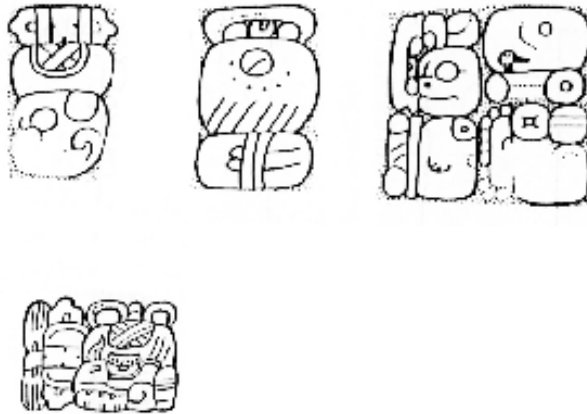


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Investigations at Piedras Negras, Guatemala: 1998 Field Season

Between Mountains and Sea: Investigations at Piedras Negras, Guatemala

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Research Year: 1998

Culture: Maya

Chronology: Early and Late Classic

Location: Usumacinta River, Guatemala

Site: Piedras Negras

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Resumen

En 1998, el Proyecto Piedras Negras llevó a cabo su segunda temporada de campo. La re-excavación de la Pirámide O-13 reveló que los sectores no perturbados por las excavaciones de la Universidad de Pennsylvania se hallaban en excelente estado de preservación. Al excavar un túnel dentro de la base de O-13 se descubrió un escondite extraordinario. Aunque no se descarta la presencia de una tumba en el interior de ésta pirámide, toda la evidencia parece indicar que el Entierro 13 representa la tumba del Gobernante 4. Excavaciones en gran escala se realizaron en la Acrópolis, lo cual reveló que los patios 1, 2 y 3 tuvieron componentes significativos de la época de transición entre el Clásico Temprano y el Tardío, aunque la actividad constructiva más intensa aconteció durante el Clásico Tardío. Abajo de la superficie de la Plaza del Grupo Oeste parece haberse localizado el Palacio Real del Clásico Temprano, cuyas estructuras fueron sistemáticamente niveladas y demolidas por los mayas. Por ahora, es claro que el final de dicho período se implementaron vías procesionales a la Acrópolis, que transformó de un cerro natural con estructuras en su cima, a un complejo que tuvo una apariencia casi completamente artificial. Este esfuerzo reconfiguró el casco urbano de Piedras Negras, otorgándole un aspecto monumental y entrelazando a los sectores norte y sur del sitio. Según nuevas interpretaciones epigráficas, es posible que Yaxchilán haya tenido relación con la destrucción de la Acrópolis y el colapso en Piedras Negras, pues el nombre de un cautivo del último gobernante de tal ciudad, se parece mucho al del Gobernante 7 de Piedras Negras. La continuación de las excavaciones en los baños de vapor demostró que todos ellos tienen no menos de dos fases constructivas, a partir del Clásico Temprano. Asimismo, se inició la consolidación del monumental baño de vapor P-7. Otro foco crucial del proyecto fueron las unidades habitacionales cuyos hallazgos incluyeron densas concentraciones de lascas de obsidiana y de fosfatos, raspadores de astas de venado y numerosos entierros de diferentes edades y sexo. También se encontró un depósito especial que contenía cuanticosas figuritas, ocarinas, una flauta polifónica y cerámica incisa con glifos, incluyendo el nombre del Gobernante 2. El programa de reconocimiento localizó 84 grupos de montículos habitacionales en la "periferia cercana" de Piedras Negras. La mayoría de los grupos se fechan para el Clásico Tardío. El reconocimiento reveló un enorme cenote seco, cuya presencia quizá haya dado origen al toponímico de Piedras Negras, *y-okib*, "entrada" o "abertura." Fuera de Piedras Negras, un pequeño equipo del proyecto exploró las remotas y bastante saqueadas ruinas de La Pasadita, cuyo asentamiento se agrupa encima de los cerros, con pequeñas terrazas y montículos dispersos sobre las ondulaciones inferiores. Fue trágico confirmar que la bóveda del edificio que alojaba los murales colapsó hace pocos años. Finalmente, una actividad extraordinaria emprendida por el proyecto, fue el entierro de las cenizas de Tatiana Proskouriakoff en la cima de la Acrópolis.

Submitted 09/01/1998 by:

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Introduction

"Old places exist on sine waves of time and space that bend in some logarithmic motion [we are] beginning to ride" Frances Mayes

Piedras Negras is one of the largest cities in the western Maya Lowlands, with an enviable record of research but many remaining problems of interpretation: How did Piedras Negras grow and collapse, and under what conditions and economic or political inducements? How big was the city, and what was its internal makeup? What activities were performed in the city, and how were these expressed in architecture? What was its polity like? How large was the population, and how did most people make a living? In 1998 the Brigham Young/Universidad del Valle project undertook its second season of research into these questions, under the co-direction of Houston and Escobedo. The Project built on prior work by, among others, the University Museum of the University of Pennsylvania (e.g., Satterthwaite, 1943; see also Maler, 1901; and Proskouriakoff, 1960) and extended previous research by our own team (Houston *et al.*, 1998). Objectives in the 1998 field season included new initiatives along with extensions of work conducted in the preceding season. This year brought confirmation of prior results and, not surprisingly, unexpected patterns that led to yet other questions.

Calendar of the 1998 Field Season

In March, 1998, a small team led by Charles Golden penetrated to the remote and heavily looted site of La Pasadita, in the southern part of the BYU/del Valle concession. The ruin, famous to epigraphers because of its murals, lintels, and connection to the dynastic polity of Yaxchilán, was reported first by Ian Graham in 1971. It proved exceptionally difficult to relocate. Harder still were the logistics of working at the site, which involved transport by river to a land route accessible only by foot and mule train. Contrary to published maps, the area around La Pasadita consisted of extremely broken, occasionally swampy (and demonstrably malarial) terrain. Ancient settlement clustered on hilltops, with small terraces and small mounds sparsely scattered on lower slopes some 20-50 m. below. The discarded remains of military rations and reports of intense battles during the height of civil conflicts in Guatemala lent weight to persistent rumors of land mines in the area. The tenuous logistics and likely danger of ordinance explosion made sustained work impossible, although Golden and his crew stayed for two weeks to map structures, recover and record additional pieces of the murals, and document the caves with cultural material that are abundant in the area. Tragically, the building that housed the murals, Structure 1, had collapsed a few years before Golden's visit. Most buildings and platforms in the area bore testimony to savage, persistent looting. At least ten graves, including three crypts in a building adjacent to Structure 1, lay open to view when Golden's party visited La Pasadita.

By late March camp construction began anew at Piedras Negras, seventy-five laborers and cooks arrived by river, and operations commenced in a variety of locations. Escobedo cleared the base and northern side of Pyramid O-13's massive stairway – or rather, what remained of it, since J. Alden Mason had destroyed much of the stairway and the central core of the building in his excavations of the early 1930s. Where undisturbed by University Museum excavations, O-13 proved to be in an extraordinary state of preservation ([Figure 1](#)). Child continued his sweatbath excavations by trenching axially in P-7, S-19, S-4, and S-2, while Christian Wells trenched Structure F-2, a building of unusual, peaked form in a grouping of terraces and partly standing architecture skirting the north side of the Northwest Group Plaza. To provide a fuller portrait of the area near Child's sweatbath excavations, Mónica Urquizú supervised slot trenches in a double-patio group focused on Structure S-11, excavated in part by Escobedo in 1997. Nancy Monterroso directed work in the small court near Structure R-20, quickly discovering a dense concentration of burials along a north-south orientation. These were of such complexity and number of interments that they occupied her attention for the remainder of the season. Lilian Garrido, Isabel Aguirre, and Ernesto Arredondo placed test pits in areas incompletely examined in the 1997 field season. Their work concentrated respectively on the West Group Plaza, the N/O "barrio" of small buildings wedged between the river and West Group Plaza, and the G/K sector on the hill behind Pyramid K-5.



Figure 1. Back face of Pyramid O-13, seen from north (photograph: Jay Hassell).

Jennifer Kirker and Amy Kovak systematically surveyed a 3-4 sq. km. region composed of three survey blocks to the east, south, and northwest of Piedras Negras proper. Their primary aim was to document patterns of settlement form, density, and distribution both on the near-periphery of the main site and in more distant, rural zones. Two other goals were to locate visible agro-engineering features and to test the usefulness of GPS systems in rugged topography under high forest. Eighty-five sites, ranging from a ceremonial precinct just south of Piedras Negras to small, single mounds, were located and mapped. Most were near-periphery sites within about 1 km. of Piedras Negras, but some were recorded as much as 3.2 km. to the northeast around the outlying subsidiary center of El Porvenir. It proved possible to obtain GPS fixes in almost all cases despite the vegetation cover. Kirker, along with Timothy Murtha, later completed 27 test excavations in 19 sites, or 22% of the total located this year. Small residential terraces are common, but no traces of extensive agricultural terracing or other agro-engineering features were encountered.

Perry Hardin and Jacob Parnell supplemented such reconnaissance by exploring valleys to the northwest of Piedras Negras. They also took numerous soil samples for processing by Terry at BYU. In the site core, Christian Wells moved his crew to a set of low, unexplored mounds squeezed between the South Group Plaza and the arroyo that ends in the beach used now (and doubtless anciently) by boats visiting Piedras Negras. This research had several objectives: to determine whether the area contained Preclassic deposits such as those in the Plaza nearby (it did not); but, even more important, to start extensive clearance of domestic architecture, a feature barely studied at Piedras Negras or, for that matter, anywhere in the western Maya Lowlands. Using a total station, Nate Currit mapped all excavations from the 1997 and 1998 field seasons. To our dismay, he showed that the University Museum map, excellent in some respects, suffered from large horizontal errors somewhere along the East Group Plaza, an error suspected by University Museum researchers (Satterthwaite, 1943:21). Architecture in the Acropolis area needed to be moved 20 m. to the northeast; buildings near the South Group Plaza lay, according to Currit's measurements, some 20 m. to the southeast.

By mid-season excavations began in earnest in the Acropolis, particularly in the courtyards. This approach necessitated less disturbance of standing masonry and promised deeper soundings in areas without heavy overburden. Golden deepened and extended trenches in Court 3, exposing earlier building levels and establishing articulations between architecture ringing (and underlying) the court. In Court 2 Houston and Urquizú cleaned a north-south trench left by the University Museum, simultaneously probing an opening cut by looters through the back of Structure J-10. By the end of the season, the team had moved to Court 1, invited by a massive, leveled platform (J-7) left undisturbed by the University Museum. This platform had two further attractions: it permitted study of the joins between Court 1, its defining palace rooms, and Pyramid J-4; and it corresponded symmetrically to J-5, where the Museum had found Burial 5 in the 1930s. Pyramid O-13 consumed most of Escobedo's attention in 1998. With Carlos Alvarado, he stripped the back of the structure, cleared rooms on the summit, trenched to bedrock the 5 m. pit left by J. Alden Mason from the University Museum expedition,

and ended by tunneling the axis. The loose rubble core of the pyramid had defeated an earlier tunnel by Escobedo to the side of the O-13 stairway. Determined to improve safety, Escobedo searched for, and found, a layer of structurally stable, sterile clay, which his workers proceeded to tunnel after inserting roof supports. Directly overhead lay a chocolate-colored clay with sporadic Early Classic sherds. After 13 m. this clay proved unstable, drying and then scaling from the walls. Terminating this operation for safety reasons, Escobedo cleared the rest of Burial 13 and established its relation to an unusual dressed-stone pavement that had been penetrated by the Maya to burn this burial a few years after its interment (Houston *et al.*, 1998:19). All monumental excavation at Piedras Negras suffered from the difficulty, often insuperable, of digging into loose rubble.

A contractual obligation of our permit was the consolidation of endangered buildings. After consideration of several alternatives, the project targeted the P-7 sweatbath (Child, 1997). Twelve masons, working in teams of two, master and apprentice side-by-side, selected and shaped the thin flagstones distinctive of late masonry at the site, removed deep tree roots that had infiltrated the body of the structure, excavated remaining room debris, sifted and graded soil of decomposed plaster from the building, and experimented with several grades of cement to reproduce the dense pointing of the original. An industrial pump and ½ km. of reinforced hose brought water to the sweatbath, since project masons required at least 150 gallons a day. After a month's work, the masons succeeded in consolidating the central room of the sweatbath, roof piers, northeast door, room benches, and the sluice (*desagüe*) leading from the inner sweatroom. Our policy was to consolidate masonry still in place or recently fallen, and not to engage in plausible, but still speculative reconstruction. The masons also provided Child with an unusual opportunity to gauge the energetics of construction at Piedras Negras. Steel axes, not chert adzes, were used in shaping stone, but this could not have been radically different from ancient results, since the flagstones took their shape largely from bedding planes in local rock. With water, stone, and cement in place, masons took approximately one day to build 1 cubic m. of wall, two days for 1 sq. m. of vaulting. They noted that much of the stone came from the river bank, some 500 m. away, the same location where local artisans extracted the poor-quality, white chert employed for tools at Piedras Negras. Our masons also proved helpful in preparing a cist in Structure J-23 for the ashes of Tatiana Proskouriakoff. On Easter Sunday (non-Orthodox calendar) project members respectfully buried her remains. Not only Proskouriakoff was interred: by the end of the season, all pits and trenches, including some left open by the University Museum, were backfilled in accordance with the requirements of our permit.

Operations in 1998

A larger labor force allowed the project to open more excavations than in 1997, often with as many as thirteen operations running simultaneously. Sixteen new operations followed the sequence established last year. Several earlier operations were re-opened, principally Ops. 1 and 11. The first season relied heavily on large-scale test-pitting, a

useful exploratory strategy at a site as large and complex as Piedras Negras. During the second season, project staff reduced the number of test-pits, restricting them to still-unexplored areas in the N/O and G/K sectors. (The "sectors" take their name from blocks of contiguous mounds and patio groups designated by letters on the University Museum map.) All soil, excepting loose rubble, passed through 1/4 in. screens. Samples of particular cultural interest – burials, middens, floors – were floated by Nicholle Townsend, who employed a wet-flotation process developed under the guidance of Prof. Deborah Pearsall of the University of Missouri. This material is now being processed at BYU. The technique also proved useful in extracting delicate material, such as a slender bone needle.

Most operations could be divided into two kinds of excavation: monumental architecture and small-scale structures and patios. Both could be time-consuming. At Piedras Negras, the excavation of monumental structures required exceptional caution because of unstable rubble, which required hard-hats and wood shoring. Several operations, including a trench through Court 2 of the Acropolis (Op. 32), had to be closed for fear of rock fall. Escobedo took the lead in such operations with a thorough investigation of Pyramid O-13, a structure with striking similarities to the Temple of the Inscriptions at Palenque (Macri, 1994). Mason had dug the pyramid in the early 1930s, leaving a deep cavity in its central axis and heaps of debris over its lower staircase. (Siftings through Mason's backdirt attested to his haste and indifferent supervision, yielding the occasional chert eccentric from a mauled cache.) Pyramid O-13 had already been the focus of study in 1997, when Escobedo and Tomás Barrientos, with minor assistance from Houston, uncovered a royal burial that had been re-opened and burned a few years after its interment (Barrientos *et al.*, 1997; Houston *et al.*, 1998:18-19). The O-13 excavations had the objective of exploring the mortuary nature of the pyramid, mentioned hieroglyphically on Panel 3, and continuing the fine work of Proskouriakoff in reconstructing its sequence of construction.

By mid-season, Escobedo, with the assistance of Carlos Alvarado, had demonstrated several important features of O-13. In the first place, the pyramid exhibited, in areas left undisturbed by Mason, an exemplary state of preservation. Its projecting stairway had most of its courses intact; terraces above still bore evidence of plaster flooring. More startling still, the back of O-13 displayed a continuous face of plastered, red-painted masonry, with considerable modifications and additions, along with evidence of intrusive burials (see [Figure 1](#)). But it was the front and axis of O-13 that revealed the nature of the building. Escobedo removed several tons of rubble, exposing the lower risers of the stairway, an outside balustrade (perhaps the footing of a fallen stela), and a flagstone pavement. Excavations to bedrock in Mason's axial cavity failed to reveal any sign of a burial, and Escobedo determined to dig inwards on axis (see above).

Almost immediately, workers struck one of the largest known caches in the Maya Lowlands, consisting of approximately 129 eccentrics (54 chert, 75 of obsidian, most in groupings of nine equivalent shapes), 1 bird skeleton, 1 vessel with 8 jade beads and 9 pyrites (interspersed with jade, *Spondylus*, and hematite flecks), and a marine spiral shell, all placed in a prepared cist ([Figure 2](#)). The cache certainly marked the axis of the pyramid. With this indication, Escobedo began a tunnel, eventually aborted because of

structural instability. We cannot discount the presence of a tomb within, although the tunnel did begin to reach a rising slope of sterile clay presumably leading to the hillside under O-13. Probably our supposition last year was correct: Burial 13, a rich interment on axis of O-13, lying beneath the flag pavement but with proof of later reentry, represents the tomb of Ruler 4 of Piedras Negras. If so, the events recorded on Panel 3 – interment, followed 24 years later by tomb opening – correspond remarkably to our "reading" of this deposit. It would seem that the cache and pavement, which passes underneath the final stage of O-13, came into existence in A.D. 757. The later phase and tomb reentry can be dated, if our reasoning is correct, to A.D. 782, in a ritual under the supervision of Ruler 7. The connection with Ruler 7 is reinforced by the presence nearby of Altar 4, a gigantic, stone jaguar paw resting on four stones. The sculptors of this altar are known to have been active during the reign of Ruler 7, and the object itself may be mentioned on another monument of his rule, Throne 1. (An earlier version of this monument may be mentioned on El Cayo Panel 1, from the time of Ruler 5.) Escobedo ended the season by plumbing the front platform of Pyramid R-1, with the same results of loose rubble core and multiple layers. The earliest levels proved to be of Early Classic date.

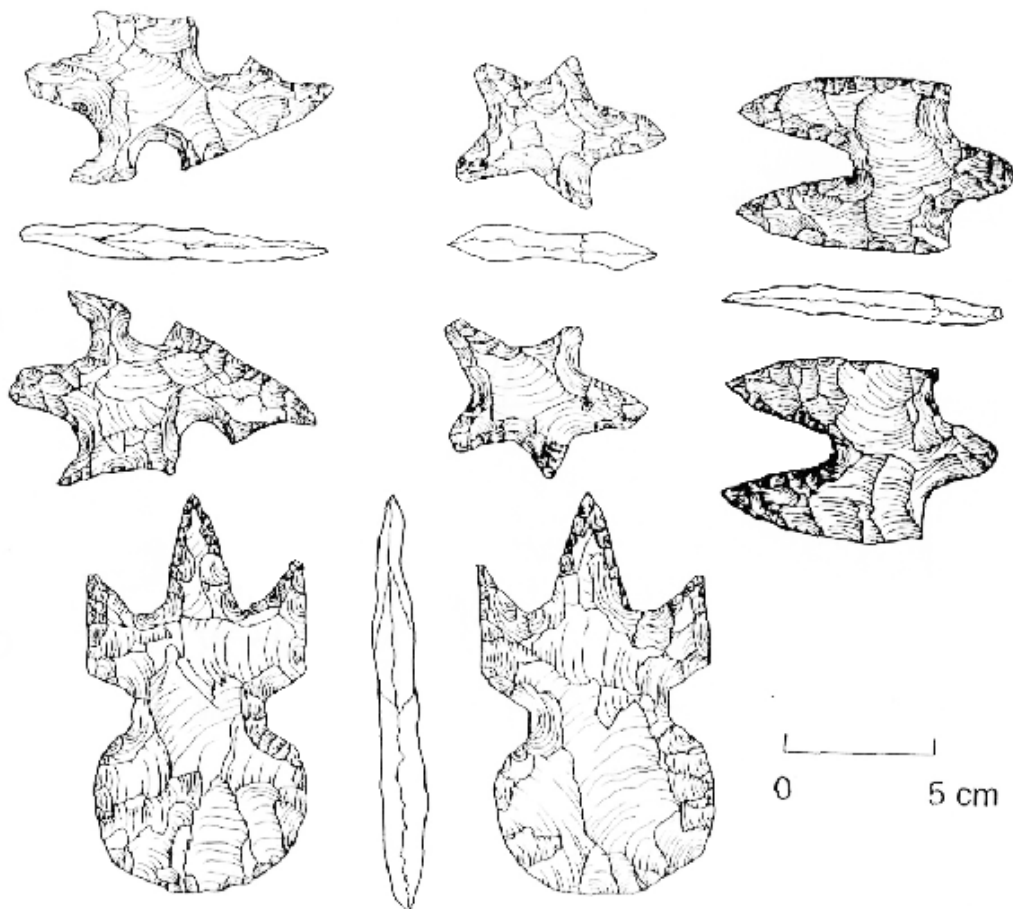


Figure 2. Selection of eccentrics from Cache 57, Pyramid 0-13 (drawing: Zachary Hruby).

In 1997 the Acropolis, almost certainly the royal palace of Piedras Negras, had begun to reveal its secrets. Court 3 was shown to contain Early Classic structures on a different orientation from buildings on the surface (Golden, 1997:95). In 1998 we resolved to excavate in many places within the Acropolis, since these investigations would capture its constructional history and functional complexity, presumably mirroring changes in court activity. Overall, the excavations showed unambiguously that the Acropolis had significant Early Classic components, including an enigmatic, ritual component in Court 3: a bedrock outcropping and abyss accessed by steps. Nonetheless, other data pointed to its overwhelmingly Late Classic construction. Court 1 was found to have many buried layers in Structure J-7 – in reality a platform permitting access from Court 1 to Court 2 via terraces on Pyramid J-4. Uppermost was the level surface of J-7, then came a courtyard with several episodes of replastering, a buried terrace, and lower still, a cluster of buildings facing Court 1 on its east and north sides. Work by the University Museum demonstrated that Court 1 possessed a deep patio filled to its current level when the buildings were constructed underneath J-7. Lowermost was a level with Early Classic material, but it was thinly distributed and embedded in what appeared to be natural clay (Satterthwaite, 1954:71). Ceramics from all subsequent deposits dated to the Late Classic period (Yaxche to Chacalhaaz phases), with a few artifacts from the Early Classic/Late Classic transition (Balche). Coincidentally, excavations in the J-7 sequence demonstrated that Pyramid J-4, so intimately associated with Ruler 4 (died before 9.14.18.3.13, the accession date of his successor), was constructed after these platforms. If Pyramid J-4 were truly his burial structure, then the platforms must antedate his death and the building of his mortuary pyramid. The presence of Chacalhaaz materials in these deposits suggests strongly that ceramicist George Holley placed the beginning of the Chacalhaaz some ten to twenty years too late (Holley, 1983:155-156).

An epigraphic observation brings the end of the Acropolis – and Piedras Negras – into finer perspective. Along with Dos Pilas and a few other cities, Piedras Negras may have highly specific information bearing on its collapse. Yaxchilán Lintel 10, a crudely planned monument and the last-known at that center, refers to an important captive of *K'inich Tatub Hol*, the final ruler of Yaxchilán. The captive's name resembles closely that of Ruler 7 of Piedras Negras, also the last ruler of his site ([Figure 3](#)). What makes the pattern more than coincidental are the dates and signs of systematic destruction in the Acropolis. The Yaxchilán reference is, at A.D. 808, the latest linked to Ruler 7 – the last mention at Piedras Negras comes at A.D. 795. Moreover, Throne 1, an important monument of Ruler 7's reign, was violently smashed, and Structure J-12 experienced intense burning. Long ago, Satterthwaite attributed such damage to class-struggle (Satterthwaite, 1935:11-12). But could such violence result instead from an attack by Yaxchilán? Nonetheless, it is naive to see local collapse solely in terms of successful battles. The fact that both Yaxchilán and Piedras Negras suffered abandonment within a few years of one another may reflect less the outcome of warfare than a more general debilitation that allowed such warfare to take place.

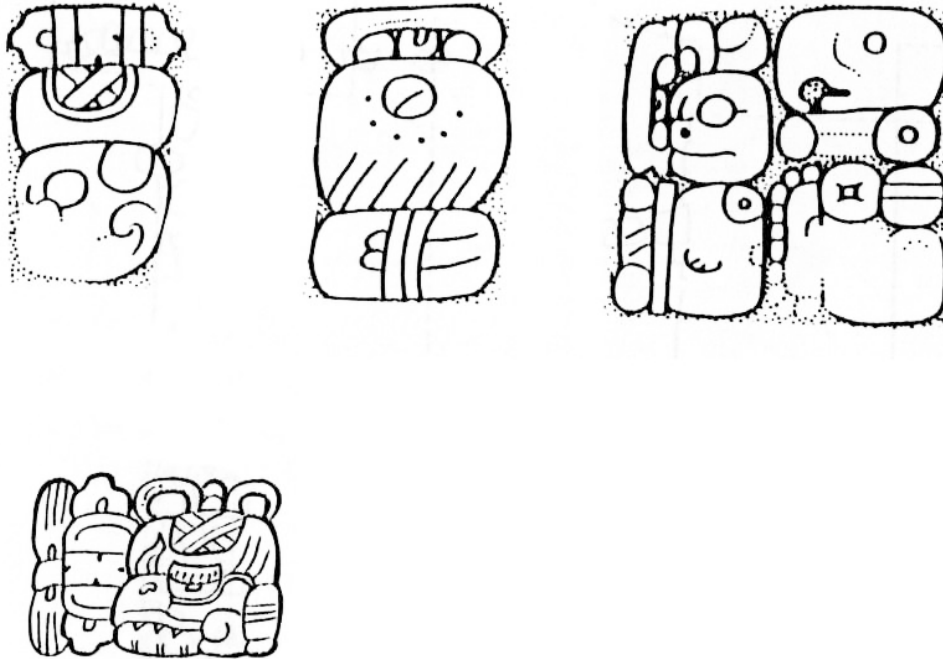


Figure 3. Glyphic information on Ruler 7: (a) Yaxchilán Lintel 10:E8-F8; (b) Piedras Negras St. 12:A13 (drawings: Ian Graham and Stephen Houston).

The Acropolis raises another question: Where did the Early Classic rulers live? Where was their palace? A strong candidate came to light under the West Group Plaza. During test-pitting, Lilian Garrido found at least two structures, fronted to the south by at least two, successive monumental stairways. Dating to the Early Classic period, these structures had been systematically leveled and their superstructures tossed, after demolition, into areas around the buildings. By this means the Maya of Piedras Negras achieved the current level of the West Group Plaza. The bases of the structures were finely plastered, with evidence of several entrances or access stairways. Moreover, the plan of the buildings lay on the same orientation and general axis as Court 1 of the Acropolis. It is difficult to escape the notion that the buildings constituted an earlier, smaller palace of more open, accessible form. In turn, Court 1 represented an attempt to emphasize dramatic enclosure and spatial exclusivity, a pattern found also in comparable buildings at Uaxactún (Proskouriakoff, 1963:111-129). Next season we expect to clear the tops of these truncated structures to establish more precisely their date and internal sequencing. Clearly, the Maya chose at the end of the Early Classic to reconfigure, through gigantic effort, processional approaches to the Acropolis. It apparently went from a natural hill with structures on its summit, to a complex that was almost entirely artificial in appearance. This effort reshaped the urban form of Piedras Negras, lending a monumental aspect, including Ballcourt 2 and later stages of Pyramid K-5 (Coe, 1959:152), integrating isolated buildings, and bonding the northern and southern portions of the site.

For his doctoral research, Child further investigated the famed sweatbaths of Piedras Negras, a feature known elsewhere but of relative rarity outside the Usumacinta basin. (An unpublished example at Yaxchilán parallels those at Piedras Negras.) Child concentrated on sweatbaths P-7, S-2, S-4, and S-19, most arranged around a planned area oriented to the S-group. Urquizú showed that the group contained high-quality masonry and most likely served as a residence of nobles or lesser royalty. The sweatbaths can in all cases be shown to have at least two phases of construction. Primary, sealed contexts dated their earliest building to the Naba period (R-13), late Naba/early Balche (P-7), Yaxche (S-4 and S-2 in sequence), and early Chacalhaaz (S-19). The advent of this type of structure raises many questions, none answerable at present: Do they represent a new cult of purification? Do they simply replace perishable versions as yet undetected? Is their number attributable to different treatments or illnesses? Or do they correspond to the needs of different lineages or lords, a conjecture perhaps supported by their varying date? Whatever their precise use, they served as efficient and ingenious chambers. P-7 proved to have a cistern above its steam room, collecting rainfall for bathing. The reconstruction of P-7 allowed Child to bring hot stones into its rejuvenated fire-box. When basted with water, the rocks generated heat that became almost intolerable within minutes, particularly if (unwise) bathers stood atop benches within the chamber.

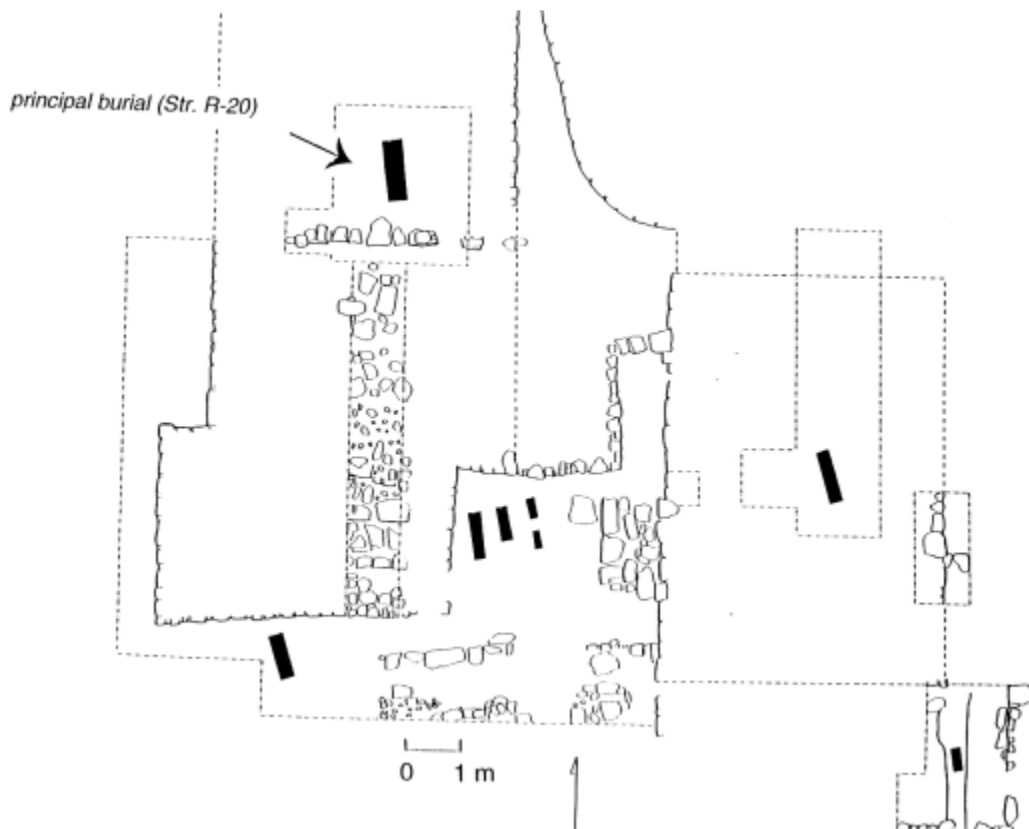


Figure 4. Late Classic cemetery around Str. R-20 (drawing: Zachary Hruby).

Another crucial focus of the Piedras Negras project were small-scale residences, which typically receive little to no scholarly attention in the western Maya Lowlands. Working around Str. R-20, Nancy Monterroso found an unprecedented deposit: a Late Classic Maya cemetery (Figure 4). Initial clearance exposed seven burials (three infants, two children, 1 adult male, 1 adult woman), all with the same general north-south orientation. Within R-20 was found a burial (#45) along the same orientation, but with far richer remains. Burial 45, an adult male, lay within a cist covered by meter-long slabs. Niches to the side held polychrome dishes, some emblazoned with a peculiar glyphic formulae of day signs and other suffixes that is unique to Piedras Negras (e.g., 'Imix'-zo/'Winik'-mi//K'IN-ni/'Chuwen'-zo//K'IN-ni/'Imix'-zo//'Imix'-zo/chi-ni, or some variant thereof). It would seem likely that these burials possess a familial relationship and that Burial 45 contains a lineage founder, a possibility to be tested in the future with additional analyses. Nearby, Christian Wells undertook the first stripping excavations within Piedras Negras, in an area of concentrated settlement between the arroyo and the South Group Plaza. Finds included a dense concentration of obsidian flaking, antler cutting, as well as additional evidence of an ancestral burial in a small, eastern platform. This area was thoroughly soil-tested by Hardin, Parnell, and Terry, and showed striking patterns of elevated phosphorus concentration along the platform edge, which may have served as a midden or an easily cleaned work station (Figure 5). Nicholle Townsend conducted a small-scale excavation in conjunction with soil sampling by Hardin and Parnell northeast of Piedras Negras, on the trail to México (Op. 38). Low background levels of phosphate (<3 mg/kg) were found in suspected ancient agricultural fields compared to elevated phosphate concentrations in suspected patio soils adjacent to house mounds (Figure 6).

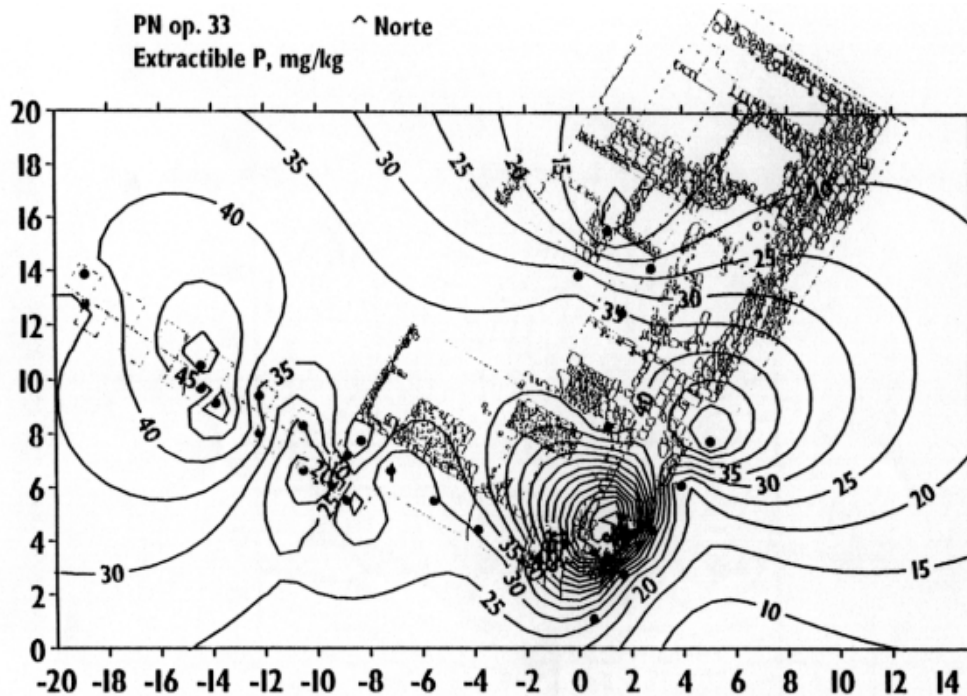


Figure 5. Soil phosphorus in Op. 33 (map: Richard Terry and Perry Hardin).

the contents of a PhosVer 3 powder pillow. Shaken by hand for one minute, the samples stood for another four minutes, resulting in good color development. A Hach DR 700 spectrophotometer determined phosphate at a wavelength of 880 nm. Using a standard curve, we then converted the percent transmittance to mg/L. Appropriate dilution factors were used to convert the concentration values to mg P/kg soil.

Test-pitting by Arredondo and Aguirre added considerably to our number of burials, bringing the current total to forty-six. In the N/O sector, Arredondo also found an extraordinary special deposit of fine ceramics in an ashy lens (Op. 24b). In 1997, Golden found a similar deposit of Early Classic date under J-20, and Wells encountered a slightly later lens of fine, burnt material under F-2. Such finds appear to involve termination rituals, although less obviously so in Arredondo's case: the lens lay between two, low-lying buildings only slightly visible on the surface. The quality of this material was stunning: many figurines, including probable portraits; ocarinas and a polyphonic flute with three chambers (a puff of air through the joint mouthpiece would sound three notes, an unusual example of chording in Classic Maya music); incised ceramics referring to Ruler 2 (accession A.D. 639, death A.D. 686, [Figure 7](#)). It seems plausible that this material came, not from buildings around it, but from the Acropolis. Why it would appear in Op. 24b continues to be a mystery.

The settlement survey, conducted by Pennsylvania State under project permit and supervision, far extended the results of the 1997 season. As mentioned before Kirker and Kovak located eighty-four separate mound groups or platforms within their survey blocks ([Figure 8](#)). Topography clearly determined density: gentle slopes invited settlement, broken terrain repelled it, a pattern quite distinct from that around La Pasadita, where structures abounded on mesa summits. According to preliminary study, most sites date to the Yaxche and Chacalhaaz phases – firmly in the Late Classic period, and further evidence of a population explosion at that time. A more extensive excavation by Webster and Kovak retrieved far deeper chronology, from Balche to late Chacalhaaz, over 200 years of occupation. That site may be anomalous because of its position astride one of the few access routes into Piedras Negras. A large number of chert points plausibly attests to its function as a guard post. Another discovery made during survey may explain the name of Piedras Negras, *y-okib* (**yo-ki-bi**), an archaic term for 'entrance' (later texts employ a logograph with 'cave' element). Close to the Webster/Kovak excavation is a rise, also with mound group, that leads up a narrow defile to a dry cenote fully 200 m. across and 200 m. deep, to our knowledge the largest yet found in Guatemala; a shallower cenote lay directly to the west. Initial attempts at exploration were stymied by the steep drop. But it seems probable that these features intrigued the Maya, to the extent that they used them in their place name.

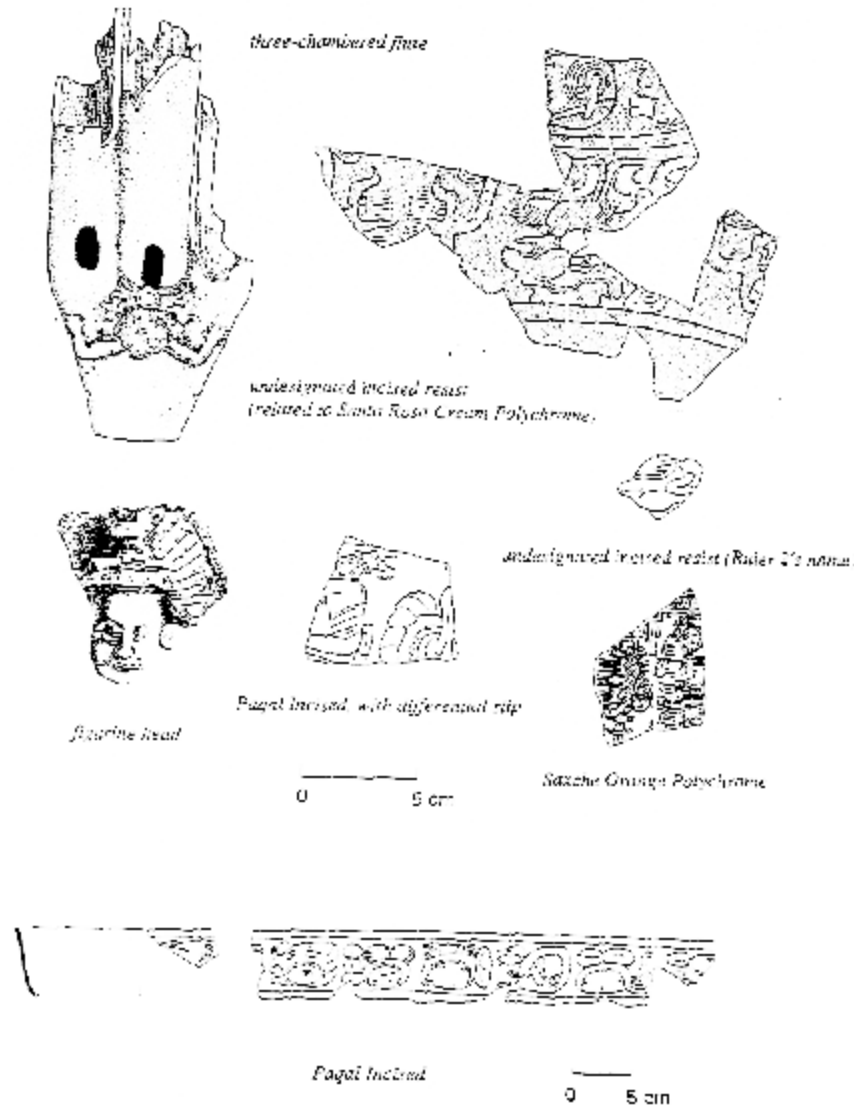


Figure 7. Artifacts from special deposit, Op. 24 (drawings: James Fitzsimmons, Heather Hurst, Zachary Hruby, and Stephen Houston).

As for faunal material from these excavations, the Piedras Negras assemblage consists so far of over 2000 bone and shell specimens. These are both well preserved and fairly ubiquitous across the site. Zooarchaeological analysis of remains from over 150 loci in over 20 habitation units revealed a fairly high taxonomic diversity (42 species represented), particularly in areas where the soil had been screened and floated. Overall, the most common species were white-tailed deer, riverine molluscs, and blanca turtle. Most of the remains were mammalian (67%), while molluscs (10%, predominantly riverine snails) and reptiles (9%) were also abundant. Despite their rarity at other archaeological sites, fish bones occurred frequently, perhaps in reflection of ancient diet, proximity to the river, and, most salient, favorable conditions of preservation at Piedras Negras. (To cite one example, two riverine catfish pectorals that accompanied stingray spines were shaped into apparent bloodletters [Burial 28].) Artificially altered

animals remains were also found at the site, as fully 17% of identified bone and shell. Less than 2% of the Piedras Negras were exotic in nature, indicating a marked tendency to exploitation of local resources.

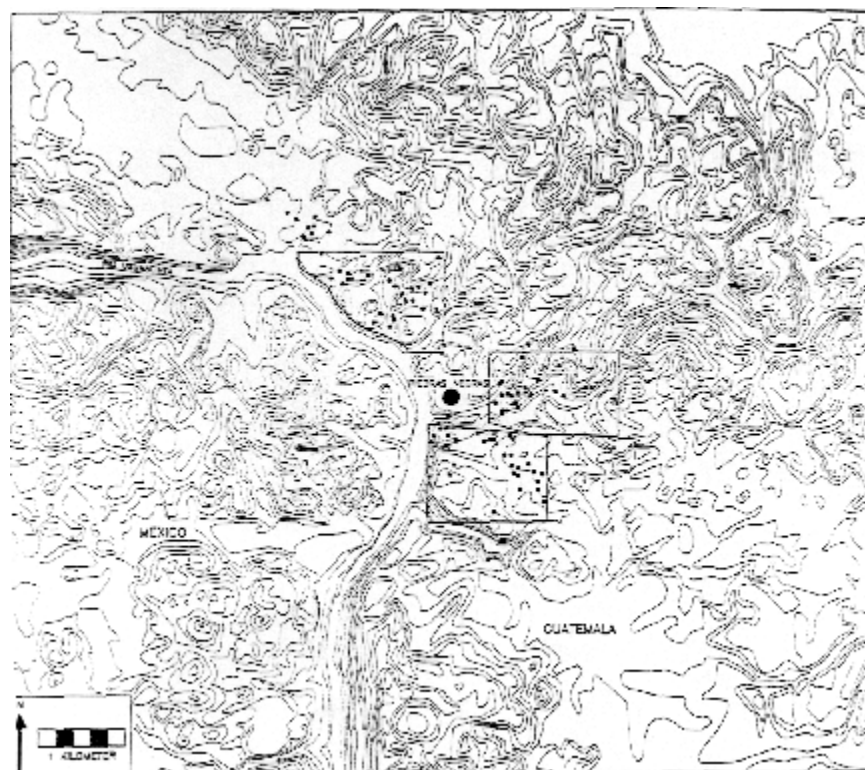


Figure 8. Distribution of sites around Piedras Negras (map: Jennifer Kirker and Amy Kovak).

Conclusions and Future Research

The 1998 field season showed once again why Piedras Negras merits detailed attention. The city and its environs supplied information on chronology, site development, building function and design, ritual topography, craft production and consumption, and residential structures unavailable at other sites in the western Lowlands. Eventually, these finds will be distilled into an account of how Piedras Negras functioned as a pre-industrial, regal-ritual center, why it began, grew, and withered, and how its historical framework explains, or deviates from, material vestiges. In the future, the project will build on prior finds by more extensive excavations of domestic sites and deeper penetration of the Acropolis and other monumental structures, whose difficulty in excavation is exceeded only by their intrinsic importance in understanding dynastic societies of the Classic period. At Piedras Negras, urban planning clearly played a large role in its transformation from isolated groupings to an architecturally integrated center. Survey will fill the many lacunae that remain on regional settlement maps, soil

studies will reveal invisible data on ancient land use, and artifact studies will deepen our knowledge of Maya artifact manufacture, use, and discard. Cave studies need to be made by specialists, and areas well to the south, in the great valley defined by the Macabiler stream, will be explored as local, ex-guerrillas vacate the national park. In this area will doubtless occur more evidence of artifactual and settlement boundaries between Piedras Negras and its enduring antagonist, Yaxchilán. Suggestions of divergent Late Classic ceramics to the south will be investigated through such reconnaissance, along with reliable reports of vaulted buildings near the Macabiler. Of the Early Classic dynasty, hinted at fitfully in a few eroded texts, more must be uncovered in the South Group court, along with Preclassic architecture suggested by ceramic discoveries last season (Forsyth and Hruby, 1997:208-209). In silence for a millennium, Piedras Negras will speak eloquently, in future seasons, of a civilization that flourished between mountains and sea.

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Charles Golden [Pennsylvania], Zachary Hruby [UC-Riverside], Jennifer Kirker [Penn State], Amy Kovak [Penn State], Nancy Monterroso [San Carlos], René Muñoz [Arizona], Timothy Murtha [Penn State], Jacob Parnell [BYU], Nicholle Townsend [BYU], and Christian Wells [Arizona State University]). Supported in part by an Albers Grant from Yale, Mark Child did a splendid job as Field Director, with chief responsibility for logistics. Dr. Jay Hassell of San Antonio, Texas, served as Project Physician, and René Muñoz ran our field lab. James Fitzsimmons (Harvard) and Heather Hurst augmented our laboratory staff in Guatemala City. This article has been published with the express permission of DEMOPRE-IDAHE. Authorship reflects seniority on the project, relative weight of substantive contributions, and assistance with fund-raising. This essay is dedicated to the memory of Manuel de Jesús Jordán, a fine man and diligent excavator who lost his life in the treacherous waters of the Usumacinta.

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