremonial center" model, a dual component "priest-peasant" social organization. The assumed dispersed sustaining population implied by this traditional model is also inconsistent with the discovery of long-term occupation along the Río Barí, beginning in the Early Preclassic under estuarine environmental conditions.

The Río Barí discoveries provide the first evidence for local Early Preclassic antecedents to the development of the Middle Preclassic center at La Venta. The Río Barí settlement suggests that La Venta evolved as the focus of a network of populations that exploited the rich marine resources of both estuary and river, the agricultural potential afforded by fertile river levees, and the water-borne transport and trading opportunities inherent in such a setting. The data from the Río Barí sites also suggest that the evolution of La Venta society was accompanied by environmental change that saw an active estuarine and riverine environment ultimately transformed into freshwater swamp, apparently due to alluvial sedimentation and coastal progradation (*13*), although causes of such geomorphological change and many aspects of its relation to cultural development at La Venta are not yet clear.

Finally, we note that the timing and distribution of the new La Venta evidence provide some support for a riverine resource concentration and circumscription model (*16*) proposed to explain the evolution of another Olmec center, San Lorenzo; the model explains social stratification arising from population growth and competition for limited amounts of productive river levee land (*17*). This support is qualified because, although the new La Venta evidence indicates that growth in population size and density along fertile river levees precedes the emergence of complex social distinctions, the relations between these factors have yet to be defined. At the least, however, the data from the discovery and excavation of domestic remains at La Venta now provide evidence for causal assessment of the interaction of environmental, demographic, social, and economic factors in the origin and evolution of Olmec civilization.

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