

The Acropolis of Kaminaljuyú, Guatemala: Recovering a «Lost Excavation»

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RESUMEN

En el año 2003, nuestro proyecto se centró en la recuperación de los datos de una «excavación perdida», una serie de profundas exploraciones —no publicadas— hechas por Gustavo Espinoza en la Acrópolis de Kaminaljuyu. Su trabajo, que tuvo lugar aproximadamente entre 1958 y 1962, descubrió una compleja sucesión de suelos y estructuras talud-tablero. Con objeto de comprender esta investigación, volvimos a cartografiar la Acrópolis y el Parque que la contiene, analizando suelos, y definiendo una paradoja: una construcción continuada que sin embargo muestra la introducción de una tecnología de edificación radicalmente extranjera, que cambia más tarde, durante el periodo Clásico Tardío (fase Amatlé), hacia una construcción de tierra con matriz de guijarros. Las opiniones extremas sobre Teotihuacan —ninguna influencia desde México o una influencia masiva desde el mismo origen— han de considerarse erróneas. Algunas partes de la Acrópolis sólo pueden entenderse en términos de una relación con Teotihuacan históricamente fuerte, aunque tal vez no económicamente amplia.

Palabras clave: Kaminaljuyu, Acrópolis, relaciones Teotihuacan-mayas, tecnología constructiva.

ABSTRACT

In 2003, our project focused on recovering data from a «lost excavation», a deep but unpublished series of

probings by Gustavo Espinoza in the Acropolis of Kaminaljuyu. His work, which took place between approximately 1958 and 1962, uncovered a complex layering of floors and *talud-tablero* structures. To understand this research, we remapped the Acropolis and the Park that contains it, analyzed floors, and defined a paradox: continuous construction that nevertheless shows the introduction of a radically foreign technology of construction, which changes later, during the Late Classic (Amatlé) period, to earthen building with cobble matrix. The extreme views of Teotihuacan—no influence from Mexico or massive influence from the same quarter—must be seen as misleading. Portions of the Acropolis can only be understood in terms of historically strong, but perhaps not economically extensive, engagement with Teotihuacan.

Key words: Kaminaljuyu, Acropolis, Teotihuacan-Maya relations, building technology.

INTRODUCTION

One of the pivotal questions in Mesoamerican archaeology is the relation between the city of Teotihuacan, Mexico, and Kaminaljuyú, Guatemala. What was the connection between sites sharing artifacts and building style yet separated by over 1060 km in direct air-line? Earlier theories that Kaminaljuyú was invaded by forces from Teotihuacan or governed coercively by representatives of that distant city are no longer in favor (cf. Cheek 1977: 166; Ohi 1994, II: 752).

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Evidence of intrusions is limited to building designs and elite artifacts, often in restricted parts of Kaminaljuyú (Berlin 1952; Braswell 2003b: 114-116), and most elite burials do not, to judge from the chemical and isotopic data, contain people from Teotihuacan (Valdés and Wright 2004: 350-351; White *et al.* 2000: 553). There is thus little reason to see concentrated settlement of Teotihuacanos in Kaminaljuyú, a pattern that contrasts with more direct evidence of Mexican populations at sites like Montana, Guatemala (Bove and Medrano 2003: 76; Carpio 1999).

But even limited contact can be momentous. The finely textured historical information at Copan and Tikal points to specific episodes of contact with Teotihuacan or its proxies (e.g., Stuart 2000: 506; also Cowgill 2003: 316). Nor do archaeologists have anything close to a full collection of elite or royal burials from Kaminaljuyú or sufficient comparative material to evaluate isotopic assays and their bearing on the geographical affiliation of skeletons. Some probable places of origin for occupants of Kaminaljuyú, such as the Pacific Coast and piedmont, are «area[s] for which no information is currently available» (Braswell 2003b: 132). Antonia Foias, drawing on her honors thesis at Harvard (1987), states that «only sixteen Thin Orange vessels» and «only eight of the sixty-seven cylindrical tripods» from Mounds A and B at Kaminaljuyú «can be identified as Central Mexican imports» (Demarest and Foias 1993: 156-157). Her aim, and that of her co-author, is to argue for the deployment of such artifacts by the people of Kaminaljuyú so as «to reinforce the prestige of one segment of the ruling elite» (Demarest and Foias 1993: 171). Yet, if accurate, that number of vessels is relatively large for fragile, long-distance imports⁵. If there is any consensus today, it is that contact between Teotihuacan and Maya-speaking populations varied by time and place, and occurred as «pulses» of a heterogeneous nature (e.g., the excellent compendium by Braswell 2003 —Ed.—)⁶. The vagueness of this consensus shows that we have far to go in conceptualizing the processes underlying contact between Teotihuacan and the Maya.

Here we examine one category of evidence, the architecture of the Kaminaljuyú Acropolis, an area excavated over forty years ago by D. Gustavo Espinoza. The buildings in the Acropolis have only been reported in part and by someone other than the excavator (Cheek 1977). Much information has been lost. What is relevant to this essay is that the Acropolis contains a large assemblage of Teotihuacan-style architecture within a matrix of deep and complex stratigraphy. Our intent is to show that a building layout and technology of a decidedly intrusive sort did make an appearance in the Acropolis, and that it can be explained partly as the work of a small set of specialized laborers. Building technologies are as culturally and historically situated as all other practices. The choices made, the materials selected, express learned behaviors that are not always determined by practical concerns. We hypothesize that these choices and materials, abruptly introduced in the Acropolis, represent more intimate contact with Teotihuacan and its proxies than mere copying by local elites and their workmen.

EARLY INVESTIGATIONS IN THE ACROPOLIS

The question of Teotihuacan-Kaminaljuyú relations came to the fore in 1936, when J. Antonio Villacorta Calderón asked Alfred V. Kidder and Oliver Ricketson of the Carnegie Institution of Washington to investigate a mound on the outskirts of Guatemala City, in what was then the Finca La Esperanza. Such work, taking place in 1936 and 1937, with the help of Robert Wauchope and Jesse Jennings —Ricketson soon bowed out from illness— was later augmented by the efforts of Edwin Shook, who continued the excavations between November 1941 and May 1942. The Carnegie investigations were masterful. From them we have the exemplary and rapid publication of two *talud-tablero* buildings, Mounds A and B, and the discovery that parts of Teotihuacan date to the second quarter of the first millennium AD by correlation with the bet-

⁵ To be sure, the tomb inventories in Mounds A and B are not as overwhelmingly Mexican as once thought (cf. Kidder *et al.* 1946: 217, 229).

⁶ Evidence of the latest «pulse» occurs at Piedras Negras, Guatemala, where Héctor Escobedo and Marcelo Zamora (2000: 206) found small quantities of Pachuca obsidian and a *candelero* in front of the R-5 pyramid. These deposits probably correlate with a date of AD 510, when a Teotihuacan-linked individual is mentioned on Piedras Negras Panel 2, presiding over the reception of regalia by a local lord (PNG Pan. 2:O2-V2; see also Anaya *et al.* 2001). Our test-pitting at Kaminaljuyú in 2003 makes it clear that these «pulses» could be artifactually invisible: very few Thin Orange, Mexican obsidian or Teotihuacan-related artifacts have been found in areas surrounding the Palangana and the Acropolis (Marion Popenoe de Hatch, personal communication, 2003; Zachary Hruby, personal communication, 2003). This accords with the striking observation by Charles Cheek (1977: 101) that no such artifacts were found in collections taken from the Acropolis by Espinoza. Nevertheless, Cheek qualifies his statement by commenting that «the ceramic lots I examined in the storeroom *seemed to be* almost pure lots of Aurora and Amate ceramics» (emphasis ours, Cheek 1977: 101). The tentative tone throws doubt on the overall appraisal of Espinoza's ceramics.

ter-understood Maya chronology (Kidder *et al.* 1946: 250)⁷.

At about the same time, A. Ledyard Smith penetrated into what was later termed the C-II-4 Group, i. e., the «Acropolis», uncovering thick stratigraphy and a Teotihuacan-style structure («basal terrace with slab-supported moldings» [Shook and Smith 1942: 265]). Smith suspected that this sector in the northern portion of Kaminaljuyú might hold ballcourts, which he had begun to investigate systematically in the Guatemalan Highlands (Smith 1961). No further work occurred in the Acropolis until the late 1950s and early 1960s, when Gustavo Espinoza conducted deep excavations in much of the southern portion of the C-II-4 Group.

Espinoza was in some respects an unheralded pioneer of Guatemalan archaeology (Kidder *et al.* 1946: 7, 29). He had little formal training in archaeology but was a resourceful man who, in addition to his own talents, learned a great deal from the Carnegie archaeologists. We suspect that Espinoza assisted Smith in the excavations of the C-II-4 Group (1941-1942) —the «Acropolis»— and must have shared Smith's belief that «investigation of the early buildings [in the Acropolis] and of what may well lie below them and behind them would undoubtedly yield invaluable archaeological information» (Shook and Smith 1942: 266). The fact that Smith left the trench open, if fenced, would in itself have invited additional work. Espinoza did just that between about 1957 and 1961, as Inspector General of Monuments for the Museo Nacional de Arqueología y Etnología (Cheek 1977: 99). By tunneling or open excavation, he and his workmen excavated at least 4000 m³. A truck ramp to the south-east, at this writing the formal entrance to the roofed portion of the Acropolis, was used to extract debris from the excavations⁸. It is probable that Stephan de Borhegyi (1965: 21-22) also worked near the Acropolis during this period, perhaps in and around the C-II-7 ballcourt.

The overriding difficulty for later interpreters is not the quality of Espinoza's excavations. He and his team were highly skilled. The strata are carefully delineated by trowel-lines, and most excavations follow a cohe-

rent, logical sequence, tunnels and pits being used to search for architecture features and floors. A metric grid was employed in laying out the excavations. Vestiges of these, the indentations of disappeared pits, mark the edges of some profiles. Moreover, walls of excavation units have been sloped to maintain their stability, probably with a view towards long-term public display. But Espinoza was not so diligent in processing artifacts or writing reports. Charles Cheek (1977: 99) was among the last to study this pottery, which were gathered by the early 1970s into baskets or *canastas*, with little evidence of provenience other than small tags atop each basket. For want of storage space, and after learning that most of the tags had been lost, D. Jacinto Cifuentes decided to discard the sherds in the mid-1980s; some of the less fragmented ceramics may have been saved, although their present whereabouts are unknown (Oswaldo Chinchilla, personal communication, 2003)⁹. Thus, any attempt to understand the Acropolis excavations must do without field notes, artifacts or any reliable account of what was removed by Espinoza's team. At the moment, our own project has not been allowed to trench, tunnel or test-pit in the Acropolis, making our task much like detective work. We have assembled clues and tried to make sense of them, sometimes successfully, sometimes not: only further excavation will resolve the questions posed by the deposits in the Acropolis.

But this much we know: Espinoza began to dig in the area of Smith's excavations, by the southeastern corner of Structure E. He extended Smith's original trench to the south, cutting through the southern building of the Acropolis, and found levels in flat areas that are now under street macadam (Cheek 1977: 100). Espinoza then tunneled to locate and trace buried buildings. Typically, his tunnels were a meter wide and arrow-shaped in section, the widest point of the «arrow» corresponding to some more compact, stable layer, usually a floor. To enhance stability, one side of the tunnel tended to follow a buried feature. With few exceptions, the tunnels are intact. The only slumping occurs close to the surface or in the open trench run-

⁷ Kidder *et al.* (1946: 250) correctly note, however, that earlier scholars, such as Raymond Merwin and George Vaillant (1932: 94), along with Sigvald Linné (2003[1934]: 100, 220), had posited such dates for Teotihuacan prior to the excavations at Kaminaljuyú.

⁸ Smith's and, perhaps, Borhegyi's excavations into the C-II-7 ballcourt left a residue of unbackfilled soil that is still identifiable to the east of this feature.

⁹ Miguel Orrego, a distinguished Guatemala archaeologist, participated in the Espinoza excavations as a young man. With Orrego's help, we hope to compose an oral history of Espinoza's work in the Acropolis and of his career in general. There is an urgent need for an overall account of Kaminaljuyú, drawing on all previous excavations and from studies of sculpture and excavated material: Juan Pedro Laporte and Héctor Mejía (2003) have greatly assisted this by extracting relevant publications from the annual volumes of the *Simposio de Investigaciones Arqueológicas en Guatemala*. These have now been issued as a CD.

ning along the back of Structure K. Towards the end of his work, probably in the early 1960s, Espinoza gridded the areas he intended to open more fully, at which time the present shape of the balks and viewing platforms began to take their present shape. Espinoza may have experimented with subterranean entrances, one extending due west from the back of Structure F, the other due east from the corner of Structure D. These were filled in. Today, the tunnel by Structure D serves as a conduit for a water pipe draining the Acropolis.

Espinoza's work was published by Charles Cheek (1977) but incompletely so. As part of his doctoral research, mostly focused on the nearby Palangana, Cheek recorded and re-evaluated Espinoza's soundings, which even at that point had begun to recede in archaeological memory. Cheek spent, we are told, «seven weeks» on retroactive documentation (Cheek 1977: 99-100), but he does not seem to have labored intensively. He simply used drawings made by Tatiana Proskouriakoff in 1962 and commented that he was not able to check details «due to a lack of light and a ladder» (Cheek 1977: 105), both, in our experience, items of equipment that are relatively easy to obtain in Guatemala City. Cheek certainly did not pry into the covered pits left in Structures F and G by Espinoza: «the structures and stages hypothesized by Proskouriakoff ... for the interior were not checked by me» or «[a]gain, I did not have the equipment to investigate this pit» (Cheek 1977: 106, 115). A few vertical profiles, as on the balks near Structure G, were probably scrapped by Cheek when he tried to clarify stratigraphy. If drawn, these profiles have not been published. We do not deny the value of Cheek's efforts, but we do emphasize their preliminary character. In all candor, we have found it easier to start afresh than to re-interpret the work of earlier investigators.

For many years, tourists have routinely visited the Acropolis, paying a small fee to enter a roofed area with complex stratigraphy and exposed buildings marked with Espinoza's designations («Structure A», etc.). Yet, aside from Cheek's record, and some archaeomagnetic dates collected by the late Daniel Wolfman (1973: 177-252, 1990: Table 15.1), little is known about this, the most spectacular remnant of densely packed architecture at Kaminaljuyú. Other members of our project, led by Matilde Ivic de Monterroso, Director, and Héctor Escobedo, Field Director, sank over fifty 2 x 2 m test-pits in what is now the Parque Arqueológico Kaminaljuyú, while the authors mapped the site. Earlier maps, including a Japanese effort by a project

working on the nearby Mongoy mound (B-I-1), proved inaccurate because of parallax problems in their aerial photographs—outside of the Mongoy map, ground-checking was minimal (e.g., Ohi 1994 —Ed.— I: fig. 20-1, II: fig. 9-1). The Japanese team also did a small amount of test-pitting near the C-II-7 ballcourt, uncovering pumice-based surfacing of the kind associated elsewhere in the Acropolis with Teotihuacan-style buildings (see below; Ohi *et al.* 1994: 106; Tanaka 1994: figs. 9-II-1 to 4); structures much like these turned up in test-pitting by Karen Pereira, a member of our project, with one, in Pit C6/5, occurring about 20 meters from the eastern entrance of the Acropolis, probably as part of Structure C-II-7 (Matilde Ivic de Monterroso, personal communication, 2003). Carlos Chiriboga and Zachary Nelson created the map presented here (Figure 1). It was compiled from 17,029 measurements taken with a Topcon total station. We used this equipment to record 989 measurements of points within the area excavated by Espinoza. The resulting coordinates served as the framework for sections and plans of exposed areas (Figure 2).

BUILDING THE ACROPOLIS

Phase I: Preclassic Platforms

The earliest known levels of the Acropolis are reported to contain Arenal- or Verbena-phase pottery, ca. 400 BC to AD 100, although we have no direct confirmation of this. In fact, Marion Popenoe de Hatch remarks that, to judge from the evidence of project test-pits around the Acropolis, most of the deposits date to the Early Classic period (Braswell 2003a: 89; Popenoe de Hatch 1997: 8, 2003). The «Preclassic» levels consist of at least three floors under the first *talud-tablero* building of the Acropolis (Structure E; Figure 3). Another two floors may occur in a pit with three exposed burials in front of Structure G, but the stratigraphy is difficult to discern: recent consolidation efforts have covered the exposed walls with cobbles and mortar. Micromorphological study of the final floor, which consists mainly of quartz and plagioclase sand in a clay matrix, reveals a definite contrast with the volcanic temper employed in later levels (Figure 4a). Moreover, the early floors are made of only one layer or several micro-layers, with no signs of smoothing or decorative treatment. Aside from the floors, there are no structural features from the «Preclassic» levels of the Acropolis, and a small alignment of stones in a tunnel be-

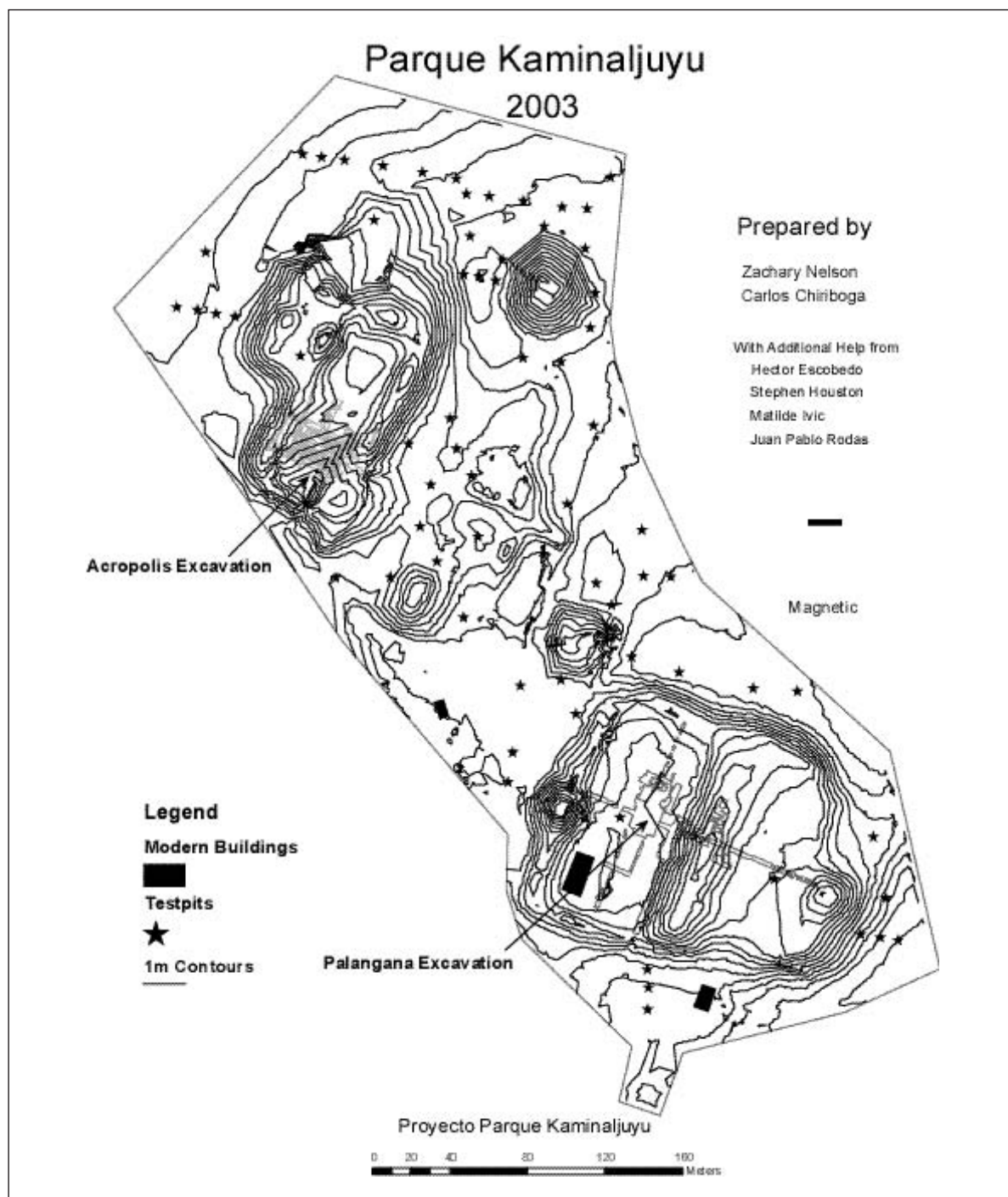


Figure 1. Map of the Parque Kaminaljuyú.

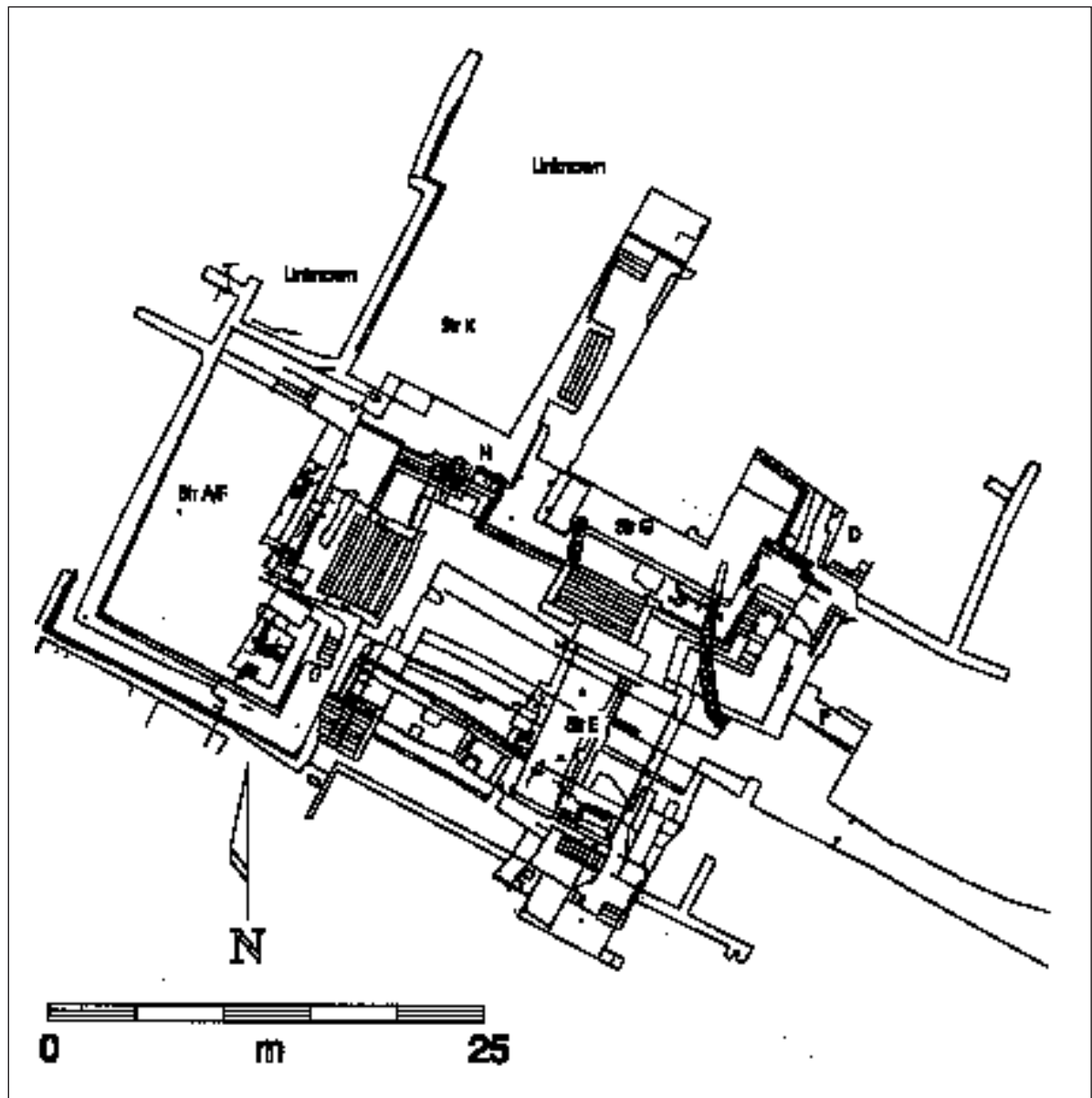


Figure 2. Plan of the Espinoza excavations.

low Structure E may have been left by modern consolidators. What is attested is the positioning of burials under floors, a pattern that seems, from our limited information, to disappear later in the sequence. There is also an impulse to fashion large leveled areas about a

hectare in size. The buildings from the Preclassic—if that is a correct assignment in time—will probably be found on the very edges of those leveled areas, in deposits that are now deeply buried under subsequent construction.

Phase II: *Talud-Tableros*

This is the phase of *talud-tableros*. It begins with an earlier version of Structure E (Cheek 1977: fig. 53), but one that was a meter higher than the building uncovered by Smith and Espinoza (Figures 3 and 5). This version may have begun as a terrace, much like the building within Structure G, and was then enlarged by the addition of its first *tablero*, a feature painted blue-on-red. There are subtle indications—a polished surface under the *tablero*—that suggest the presence of a small platform that was redesigned a short time later as a full *talud-tablero*. The *tablero* of this structure collapsed, perhaps because it did not use any knapped *lajas* or slabs of the sort found later in the Acropolis. As a result, the builders had to buttress the *tablero* with a new molding and an out-set base. In its final phase of construction, Structure E was cut down and an entirely new *talud-tablero* created. The scholarly literature places great emphasis on the proportions of *talud-tableros* (Demarest and Foias 1993: 164; Laporte 1988). However, we agree with George Cowgill (2003a: 321) that these ratios are not necessarily meaningful: the *talud* of Structure E, final phase, was covered incrementally with new floors and thus «diminished» in height. This means that proportions of *talud* to *tablero* changed through time, a process that also affected the base of Structure A.

Structure E's final surface was covered by a dense brown matrix containing equal parts of pumice and sand-sized plagioclase. Here, in the strong evidence for volcanic temper, is a vivid break with the «Preclassic» levels. The surface of Structure E appears to have been smoothed, as the grains were oriented flat-side up. The floor around the back of Structure E, final phase, had post-holes placed every meter or so. These held banners or supported an enclosure that sealed off Structure E with perishable materials, perhaps textiles. Postholes also mark the edges around the base of Structure K and the top of Structure G (see Cheek 1977: fig. 53). An analogous enclosure appears around Structure A2 (Kidder *et al.* 1946: fig. 106b). The overall disposition of Structure E, stairway facing west, is quite similar to «altars» in the patios of the Teotihuacan sectors of Atetelco, the Conjunto Plaza Oeste, Tetitla, and Yahualala (de la Fuente 1995a: plano 19.1, 19.2, 1995b: plano 22.1; Cabrera 1995a: plano 18.1, 18.2, 1995b: plano 4.1). We do not entirely agree, then, with

Geoffrey Braswell, who states that the «Teotihuacan-phase platforms of Kaminaljuyu ... do not conform to the architectural norms of any particular site in central Mexico» (Braswell 2003b: 121; see footnote 8). Moreover, the surface comparisons that Braswell (2003b: 117-118, fig. 4.2) makes between various highland Guatemalan sites and Kaminaljuyú are weakened by the fact that there is, in the Kaminaljuyú Acropolis, considerable discrepancy between buried and surface features.

Before Structure E was covered, the builders erected at least three other *talud-tablero* buildings—Structures G and A/F—and a welter of other constructions that went unnoted by Cheek¹⁰. One such construction was a smoothed and terraced surface that defined the northern edge of the court. It is sufficiently removed from Structure E to avoid any «cramping» of space, the rather puzzling, tight-set arrangement of later buildings in the court. In the latest phase, only 2 m separates the basal step of the Structure G stairway from the side of Structure E, thus muting, to an inexplicable extent, any grand effect of that stairway. The terrace was linked in some way to finely smoothed walls that appeared in the extreme north of the Espinoza excavations. These walls, of which little is exposed, lie perpendicular to Structure K (Cheek 1977: fig. 55, near the area marked «A-prime»).

Unlike Cheek (1977: 106), we are sure that Structures A and F are one-and-the-same building, although there is a buried structure, as yet undefined, in the southern half of Structure F. The buried building has a buried, red-painted wall on its front side, and, to the back of Structure F, a clear corner, 5.20 m from the southwestern extreme of Structure F. The buried building also had a surface of about 50% pumice fragments and 50% plagioclase sand in a clay matrix, with some ceramic fragments as well. Proskouriakoff and Cheek did not notice that there were three *talud-tablero* levels on Structures A/F and two on Structure G, in both cases partly destroyed by episodes of leveling. The overall appearance of these buildings seems now to have been far closer to Structures A-7 and B-4 (Kidder *et al.* 1946: figs. 108, 113) and, by extension, to the Feathered Serpent Pyramid at Teotihuacan (cf. Braswell 2003b: 119).

The desired effect in such multi-leveled buildings was to impress people on the plaza below. Each successive tier of Structure A/F was about a third less in

¹⁰ There is insufficient space here to describe all of these buildings, but other structures appear just to the south of Structure A, and at least two vertical surfaces lie within the tunnel that extends east from the alley of the «red building» (see below).

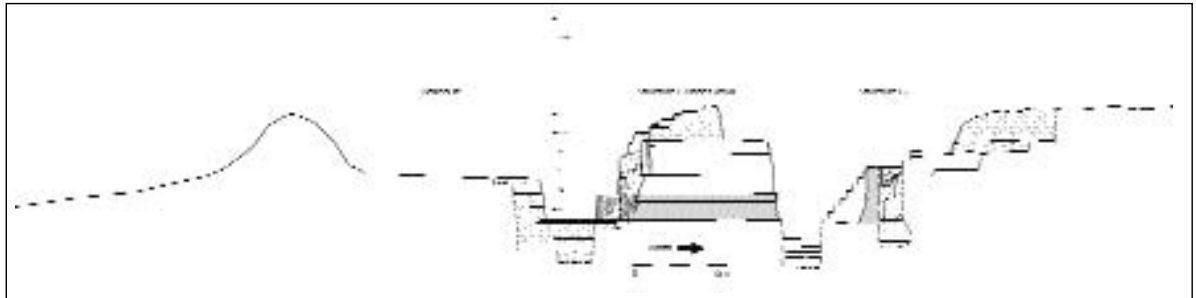


Figure 3. North-south profile across the Acropolis excavations.

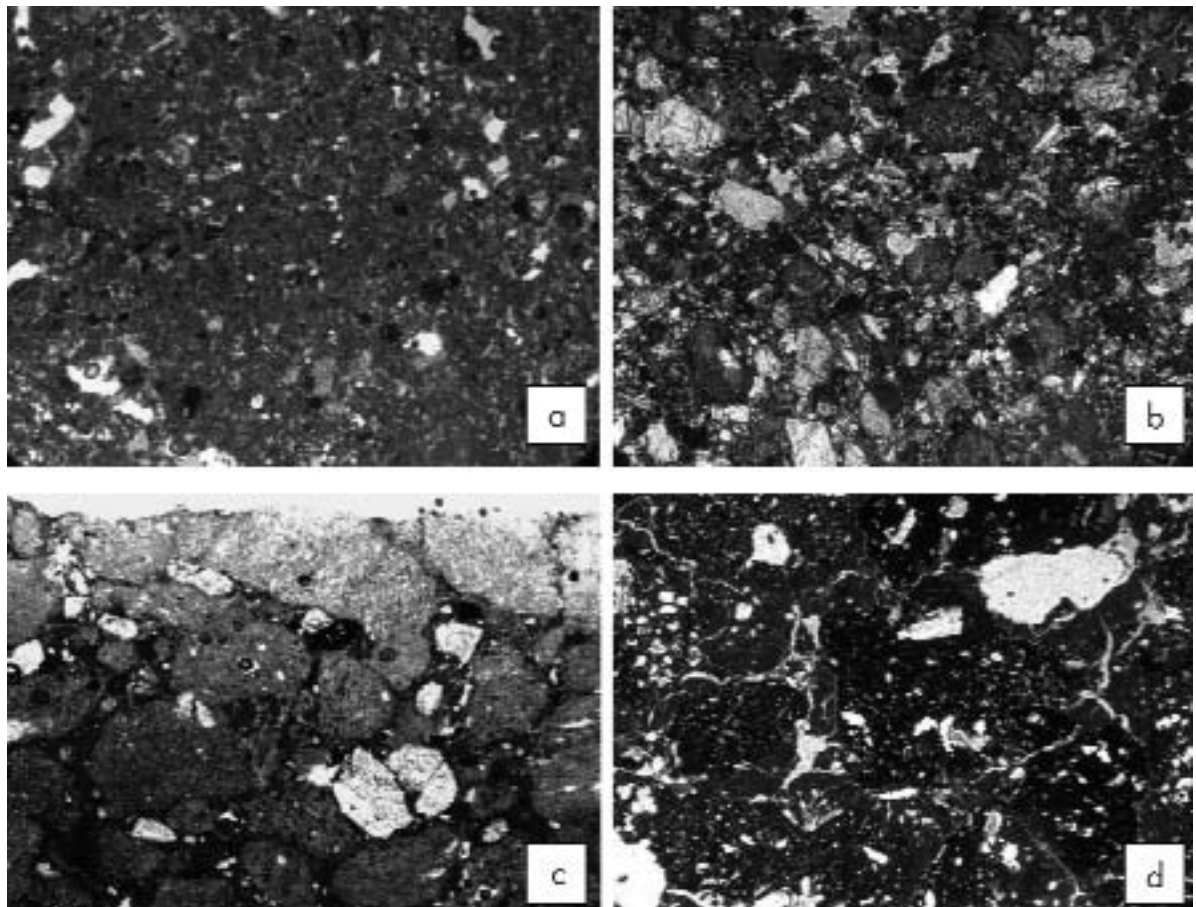


Figure 4. Cross-sections of floors in the Acropolis (photos taken under plane polarized light at 2x magnification [field of view ~2.5mm]). a) «Preclassic» floor composed of plagioclase and quartz sand in a dense clay matrix. b) Middle Classic floor (*nivelización* of the «red building») composed primarily of sand sized pumice, plagioclase and quartz grains. c) floor surfacing material (possibly late Early Classic) composed primarily of coarse, rounded pumice grains (*pumadrín*) in a clay matrix. d) Middle Classic *pedrín* surfacing material, back of *talud-tablero* to the north of Structure K; composed of coarse volcanic scoria fragments in a clay matrix.

size than the level underneath (1:0.43:0.20). In addition, upper levels retained only the vertical and top moldings of their *tableros*, presumably because, at Kaminaljuyú, viewers from below could not easily make out lower moldings. We call this effect *reverse entasis*. «Entasis» is the property in Greek architecture of widening and curving upper elements so as to preserve the optical illusion of straight edges in vertical lines. In contrast, «reverse entasis» accentuates height by the opposing process of reducing the size and proportions of upper elements. The effect is further emphasized by making stairways wider at their base than at their summit, a feature evident in all *talud-tablero* structures in the Acropolis. The presence of reverse entasis suggests that the visual accessing of *talud-tablero* buildings focused on people in fixed position below. Anyone standing on the summit or ascending the stairway quickly perceived their small size, thus weakening the effect. The presumed Amatle or Late Classic «palace» (see below), an elevated area with wide but shallow patios, was altogether different in effect. It emphasized horizontal views over vertical or inclined ones, and had ample space for participatory activities.

The meaning of *tableros* must have been profound. They served not only as flat fields for painted designs—red circles about 20 cm in diameter are regularly disposed, if faintly visible today, on the southern front *tablero* of Structure F, much like those on Substructure 3, Temple of the Plumed Shells, Teotihuacan (Miller 1973: 33-34, figs. 58 to 62)—but also «projected» messages by the act of their destruction and concealment. The obliteration of a *talud-tablero* might have been as loud a signal as its construction in the first place. With few exceptions, the upper molding of *tableros* in the Acropolis were snapped off, perhaps deliberately so. We observed this pattern in Structure E, Structure G (whose episode of *tablero* destruction is disguised by recent consolidation), the eastern side of Structure K, and the total removal of the *tablero* in Structure P. In Structure K, the last *talud-tablero* known in the Acropolis, builders raised the external floor to hide most of the *talud* and then covered the *tablero* with poor-quality adobe. This destruction also involved the systematic defacement and lowering of the top levels in Structures F and G.

Another feature that went unnoted by Cheek lies within an open pit in the top platform of Structure G

(Figure 6). The pit was excavated by Espinoza through three, densely compacted floors (the last two resurfacings of Structure G). It revealed a 2 m-deep, stone-lined, and mortared receptacle for a wooden pole, now-disappeared, that must have been at least 30 cm in diameter. Broken flooring on the other side of Structure G may have held a similar deposit, both heavily disturbed in ancient times by the construction of *desagües* or stone-slabbed conduits for water; often, these channels were made of stones robbed from *lajas* in *talud-tableros*. The pole, similar to another such feature in Structure A-7 (Kidder *et al.* 1946: 22, fig. 12), and, George Cowgill informs us (personal communication, 2003), to a pit in the stairway of the Plataforma Adosada attached to the Feathered Serpent Pyramid at Teotihuacan, may have done two things: (1) it helped support a large flat roof, a more likely shelter than the sloping, thatched coverings reconstructed by Proskouriakoff (e.g., Cheek 1977: figs. 57, 58); or (2) it contained a tree-trunk of indeterminate function and meaning.

A final, noteworthy property of the *talud-tablero* structures is their distinctive «recipe» of construction materials. First, the interiors are notably free of carbon and other artifacts, as though the source deposits were intentionally selected or cleaned by careful winnowing. Second, the *lajas* or knapped slabs that supported the *tableros* reflect a strong need to maintain precision of edge, a minute attention to detail not seen before in buildings at Kaminaljuyú (Kidder *et al.* 1946: 22; also Cheek 1977:20). Third, the material that covers the *talud-tableros* is *pumidrin* or *piedrín*, the former consisting of rounded pumice, the latter of volcanic fragments or scoria (Figure 5; Kidder *et al.* 1946: 21-22). The *pumidrin* was evidently crushed with attention to consistency in *metates* (grinding stones), mixed with a brown-yellow clay matrix, and, we suspect, heated at some unknown temperature. Even away from the surface, some of the pumice mix exhibits a pronounced red color. Such concrete technology is utterly distinct from what came before in the Acropolis, which, even in the *talud-tablero* of Structure E, shows more of a Peten-style burnishing and meticulous degree of polish (indeed, the effect is rather like the «diamond-polish» of plastered surfaces in the American Southwest)¹¹. The concrete was applied in a viscous state, set into molds along the edges and corners of the buildings and, in a final action, poured into sha-

¹¹ We take «cement» to mean construction adhesive, «concrete» to be a mix of such adhesives with other particles. Properly speaking, the covering at Kaminaljuyú is «concrete».

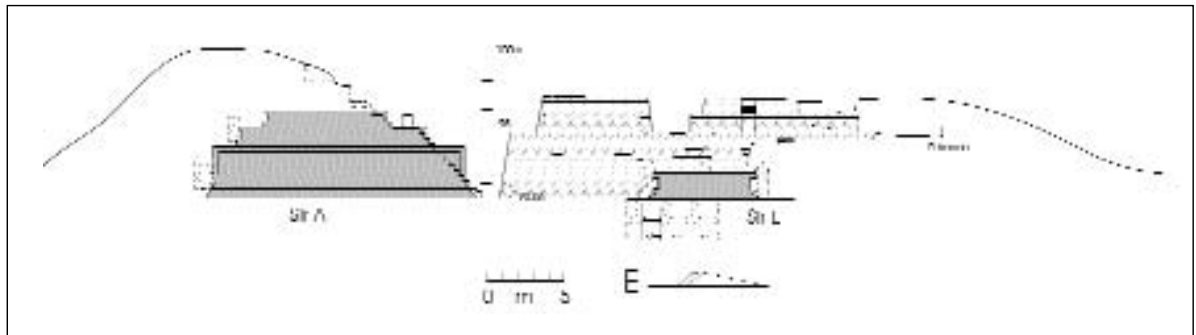


Figure 5. East-west profile across the Acropolis excavations.

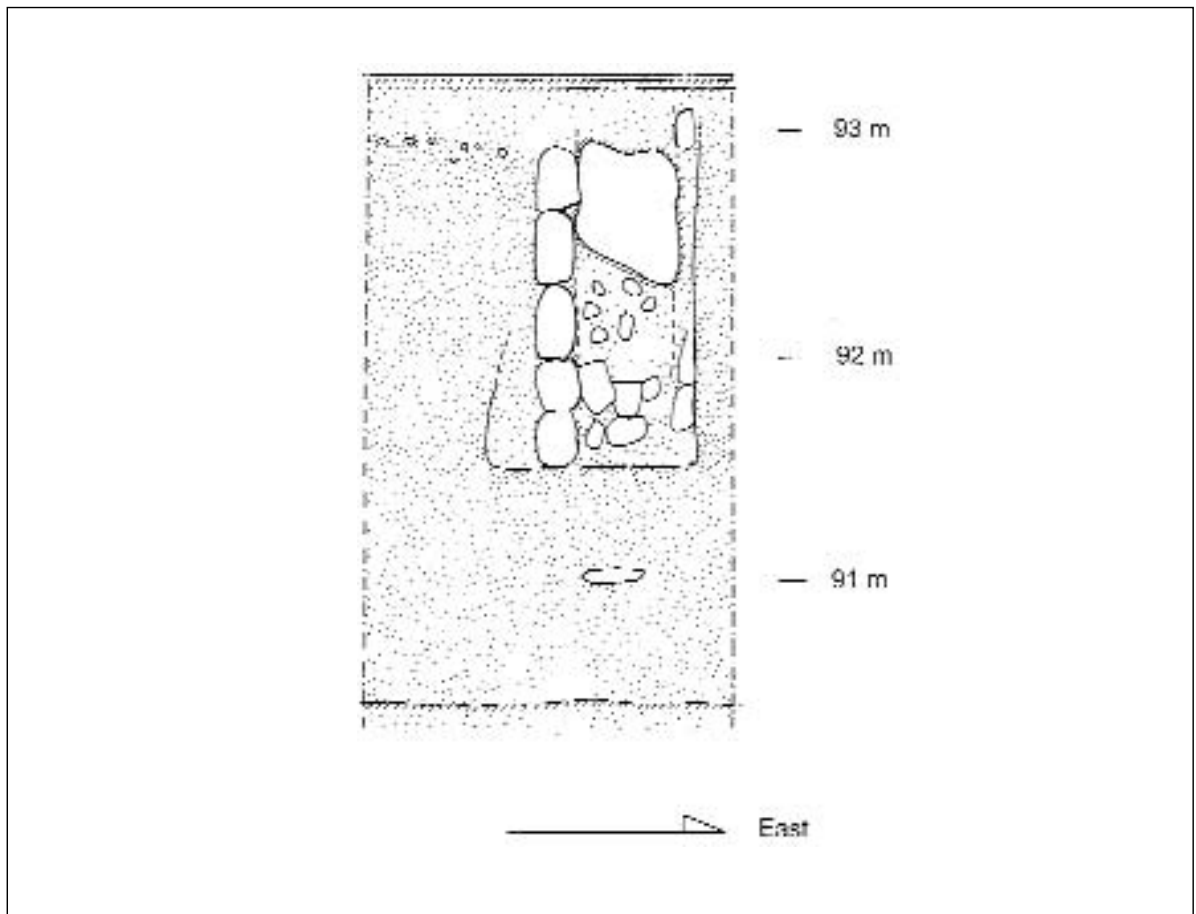


Figure 6. Profiles of post-hole in summit of Structure G.

low depressions on the top. Vertical layers were applied in swaths about 3 to 4 m in width. These started at the mid-section of the front stairway and moved around the building in counter-clockwise fashion, meeting the initial surfacing at mid-point of the stairway.

In our view, these rigid attributes hint at a highly-specialized work-group of no more than a handful of people. The peculiar insistence on surfacing in only one direction, the novel concrete technology and its application to the surface by means of molds and pouring, the evidence of small numbers of workmen doing final finishing, the ground pumice layering underneath the slathered surface, the astonishing regularity of size in vertical facings (pumice blocks beneath the concrete measure 5 by 10 cm, with well-cut sides facing outwards), the unprecedented lithic pattern of precisely aligned *lajas*, all indicate an inventory of behaviors that is learned and, from all available evidence, *not* local in origin. Susan Niles (1987: 211-215) shows the importance of masonry style in determining the meaning behind Inka stonework, some aesthetic and structural varieties being «separate traditions» that express everything from local building practices to explicit replications of imperial, Cuzco-style masonry (see also Protzen 1993: 264).

Cheek (1977: 166) perceived different phases of contact between Kaminaljuyú and Teotihuacan. We do not believe he proved his argument. Too much rides on a speculative, indeed unprovable, scenario of trade replaced by direct control from Teotihuacan. Neither copious trade nor territorial imperialism is evident in the archaeology of the Valley of Guatemala. However, there *is* reason to think that technological intrusions took place yet, strangely, within an unbroken sequence of construction in the Acropolis: that is to say, the commissioning intent was continuous, yet the commissioned works differed. The impulse to build such structures must have come from elsewhere, even if promoted by local elites. The workmen who undertook this labor behaved in ways that indicate pronounced breaks with preexisting techniques of construction. We do not believe that the master masons of this phase of the Acropolis were from Kaminaljuyú, although, to be sure, the identity of unskilled laborers working under them remains less clear.

Architecture is not the only relevant testimony. A sculpture now placed off the southeastern corner of

Structure A is almost certainly in Teotihuacan style, among the few known at Kaminaljuyú (Karl Taube, personal communication, 2003; see Parsons 1986: fig. 202). Its use as a supposed tenon in the C-II-4 ball-court, a conjectural placement by Smith, has been thrown into doubt by recent discoveries in southern Guatemala, where such sculptures occur in many other contexts. Could they have fitted into the balustrades of stairways (Oswaldo Chinchilla and Karl Taube, personal communications, 2003)? In an email to us, Karl Taube notes a number of balustrade sculptures at Kaminaljuyú, particularly snake rattles and heads, along with other Teotihuacan features (e.g., Parsons 1986: fig. 188, 190, 204-209; cf. Cabrera 1990: 100, for stone rattles from Rancho La Mora, Toluca) that resemble to a remarkable extent a temple-model on an Escuintla-style incense burner (K8037 and K8037a, Kerr database, «portfolio»). Moreover, a depression on the top of Structure G matches precisely the base of an unlabeled sculpture, an incense burner, perhaps dating to the Late Preclassic period, that currently lies at the base of the Structure G stairway. Espinoza excavated but did not publish a small *talud-tablero* structure just to the south of the Parque Kaminaljuyú (Figure 7). On mapping the feature, our project established that this, the smallest attested *talud-tablero* in the city, had been leveled at a later, probably Amatlé date. During its use, however, three Late Preclassic sculptures were positioned in front of it, within a small U-shaped courtyard that resembled the enclosure before a *talud-tablero* structure in the Palangana (Cheek 1977: figs. 20-22). Samuel Lothrop and Cheek had both found Preclassic sculptures in comparable locations within the courtyard, the «atrium», of the Palangana, (Cheek 1977: fig. 30; Lothrop 1926; Parsons 1986: fig. 5)¹². The careful, even reverential positioning of these objects indicates a strong desire to accommodate sacred objects from earlier periods, but without, it must be stressed, any real proof that the builders understood the iconography of these monuments.

A great problem in interpreting the motivation behind *talud-tableros* is that no scholar has presented a persuasive explanation of what they *meant*, other than that these features represent vague markers of Teotihuacan influence (Kubler 1985: 275-279, 353-355). Were they regarded, as were many high buildings in Mesoamerica, as instantiations of particular, sacred

¹² The question arises as to whether the atria diverge from patterns at Teotihuacan or are instead “of local origin” (e.g., Braswell 2003b: 122). It is true that no one-to-one matches occur with features at Teotihuacan. Yet, the presence of enclosures in front of temples is well-attested at Teotihuacan, including the Ciudadela. It also finds an echo in the undulating snakes that define the front entrance to the platform of the Aztec Templo Mayor (Matos 1987: 191-192).

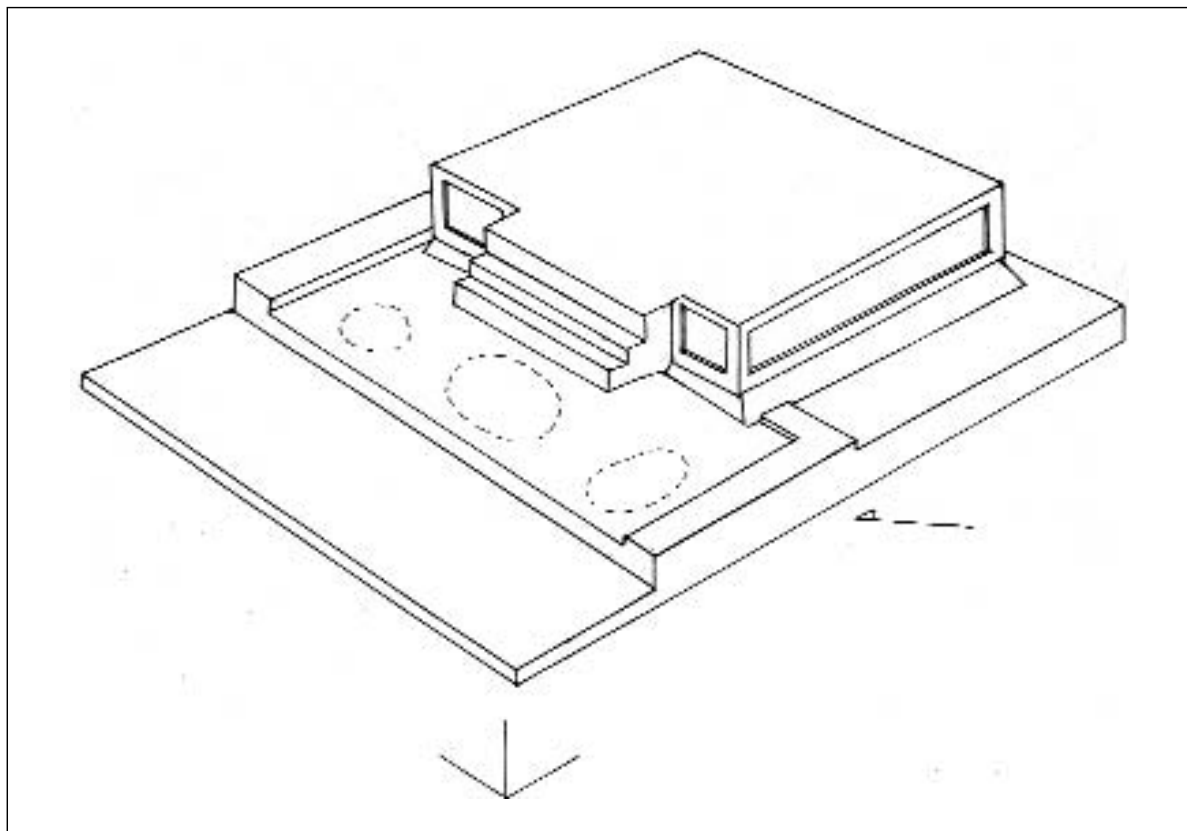


Figure 7. *Talud-tablero* 100 m south of the Palangana; arrow point is oriented towards magnetic north, and scale is a meter in length; CAD reconstruction.

hills? That argument is belied by the fact that most Teotihuacan buildings, when depicted in imagery, emphasize the super-structure and its ornamentation more than the basal platform, a deliberate contrast made evident in the one image that contrasts a Maya structure with another in Teotihuacan style (Culbert 1993: fig. 128a). For the Maya, features of Teotihuacan provenance embodied all that was of great age and high civilization, a yearning for, even an attempt to surpass, past conditions, much like later European «quotations» and mimicry of Classic art and architecture (Barkan 1999: xxxi-xxxii; see also Stuart 2000: 498). At the same time, as Karl Taube points out (personal communication, 2003), Teotihuacan-style buildings in the Maya region date with only a few exceptions to the period of possible contact with that city. This suggests something other than a mere evocation of antiquity.

Phase III: *Talpetate* Block

At some juncture the builders of the Acropolis decided to fill the courtyard around Structure E, the earliest *talud-tablero*, and replace it with open areas faced on the south by a red-painted, terraced structure. This effort concealed most of Structure G and the front of Structure A/F but not suddenly: the first level buried Structure E and only rose to cover most of G in a progression of higher and higher floors. As these floors were made, the builders found it necessary to create more *desagües*, apparently of *lajas* from dismantled *tableros*. Passing across Structure G is one such conduit, with indications from various resurfacings that it had to be opened, cleaned, and, somewhat later, shifted to a higher level when it slowly filled with debris. The conduits demonstrate a new interest in facilitating drainage from large open areas. They also pre-

sented significant problems in maintaining an unchecked flow of water away from the enclosed spaces of the Acropolis. The «red-building», so-named because of its layers of red paint (~8µm thick) and calcitic paste (the only calcareous product in the Acropolis detected thus far), consisted of two terraces. It was hidden gradually by the addition of new levels in front of it: the first terrace in two increments of filling, the second also in two, the final showing signs of considerable burning and levels of carbonized ash.

Construction technology had clearly changed. Large blocks of locally quarried, indurated ash (*talpetate*) were extracted from some new source and mortared with a thin slurry of grey material, much like the surfacing of the building. The builders devised thin walls one-block wide and created a new edifice, Structure I, with built-in «furniture», including thrones and dividing walls. The eastern side of this structure was destroyed anciently. In more recent times, Smith and Espinoza disturbed it again as they plunged into lower levels of the Acropolis. What survives shows that the builders required several parallel walls, possibly to buttress against a series of new, heavy floors behind it. The only *talud-tablero* to remain in view was the southern side of Structure F, but it had been caked with thick adobe. Few of its Teotihuacan elements could be seen. (In fact, it was probably at this time that poorly preserved sculptures of adobe appeared on the southern *tablero* of Structure F). The front of Structure I, although long since ripped out by Espinoza, can be observed as a «ghost» in the wall profile to the south of Structure F. This building was at least 5 m wide, at least if we have correctly interpreted Espinoza's trowel-lines. These structures, so markedly different from the *talud-tablero* building technology, still exist within a sequence of construction characterized by small, successive modifications rather than radical changes in building programs.

In preparation for a new construction, plainly an ambitious one, the builders created what we term the «*gran nivelación*», a thick layer that covered all structures in the Acropolis and perhaps somewhat beyond. This level, with pumice grains, some plagioclase sand and carbonized plant fragments in a brown clay matrix, extended across the length of Espinoza's excavation. The only building associated with the *nivelación*, a polished platform base on top of Structure F, was cut down and, some 15 to 20 cm above, depending on the area, an entirely new deposit came into existence. This deposit contains, in one profile, a red-brown clay matrix with silt-sand sized plagioclase, including some

volcanic material (both pumice and the more generic scoria). Other ingredients include yellow-clay aggregates, a sandstone fragment, rip-up clay clasts, and burned plant fragments, all of impressive heterogeneity in comparison to the deposits beneath. The massive construction layers of the deposit alternated with what appeared to be natural volcanic deposits, probably direct indications of eruptions (from the Pacaya volcano? [Kitamura 1994: 669-670]). In other parts of the Acropolis, especially above Structure P, the layer of burned material is up to 20 cm thick, and there is good reason to think that a period of abandonment or, at least, a notable pause in construction accompanied these events, whatever their nature. Areas on top of this level, including a floor left by Espinoza above Structure K, display what may be natural erosion and a general, natural deterioration of a surface. We do not want to over-dramatize the break, much as it seems to exist. Rather, it is prudent to avoid Kuniaki Ohi's simplistic separation of all cultural periods at Kaminaljuyú by conflagrations and societal tumult, shown in his diagrams by flames dancing atop each cultural divide (e.g., Ohi 1994 —Ed.—: frontispiece).

Phase IV: River Cobble and Adobe

Still, there was a drama taking place at Kaminaljuyú, especially as demonstrated by what came after the *gran nivelación*. Technology veered off in another, abrupt shift of direction. In place of *talpetate*, there was now an emphasis on thick layers of adobe containing a structural «skeleton» or core of water-rolled cobbles. The hearting of cobbles formed pavements and alignments, of which only a few remain in an area left intact by Espinoza above Structure F and near the present-day, eastern entrance to the Acropolis. The crudeness of the overall effect is camouflaged by what may have been a thin but highly polished layer of stucco that survives, barely, near the back wall of the excavation above Structure F.

The functional thrust of the Acropolis—at least as excavated so far—was directed towards shallow platforms and wide open plazas, a more inclusive architecture than the vertically disposed spaces of the *talud-tablero* phase. It seems fairly clear that the adobe-cobble construction dates to the Amatlé period, sometime between AD 600 and 800 (Popenoe de Hatch 1997: 8). The temporal position is supported by the archaeomagnetic dates from Wolfman (1990: 280-281) and by a single radiocarbon date extracted

from charcoal the exposed ceiling of the tunnel behind Structure F, a sample that may have come from the upper fabric of that building (A-13083, uncalibrated AD 770 ± 150* [1180 ± 150 BP, counted 4000 minutes and corrected for ¹³C]; AMS dates are still expected for four other samples). Building technology is of the sort that could be employed anywhere at Kaminaljuyú, regardless of sector or probable social status of the occupants. Cobbles probably derived from *barrancos* or chasms running through the Valley of Guatemala, the adobe from deposits near the surface—only the plaster required some additional skill for its application. Yet it is well to remember that most of the visible buildings in the Acropolis, the mounds that define the courtyards of Group C-II-4, date to this period. The «footprint» of these late buildings, the last to be erected in the Acropolis, must have been of long, range-like structures with low stairways. In contrast to the careful management of excess water, the open plazas of this time are likely to have been muddy during the rainy season, an effect that contrasted starkly and messily with the precise lines of the *talud-tablero* phase.

CONCLUSION

Almost twenty-five years ago, Charles Cheek (1977: 166-177) concluded that the nature of relations between Teotihuacan and Kaminaljuyú was multi-staged. The sites grew close over time and then became closely entangled, with Teotihuacan exercising direct control of Kaminaljuyú. It is difficult to prove such a model for the reason that no such control can be detected in available evidence. The historical records from Tikal and Copan raise the bar very high indeed for Kaminaljuyú, in that they disclose singular historical events and small groups, if influential ones, of particular individuals, neither of which can be detected at Kaminaljuyú, at least as yet. (The only historical links are with Tikal. The Esperanza-phase Tomb B-I contains a jade earspool, probably an heirloom, with the name of the founder of the Tikal dynasty [Kidder *et al.* 1946: fig. 44]. Late Preclassic royal names also occur on Kaminaljuyú Monument 65 [Parsons 1986: fig. 149]).

However, the building of the Acropolis did involve new technologies over time, radically different sources of materials, construction of floors, finishing techniques, all of which point, at critical moments, to disjunctions in the modes of creating sacred structures

and surfaces at Kaminaljuyú. Those techniques linked to the *talud-tablero* buildings are particularly jarring in their discrete «package» of construction techniques, perhaps employing relatively small numbers of specialists and larger groups of unskilled laborers. In comparison, the floors of the earliest levels, and those of the latest, exhibit no such expertise but rather imply practices that were widely available among the ancient occupants of Kaminaljuyú. The common perception by scholars that mere copying was operative at Kaminaljuyú does not apply to building technologies, which, in Phase II above, must come from elsewhere. Choosing between alternatives—local elites petitioning for such services from afar, or external elites, burrowed into the city by unknown means and accompanied by suites of technicians—does not seem possible on archaeological evidence alone, or in default of any coherent understanding of what the *talud-tableros* mean, both at Kaminaljuyú and in other corners of ancient Mesoamerica.

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REFERENCES

- ANAYA, Armando, Stanley GUENTER and Peter MATHEWS. 2001. «An Inscribed Wooden Box from Tabasco, Mexico». www.mesoweb.com/reports/box/index.html.
- BARKAN, Leonard. 1999. *Unearthing the Past: Archaeology and Aesthetics in the Making of Renaissance Culture*. Yale University Press. New Haven.
- BERLIN, Heinrich. 1952. «Excavaciones en Kaminaljuyú: Montículo D-III-13». *Antropología e Historia de Guatemala* 4(1): 3-18.
- BORHEGYI, Stephan F. de. 1965. «Archaeological Synthesis of the Guatemalan Highlands». In *Handbook of Middle American Indians, Volume Two: Archaeology of Southern Mesoamerica, Part One*, Ed. G.R. Willey, Gen. Ed., R. Wauchope, pp. 3-58. University of Texas Press. Austin.
- BOVE, Frederick J. and Sonia MEDRANO BUSTO. 2003. «Teotihuacan, Militarism and Pacific Guatemala». In *The Maya and Teotihuacan: Reinterpreting Early Classic Interaction*, Ed. G.E. Braswell, pp. 45-79. University of Texas Press. Austin.
- BRASWELL, Geoffrey E. 2003a. «Dating Early Classic Interaction between Kaminaljuyu and Central Mexico». In *The Maya and Teotihuacan: Reinterpreting Early Classic Interaction*, Ed. G.E. Braswell, pp. 81-104. University of Texas Press. Austin.
- . 2003b. «Understanding Early Classic Interaction between Kaminaljuyu and Central Mexico». In *The Maya and Teotihuacan: Reinterpreting Early Classic Interaction*, Ed. G.E. Braswell, pp. 105-142. University of Texas Press. Austin.
- BRASWELL, Geoffrey E. (Editor) 2003. *The Maya and Teotihuacan: Reinterpreting Early Classic Interaction*. University of Texas Press. Austin.
- CABRERA CASTRO, Rubén. 1990. «The Metropolis of Teotihuacán». In *Mexico: Splendors of Thirty Centuries*, Ed. J.P. O'Neill, pp. 87-114. Bulfinch Press. Boston.
- . 1995a. «Atetelco». In *Pintura Mural Prehispánica en México: I, Teotihuacán, Tomo I, Catálogo*, Ed. B. de la Fuente, pp. 202-257. Instituto de Investigaciones Estéticas. UNAM. México.
- . 1995b. «Conjunto Plaza Oeste». In *Pintura Mural Prehispánica en México: I, Teotihuacán, Tomo I, Catálogo*, Ed. B. de la Fuente, pp. 44-57. Instituto de Investigaciones Estéticas. UNAM. México.
- CARPIO, Edgar. 1999. *La relación Kaminaljuyú/Teotihuacan*. Escuela de Historia, Universidad de San Carlos de Guatemala. Guatemala.
- CHEEK, Charles D. 1977. «Excavations at the Palangana and the Acropolis, Kaminaljuyu». In *Teotihuacan and Kaminaljuyu: A Study in Prehistoric Culture Contact*, Eds. W.T. Sanders and J.W. Michels, pp. 1-204. Pennsylvania State University Press. State College.
- COWGILL, George L. 2003. «Teotihuacan and Early Classic Interaction: A Perspective from Outside the Maya Region». In *The Maya and Teotihuacan: Reinterpreting Early Classic Interaction*, Ed. G.E. Braswell, pp. 315-335. University of Texas Press. Austin.
- CULBERT, T. Patrick. 1993. *Tikal Report No. 25, Part A: The Ceramics of Tikal: Vessels from the Burials, Caches, and Problematical Deposits*. University Museum, University of Pennsylvania. Philadelphia.
- DE LA FUENTE, Beatriz. 1995a. «Tetitla», in *Pintura Mural Prehispánica en México: I, Teotihuacán, Tomo I, Catálogo*, Ed. B. de la Fuente, pp. 258-311. Instituto de Investigaciones Estéticas. UNAM. México.
- . 1995b. «Yayahuala», in *Pintura Mural Prehispánica en México: I, Teotihuacán, Tomo I, Catálogo*, Ed. B. de la Fuente, pp. 342-344. Instituto de Investigaciones Estéticas. UNAM. México.
- DEMAREST, Arthur A. and Antonia E. FOIAS. 1993. «Mesoamerican Horizons and the Cultural Transformations of Maya Civilization». In *Latin American Horizons*, Ed. D.S. Rice, pp. 147-191. Dumbarton Oaks. Washington D.C.
- ESCOBEDO, Héctor L. and F. Marcelo ZAMORA. 2000. «PN 47: Excavaciones en la estructura R-5». In *Proyecto Arqueológico Piedras Negras: Informe Preliminar No. 4, Cuarta Temporada, 2000*, pp. 199-216. Report submitted to the Instituto de Antropología e Historia de Guatemala. Guatemala.
- FOIAS, Antonia E. 1987. *The Influence of Teotihuacan in Maya Culture during the Middle Classic: A Reconsideration of the Ceramic Evidence from Kaminaljuyu, Uaxactun, and Copan*. B.A. honors thesis, Department of Anthropology, Harvard University.
- KIDDER, Alfred V., Jesse D. JENNINGS and Edwin M. SHOOK. 1946. *Excavations at Kaminaljuyu, Guatemala*. C.I.W. Pub. 561. Washington D.C.

- KITAMURA, Shigeru. 1994. «The History of Volcanic Eruption in the Vicinity of Guatemala City and the Influence of the Eruption on the Ancient Maya Society», in *Kaminaljuyú (1991-94), Tomo I*, Ed. Kuniaki Ohi, pp. 669-678. Museo de Tabaco y Sal. Tokyo.
- KUBLER, George. 1985. *Studies in Ancient American and European Art: The Collected Essays of George Kubler*, Ed. Thomas R. Reese. Yale University Press. New Haven.
- LAPORTE, Juan Pedro. 1988. «Arquitectura Clásica Temprana de Tikal y el modo talud-tablero». *Antropología e Historia de Guatemala* 7: 1-48.
- LAPORTE, Juan Pedro and Héctor E. MEJÍA. Editors. 2003. *Kaminaljuyú en el Simposio de Investigaciones Arqueológicas en Guatemala*. Museo Nacional de Arqueología y Etnología / Asociación Tikal. Guatemala.
- LINNÉ, Sigvald. 2003 [1934]. *Archaeological Researches at Teotihuacan, Mexico*. University of Alabama Press. Tuscaloosa.
- LOTHROP, Samuel K. 1926. *Stone Sculptures from the Finca Arevalo, Guatemala*. Indian Notes 3: 147-171. Museum of the American Indian, Heye Foundation. New York.
- MATOS MOCTEZUMA, Eduardo. 1987. «Symbolism of the Aztec Templo Mayor». In *The Aztec Templo Mayor*, Ed. Elizabeth H. Boone, pp. 185-209. Dumbarton Oaks. Washington D.C.
- MERWIN, Raymond E. and George C. VAILLANT. 1932. *The Ruins of Holmul, Guatemala*. Memoirs of the Peabody Museum Vol. 3, no. 2. Harvard University. Cambridge.
- MILLER, Arthur G. 1973. *The Mural Painting of Teotihuacán*. Dumbarton Oaks. Washington D.C.
- NILES, Susan A. 1987. *Callachaca: Style and Status in an Inca Community*. University of Iowa Press. Iowa City.
- OHI, Kuniaki. Editor. 1994. *Kaminaljuyú (1991-'94)*. 2 vols. Museo de Tabaco y Sal. Tokyo.
- OHI, Kuniaki, Nobuyuki ITO and Shione SHIBATA. 1994. «Parte 1: Investigación arqueológica en el Parque Arqueológico Kaminaljuyú». In *Kaminaljuyú (1991-94), Tomo I*, Ed. Kuniaki Ohi, pp. 105-113. Museo de Tabaco y Sal. Tokyo.
- PARSONS, Lee A. 1986. *The Origins of Maya Art: Monumental Stone Sculpture of Kaminaljuyú, Guatemala, and the Southern Pacific Coast*. Dumbarton Oaks. Washington D.C.
- POPEÑO DE HATCH, Marion. 1997. *Kaminaljuyú / San Jorge: Evidencia Arqueológica de la Actividad Económica en el Valle de Guatemala, 200 a.C a 300 d.C*. Universidad del Valle. Guatemala.
- . 2003. «Proyecto Parque Kaminaljuyú, Informe Final 2003: Cerámica». Manuscript in possession of authors.
- PROTZEN, Jean-Pierre. 1993. *Inca Architecture and Construction at Ollantaytambo*. Oxford University Press. Oxford.
- SHOOK, Edwin M. and A. Ledyard SMITH. 1942. «Guatemala: Kaminaljuyú», *Carnegie Institution of Washington Yearbook 1941*: 263-267.
- SMITH, A. Ledyard. 1961. «Types of Ball Courts in the Highlands of Guatemala». In *Essays in Pre-Columbian Art and Archaeology*, Ed. S.K. Lothrop, pp. 100-125. Harvard University Press. Cambridge.
- STUART, David S. 2000. «“The Arrival of Strangers”: Teotihuacan and Tollan in Classic Maya History». In *Mesoamerica's Classic Heritage: From Teotihuacan to the Aztecs*, Eds. D. Carrasco, L. Jones and S. Sessions, pp. 465-513. Colorado University Press. Niwot.
- TANAKA, Yasushi. 1994. «Sondeo subterráneo y análisis químico de los suelos de Kaminaljuyú». In *Kaminaljuyú (1991-94), Tomo I*, Ed. Kuniaki Ohi, pp. 683-689. Museo de Tabaco y Sal. Tokyo.
- VALDÉS, Juan Antonio and Lori E. WRIGHT. 2004. «The Early Classic and its Antecedents at Kaminaljuyú: A Complex Society with Complex Problems». In *Understanding Early Classic Copan*, Eds. E.E. Bell, M.A. Canuto and R.J. Sharer, pp. 337-355. University of Pennsylvania Museum of Archaeology and Anthropology. Philadelphia.
- WHITE, Christine D., Fred J. LONGSTAFFE, Michael W. SPENCE and Kimberley R. LAW. 2000. «Testing the Nature of Teotihuacan Imperialism at Kaminaljuyú Using Phosphate Oxygen-Isotope Ratios», *Journal of Anthropological Research* 56(4): 535-558.
- WOLFMAN, Daniel. 1973. *A Re-evaluation of Mesoamerican Chronology: A.D. 1-1200*. Ph. D. Dissertation, Department of Anthropology, University of Colorado. Boulder.
- . 1990. «Mesoamerican Chronology and Archaeomagnetic Dating, A.D. 1-1200». In *Archaeomagnetic Dating*, Eds. J.L. Eighmy and R.S. Sternberg, pp. 261-308. University of Arizona Press. Tucson.