

Settlement Patterns and Community Organization in the Maya Lowlands

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FIG. 1. Terminal Classic Period temple (Str. A-3) at Seibal, Guatemala. The Maya lowlands are justly celebrated for the highly developed art and architecture found at many sites.

Photo by the author

Since the last century the principal emphasis of Maya studies has been on the ancient Maya elite. This fact is certainly not surprising given the visually spectacular nature of the art and architecture associated with the rulers of the lowland Maya realm. The elaborate tombs, the stelae depicting rulers in full regalia, the polychrome pottery, hieroglyphic inscriptions, temples, and palaces of the ancient Maya became the foci of both scholarly and popular interest (Fig. 1).

Because of this emphasis, students of the ancient Maya developed an understanding of Maya civilization that was focused almost entirely on the trappings of elite activities, particularly those of the southern Maya lowlands during the Classic Maya Period (circa A.D. 300–800). For much of this century, for example, it was generally believed that the great Classic centers were non-urban, vacant ceremonial centers in which a few rulers, priests, and their retainers



FIG. 2. Temple 1 at Tikal, Guatemala, overlooking the Great Plaza. What we today call temples were assuredly religious buildings of paramount importance to the ancient Maya. But to focus only on ceremonial and palatial structures creates a one-sided and misleading picture of Maya settlement and society.

Photo by William R. Coe, courtesy of the Tikal Project

resided (Fig. 2). The bulk of the population, it was assumed, lived well outside the centers and only came in to them for great ceremonies or to perform labor for the elite. This was the model popularized in books such as Sylvanus Morley's pathbreaking *The Ancient Maya* (first published in 1946) and Eric Thompson's widely read *The Rise and Fall of Maya Civilization* (which first appeared in 1954).

In retrospect, it can be argued that Maya studies suffered from a sampling bias. With some notable exceptions, significant aspects of the ancient Maya world were generally ignored. It was not until the early 1950s that Maya studies began to undergo a major shift in emphasis. Under the leadership of Gordon Willey of the Peabody Museum at Harvard, Maya studies began to turn, if not away from elite concerns, at least towards the study of overall settlements, including the remains of relatively inconspicuous, perishable peasant houses.

By the late 1950s to early 1960s, new settlement research, in particular that initiated by the University of Pennsylvania Museum and the Guatemalan government at Tikal, began to challenge the accepted wisdom. The picture of vacant, non-urban centers, a complete reliance on extensive shifting agriculture, and a number of other tenets of the traditional or elite-oriented model was changing. For example, as the Tikal archaeologists began to map the central 16-square-kilometer zone of the site and, subsequently, the surrounding suburban and rural zones, they recognized the remains of a large number of apparently non-elite house groups (Fig. 3). The urban nature of Tikal soon became undeniable.

This new settlement work, along with path-breaking research in hieroglyphic decipherment, helped overturn a variety of assumptions about the ancient Maya world. Since the 1950s and early 1960s there have



FIG. 3. House mound excavation at Tikal. When archaeologists began exploring the suburban and rural zones surrounding Tikal's "ceremonial center," they found large numbers of clearly residential, non-elite structures. These new discoveries forced a reevaluation of the nature of Maya urbanism.

Photo by William A. Haviland, courtesy of the Tikal Project

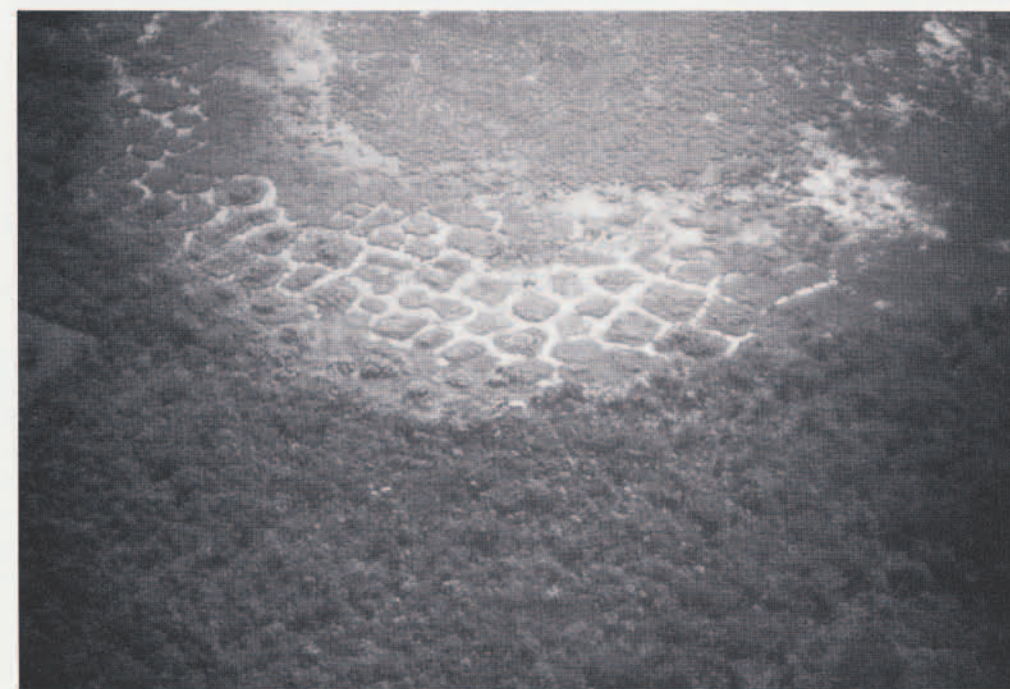


FIG. 5. Raised fields in an aerial view of Pulltrouser Swamp, Belize. During the Late Preclassic and Classic Periods, certain forms of agricultural intensification, such as swamp reclamation and raised fields, encouraged farmers to live near their agricultural plots rather than in more distant urban centers.

Photo by Peter D. Harrison



FIG. 4. Drs. Gair Tourtellot and Patricia McAnany using an EDM Total Station during settlement mapping at Sayil. New technologies such as this contribute to the increasingly sophisticated survey methods that mark recent field research in the Maya lowlands.

Photo courtesy of the Sayil Archaeological Project



FIG. 6. The Maya lowlands, showing the location of Sayil in the Puuc Region of Yucatan, Mexico.



FIG. 7. Sayil's Great or North Palace, a three-story building of nearly 100 rooms. Puuc Region sites like Sayil flourished briefly during the Late and Terminal Classic periods, from about A.D. 700 to 1000.

Photo courtesy of the Sayil Archaeological Project

been many advances in settlement pattern research. For example, there have been innovations in the technology and instrumentation of this work. EDM total stations, electronic measuring devices which do all the surveying trigonometry, have replaced the archaeologist's laborious and potentially mistake-ridden calculations. These stations allow much more accurate and much faster mapping, as well as the possibility of directly downloading the results into computer plotters (Fig. 4). One can now move from field measuring directly to maps and a variety of statistical manipulations of the spatial data. Improved aerial photography has helped archaeologists at the wonderfully named Pulltrouser Swamp in Belize better appreciate how the Maya practiced a variety of agricultural intensification techniques, such as raised-field swamp reclamation (Fig. 5). Satellite imagery and side-looking radar have also proved quite helpful.

In addition, there are much better methodologies for recovery of data, including more sophisticated sampling strategies, than there were in the 1950s. Concerns for a wide variety of non-elite activities also have emerged. A good example is the research on chert quarrying and production of chert tools at the site of Colha in northern Belize. Another is the study of the distribution and re-use of chert biface tools that were used to prepare the soil for cultivation at nearby sites such as Pulltrouser Swamp. These and similar studies are illuminating scholarly understanding of the eco-

nomics and community organization of craft production.

In the realm of analysis we have seen a number of significant and important advances in the interpretation of data and the formulation and testing of hypotheses about the archaeological record. More sophisticated use of analogies drawn from both ethnographic and historic sources (such as the 16th century A.D. writings of Bishop Landa) provides information that can be projected, with care, back into the ancient Maya world.

Despite these many advances, until recently settlement pattern research had not moved beyond the discovery of gross patterns showing the distribution of settlements across varied landscapes. The nature of Maya urbanism was still not well delineated. Ancient house mounds usually showed up on settlement maps as undifferentiated black rectangles, and inferences about household activities, let alone community organization, were at best difficult to make.

In an attempt to rectify these and other problems, I initiated the Sayil Archaeological Project in the Puuc region of northern Yucatan in the early 1980s. Phases I and II of this project were undertaken during five field seasons (1983–88) with the support of the National Science Foundation. Phases III and IV of the project have continued to the present day under the direction of Michael Smyth and Christopher Dore. After the initial season I was joined by Gair Tourtellot

(Boston University) as co-director. A number of students and colleagues from both the U.S. and Mexico have contributed to this research. I would like to discuss briefly the nature of our research at Sayil and to indicate what settlement survey can tell us about Sayil community organization in particular, and ancient Maya community organization in general.

THE SAYIL ARCHAEOLOGICAL PROJECT

Sayil is located in a north-south trending valley of the only hilly area in northern Yucatan (Fig. 6). It is perhaps best known for its three-story building of 90-plus rooms, the so-called Great or North Palace (Fig. 7). Scholars have known of Sayil for many years. In fact, the journalist and explorer John Lloyd Stephens and the artist Frederick Catherwood visited Sayil in the mid-19th century. In 1934, the Carnegie Institution of Washington undertook an initial mapping project at Sayil and produced an excellent map for the time. This map, prepared by Edwin Shook under the direction of Harry Pollock, is dominated by standing stone buildings. It is interesting to note that in his write-up Harry Pollock states: "The maps of Sayil and Labna [a neighboring site] are incomplete in that they omit a good number of small constructions, presumably house mounds . . . This was done consciously to speed up the

mapping, which seemed to be consuming more time than we could afford, and it provides another indication of how we tended to exclude the inconspicuous building remains from our architectural study."

So up until very recently, we had a good map of the standing stone, elite structures at Sayil but no indications of how large the site was, what the nature of its population was, how it was distributed on the landscape, how it was contoured to exploit that environment, or how it was organized. One of the goals of our research was to provide answers to these basic questions as well as to explore a number of hypotheses we had about the nature of urban development at Sayil and surrounding sites.

Turning our attention away from the large, standing structures, we spent the bulk of our time on the remains of small structures or perishable houses. One of the reasons that I chose Sayil for study is that the preservation of the perishable ancient houses was far better than at other sites. Moreover, Sayil was significantly occupied for only a relatively short period of time, and there has been little occupation or disturbance in the thousand years since its abandonment in the 10th century A.D. Typical houses at Sayil were built on small platforms, and their wattle-and-daub walls were set down on one course of foundation stones which would remain after the cane or wood and thatch had decomposed (Fig. 8). So even with the wood and thatch gone,

FIG. 8. Remains of a house at Sayil. Nothing is left of the perishable walls and roof that stood on these now-scattered foundation stones (note the stone door jambs in center of photo).

Photo courtesy of the Sayil Archaeological Project



FIG. 9. Rubble (chich) mound at Sayil. Many of these small mounds may have been the remains of simple dwellings built of perishable materials atop earthen floors.

Photo courtesy of the Sayil Archaeological Project



we can get some idea of the basal platform, the exact dimensions and nature of the houses, and the activities that took place inside and outside the houses, and on and off the platform.

We studied even more inconspicuous remains. These are small rubble mounds that we think, on the basis of excavations, are all that was left of very small platforms with tamped earth floors and simple perishable structures above them (Fig. 9). Some of these lesser structures might have been seasonally occupied houses or perhaps the dwellings of a lower class at Sayil, a group that has been almost totally ignored in Maya studies up until now. Such a group might have included cooks, servants, slaves, or laborers.

Our mapping allowed us to go beyond the simple recognition of house structures and platforms to the details of their composition and growth through time. We cleared wide areas in certain limited survey zones,

regardless of whether or not there were visible features on the surface. (This procedure is becoming more common in Maya archaeology, and has been undertaken by Anne Pyburn in Belize, David Webster and his students at Copan, and others elsewhere.) We literally had our crew on their hands and knees in 2-by-2-meter squares, picking up everything in the top 10 centimeters of the soil (Fig. 10). We also excavated selected squares to see if there were any hidden features that were not visible on the surface. Fortunately, we were able to conclude that the surface signatures at Sayil accurately reflected what was under the ground. With the relatively short period of settlement at Sayil, the amount of build-up over the limestone bedrock tended to be less than a meter.

We undertook a number of studies of the distribution of pottery and other artifacts—their numbers, their weight, and their size throughout the area, both on



FIG. 10. Intensive surface survey at Sayil. The crew is painstakingly collecting everything in the top 10 centimeters of the soil in 2-by-2-meter units.

Photo courtesy of the Sayil Archaeological Project

top of the platforms as well as in each of the 2-by-2-meter squares that covered this whole area. Geographer Nicholas Dunning (University of Cincinnati) analyzed the soil chemically, particularly for its phosphate content. On the basis of these studies, Thomas Killion (Smithsonian Institution), Tourtellot, Dunning, and I were able to argue that the open areas we had identified were *not* plazas, as had previously been assumed, but were instead filled to a great degree by fertilized vegetable gardens. These were the equivalents of modern truck gardens, which the residents cultivated to provide daily food in addition to the maize, beans, and other crops they grew in more distant fields. In other words, Maya cities were garden cities. What in the past has been taken to be much non-domestic or ceremonial space actually was utilized to provide daily food for the inhabitants. These “infields” might have played as important a subsistence role as the larger but distant “outfields.”

We also made a careful study of the location of subterranean cisterns. There are no natural water sources in and around Sayil. In order to live in the Sayil Valley and utilize the very rich soils there, the occupants had to find a way to capture water. Instead of building large community reservoirs, as did the Maya elsewhere, they constructed a system of individual household catchment basins to capture water during the rainy season and store it in underground cisterns (*chultun* in Maya). This enabled them to survive during the dry season from February through May, when rainfall either was nonexistent or at a minimum. In studying the nature and distribution of the cisterns, we found that what had initially appeared to be a random settlement pattern did, in fact, have a very recognizable arrangement. These Maya situated their houses on small natural rises where the hard limestone cap was very thin, allowing them to break through to a much softer marl

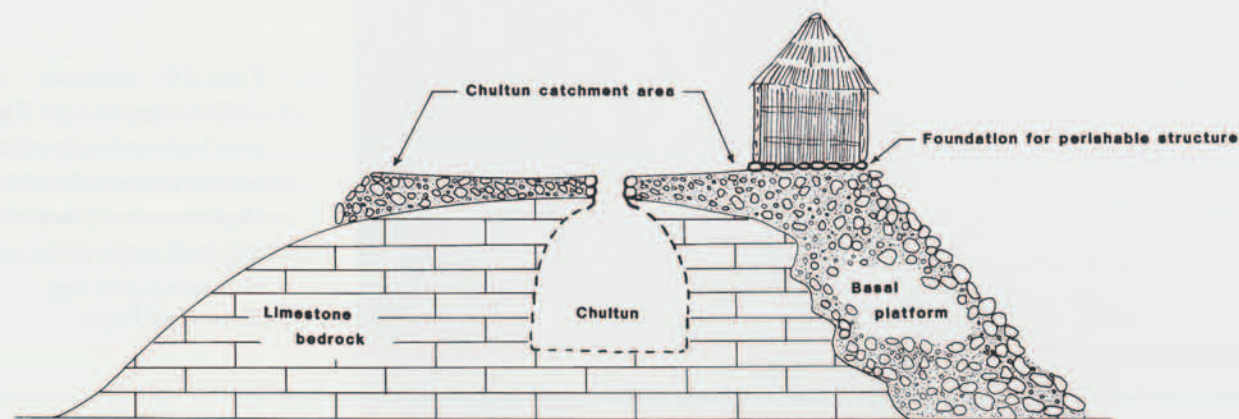


FIG. 11. House, house platform, and chultun (water catchment basin). Although the soil is rich, there are no water sources in the Sayil Valley. Ingenious household catchment systems captured rain water and stored it for use throughout the dry season.

Courtesy of the Sayil Archaeological Project

below in which they could excavate their cisterns. They could then use the excavated marl to level the irregular rises and provide a platform to raise their houses off the forest floor. The platform also supported a plastered area to catch the rain and fill the cisterns (Fig. 11). Cisterns had narrow openings to keep the dirt out, as well as to prevent too much evaporation; their stone collars further restricted the openings. As family size grew and new houses were built for the extended family, new cisterns were often dug into the basal platform. So the seemingly random settlement actually had a rationale based, at least in part, on topography and geology, and in part on length of occupation and family size.

In brief, my colleagues and I found at Sayil a fairly well demarcated urban zone of about 5 square kilometers with an inferred population of more than 7,000 at the city's height in the early 9th century. This well-defined, nucleated urban area contrasts with the dispersed pattern found at most Classic Period cities (Fig. 12). As Tourtellot and I have previously suggested, Sayil's pattern may be the result of the city's relatively short occupation. Other Maya sites may have begun with a Sayil-like pattern and through time become more dispersed and amorphous.

TOWARD A NEW MODEL

Although Maya settlement pattern studies are still in their infancy and basic information remains to be uncovered, some preliminary trends are discernible. One, which I wish to emphasize, relates to demographic, political, economic, and religious centralization during the Classic Period. Since the early 1970s, there has been a significant scholarly discussion about whether Classic Maya cities controlled large, extensive

territories. Arguments have ranged from those that see the Classic lowlands filled with individual city states to those that envision a few large superpowers. Most of the arguments have centered on differing interpretations of hieroglyphic texts. It now appears that both positions may be correct, with Classic Maya political organization cycling from decentralized to centralized and back again. Whether political and economic centralization co-vary remains to be seen. In relation to the material archaeological evidence, however, the bulk of settlement evidence to date reinforces the picture that I just described for Sayil: particularly that of decentralized political and economic organization.

In the economic realm, we see a widespread distribution of certain elite goods and perhaps some small-scale tribute, but the vast majority of economic exchange was undertaken on the local level. Even where regional distribution can be clearly shown, as in the case of the Colha chert mentioned above, the production/distribution systems do not appear to be under centralized control. And, as the research of Thomas Hester, Harry Shafer, and their colleagues has shown, much production and distribution was undertaken by individual or related households.

The picture that emerges from the hieroglyphic texts indicates that a few states, especially Tikal and Calakmul, were able to hold together large-scale territories for limited periods of time. However, the archaeological picture that has emerged so far indicates that the Maya lowlands were dotted with numerous city-states, with dispersed populations, limited spheres of influence and demographic spread, and relative independence in the realms of politics, economics, and religion. Clearly, more archaeological research is needed to see if the archaeological and hieroglyphic data can be

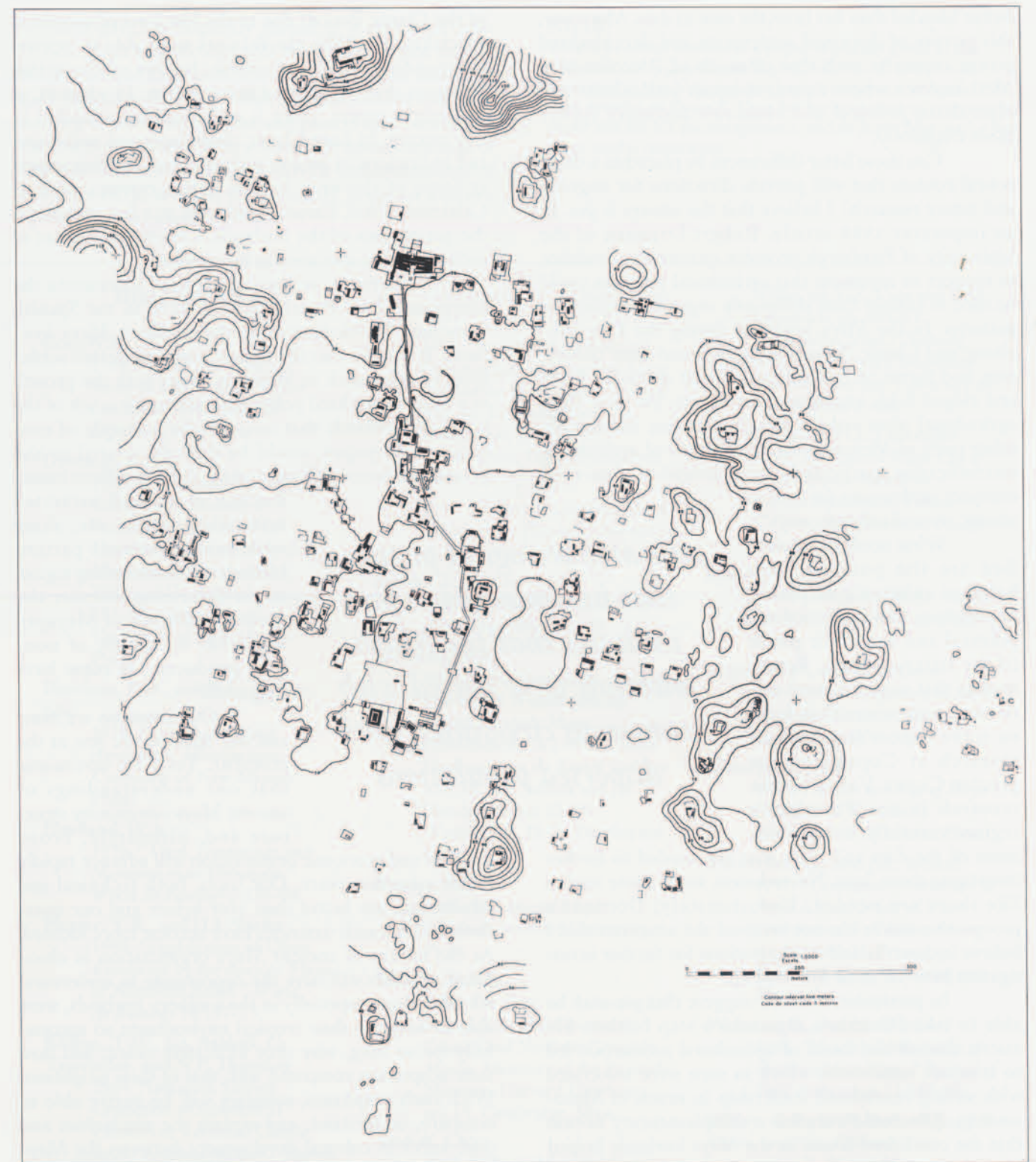


FIG. 12. Sayil settlement map. Sayil's densely occupied urban zone differs from the more dispersed patterns of most Classic Period cities. At its peak, the city may have contained more than 7,000 residents in an area of about 5 square kilometers.

Courtesy of the Sayil Archaeological Project

better blended than has been the case to date. Moreover, this picture of dispersed settlements and decentralized power contrasts with that of much of Precolumbian Mesoamerica where dense, compact settlements and centralized political and economic authority appear more frequently.

Can these latter differences be placed in a theoretical context that will provide directions for ongoing and future research? I believe that the answer is yes. In an important 1988 article, Robert Drennan of the University of Pittsburgh provides quantitative evidence to support an argument that agricultural practices could be used to explain these differently organized settlement patterns. In the Maya lowlands during the Late Preclassic and Classic Periods both slash-and-burn cultivation and forms of intensification such as raised fields and ridged fields encouraged farmers to live near their agricultural plots rather than close to one another. In other parts of Mesoamerica other forms of agricultural intensification, particularly canal irrigation, fomented compact settlements (as well as strong, centralized authority).

What needs to be clarified are the possible links between relatively dispersed populations and decentralized political and economic power (if the latter co-vary). Recent studies that examine rural settlement and others that focus on entire regions (e.g., the vast research at Copan and the greater Copan Valley or the research in the Petexbatun region) certainly will provide

some of the data and ideas that are needed to further investigate these links. Nevertheless, many more studies like these are needed. Unfortunately, Drennan's provocative article has not received the attention that I believe it deserves and its suggestions for further investigation have yet to be followed up.

In particular, I would suggest that we may be able to take Drennan's argument a step further. He asserts that certain forms of agricultural production led to compact settlements which in turn were associated with strong centralized leadership in much of Mesoamerica. We could examine a complementary notion that the conditions found in the Maya lowlands helped block the growth of a strong central authority. These conditions include the dispersed populations of the Classic Period, the seeming independence of Maya farmers from state control even when they intensified their agricultural production, and the relatively low number of non-food producers (except towards the end


of the Classic Period) due to the low level of economic specialization. Why the farmers were able to remain independent would, of course, be one of the prime questions that would need investigation. In addition, as one might expect, there is considerable variability in this picture. In Late Classic times increased nucleation and indications of greater political centralization appear at some of the very largest urban centers such as Calakmul, Tikal, Caracol, and even at a few centers on the peripheries of the lowlands. Clearly, the causes of such variability also need to be explored.

Moreover, archaeologists need to examine the contrasting Late Postclassic (A.D. 1250 to the Spanish Conquest) developments in the northern Maya lowlands. It may be that the denser, more nucleated settlement of cities such as Mayapan, along with the growth of a more centralized political structure for much of the northern lowlands that centered for a couple of centuries at Mayapan, could be directly related to the growth of mercantilism during the Late Postclassic.

Restudy of the well-excavated materials from the site, along with new settlement pattern research in its surrounding region, might determine whether the dense population of Mayapan was made up mostly of non-food producers, as some have suggested.

Our questions are many and our answers are few at the moment. Yet I am optimistic that our understandings of ancient Maya community structure and, ultimately, broad

political and economic organization will advance rapidly in the next few years. Our tools, both technical and intellectual, are better than ever before and our questions and research strategies have become more focused. As the nature of ancient Maya organization is elucidated, scholars will have the opportunity to understand why the Maya, especially in the southern lowlands, were able to adapt to their tropical environment so successfully for so long, why they ultimately failed, and how their adaptation compared with that of their neighbors. With such emphases, scholars will be better able to compare, understand, and explain the similarities and differences in cultural development between the Maya and decentralized, pre-industrial agricultural societies in other parts of the Americas and the Old World, as well. They may even be able to make suggestions about the ancient exploitation of the tropical forest environment that will have relevance to problems facing the world today in such areas. As Joyce Marcus of the University

of Michigan has cogently stated in a recent article: "Good Maya archaeology will bring to light not merely what is unique and exotic about the Maya, but also what they shared with every other ancient civilization." By moving beyond the temples and palaces and combining the insights of both the new historical understandings of the elite and the settlement-driven understandings of the non-elite, we may confidently hope to achieve "good Maya archaeology." 

NOTE:

This is a revised version of a paper originally given at the "Frontiers of Research on Maya Civilization" symposium presented at the National Academy of Sciences in April 1995. I am grateful to Evon Z. Vogt for his invitation to prepare the paper and for his encouragement, and to Joyce Marcus for her many useful comments.

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