CHOCOLÁ ARCHAEOLOGICAL PROJECT

REPORT No. 2

SECOND SEASON 2004

Jonathan Kaplan, Juan Antonio Valdés and Federico Paredes Umaña

Editors

Report Submitted to the Direction General of Cultural and Natural Patrimony of Guatemala

Guatemala, December, 2004

TABLE OF CONTENTS

Chapter 1 **4**
Introduction, Backgrounds and Objectives of the Chocolá Project
Jonathan Kaplan and Juan Antonio Valdés

Chapter 2 **49**
On the Threats and Risks to the Archaeological Remains of Chocolá and the Project's Reponse during the 2004 season
Jonathan Kaplan

Chapter 3 **52**
Survey and Mapping at Chocolá: the 2004 Season
Juan Pablo Herrera

Chapter 4 **60**
Gradiometric Survey: the 2004 Season
David Monsees

Chapter 5 **73**
Methodology of Excavation
Jonathan Kaplan, Juan Antonio Valdés, Juan Pablo Herrera and Federico Paredes Umaña

Chapter 6 **81**
Excavations at the North Group: Structure 15-1
Diana Belches-Luín

Chapter 7 **138**
Excavations at the North Group: The Canals of Mound 15
Margarita Cossich Vielman

Chapter 8 **172**
Excavations at the South Group: Structure 5-1
Oscar Rolando Gutiérrez, Damien Bazy and Sonia Cañada Cañada

Chapter 9 **227**
Salvage Operation: Operation 15
Jonathan Kaplan, Federico Paredes Umaña and Rafael Cambranes

Chapter 10 **237**
Archaeological Salvage on August 4
Federico Paredes Umaña and Rafael Cambranes

Chapter 11 **240**
Industrial Archaeology at Chocolá
Edgar Gutiérrez Mendoza

Chapter 12 **261**
The Ceramics from Chocolá: Previous Summary and Dating
Federico Paredes Umaña

Chapter 13 **275**
Catalog of the Chocolá Monuments
Federico Paredes Umaña

Chapter 14 **310**
The lithics from Chocolá: the 2004 Season
Edgar Carpio

Chapter 15 **321**
The PACH Laboratory, 2004: Construction, Function, and Organization
Federico Paredes Umaña

Chapter 16 **327**
Achievements of the 2004 Season, Chocolá Archaeological Project
Jonathan Kaplan and Juan Antonio Valdés

ACKNOWLEDGEMENTS **331**

APPENDIX **333**

BIBLIOGRAPHY **355**

[Headline picture: surface collection, el Cementerio, PACH 2004]

All photos and drawings, unless otherwise indicated, are the property of PACH.

CHAPTER 1

Introduction, Backgrounds and Objectives of the Chocolá Project

Jonathan Kaplan and Juan Antonio Valdés

Introduction

After the 2003 season, the Chocolá Archaeological Project (*Proyecto Arqueológico Chocolá,* PACH) [Fig. 1-1] conducted its second four-month long field season from May 1 to August 30, 2004, under the direction of Dr. Jonathan Kaplan from the University of New Mexico, U.S.A., and Dr. Juan Antonio Valdés, from the University of San Carlos, Guatemala. Thus, the stipulations of Agreement Number 9 signed between the Director of PACH, Dr. Jonathan Kaplan, and Lic. Guillermo Díaz Romero, Director General of the Direction General of Cultural and Natural Patrimony *(Dirección General de Patrimonio Cultural y Natural)* were fulfilled. This second season constituted the second of five years of research completed at the archaeological site, under the terms of Agreement No.19 signed the 4th of May, 2003, between the parties.

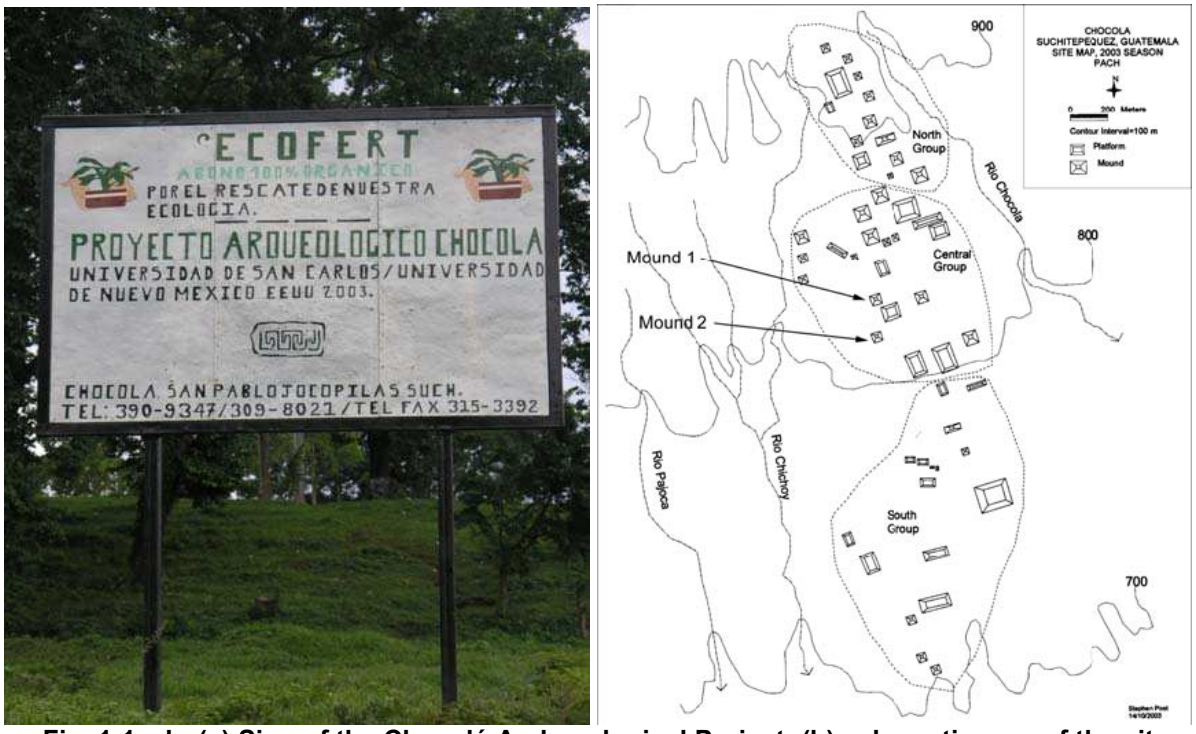


Fig. 1-1a, b: (a) Sign of the Chocolá Archaeological Project; (b) schematic map of the site drawn up after the 2003 season.

The present season benefited from the participation of researchers from Guatemala, the United States, Spain and Australia, and the particular and constant support of many students of the Area of Archaeology from the University of San Carlos, who carried out field and laboratory practices, as well as Ph.D. students of archaeology

from the University of Paris, France, and from the University of Valence, Spain. Also, volunteers from different countries in the world were a part of the project through a system of support developed under the strict collaboration of Earthwatch. Every volunteer and team member was fully accredited by the department of Prehispanic Monuments of the Direction General of Cultural and Natural Patrimony.

Mrs. Sheila Flores was appointed Project Inspector, having visited the field twice. Also, Lic. Ervin S. López, Chief of the Department of Prehispanic Monuments of the IDAEH, and the Assistant Chief, Licda. Yvonne Putzeys González visited the project's facilities in the field. Two lawyers from the Ministry of Culture presented themselves in two occasions to explain to the local inhabitants the national law of protection of the cultural heritage. These visits coincided with the preparation of a map that will show which portions of the site should be delimited so that they may become a part of the nation's patrimony.

When the field season came to an end, almost all ceramic materials remained at the headquarters of the Project, in Chocolá, as requested by the community, while several figurines and complete vessels, together with the lithic materials, were taken to the capital city. Mtro. Edgar Carpio, from the University of San Carlos, has already begun with the lithic analysis. The complete vessels were taken to the Miraflores Museum in the capital city for treatment, where they were left under the surveillance of Dr. Juan Antonio Valdés. All monuments and fragments of monuments have remained in Chocolá under the protection of the ECA and other persons hired by the Project to that end.

Fig. 1-2. Northeast view of the town and mountains from the top of Mound 1.

Backgrounds

Chocolá is a small town with 8,000 inhabitants located in the strip of the Bocacosta, 165 km southwest of the City of Guatemala [Fig. 1-2]. One gets there through the asphalted road that comes from San Antonio Suchitepéquez and then continues to

Santo Tomás La Unión. In spite of the easy access it presents and the large dimensions of this archaeological site, it was only with the recent creation and realization of the Chocolá Archaeological Project that a formal direction was established for the research.

At an archaeological level, only the archaeologist Robert Burkitt [Fig. 1-3] paid attention to it during his stay in the area, in the second decade of the XX century. At that time he prepared a schematic map [Fig. 1-4], excavated three of the mounds, and presented the results in the publication "Excavations at Chocolá", in 1930. Later, Franz Termer, Edwin Shook, John Graham and others visited the place but conducted no formal investigations. Edwin Shook visited the site in 1943 and conducted a surface collection while he described the monuments he observed at the park of the establishment. Over thirty years later he excavated at least two pits within the structure that R. Burkitt had intervened (Mound 2) in 1978-79.[1] This time he was accompanied by J. Graham, who provided the PACH with slides of Shook's work, among other interesting things.

Fig. 1-3. Robert Burkitt.

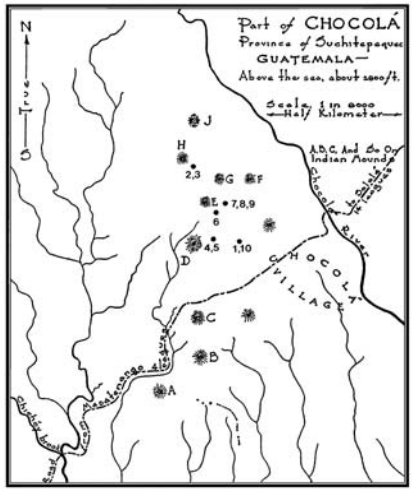


Figure 3. Burkitt's map showing presumed site core (Burkitt 1930).

Fig. 1-4. Burkitt's schematic map (Burkitt 1930).

Geographic Setting

The region of the Bocacosta, where Chocolá is located, is a very thin strip of land which extends transversally from the department of San Marcos to Jutiapa. It is located on the mountain slopes of the Sierra Madre, in the steep descent from the Altiplano to the Pacific coastal plains, with elevations of 300 to 2,500 m above sea level. Rainfalls reach the highest levels in the country, with pluviometric maximums

[1] See Shook, Notas de Campo 241-1943 *Conferencias, Costa Sur y Altiplano occidental de Guatemala,* pp. 68-74. Departamento de Arqueología, Universidad del Valle de Guatemala, and Shook 1978 Enero-Febrero, Chocolá, Departamento de Arqueología, Universidad del Valle de Guatemala.

that take place from June to September [Fig. 1-5]; the temperature values increase as one gradually descends towards the Pacific littoral.[2]

Fig. 1-5. Heavy rain falling on Chocolá , and the old general headquarters area of the Finca Chocolá.

The dominant topography is rough, with steep slopes and a serious risk of erosion. The soils of volcanic origin are fertile, and Chocolá still has natural, primary forests and large areas with coffee trees under other different shadow trees. This region has large and middle size establishments where coffee plantations prevail, a development that was first encouraged around the mid- XIX century, and which has passed through a series of stages along time, although only nowadays it has begun to be perceived under an environmental view, to the point of being called "the friendly crop". Recently, it has been promoted so that it may be considered as an artificial forest.

The Village of Chocolá

Chocolá is a Kiche' derived word: "Chok' La Ta", which in Spanish stands for *"Pase adelante, señor"* or *"Bienvenido sea usted, señor"* ("Do come in, sir", or "Wellcome, sir")[3] stressing the kindness and hospitality of the local inhabitants. A similar tradition indicates that when some important lord promenaded in the area, the neighbors

[2] http://www.insivumeh.gob.gt/meteorologia/zonas/climaticas.htm.
[3] Monografía Mínima de Chocolá: 2001, pp. n.n.

would greet him with the above phrase. A different aspect of such derivation may correspond to the very extended and profound history of trade in the region, with different populations coming in and out both for buying or selling. It is suggestive that just a few kilometers north there is a second village bearing the name of Xojolá. Francis Gall, in his Geographic Dictionary of Guatemala (1983) discusses the possibility of the following etymology: "Chocol-já… may derive from the Maya Chocomol = heat and já as in há = water, in other words, hot water" (Gall 1983 vol. I). A different hypothesis dealt with by some members of the research team favor Michael D. Coe's view when he quotes Tedlock on the possibility that the word may derive from the K'iche' "Chocola'j", "to drink chocolate together" (Coe and Coe 1996:63, 118-121), given the fact that these lands were known to be rich in cacao plantations, both during prehispanic times and early in the colonial era. One might think that it derives from the Náhuatl word *chocolatl*, as Nahuatlisms are common in the Altiplano and coastal areas of Guatemala, but as suggested by Coe there is no such word in any early Náhuatl dictionary (op. cit.: 117). A very recent approach concerning the etymology of Chocolá has been brought forth by Ruud Van Akkeren during the last Symposium for Archaeological Investigations in Guatemala, presenting us with one more version to think about: "The Mud's Place". (Van Akkeren, in press).

Chocolá is among the highest and freshest regions of the slope to the Altiplano at a height of 600-825 m above sea level [Fig. 1-6]. The mountains are close-by and

Fig. 1-6. Location of Chocolá just below the Sierras Madres and the volcanoes.

usually fade away in the fog, while the sea appears as a white fringe in the horizon. From the mounds of the site (and those of the village), one may perceive the volcanoes Zunil, Santa María and Tolimán [Fig. 1-7] in the mountain range of the Sierra Madre. The surface in the region has the overall appearance of an undulating plain of shrubs, with agricultural patches, but it also has countless deep gorges that remain unnoticed unless one reaches the precise spot [Fig. 1-8]. This is important at the time of considering the movements of the ancient traders and settlers of the region.

Fig. 1-7. The volcanoes, high above Chocolá.

Fig. 1-8. An undulating plain with gorges.

The soil is fertile and well irrigated. Presently, Chocolá has several micro-industries, such as bamboo and wood-derived crafts, and blacksmithing. Their commercial significance is still evident through the communal market where traders from Santo Tomás La Unión and others from the Altiplano gather to sell their products. The community is organized in different sectors: El Centro, El Calvario, El Mercado, Cerro Grande, El Salón, Cerro Partido, IAN Casitas, IAN Tarrales, El Toronjal, El Ixcanalero, Socorro, Pacacó and El Hato.[4] The complexity of Chocolá as a political entity is evident while sharing and competing for power is a part of the local dynamics, even though the village is still small in size.

Associative Peasant Enterprise (*Empresa Asociativa Campesina)* ECA Chocolá

The Chocolá Agrarian Community, ECA Chocolá, is located 8 kilometers away in a northeastern direction from the municipal capital of San Pablo Jocopilas; it is located 12 kilometers away from Mazatenango, department capital of Suchitepéquez [Fig. 1-9]. It has an approximate territorial extension of 19 *caballerías* or 49.5 blocks[5] although by 1920 it already included 60 *caballerías*.

[4] Monografía Mínima de Chocolá: Op. Cit.; 2001, pp. n.n.
[5] Monografía Mínima de Chocolá: Op. Cit.; 2001, pp. n.n.

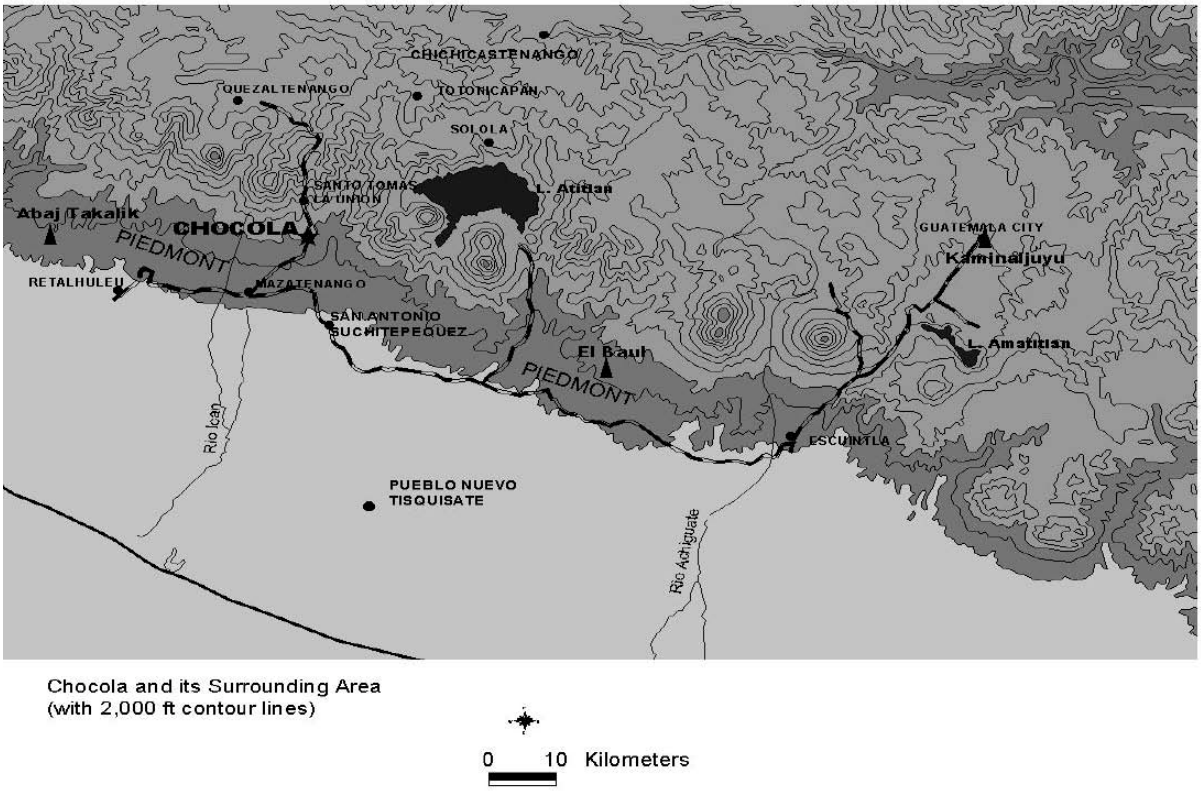


Fig. 1-9. Location of Chocolá at the Bocacosta.

Because of its territorial extension, this is among the largest *fincas* and/or communities within the national territory; it is crossed by the main road that connects the towns of San Antonio Suchitepéquez and Santo Tomás La Unión.[6] To the north it is limited by the finca Santa Isabel, town of Santo Tomás La Unión, and the Lolemí agrarian community, presently a part of ECA. To the south it is limited by the finca Basilea and labor terrains owned by the town of San Antonio Suchitepéquez, to the east by the finca Olimpia which belongs to Santo Tomás La Unión and the agrarian community ECA La Ladrillera, and to the west by the agrarian community ECA Madremía. ECA Chocolá "is formed by peasants that benefited from the process of agrarian transformation, who are constituted in a collectivity under a common management, to work the land directly and personally in an efficient and rational way, contributing their work, industry, service or other assets in the pursuit of improving the production in the fields to satisfy their own needs, to trade, transform or industrialize their products and to proportionally distribute the contributions, profits or losses resulting from each fiscal period."[7]

This organization is integrated by two major bodies: 1) body of Direction, composed by the Community Assembly and the Board of Directors; and 2) body of Management, formed by the Surveillance Board and the Production, Marketing, Finances, Water, Social Participation and Security Committees.[8]

[6] Ibid.; 2001, pp. n.n.
[7] Ibid: 2001, pp. n.n.
[8] Diario de Centroamérica, 6 de Julio, 1984.

Fig. 1-10. Lombriculture.

Presently, there is an ongoing project in Chocolá which is involved in the production of organic fertilizers using the pulp of coffee [Fig. 1-10]. “Lombriculture” has to do with the use of worms for the transformation of coffee pulp into an organic fertilizer, and this is a new biotechnology that is being developed with the main objective of obtaining two products of paramount importance for human beings: humus, and worm flour, the first as the best organic fertilizer, and the second, as an outstanding source of protein for feeding animals.[9]

Fig. 1-11a, b. Rivers and creeks from Chocolá.

[9] http://mail.export.com.gt/website/proyecto/htm.

Physiography of Chocolá

The soil where the archaeological site of Chocolá is located comprises an area represented by igneous rocks of volcanic origin, andesites, dacites, basalts and rhyolites, corresponding to the Upper Tertiary and Quaternary periods.[10] In terms of agriculture, the soils are still very fertile and there is an abundance of water, very regular, predictable and well drained, or at least that is how it must have been in ancient times. There are several minerals such as mica and taxcal (lose fragments of porous andesitic rock in decomposition; it is rich in hematine and has pastel colors).

In addition to the heavy rainfalls in Chocolá, the presence of abundant creeks around the site [Fig. 1-11a, b] makes the area a particular propitious setting for growingn multiple products, including, in our opinion (see below) the cacao in prehispanic times. The village and archaeological site are surrounded by the rivers Camaché, Chocolá or Nimá in its eastern part, and by other streams that flow to the Nahualate River. To the west the rivers of La Montañita, Chichoy, Arroyo Gorgonato and others are found, all flowing to the Ixtacapa River.

The main house of the finca has running waters of a ditch formed by two affluents, the Patzín and the Camaché. The waters of this ditch serve in different ways, and are used at the workshop to move the machines employed in carpentry and mechanical works [Fig. 1.12a, b], as the driving force for the lathes driven by water power, and for the humid beneficiation of coffee. In ancient times it generated electric power through an electric power plant. Chocolá has a network of potable water fit to supply 90% of the population.[11]

Fig. 1-12a, b. Workshop and beneficiation.

[10] Ibid: 2001, pp. n.n.
[11] Ramírez: Op. Cit.; 2000, pp. n.n.

The study of this water resource has been taken into consideration by the PACH after the discovery in 2003 of three canals or irrigation ditches in Mound 15, at the northern end of the site; as a consequence of intensive excavations in 2004 the ditches found have now added up to seven, and have clearly shown to be irrigation ditches to carry water, and a draining system to evacuate waters from one place to the other (see Chapter 6). In any case, there is little doubt regarding the concern of the ancient Chocolá settlers to concentrate this resource to use it and benefit from it in the growing fields, which we assume extended in the southern portion of the site, where large residential platforms are located. The overabundance of water in Chocolá is and has been used through clever constructions for an adequate management. Nowadays, some irrigation ditches are exposed on the surface, and there are underground pipes that carry the water from its place of origin to people, and are maintained by water committees by sector, while in post colonial times they would use aqueducts, tanks, and vents; the evidence obtained by the Project would be pointing to large underground pipes [Fig. 1-13a, b].

Fig. 1-13a, b. Aqueduct to workshop.

Ethnohistoric Information on the Bocacosta Region.

The *Título de los Señores de Totonicapán* includes the account of the expedition of the K'iche' leaders who attempted to find and defeat all their enemies and to survey and take possession of the mountains and valleys; when the Cakzay took possession of their lands, they took as well the name of Ahzamayaque, a village in the coast of Suchitepéquez which is today known as Samayac, a neighbor of Mazatenango and Zapotitlán; the document also refers to the place called Chacalat Nagual by the mouth or pass of Samalá, Siván, and the mouth of the Reve, a sea branch, where the measurements of the lands that were to be occupied by the Yaquiab were completed (they descended from the Toltecs who emigrated jointly with Guatemalan groups), and established the landmarks for the territories of the Yaquiab and the Mazatecs (a population originated in the Soconusco region).[12]

[12] Título de los Señores de Totonicapán: 1995, pp. 187-190.

The *Memorial de Sololá* explains that the Caqchikel (when they were still united to the K'iche') headed to the localities known as Panpatí and Payan Chocol, and then reached Chitulul; this episode refers to the struggle between the Caqchikel and the Tzutujil for Lake Atitlán, which was divided in several portions: that of the south and southwest, occupied by peoples of Tzutujil race and tongue; those of the north and east, occupied by several villages founded by the Caqchikel; and that of the west, where the peoples with a K'iche' origin settled down. This manuscript tells as well about the Caqchikel who fought a war against Panatacat (presently Escuintla, a Pipil town mentioned by Alvarado in his *Relación a Cortés* under the name of "Yscuintepeque"). At the same time, it tells about the arrival of the Spaniards to Xepit and Xetulul, where they conquered every town; Xetulul was translated by the Mexicans as Zapotitlán, and corresponds to the Pacific coastal region in the modern department of Suchitepéquez.[13]

The major peoples marched to war and conquest and made incursions among the Achí Indians from the coast, who called themselves the people and site of Xetulul, and that was why the people from Mazatenango, Cuyotenango, Zapotitlán, Samayaque, and Sambó, among others, brought cacao and pataxte to the main chieftain, Don Francisco Izquin Ahpalotz y Nehaib, acknowledging him as king and obeying him as tributaries; the Achí Indians surrendered to this chieftain the rivers Zamalá, Ucuz, Nil and Xab. Other chieftains surrendered Naguatecat, Ayutecat, Mazatán and Tapaltecat (ancient villages located in the Soconusco coast) and back to Xicalapa, where the Quiquizat River runs (Tiquisate)[14]. The territories of the Caqchikel in the early XVI century included the lands that today comprise almost the entire department of Chimaltenango, the department of Sacatepéquez, the northwestern corner of the department of Guatemala, the north end of Escuintla, the northeastern portion of Suchitepéquez, and the area located north of Lake Atitlán, in the department of Sololá.[15]

Francisco Antonio de Fuentes y Guzmán mentions the journey of the *Adelantado* across de towns of Zapotitlán (San Antonio Suchitepéquez), where on the other side of the bridge across the Zamalá River he fought fierce battles against the local Indians, with their final surrender to the obedience of the King of Spain; referring to the countless and large cities and populations encountered by the Spanish conquerors, the chronicler mentions Utatlán, Tecpangoathemala, Mixco, Huehuetenango, Chalchitán, Pochuta, and one Caqchikel fortress named Parrasquín, which may be seen while descending from Totonicapa towards the southern coast and which was a memorable and densely populated garrison formed by eighty thousand men at arms, to protect the Caqchikel kingdom from the hostilities of the K'iche' and the Tzutujil Indians.[16] The *Título de los Indios de Santa Clara La Laguna* states that the K'iche' lands included Totonicapán, Queltzaltenango, San Martín Zapotitlán, San Gaspar Yabacoj, Cuyotenango, San Bartolomé Mazatenango, San Francisco Zapotitlán and Santa María Samayac.[17]

In the Letter that Diego Garcés wrote to the *Real Audiencia de Guatemala* (possibly in 1560) concerning his visit to several towns of the Suchitepeque under his jurisdiction and what was it that each one of them could tribute, with specifications about the *encomenderos*, he mentions, for example, San Juan de Nagualapa, from

[13] Memorial de Sololá: 1995, pp. 64-65, 95.
[14] Título de la Casa Ixquin-Nehaib, Señora del Territorio de Otzoya: 1984, pp. 79-81.
[15] Polo Sifontes: 1986, pp. 38.
[16] Fuentes y Guzmán: 1979; IX, pp. 17, 61, 91.
[17] Título de los Indios de Santa Clara La Laguna: 1984, pp. 179.

the *encomienda* of Gaspar Arias de Ávila, the cacao richest town along the coast; San Antonio, from the *encomienda* of Juan Méndez de Sotomayor and Francisco de Ayllón, villages so rich in cacao like those from Nagualapa; Santo Tomás, from the *encomienda* of Gaspar Arias de Ávila and Alonso Gutiérrez Monzón, two leagues away from the Suchitepeques, to the portion of the sierra of Totonicapa, a mild land and not to good for growing cacao for it was cooler: San Gregorio, one additional league up hill, near the sierra; Zamayaque, from the *encomienda* of Alonso Gutiérrez de Monzón, one league away from San Antonio Suchitepeque, a village of cacao growers, though not as rich as those of Suchitepeques; San Pablo, from the *encomienda* of Lorenzo de Godoy, Juan de Morales y de Cevallos, and Juan Rodríguez Cabrillo; Zambo, from the *encomienda* of the secretary Diego de Robledo, Gaspar Arias de Ávila and the minor Diego de la Barrera, two leagues away from Zamayaque, is a mild town; Zapotitlán, from the *encomienda* of Juan Maldonado de Guzmán and doña Juana de Sayavedra; Mazatenango and Cuyotenango, subjects of the town of Zapotitlán, with the best cacao.[18]

Surprisingly, in the map that includes *La Relación de Zapotitlán*, written in the year 1579, it is possible to locate towns such as Tolimán, San Juan Nahualapa, San Francisco Zapotitlán, Santo Tomás, San Antonio Suchitepeque, Samayac, San Pablo, Mazatenango, etc. The notary Juan de Niebla, refers that there were no Spanish towns, as the inhabitants were merchants and cacao traders who moved from this province to New Spain bringing clothes, fabrics and linens for the Indians. These already constituted peoples and permanent dwellers used three tongues, Mexican, Achi and Mame. The *Relación* contains as well a document from the Indians of the Province of Zapotitlán, where they have emphasizes their K'iche' ancestry.[19]

In the XVIII century, Pedro Cortés y Larraz, in his *Descripción Geográfico-Moral de la Diócesis de Goathemala*, refers to a San Antonio Suchitepéques as the sixth of the 10 provinces of the Archbishopric, which was composed of six parishes, as follows: San Antonio Suchitepéquez, Mazatenango, Cuyotenango, Retaluleuh, Sapotitlán, Samayac and San Pablo Jocopilas.[20] He explains that the parish of San Pablo Jocopilas was located one quarter league north of Zamayac; it was the seat of the parish together with two other towns: Santo Thomás, three leagues away, and San Miguel, seven leagues away from the seat; the language spoken was the K'ich'e, and it was in charge of the Franciscan brother Fr. Miguel Arrevillaga; the parish of San Antonio Suchitepeques was located three short leagues away from Zamayac to the east, and the route was crossed by three rivers: Istacapa, Pachuca and Chicoy, which were the same that were crossed from Xocopilas to their annexes to form the plentiful Nahualate River; it was directed by the priest don Teodoro Mendizábal; the mother tongue was the Sutugil, though some other foreign tongues had been introduced, such as the Kaqchikel and the K'ich'e, while many also spoke Castilian; the town was located in the plains and occupied a large space because it was very densely populated, there were long streets with no houses other than the existing (earlier) ruins.[21]

Tomás Gage notes that the main goods brought from the southern coast to Guatemala originated in the provinces of Soconusco and Suchitepéquez, where people grow cacao, annatto trees, mecasuchil, vanilla and other drugs used to

[18] Carrasco: 1982, pp. 89-95.
[19] Relaciones Geográficas del Siglo XVI: Guatemala: 1982, pp. 25-60.
[20] Cortés y Larraz: 1958; I, pp. 18.
[21] Cortés y Larraz: 1958; II, pp. 271-278.

prepare the Chocoláte, some indigo and kermes berries picked in the surroundings of San Antonio, capital city of all the Suchitepéquez.[22]

The ancient Maya harvested cacao in great volumes, and used the grains as currency and for the beverage that only the ruling class could afford: the chocolate (Chocolátl); the growing fields comprised a large extension of the Pacific coastal plains, up to an altitude of 600 m. Huge amounts of cacao were sent to the Aztecs to trade and as a tribute, as well as to the Spaniards, who managed to increase the production. with a huge toll in natives' lives. The great decadence of cacao in the early XIX century was caused by the South American competition; similarly, there was a decrease in the production of cotton and kermes berries, due to the imports of aniline-dyed linens.

The Arrival of Coffee in the XIX century

By the mid XIX century Guatemala witnessed the introduction of a large scale coffee production; between the years 1850 and 1925, the quick growth of coffee plantations seduced those who lived in the Altiplano and the coast, and the product began to be grown at an altitude of 350 to 1,550 m; this event caused that the Indians from the Altiplano (Mame, K'iche', Tzutujil and Caqchikel) settled in the lowlands along the entire Pacific Bocacosta. Coffee has modified the original green cover of this region, for it requires some special shadow trees, and therefore, they have been artificially intensified.[23]

By the time of the Liberal Reformation of 1871, the land owners had already subdued a large number of laborers, and Guatemala as a whole had transformed itself in a *finca*. Costa Cuca possessed extremely productive lands, very adequate for growing coffee, therefore, more towns were founded in the surroundings, with the incorporation of thousands of men and women to the production of coffee; the earliest coffee planters of the southwest devoted to grow coffee in his old properties, motivated by the success it had had in Costa Rica and by the support that the conservative government had provided, by forcing the handing over to private individuals and mainly foreigners, of the lands that by right and lawfully belonged to the peasant communities. One of the first businessmen who somehow managed to penetrate and settle down in community lands was the Spaniard José Guardiola, in Suchitepéquez, with the *comuneros* of San Antonio, after buying the land from the Catholic Church through the presbyter Felipe Marroquín.

This is how the historic memory of the modern town of Chocolá begins, with the name of *don* José Guardiola [Fig. 1-14], who on the 27 of August of 1864 bought the hacienda, built a mill, and introduced the sugar cane plantations. This practice would be revised over one decade later and sugar would be transferred to Palo Gordo, at that time a part of the lands purchased for the hacienda. At Chocolá, the sowing of coffee was initiated, and José Guardiola made himself a name as the first agricultural engineer to invent a horizontal coffee-dryer machine in the territory of Guatemala. The dryers quickly became very popular, and their use and commercialization spread with some degree of success; the workshop and the beneficiation that still stand, are witnesses to this industrial development, and

[22] Gage: 1967; VII, pp. 33.
[23] McBryde: 1969; I, pp. 111-118.

needless to say, of the events of the history to come. On the 20 of December of 1875 the transaction deed celebrated between the municipality of *ladinos* and Indians of San Antonio Suchitepéquez and José Guardiola was signed before the notary H. Irondo. By the time, the title deed referred to it as Finca Chocolá, and its function as a sugar mill had been specified [20/12/1875. Archivo INTA folio NO. 03 y 04) (Calderón 2000:67).

Fig. 1-14. Don José Guardiola's patent.

The establishment posed legal problems regarding the purchase and sale of lands, as it is apparent in the *Fondo Documental de la Escribanía de Gobierno*, located in the premises of the *Archivo General de Centro América*. The consulted documents include: Suchitepéquez Package 6 Dossier 14 corresponding to the year 1855; whereby Refugio Obregón trustee of Mrs. Matías Vásquez landmarks' owner of the Chocolá lands accuses the Surveyor Don Francisco Colmenares of causing her damage in the measurement of one portion of the land sold to Presbyter Don Felipe Marroquín. The latter mentioned requests a certification of the title deed of the terrain called Chocolá, in terms of San Antonio and Santo Tomás, the land in question measures 54 7/8 *caballerías*. This may be seen in the Suchitepéquez manuscript Package 6 Dossier 15 of the year 1858.

The above Documentary Fund includes: Suchitepéquez Package 7, Dossier 2, corresponding to the year 1875, and in this document Señor Don José Guardiola, from Spain, already appears as the owner. By this year, discontent spread among the neighbors of San Antonio, who complain about the Surveyor Don Juan de Dios Morales for not having properly taken the measurements of the terrain. According to the document, Mr. Guardiola is in possession of the title deeds while the neighbors are not. The other manuscript is Suchitepéquez Packete 7 Dossier 3, corresponding to the year 1876. This document contains the final demarcations between the neighbors of San Antonio and Don José Guardiola. Therefore, it includes a final plan, up to that moment.

The subsequent moving of countless workers and their families made the population throughout the region of the Bocacosta grow larger; they used to live in hamlets and/or belonged to communities located in the Altiplano, and had no growing fields in their places of origin, therefore, as it had happened during the times of Spanish domination, the reason for such shifts were the purely economic and political interests of the landowners who through the State, had passed laws that responded to their needs. By 1864, the landowner Justo Rufino Barrios had become the legal owner of the plantation "San José el Porvenir", located within the territory of the San Pablo community, in San Marcos; similarly, the Chocolá plantation in Suchitepéquez, was turned to Guardiola's hands in 1874.

In Guatemala, the foreigners displayed their skills to successfully manage their coffee plantations, in such a way that many valuable and famous plantations ended up as the property of German companies that obtained large revenues on their investments.[24] Through the acquisition of plantations and uncultivated lands that were transformed in prosperous plantations, the Germans in Guatemala controlled one third of the coffee production in the country, and two thirds of the coffee exports to Europe. [25] An infrastructure at the service of these companies came to life to intensify the trade, transportation and shipping of coffee, including the opening of banks, the building of better roads, new seaports, railways to the coasts, and power companies.[26]

In spite of his success, Guardiola makes the decision to sell his property in Chocolá to a company known as Plantaciones "Chocolá", founded in Hamburg on February 2, 1891 by means of a partnership of German bankers and coffee planters through their representative in Guatemala, Enrique Neutze (Wagner 1991:151). The transaction was arranged in four hundred thousand American gold pesos. The agreement established that payments were to be deposited in the house of the bankers Baring 'Brothers & Company' from London in American gold or its equivalent amount in Sterling Pounds.[27] Thus, Enrique Neutze came to own, at least in the papers, the Plantagen Gesellschaft Chocolá Neutze. The plantations, the premises, the natural resources and even the laborer young settlers were a part of the property. As of then, several transactions would take place between the German citizens and their companies for the ownership of the Chocolá lands [Fig. 1-15].

[24] Castellanos Cambranes 1985: 118-119, 209, 257-259, 527.
[25] Villatoro: http://www.lahora.com.gt/18-10-2k/paginas/cult_1htm#n1
[26] Castellanos Cambranes: Op. Cit.; 1985: 60-61.
[27] For a more complete reading of the clauses of this agreement, see Calderón 2000: 69-71. Regina Wagner refers that the amount paid was of 2.6 million Deutschmarks, and that in 1900 the agreement was modified to include the adjacent grasslands of "Madre Mía" in the district of Santo Tomás Perdido, Cuyotenango, in Costa Grande, Suchitepéquez, which jointly represented 56 caballerías (Wagner 1991:151).

Fig. 1.15. View of Mound 1, Chocolá, early in the 20 century.

On December 14, 1923, the testimony of the purchase and sale title deed from the Chocolá Plantagen Gesellschaft in Hamburgh in favor of The Central American Plantation Corporation (CAPCO) was celebrated, before the notary Javier Bolaños. His trustees were Messrs. David E. Sapper and Juan Goebel (Calderón 2000:73).

The shaping of the identity of the modern inhabitants of Chocolá may be traced back to those days, with an emphasis on the migration of families from the Altiplano in Totonicapán, and from Quiché and Huehuetenango[28] to work as laborers in the plantation. Robert Burkitt notes that the inhabitants of Chocolá had their origins in Nahualá and Ixtahuacán, and that their language was "… a Maya language, a Kichechí dialect" (Burkitt 1930:5).

According to the data provided by Wagner (1991:152), by 1900 Chocolá was already one of the largest sugar and coffee producers of Guatemala, with some 560,000 coffee trees in production. It was administrated by Czudnochowski and later by Fedor Deininger.

In the 1910's, the imperialisms both from Germany and the U.S. started to compete for the political and economical institutions in Guatemala that served their requirements, a struggle of interests that was resolved around the beginning of the 1940's when the German estates were expropriated; this resulted in the strengthening of the political influence of the United States in Guatemala, and the consequent decay of the German power.[29]

World War II and the Nationalization of the German Estates

Since World War I, the United States had been Latin America's major commercial partner, due to their geographic location and their technological modernization,

[28] Monografía Mínima de Chocolá Junta Directiva 2001:4.
[29] Castellanos Cambranes: 1992, pp. 341-342.

however, World War II provided the opportunity to consolidate this process, aided by the political situation of the Old Continent.

Hitler seized power in 1933, and realized that Germany imported from Latin America almost double of its exports to those countries. Guatemala was the third country, after Argentina and Brazil. 45.3% of the coffee exports in Guatemala in 1932-33 went to Germany (Wagner 2001:170). Hitler decided to pay debtors with Deutschemarks, with the condition that they were used to buy German products, thereby fixing their balance of trade. The measure was enforced in 1934, and marked the decrease of the exports of Guatemalan coffee to Germany, in favor of the U.S.

After 1939, things began to complicate for the Germans in Guatemala. The U.S. pressure for relegating their commercial activity intensified. Chocolá would be a witness of such international changes. Wagner (1991: 366-390) discusses the position taken by Jorge Ubico with respect to the reorientation of the coffee exports, and even though he consented in limiting the opportunities of German exporters and switched his own activities towards the north, the consuming capacity of the entire Guatemalan product by the U.S. was not fully positive for local coffee planters; the market was saturated and between 1939-1940 the prices collapsed.

Ubico was unable to get rid of the Germans that fast. One of his earliest measures was having the Ministry of Agriculture to control and regulate the coffee exports, with a 75% for the United States, and the remaining 25% for other countries; like this measure was not good enough, in 1941 the exports of national products to non-American countries was banned, even though 40% of the coffee production in the country was in German hands.

The economic returns of the German establishments in Guatemala was undisputable, and therefore acting impulsively was not advisable; a decree was created through which the Central Bank of Guatemala would assume control of the establishments marked in black lists that were to be published first in the United States and later in local newspapers. As to the situation of labor, Ubico suppressed the habilitations and the indebted labor, but introduced other procedures to keep peasants compulsively linked to the production of coffee, for example the vagrancy act.

On December 8, 1941, after the Pearl Harbour attack, Ubico summoned the Assembly and passed a decree that restricted the constitutional guarantees to the citizens of Japan, Germany and Italy that had resided in the country for as long as the war had lasted. On June 16, 1942, inspectors were commissioned to inventory the assets existing in each establishment, mill, beneficiation or ranch. Early in 1943, according to its own laws and through the Custody of Enemy Property of the United States, that country confiscated the shares of the largest complex of German coffee plantations in Guatemala, CAPCO, inscribed in Wilmington, State of Delaware[30]; immediately after, the Guatemalan state took action in defense of the nation's patrimony, and CAPCO was nationalized (Wagner 1991:372).

[30] "CAPCO, a German capitals enterprise which in 1933 according to Wagner (2001:169) appears as registered in N.Y. and in 1943 according to Wagner (1991:372) in Wilmington, Delaware. Interestingly, this company had a nature broader than the German nationality, as an affiliation criterion. By the time of its intervention, its representatives were Messrs. Morrison, Tucker Graham and Vincent Paul Downey O'Donogue. Clearly, they were not German" (Paredes Umaña 2003. Tercera Práctica de Campo. Escuela de Historia. PACH).

By 1941, the process of deportation of German citizens whose names were in black lists was being enforced[31]; this took place throughout the conflict, and the individuals involved were first sent to concentration camps in the United States, where some chose to stay in prison until the end of the war and others were sent through different means to the Old Continent. The German citizens deported from Chocolá and the surrounding areas appeared on a list published in *Nuestro Diario* on January 19, 1943, with a headline that read, "list of 141 Germans deported in January, 1943, to the 'Alien Detention Station', Kennedy, Texas" (Wagner 1991: 431-34).

Based on the cadastre drawn up in 1943 for a more accurate control of the coffee plantations in the country, the confiscatory measures against the Germans were facilitated. The Government passed the decree No. 3115 of June 22, 1944, which stipulated the expropriation and nationalization of every coffee plantation owned by German citizens, the bonds, stocks and shares they had in some or several of the expropriated establishments, and proceeded accordingly through decree No. 3119 of June 26, 1944.[32] Thus, Chocolá became a national *finca* during the brief administration of General Ponce Vaides, who created the Department of National and Intervened Rustic *Fincas* (Wagner 1991:375).

The October Revolution and Contemporary History

As of 1945, the first revolutionary government was established. Times had changed in the world, Germany and its allies had lost the war and the United Nations was a new institution that proposed a change of style for international relationships. At a local level, a first essay of democracy was taking place.

In general, historians tend to agree when they speak of a cultural rebirth, the abolition of all sorts of hard labor and the free hiring of manpower, the right for free association, the return of labor organizations that had been banned, the emergence of new political parties, and the free press that so many problems had caused to revolutionary governments, like the incitation to an anti-communist hysteria. The second government could not complete its mandate, as it was overthrown by the "liberationist" party, sponsored by the United States department of intelligence.

The National Agropecuarian Institute, founded around 1945 with its seat in Chocolá and its surroundings, was a project between the Ministry of Agriculture and the Washington Department of Agriculture. G. Aleman Bolaños, in his guide published in 1945 "Vida Agrícola de Guatemala. Las Grandes Fincas, Las Buenas Fincas" (*Agricultural Life in Guatemala. The Large Plantations, the Good Plantations"*), sketched a forthcoming Revolutionary Agricultural Plan.

Chocolá witnessed all of this processes, and we shall now see how this was expressed by local inhabitants in the *Monografía Mínima de Chocolá*, elaborated in 2001 by the Board of Directors of the ECA Chocolá:

"In the year 1952, during the administration of the President of the Republic, at that time Jacobo Arbenz Guzmán, the *finca* Chocolá and annexes were handed over to

[31] Some of the lists were published in the Diario de Centroamérica between April and July, 1942, under the title of "volunteers who wish to be repatriated".
[32] Villatoro: http://lahora.com.gt/18-10-2k/paginas/cult_2htm.

the settler workers of those days, each one being benefited with a fraction of 60 to 90 ropes *(cuerdas)* (…) approximately two years later, the new government of Carlos Castillo Armas (liberationist party)[33] through a decree, determined that Chocolá was to be once again administrated by the State of Guatemala. That is how the Institute for the Agrarian Transformation (INTA) was created, an institute that was in charge and responsible of all the works, production, administration and operation of Finca Chocolá and its Annexes until the year of 1981".

In May, 1952, Decree 900 was passed at the Congress of the Republic, a project for the redistribution of agricultural lands among the landless peasants and laborers, while they began to struggle for their rights against the landowners, on the grounds of the Agrarian Reform.[34] The National Chocolá Finca and Annexes were then distributed among the settlers-laborers, with a benefit for each one of them of a fraction of 60 to 90 ropes.[35]

In 1954, the chiefs of the Army demanded from President Arbenz to take the necessary steps to enforce the Law of the Agrarian Reform and against the rural agitators, but Arbenz paid no attention to such demands and was forced to resign by the Army officers.[36] The liberationist government under Castillo Armas in 1954 issued Decree 31, stipulating that plantation owners were entitled to request the devolution of the lands that had been illegally taken away from them, and that the beneficiaries of Decree 900 were to be deprived of lands; later, in 1956, Decree 559 was passed, stating that those interested were entitled to apply for the plots of land bought and expropriated, provided they did not own any parcel and had not received any land under Decree 900. The Finca Chocolá once again fell under the administration of the State through the Institute for the Agrarian Transformation (INTA), until May, 1981, when it was once again distributed among 1,670 peasants, benefited grantees, through Grant Agreement No. 7-81 of the National Council of Agrarian Transformation, regulated by Decree 15-51 and its reforms, granted as Collective Agrarian Patrimony.

In 1985, the annexes Madre Mía, Lolemí and La Ladrillera had their administrations separated from Chocolá, and in the year 1988 the constitution of the four Associative Peasant Enterprises, ECAS, was created, as a derivation of the enforcement of Decree-Law 67-84, which propitiated its full independence from the State, leaving out the Institute for the Agrarian Transformation, INTA.

The new situation of the Finca Chocolá has propitiated as well the financial support of organizations such as the European Economic Community, which through the Bocacosta Project has financed development projects in the region, for example, the improvement of coffee plantations, the availability of drinkable water, sanitary drainages, the repair of the Coffee Beneficiation, the obtention of machinery and gears, etc., [37] while presently there are five projects funded the European Economic Community whose objectives are to promote the development of specific rural areas in the country, for a total of U$S 45.6 million. Also, the European Community is still attempting to increase the economic activity in poor communities and supporting

[33] Brackets are by the authors.
[34] Gleijeses: 1992, pp. 383.
[35] Monografía Mínima de Chocolá: Op. Cit.; 2001, pp. n.n.
[36] Gleijeses: Op. Cit.; 1992, pp. 383.
[37] Monografía Mínima de Chocolá: Op. Cit.; 2001, pp. n.n.

several productive activities.[38] "Lombriculture", mentioned earlier in this text, represents an alternative economic activity in regard to coffee.

Fig. 1-16. Karl Sapper.

Archaeological Backgrounds [JK: photo by Graham, old town photo]

The first archaeological comment about Chocolá came from Karl Sapper (Sapper 1895) [Fig. 1-16], but it was Robert Burkitt (1930) who inspected part of the site, draw a schematic map with 11 mounds, and excavated three of them, Mound A (probably gone by now), Mound B (Mound 2 or Cerro Partido), and a third, unnumbered one, that he excavated between 1924 and 1928. The results were presented in the report "Excavations at Chocolá", by the University of Pennsylvania (Burkitt 1930: 5-24). Burkitt was frustrated for not having found too many artifacts [Fig. 1-17], and was apparently confused with the earthen constructions that represented the existing mounds, a lack of understanding that probably would not have taken place should he had been aware of the excavations conducted by Messrs. Villacorta (1927) and Manuel Gamio (1926-1927) in K'aminaljuyú since 1910, which defined the use of mud in the architecture of sites from the Altiplano.[39]

[38] Banco Interamericano de Desarrollo; 2002, pp. 13.

[39] During a visit paid to PACH in 2003 by Dr. John Clark, we were suggested that the absence of sherds and the scarce evidence of a long history of human occupation in Mound 2 could be interpreted as an indicator of a very early date, and therefore, time must have been short for depositing artifacts in the construction. On the contrary, the excavation of test pits in Mound 9 produced a large amount of sherds, probably indicating later dates or phases of construction (see Valdés and Kaplan 2003).

Fig. 1-17. Well polished figurine made of white stone recovered by PACH in 2003 at Mound 2, where Burkitt worked in the 1920's.

However, Burkitt's report was extremely interesting in regard to the discovery by farmers of the fragments of an extraordinary basalt sculpture, Monument 1 from Chocolá [Fig. 1-18], a stela dated for the Late Preclassic period with depicted scenes and an iconography almost identical to that of Stela 10 from K'aminaljuyú [Fig. 1-19] (Jones 1986, Kaplan 1995:191, 2001:9, 11, 19-20). The Chocolá monument was taken to the Museum of the University of Pennsylvania (see Chapter 13). It depicts a scene that shows the triumphant sovereign accompanied by icons related to a war event and/or a sacrificial event. The stylistic similarities between this monument and Stela 10 from K'aminaljuyú have been a subject study for Parsons (1986) and Jones (1986) in the past few years, and no doubt point to a probable political relationship between Chocolá and K'aminaljuyú (see Kaplan 1995, 2000a, b).

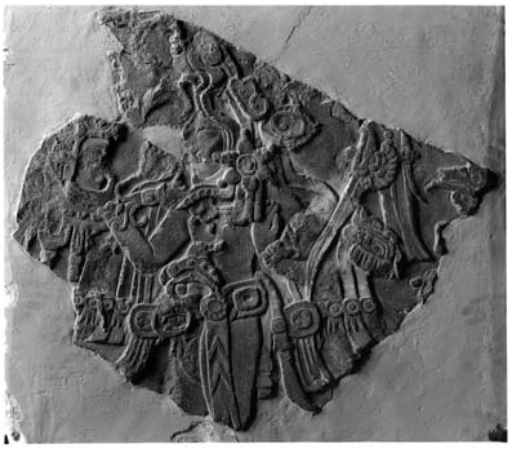
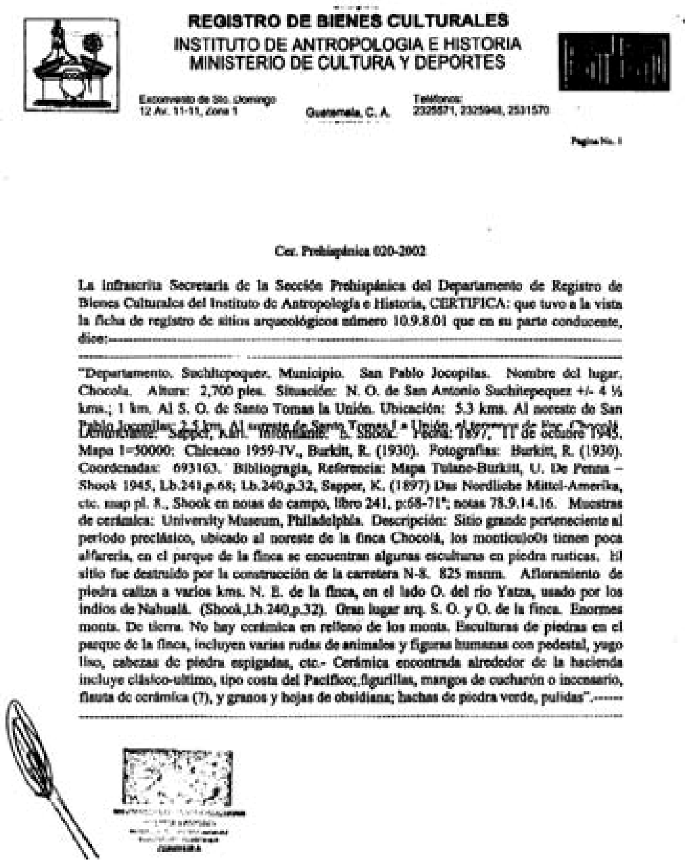


Fig. 1-18. Monument 1, Chocolá (photo Museum of the University of Pennsylvania).

Fig. 1-19. Stella 10, K'aminaljuyú (photo JK).

Edwin M. Shook visited the site in the forties, and it was him who recorded it formally at the Institute of Anthropology and History like an archaeological site,[40] describing it as a "large" and "important" site [Fig. 1-20].



REGISTRO DE BIENES CULTURALES
INSTITUTO DE ANTROPOLOGIA E HISTORIA
MINISTERIO DE CULTURA Y DEPORTES

Exconvento de Sto. Domingo
12 Av. 11-11, Zona 1
Guatemala, C. A.
Teléfonos:
2325871, 2325948, 2531570

Pagina No. 1

Cer. Prehispánica 020-2002

La infrascrita Secretaria de la Sección Prehispánica del Departamento de Registro de Bienes Culturales del Instituto de Antropología e Historia, CERTIFICA: que tuvo a la vista la ficha de registro de sitios arqueológicos número 10.9.8.01 que en su parte conducente, dice:--

"Departamento. Suchitepequez. Municipio. San Pablo Jocopilas. Nombre del lugar. Chocola. Altura: 2,700 pies. Situación: N. O. de San Antonio Suchitepequez +/- 4 ½ kms.; 1 km. Al S. O. de Santo Tomas la Unión. Ubicación: 5.3 kms. Al noreste de San Pablo Jocopilas; 2.5 km. Al [illegible] de Santo Tomas La Unión [illegible] Chocolá. Denunciante: Sapper, Karl. Informante: E. Shook. Fecha: 1897, 11 de octubre 1945. Mapa 1=50000: Chicacao 1959-IV., Burkitt, R. (1930). Fotografías: Burkitt, R. (1930). Coordenadas: 693163. Bibliogragia, Referencia: Mapa Tulane-Burkitt, U. De Penna – Shook 1945, Lb.241,p.68; Lb.240,p.32, Sapper, K. (1897) Das Nordliche Mittel-Amerika, etc. map pl. 8., Shook en notas de campo, libro 241, p:68-71"; notas 78.9.14.16. Muestras de cerámica: University Museum, Philadelphia. Descripción: Sitio grande perteneciente al periodo preclásico, ubicado al noreste de la finca Chocolá, los monticulo0s tienen poca alfarería, en el parque de la finca se encuentran algunas esculturas en piedra rusticas. El sitio fue destruido por la construcción de la carretera N-8. 825 msnm. Afloramiento de piedra caliza a varios kms. N. E. de la finca, en el lado O. del río Yatza, usado por los indios de Nahualá. (Shook,Lb.240,p.32). Gran lugar arq. S. O. y O. de la finca. Enormes monts. De tierra. No hay cerámica en relleno de los monts. Esculturas de piedras en el parque de la finca, incluyen varias rudas de animales y figuras humanas con pedestal, yugo liso, cabezas de piedra espigadas, etc.- Cerámica encontrada alrededor de la hacienda incluye clásico-ultimo, tipo costa del Pacífico; figurillas, mangos de cucharón o incensario, flauta de cerámica (?), y granos y hojas de obsidiana; hachas de piedra verde, pulidas".------

Fig. 1-20. The Chocolá record, by Edwin M. Shook.

According to him, the site had about 100 mounds [Fig. 1-21], many of which were 20 m tall or more, but have been destroyed by the increasing construction of infrastructure.

Fig. 1-21. Mound 1, Chocolá.

[40] Monografía Mínima de Chocolá: Op. Cit.; 2001, pp. n.n.

He also reported the occurrence of archaeological remains such as figures and stone altars, sherds, and ceramic figurines spread all over the village. Shook returned to Chocolá in 1978 and excavated a pit or trench [Fig. 1-22]. Franz Termer visited Chocolá during the sixties, when he was conducting excavations at Palo Gordo, a site nearby Chocolá.

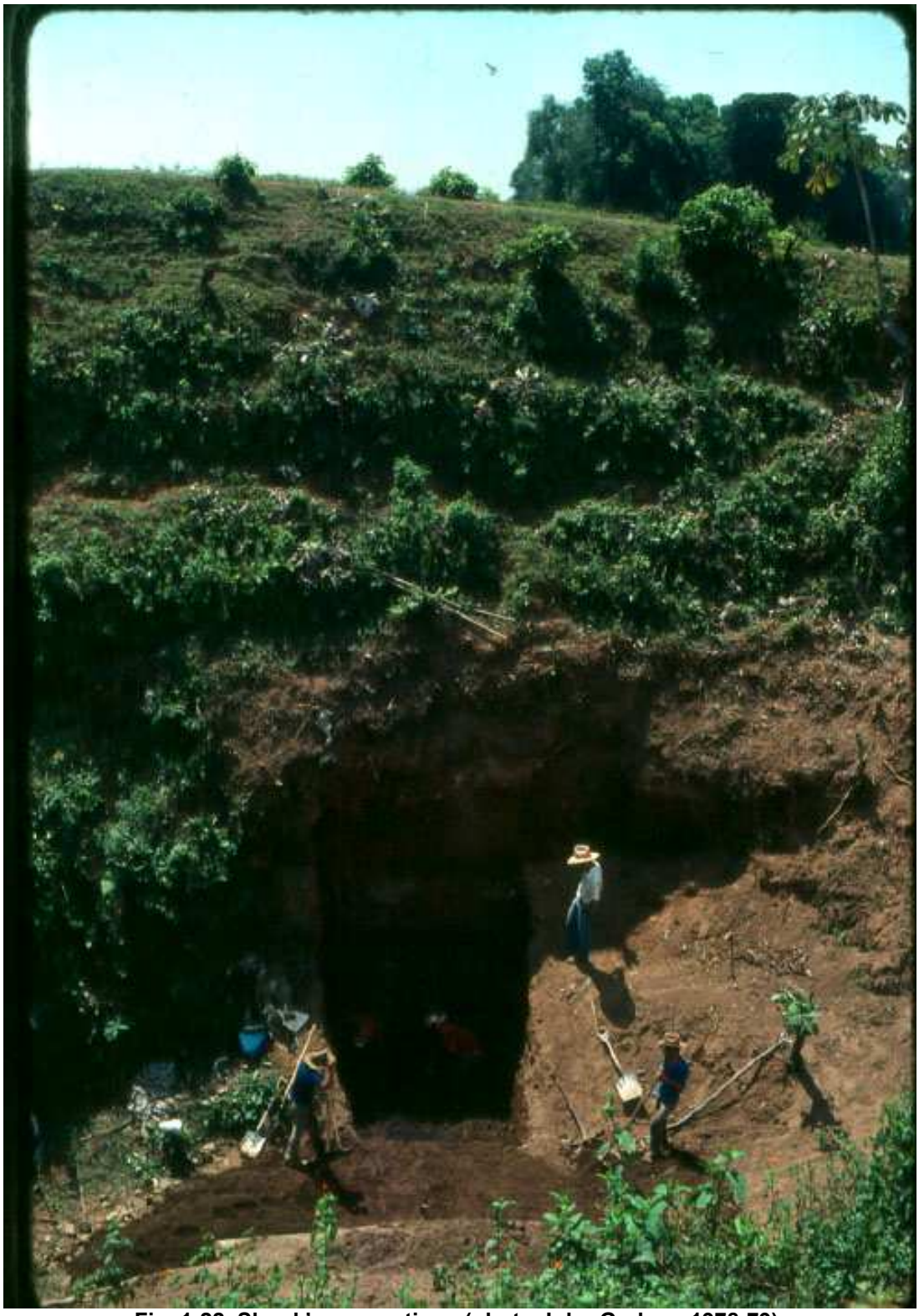


Fig. 1-22. Shook's excavations (photo John Graham 1978-79).

Burkitt excavated Mound B and noted the absence of stone in its construction, something he found extremely awkward in view of the fact that he had conducted excavations at Quiché,

where this type of stony material was used in architecture. He used a methodology of inverted steps and transformed the trench in some sort of stadium [Fig. 1-23], a common system by then in the Near East to understand the stratigraphy.

Fig. 1-23. Mound 2 excavated by Burkitt between the 1920's and 1930's.

He reported an earthen construction, floor levels, sand, charcoal and Preclassic ceramics. When his investigation was completed the trench was left open, and unfortunately, with time, it ended up as a huge modern garbage dump [Fig. 1-24a, b]. This focus of contamination has been almost completely cleared by members of the Chocolá Project during the 2003 and 2004 seasons.

Fig. 24a, b. Clearing Mound 2 of garbage, PACH 2003.

Like we noted earlier, Chocolá is a site which had not been subject of a formal research project with systematic archaeological works, and therefore, there are but a few written reports wherefrom some useful information may be obtained. Because of this and necessarily, the first step in the frame of the investigative activities of PACH was the reconnaissance and inspection of the field, consisting in getting acquainted with the territory and the ancient traits, to develop a research plan and to delimit the areas comprised by the

archaeological site through a systematic study.[41] In the 2003 season this plan was carried out in an area of 4 x 2 kilometers across the site. In 2004, formal mapping continued outside the area covered in 2003, in additional 5.5 x 2 km [Fig. 1-25a, b]. Using very precise benchmarks set in 2003, we also started to map the topography of portions of the site using a total station (see Chapter 3).

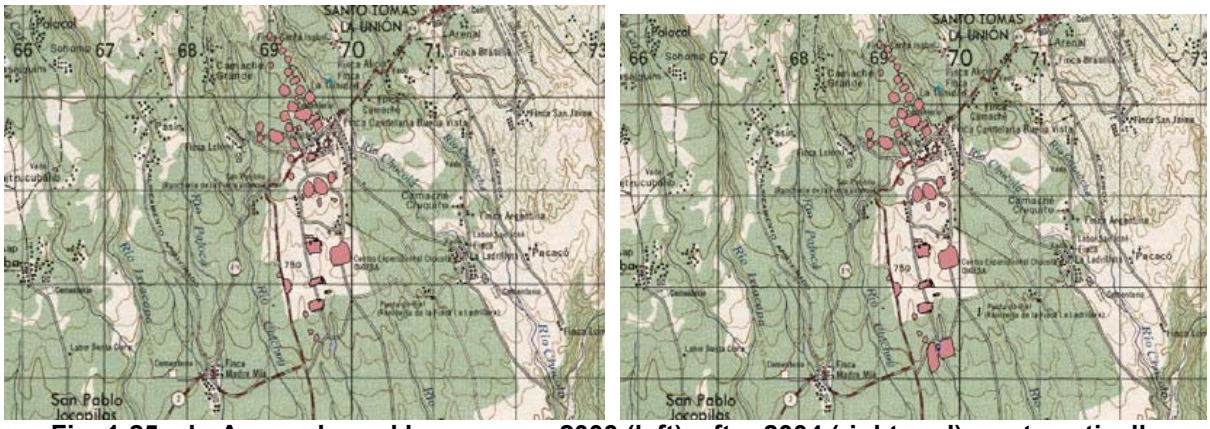


Fig. 1-25a, b. Area enlarged by surveys, 2003 (left), after 2004 (right, red), systematically mapped, and yellow, surveyed.

Theoretical Motifs of the Chocolá Archaeological Project, 2004

Like we said, the second season represented the second year of investigation under the terms of an agreement between Kaplan and IDAEH. The results of the first season were detailed in the 2003 final report submitted to IDAEH. Some introductory information present in the 2003 research proposal is still relevant, though research and findings carried out during the 2003 and 2004 seasons have somehow changed the scope but not the direction and general focus of the Project. The 2003 proposal read as follows:

"Considerong the data available so far, we know that the southern area of Guatemala and Mexico witnessed innovative developments during the Preclassic period, which have remarkably influenced the future of other neighboring cultures. However, there is a lack at times of a clear notion of the determining events and processes that shaped the history of the southern Guatemala region, that have long ago given it its assumed seminal character. The investigations conducted in the past decade at K'aminaljuyú and Tak'alik' Ab'aj have shown the close relationship existing between both areas, consequently considering that the sites located in-between must have been economically subordinated to them. The position of Chocolá may provide an answer to that question and to several other uncertainties, including issues concerning the processes of evolution that may have led to the further creation of polities within the Maya world."

"Chocolá is an archaeological site that was investigated solely by Robert Burkitt (1930) at the beginning of the past century, and is located in the region of the Boca Costa, in the township of San Pablo Jocopilas, department of Suchitepéquez. As of the evidence present in the field, it must have been one of the largest and most significant centers of the region during the Preclassic period, with very tall mounds and several Preclassic sculptures that show historic evidences of links with K'aminaljuyú, the most significant polity in the Altiplano, located 120 km to the east."

[41] Kaplan: Op. Cit.; 2003, pp. 10.

“It is very probable that at some point during the Late Preclassic period, Chocolá served as a secondary regional center within the broader sphere of K’aminaljuyú. If concrete archaeological evidence is found confirming this notion, it would help us to understand how during the Preclassic period sophisticated, hierarchical settlement patterns began to emerge, on which at least some part of the political scenario of the Classic period would be modeled. One related issue is focused on the relationships that Chocolá maintained with K’aminaljuyú and the many sites of the west, whose precise language we ignore. The Chocolá Project will attempt to find answers for these historic and cultural issues and for other broader and more theoretical research problems”.

Much if not all of the above is still valid regarding the nature and significance of the site, in addition to the Project’s objectives. Analyses conducted after the conclusion of the first season, including the data obtained during the second season (2004) concerning ceramics and other artifacts found, besides the architecture and settlement patterns, have led us to believe that the occupation of the site began at a much earlier date than the Late Preclassic period –probably as far back as B.C. 1200 - and that it may have lasted until the end of the Postclassic period. The construction phases, the changes in the groups controlling the city and the continuity or the absence of it in the different occupations of the site besides many other archaeological aspects of Chocolá, still remain unknown. However, we believe that significant progress has been made in a rather short time.

After the 2003 season, our ideas changed in regard to the ancient occupation of the site; this means that the occupation may have begun earlier in time and may have extended longer than we anticipated. This change was the major cause for the revision of our plans for 2004. The second specific change for the understanding of the ancient community derived from the discovery of very sophisticated water managements in two mounds located at the north of the site [Fig. 1-26a, b, c, d]. In 2004 we excavated one of these mounds in systematic units and identified 34 m of underground conduits including forks and apparent mechanisms used to open and shut the water flow (see Chapter 6). One small channel separated from the massive channel, running within a 6 x 16 m structure (see Chapter 5) in addition to salvage operations conducted more than 1 km to the south (see Chapter 10), led us to broaden our estimates of the size and scale of the system or systems. These findings reinforced the probability that we may find water management systems fit to irrigate intensive growing fields in the southern area. The discovery of sophisticated hydraulic managements, in addition to ethnohistorical evidence about the Bocacosta as an ancient center for the production of cacao, have led us to establish a new focus for our investigation: the possibility that intensive agriculture in Chocolá may be the material witness of a superior cultural and social complexity in the Mesoamerican path during the Preclassic period in the southern Maya area.

Fig. 1-26a, b, c, d. Ancient management of water resources, Mound 15.

The significance of cacao in Mesoamerica [Fig. 1-27] before the peak of the Aztec Empire and throughout colonial times has been well established.

Fig. 1.27. Cacao tree, private garden, Chocolá.

The early use of cacao is documented in ceramics of the ancient Maya area, for example in a vessel from Colhá, Belize, dated B.C. 600 - A.C. 250, which contained cacao residues (Powis et al. 2002: 97-98). At least since then, cacao grew in importance in Mesoamerica as a merchandise of common use, used as a luxury beverage for the elite and in the form of grains as currency. As described in the Mendoza Codex, the empire of the Aztecs received on a yearly basis huge amounts of cacao as tribute. Many Classic Maya ceramics show images with contexts of cacao usage, for example, in royal courts. Cacao was the focus of formal feasting; the Primary Standard Sequence, a hieroglyphic formulaic declaration repeatedly found around the rim of elite vessels, makes reference to cacao [Fig. 1-28]. Consequently, in addition to the economic value, the luxury consume of cacao helped to characterize the social hierarchy. To conclude, cacao was a part of the rituals and routines of the Maya elite. It was taken to the most sophisticated social and political world by the important exchange networks, apparently with roots or origins not only in the well-known region of the Soconusco, in Chiapas, México, but also in the Bocacosta, Guatemala –where the ancient site of Chocolá is centrally located-; cacao also must have greatly impacted the economies, the social organization, and the complexity developed in the southern Maya area.

Fig. 1-28. The Primary Standard Sequence (Kerr Archives and courtesy of Reents-Budet 1994).

The Bocacosta is located adjacent to the Soconusco, and according to ancient geography and ethnohistory, both regions have been the heart of the rich ancient production of top quality cacao (*Título de la Casa Ixquin-Nehaib, Señora del Territorio de Otzoya* 1984: 79-8, Carrasco 1982, Juarros 1936, Coe 1961: 18-19, Gage 1967, Gasco 1993, 1996, 1998, 2001, 2003, Lutz and Lovell 1990, McBryde 1945). One plausible use, given the abundance of water, is the irrigation of this product with such a high demand in Mesoamérica. The intensive, large scale production plus the exchange of cacao, appear as the logical grounds for the complex, ancient developments that took place in Chocolá. The hypothesis that these processes and events did in fact take place at Chocolá during the Middle Preclassic and Late Preclassic periods, deserved additional attention during the 2004 season (and will be a special priority in future investigations).

Our investigations in 2004 have shown that conditions for the cacao production at Suchitepéquez are outstanding: a height that ranges from 600 to 800 m above sea level[42]; a strong sun with good shadow provided by trees; huge water resources averaging 5 meters rainfalls per year, many sources and springs, many rivers with plentiful water and a rapid flow, and well-drained soils, so rich that the people from Chocolá use to say that all plants with no exception would grow in such a soil. Cortés introduced cacao in Europe by 1527, where it became popular in a very short time. In the centuries that followed, the massive growth was introduced by Spanish, French, Dutch and English colonies around the world. Since the earliest post-conquest times to the mid-XIX century, Spanish *encomenderos* from southern Guatemala created large plantations to export the product. In the XVII and XVIII centuries, the Guatemalan *fincas* from Suchitepéquez and the adjacent Soconusco exported a large percentage of the cacao worldwide. As of the XIX century, the

[42] The extension of the archaeological remains of Chocolá from 900 to 600 m above sea level supports the hypothesis that the ancient site no only played a role in the intensive growth of cacao, but also in controlling the exchange of the product. Without this role, there is no reason to explain the large size of Chocolá and its extended time of occupation.

cheaper production of cacao in South America led to the acute fall of the fortunes originated in the Guatemalan cacao plantations. By the mid-XIX century, coffee and sugar cane replaced cacao in southern Guatemala as an export crop.

Like we said, the results of the 2003 and 2004 seasons conspicuously included the finding of water management in large elite mounds built both within the site's precincts at the north of the site and in the central administrative districts. A greater understanding of such water managements, used particularly for intensive agriculture, will not only help us to understand how and why Chocolá, since the beginning of the Preclassic period, has grown and become very large and lasted for a long time creating a possibly very influential society, but it will also help us to study how the processual factors linked to water management, specialized agriculture – and particularly elite items - and monopolic exchange, led to the formation of a polity, in a comparative sense.

Modality and general conditions of the research

The primary activities of PACH during the first season consisted in surveying and systematically mapping every ancient vestige of the site, including structures, terraces and the precise location of monuments. These activities included the reconnaissance of aspects of the more recently or modernly modified landscape, for example ravines, cemeteries, waterfalls, springs, water inlets, aqueducts, and the Victorian buildings conforming the headquarters of the plantation. In 2004 additional survey and mapping were completed, although this did not represent the major part of our field work. This effort focused on areas located outside the 4 x 2 km area involved in the works carried out in 2003 (see Chapter 3). We believe, as of the informal reconnaissance, that there are very distant satellite communities still to be explored and mapped. This was confirmed after the 2004 season. It is important to conduct such reconnaissance to achieve a better understanding of how the ancient city worked and of the diachronic changes in the form of the community's growth and decrease, to outline the history of their lives in terms of their developments and evolutions as a social and political entity. Non-invasive, remote-sensed survey technology was used as a part of the mapping strategy to identify very specific and significant locations (see Chapter 4) [Fig. 1-29].

Fig. 1-29. The use of gradiometry, Chocolá, 2004.

Through gradiometry we searched for buried traits, monuments and garbage pits around the major mounds where we assumed elite districts were located at the north of the site, in the administrative precinct of the core area, and in areas south of the features and buildings probably related to intensive agriculture, workshops, and common households. In addition to the reconnaissance, mapping and remote survey, in view of the fact that the sole publication on excavations previously conducted at Chocolá was written by R. Burkitt's back in the 1920's, extensive excavations were carried out in 2004, whose results are described in the chapters that follow.

The field work and excavation season of 2004 took place during the months of June, July and August. As usually happens during this timeframe in the southern coast of Guatemala, work is accomplished during the morning hours, as after lunch at 1 or 2 pm and two or three times a week, it regularly rains. This impairs continuity in the excavation works because pits tend to flood, and besides, the water that runs from the higher parts of the mounds to the lower ones falls directly into the pits, in a way that makes it difficult to detect the natural strata of profiles, as water homogenizes the texture and color of the soils. Even with the use of the Munsell color charts and their numbered range of colors, the task is rather difficult.

Research Justification

The archaeological site of Chocolá is located there where it used to be an old coffee plantation, owned by German citizens who settled in Guatemala during the second half of the XIX century. This was a large plantation with an extension of nearly 60 *caballerías*, where the owners built their own headquarters, a hotel for visitors, a beneficiation for processing coffee, a huge workshop and houses for the senior workers. The relevance of this *finca* took the railways to the very heart of it to extract the grains and transport the sacks of coffee to the Pacific ports. All of these constructions were built in the Victorian style, in concordance with the architectural fashion of those times, with an emphasis in houses and administrative buildings of the use of wood in practical and elegant designs (see Chapter 11) [Fig. 1.30].

Fig. 1-30. Victorian architecture, Chocolá.

Today, just a few of these buildings persist, some in a very poor condition, thus, their protection is necessary for the substantial revalorization of these buildings which are still being used; this would encourage restoration to extend their useful life, while simultaneously, a particular architectural style that has been gradually disappearing from the national panorama would be protected.

Presently, this rural establishment is a cooperative society run by hundreds of small owners organized in commissions and committees, including one for the protection of green areas, and even though they are familiar with the recent history of the establishment, they ignore why Mound B excavated by Burkitt in 1924 has become the town's garbage dump, while Mound 1 ("Mound C" in Burkitt's program) serves as a center for social gatherings and sports, where football games and bullfights are watched. All other mounds show coffee plantations on top of them, although it is also apparent that with the growth of the village, modern houses were as well built on top of secondary mounds [Fig. 1-31] (see Chapter 2).

Fig. 1-31. Damage to the mounds at Chocolá (Mound 2).

Other signs of damage suffered by the archaeological patrimony are observed at the local cemetery, located on top of a plaza among several mounds, so that the surface archaeological materials originated in the lower strata, disturbed when new graves were dug, may be easily observed [Fig. 1-32].

Fig. 1-32. Chocolá's cemetery.

A particularly special phenomenon which should not be disregarded is the recent change from the Catholic to the Protestant religion by several plot owners [Fig. 1-33]. According to informants, this has led to the search of monuments that the practitioners of the new religion call "demons of evil", forbidding natives to conduct the rituals and ancestral ceremonies they used to practice there in the past.

Fig. 1-33. Catholic church with an almost discontinued use as a consequence of the proliferation of Evangelic churches.

Therefore, there is an urge to proceed with the archaeological work at the site to have its dimensions defined and to gain knowledge on its sociopolitical implications at a regional [Fig. 1-34a, b] and extra-regional level. This will allow to encourage its protection, making the local population aware of the value the site once had, and the advantages it could have in the future by combining the administration of tourism at the prehispanic place with the preservation of the Victorian-style buildings, where the functioning of the water power driven machines may still be witnessed like in a living museum, unique in Guatemala and very valuable as a window to post-colonial times in Guatemala.

Fig. 1-34a, b. Architectural samples near Chocolá (immediately west of San Antonio Suchitepéquez) from the recent cut of the mound.

Objectives

Taking into consideration the above information, the significance the site once had and still has is self-explanatory, thus, the primary goals of our work are the following, just as in the first season:

General Objectives

1. To continue obtaining as much information as possible about one of the most important sites in southern Guatemala during the Preclassic period, a time and place that archaeologists have long assumed as having contributed critical and significant stimuli for the development of future civilizations;
2. To continue using different methods to define the set of archaeological manifestations at the central core, the important peripheral structures, the occupational timeframe, the main constructive phases, and to obtain data referred to the economic, political and social organization of the site;
3. To continue in the search of relationships with major sites at the west including non-Maya speaking centers, which may have been related to K'aminaljuyú by using Chocolá as an intermediary center as a part of an emerging system of interaction of the "center-periphery-center" type.

Specific Objectives

1. To continue with the full and thorough mapping of the site to define its extension and territorial composition.
2. To continue with the identification of traits and features defining its local character and foreign relationships, both with K'aminaljuyú at the Altiplano and with Tak'alik Ab'aj at the Bocacosta, or with any other site from the coastal area.

3. To continue defining the role of Chocolá as a polity throughout its history:
    a. like a possible port of exchange.
    b. like a secondary redistribution center under the administration of K'aminaljuyú;
    c. like a secondary center, with a greater dependency from Tak'alik' Ab'aj;
    d. like a neutral center with an independent political category,
    e. like an hydraulic center involved in the intensive growth of cacao with a possible commerce monopoly along the southern area.

Theoretical and Methodological Approach

Chocolá extends along the elevated southwestern piedmont of Guatemala, within the Suchitepéquez department. The piedmont at the west begins there where the volcanoes of the central Altiplano descend to the large "boiler" created by Lake Atitlán, and extends along hundreds of kilometers towards the west to introduce itself in the area of Chiapas. Chocolá is located almost equidistantly from the important sites with Preclassic and Protoclassic hieroglyphic writing of El Baúl to the east and Tak'alik Ab'aj to the west. This site is also more or less at an equal distance between K'aminaljuyú and Izapa, [Fig. 1-35], the great probably non-Maya and very interesting site, as partly, the Popol Vuh's ideology may have developed there, according to the depictions found in some of its many monuments.

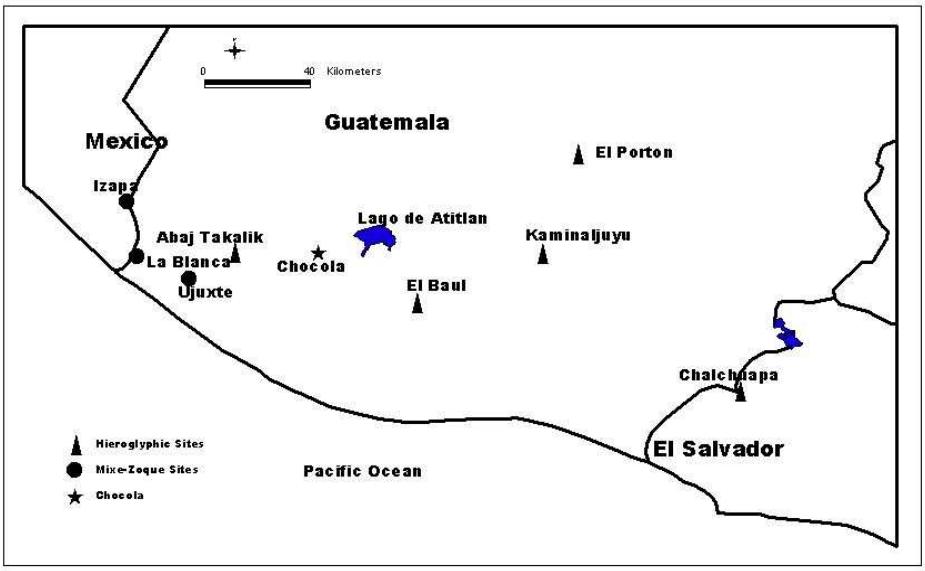


Fig. 1-35. Map showing the equidistant distances between significant sites, including Chocolá, during the Preclassic period.

Three sites –K'aminaljuyú, Izapa and Chocolá-, as also other major Preclassic centers from the south, produced that which art historians have described as an extraordinary sophisticated and refined sculptural art in the frame of the entire Mesoamerican context (Miles 1965:255, Parsons 1986:50) while at least one part of those sculptures exhibit early hieroglyphic texts. We refer specifically to the "Miraflores" sculptural style, which represents the apparent moment of the highest Preclassic developments at K'aminaljuyú, also present at Chocolá in sculpted Monument No. 1, maybe suggesting a link between the geographic heart of the area

of production of refined Preclassic sculpture, and what perhaps should be called a "precocious" writing.

As suggested, in addition to the significant implications derived from works such as Monument 1 at Chocolá, which indicates different bonds with centers such as K'aminaljuyú, it seems plausible to consider of significance the surprising equidistant localization of Chocolá between K'aminaljuyú to the east, and Izapa to the west. There is strong artistic evidence of some relationship during the Late Preclassic period between the two latter centers, which leads us to speculate in a more precise manner about the seminal and dynamic developments that occurred prior to the birth of the Classic Maya civilization.

Moreover, and as mentioned earlier in this text, Chocolá extends along a line of sites with hieroglyphic monuments, including Tak'alik' Ab'aj, El Baúl, K'aminaljuyú, and Chalchuapa [Fig. 1-36], so we anticipate the presence of other sculpted monuments that will be revealed, besides Altar 1 which was discovered almost one century ago. Regarding the Preclassic K'aminaljuyú, it has been argued that writing represents two languages, Mayan and Mixe-Zoque (Kaplan n/d.: 343-351). Others state that the language of glyphs from K'aminaljuyú may be identified as Cholan. These questions about the development of writing may be clarified with new evidence obtained at Chocolá.

Important Middle and Late Preclassic Centers in the Southern Maya Zone

Fig. 1-36. The southern Maya area.

Besides the "cultural" issues, such as hieroglyphic writing and sculptural production, the socio-economical processes at Chocolá must be made evident through archaeology. The great and particular drive which assumedly led the way to the irruption of K'aminaljuyú in the great southern area was the control of the large

obsidian sources of El Chayal. If Chocolá was a secondary site within the great major sphere of K'aminaljuyú, as suggested, evidences should be obtained regarding the economic support derived from K'aminaljuyú's hegemony, just as it is observed in Chocolá regarding the obsidian in crafts workshops, as well as the evidence of regional and extra regional distribution of obsidian and other goods and products. Moreover, full and complete ideological and economical evidence should be found related to the "primary-secondary" or "core-periphery" sociopolitical system.

Relevance and problems of the investigation in the southern Guatemala area

Mayanist in the past have considered that the innovative answers to social challenges were developed in the area of southern Guatemala and the Altiplano during the Preclassic period, and that said areas provided significant stimuli to the Maya culture of the Classic period (Demarest 1986, 1988:340, Kidder 1934- 35-12, Morley, Brainerd and Sharer 1983: 63-77, Parsons 1986: 95-96, Riese 1988:67, Sharer 1994: 105-108, Sharer and Sedat 1987: 452-454). However, this approach has raised controversies in recent years in different articles that deal with the beginning of populations in the lowlands, and the emergence of social complexity in the region (Hansen 1994a, 1994b, Clark, Hansen and Pérez, n/d), while it was suggested that political and religious ideology was locally developed, although with foreign loans from the Olmec area.

Another arguable aspect has been the impossibility to define the nature of the Classic Maya state, which up to this day should be described like some sort of debate on whether the picture closest to reality is a model of a "paritary-state" or of a "core-periphery" state (Pyburn 1997:157). According to recent statements, the formation of a polity requires hierarchical settlement patterns (ibid.); moreover, in attempting to envision the state as a system of representation, "it is necessary to adopt a methodology that includes some kind of approach to a settlement pattern" (Wilson 1997:231). Therefore, one significant matter that still encourages research is how the emerging polities interacted with, and/or controlled, the minor states –a pattern accepted nowadays by most Mayanist researchers for the extremely extended Maya polities of the Classic period, even if the pattern of "swamp state" still seems to be referring to the relationships between many other Maya centers. The political systems with a large, dominant central site interrelated to secondary, "border" sites, are described in the very rich archaeological literature like "central" or "nuclear" and "peripheral", while Algaze (1993) in particular, describes the Mesopotamian hegemonies that reached extremely distant regions under a direct political control. Therefore, it is demonstrable that the investigation in the area of southern Guatemala and Mexico may be benefited and may offer richer evidence regarding such systems and processes by compared application.

Both in antiquity and more recently, researchers have shown that the southern Preclassic cultures had an extended permanency and were leading centers in the early Mesoamerican chronology. Traditionally, for instance, scholars have considered that the southern area had witnessed the birth of hieroglyphic writing, as well as the cult to stelae. It is known that broadly, there was an emergence of population centers that exhibited many of the traits usually considered as typical of the early polities, such as a relatively large size and monumental architecture and sculpture. Tak'alik' Ab'aj was creating monumental sculptures since ca. B.C. 1000 (Graham 1977, 1979), K'aminaljuyú, as well as Izapa, since ca. B.C. 700 (Parsons

1986, Ekholm 1969, Lowe, Lee and Martínez 1982), while Bilbao and Monte Alto since ca. B.C. 500 (Parsons 1967-1969, Parsons 1986).

In the early dates mentioned above, monumental, large scale architecture was being built at La Blanca (Love 1990, 1991). And this also happened at the even larger Preclassic and amazing site of Ujuxte, on the west coast, where a system of grids with formal “avenues” was uncovered (Love 1999). Even farther away, in the South Pacific of the Mexican coast, significant developments pointing to a complex culture occurred, as a part of the cultural matrix wherefrom at least some of the stimuli and history of the civilizations of southern area (Clark 1991) seem to have emerged; the investigation at important sites from southern Chiapas, ecologically a part of the Chocolá environment, is completing our knowledge of the Early and Middle Preclassic periods (Lowe 1977: 230, 1995; cfr. Clark, Hansen and Pérez, n/d: 17-18). Those sites, probably of Zoque speakers, show connections with the Maya culture both as beneficiaries and donors.

In spite of the numerous and useful projects that have been completed in the past decades, conducted in an attempt to approach such assertions and evidences, our knowledge of the southern Preclassic area still remains a vague amalgam of non-integrated but intriguing facts and their synthetic reality, a mystery. Probably, within the sphere of K’aminaljuyú in Preclassic times there was a constellation of significant sites, be them independent or included within its aegis, such as El Portón at the north, Chalhuapa at the south, and the largest and almost fully unstudied site of Chocolá, at west. El Portón and Chalchuapa, as well as K’aminaljuyú, have a good number of early hieroglyphic texts from the beginning of the Late Preclassic period, and consequently, prior to the first dates of the Classic Long Count; therefore, it is highly probable that Chocolá may also have sculpted monuments of an identical type and dates. As mentioned earlier, Chocolá has not been studied so far, with the exception of a few and inefficient efforts made several decades ago that have yielded more questions than answers.

Perhaps, in the archaeological empirical investigation of the southern area, the economic processes were somehow underemphasized, while clearly, such processes must have been extremely important, given our knowledge of the trade routes and the dynamic connections with the highlands, presumably functioning as a nexus with the cultures of the lowlands and with the coastal cultures of the west and south. Moreover, materialistic paradigms may emerge offering the most promising possibilities to understand the seemingly extraordinary significance of the southern area with respect to the development of some of the key traits of the Mesoamerican culture from the highlands. Therefore, the problems addressed to achieve a better understanding cannot be healed regarding the historico-artistical and ideological bonds between the southern centers, which are apparently quite different in the cases of Chocolá and K’aminaljuyú; an investigation is urgent not only to fill in the “voids” or historico-cultural blanks, but also to search for concrete evidences of manifestations of crucial economic processes, including evidence of craft manufactures and trade within the varied and heterogeneous southern Preclassic. Perhaps, the specific, most important question in this investigation, as of the evidence obtained from the southern area, would be: if its true that complex, significant societies were more or less pristinely emerging in the south, how, for example, was a state system manifested?, were they perhaps a network of primary-secondary linked center, or whey they connected through “peripheral cores”?

Conclusion: Research Program of the Chocolá Archaeological Project

The framework of the PACH research is oriented towards the search of the following: 1) early or seminal urban planning; 2) cores and peripheries within a "world-systems" perspective; 3) seminal forms of Maya ideology, art, govern, and hieroglyphic writing; 4) ethnic interaction in the process of culture production and the agency-structure praxis; 5) economic early or seminal appropriations and inventions of a production infrastructure, including intensive agriculture and monopolism and exchange of significant consumer goods. All of these theories and considerations have guided and will continue to guide our studies for a long time, to find explanations concerning the many mysteries of the Mayas of the southern area in the Preclassic period.

As noted, this site has sufficient physical evidences to show its particular significance in the region. However, we know absolutely nothing about what is hidden in the subsoil as a secret of such a glorious past, as no researcher has ever excavated the place in a serious and systematic way. To check some of the postulates brought forth by the heads of the project, a search for funds was initiated to carry out this project, which should begin with the survey and mapping of the place, to further approach the excavation works. That is why during the 2003 and 2004 seasons special emphasis was placed on mapping, to become timely acquainted with the topography, the geographical features, the presence of mounds and any other trait that may have influenced human settlements several millennia ago.

During over one year contacts were established with the authorities of ECA Chocolá so that they would learn about our intentions to conduct a study. They were explained the importance of archaeology to learn about the past of the modern settlers and the advantages the project could bring about for the present population in such different fronts as educational support, labor sources, and support for tourism [Fig. 1-37a-i].

In view of the fact that the ancient Chocolá is located equidistantly between K'aminaljuyú and Izapa, as well as very close to the sites of Tak'alik' Ab'aj, La Blanca and Ujuxte, we are certain that Chocolá also had a political bond with the greater Maya center of the Altiplano, K'aminaljuyú, and therefore it is very feasible that it had taken part in the development and the dynamics of the southern area of Guatemala during the Preclassic and Classic periods.

In the past decades, several archaeologists have outlined the close relationship that existed during the Late Preclassic period between sites from the Altiplano and others from the western coast of Guatemala (Schieber and Orrego 2002; Hatch 2003), based on isolated data obtained from sculptures, ceramics, lithics and architecture (Valdés et al. 2003). For a better understanding of such contacts, we believed that new corridors or mountain gorges were to be found, which had served as routes for communicating both ecosystems; thus, topographic and anthropological observations were initiated in the region, consulting maps and individuals, all of which led to our learning about the existence of an ancient commercial route that began at Chocolá and ended at Nahualá (Sololá), a village widely known for its rich agriculture and trade. This route also forks towards Cantel (Quetzaltenango) and towards Lake Atitlán.

This has led us to presume that the study of Chocolá may be more complex than originally thought, and that its location in one of the ends of the commercial route that connected the Bocacosta with the Altiplano responds to an intentional planning.

Therefore, we proceeded to add the major objectives of the first season. In 2003, our motifs were the following:

1. To gain knowledge on the location of the site, the distribution of architectural traits, and the exploitation of its natural resources, as of a wide survey program that would lead us to the preparation of a new map of the archaeological zone;
2. To conduct studies at a local level, to define the role played by Chocolá as a polity throughout its history, like:
3. a possible port of exchange;
4. a redistribution center, administrated during the Late Preclassic by K'aminaljuyú:
5. a secondary center with a greater dependency from Tak'alik' Ab'aj;
6. a center with a political category of its own;
7. To conduct studies at a regional level, identifying new centers and defining the scopes of Chocolá within the regional sociopolitical dynamics. This will allow to understand the type of relationship that existed between Chocolá and other leading centers such as K'aminaljuyú, Tak'alik' Ab'aj and probably as well, Palo Gordo and El Baúl.

In 2004 other focuses were added, guided by specific and highly significant findings made in 2003 concerning the presence of a sophisticated water management system and the possibility to finally understand Chocolá's rise to a high social and cultural level through the ancient exploitation of the agricultural wealth in the area, and specifically, through the intensive growth of cacao, a very significant product throughout Mesoamérica. Therefore, this season we sought for results achieved through the intensive excavation of Cartesian units by following the below axis:

1. To investigate the specific possibility of the special utilization of the overabundance of water in Chocolá in the form of a sophisticated water management to water the fields, and the intensive grown of cacao. This activity could explain the rise to social and cultural complexity of the ancient city;
2. To investigate presumably administrative structures.
3.

In short, focusing on such subjects during the second season, a number of dramatic discoveries led us to adapt and modify our proposed plans, while the findings, however, gave us the opportunity to make progress in the field of hydraulic and agricultural investigations, offering us as well new ideas on the ancient city that we had not anticipated.

Fig. 1-37a. One of the figurines recovered by PACH.

Fig. 1-37b. Offering, southern area.

Fig. 1-37c. Vessels of the offering, southern area.

Fig. 1-37d. Tripod vase, Mound 15, northern area.

Fig. 1-37e. Large bowl, Structure 15-1, northern area.

Fig. 1-37f. Ceramics, private collection, Chocolá.

Fig. 1-37g. Early Preclassic sherds.

Fig. 1-37h. Middle Preclassic sherds.

Fig. 1-37i. Late Classic sherds.

Chapter 2

On the Threats and Risks to the Archaeological Remains at Chocolá and the Project's Response During the 2004 Season

Jonathan Kaplan

The first field season in 2003 revealed to PACH a number of necessities and desirable changes that had to be implemented for the protection of the archaeological relics. The efforts continued during the 2004 season, while simultaneously, new problems and dangers became apparent. The most obvious threat was the construction of houses placed at the base of the prehispanic structures, with the probable destruction of archaeological urban contexts and most certainly, portions of ancient buildings. To emphasize the pressing need to protect the cultural relics, PACH, through the IDAEH, appealed to the Guatemalan government, and with the data derived from the survey and mapping accomplished by the Project, the declaration of the site as a part of the nation's cultural patrimony was petitioned. Other less urgent problems and errands will be described below. The conversations held by the Project Director with Lcda. Yvonne Putzeys Gonzáles, from the Department of Prehispanic Monuments, led to the decision that the IDAEH and the Project developed jointly a concrete plan of alternatives for sustainable growth and for preservation in the modern village of Chocolá. Permanent contacts with local and national authorities will give way to more promising alternatives; Don Diego Macario Coc, municipal mayor of San Pablo Jopopilas, with jurisdiction over Chocolá, has continued to meet with the members of the PACH team and has expressed his will to cooperate in any possible way.

Briefly, the problems derive from the economic situation created by the models of the conquest, of the colony and the post-colony, and recently of globalization, characterized by huge agro-exporter rural establishments that maintain people in utter poverty facing obstacles of a structural and infrastructrural nature, in the pursuit of their daily survival. This relationship of economic dependence with production characteristics of raw materials has been historically exacerbated by Guatemalan politicians, interested in preserving the *status quo*. The Project Director has always maintained that scientific investigation cannot be alienated from issues related to the well-being of the local population. The help of the people for protecting the archaeological remains is necessary; therefore, we must explain to them not only why the investigation is important in terms of world patrimony, but also how the studies will produce specific and concrete advantages for them while simultaneously knowledge is gained. The Project hires many people from the community, and therefore there is a concern for the health of its members. We, as Project members and in spite of our status of scholars, lack abundant cultural, ethnographic and historical information on Chocolá and its environment; that is why we encourage an exchange of knowledge, notions and values with the people of Chocolá. Clearly, the impact of this all, is to find a way so that the Project does not remain as the sole judge of the value of history and knowledge, as our aspiration consists in integrating our work with the lives of local people for the good of a model of sustainable growth and for the preservation of the cultural and biological diversity in the region.

The absence of basic services such as the management of garbage characterizes the situation of neglect and poverty of the population. The lack of resources shows in the lack of hygiene and health, mainly evidenced by water contamination, caused in turn by the absence of an adequate system of waists disposal whish results in the contamination of the water sources. Certainly, the shortage of financial resources and the difficulties involved in the obtention of loans are the causes that maintain more depressed the daily activity of the people of Chocolá. In addition to the restricted individual productive capacity (most of the farmers own a parcel of 20 ropes) and the shortage of cash that averages Q12.000 a year, the people of Chocolá lack any sort of flexibility to take care of health emergencies or education programs. It is within this scenario that the Project attempts to conduct a "neutral" scientific study program regarding the conditions of a higher-culture society in the past, whose intellectual products will be of scarce relevance for the modern inhabitants of Chocolá. Understanding the living conditions of the modern people of Chocolá is crucial for the success of the Project, which continues with its efforts towards creating alternatives for improving the lives of the villagers.

Garbage and its management

The present problem with the garbage is affecting the project, as it environmentally degrades the village, exerts an increasing pressure over people's lives and deteriorates the archaeological remains in general. Obviously, the lack of a garbage management system damages the health and the lives of the local dwellers. In addition, it damages the possibility to develop alternatives for a sustainable growth. With this I mind and in addition to the fact that the production of coffee yields increasingly poorer revenues, the Project has approached the villagers by means of assemblies to emphasize the importance of ecotourism and archaeology developed for exhibition. The Project has stressed to the people the need to show a clean Chocolá to the visitors from other regions. In 2003, PACH has insisted with ECA on the necessity of having a garbage collection system. In 2004, the personnel of the Project joined school authorities to create a conscience among the students about garbage management and how the residues should be deposited in containers placed at important places in the village.

Health and Well-being

People from Chocolá live day after day in a state of crisis, not only due to their struggle for the most elemental survival, but also as a consequence of this absence of health and hygiene. Like we said, many of these problems may be solved with a project for handling solid residues, because many recurrent diseases are the consequence of contaminated food and water. The Project is trying to raise funds to conduct feasibility studies to define a way to consolidate programs for the management of solid residues and the management of drinkable water. In turn, such studies will help to obtain the necessary resources to complete the required improvements. In 2004, with the mediation of Dr. Juan Antonio Valdés and Lic. Oscar Gutiérreaz, members of the PACH team and members of the school of medicine of the University of San Carlos provided free medical care for one week,

while Diana Belches, an archaeology student and professional odontologist, took care for several weeks of the needs of many members of the community. We are aware that these are but small efforts compared with the dramatic needs of the people of Chocolá, but the Project is still in the pursuit of structural improvements considering the possibilities at hand, as the major portion of the funds available are to be applied to the investigation. However, hygiene and health are a part of our primary concerns.

Education

Like we said, the argumentation around the benefits that scientific research could bring to the local inhabitants is not an easy task. Their history and our necessities, our history and their necessities seem incompatible. But education is a part of the process that seeks to integrate the cultural and biological diversity for a sustainable growth of the world archaeological patrimony that Chocolá represents. Through a collaboration program based on volunteers, the Project is creating scholarships to send children and young persons to schools and to the University of San Carlos at Mazatenango. Besides, it continues with its educational program on archaeology and cultural patrimony in schools and community assemblies.

Urban planning

The town of Chocolá is growing, but in an unplanned and risky manner, which in addition to harming the quality of life at Chocolá, is damaging and destroying the archaeological relics of its subsoil. With no resources for a planned development, with no financial flow, with no time for education, and with no resources for migrating to other countries, the people of Chocolá have no other choice but to struggle for their survival with a bankrupted patrimony, such as the poorly paid coffee crops and their small individual plots. Even in a situation like this, there is an apparent populational growth and an accelerated urban development that generate the destruction of significant archaeological features. The rich biological resources of Chocolá together with its archaeology may represent an important source of income for the village, provided the course is strategically changed in regard to urban planning and development patterns. The Project is promoting schemes through which the rich archaeological resources of the 774 individual plots may be protected, and an economical viability established for the owners. Like we said, PACH is working with IDAEH to declare the archaeological site of Chocolá a part of the Cultural Patrimony of the Nation, being particularly careful with the incomes of the plot owners, which should not be affected. The possibility of an exchange of plots in those places with monumental remains of prehispanic architecture is being considered by the mayor, *señor* Diego Macario Coc. Beyond this possibility, the Project is trying to find private investors to undertake projects of development and touristic infrastructure at Chocolá. Such efforts, for the time being, are preliminary, but we hope to make them come true, and thus help to save a heritage that is significant for the people of Chocolá, for Guatemala, and the world.

CHAPTER 3

Survey and Mapping at Chocolá: the 2004 Season

Juan Pablo Herrera Sánchez

Introduction

The archaeological research works conducted during the 2004 season have attempted to achieve the following goals: 1) to continue with the survey of the archaeological site of Chocolá and to try to define the boundaries of the prehispanic city (Valdés et al. 2004, Herrera n/d); 2) to establish a system to advance with the site mapping within the already studied polygon, in other words, to refine the mapping of specific architectural groups with the purpose of defining the settlement pattern or urban design through the use of twelve permanent and very precise benchmarks, systematically distributed across the site along its north-south axis and along its east-west axis, to maintain a spatial relationship between different areas in the framework of one single reference system; and 3) to initiate the important long-term task of creating a topographic map of the entire site.

Figure 3-1 represents the schematic results of the mapping efforts accomplished during the 2003 season; how this map was finally produced requires some explanation. During the 2003 season, teams with GPS instruments took UTM readings of three types of features: dots, lines, and areas. The indicated ancient constructions shown in the map are an idealization of the areas mapped in circumference or around the present mounds, platforms, etc.

During the present season the reconnaissance was expanded to 10 km2 [Fig. 3-2], while the number of mounds ranging from 0.50 to 25 m in height and clustered in open or enclosed plaza groups, climbed to 80. Based on this we found ourselves in a position to hypothesize about the possible use and functions of the different areas located across the site. For example, where were we to look for the elite residential areas (Valdés et al. 2004), the administrative centers, the possible growing fields or the workshops areas.

Survey methodology

To find these traits, during the field season 2004 several GPS units were used, as well as a GPS GeoExplorer XT, for they provide a greater accuracy and allow for the placement of new benchmarks wherever they are needed. The reconnaissance of the ancient city was approached in three stages simultaneously implemented according to a previous planning, which allowed to cover an area of approximately one kilometer from north to south, and 2.5 kilometers from east to west. The first stage was accomplished by a team of two people; one governed the GPS Trimble unit, and the second was in charge of the data recording, thus covering areas

defined in the map on a scale of 1:50,000. The second stage of the survey comprised systematic transects, with lines of ten people 5 m apart from one another. In each team, one person was in charge of taking notes in our field cards, including every trait discovered with its corresponding UTM coordinates, which were constantly incorporated into the GPS memories. The third stage consisted in the verification of the data recovered in each transect and the annotation of any further detail regarding the shape of the structures and other relevant traits. The survey works were made possible thanks to the assistance of students from the University of San Carlos, of volunteers from the Earthwatch organization, to the collaboration of Dr. Fred Bove, who facilitated the use of a Total Station, to Mr. Gordon Baty and the Trimble company, who contributed donations that allowed us to afford the GPS device, and to the University of New Mexico, through which could have the ArcGIS software at our disposal.

Data processing

A Pathfinder and ArcGIS software programs were used to process the information captured. With them, we were able to obtain more than minimal data in UTM coordinates and mappings showing the shape of the mounds, while we were also able to define different constructive complexes and urban spaces such as plazas and accesses between structures.

The Pathfinder program is compatible with ArcGIS, and the information captured with the Trimble GeoExplorer units allows to be transferred to the ArcGIS toolbar in the form of areas, lines, and dots. The graphic options of the program allowed us to assign different symbols to each one of the traits. In the future, as we gradually refine our data base with the information originated in the survey and mapping, we shall be in a position to obtain individual or combined layers for showing the data and for revealing pattern relationships within the site.

For the moment we are able to speculate about what the relationships between the discovered findings represent. With this graphic tool it is possible to anticipate places where to investigate and broaden our understanding of the settlement pattern of this city. The capacity to see on a scale and with precision the different forms mapped through the GIS program, allows us to understand the spatial distribution of the buildings and their reciprocal relationships, which has resulted in an important tool for the archaeological surveys at Chocolá. We must outline that in order to achieve a better understanding of the site the adjacent communities should also be surveyed, as during other visits to these places, we could detect evidence of human activity in the area.

During the 2003 season, 50 benchmarks were set at strategic points throughout the site, and thanks to the support provided by Dr. William Poe, of the Sonoma State University, California, twelve of them could have their coordinates taken with a millimetrical margin of error (Poe 2003:3) [Fig. 3-3]. The strategic use of these benchmarks consisted in their forming the spinal column of the topographic map of the site, a work initiated during this season; therefore, we concentrated in planning and defining how this activity could be approached.

Keeping in mind that one of this year's objectives consisted in excavating areas with possible residential evidence, we decided to initiate the mapping of the site with

Mounds 5 and 15, using benchmark 50 (BM) as a guideline for the first, and BM 6 for the second. With BM 6 we had BM 4 calibrated, which was the one that governed all the excavation references in Operation 4. Said data were annotated in a base map on a scale of 1:50,000 where all our points of reference are recorded.

Topographic work

The topographic mapping of Chocolá was accomplished with the use of a Topcon 220 total station equipped with a TDS Data Collector [Fig. 3-4]; besides, we are using the program Surfer 7 to process and edit the information, and with it, we may create images that allow us to analyze the results from different viewpoints [Fig. 3-5]. We counted as well with the collaboration of Carlos Chiriboga, from the Universidad del Valle de Guatemala, who collaborated in the topographic efforts this season.

Among the advantages of the topographic mapping we may say, first, that it provides a general map of the city outlines with all the artificial or natural alterations that are found in it. Second, that it allows to obtain detailed individual maps of the areas where excavations are being conducted, thus increasing our knowledge about them; and in the third place, it gives us the chance to produce a more precise record of the artificially modified areas and provides a guideline for its further approach.

With the topographic mapping the following has been achieved: first, we could draw very accurate grids in the areas where excavations were conducted; second, we saw that we could hypothesize regarding what the different superficial alterations shown in the maps could represent, and third, it allowed us to speculate around the building patterns between the northern area and the southern area.

We think it is relevant to say that the results obtained have represented quite an effort, because the gear posed a number of inconveniences and so did the terrain, having been the cause of slowness in our work at some stages of the elaboration process. Among such handicaps we may mention for instance the sensitivity to water, given the fact that this season unfolded during the wintertime and the mapping works had to be interrupted whenever rain began to fall; another situation had to do with the green cover of the terrain, as most of the times it came between the station and the prism, forcing us to implement strategies to overcome that major obstacle; at times, we were able to record the elevations only by increasing the height of the prism so that it would exceed the height of the vegetal cover, and occasionally we were forced to set the device as close to the surface as possible and to adjust the prism at the lowest possible position to help us envision points below some coffee plantations; a third strategy consisted in opening transects, as there where none of the first two strategies seemed to work, the most practical thing to do was to cut branches and leafs off along a predetermined direction. With this action we finally succeeded in obtaining the desired data.

A different way of surveying

During the 2004 season we worked with a Geoscan Research FM250 Fluxgate gradiometer, which helped us in the reconnaissance by providing information on the different concentrations of iron it detected in the subsoil.

The methodology developed for the utilization of the gradiometer, in charge of Dr. David Monsees (see Chapter 4), comprised reticules of 20 x 20 m, within which systematic transects were set out to record readings each 0.50 m, until the above mentioned area was covered; like we said, the gradiometer detects iron concentrations, but we should add that just as it detects a stone element, it will with a greater precision detect any metal object found on or below the surface; the interesting thing in this situation is that all readings are exported to the Geoplot 3 Software program, where all data are processed, resulting in the obtention of concatenated images of the entire grid; they in turn are analyzed by the technician who observes patterns that undoubtedly help him to differentiate which readings come from metals, organic matter, or in the case of Mound 15, of stone alignments. Clearly, this technology is useful as a guideline to determine where excavations should be conducted, and it increases the possibilities of finding traits which in turn may expand our archaeological datum.

Conclusions

The manner in which the topographic map is being built provides us with the option of a greater flexibility regarding the mapping of any part of the site that may be found of interest, through the use of the benchmarks located in most parts of it. The creation of a basic map in UTM coordinates facilitates the development of works in sections that may later on be linked to one another, thus giving way to one single map of the entire place. The use of GIS and GPS technology allows us to save time and to encompass a larger terrain, achieving with these results sufficient information on where to focus our attention, as well as all of our research activities. Besides, the GIS technology represents a highly potential tool for the analysis of the different areas with human activity within the 10 km2 studied so far, as well as for the physical arrangement of the architectural forms on the surface. By combining advanced survey and traditional mapping methods, and with the additional help of GIS such as the GPS mappings and the transects, we were able in a short period of time to obtain a radiography of the skeleton of ancient Chocolá, which together with the different research activities carried out, have been of help to provide life and color to the history of this great prehispanic city.

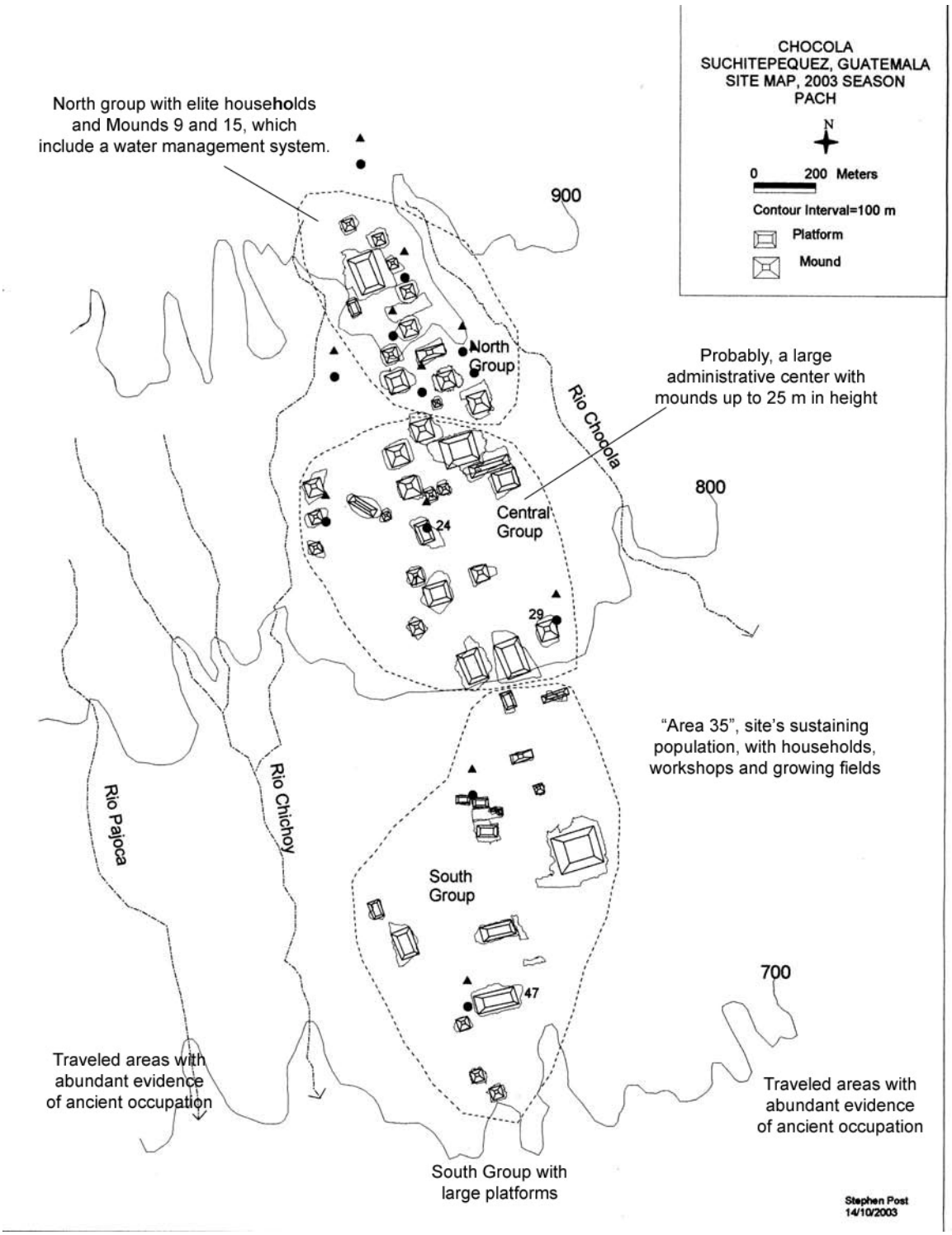


Fig. 3-1. Schematic map drawn up during the 2003 season, indicating the three speculative functions.

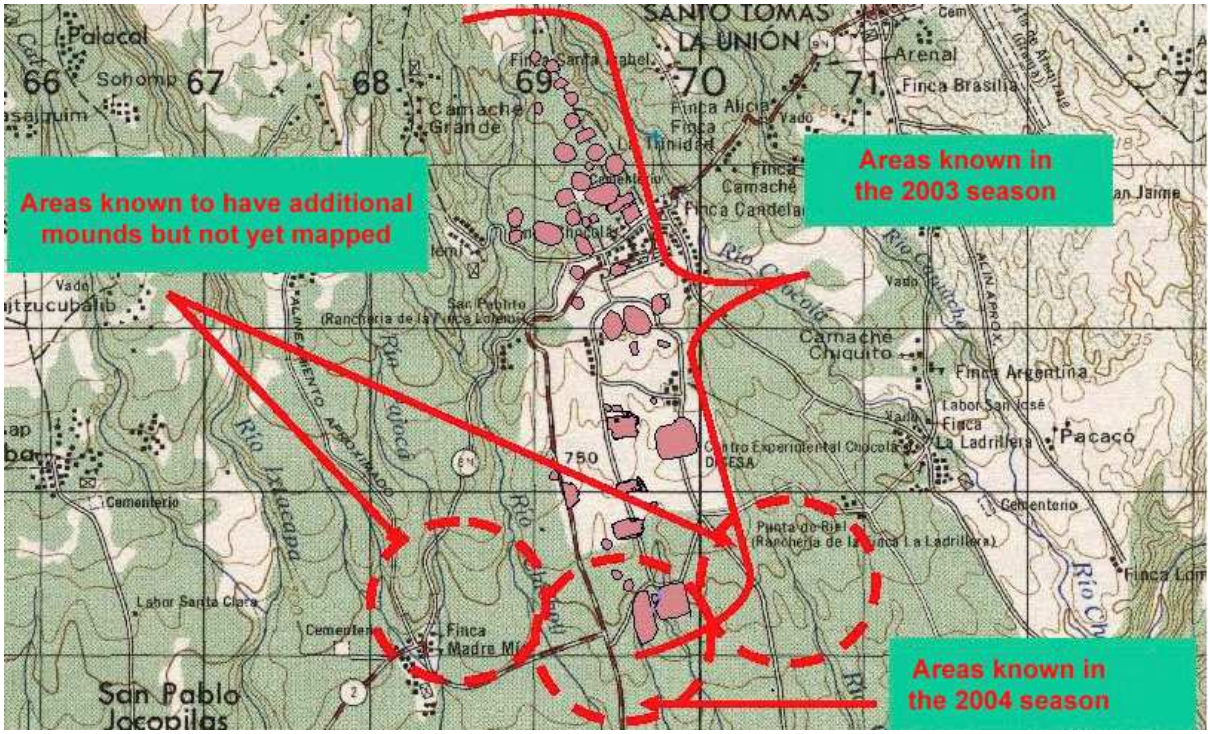


Fig. 3-2: (a) ESRI Map of the 2003 season showing occupational areas (mounds, etc.); (b) additions in the 2004 season.

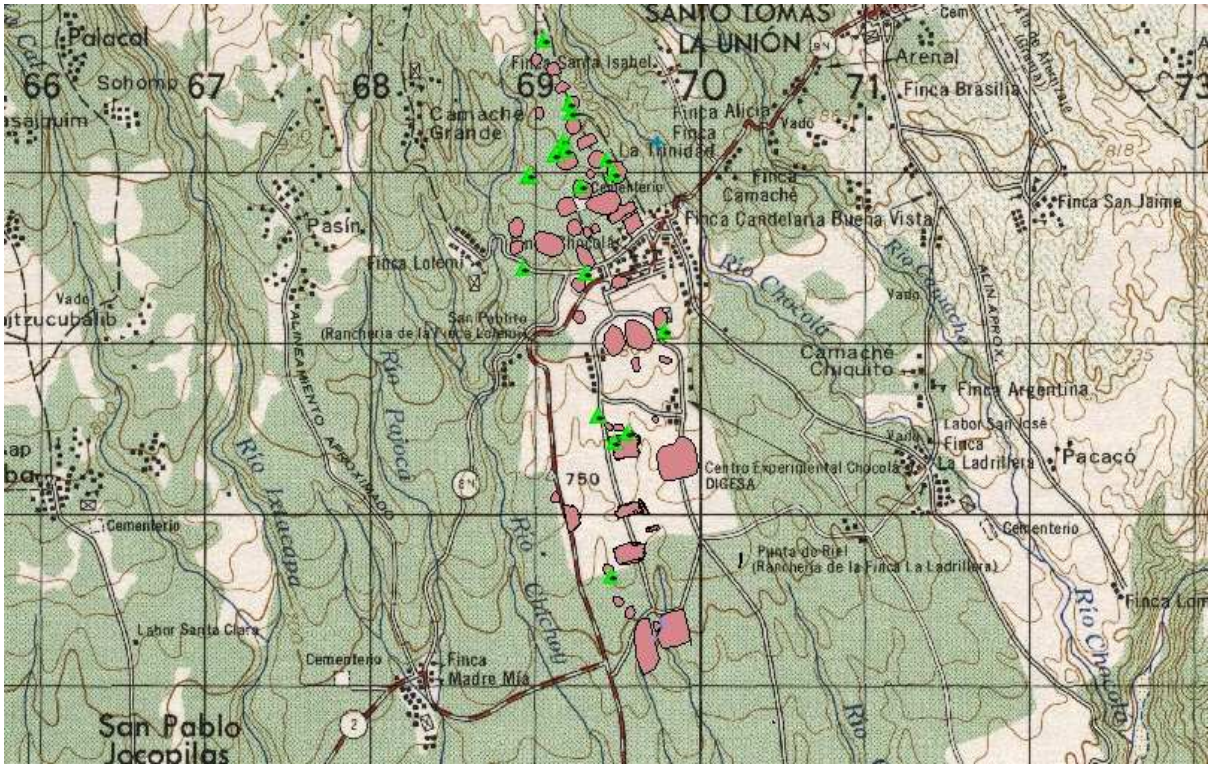
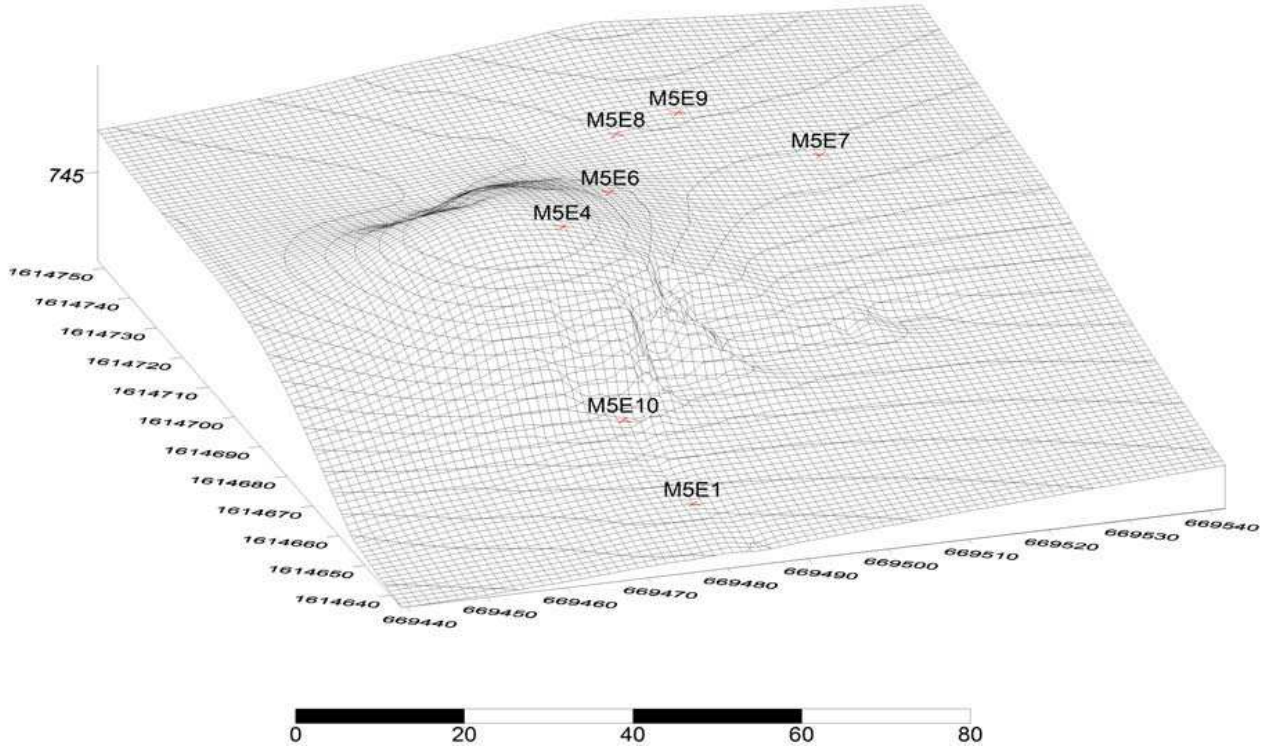
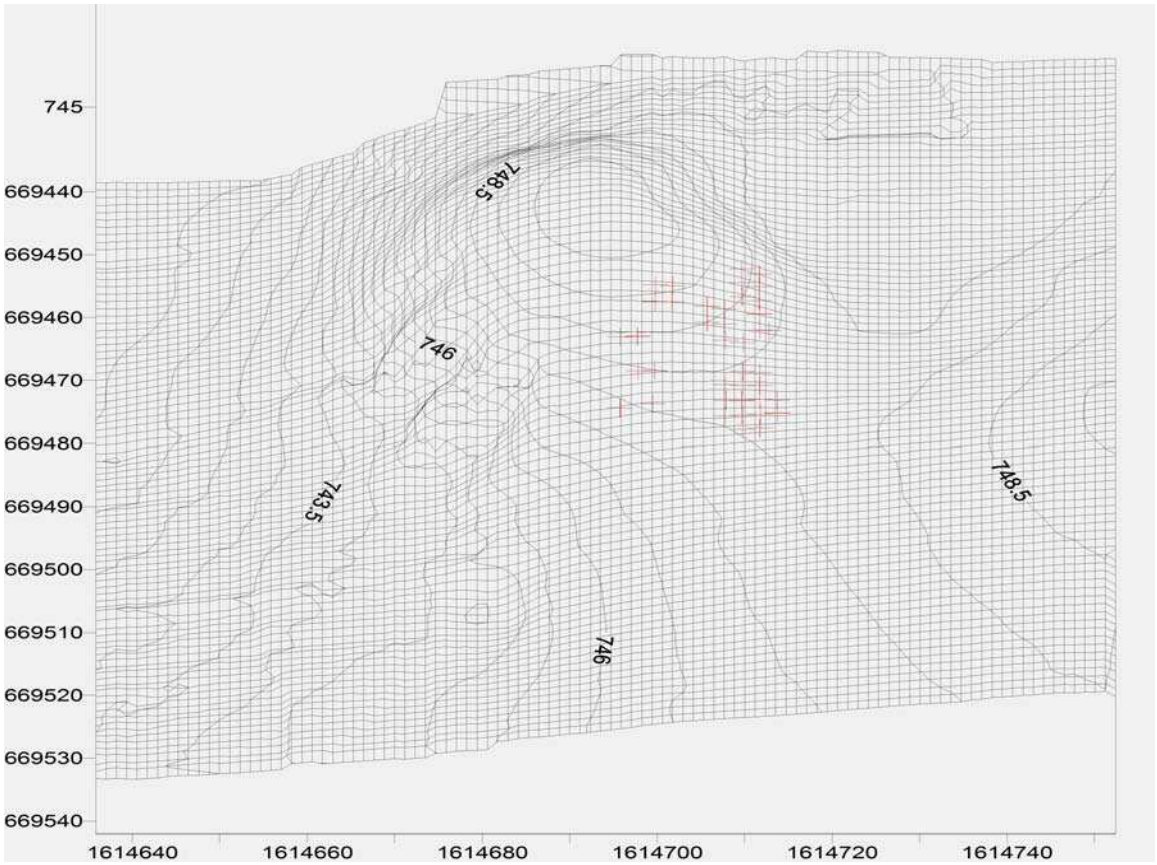


Fig. 3-3. Benchmarks, PACH 2003.

Fig. 3-4. The Total Station.





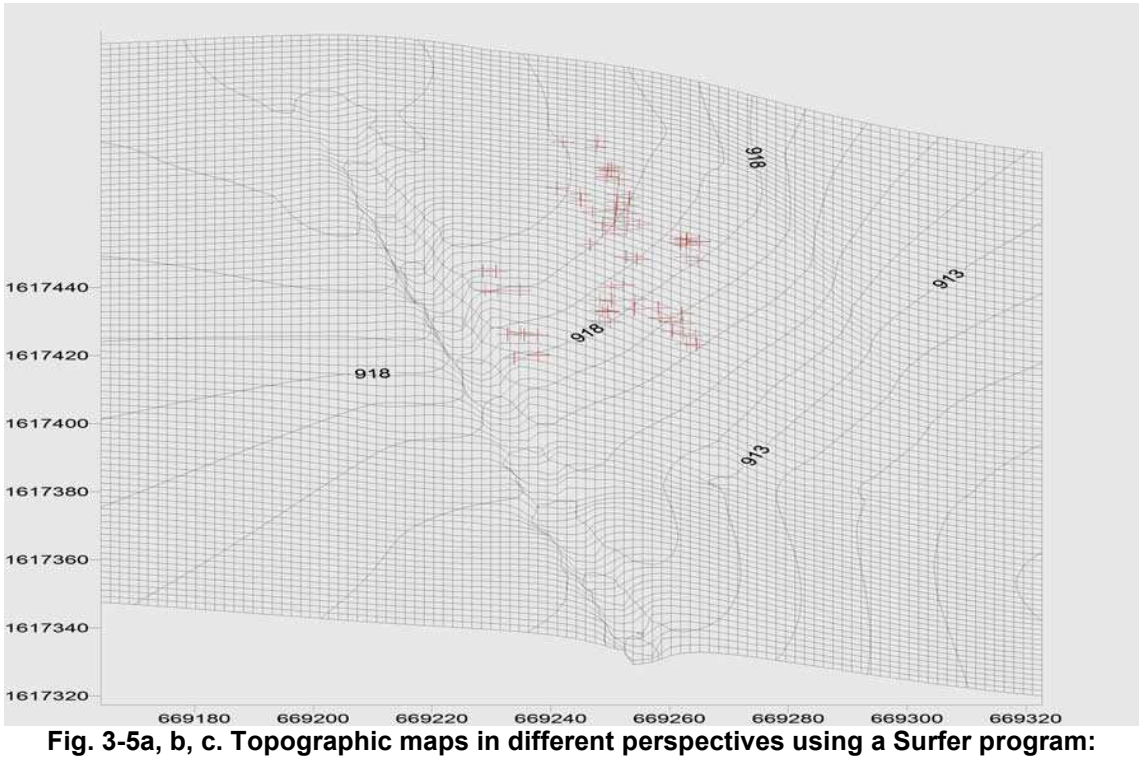


Fig. 3-5a, b, c. Topographic maps in different perspectives using a Surfer program:
(a); Mound 5;
(b) Mound 5 showing the excavations in Structure 5-1 indicated with red crosses;
(c) Mound 15.

CHAPTER 4

Gradiometric Survey, PACH, 2004 Season

David Monsees

Survey Area

The geophysical survey area is located in Chocolá, Suchitepéquez, Guatemala. The archaeological site lies under and around the small village of Chocolá, presently inhabited by some 8,000 people. Both the archaeological site and the village, of Maya speakers, are found in the narrow region of the northern portion of the Suchitepéquez department and between the rivers Chocolá and Chichoy, at the immediate foot of the mountain range that houses active volcanoes to the north and wide plains that descend towards the Pacific Ocean. Everyday, the fumaroles of the volcanoes of the northeast and southwest are visible. Most of the land in the region is occupied by small plots of coffee plantations as a part of the collective efforts of the Associative Peasant Enterprise *(Empresa Campesina Asociativa)* ECA Chocolá, an entity that congregates these individual efforts for the commercialization of the product. Other plots are planted with corn and several different crops that are grown for local or domestic consume only. This characteristic of the property, divided in small plots, restricts the mapping efforts. To this date, the archaeological site has been mapped in an area of 2 x 5.5 km (see Chapter 3), and it seems to represent ancient occupations from the Middle and Late Preclassic periods to the Postclassic period (B.C. 900 to A.C. 1500). The remote sensing probes attempted to confirm the success of gradiometry in the geological setting of Chocolá, to identify interest points for excavation, and to map through the survey the traits and structures found in several parts of the ancient city.

Conditions of the field

The soil of the area consists in a very productive layer, rich in volcanic ash and igneous stones, as well as layers with varied proportions of iron (the *taxcal*, a paste of decomposed muds of an impermeable nature was used here by ancient inhabitants to build underground, stone-faced water conduits. Naturally, it is found in the subsoil and the hues range from yellow, red and orange and then turn to gray, blue tones).

During the survey works we had moderate to heavy rains, typically in the afternoon, but in the morning, the water from the previous day was almost entirely drained, in a way that the gradiometric survey could be carried out from 7 am to 2 pm. Due to the magnetic nature of the subsoil at Chocolá, we had to build a 1.60 m platform or elevated chair made of fastened bamboos and planks to lift the machine and separate it from the ground during calibration [Fig. 4-1].

Fig. 4-1. Machine being calibrated.

Most of the fields were sowed, making it necessary to use the swaths of coffee trees or corn as grids for transects [Fig. 4-2]. Coffee trees are planted at a distance of around two meters from one another. The distance for corn is of about one meter. The width varies between the different swaths and the orientation of the cultivated fields change frequently, making it difficult to locate the anomalies and forcing us to use the spaces between the swaths as a grid. Even though the fields free of crops were cleared with *machetes*, among the coffee plants we would regularly find shadow trees, an impediment that represented an added difficulty to our attempt of reducing data defects.

Fig. 4-2. Transects.

Survey methodology

The magnetic survey took place during the first three weeks of June, 2004. The size of the grids varied depending on the area to be studied. Four areas were surveyed: 1) the initial grid *(retícula inicial),* (RI) in Mound 15, a 20 x 20 m grid established by total station in an old coffee plantation and in the adjacent *milpas* at the north and west of the Mound; 2) in "Area 35"[1], fully covered with corn, and a relatively young adjacent coffee plantation, easy to explore; 3) in Mound 5, a mature coffee plantation where we had to clear or kill many plants. The orientation of the traverses –from north to south approximately and then from east to west approximately- was forced by the orientation of the swaths. The branches of the coffee trees forced us to survey at a distance of two meters between them instead of only one meter, which is the desirable distance. All readings were collected at regular intervals, with eight readings per each meter traveled. In the grid of Mound 15 and also in other cases where there was space enough to walk on a straight line, tapes with marks placed each half meter were used to control the position and thus facilitate the data capture at regular intervals. The device used was a Geoscan FM fluxgate gradiometer operated at a sensitivity level of 0.1 nT (nanoTeslas). The distance traversed in the three areas represented approximately 70.000 data points collected.

The magnetic data were transferred to a laptop using a Geoplot 3 software program. The data processing included: 1) the clipping to three standard deviations to diminish the distortion of high frequency spikes in the data, and to intensify the archaeological traits that were weaker for whatever the reason; 2) a "zero mean grid" control was applied to eliminate the discontinuities at the edge of the grid; 3) "high pass" filters were used to eliminate the large scale tendencies and to preserve the slow scale spatial details; 4) interpolation to a uniform number of data points on the X and Y axis (four per meter) to facilitate visual interpretation. Besides, other techniques of filtering and analysis were applied, including "zero mean traverse", "low pass filtering", "relief mapping", "absolute function", "median filtering", and the "clipping" of data to improve the understanding of the magnetic anomalies. Once processed, the data were exported to the Surfer 8 software program to print the maps and other graphics.

Results and interpretations

The four north-south surveyed areas are described. The area to the north possibly consisted in elite residences, while the central area served an administrative function, and the southern area housed common people dwellings, workshops, and intensive agriculture. Mound 15 and the *milpa* adjacent to the north are located in the northern area, "Area 35" is located south of the administrative area, and Mound 5 is located at the southern edge of the latter.

[1] Name of the area with small and low mounds identified as 32-35, rich in surface artifacts.

1. Area at the north of Mound 15

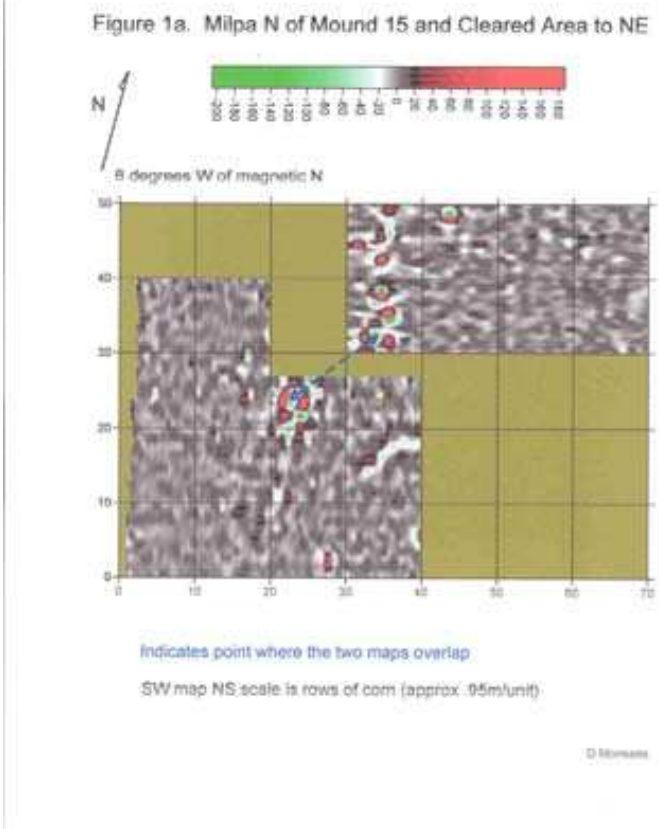


Fig. 4-3a. The milpa, north of Mound 15-1 and the cleared area to the northeast.

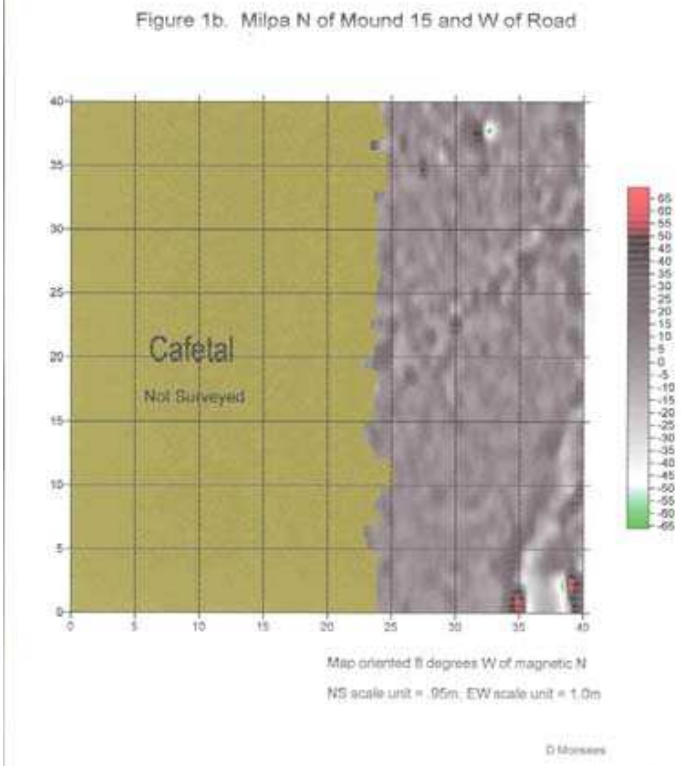


Fig. 4-3b. The milpa, north of Mound 15-1, west of the road.

Figure 4-3a shows the results of the magnetic survey accomplished in the area at the east of the road. Figure 4-3b shows the results obtained in the area at the west of the road. The east-west traverses shown in these two figures were restricted because of the corn swaths, and correspond to the southwest section of figure 4-3a and the entire figure 4-3b. The average width between the corn swaths was of 0.95 m. Once the obstructions were cleared in the northeastern area shown in figure 4-3a, the area was crossed in traverses oriented to the north and separated by a distance of one meter. In the maps of figures 4-3a and b, around 21.700 data points are represented. Figure 4-3c repeats figure 4-3a, but with drawn-up lines as a part of the analysis.

The magnetic field data represent the deviations of a given full body. The areas with archaeological or geological anomalies are deviated from the hypothetical gentle uniformity of the field. Objects with no magnetism yield negative signals and are shown with lighter colors in the maps. The objects with a magnetic susceptibility or a remnant magnetism yield positive signals, and are manifested with dark tones. Magnetic susceptibility is caused by the concentrations of ferruginous molecules. Remnant magnetism is caused by the heating of different materials at a temperature that exceeds the Curie point and their subsequent cooling within a magnetic field –such as that of planet Earth-. This process aligns the ferruginous molecules in the material and yields a permanent magnetic field after the cooling.

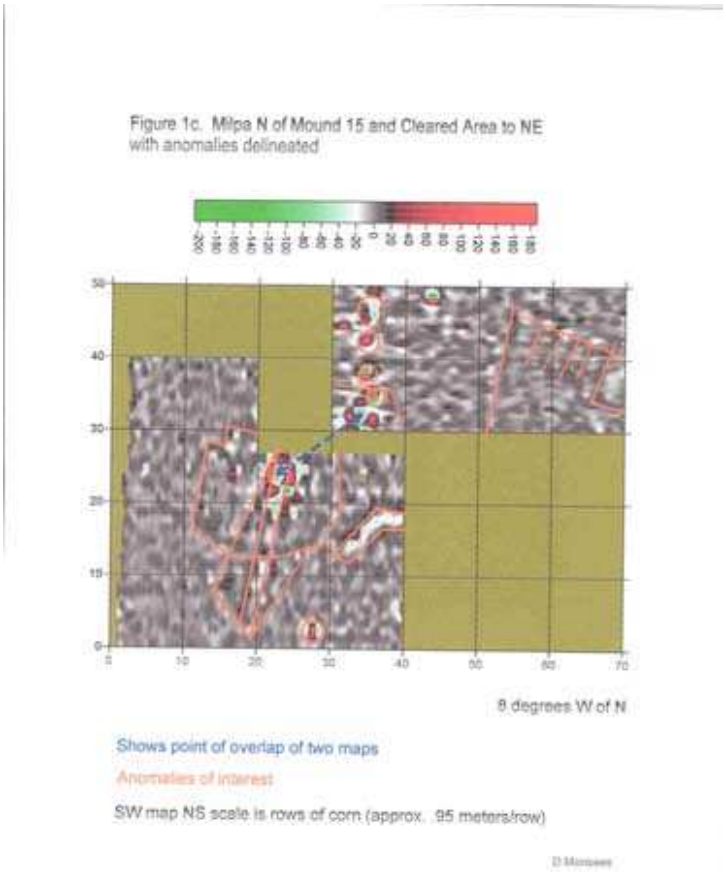


Fig. 4-3c. The milpa north of Mound 15-1 and the northeastern area with its delineated anomalies.

The stronger the presence or absence of magnetism, the darker or lighter the hues in the map will be. Modern iron and steel produce, as a consequence of magnetic susceptibility, a very strong bipolar field with positive and negative poles that distorts the field and darken all the surrounding readings. The concentrations of organic material from middens, postholes, or water wells, reflect the concentration of ferrous molecules (magnetic susceptibility) as a positive anomaly. Remnant magnetism may produce a very strong bipolar field with an aspect similar to iron, particularly in the case of objects or traits that were subjected to high temperatures, such as igneous stones, hearths, or burnt structures. Soils that have undergone change by the action of fire, ceramic sherds and bricks, will all exhibit remnant magnetism.

In figure 4-3a the interesting anomalies are indicated with orange, while in fig. 4-3c the blue arrows show where the milpa (southwest map) and the cleared area (northeast map) overlapped and joined together. Differences may be noted in the traits due to the interpolation used in both maps, and the greatest density of data is centered in the lines of the southwest map and the columns of the northeast map. The stained aspect of the maps derives from highs and lows of less than +/- 25 nT; this is probably the result of cutting trees and sowing in the past, emphasized by the type of filter used in the procedure, and maybe, of the geology of the area. The anomalies that are very probably cultural are located at 13-15 m NS and 7-8 m EW, in a cluster of extreme bipolar anomalies that extend along a northern direction up to the edge of the map, and begin in E20-26/N18, to continue north. We must point out that the northeast map is displaced 10 m to the east. Possibly there is an indication of a structure surrounded by a platform marked by a positive ring of orange color. Flagstones or possible monuments are also indicated. In the eastern portion of the northeast map, the almost parallel lines that run along a north-south direction and end up north with a row of east-to-west negative points (light in color), may possibly represent a trail to the Chocolá River, though we should not leave aside the possibility that they were possibly a consequence of plowing, because when the German rural establishment was there, these lands were used as sugar cane plantations. The nature of these traits must be verified to define the meaning of the anomalies. The curved anomaly with an extreme bipolarity that extends from E32/N13 to E40/N18 may probably be indicating a dam built with igneous stones. We come to this conclusion because the anomaly is consistently positive at the north and negative at the south –we feel that should this structure be a cultural trait, the stones with remnant magnetism would be randomly oriented, as was confirmed in the case of Mound 15's structure. The anomaly showing magnetic extremes in E28/N2 may probably represent a common stone, modern metal, or a monument.

Fig. 4-3b does not seem to show anomalies of a cultural nature. The anomalies observed in the lower right corner probably indicate surface materials deposited during the construction of the road immediately east of the milpa. The more or less lineal anomalies that extend across the map along a southwest-northeast direction, beginning approximately in N15/E25 and ending approximately in N35/E40 could be cultural traits, though more probably they were caused by the erosion of the terrain.

2. Mound 15

Fig. 4-4a shows the full prospection of Mound 15. Prior to beginning, most of the area comprised in E20-40/N30-50 was entirely cleared, mapped with a total station, and staked at 2 m intervals. The areas at west and east were cleared preserving the

coffee plantations and the grid was established using a compass and a metric tape. All traverses were 1 m apart and run along a south-north direction. Figure 4-4a shows more than 10.000 data points. The initial grid *(retícula inicial)* (RI) of 20 x 20 m was mapped twice, to guarantee precision in the methodology.

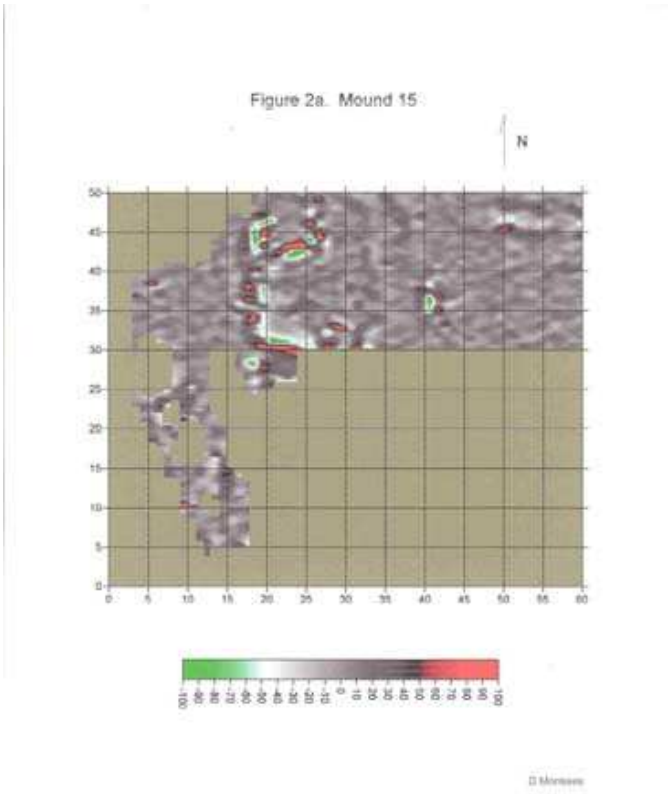


Fig. 4-4a. Mound 15.

The excavation immediately after the mapping produced information for the interpretation of anomalies in this and other areas of the ancient site. Figure 4-4b outlines the interesting anomalies in the map of Mound 15. Maps display a clear code of intercrossed lines that run along a west-southwest-east-northeast and northwest-southwest direction, which by means of the excavation, proved to be old plow marks scattered in positive areas, probably indicating contemporary plantations.

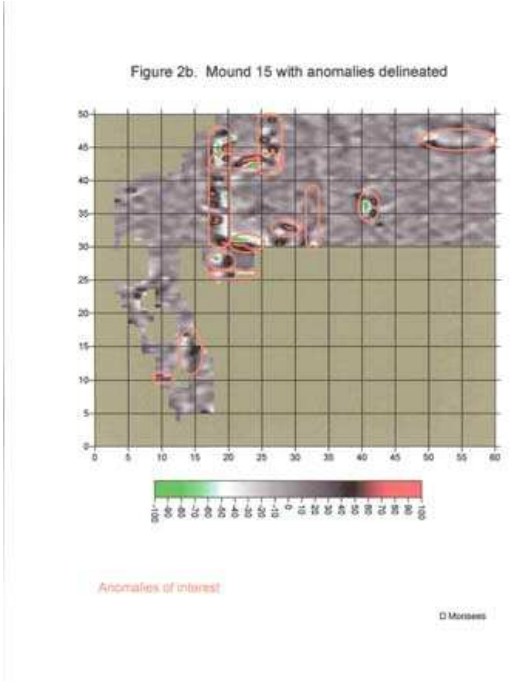


Fig. 4-4b. Mound 15 and delineated anomalies.

The area at the northwest of the initial grid (RI) of 20 x 20 m shows extreme positive and negative signs. At the beginning we thought that the great ellipsoidal anomaly observed in E21-27/N40-44 could have been caused by a lightning. However, during the excavation we observed that the anomaly represented the stone foundations of the south wall of Structure 15-1. It is possible that the anomaly was caused by the ancient use of igneous stone in the wall, as well as by the remnant magnetism of a lightning, as storms with lightning are frequent in this area. It was found that the anomaly in E18-20/N40-47 represented a stone alignment in the shape of a *talud* or sloping wall, and that it belonged to the west wall of Structure 15-1. The anomaly seems to continue south down to N30, where it turns to continue east to E28. At the eastern edge of the wall and proceeding towards north, we located the anomalies E25-27/N48-50, which proved to be three walls of Structure 15-1. After the excavation, the anomaly in E27-30/N33 proved to be a stretch of a water canal (see chapters 5 and 6). A well preserved canal that runs across the entire grid from E31.5/N30 to E30.5/N50 was located during the excavation. However, apart from the south portion of this canal, no other cultural trait was anticipated through gradiometry.

Precisely at the east of the initial grid (RI) of 20 x 20 m, a complex anomaly was observed, however, the excavation of four pits, each one a meter and a half deep, proved to be in grounds with no architectural traits. (The additional excavation of these pits to reach deeper levels is recommended to identify the cause of this anomaly). Given the extreme bipolar values, it is extremely surprising that the origin of the anomaly could not be found. Finally, in E50-60/N45-47 extreme values were found in the west edge, with a long, moderate negative area, flanked at each side by moderate positive signals. They may be of a geological nature, as they are located in a slope that descends to the river where the erosion has exposed a concentration of volcanic stones. It would be advisable to dig a deep pit to make sure that this is not a cultural trait.

In the area below N32 and west of E15 there are two anomalies that probably represent water conduits. Completing this traverse was difficult because this area is located under a post that carries electric wires with two poles of ferrous rods. The three white areas at the north within the map reflect the extripation of the extreme signals of the wires, aimed at preserving the machine's sensitivity for the artifacts in the subsoil. The more southern white area reflects a large trunk (inhabited by the most vicious ants). The anomalies in the area between N25 and N30 must be investigated. Very possibly, we could detect cultural traits such as water canals associated with the extensive ruin of Structure 15-1 and other traits that were excavated within the initial 20 x 20 m grid.

3. Area 35

Initially, 40 m of the north portion of Area 35 were mapped within a coffee plantation using parallel north-south traverses, with a 2 m separation [Fig. 4-5a]. The low data density is evidenced in the faded sections of this map. The mapped part consisted of milpas surrounded by unmapped coffee plantations. The swaths of the milpa were traversed along a west-east direction. The swaths had variable widths, and besides, at times they had to be side-stepped, particularly in the 40 m long section. Probably these variations resulted in a distortion of the possible traits; the extent of the distortion will be discussed below, in the description of Mound 5. As it may be understood by fig. 4-5b, Area 35 shows an intense magnetic activity. The probability that said activity is marking cultural traits holds up, due to the surface finding of many ceramic artifacts, obsidian blades, carved stones, and several big spike stones, probably (plain?) stelae. The sowing and piling up of stones by the peasants has disturbed the context for magnetic reading not only in the surface but also deep down in the subsoil. The abundance of artifacts, particularly those broken or worn out, has led us to believe that this is an area of workshops for some king of production. The large groups of interest are discussed below, as it is not possible to elaborate on all the anomalies. All the areas marking extreme magnetic values probably contain stones of cultural interest and must be researched through excavation. Figure 4-5b shows more than 28.100 data points.

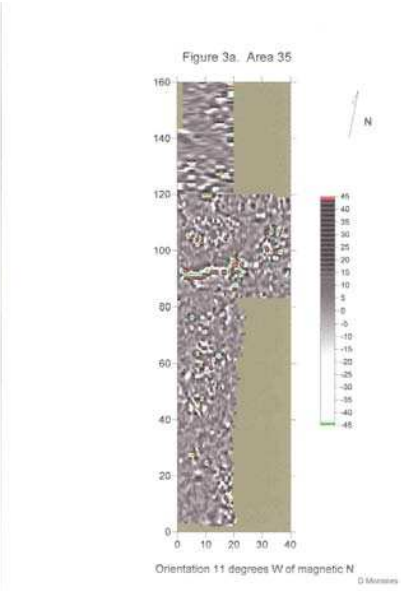


Fig. 4-5a. "Area 35".

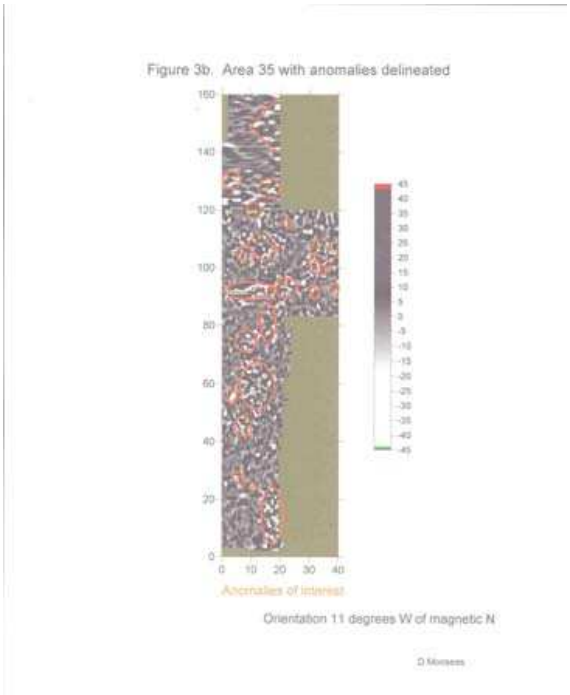


Fig. 4-5b. "Area 35" and delineated anomalies.

In the area north of the coffee plantation there is one interesting anomaly located at the east end, however, it may be indicating a natural outcrop near the creek, so that the marks could be caused by geology. The cause may only be determined through the excavation of this trait. Also, this area shows less surface artifacts, therefore, if we are in front of cultural traits, it is more probable that this is representing an ancient context less disturbed. In the areas to the south there are two clusters of anomalies shown between N98 and N112, which could very probably be cultural structures. Close to N90 there is what could probably be a dam of igneous stone, or the wall of a structure to the east. We have also observed groups with extreme values in N50-68 and N5-14.

4. Mound 5

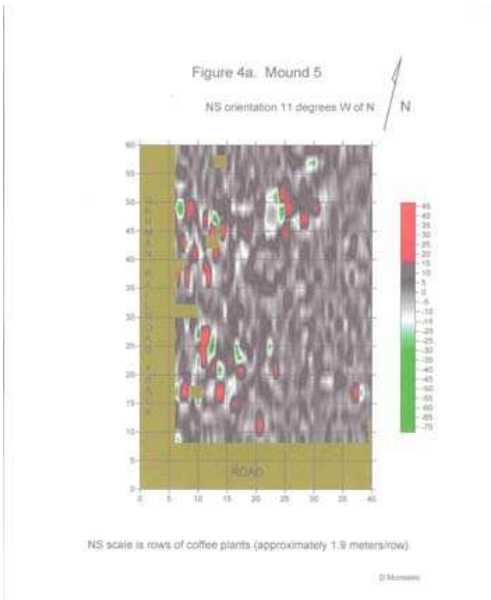


Fig. 4-6a. Mound 5.

This area, covered by a coffee plantation, required the clearing of branches before accomplishing the traverses with the gradiometer, and that procedure resulted in the variation of directions: instead of moving from west to east, we moved from west-south-west to east-north-east. As seen in figure 4-6a, to the south there is an access road to the coffee plantation. To the west lie the remains of a clean area that in the past was used by the railway that functioned during the first half of the XX century. When the railroads were removed, large nails and other ferrous debris accumulated in the area. Those residues were removed from the surface before the survey was initiated, to avoid false signals and to lessen the distortion of the anomalies. At times, the swaths of plants changed their orientation in the middle of the traverse, and some others, the distance between the swaths varied, and what began as one swath, turned into two. The distortion caused may be observed in figure 4-6b, where the blue frame marks the position of a 20 x 20 m grid with an ordinal orientation. This distortion complicates the interpretation of anomalies, but it was not possible to provide any other solution. The figure represents more than 7.000 data points.

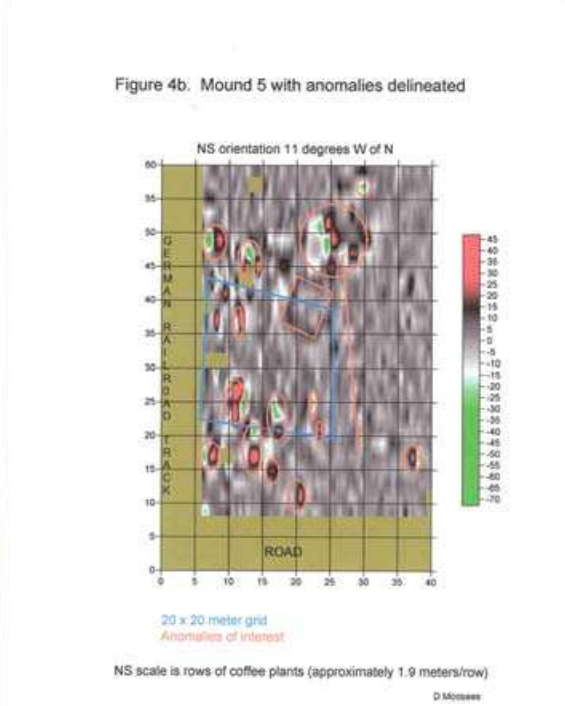


Fig. 4-6b. The mound and the delineated anomalies.

The anomalies with extreme values (and usually bipolar) we see dispersed in figures 4-6a and 4-6b, may represent igneous stones (native or either belonging to structures) or modern iron objects. The smaller bipolar spikes may not be determined without an excavation. Anomalies and unipolar anomalies probably do not reflect modern traits. However, the context is disturbed by plowing activities. The moderate positive and negative lines that run along a southeast-northwest direction are probably reflecting plowing. One may observe that some of the major anomalies are aligned with these marks, possibly a number of stones that were aligned by the plow. In figure 4-6b, the frame in E16-26/N35-44 is a positive anomaly that may reflect some cultural trait and that must be tested through excavation. The large circle in this figure with its center in E26/N49 is an area with signals above the average, particularly at west, it may reflect geology, and it must be tested. Proceeding from this circle to the south, there is a line with periodical negative values; this may be of a cultural nature, particularly if negative values are the result of sedimentary stone.

Among the other anomalies noted in figure 4-6b –the ones located in E17/N15, E15/N23, E13/N26, and E8/N48 (denoted by its central points to facilitate the description) have been tested through excavation and are stone wall alignments of 4- x 45 m, part of a structure denominated 5-1. It should be noted that a good portion of the wall is not shown in the gradiometric map. The conclusion we may make is that many of the stones used are of a sedimentary and not of an igneous origin, and therefore are not recorded in the gradiometer traverses. One important procedure to carry out, now that we are familiar with the precise location of the platform's walls, is the investigation through excavation of the extreme values inside the walls.

Conclusions

Gradiometry has proved to be of a substantial utility in the identification and localization of archaeological traits in the volcanic area of Chocolá. The strong signals caused by the igneous stone tended to render the details obscure, which would have been evident in a locality with lesser magnetic activity in general. The traverses, set 1 m apart, tended to provide the upper details to make excavation decisions, in contrast with those of two meters. However, considering the circumstances of the researchers involved, there was no other option. The distortion in the mapping caused for the need to work between the swaths is evident. However, the utility of the survey maps is undeniable, in terms of defining the precise location of the more interesting anomalies, and to show the way for subsequent excavations. These maps enhance the significance of the data obtained through surface collection, and reaffirm the conceptualization of the Chocolá areas as forming an urban entity.

The interpretations present in this chapter must be considered as preliminary, excepting when they have been confirmed through excavation in the investigated places (Mounds 5 and 15). This is the first experience of the geophysicist surveyor with this type of volcanic soil, and with archaeological sites of the Maya area, however, the identification and interpretation of the anomalies were significantly improved with the simultaneous excavations. We not only learned whether the signals indicated true traits or not, but also, this helped the surveyor to refine the methods and to interpret the signals in two dimensions: 1) the surveyor conceptualized the features or aspects of the unique characteristics of the soil and how these were reflected by gradiometry; 2) it enabled the Project to gain time in making decisions, by providing good degrees of certainty in the identification of anomalous concentrations representing unique cultural traits of the ancient remains of the city.

Recommendations

It is obvious that only with the test excavations accomplished during the remote sensing survey has it been possible to provide feedback for the correct functioning of the gradiometer. The local conditions of magnetism vary greatly from site to site, and it has been only through such tests that we have gained this experience. With precaution, it is possible to extrapolate the knowledge and determinations of one part of the site to other parts, emphasizing that test excavations must be considered a priority.

In view of what we have stated so far, we recommend posing the following questions:

- In the excavations completed, some ideas regarding the interpretation of the identified anomalies changed; then, is it or is it not correct to make a preliminary interpretation of the anomalies not yet tested through excavation?
- Which is the physical composition of the stone traits? Are all the stones used of an igneous nature?
- Could the cultural context of traits be better identified? Do the structures date to the Preclassic period? Are the areas, for instance “Area 35” truly workshop areas? Can we define the functions of the other structures? Obviously, these questions are of a general interest to the project, but they are as well of interest specifically for the gradiometric investigations.
- Could the identifications of the more ambiguous and smaller anomalies be improved, for example to define whether they are of an archaeological or a geological nature?

In areas where it would be too costly to investigate through intensive excavation, maybe a permission of the owners could be obtained to conduct shovel tests, and to investigate the anomaly plus the immediately adjacent area, to clearly assert the dimensions and the character of the anomaly. In general, shovel tests must be placed on top of the anomaly and should extend approximately three times the diameter of the anomaly to the north, south, east and west. In the case of linear anomalies, such as the wall of a building, the excavation should be perpendicular to the anomaly and extend approximately three times the width of the anomaly at each side. The depth of the excavation cannot be specified because the image is a function of, or depends on, the size of the object or trait buried, plus the magnetic contrast between the trait and the surrounding matrix. The distortion of the extreme signals due to the remnant magnetism of the igneous stones used in the ancient construction further complicates this issue. When following these recommendations, it must be understood that most anomalies with “interest circles” are really reflecting clusters of anomalies. Besides, it may be necessary to conduct an excavation between the swaths, or there where milpas are present, during a period of rest of the crops.

CHAPTER 5

Methodology of Excavation

Jonathan Kaplan, Juan Antonio Valdés, Juan Pablo Herrera and Federico Paredes Umaña

Introduction

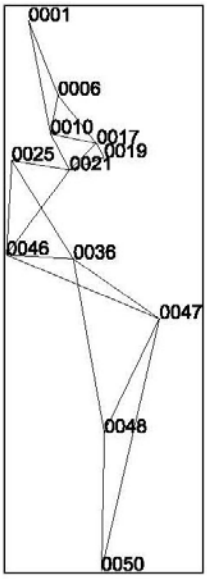
All excavations were supervised by JK and JAV, who on a daily basis defined the procedure, besides placing the grid system. Before initiating the excavations and once the grid was placed, Dr. Monsees proceeded with a gradiometric survey. The indication or not of anomalies in the subsoil defined interest areas for undertaking excavations. The excavation levels were arbitrary, of 20 cm each, with the exception of the first lot where the 20 cm could be exceeded or decreased, as it served to level the ground. If natural strata were identified, they would be excavated as such, depending on the particular circumstances. Whenever architectural traits were found, excavations were modified from vertical to horizontal ones, horizontally exploring the extension of the trait before going deeper. The material removed from the pit was sifted using a mesh of ¼ inch and placed in plastic bags, according to the lot; each bag was given a tag with the corresponding excavation data (Operation, Sub-operation and lot); the materials were sorted in different bags that contained ceramics, obsidian, lithics, charcoal, taxcal and others.

Immediately after returning from the field the excavated material was taken to the lab (see figures 5-2, 5-3, 5-4, 5-5 for the cards used during the 2004 season). This process was used to verify the data annotated in the field. For additional details on the cards and their practical use for storing and data handling, see Chapter 16.

For the absolute control of our references concerning elevations above sea level and UTM spatial positionings we have used Benchmarks, Datums and Subdatums. They are defined and listed in this chapter:

- Benchmarks (BM): This is how we refer to 12 permanent reference points established in the 2003 season by Dr. William Poe through the use of the Trimble 4000SSE Geodetic Surveyor and Trimble 4000 SE GIS Surveyor instruments (see Annex I) with a horizontal precision of less than 1 cm of error and a relative vertical precision in meters above sea level. They are expressed in UTM and MSNM (MASL, *meters above sea level*). The 12 points work as the spinal column in the site mapping. The BMs that PACH cemented in concrete with nails across the site amounted to a total of 50, of which only 12 now have a precise location established by instruments. These 12 points are distributed as follows:

Pt.	North[m]	East[m]	MASL	Ortom. [m]	Lat.	Long.
1	1617973.581	669048.916	923.002	923.542	N 14°37'47.53206"	W 91°25'49.44451"
6	1617552.483	669215.485	891.961	892.511	N 14°37'33.79321"	W 91°25'43.97581"
10	1617333.339	669172.466	875.928	876.491	N 14°37'26.67259"	W 91°25'45.46404"
17	1617276.653	669434.329	867.540	868.098	N 14°37'24.76914"	W 91°25'36.72681"
19	1617197.294	669477.489	866.650	867.209	N 14°37'22.17728"	W 91°25'35.30301"
21	1617125.241	669281.556	865.688	866.255	N 14°37'19.87709"	W 91°25'41.86687"
25	1617180.196	668953.578	863.268	863.841	N 14°37'21.73902"	W 91°25'52.81370"
36	1616621.490	669301.775	825.053	825.636	N 14°37'03.48189"	W 91°25'41.30784"
46	1616643.574	668923.492	827.989	828.581	N 14°37'04.28557"	W 91°25'53.94298"
47	1616280.877	669790.076	809.925	810.506	N 14°36'52.28914"	W 91°25'25.07043"
48	1615631.138	669477.474	759.801	760.412	N 14°36'31.21902"	W 91°25'35.66624"
50	1614847.696	669461.348	719.089	719.725	N 14°36'05.73166"	W 91°25'36.38635"
GUAT	1614480.619	767173.488	1521.572	1519.880	N 14°35'25.44851"	W 90°31'12.63839"



- Datum (D): This is how we refer to stations with absolute reference values, as of a Benchmark. They are expressed in UTM and MSNV, and are used to provide control over the excavation data of the different operations. In general, a Datum is the reference that governs all vertical measurements in any given operation;
- Subdatum (SD): They refer to the auxiliary control points of a Datum. Whenever the datum appears too far apart from a group of pits it is transferred to a substation, adding or reducing the vertical value accordingly. For example, Subdatum 3 in Operation 4 equals 0.20 m above the value of Datum 4.

Methodology used in Mound 15

The operation on Mound 15 has been abbreviated in PACH terminology as Operation 4. For Mound 15, JK picked the area in the reticule and established the grid. The southwest corner was used as benchmark No. 4 to provide an accurate UTM horizontal and vertical location; this work was accomplished by Juan Pablo Herrera, who also linked benchmark (BM) No. 6, of already known measures, with BM 4, allowing the establishment of a 20 x 20 m grid marked with flags on the four corners; this initial grid was divided in suboperations of 2 x 2 m each, numbered from 1 to 100. This area, which comprises 400 m2 (100 units of 4 m2 each) constitutes de initial grid *(retícula inicial)* (RI) for the excavation of Mound 15. When the need to expand the excavation to neighboring areas not included within the initial central area became evident, and to identify those new pits, we continued with the numbering used in the initial grid (RI) according to the orientation of the new suboperations. Thus, the RI shows the numbering of suboperations 1-100; to the east of the RI numbers go from 101 to 200; to the north, from 201 to 300; to the northwest, from 301 to 400, to the south, from 401 to 500, to the southeast, from 501 to 600, to the south of the latter, from 601 to 700, and to the west of the preceding ones, from 701 to 800 [Fig. 5-1]. Operations are described according to their numbering in an ascending order. For details to facilitate the search of data, see the illustrations of Chapters 6 and 7. The excavations at Mound 15 including those at Structure 15-1, jointly with the water conduits, took the first half of the 2004 season. The traits excavated within Mound 15 were correlatively numbered, with no differentiation between the excavations of the DBL (Structure 15-1) and the MCV (canals). The list of traits (see below) comprises both excavations.

By means of benchmark 4 at Mound 15 (defined with the total station), subdatums were derived to place them closer to the pits that were to be worked, and thus, during the excavation of each pit, the elevations of the four corners at the beginning of each lot were taken, to obtain a relationship and to understand the variety of the heights in the entire mound. When the pits were completed, we proceeded to create profiles and drawings of the excavations.

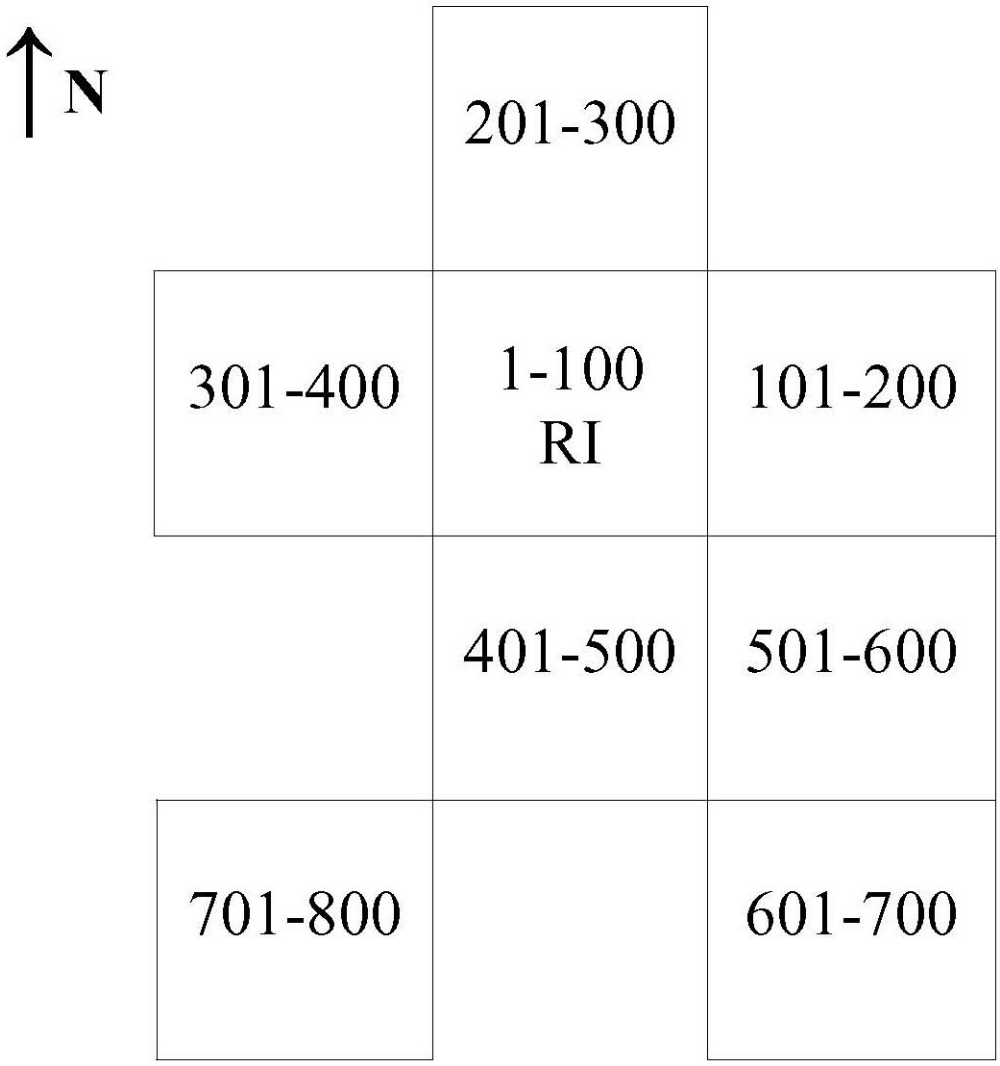


Fig. 5-1. Grid scheme, Operation 4.

Methodology used in Mound 5

In the PACH nomenclature, the operation on Mound 5 was abbreviated as Operation 14. A number of traits discovered during 2003 showed architectural remains of a permanent nature, with characteristics that indicated the need of a more extended research. The extensive grid excavation was also used in Operation 14, just as it has been described for Mound 15. The excavations were initiated after the gradiometric prospection conducted by Dr. Monsees, who studied an area on and around the stone alignments discovered during the past season, located at a depth of around 1 m from the surface and towards the east of the hill. Using the total station, the

permanent benchmark, BM 50 was the reference for all the vertical heights, whereby the Datums and Subdatums were established. The first grid of 20 x 20 m was outlined by triangulation and with the use of flags and metric tape, and whenever the excavation required it, additional 20 x 20 m grids were established around the original one. If our estimations are correct, it comprises most of the area we presently know as Mound 5, taking into account the depositional processes, the taphonomies, and the disturbances caused by plowing or other factors of human and natural alteration along the millenia.

Once the gradiometric survey was completed and locations with high concentration were identified, the excavations revealed stone walls, the north wall emerging as the first feature, followed by the east wall. Following a Cartesian method of excavation – as opposite to other methods used in the lowlands, where extended architectural constructions are excavated without an accurate control of the location of materials- the excavators were instructed to proceed towards the west on the wall, and towards the south on the east wall, thus obtaining accurate measurements controlled by the total station as of Datum 50. In addition to the horizontal search of features to delimit the platform, and at least in one occasion, a contemporary floor was found with the seat of the wall stones. Vertical investigations were carried out at the center of the platform, resulting in the discovery of a trait of burnt clay. Future investigations are contemplated regarding this precise trait, as everything is referenced in heights as of Datum 50.

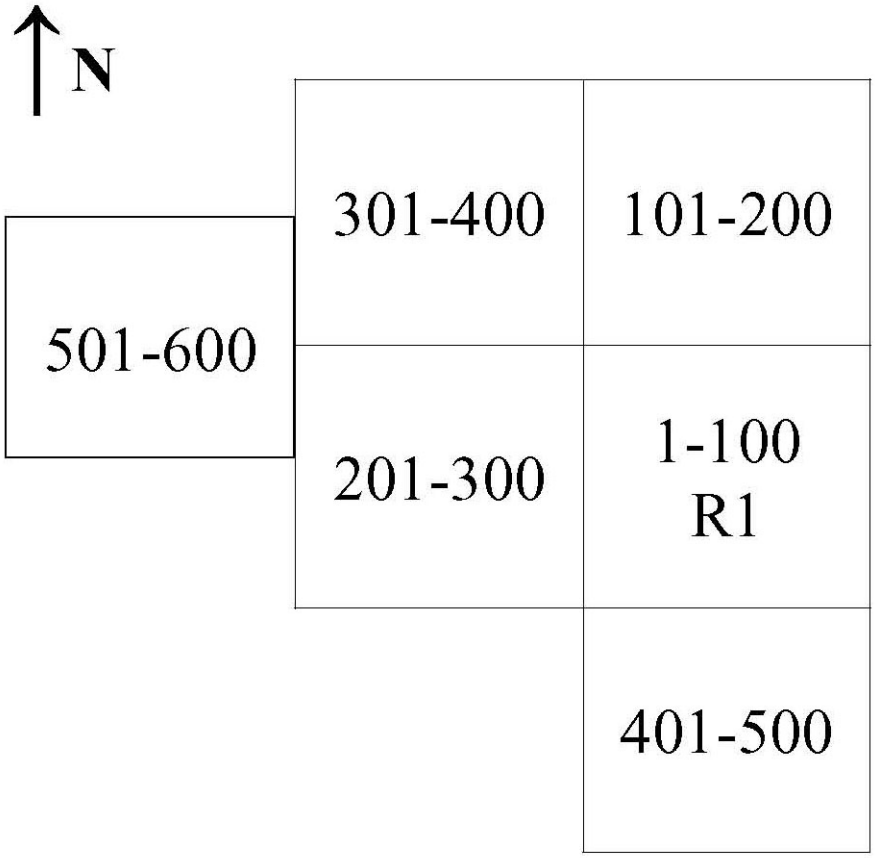


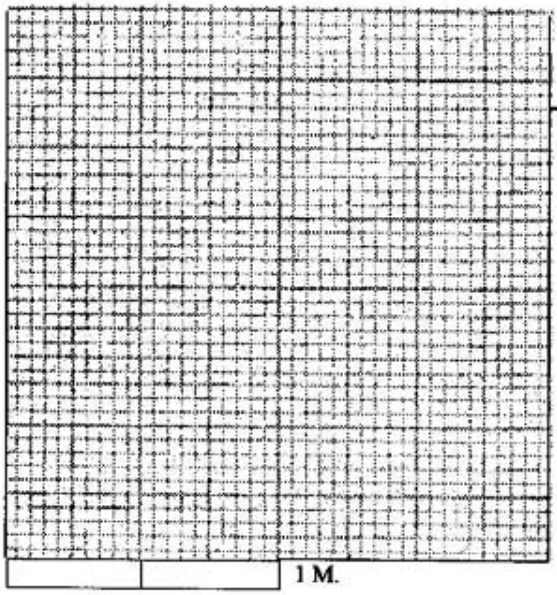
Fig. 5-2. Grid scheme, Operation 14.

PROYECTO ARQUEOLOGICO CHOCOLA
FICHA DE CAMPO N.2 UNIDAD DE EXCAVACION 2X2 M.

FECHA:	RESPONSABLE:			
OPERACIÓN	SUBOPERACION	LOTE	MC	ESTRUCTURA
DATUM / BANCO DE MARCA O REFERENCIA PARA LA ELEVACION				
PROFUNDIDAD DE ESQUINAS DEL POZO				
NO	SO	NE	SE	

DESCRIPCION

Fotografias anexas: SIGUE ATRAS



NUMERO DE BOLSAS CUENTA DE MATERIALES:	
CERAMICA	OTROS MATERIALES
OBSIDIANA	
MICA	
JADE	MUESTRA PARA FECHAMIENTO
PIEDRA TALLADA	
HUESO	
VIDRIO	MUESTRA BOTANICA
METAL	

Fig. 5-3. Field card, PACH 2004.

Ficha de laboratorio

Cuenta de materiales

Instrucciones:

Una vez el lote esté seco, reembolsado y reetiquetado , usted podrá llenar esta ficha con la cantidad de materiales por lote. No deje sin llenar la casilla **MC (muestra de campo)**

Operación:	**Suboperacion:**	**Lote:**	**MC:**	EXCAVADOR:
CERAMICA:	MICA:	PIEDRA TALLADA:		METAL:
OBSIDIANA:	JADE:	VIDRIO:		OTROS:

Operación:	**Suboperacion:**	**Lote:**	**MC:**	EXCAVADOR:
CERAMICA:	MICA:	PIEDRA TALLADA:		METAL:
OBSIDIANA:	JADE:	VIDRIO:		OTROS:

Operación:	**Suboperacion:**	**Lote:**	**MC:**	EXCAVADOR:
CERAMICA:	MICA:	PIEDRA TALLADA:		METAL:
OBSIDIANA:	JADE:	VIDRIO:		OTROS:

Operación:	**Suboperacion:**	**Lote:**	**MC:**	EXCAVADOR:
CERAMICA:	MICA:	PIEDRA TALLADA:		METAL:
OBSIDIANA:	JADE:	VIDRIO:		OTROS:

Operación:	**Suboperacion:**	**Lote:**	**MC:**	EXCAVADOR:
CERAMICA:	MICA:	PIEDRA TALLADA:		METAL:
OBSIDIANA:	JADE:	VIDRIO:		OTROS:

Operación:	**Suboperacion:**	**Lote:**	**MC:**	EXCAVADOR:
CERAMICA:	MICA:	PIEDRA TALLADA:		METAL:
OBSIDIANA:	JADE:	VIDRIO:		OTROS:

Operación:	**Suboperacion:**	**Lote:**	**MC:**	EXCAVADOR:
CERAMICA:	MICA:	PIEDRA TALLADA:		METAL:
OBSIDIANA:	JADE:	VIDRIO:		OTROS:

Operación:	**Suboperacion:**	**Lote:**	**MC:**	EXCAVADOR:
CERAMICA:	MICA:	PIEDRA TALLADA:		METAL:
OBSIDIANA:	JADE:	VIDRIO:		OTROS:

Operación:	**Suboperacion:**	**Lote:**	**MC:**	EXCAVADOR:
CERAMICA:	MICA:	PIEDRA TALLADA:		METAL:
OBSIDIANA:	JADE:	VIDRIO:		OTROS:

Operación:	**Suboperacion:**	**Lote:**	**MC:**	EXCAVADOR:
CERAMICA:	MICA:	PIEDRA TALLADA:		METAL:
OBSIDIANA:	JADE:	VIDRIO:		OTROS:

Operación:	**Suboperacion:**	**Lote:**	**MC:**	EXCAVADOR:
CERAMICA:	MICA:	PIEDRA TALLADA:		METAL:
OBSIDIANA:	JADE:	VIDRIO:		OTROS:

Fig. 5-4. Laboratory card, PACH 2004.

PACH 2004 MUESTRA DE CAMPO (CADA LOTE) 1

FECHA	MUESTRA DE CAMPO	NUMERO PP	RASGO	ESTRUCTURA	CUARTO	OPERACION	UNIDAD O SUBOPERACION	LOTE	ELEVACION INICIAL	ELEVACION FINAL	RESPONSABLE	COMMENTARIO

Fig. 5-5. Card of field sample, PACH 2004.

PACH 2004: FICHA DE DESCRIPCIÓN DE ESTRATUM

RESPONSABLES:				FECHA:	
Estructura:	Cuarto:		Rasgo:	Otro:	
CODIGO MUNSELL:	Lleno cultural?:			Lleno no-cultural?:	
Color de suelo:			Deposito primario ☐	Alluvial ☐	Colluvial ☐
Textura de suelo:			Redeposito ☐	Aeolian ☐	Otro ☐
Ancha maxima:	Ancha minima:	Ancha media:	Cernidor: ¼" ☐ ⅛" ☐ Ambos: ☐ Otro: ☐ Perfil dibujado? Si ☐ No ☐		
Ubicación y estratums asociados:					
Descripción del matriz de suelo (tipo de suelo, textura, consolidación, % inclusiones de rocas, frecuencia de artefactos, y otras caracterizaciones pertinentes: se usa guia del suelos)					
Disturbio (deflación, bioturbación, etc.)					

Fig. 5-6. Layer card, PACH 2004.

CHAPTER 6

Excavations at the North Group: Structure 15-1

Diana Belches-Luín

With contributions by Jonathan Kaplan, Juan Antonio Valdés, and Federico Paredes Umaña

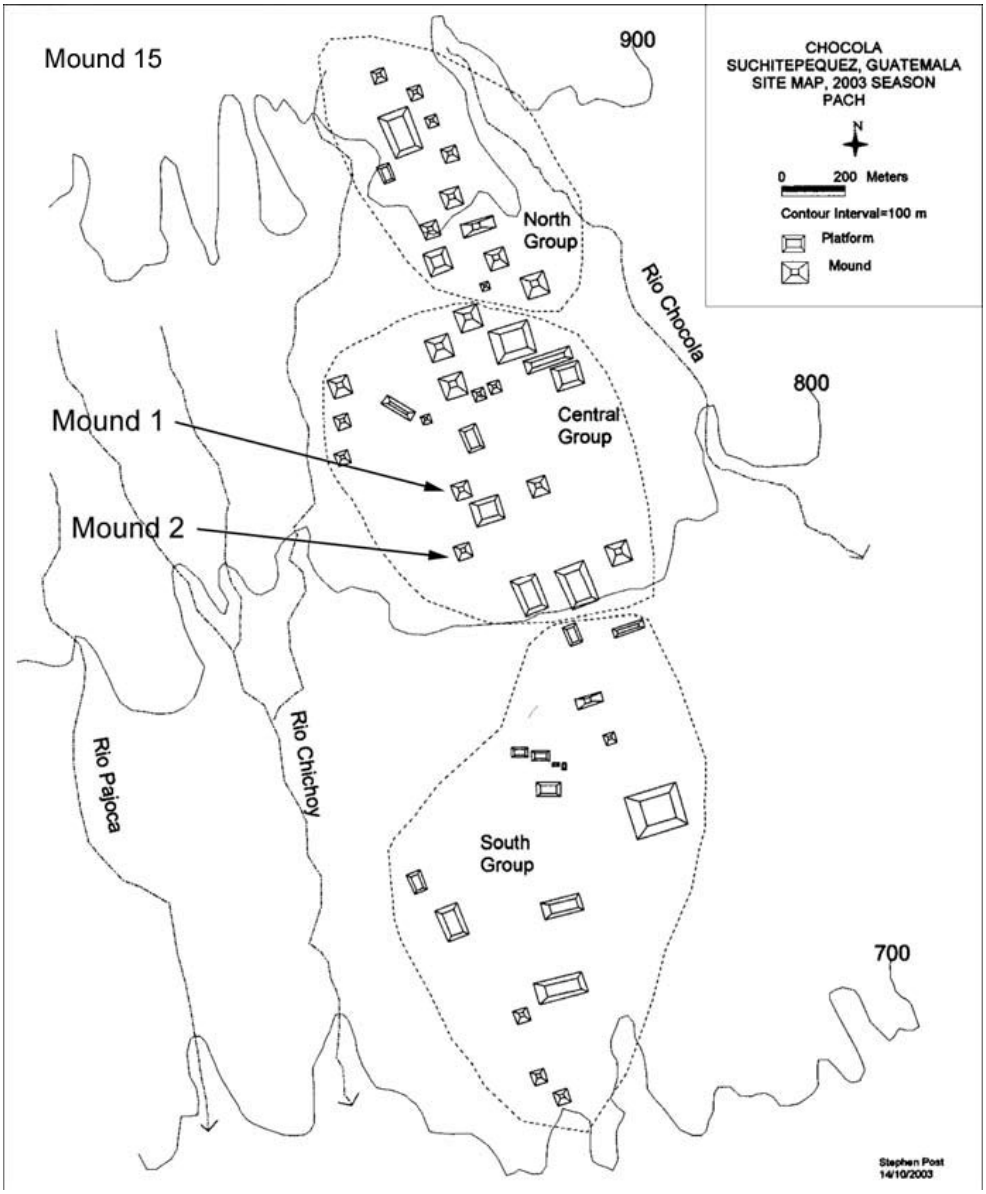


Fig. 6-1. Schematic map of the Chocolá ruins showing Mound 15.

Introduction

One of the activities accomplished during the field season 2004 was the extensive excavation of a large portion of Mound 15, in the North Group of the site [Fig. 6-1].

The North Group is located in the highest part of the site, and is cut by the road that connects Chocolá with the village of Xojolá, at Nahualá. During the field works of 2003, traits of ancient, very sophisticated water technology were found within the road cut, at an approximate depth of one meter. For this reason, it was decided to continue with the search of architectural traits during the 2004 season, but this time through Cartesian excavations. The excavations resulted in the very interesting discovery of a stone enclosure of large dimensions -6 m by 12 m- with strong evidence of connections with another major discovery: underground canals used for carrying water [Fig. 6-2] (see Chapter 7).

As of the 2003 season and based on general observations, the project director had suggested that the design of the ancient city comprised three different parts: 1) a north area, higher in altitude, with clean water, and long, extended, low platforms that served to support elite residential houses or "palaces"; 2) a central area, with administrative structures represented

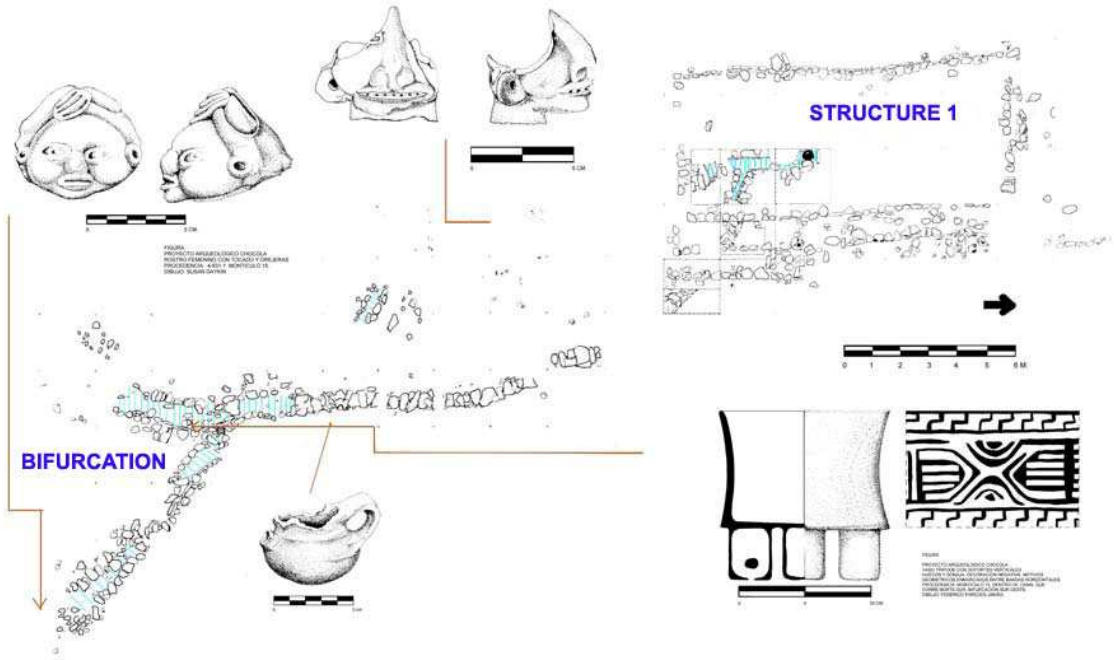


Fig. 6-2. Plan view of Structure 15-1 including plan view of the associated water canals and artifacts recovered, PACH 2004.

by very large, pyramidal mounds such as Mounds 1, 2, and 11; and 3) a south area, with abundant surface artifacts, with rather plain or flat prairies, and small and low mounds which probably represented common households, reserved for intensive agriculture and housing of the sustaining population [see Fig. 3-1]. Regarding the north area, it is plausible that the elite group that lived in this position (geographical and social) enjoyed an easy access to the route connecting them with the Guatemalan highlands, no doubt a significant trade route with the south coast. As we know, the control and access of trade routes in many Mesoamerican cultures was in the hands of groups that evidenced some kind of social status, prestige, and economic and political power. This hypothesis was reinforced by the findings obtained during the excavations conducted in the months of June, July, and August, 2004, at Mound 15.

The initial finding during the 2003 season, plus additional discoveries of underground canals for water management in 2004 confirm the notion that this was an area with enough power (economic, ideological, social, etc.) to afford the construction of buildings of this type and significance. After the gradiometric survey (see Chapter 4)

[Fig. 6-3], to the northwest of the grid, we found Structure 15-1, a rectangular structure

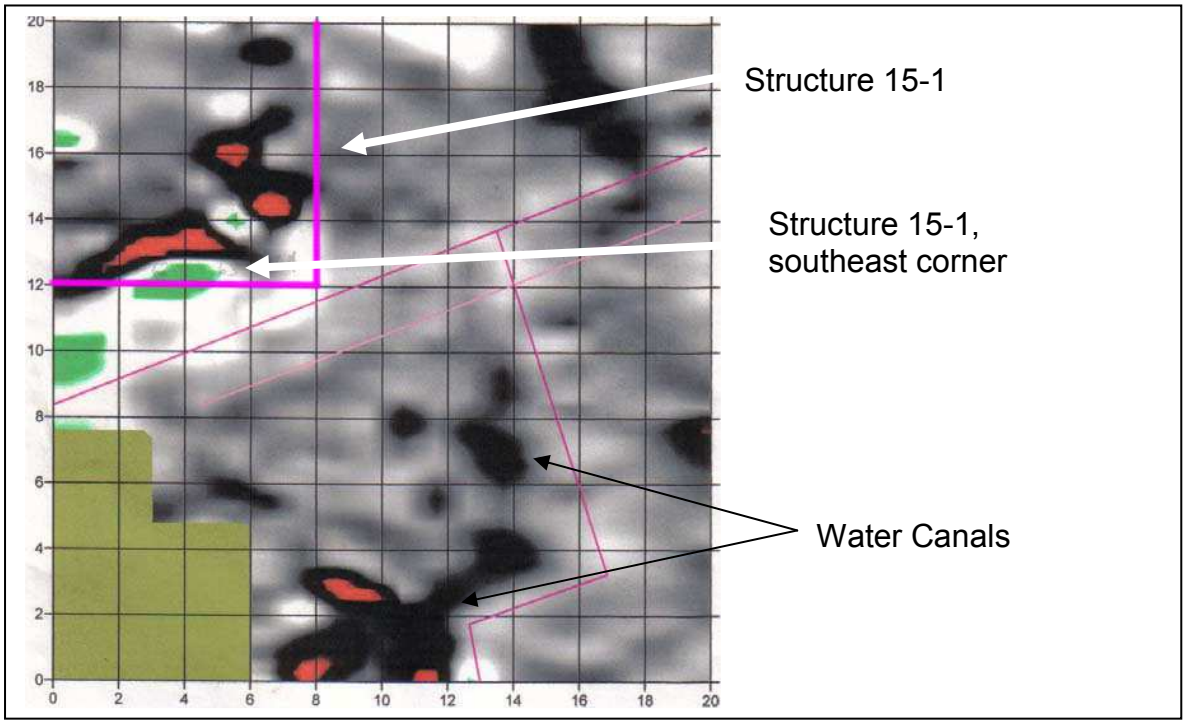


Fig. 6-3. Geoplot of the gradiometric survey conducted by Dr. David Monsees.

with cobble walls, one of them sloping [Fig. 6-4], and with steps oriented towards the east. Elaborating about the nature of this structure, we may allege that it was located in a residential and administrative area; however, being this a preliminary report, the reader should keep in mind that it is necessary to finish the physical and chemical analyses of ceramics, lithics, and samples of soil and charcoal in order to solidify ideas and make more certain inferences.

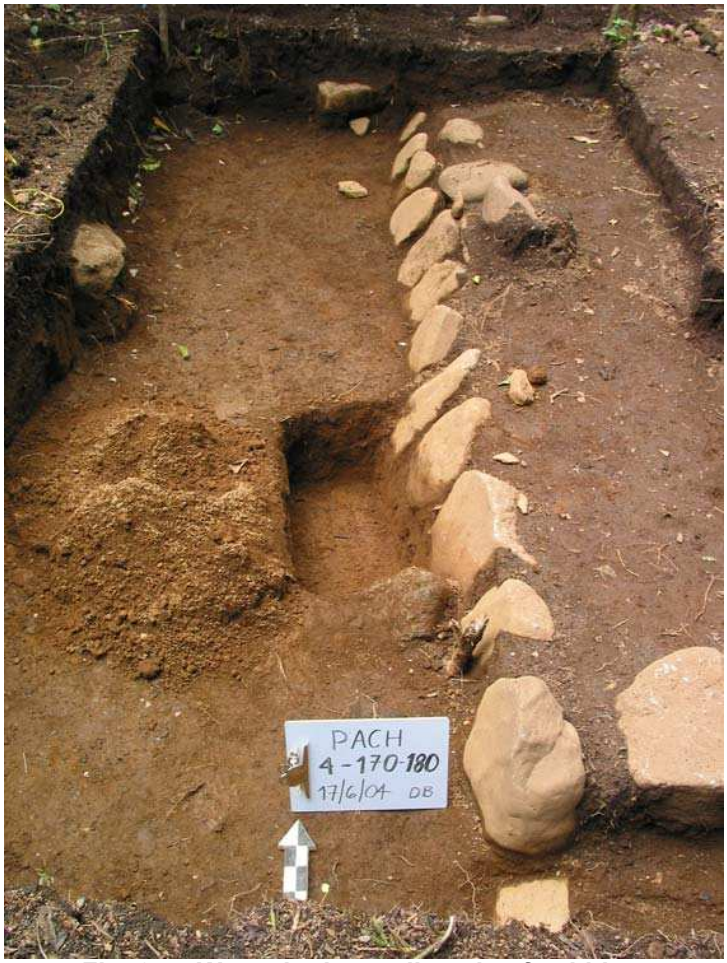


Fig. 6-4. West sloping wall made of cobbles.

Chronology

On the surface, there is ceramic material that dates to the Postclassic period (A.C. 900-1500); however, the material found from the surface down to a depth of 1.25-1.50 m, in the central pit (Sub-operation 91) at Structure 15-1, seems to date to the Late Pre-Classic period (B.C. 400 – A.C. 250). At a greater depth, the ceramic seems to relate to the Middle Pre-Classic period (B.C. 800-400). This change in chronology is supported, at least initially, by the change and variation of the materials found with the associated architectural traits (see examples of profiles of the ceramics recovered from two pits inside the building, with their radiocarbon dates, Figure 6-36, at the end of this Chapter).

Problematics and preliminary conclusions for further discussion

The project directors discussed the possibility of keeping Structure 15-1 from further excavation, to restore it for future exhibition. Undoubtedly, one of the most important decisions upon realizing its good state of preservation was to carry on with the full excavation. Inevitably, archaeology causes the destruction of traits; however, Structure 15-1 represents a good example of a poorly understood area that was probably seminal in the history of Mayan civilization. Following some discussion between JK and JAV, particularly considering the importance of achieving a full

understanding of whether there was a connection between the canal system found at Mound 15 and Structure 15-1, it was decided to proceed very carefully with the excavation to avoid any damage to the stability of the structure. The decision, apparently, was the right one to make, because a very intimate and significant connection was discovered between the canals outside the structure and traits that could correspond to storage and redistribution of water inside the structure. All this facilitates the understanding of the structure's function as a compound of the elite, indicating a strict social hierarchy capable of controlling corporate labor perhaps very early in time, in comparison with other areas of the Mayan world.

In addition to other general issues such as the preservation of the structure, we faced other challenges during the excavations. One of the major challenges had to do with the identification of floors. We are still discussing the possibility of three different floors. Two distinct floors representing different times of occupation were located: the first one corresponds to the Middle Pre-Classic period, and the second one to the Late Pre-Classic or Early Classic periods. As to the third floor, it possibly represents a filling or some other structural feature (see discussion below, Pit 4-71). Nonetheless, further stratigraphic studies are required to resolve this issue.

A question that still remains unanswered has to do with the identification of constructions older than those presented by Structure 15-1. As was mentioned earlier, the problem of identifying floors stems from the difficulty of clearly distinguishing between natural and artificial layers. This problem arises not only from the composition of the natural soils, but probably also from the great antiquity of the architecture, made of mud and stones in decay; it is assumed that at earlier locations architecture utilized more mud and fewer stones. The increase in the use of stones has been detected in the archaeological patterns of Tak'alik Ab'aj, and other sites, as centuries go by and there is an increase in the energy invested in corporate labor, as power and some sense of permanency of the formal social institutions grow.

Another basic issue pending to be resolved is elucidating the original function of Structure 15-1. Considering its relatively large size, compared to what we know about other common domestic structures, and considering its orientation with respect to the cardinal points –perhaps evidencing the formal ideology behind the construction of the structure- we believe this is an elite enclosure. The apparent divisions or rooms and their restricted size are notable, but it should also be noted that small rooms were common in Classic Mayan cities. One additional piece of evidence indicating that it could possibly be an elite precinct was the presence of a very well built conduit which might have had the capacity to store a modest amount of liquid, with more than one conduit to feed and distribute the fluid. This feature runs along the interior of the structure and is connected with the underground canal of largest capacity outside the structure, suggesting that it carried water to the house as part of a distribution system. The *in situ* finding of a vessel at the bottom of the square-shaped putative deposit at the center of the house reinforces this assumption. Given the numerous hydraulic resources found in and around Chocolá, we would like to suggest the possibility that the structure represents a "spring water house" (Vernon Scarborough, personal communication 2004), built on top of, and to manage, the fluid of a source or mouth.

An additional unsolved problem is the original shape of the architecture on the east side of the structure –was it a wall associated with rooms? A wall associated with a corridor? A wall associated with steps to access the structure? At this point we believe there was a small corridor with steps, though it would be hard to say exactly

if these were part of stairs or not. The west wall also poses problems of interpretation because it is composed of massive stones that form a sloping wall on top of soil, beneath which there is another stone alignment, possibly representing an even earlier building.

It is possible that Structure 15-1 represents one of the elite buildings of the north group at Chocolá. Evidence of another structure was found very close, to the north of Structure 15-1, and the finding, during the 2003 season, of underground canals at the base of Mound 9, some 100 m south of Mound 15, is additional evidence of an ancient pattern of elite buildings with associated canals, or of a formal and sophisticated water management system. The data recovered from the extended canals in Mound 15 particularly confirms this assertion (see Chapter 7).

The methodology of excavation is described in Chapter 5 with an overview of the method used and the particularities of each operation. Mound 15 is referred to as Operation 4.

In summary, excavations at Mound 15 were initiated on June 1, 2004, with a previously reticulated area established by JK; Figure 6-37 shows the pits within the grid corresponding to Structure 15-1. Dr. David Monsees directed a gradiometric survey prior to the start of the excavation process. As previously mentioned, this survey resulted in a digital map of the reticulated area, showing some sections of the terrain with remarkable anomalies. The areas with such anomalies were the ones that motivated the first pits.

The main reference for Mound 15 is the datum located at BM 4, with an elevation of 920.6975 m above sea level: this was located by a high fidelity GPS and calibrated with the total station to define its precise location within the full map of the site. To reference the excavations described in this chapter the following Subdatum (SD) were used: SD 2 with the same elevation of the datum but 15 m to the east, SD 3 at 0.20 m over the datum, and SD 4 at 0.60 m over the datum. The datum was used for pits 4-17 and 4-735, SD 2 for all pits comprehended between pits 400 and 700, SD 3 was used for pits 3 to 45, and SD 4 for pits 4-64 and 4-65. The nomenclature on each one of the following paragraphs refers to the Operation number: 4 (Mound 15) and Sub-operation (pit).

SD NUMBER	HEIGHT OVER THE DATUM	HEIGHT ABOVE SEA LEVEL
2	0.00 m	920.6975 m
3	0.20 m	920.8975 m
4	0.60 m	921.2975 m

Description of excavations by units

What follows is a description of the excavation units or sub-operations carried out in Structure 15-1 (or in association with it); all units were under the responsibility of DBL with the collaboration of Margarita Cossich V. and Edgar Arévalo B., during the months of June and July, 2004. The beginning date was June 12, 2004, and the date of conclusion was July 15, 2004.

Pit 4-52

The objective was to define the continuity of traits or the presence of new ones to the south of the southern wall (Trait 4-R-7) of Structure 15-1. The excavation took place with respect to Subdatum 2. In Lot 1 we found humus and dark brown earth, and the roots of a tree approximately 7 meters high. The artifacts found included ceramics, 61, and obsidian, 20.

In Lot 2, measuring 0.45-0.60 m, the presence of a floor was inferred from the change of the natural layer, where dark brown switches to dark, yellowish brown (natural Layer 3). The stones rest on the very dark brown layer. The artifacts found included: ceramics, 57; obsidian, 17; carved stone, 3; metal, 1. Charcoal was discovered 24 centimeters below the surface.

Pit 4-53

The objective was to identify the possible continuity of traits 4-R-4, 4-R-7 and 4-R-8 towards the southwest. Lot 1 does not show the continuity of any of the traits we were seeking. A stone rests on the second natural layer. Artifacts found: ceramics, 99; obsidian, 21; metal, 1.

Pit 4-54

The objective was to define the southern boundary of Trait 4-R-3. In Lot 1 there is an apparent continuity of Trait 4-R-3. To the east, there are tunnel holes and tree roots. The size of the stones is smaller in relation with the ones found in Pit 4-64. The stones are distributed with no apparent arrangement, and there are two ‘metate’ (base or lower grinding stone of a two-part mill) fragments and one fragment of a ‘mano’ (upper, movable grinding stone of the mill). Artifacts found: ceramics, 65; obsidian, 9.

In Lot 2 we found stones at the lowest levels; probably the alignment continues to the north of Trait 4-R-3. The stones rest on the dark brown layer. This grouping of stones located on the outside of the southeast corner of Structure 15-1 has been designated Trait 4-R-8. Artifacts found: ceramics, 36; obsidian, 2.

Pit 4-61

The objective was to look for the continuity of Trait 4-R-7 towards the west, the presence of the interior floor of Structure 15-1, and its external boundaries to the south. In Lot 1 we found a number of stones resting on the dark brown layer (Layer 2), there were plenty of roots, and a possible interior floor delimited by stones aligned towards the west. Artifacts found: ceramics, 48; obsidian, 7. A charcoal sample was taken 27 cm below the surface; however, the sample could be of little or no use for dating tests, due to the place where it was found.

In Lot 2, the group of stones has been designated Trait 4-R-32, and it is very likely that the interior floor of Structure 15-1 would have been where the dark brown, and the dark, yellowish brown layers (Layers 2 and 4, or 2 and 3, respectively) meet. Trait 4-R-32 consists of a grouping of four stones which do not present any defined arrangement or function. They are clearly associated with the southern interior of the

structure in an area where the continuity of stones that would form a wall, is absent. Are these stones a part of the south wall and have they for some reason been removed intentionally off the alignment? Are these stones at their primary placement? If the stones were not removed, they might probably represent some kind of boundary to a southern access of the structure.

Pit 4-62

The objective consisted in defining the cause of variation in the results obtained with the gradiometer in this quadrant, and describing the archaeological information that explains what kind of findings may have caused the signal obtained with the gradiometer at Mound 15. In Lot 1 we found humus and a dark brown layer (Layers 1 and 2, respectively), with roots of a tree that was approximately 7 meters high. There are stones aligned in an east-west direction (Trait 4-R-7) and a small canal or tunnel that could be the space left by the roots of some tree or trunk after decomposing, or simply a tunnel dug by some animal, as is the case in the pits nearby. Artifacts found: ceramics, 115 (including the “little toad” zoomorphic face, see figure in the chapter of important artifacts); obsidian, 17; and porcelain, 1.

In Lot 2 we excavated a window south of the stone alignment, Trait 4-R-7, to eliminate dirt on the external surface of the stones or wall. There were several stones of approximately 12-15 cm in diameter, rounded in shape and with irregular edges. We consider that they are probably fallen stones. Earth Layers 2, 3 and 4 (see Layer charts) are visible. Artifacts found: ceramics, 4; obsidian, 1.

Lots 3 to 8 have been worked by Margarita Cossich V. In lot 3, at 0.82 m, the rim and part of the body of a bowl with abundant incisions were found. The earth in this lot varies from dark brown at the beginning changing later to light brown. The pit measures 2 m from east to west, and only 1.14 m from north to south, as the excavation reached the south wall boundary of Structure 15-1. This is why only the northeast and northwest corners were measured. The attempt was made to locate a possible water canal that comes from Pit 4-72 to define its precise function. A small bench was left in place because we think it may be a step of the house; this bench was solid and dark brown, and it was located at the stone level of Trait 4-R-7. Artifacts found: Lot 3, ceramics 65, obsidian 6; Lot 4, ceramics 114, obsidian 4; Lot 5, ceramics 63, obsidian 1, taxcal 14; Lot 6, ceramics 81, obsidian 24; Lot 7, ceramics 9, charcoal sample 1; Lot 8, ceramics 35, obsidian 4.

In lots 4-5, there was light brown earth, or Layer 3, with no other significant features.

Lot 6 measures 1.25-1.45 m at the corners. We found taxcal and gravel in Layer 3. Floor 3, observed in Pit 4-71, stretches towards the south and continues at an approximate distance of 30 cm from the northwest corner of this pit, always heading south.

In Lot 7, measuring 1.45-165 m at the northeast and southeast corners, no additional excavation was carried out to produce a greater depth in the northwest and southwest corners. There was Layer 4 with a larger concentration of gravel on the east side, and it would appear that a small extension of Floor 3 was also present.

In Lot 8, measuring 1.65-1.85 m in the northeast and southeast corners, there was a new layer, whitish or light, yellowish brown in color. Floor 3 did not continue.

In Lot 9, measuring 1.85-2.05 m in the east corners, and 1.45 m in the west corners, the objective was to identify the architectural characteristics of the possible canal to the south and their relationship with traits 4-R-17, 4-R-18 and 4-R-22. In a trench towards the south, gravel was abundant and provided the floor of this lot with a hard consistency; it probably was a filling or a structure that covered the canal in an east-west orientation. There was also a combination of areas with very compacted, "hard packed" sand, with zones of weak or "loose" sand, and scarce gravel. Artifacts found: ceramics 60, obsidian 5, charcoal sample 1.

In Lot 10, measuring 2.05-2.25 m in the eastern corners, a window was made at the interior of the canal, corresponding to the area towards the west, parallel to the canal, or Trait 4-R-28, oriented in a southward direction. This matrix was "soft" in consistency. It was removed and we noticed that it was present in areas directly associated with the internal space limited by the stones that form the canal in this part of the pit, to the south of traits 4-R-22 and 4-R-18. Artifacts found: ceramics 35, obsidian 4, charcoal sample 1.

In Lot 11, measuring 2.25-2.45 m in its eastern corners, we found yellowish brown sand with abundance of small gravel and several stones measuring 3-5 cm. There were just a few stones of a larger size, such as those found in the other layers with an approximate diameter of 10 cm. This matrix seems to be a filling, the same one associated with traits 4-R-17 and 4-R-18. At the bottom of this lot there was a layer of whitish sand with a rather thick grain, covering the flagstones that form a canal which heads south and is identified as Trait 4-R-28. Artifacts: ceramic 9.

Lot 12 measures 2.45-2.65 m in the eastern corners. No sherds or other artifacts were found in the matrix associated with the canal to the south. The matrix corresponds to Layer 8, like the one briefly described for the previous lots. Artifacts found: ceramic 17.

In Lot 13, work was accomplished at the interior of the canal or space limited by traits 4-R-17, 4-R-18 and 4-R-22. The matrix was very loose and with scarce gravel. No artifacts were found except for taxcal and stone, which were sampled.

Lot 13 *bis* is a 1.00 m by 1.00 m pit excavated by Dr. Cristina Vidal, only in its eastern half and on 0.11 m. It was excavated further in its northeast-southeast sector in an attempt to spot the floor where the canal that runs in a northeast-southwest direction was built. At a depth of 2.80 m, the floor level on which the canal ran was reached, made of tightly packed taxcal of different colors, equivalent to that of the canals of Pit 4-72. No artifacts were found.

Pit 4-63

The objective was to discern the continuity of the stone alignment identified as Trait 4-R-3 towards the west. In Lot 1 we found black earth (humus) and dark brown earth (Layer 2). A cedar tree, approximately 5 years old, was preserved in this pit to mark in the trunk the references used for recording the vertical measurements: Datum 1 and Datum 2. Large stones form a corner to the southeast of the pit. A stone alignment identified as Trait 4-R-6 continues towards the north, close to the west wall of the pit; the stone alignment identified as Trait 4-R-4 also continues towards the north, but close to the east wall of the pit. Artifacts found: ceramic, 48; obsidian, 7.

In Lot 2 the dark brown earth was removed (Layer 2) from the area between the stone alignments, identified as traits 4-R-4 and 4-R-6. Only 5 ceramic artifacts were found.

Pit 4-64

The objective was to define the type of trait or finding evidenced by the magnetism measured with the gradiometer. In Lot 1 we found black earth (humus) and dark brown clayish sand (Layer 2), where the stone alignment positioned in a north-south direction was found. Roots were abundant. Artifacts found: ceramic, 121; obsidian, 17.

In Lot 2 we found dark brown clayish sand (Layer 2) and abundant roots of 0.5 to 0.7 cm in diameter. Artifacts found: ceramic, 75; obsidian, 8; stone, 1.

In Lot 3 we found yellowish dark brown clayish sand (Layer 3), with irregular stones of approximately 1 to 3 cm in diameter. Artifacts found: ceramic sherds, 75; obsidian, 10; stones for describing the matrix, 9.

In Lot 4, in a yellowish dark brown layer with taxcal and gravel (Layer 3), 34 ceramic fragments and 3 fragments of obsidian were found. Among the ceramic sherds found, there was a rim approximately 10 cm long, found at a depth of 1.60 m (in relation to Datum 2), which was assigned a PP ('Punto de Proveniencia' or Point of Origin) number. Artifacts found: ceramic 34, obsidian 3.

In Lot 5 we tried to locate the intersection between the canal and Structure 15.1. Artifacts collected: ceramic 20, obsidian 2

In Lot 6 there were flagstones from the canal which proceeds to Structure 15-1. 40 pieces of ceramics were recovered together with 30 obsidian pieces.

In Lot 7 only the canal's flagstones were discovered. Collections: ceramic 21 and taxcal 8.

Pit 4-65

The objective was to define the extension of the trait associated with Trait 4-R-3 or the continuation towards the east of the flagstones found in Pit 4-64. In Lot 1, a metate fragment was found in natural layer 2. Artifacts found: ceramic, 165; obsidian, 28.

Pit 4-71

In Lot 1 the objective was to define the architectural characteristics inside Structure 15.1. We found humus and roots of different sizes. Some areas show the slight occurrence of natural Layer 2. Artifacts found: ceramics, 65: obsidian, 4.

In Lot 2 the objective was to proceed with the intensive excavation to achieve a better view of the feature, identified as number 20. Stones were found in the second natural layer (dark brown earth), with their bases resting on earth 10-15 cm thick before changing to a yellowish dark brown earthen layer or Layer 3. At 1.30 m below Datum 1 (921.7818 m above sea level) the change of layer takes place (from Layer 2

to 3), this change is being considered as the possible location of a probable floor. Artifacts found: ceramic, 158; obsidian, 26. Nine taxcal samples were collected.

In Lot 3 we found yellowish dark brown soil (Layer 3). A cluster of stones concentrated in the northwestern section of the pit; the stones forming this trait (4-R-20) seemed to be the largest in the entire surface of Structure 15-1, and they continue in a northward direction. Artifacts found: ceramic, 88; obsidian, 11.

In Lot 4 we found 75 ceramic artifacts. No floor was noticed, and the layer was identified as number 3.

In Lot 5 the yellowish dark brown layer with taxcal and gravel was still present (3). Artifacts found: ceramic, 37; obsidian, 2.

In Lot 6, at 1.25 m below Datum 2 and near the east wall, there was a large sherd (rim), which later, due to its position, could be associated with Trait 4-R-26. Layer 3 seems to slightly increase its hardness. Pumice stone (?) at a depth of 1.25 m, associated with the south wall of the pit, may probably represent the same structural element present west of Pit 4-72. Two charcoal samples and three samples of pumice stone (?) were included. Artifacts found: ceramic, 63; obsidian, 9.

In Lot 7, we determined that the filling of yellowish dark brown earth present in the previous layers, in spite of having become harder, seems unchanged in its taxcal concentration, and is therefore considered the same layer. The matrix or soil was richer in sand and had a greater presence of taxcal at a depth of 1.45-1.46 m below Datum 2. This was considered a probable floor (it has been designated Floor 3 and Trait 4-R-33) but it could also be a filling or a different structural element, like a wall or roof. In Pit 4-72, on the west profile, this possible structural feature or probable floor appeared at a depth of 1.49 m, while a circular space filled with a different layer was observed. Maybe this is a secondary modification produced by animals, or perhaps it is a part of the structure. Artifacts found: ceramic, 25: obsidian, 2. The collected evidence included a soil sample of the possible floor (MC 385) and a sample of the possible Floor 3 (MC 386) for further description and analysis.

Pit 4-72

In Lot 1 the objective was to identify the internal characteristics of Structure 15-1 that could contribute to its better comprehension and interpretation; the area comprising this lot occupies what could very possibly be defined as the interior floor of the building, delimited by the stone alignment (Trait 4-R-6) towards the west. We found humus and dark brown sand, mainly on the west side. Artifacts found: ceramic, 84; obsidian, 21, and some taxcal samples.

Lots 2-4 were excavated by the archaeologist Edgar Arévalo B. In Lot 2, Layers 1 and 2 were removed. 217 ceramic sherds and 29 obsidian pieces were recovered. In Lot 3, Layer 2 is observed, 155 sherds were found, together with 13 obsidian fragments, 13 taxcal pieces and one charcoal sample. In Lot 4, the archaeologist in charge considered the presence of a probable floor at a height of 1.16 m below Datum 2. This “floor” coincides with the level where the stone located directly on top the vessel in the central pit was located [see Fig. 6-6g]. 116 ceramic fragments were recovered, together with 15 obsidian fragments and one charcoal sample.

In Lot 5 the objective was to define the presence of a canal (Trait 4-R-9) at the interior or below Structure 15-1. In Layers 3 and 4 there were small stones that seemed to have been burned (?). Artifacts found: ceramic, 143; obsidian, 18. 16 taxcal stones were also recovered, together with one charcoal sample.

In Lot 6 we found Layer 4 with several intrusions of white and yellowish-white sand in accumulations of irregular shape and thickness. An accumulation of “pink” stones was identified as Trait 4-R-26, within which there were several large ceramic fragments, some of them apparently with signs of having been in contact with fire. Samples of matrix, ceramic and charcoal were collected for dating. Artifacts such as obsidian (17), ceramic (156) and carved stone (1) were recovered.

In Lot 7 we found a matrix consistent with Layer 4, which grew “harder” towards the north. We attempted to locate the probable “floor” present in Pit 4-71, to no avail; however, some indications of it were associated with the northeast section of the pit. Artifacts found: ceramic, 70; obsidian, 6.

In Lot 8 we found a matrix consistent with Layer 4, but with no sand intrusions like those found in the two previous lots. In the north half of the pit, the consistency of the earth was very hard, probably representing a wall. Two traits, 4-R-18, to the south, and 4-R-17, to the north, are visible. Trait 4-R-17 was covered by a very hard, thick layer of taxcal and sand, showing areas of probable intrusions of “soft” dirt. We detected the possible continuity of a “tunnel” at the northwest corner of the pit. Traits 4-R-17 and 4-R-18 form a canal. This canal under Structure 15-1 corresponds to the one outside and southeast of this structure, which was identified as Trait 4-R-9. Artifacts found: ceramic, 70; obsidian, 8. Also, one charcoal sample for dating was taken.

Lot 9 corresponds to the excavation conducted in the space delimited by traits 4-R-17 and 4-R-18 but (inside the canal) removing the matrix corresponding to Layer 8, with the recovery of 77 sherds and 4 obsidian fragments.

In Lot 10 the matrix corresponding to Layer 9, and entirely originating from the internal part of the canal, was removed. 30 ceramic fragments were recovered [Fig. 6-5a, b].

In Lot 11 the gravel stones, present in the matrix removed, were less than 3 cm in diameter. A few sherds were recovered, and no obsidian fragments were found.

Fig. 6-5a, b: (a) Small canal inside the Structure; (b) Pits 62 and 72; this view from the south shows, from left to right, traits 4-R-22 and 4-R-26 (to the north), and the canal formed by traits 4-R-17 (to the north) and 4-R-18 (to the south).

Pit 4-73

In Lot 1 the objective was to expand the excavation to the west of Pit 4-74, to find the continuity of Trait 4-R-3. The presence of a new stone alignment was detected along a north-south direction, identified as Trait 4-R-4. Artifacts found: ceramic, 82; obsidian, 14. Two stones were also collected for matrix description, together with 3 small taxcal accumulations.

In Lot 2, with dimensions of 0.50 by 0.50 m, the objective was to proceed with intensive excavation to uncover the details of Trait 4-R-4. Two stone alignments running along a north-south direction were noted, which are continued in Pit 4-83. The matrix on which these aligned stones rest has 0.5 to 1 cm in diameter, irregular gravel stones, in addition to orange, amorphous stones, and black, greenish, and yellowish stones. The amount of gravel grows larger with depth. Artifacts found: ceramic, 21; obsidian, 7.

Pit 4-74

In Lot 1 the objective was to establish the continuity of Trait 4-R-3 towards the north. We found humus and dark brown clayish sand (natural Layers 1 and 2). The continuity of traits 4-R-3 and 4-R-4 towards the north was established. Artifacts found: ceramic, 102; obsidian, 17.

Pit 4-81

The objective of this pit was to identify the continuity of Trait 4-R-20 to the north, to describe its characteristics and analyze its possible function. In Lot 1 we found humus and a dark brown layer, a small *"volador"* (*gyrocarpus americanus*, also known as Cooliman tree) and a coffee tree. Stones are present in the dark brown layer (Layer 2). Some stones show a smooth surface and sharp edges, others have a rugged surface and rounded edges. The amount of gravel increases at the base of the stones. Very small sherds of approximately 1 cm in diameter are observed within the gravel, being a part of a possible filling or some kind of cementing agent. Materials found: ceramic, 40; obsidian, 10; taxcal, 2.

In Lot 2, the entire Trait 4-R-20 is clearly identified. The base or seat of the stones occurs in Layer 3 or very close to it, as opposed to what happens in Pit 4-71, where stones mostly rest on layer 2. Materials found: ceramic, 45; obsidian, 16.

In Lot 3, the northern and eastern walls maintain the dimensions described earlier. We modified the initial area of excavation in order to make space to protect the identified trait while continuing the intensive excavation. The elevation was of 0.60-0-80 m. We found Layers 2 and 3, and 38 ceramic fragments.

In Lot 4 large sherds were recovered mainly associated with Trait 4-R-20 and the southeast corner of the pit (Trait 4-R-26). Charcoal was scarce and taxcal abundant. There was a lens or intrusive layer, visible like a dark brown, diffuse spot on the lot's floor. Materials found: ceramic, 44; obsidian, 20; one charcoal sample.

In Lot 5, at 1.00-1.20 m below Datum 2, we found a pink stone of fragile consistency and irregular shape at the southeast corner of the pit as a part of a stone accumulation, of shape, color and consistency similar to those observed in Pits 4-71 and 4-72 as part of Trait 4-R-26. At this depth it was decided to open a window below Trait 4-R-20. No ceramic artifacts or obsidian were found in the matrix removed, except a large stone, irregular in shape, with a smooth surface and sharp edges, similar to those observed in the accumulation of stones identified as Trait 4-R-20 on the surface. This stone is included in the illustrations, but as it was found practically isolated, it was not considered relevant, at least in relation with the information obtained so far. Materials found: ceramic, 25; obsidian, 4; one sample of matrix stone.

Pit 4-82

In Lot 1, the objective was to identify the characteristics of the interior of the structure. We found Layer 1, with the following materials: ceramic, 29; obsidian, 7.

In Lot 2, layers 1 and 2 were removed. Materials found: ceramic, 38; obsidian, 8.

In Lot 3, the objective was to identify the probable continuity towards north of the canal formed by traits 4-R-22 and 4-R-17. We found removal of layers 2 and 3 and the following materials: ceramics 44, and obsidian, 11.

In Lot 4, with dimensions of 1.50 by 2.00 m, we found a patch of dark brown earth within the matrix corresponding to Layer 3. Materials found: ceramic, 57; obsidian, 10.

In Lot 5, with dimensions of 1.50 by 2.00 m, we found a matrix corresponding to Layer 3. We believe that traits associated with the canal probably predate Structure 15-1 in chronology and/or function. Materials found: 41 ceramic fragments.

In Lot 6, with dimensions of 1.50 by 2.00 m, we found a matrix corresponding to Layer 3, and probably also to Layer 4. Materials found: ceramic, 71; obsidian, 8.

In Lot 7, with dimensions of 1.50 by 2.00 m, we found matrix corresponding to Layer 4, and an intrusion of white sand forming a flap, at a depth of 1.50 m, underneath which there is a flagstone and a large sherd associated with it. Materials found: ceramic, 97; obsidian, 10; charcoal sample.

In Lot 8, with dimensions of 1.50 by 2.00 m, we found Layers 4 and 8, as well as sherds in association with Trait 4-R-26, 1.79 m below Datum 2, which were identified with a PP number. We were able to recover a very good sample of charcoal for dating. 84 ceramic fragments and 7 obsidian fragments were also recovered.

In Lot 9, with dimensions of 1.50 by 2.00 m, Trait 4-R-27 was identified as a grouping of stones placed in a north-south direction, which are a part of the canal that seems to be the continuation of the one formed by traits 4-R-22 and 4-R-18. Materials found: ceramic, 65; obsidian, 5.

In Lot 10, with dimensions of 1.50 by 2.00 m, we found a canal associated with traits 4-R-26 (towards the south) and 4-R-27 (towards the east). Materials found: ceramic, 15; obsidian, 2.

In Lot 11, with dimensions of 1.50 by 2.00 m, we found a vessel surrounded by clayish soil inside the canal; together these features are considered Trait 4-R-31. The canal heads towards the northwest. Materials found: 9 ceramic fragments.

In Lot 12, with a dimension of 1.50 by 2.00 m and an elevation of 2.40-2.60 m below Datum 2 and inside the canal, we removed the soil close to the vessel. The west wall of the canal remains within the adjacent profile, corresponding to the east wall of Pit 4-81. No sherds were found at this lot.

Pit 4-83

The objective was to try to find the continuity of Trait 4-R-4 to the west, to define and interpret it. In Lot 1 we found a circular accumulation of stones, which seemed to be located north of the stone alignment identified as Trait 4-R-4. This new stone accumulation was identified as Trait 4-R-5. Layers 1 and 2 were present. Artifacts found: ceramic, 112; obsidian, 14; and one contemporary metal fragment. 10 taxcal samples were taken.

In Lot 2, we found stones resting on a dark brown layer (Layer 2); stones with a similar aspect but of smaller size were observed resting on Layer 3. 34 sherds were found.

Pit 4-84

The objective was to establish the continuity of Trait 4-R-3 towards the north, and to define its characteristics. In Lot 1 there was humus and very dark brown earth. Six taxcal samples and one charcoal sample were included. Artifacts found: ceramic, 194; obsidian, 42.

In Lot 2, with an elevation of 1.05-1.25 m, we found Layers 2 and 3. Stones rest on layer 3, which is rich in taxcal and gravel of approximately 1 cm in diameter, and of irregular shape. Materials: ceramic, 20; obsidian, 5.

Pit 4.91 W

(Note: the nomenclature “W” indicates its position to the west of the main pit or Pit 4-91, inside Structure 15-1). The objective was to identify the characteristics of Trait 4-R-14 towards the west, inside Structure 15-1, for its better comprehension. In Lot 1 only humus was removed; 39 ceramic artifacts and 12 obsidian artifacts were found.

In Lot 2, with dimensions of 1.00 by 2.00 m, there are stones at the same level of the stones aligned in a north-south direction in Pit 4-91 (Trait 4-R-14), which rest on Layer 2. Artifacts found: ceramics, 22; obsidian, 6.

Pit 4-91

The objective was to define the stratigraphy of Structure 15-1. In Lot 1, the humus was removed. No trait was visible. Artifacts found: ceramic, 27, obsidian, 7.

In Lot 2 Layers 1 and 2 were removed, and four stones aligned in a north-south direction were observed, with their bases resting on soil of Layer 2 type. Artifacts found: ceramic, 69; obsidian, 28.

In Lot 3, with an elevation of 1.30 –1.50 m below Datum 2, we found a large pot intentionally placed for ritual purposes very close to the center of the house, this niche was identified as Trait 4-R-14 **[Fig. 6-6 a, b, c, d, e, f, g]**. After taking all the notes regarding the origin, context and recovery of the pot, Dr. Juan Antonio Valdés supervised the excavation of the niche and observed that the stones around the pot represented the five directions of Mayan cosmology.

Fig. 6-6a, b: Large pot found *in situ* in a special nook (Trait 14). It was covered with three large stones together with other five stones which apparently represent the world's five directions, four cardinal ones and a vertical one at the centre; c) The author with Edgar Arévalo immediately after recovery of the vessel; d) the stones representing the five directions of Mayan cosmology.

Fig. 6-6e: the vessel after cleaning:

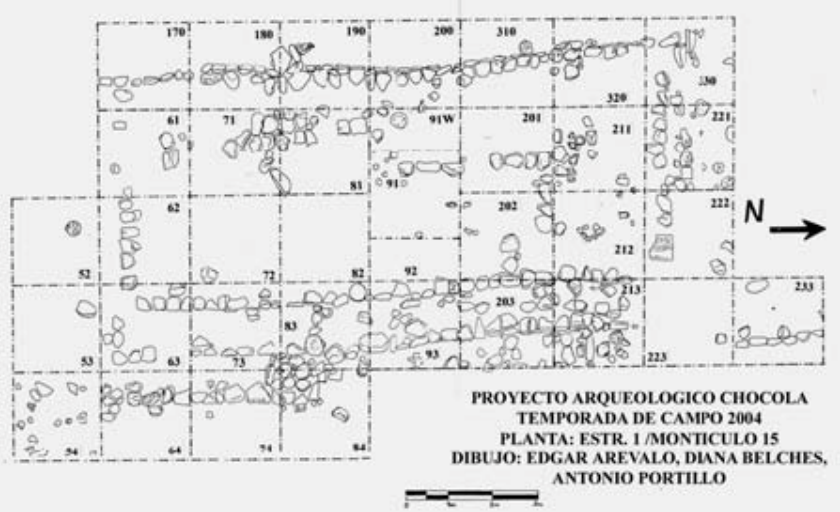


Fig. 6f: location of the finding.

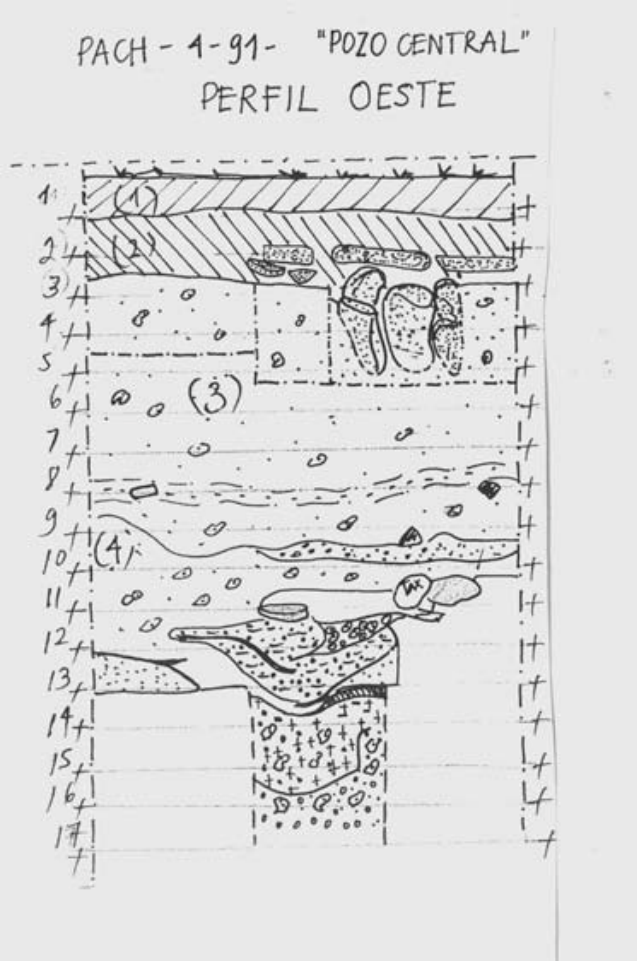


Fig. 6g: west profile, pit 4.91.

Pit 4-92

The objective was to obtain a sample of ceramic artifacts and obsidian according to their occurrence in lots that were delineated by their natural strata (Layers 1 and 2). In Lot 1, with dimensions of 1.00 by 2.00 m, the first natural layer or humus was removed. Materials: ceramic, 41: obsidian, 7.

In Lot 2, with dimensions of 1.00 by 2.00 m, we clearly defined the characteristics of the stones located east of the pit which are a part of the wall of Structure 15-1, initially identified as Trait 4-R-6. Materials found: ceramic, 68; obsidian, 21.

Pit 4-93

The objective was to identify the characteristics of traits 4-R-4 and 4-R-6 towards the north. In Lot 1, traits 4-R-6 and 4-R-4 continue towards the north of the structure. There are abundant "disordered" stones, apparently fallen or collapsed, which continue in this disorderly manner towards the east. Since this stone grouping with no apparent order cannot be clearly explained, it is designated as Trait 4-R-10. Artifacts found: ceramic, 40; obsidian, 6.

In Lot 2 we uncovered the front and a portion of the base of the stones which aligned in this pit were identified as Trait 4-R-4, and the part defined as the "exterior" of the structure in this sub-operation. We found that the stones rest on Layer 3 (yellowish dark brown with taxcal and gravel), at approximately 1.00 – 1.06 m below Datum 2. Materials found: 19 ceramic sherds.

Pit 4-170

In Lot 1, the objective was to find the southwest corner of Structure 15-1, by following the south wall (Trait 4-R-7) to the west. The southwest corner of Structure 15-1 was located. This corner corresponds as well to the south end of the stone alignment identified as Trait 4-R-11. Artifacts found: ceramic, 80; obsidian, 21. A charcoal sample is included.

In Lot 2, with dimensions of 1.25 by 2.00 m, the objective was to define the architectural characteristics of the west wall of Structure 15-1 towards the exterior. A flagstone was found at a depth of 1.40 cm below Datum 2. Artifacts found: ceramic sherds, 32; obsidian fragments, 10.

In Lot 3, with dimensions of 1.25 by 2.00 m, we found a long, river flagstone of over 50 cm in length and 4 cm in thickness. The stones vertically placed and in a slight incline, form a sloping wall and their bases reach Layer 3. 5 sherds were found.

In Lot 4, with dimensions of 1.25 by 2.00 m, we found a floor rich in taxcal. A sample was left where we considered that a probable floor may have existed, approximately 10 cm above the lower edge of the inclined stones. This was done because JAV believed that in order to preserve their position, the stones of the wall required that a soil level (at least at their lower third) be used to keep them fixed in a predetermined place.

In Lot 5, with dimensions of 1.25 by 2.00 m, a pink stone of friable consistency was observed at the bottom. The matrix changes to yellowish dark brown with scarce gravel (Layer 7) in the area associated with the pink stone. Materials found: ceramic, 57; obsidian, 7.

In Lot 6, with dimensions of 1.25 by 2.00 m, a small area associated with the stones and with the southwest corner of the structure presented a slight matrix change in the floor; however, this was not visible in the profile. Materials found: ceramic, 92; obsidian, 3; taxcal, 10.

Pit 4-180

The objective was to identify the characteristics of Trait 4-R-11 towards the north. In Lot 1, we found Layers 1 and 2. The matrix of Layer 2 was soft in consistency, rich in mica, and contains increasing amounts of gravel as its depth increases. Artifacts found: ceramic, 77; obsidian, 17.

In Lot 2, with dimensions of 0.80 by 2.00 m, we observed part of the "outer face" of the west wall of the structure. Artifacts found: ceramics 65, obsidian 13, taxcal 3.

Lot 3 measured 0.80 by 2.00 m, and at this level the pit's floor presented a scarce amount of taxcal resulting in a consistency that was not too hard. At the southern edge of the sub-operation (1.60 m deep), there were four stones of approximately 8-10 cm in diameter, of an irregular shape and rounded edges, aligned in an east-west direction. Artifacts found: ceramic, 66; obsidian, 4. A charcoal sample was taken.

In Lot 4, with dimensions of 0.80 by 2.00 m, we found a yellowish dark brown soil (Layer 3). It was associated with stones that formed the west wall, sand with medium fine grains, white-light brown and yellowish in color, compacted and with a firm consistency as if it formed a "model" not distributed throughout the entire lot. It could probably be a lens. Artifacts found: ceramic, 19; obsidian, 3. A charcoal sample was included together with a sample of stones, for matrix description.

In Lot 5, with dimensions of 0.80 by 2.00 m, a soil sample of Layer 7 was included. This layer was associated with three stones, two of which were pumice stones, located at 40-50 cm below the lower edge of the stones that formed the sloping wall (West Wall of Structure 15-1, or Trait 4-R-11). Layer 7 appears then at 1.86–1.89 cm below Datum 1. In the south side of the pit, the matrix has a high concentration of small gravel (1–1.5 cm) of rounded shape, and stones of 1.5–3 cm in diameter, with irregular shapes and sharp angles with an occurrence of approximately 75%. Small accumulations of yellowish-white sand (lens) occur in the northwest corner and on stones associated with the east wall, towards the south. Artifacts found: ceramic, 32; obsidian, 3. One charcoal and 13 taxcal samples were taken.

Lot 6 measured 0.50 by 1.00 m. This lot originates inside Structure 15-1, east of the stone alignment that forms the western wall of this structure. The dimensions were reduced because the space is also limited by Trait 4-R-20 to the east. It corresponded to lots 1 and 2 worked in this same pit, but outside of the structure. Artifacts found: 27 ceramic fragments, and 2 fragments of obsidian.

Lot 7 measured 0.50 by 1.00 m. According to the excavation level, this lot corresponded to lot 3 outside of the structure. A stone with sharp edges, irregular shape and smooth surface was located at the bottom of this lot on a Layer 7 matrix. Materials found: 25 ceramic fragments and 7 obsidian fragments.

Pit 4-190

The purpose was to look for the continuity of Trait 4-R-11 towards the north, to identify the northwest corner of Structure 15-1. In Lot 1 we found a stone alignment which formed a probable wall, whose exterior was located towards the west. Artifacts found: ceramic, 131; obsidian, 14; carved stone, 1.

In Lot 2 they remain at a depth of 0.85 m. The dirt in the west section of the pit was removed to uncover the "outer faces" of the stones that form the *talud* or sloping west wall of the Structure. There is a "box" built with 3 stones, among which a flat one with sharp edges (the largest one) and another one of a greenish color stand out. Under the "box" and towards the north wall, there is an alignment of stones no larger than 10 cm in their widest diameters. These stones have irregular surfaces but they fit perfectly, forming a flap to the northwest. Among these stones there was a fragment of grinding stone or hatchet. In the south wall of the "box" there are two small flagstone triangles, placed as if they were supporting the largest stone probably to create a space. Artifacts found: ceramics, 38; obsidian, 24.

Lot 3 corresponds to the "inner" part of the structure delimited in this sub-operation, where we proceeded to remove the matrix corresponding to Layer 2. Materials found: 23 ceramic fragments.

Pit 4-200

The purpose was to define the architectural characteristics of the structure by finding the continuity of Trait 4-R-11 towards the north, or the northwestern corner of the structure. In Lot 1 the continuity of Trait 4-R-11 towards the north was seen, gradually increasing its incline to the west. Artifacts found: ceramic, 40; obsidian, 4.

In Lot 2, while looking for the continuity of the wall, we noted that the stones located in the eastern section of the pit were resting on Layer 2. The "external face" of the elongated stones vertically placed to form a *talud* or sloping wall, identified as Trait 4-R-11, was uncovered. In the west profile, Layer 3 disappeared at a depth of 1.05 m below Datum 1. Artifacts found: ceramics, 35; obsidian, 7.

In Lot 3 the eastern portion of the pit, or "internal" part of the west wall of Structure 15-1 was removed. Earth corresponding to Layer 2 was removed. Materials found: ceramic, 15; obsidian, 6.

Pit 4-201

The objective was to identify the probable continuity of the stone alignments associated with Trait 4-R-14. Humus was found in Lot 1. A coffee tree and a "volador" *(gyrocarpus americanus*, also known as Cooliman tree) were present. Materials found: ceramic, 42; obsidian, 3.

In Lot 2, Layers 1, 2 and 3 were present. At this level we did not observe any new traits or the continuation of the ones present in the adjacent sub-operations. Materials found: ceramic 133; obsidian, 34.

In Lot 3 there is a stone alignment placed in a north-south direction, probably the same stone alignment observed in Pit 4-91. Materials found: ceramic, 95: obsidian, 15; taxcal, 18.

Pit 4-202

The objective was to identify the existing interior traits of what is seemingly the latest construction stage of Structure 15-1 and to define the relationships with the vessel found in Trait 4-R-14. In Lot 1 we found humus and a matrix that corresponded to Layer 2. Artifacts found: ceramics, 68: obsidian, 9.

In Lot 2 we found stones seated on a yellowish dark brown layer (Layer 3). Artifacts found: ceramic, 75; obsidian, 21; carved stone, 4; and one charcoal sample.

Pit 4-203

The objective was to look for the continuation of traits 4-R-4, 4-R-6 and 4-R-10 towards the north to identify and describe the architectural characteristics of Structure 15-1 towards the east. In Lot 1, loose humus was removed together with abundant roots. Artifacts found: ceramic, 42; obsidian, 14.

Lot 2 presents scattered stones with no apparent arrangement and of different sizes and shapes. Artifacts found: ceramic, 33; obsidian, 11.

In Lot 3 only 10 cm of dirt were removed to eliminate the matrix corresponding to Layer 2. There were stones that very probably collapsed from upper levels. Materials found: ceramic, 30; obsidian, 3.

Pit 4-211

The objective was to look for the continuation of Trait 4-R-19 towards the north of the structure to identify its interior architectural characteristics. In lot 1 we found humus and roots of a caspirol tree. No stones were visible. Materials found: ceramic, 98; obsidian, 10.

Lot 2 shows no stone alignment on the west side of the pit. On the east side, Trait 4-R-19 continues towards the north. One stone extends towards the north the alignment of 5 stones with similar size and shape to those that formed the “roof” of the niche in Trait 4-R-14.This stone alignment was identified as Trait 4-R-21. Materials found: ceramic, 135; taxcal, 34.

In Lot 3 we did not remove the full lot, as we attempted to leave the inner part and the traits being uncovered at the same level, for a better understanding of their relationship. A very good charcoal sample was collected. We observed a group of stones in dark brown earth, with abundant, irregular gravel that ranged from 1 to 5 cm in diameter, and taxcal. The stones found rested on Layer 3. Whenever the earth shows abundant gravel or taxcal, the hardness or compactness of the floor also seems to increase. Artifacts found: charcoal, 61; obsidian, 6. One charcoal sample of approximately 2 x 3 cm was collected.

Pit 4-212

The objective was to identify traits and characteristics inside Structure 15-1 that could contribute to the understanding and interpretation of this construction stage and of the activities that may have taken place within this space. Lot 1 shows no new traits and no continuation of those already identified at this level. We found Layers 1 and 2. Materials found: ceramic, 102; obsidian, 18.

Lot 2 shows an accumulation of middle-sized stones, with slightly rounded shapes distributed with no apparent arrangement. We found small blocks of taxcal. This trait was identified with the number 29. Materials found: ceramic, 128: obsidian, 25.

Pit 4-213

The objective was to look for traits 4-R-4 and 4-R-6 towards the north, to define the architectural characteristics of the east wall of Structure 15-1. In Lot 1 we found Layers 1 and 2, both strata presenting the characteristics described earlier. Artifacts found: ceramic, 47; obsidian, 17.

In Lot 2, 10 cm of dirt were eliminated from the east corners at 0.45–0.55 m below Datum 2. The irregular stone grouping identified as Trait 4-R-10 continues, basically scattered in the matrix corresponding to Layer 2. Materials found: ceramic, 4.

Pit 4-221

The objective was to identify the characteristics of the north wall of Structure 15-1. Lot 1 included two small coffee trees and one "volador" tree of approximately one year of age. It contained an abundant amount of humus on top of which a large boulder with sharp edges and irregular shape rested. Ceramic found: 74 sherds.

In Lot 2 the elevation at the south half of the pit remained at 1.10 m, corresponding to the place where possibly the inner floor of the structure was found. At the north half, 20 cm of earth were removed, and the levels at both corners were of 1.10–1.30 m below Datum 1. According to our findings in Pit 4-330, we were able to establish the continuity of the stone alignment of the structure's north wall positioned in an east- west direction. This trait was identified as number 30 and consists, at least in the excavated area of this sub-operation, of two stone alignments that probably constituted a kind of steps. Artifacts found: ceramics, 52; obsidian, 13.

In Lot 3 the south corners maintain an elevation of 1.10 m. The stones of the second alignment rest on Layer 2, below them the concentration of gravel increases, the earth is loose and roots are abundant. Ceramics found, 47.

Pit 4-222

The objective, as with Pit 4-221, was to locate the north wall of the structure. There is a coffee tree at the surface of the sub-operation at lot 1. There is abundant humus and tree roots also present in Pit 4-223, and Layer 2 is present. Artifacts found: ceramic, 64; obsidian, 2.

In the Lot 2 sub-operation the north wall of Structure 15-1 shows a stone alignment visible on the second layer and resting on the third layer, where there is also irregular gravel of a lighter coloration. Artifacts found: ceramic, 42; obsidian, 4.

Pit 4-223

The objective was to find the northeast corner of Structure 15-1. We did not find the stone or stones that jointly could constitute the northeast corner of the structure, in Lot 1. Due to the abundance of roots it was very hard to maintain a level of 20 cm. Artifacts: ceramic, 74; obsidian, 9. One sample of taxcal was collected. We found an anthropomorphic face with an axial hole, elaborated with a thin paste.

Pit 4-233

The objective was to identify the northeast corner of Structure 15-1 by following traits 4-R-4 and 4-R-6 towards the north. Lot 1 included a coffee tree, humus and plenty of roots, as well as a new trait towards the northeast of Structure 15-1 which consisted of a stone alignment. Artifacts found: ceramic, 34; obsidian, 6.

Lot 2 has: Layers 1 and 2, a yellowish patch (probably taxcal with sand) to the south of the alignment, approximately 25 cm long and 12 cm wide, and the outer face of the stones towards the west, therefore confirming that most probably this represents a trait associated with Structure 15-1, and not a component part of the structure. Artifacts found: ceramic, 39; obsidian, 7.

Pit 4-310

The objective was to find the continuation of Trait 4-R-11 towards the north, and its connection with Trait 4-R-12. We found Layers 1 and 2 in Lot 1, as well as the following artifacts: obsidian, 25; ceramic, 33, and one nail.

Lot 2 has an elevation of 0.8–1.15 m below Datum 1. Even though the stones are not fully visible, the continuation of Trait 4-R-11 towards the north is clear. The stones occur in Layer 2. A border with PP number was located 0.65 m below Datum 2, and with the following coordinates: 1.55 m east and 0.07 m north. Other artifacts found: ceramic, 40; obsidian, 26.

Lot 3 is inside Structure 15-1. Dirt was removed towards the east of the stone alignment, and 25 ceramic fragments were recovered.

Pit 4-320

The objective was to look for the continuity of Trait 4-R-11 towards the north. Lot 1 included a stone whose association with the existing traits is still uncertain, and large ceramic fragments. Layers 1 and 2 were present. Artifacts found: ceramics, 25; obsidian, 7.

In Lot 2 we found stones aligned on a northern direction, with a slight inclination to the west. Artifacts found: ceramics, 44; obsidian, 13.

Lot 3 measured 0.50 by 2.00 m. The exterior that delimited the stone alignment constituted by Trait 4-R-11 was located to the west. It was initially thought that this stone alignment constituted a trait different from Trait 4-R-11, and was therefore identified as Trait 4-R-12. The dirt present on top of the horizontal stones found above the vertically placed stones was considered as a possible floor and/or filling. Artifacts found: ceramic, 30; obsidian, 11.

Lot 4 measured 1.50 by 2.00 m. In this lot the earth (Layer 2) inside the structure, associated with the west wall or Trait 4-R-11, was removed. Materials found: ceramic, 19.

Pit 4-330

The objective was to identify the northwest corner of Structure 15-1. In lot 1 there was an approximately 15 m high caspirol tree at the junction of this pit with pit 320 (to the south), and therefore abundant roots were present.

Lot 2 measured 1.50 by 1.60 m. We found dark brown clayish sand (Layer 2) and tree roots which had moved some stones that were part of the northwest corner of the structure. Materials found: ceramic, 64; obsidian, 5; taxcal, 1.

Lot 3 measured 1.50 by 1.60 m, and contained Layer 2. Artifacts found: Ceramics, 20; obsidian, 2; pumice, 1.

Lot 4 measured 1.50 by 1.60 m. We found a matrix with plenty of gravel, though possibly the soil, identified as Layer 3, may have been supporting the large flagstones of the corner; its presence was not visible in the west profile associated with them. Materials found: ceramic, 71; obsidian, 10.

Conclusions about the excavations

The excavations conducted in Structure 15-1, operation 4, were initiated with Pit 4-64 with the purpose of identifying the trait or traits that caused a white reading (negative, very strong) in the gradiometer. The discovered trait diverged from the results obtained elsewhere, in non-Mayan sites around the world; therefore, new adjustments and calibrations were required to establish the region's own standards, which were completed in later measurements and will be carried on in future field seasons.

Each trait located in one or more sub-operations was assigned an identification number to facilitate its description and interpretation within the overall complex ultimately formed by Structure 15-1 and the possible substructure associated with a water management canal.

The general characteristics of Structure 15-1, based on evidence and comparisons with other data, are described below:

1. A rectangular structure, with its longest sides positioned in an east-west orientation, probably a basal platform;
2. A roof made of perishable material;
3. A putative floor, compressed, difficult to identify;
4. A west, sloping wall *(talud)*;
5. An east wall formed by aligned stones;
6. Two stone courses that from the boundaries for benches or external corridors;
7. A north wall with one possible external step;
8. Two to four interior rooms;
9. An accumulation of stones which may have served as a hearth;
10. An accumulation of stones of unknown function;
11. A ritual offering placed in a niche under the "floor" at the center of the structure;

12. A water distribution canal discovered under the structure, related to the structure or to a substructure, and associated to traits that suggest ritual celebrations, and mud constructions built as far back as the Middle Pre-Classic period.

The list and description of these and other traits are included below.

Fig. 6-7a. South profile of pit 4-82, including the first 4 lots, showing the presence of natural Layers 1, 2 and 3.

Fig. 6-7b. West profile of pit 4-45, showing the same Layers.

Description of natural layers [Fig. 6-7a, b]

Jointly with MCV, we accomplished the description of the five more repeated layers found in Mound 15 as follows: Layer 1, humus, organic, black soil; Layer 2, dark brown soil; Layer 3, dark brown soil with taxcal; Layer 4, light brown soil; and Layer 5, yellow soil with taxcal; as we proceeded with our work, the most common strata were reduced to three: Layers 1 and 2, and light brown soil with taxcal.

LAYER 1 (E-1)

Humus or very dark brown clayish sand (10 YR 2/2. Note: all colors have been identified in wet soil). This layer covers the entire surface of the excavation, in and out of Structure 15-1 at Mound 15. It is associated with Layer 2. It consists of a mix of roots, organic remains, plants and earth, mixed with stones of varied sizes and cultural artifacts such as ceramic and obsidian. The stones are irregular in shape, including very large ones that exceed 30 cm in diameter, like those observed in buildings. There are many stones of 10 to 12 cm in diameter (10%); stones of 5 to 10 cm in diameter (20%) and stones of less than 5 cm in diameter (30%). The average width of this layer was 20 cm; it shows a minimum width of 0.15, and a maximum of 25 cm.

LAYER 2 (E-2)

It corresponds to a dark brown clayish sand (7.5 YR 3/2), with a maximum width of approximately 60 cm (northwestern corner of the excavation – Pit 4-330), and a minimum width of 10 cm. This soil or matrix is of a granular consistency, loose, with a remarkable frequency of artifacts, sherds of 1.5 to 5 cm long (some figurines were present) and obsidian (many small and used prismatic blades). The soils present abundant roots with diameters of 1 cm or less, mostly originated in middle size trees such as the coffee trees. Gravel is irregular, with edges both sharp and rounded, a 15% of which exceeds 2.5 cm in diameter, and 40% with diameters that range between 1 and 2.5 cm. Mica is present, as well as small clusters of taxcal of 1.5 to 0.5 cm, with an occurrence of 5-10%. Most disturbances (tunnels) were found in this layer. Most of the stones corresponding to the southern half of the structure (traits 4-R-20, 4-R-7, 4-R-8, 4-R-4, 4-R-3, 4-R-6, 4-R-5) and some associated with the northern half of the structure (Trait 4-R-25) rest on this layer, with an increased presence of gravel and small sherds, less than 1.5 cm long.

LAYER 3 (E-3)

This layer is represented by a yellowish dark brown clayish sand (10 YR 4/6), with taxcal and gravel. This layer appears with a minimum width of 0.50 m and a maximum approximate width of 1.20 m, and possibly wider. Its texture is less granular, of a compact consistency, and has some small roots which do not exceed 2 mm in thickness. In general, compared with layer 2, the amount of sherds seems to have decreased in concentration given the larger size and thickness of this layer; however, for the same reason, the total number of artifacts increases, yielding most of the material found. Rich in mica, and very fine colored sand. The percentage of the inclusions of stones or taxcal rocks, gravel, greenstone (unidentified), and probably pumice stone was as follows: 15% of small stones, 70% of irregular stones of some 2.5–5 cm in diameter, and 10% of larger stones of over 5 cm in diameter. In some areas, there were some minor inclusions of charcoal of less than 1 mm in diameter. Charcoal samples of a good size (up to 3 cm in its greatest diameter) were collected. This was the layer directly associated with the bowl found in the niche, at the center of the structure (Trait 4-R-14) and it was the same layer in which most of the stones of the northern half structure were resting.

LAYER 4 (E-4)

It consists of a sandy clay similar in color to that of the preceding layer: yellowish dark brown (10 YR 4/6) with abundant taxcal and gravel. The hardness of this layer

seems to increase, possibly because of the larger amount of small stones between 0.5 and 1.5-2 cm in diameter, of irregular or rounded shape (mostly taxcal) in a concentration of 50% to 75%, which produced a more compact layer. The stones of 2.5 to 5 cm in diameter diminished by 10% and those over 5 cm were sometimes present at a concentration of 5%. The greatest thickness of the layer was of 80–85 cm, and the smallest thickness was of 40–45 cm with associated charcoal samples.

LAYER 5 (E-5)

It was not observed in a direct association with this structure but only with the canal to the south of it, at Mound 15.

LAYER 6 (E-6)

This was a special layer, and was assigned to the trait identified as Floor 3, present in pits 4-71, 4-62 and 4-73. It is a sandy clay of a yellowish dark brown color (10 YR 4/4), made of sand, taxcal and some mica, at an approximate depth of 1.49–1.60 m (deeper towards the east) below Datum 2. In the southern profile of Pit 4-62, it shows an approximate thickness of 2–3 cm, but it is part of the wall, or west wall of Pit 4-72, where it is visible; it continues as part of the "floor" identified in Pit 4-71, where, towards west, it seems to recover its 2–3 cm in thickness, and can be observed as well defined, smoothed (relatively), well separated from the previous layer (Layer 3 in Pit 4-71), and with a regular inclination towards the east. It did not contain large gravel, but presented some small intrusions probably made of ground pumice stone (yellowish white); these intrusions make the layer look whitish, and constitute 15% of its composition with sizes of 0.3–1 cm. There is a concentration of 5–10% of larger stones, of 1–2 cm in size, and rounded shape.

LAYER 7 (E-7)

Sandy clay of a yellowish dark brown color (10 YR 4/6), not very compact in consistency, with intrusions of rounded stones of approximately 1–2.5 cm in diameter in a concentration of approximately 20%. It appeared in association with stones located in the two last Lots of Pits 4-170 and 4-180, and with the stone found under Trait 4-R-20, at the same depth. In pits 4-62 (lots 10 and 11) and 4-72 (lots 8 and 9), it was associated with the stones of the canal and was described as a "soft" layer, probably filling material. Mica was present.

LAYER 8 (E-8)

Sandy clay of a yellowish dark brown color (10 YR 4/4) associated with the canal, very hard in consistency, with a high percentage (75–85 %) of small gravel and taxcal of approximately 1-2 cm in diameter, and 15% of stones of a larger size (over 2-5 cm in diameter). There was an abundance of whitish, red, and yellowish sand, and mica. The greatest thickness was observed at the south and east corner and walls of Pit 4-62, and was also present in the north profile of Pit 4-72.

LAYER 9 (E-9)

Sandy clay of a yellowish dark brown color (10 YR 3/4) it is present inside the canal in Pits 4-62, 4-72 and 4-82. This layer has a low incidence of ceramic artifacts. It contains a fair amount of sand and small gravel, which diminishes as the depth

inside the canal increases. It was associated with the vessel identified as Trait 4-R-31, and at times it was seen adjacent to Layer 7 (in Pit 4-62).

LAYER 10 (E-10)

It was composed of thick and fine sand of a light brown, yellowish and whitish color. It appeared as a lens in all the pits. Quartz and mica were abundant, and the latter appears at times mixed with black, greenish or pink grains. The thickness varied from less than 1 cm up to 5 cm. It was found associated with all the previously described layers, with the exception of Layer 1.

LAYER 11 (E-11)

Sedimentary clay of a yellowish dark brown color with a very large amount of mica (10 YR 4/4) found at the bottom of the central pit. Initially it presented just a few sherds, but it seems to be a sterile layer. It contained an elevated percentage of taxcal, pumice stone (?), gravel and thick stones. It was visible in all the profiles of the main pit, in the deeper layers (15, 16 and 17), and it reached a maximum thickness of 60-70 cm, though it could be thicker. Figure 6-8 shows the code for the identification of the layers observed in the excavations conducted at Structure 15-1.

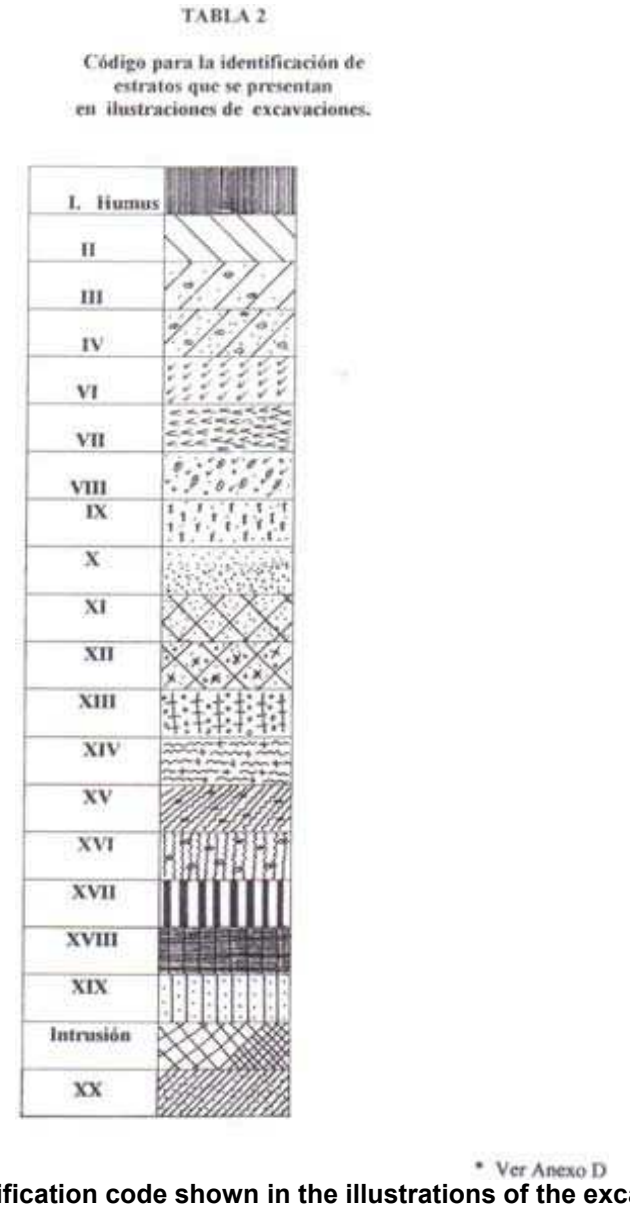


Fig. 6-8. Layer identification code shown in the illustrations of the excavations conducted.

Special layers

These are considered as inclusions not present in every pit, they occur mostly in the main pit and in Pit 4-72. They may consist of thick sand used in refills, intrusions created by animals or by other unknown causes.

Description of significant artifacts

Figurines

Pit 4-62-1
ZOOMORPHIC CERAMIC FIGURINE. A bowl rim decoration elaborated with a red paste [Fig. 6-9].

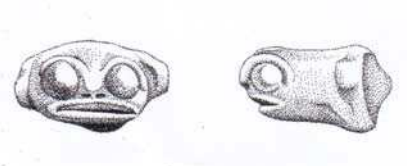


Fig. 6-9. Zoomorphic ceramic figurine. A bowl rim decoration elaborated with a red paste. Code: 4-62-1.

Pit 4-82-4
ZOOMORPHIC FACE, PROBABLY REPRESENTING AN OWL. Large eyes, elaborated through the puncturing technique, an appliqué ornament decorates the head and descends surrounding the face. Elaborated with a red paste and eroded at the front [Fig. 6-10].

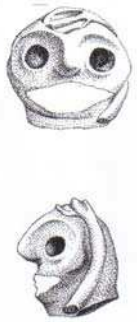


Fig. 6-10. Zoomorphic face, probably representing an owl. Large eyes, elaborated through the puncturing technique, an appliqué ornament decorates the head and descends surrounding the face. Elaborated with a red paste and eroded at its front. Code 4-82-4.

Pit 4-91-7
ANTHROPOMORPHIC FEMALE FACE WITH HEADDRESS. Similar to PACH 4-631-2, almond-shaped eyes, eroded nose, with signs of smoke exposure [Fig. 6-11a, b]

Fig. 6-11a, b. Anthropomorphic female face with headdress. Similar to PACH 4-631-2, almond-shaped eyes, eroded nose, with signs of smoke exposure. Code 4-91-7.

Pit 4-223-1
SMALL MALE HEAD MOUNTED ON A CYLINDER. Elaborated in a light cream paste, probably a white paste, with punctured, triangular eyes and remains of red paint on its surface [Fig. 6-12]

Fig. 6-12. Small male head mounted on a cylinder. Elaborated in a light cream paste, probably a white paste, with punctured, triangular eyes and remains of red paint on its surface. Code 4-223-1.

Ceramic
Pit 4-82-11
BROWN PITCHER with lateral handles attached to a punctured rim. Signs of smoke exposure, coarse surface [Fig. 6-13]

Fig. 6-13. Brown pitcher with lateral handles attached to a punctured rim. Code 4-82-11.

Pit 4-91-4, 5 and 6
RED PITCHER with vertical incisions on the outer rim; it is part of an offering situated at the center of Structure 15-1, the paste is of medium thickness [Fig. 6-14].

Fig. 6-14. Red pitcher with vertical incisions on the outer rim. Code 4-91-(4, 5, 6).

Pit 4-221-2
Rim of brown bowl with notched decoration of parallel, vertical lines [Fig. 6-15].

Fig. 6-15. Rim of brown bowl with notched decoration of parallel, vertical lines. Code 4-221-2.

Pit 4-72-?
Ceramic fragment with red slip and incised decoration made of circular designs. It was found isolated at the bottom of the canal in Pit 4-72, between traits 4-R-17 and 4-R-22 [Fig. 6-16].

Fig. 6-16. Ceramic fragment with a red slip and incised decoration made of circular designs.

Pit 4-91-?
Rim of dark brown bowl with incised decoration of parallel vertical lines, horizontal lines, and semicircles. The precise place of origin is uncertain, and it was found while clearing the profile of the main pit (91) [Fig. 6-17].

Fig. 6-17. Rim of dark brown bowl with incised decoration of parallel vertical lines, horizontal lines, and semicircles.

List of traits, Structure 15-1, Operation 4

This list includes the traits detected during the excavations at Mound 15, this includes the excavations conducted at Structure 15-1 (Belches-Luín) and the excavations at the canals (Cossich V.; see Chapter 7) **[Figs. 6-18, 6-19]**.

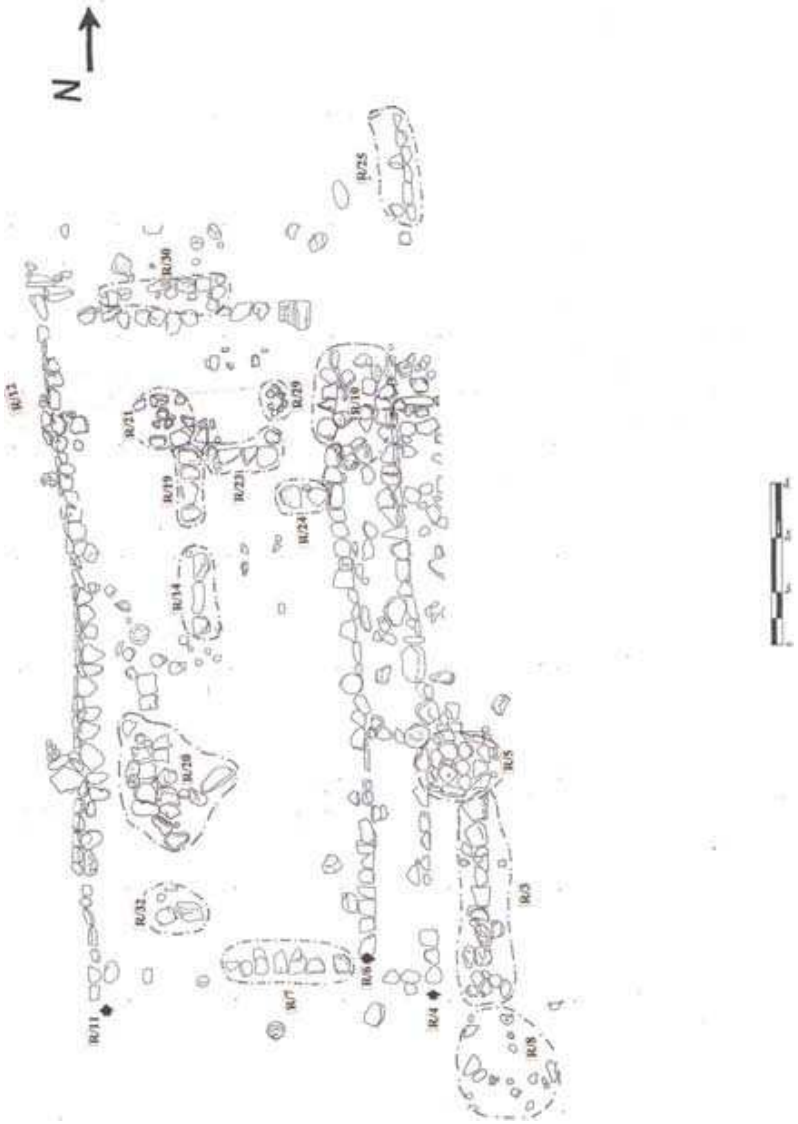


Fig. 6-18. Traits of Structure 15-1.

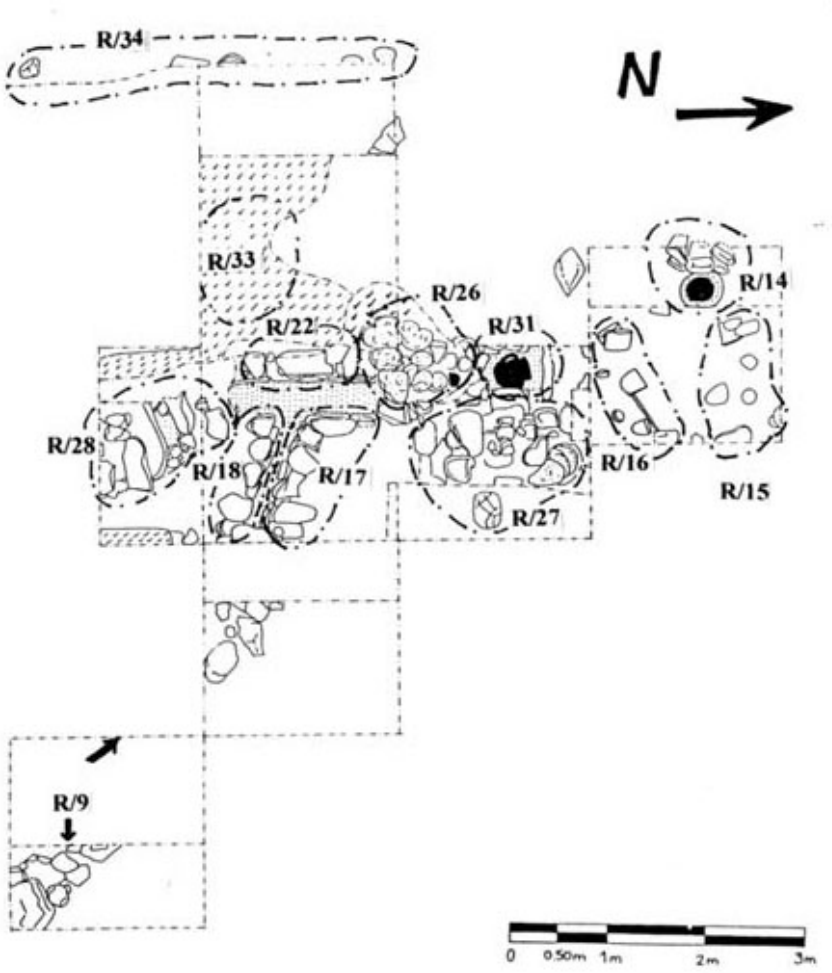


Fig. 6-19. Traits discovered under Structure 15-1.

LIST OF TRAITS

No.	Description	Comment
1	Canal south of Structure 15-1 (archaeologist in charge: Margarita Cossich V.)	It corresponds to the finding of one segment of a canal (Pits 4-4, 4-5 and 4-14) which presented no prolongation. Only 1.50 m of each lateral wall were found. It runs on a northwest-southeast direction.
2	Canal south of Structure 15-1 (archaeologist in charge: Margarita Cossich V.)	It corresponds to the flagstone and other stones located close to Trait 4-R-1, which do not follow an alignment or possible relationship with the preceding trait. The orientation of this little canal was measured at the center (considering traits 4-R-1 and 4-R-2 as one single canal), the orientation is 305º Az.
3	Stone alignment positioned in a north-south direction	Stone alignment later identified as part of the southeast corner of Structure 15-1, presumably collapsed.

4	Stone alignment positioned in a north-south direction	Stone alignment
5	Circular grouping of stones associated with traits 4-R-4 and 4-R-6	Accumulation of stones in Pit 4-83
6	Stone alignment positioned in a north-south direction, east wall of Structure 15-1	Stone alignment located in Pit 4-63 and 4-72, later identified as part of the east wall of Structure 15-1
7	Stone alignment positioned in an east-west direction, south wall of Structure 15-1	South wall of Structure 15-1
8	Stones irregularly grouped at the southeast corner of Structure 15-1	Group of stones located on the outside of the southeast corner of Structure 15-1
9	Canal observed under Structure 15-1	Canal outside Structure 15-1 connecting with the small canal inside the structure. This constitutes the 18 m of the total north-south alignment of the canal, up to the canal found below Structure 15-1. Its construction variants include covered and uncovered sections, but none of them present any type of floor inside the canal. There are two types of traits classified by the differences in branching construction and orientation. The orientation of this canal is as follows: 356º Az following a straight line from Pit 4-6 to Pit 4-36, and 340º Az along the curvature from Pit 4-36 to Pit 4-64.
10	Irregular grouping of stones near the northeast corner of Structure 15-1	Abundant “disordered” stones, apparently fallen or collapsed, which continue towards the east in the same disordered manner.
11	Stone alignment along a north-south direction; this is the west wall of Structure 15-1	This corner also corresponds to the south end of the stone alignment identified as Trait 4-R-11 in Pit 4-170.
12	Stone alignment positioned in a north-south direction, part of the west wall of Structure 15-1	Later identified as a part of Trait 4-R-11.
13	Canal at the south of Structure 15-1 (archaeologist in charge: Margarita Cossich V.)	This was classified as a different canal because we do not know whether this branching to the southeast is part of the same canal positioned in a north-south orientation. It is 12 m long. It is formed by sections with no covers and with a stone floor inside the canals. The orientation is 335º Az from Pit 4-631 to Pit 4-641, 361º Az from Pit 4-641 to Pit 4-459, and 305º Az from Pit 4-459 to Pit 4-486.
14	Niche and vessel at the center of Structure 15-1	Excavated below Structure 15-1, it represents the niche containing the large vessel and large stones on top of the deposit that show the four cardinal directions and the additional vertical direction of Maya cosmology. Interestingly,

		the modern Maya around Chocolá still build their hearths with three stones as base or support, while ethnohistorical Maya origins reflect the belief that through the hearths in each household, there is a connection with the underworld and heaven. Perhaps that's why the large bowl represented an offering required to show respect to the myths of the origin of the universe.
15	Group of stones north of the main pit at Structure 15-1	Excavated below Structure 15-1.
16	Group of stones south of the main pit at Structure 15-1	Excavated below Structure 15-1.
17	Slightly semicircular stone alignment, part of the canal identified as Trait 4-R-9, under Structure 15-1.	Excavated below Structure 15-1.
18	Stone alignment that forms the south portion of the canal, identified as Trait 4-R-9 below Structure 15-1.	Excavated below Structure 15-1.
19	Stones aligned in a north-south orientation inside Structure 15-1, located north of the stone alignment above the vessel (offering and niche identified as Trait 4-R-14).	Stone alignment.
20	Group of stones inside Structure 15-1, associated with the west wall.	In lot 4 of Pit 4-81 there were large sherds mainly associated with Trait 4-R-20 and with the southeastern corner of the pit (Trait 4-R-26). There was also little charcoal and abundant taxcal, together with a lens or intrusive layer seen as a dark brown, diffuse patch on the lot's floor.
21	Group of stones associated with the northern part of Trait 4-R-19	In pit 4-211, towards the east, Trait 4-R-19 continues towards the north. One stone prolongs in a northward direction the alignment of 5 large stones of size and shape similar to those that formed the "roof" of the niche in Trait 4-R-14. This stone alignment has been identified as Trait 4-R-21. Materials: ceramic, 135; taxcal, 34.
22	Stone alignment positioned in a north-south direction, associated with traits 4-R-17 and 4-R-18; it was finally identified as the extension of the canal and as Trait 4-R-9 below Structure 15-1.	Excavated below Structure 15-1.
23	Stone alignment positioned in an east-west direction inside Structure 15-1; traits 4-R-19 and 4-R-21 are visible west of this	An alignment or small group of stones immediately north of the niche with the large pot found in Pit 4-91 (Trait 4-R-14).

	alignment.	
24	Stone alignment positioned in an east-west direction, directly associated with the east wall of Structure 15-1 (Trait 4-R-6)	
25	Stone alignment positioned in a north-south direction, north of Structure 15-1; probably part of an adjacent structure	A trait similar to other stone traits found in the southern half of Structure 15-1 (traits 4-R.3, 4-R-4, 4-R-5, 4-R-6, 4-R-7, 4-R-8, 4-R-20) which rests on Layer 2, with an increased presence of gravel and small sherds not exceeding 1.5 cm in length but ties to the north within the structure
26	Circular grouping of pink stones, below Structure 15-1 and associated with traits 4-R-17, 4-R-18, 4-R-22, 4-R-27, 4-R-28, 4-R-31 and 4-R-33. 4-R-9 (canal)	Excavated below Structure 15-1
27	Grouping of stones, east of Trait 4-R-31, placed in a north-south direction, which are a part of the canal that seems to be the continuation of the one formed by traits 4-R-22 and 4-R-18.	Excavated below Structure 15-1
28	South extension of canal formed by traits 4-R-18 and 4-R-22 to the north	Excavated below Structure 15-1
29	Group of stones within Structure 15-1, near its northwestern corner	
30	Stone alignment positioned in an east-west direction, parallel to the north wall of Structure 15-1	Probably an access step on the wall or north wall of the structure
31	Extension towards the northwest, North of the canal (Trait 4-R-9) which extends below Structure 15-1	Excavated below Structure 15-1
32	Small group of stones associated with the south wall of Structure 15-1	Group of stones found in Pit 4-61
33	Floor 3, maybe a part of a substructure (?)	Excavated under Structure 15-1; a trait is constituted by a special finding, such as architectural systems, floors, etc. These ones were given a correlative number as they appeared, jointly with the excavation conducted by Belches
34	Stone alignment positioned in a north-south direction under the southern section of the west wall of Structure 15-1	Excavated below Structure 15-1
35	Canal south of Structure 15-1 (archaeologist in charge:	This classification was made, like that of Trait 4-R-13, consisting of a bifurcation in a

	Margarita Cossich V.)	southwest direction. The system of construction changes by having no covers and no interior stones as a floor inside the canal. Orientation 37º Az from Pit 4-455 to Pit 4-465 and 20º Az from Pit 4-465 to Pit 4-486[1]
36	Floor, southwest canal	This is the floor located in Pit 4-735, made of a very compacted reddish brown mud 1 cm thick, on top of another gray sandy layer with pumice stone which gives the sand a lighter tone, with a thickness of up to 3 cm. One light brown, almost yellow layer with abundant taxcal of many colors, and 5 to 10 cm in thickness is visible under the sand layer; we still do not know whether it is a filling or a part of the floor. This floor was only located at the west side of the pit, at 0.90 m (measurement taken in relation to the Datum).
37	Southwest canal excavated in 2003 and re-excavated in 2004	Located in Pit 4-735 like the preceding one, but this one is a section of the canal, with a portion with covering and another one without covering that follows the same alignment as Pit 4-17 excavated in 2003. The orientation of the canal in Pit 4-17 is 310º Az and the canal in Pit 4-735 is 330º Az.

Description of particularly significant traits

STRATIGRAPHY [See Fig. 6-7a]
Natural layers 1, 2 and 3 are present and distinguishable in the south profile of Pit 4-82, shown here with the first 4 lots in view.

STRUCTURE 15-1, LATE CONSTRUCTION PHASE [Fig. 6-20].

[1] The two orientations of the bifurcations were taken up to the red stone at the center of the bifurcation.

Northeast view of excavations conducted at Structure 15-1. The stone alignments are well defined, and the west wall is seen uncovered at the level of what probably may have been a platform supporting a structure which did not last through time.

Fig. 6-20. Southwest view of the excavation conducted at Structure 15-1.

TRAIT 4-R-11 [Fig. 6-21]

A different southwest view of the excavation; the individual stands precisely on the stone alignment identified as Trait 4-R-11, where the continuity of stones disappears, we believe, because it is where some kind of access to the structure would have been placed.

Fig. 6-21. Another southwest view of the excavation; the individual stands precisely on the stone alignment identified as Trait 4-R-11.

TRAIT 4-R-9 **[Fig. 6-22]**

Trait 4-R-9 seen from the south; the stone alignment towards the north was initially identified as Trait 4-R-17, and the stone alignment towards the south was initially identified as Trait 4-R-18. The canal continues with the characteristics already observed in some of its stretches to the south; basically, there are middle sized cobbles vertically placed [Trait 4-R-18] or horizontally placed (Trait 4-R-17], crowned

by a border of totally horizontal stones covered by a layer of hard and compact dirt with abundant taxcal and gravel (Layer 8).

Fig. 6-22. Trait 9, viewed from the south; the stone alignment to the north was initially identified as Trait 17, and the stone alignment to the sough was initially identified as Trait 18.

TRAIT 4-R-S 9, 20 and 33 [Fig. 6-23]

Northeast view of traits 4-R-9, 4-R-20 and 4-R-33 and how they relate to the external alignments of the structure.

Fig. 6-23. The northeast view of traits 4-R-9, 4-R-20 and 4-R-33.

TRAIT 4-R-6 [Fig. 6-24]

Accumulation of stones identified as Trait 4-R-5. Note the inclusion of a metate fragment in the architecture. This may probably be an access way.

Fig. 6-24. Accumulation of stones identified as Trait 4-R-5. Note the inclusion of a metate fragment in the architecture.

TRAITS 4-R-28 and 4-R-29 [Fig. 6-25]

These traits show two types of canals. The canal corresponding to Trait 4-R-28 includes large flagstones covers. The canal identified as Trait 4-R-9 is open, narrower, and shows a pronounced curve.

Fig. 6-25. Traits 4-R-28 and 4-R-9. The canal identified as Trait 4-R-9 is open, narrower, and shows a pronounced curve.

TRAIT 4-R-19 [Fig. 6-26]

Seen from the west, Trait 4-R-19 is visible across the center of the picture, at its left the stone alignment identified as Trait 4-R-23, and the two alignments in the back: Trait 4-R-6 and Trait 4-R-4 behind it.

Fig. 6-26. Seen from the west, Trait 4-R-19, Trait 4-R-23, Trait 4-R-6 and then Trait 4-R-4.

TRAIT 4-R-30 [Fig. 6-27]

Trait 4-R-30 viewed from the northeast corner; it is probably an access step in the northern wall of the structure.

Fig. 6-27. Trait 4-R-30 viewed from the northeast corner, probably an access step.

TRAIT 4-R-14 [Fig. 6-28]

Viewed from the east, Trait 4-R-14 before the vessel was removed. This is the main pit of the excavation.

Fig. 6-28. Viewed from the east, Trait 4-R-14 before the vessel was removed.

TRAIT 4-R-11 [6-29]

The stone alignment identified as Trait 4-R-11 viewed from the northwest; the sloping stones exhibit a more marked inclination as they extend north.

Fig. 6-29. The stone alignment identified as Trait 4-R-11 viewed from the northwest.

TRAIT 4-R-20 [Fig. 6-30]

From the west, Trait 4-R-20, the presumed “Floor 3”, is observed on the surface; the relationship between Trait 4-R-26 (accumulation of pink stones on top of which abundant ceramic remains and charcoal were found) with the canal or Trait 4-R-9 are also visible.

Fig. 6-30. From the west, Trait 4-R-20, the presumed "Floor 3", is observed on the surface; the connections between Trait 4-R-26 with the canal or Trait 4-R-9 are also visible.

TRAIT 4-R-26 [Fig. 6-31]

Another view (to the south) of the same image presented earlier.

Fig. 6-31. Another view (to the south) of the same image presented earlier.

TRAIT 4-R-9 [Fig. 6-32]

Detail of Trait 4-R-9, with a circular space probably left by a tree trunk placed inside the canal. This is the view from the west.

Fig. 6-32. Detail of Trait 4-R-9. View from the west.

THE SMALL CANAL AND OTHER TRAITS [Fig. 6-33]

The canal and its association with other traits. This has been described earlier.

Fig. 6.33. The canal and its association with other traits.

TRAIT 4-R-31 [Fig. 6-34a, b]

Detail of Trait 4-R-31 or “Vessel number 2”, found inside the canal. Its size and placement rule out any functional purpose (like water control); it probably fell down accidentally or was put in place, when the water level was very low or absent, as a part of a ritual. Further definition of its function requires association with other findings, mainly with Trait 4-R-26.

Fig. 6-34a, b. Detail of "Vessel number 2", found inside the canal.

TRAITS LOCATED UNDER STRUCTURE 15-1 [Fig. 6-35]

View from the southeast of traits of interest found under Structure 15-1.

Fig. 6-35. View from the southeast of traits of interest found under Structure 15-1.

Conclusion

Structure 15-1 at Mound 15 is located in the north group of the site. We classify it within the elite structure groups because of its geographical location, the architectural characteristics of the structure itself and those of its associated constructions, as well as the characteristics of the ceramic artifacts found as evidence in the area. As we said earlier, drawing definite conclusions at this point of the research would be premature, since it is necessary to evaluate the information obtained through the physical and chemical analysis of the material obtained.

Basically, we have a construction made of river cobbles of rather similar size and shape: they are rounded, some show traces of carving, and some of them vary from a whitish to a pink or greenish coloration, porous and bulky stones are scarce. The stones appear in alignments that connect to delimit a rectangular area whose major axis extends in a north-south direction, obviously sharing a very usual pattern in Mesoamerica, and certainly an important one in Mayan ideology.

The west wall of the structure presents carved, long, oval stones, placed in an inclined plane or *talud.*

The east wall presents a stone alignment of big and roughly circular stones. Towards the east of the wall there are two stone alignments which in my view very probably represent two outer steps or benches. We may even speculate that they were external planters. The accumulation of stones in association with these two stone courses may indicate an access ramp.

The south wall shows a loss of continuity in the aligned stones, and therefore we could speculate that this wall may have included some kind of access, just as the north wall where apparently there were one or two access steps.

If we consider that the stone alignments were the walls that defined a platform or support of a building that vanished, the surface dirt immediately above the stones or at their same level would then represent the interior floor of the structure.

The interior of the structure seems to be divided in at least two to four rooms not fully independent from one another, or at least not fully delimited by stone walls.

A stone alignment stands out, inside the structure, under which an offering, consisting of a vessel, was found. This offering was in a niche with ritual and religious significance, built with five stones that represent the four cardinal points and a central one, symbolizing the five points of Mayan cosmology (Dr. Juan Antonio Valdés, personal communication, 2004); this finding outlines the major significance, for the ancient inhabitants, of the strict orientation towards the cardinal directions and its associated ideology.

The stone accumulation identified as Trait 4-R-20 may have been used as a bench, resting area, or as a place to position something or someone that was not to be in direct contact with the floor. We have ruled out the possibility that the stones were a part of a different niche, offering, or burial.

No postholes or areas with an accumulation of gravel or small stones were found in the internal corners of the structure to house the pillars of the walls and the roof of a perishable structure.

To the north of the structure there are three stone accumulations, one of them probably serving as a hearth; however, no major indicators of constant fire such as burned mud, special stone arrangements or abundant charcoal were observed, though a large fragment of charcoal was found in one of these stone accumulations.

I am not prepared to assert that there was an interior hearth, at least one used for the constant cooking of meals during an extended period of time, understood as the occupational time.

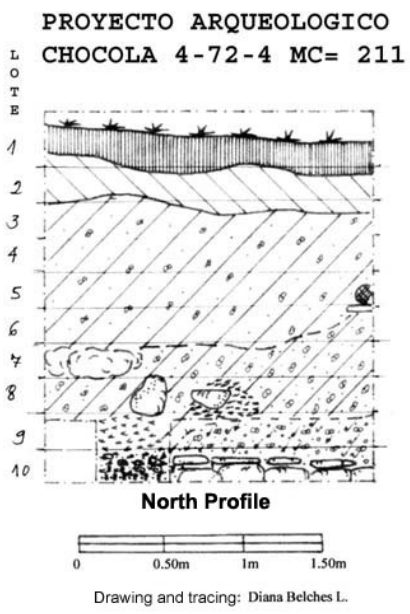
For now, the occupational temporality of the structure may be traced back to the Late Pre-Classic period, with possible periods without occupation or with reoccupation at a later time.

A first constructive stage seems to exist under Structure 15-1, associated with the water management canal found at the south. Its chronological association possibly dates to the Middle Pre-Classic period.

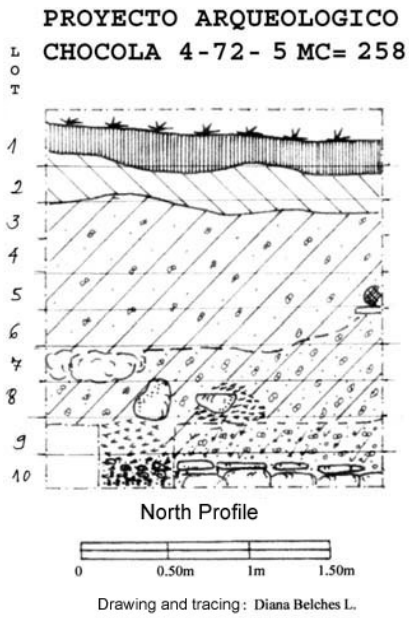
The methods of construction used, apparently involved the use of cobbles, and carved and plain pumice stone; the walls were made with a mix of mud, organic material and taxcal that may have been burnt for consolidation, as we have noted tiny particles of charcoal dispersed in the composition of several layers, mainly at the south of Pit 4-62 associated with traits 4-R-28, 4-R-18 and 4-R-22.

The trait identified as Floor 3, in addition to having served as a floor, may have been the body of a structure, or the way an earlier architectural trait was filled in.

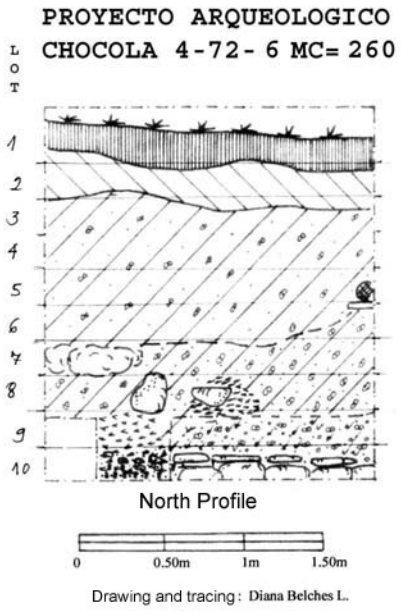
In the main pit, the stone accumulation and its association with sherds, earth blocks and gravel with signs of fire, suggests that it was there for the cooking of meals or for use in ritual celebrations, more intense or frequent than the presumed hearths found in the internal surface of the structure.



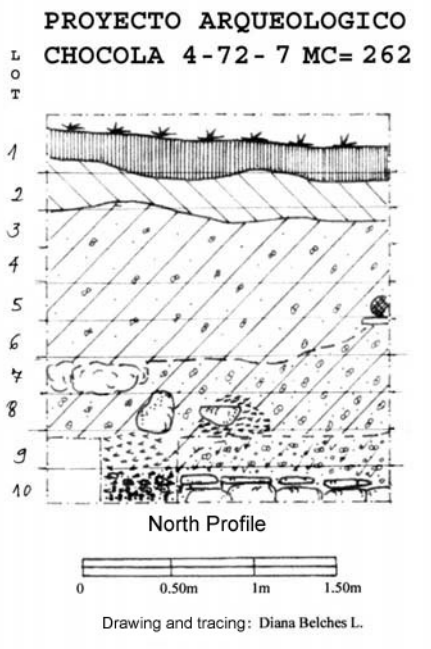
^{14}C B.C. 390-190 (cal)

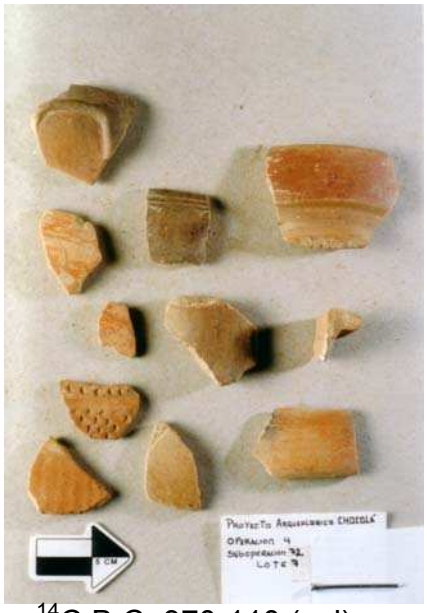


^{14}C B.C. 390-80 (cal)

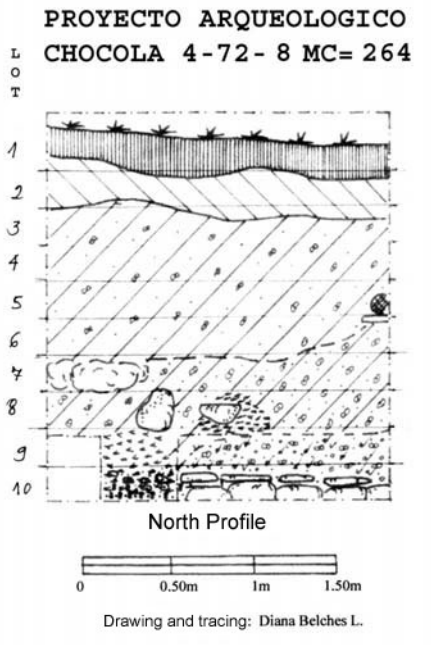


^{14}C B.C. 390-160 (cal)

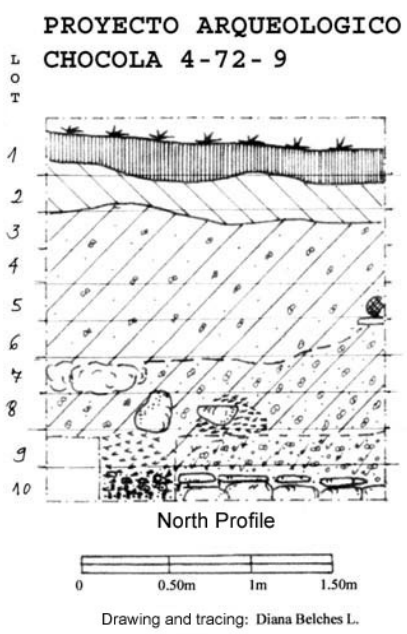


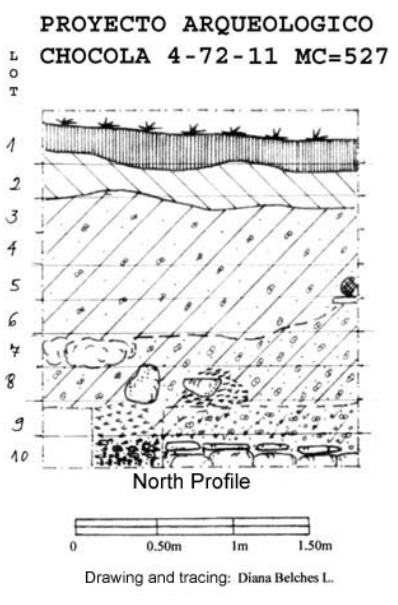


^{14}C B.C. 370-110 (cal)

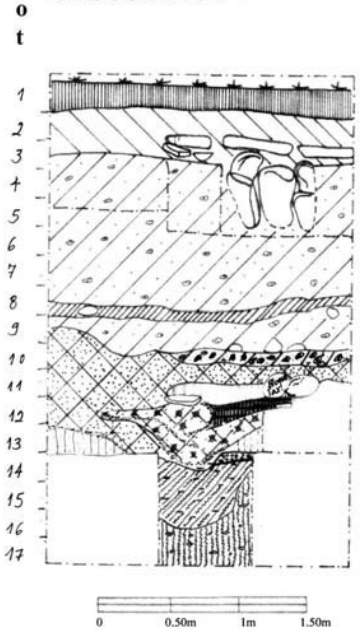


^{14}C B.C. 500-460/B.C. 430-A.C. 20 (cal)


PROYECTO ARQUEOLOGICO
CHOCOLA 4-72- 9
LOT
1
2
3
4
5
6
7
8
9
10
North Profile
0
0.50m
1m
1.50m
Drawing and tracing: Diana Belches L.

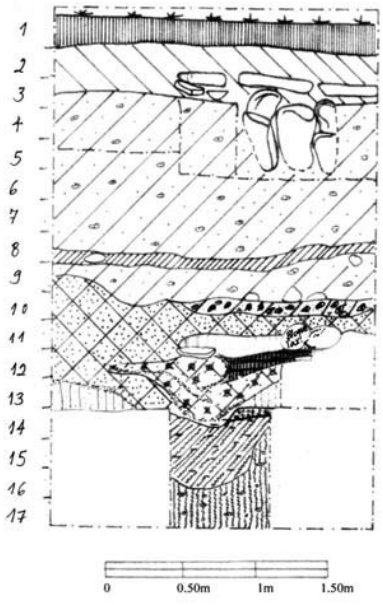

PROYECTO ARQUEOLOGICO
CHOCOLA 4-72-11 MC=527
LOT
1
2
3
4
5
6
7
8
9
10
North Profile
0
0.50m
1m
1.50m
Drawing and tracing: Diana Belches L.

PROYECTO ARQUEOLOGICO
CHOCOLA 4-91- 4

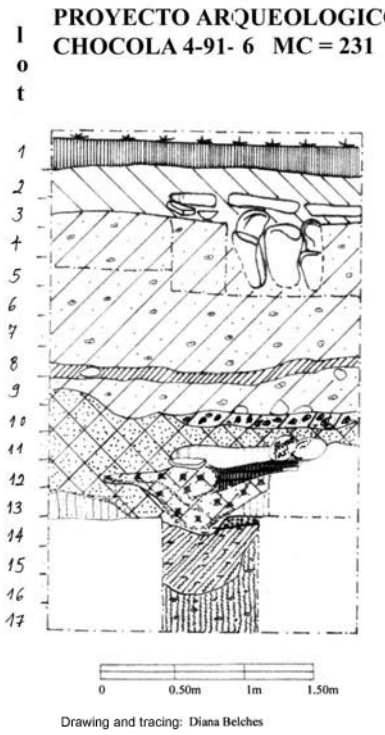


Drawing and tracing: Diana Belches

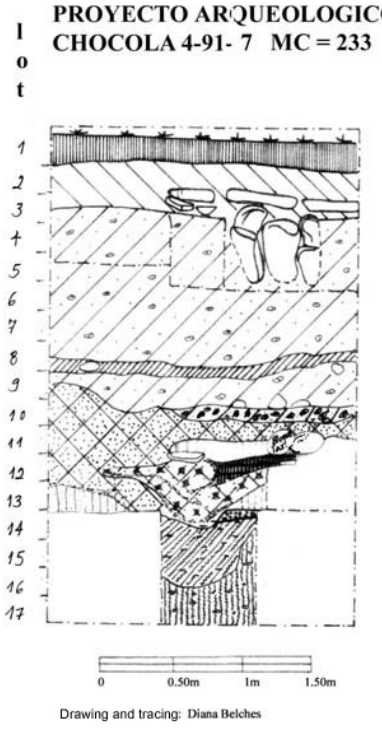
PROYECTO ARQUEOLOGICO
CHOCOLA 4-91- 5

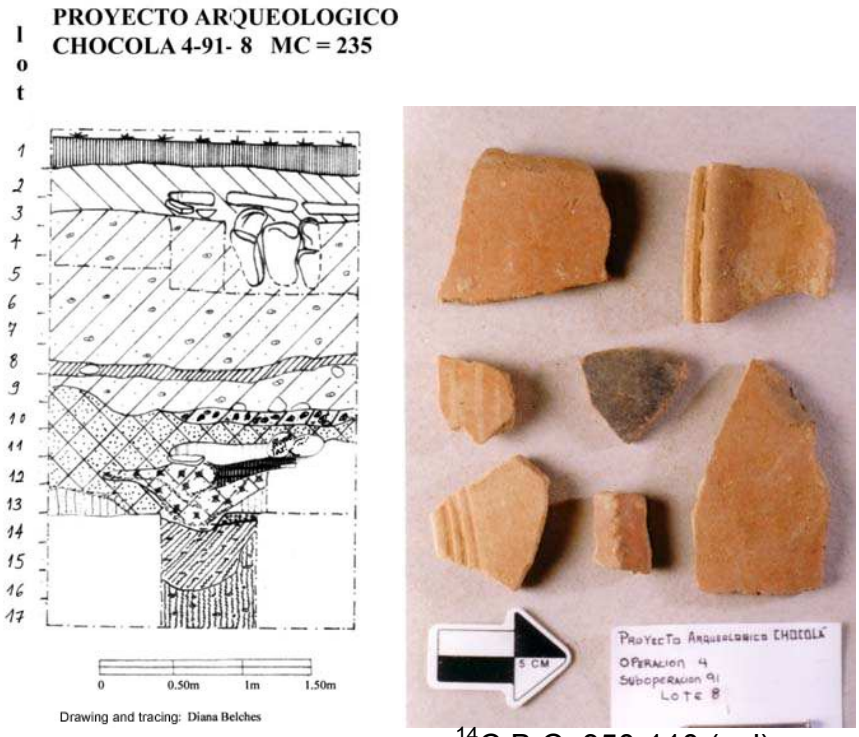


Drawing and tracing: Diana Belches



^{14}C A.C. 380-160 (cal)





^{14}C B.C. 350-110 (cal)

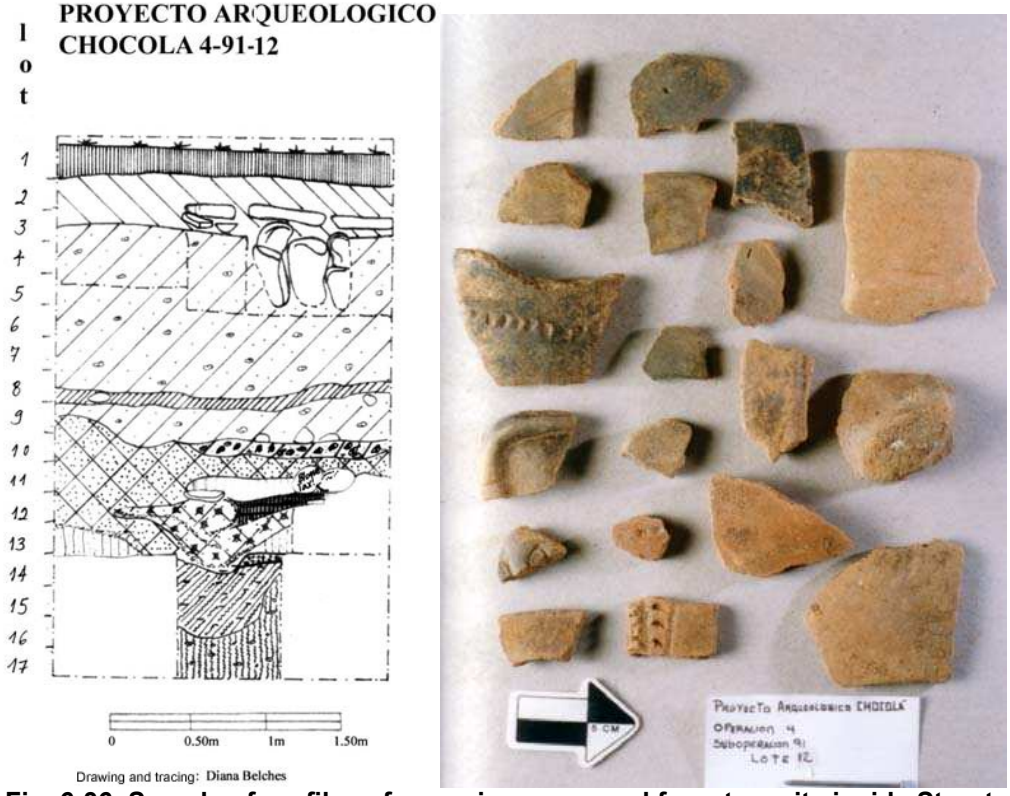


Fig. 6-36. Sample of profiles of ceramics recovered from two pits inside Structure 15-1, with radiocarbon dates.

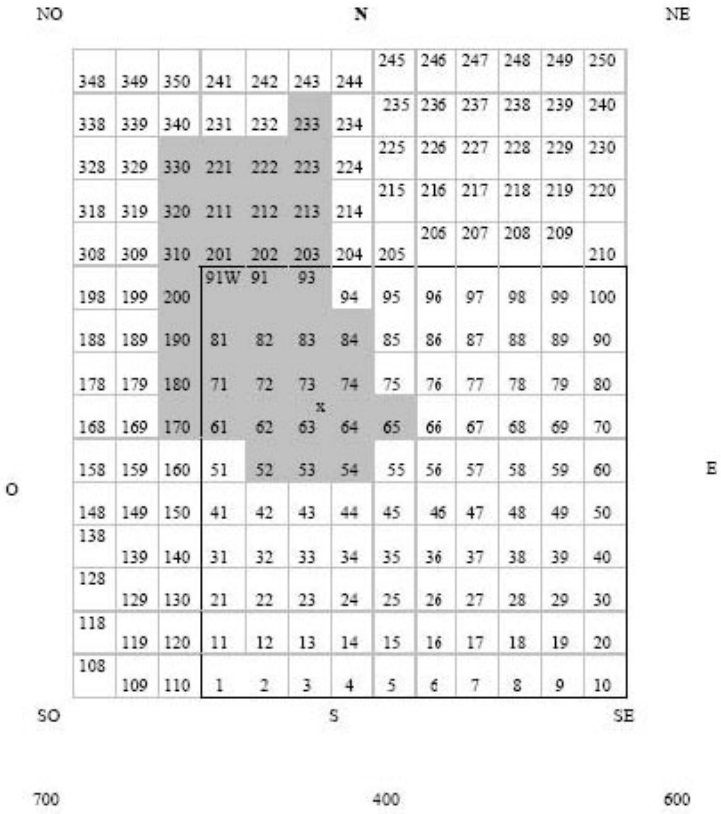


Fig. 6-37. Diagram for the identification of sub-operations excavated at Mound 15 (Operation 4), June-July 2004. The central area (also the initial excavation area) is shown within the black square frame. The shaded area indicates the operations involving Structure 15-1 and the water canal below. Each square represents a 2 m by 2 m area, except operations 91W, and 92, with an excavated area of 2 x 1 m. Each quadrant outside the central area has been given a different number in the hundreds, assigned according to the arrangement of the extension of the excavation within them. The "x" indicates the location of Datum 1 and Subdatum 2.

Chapter 7

Excavations at the North Group: The Canals at Mound 15

Margarita Cossich Vielman

With contributions by Jonathan Kaplan, Juan Antonio Valdés and Federico Paredes Umaña

Introduction

This work presents the excavation results of 41 pits during PACH's second field season, accomplished to define the route of a water management system at Mound 15 [Fig. 7-1 a, b].

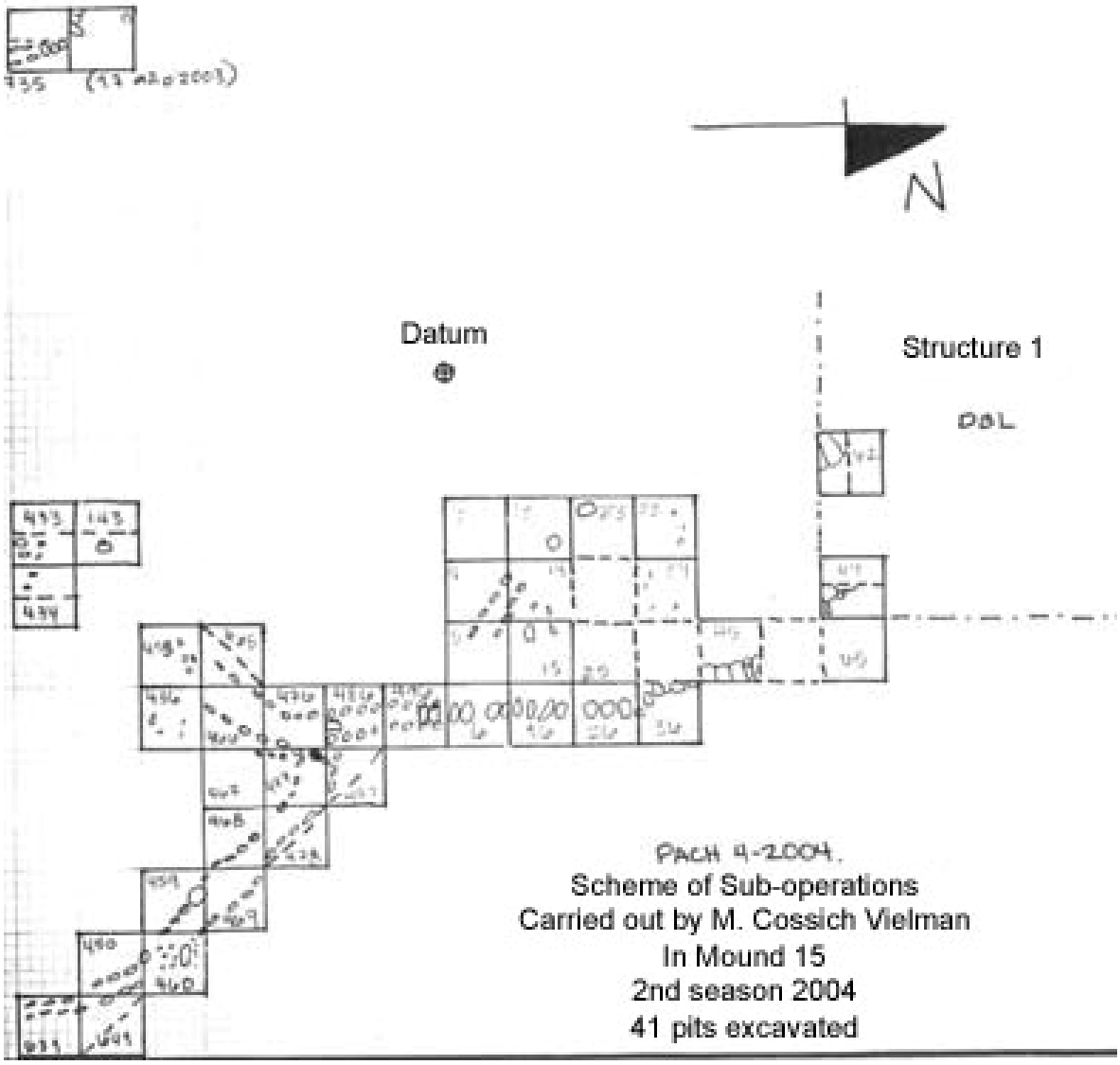


Fig. 7-1 a, b. The 41 Cartesian units that reveal the canals at Mound 15, and the plan view of the canals, PACH 2004.

Traits of a very sophisticated ancient hydraulic technology were discovered, during the 2003 fieldwork, in the road cut that transversally splits Mound 15. These traits were located approximately at a depth of one meter below the surface in the transversal cut, as well as in test pits completed on the top of this mound [Fig. 7-2 a, b, c, d, e, f, g, h] (see Valdés and Kaplan, 2003). Cartesian excavations carried out later and discussed here, revealed other traits connected with this water management system.

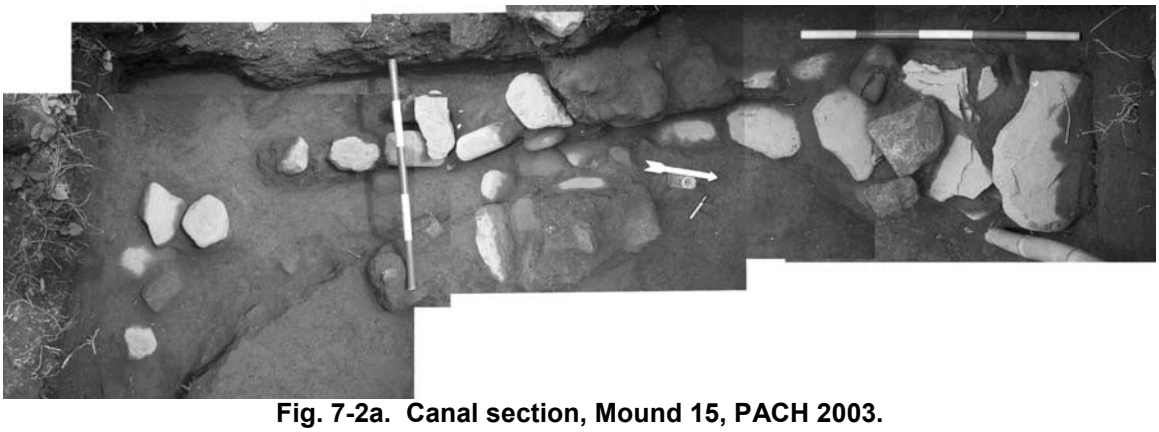


Fig. 7-2a. Canal section, Mound 15, PACH 2003.

Fig. 7-2b. Canal section, Mound 15, PACH 2003.

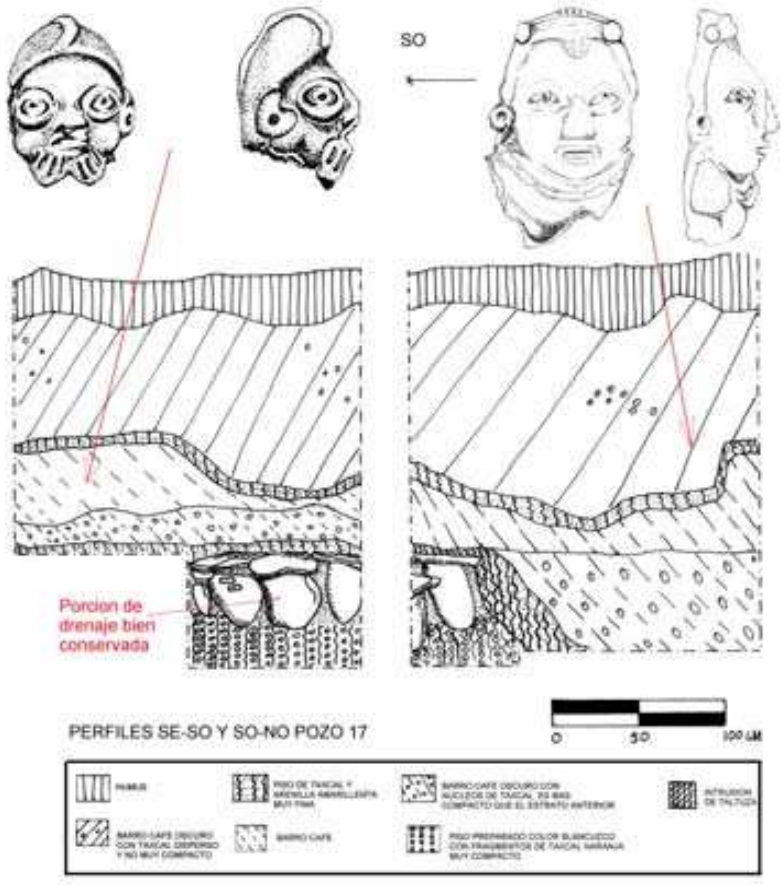


Fig. 7-2c. Canal profile, Mound 15, PACH 2003, with associated artifacts.

Fig. 7-2d. Canal, Mound 15, PACH 2003.

Fig. 7-2e,f. Road cut showing the canals, Mound 15, PACH 2003.

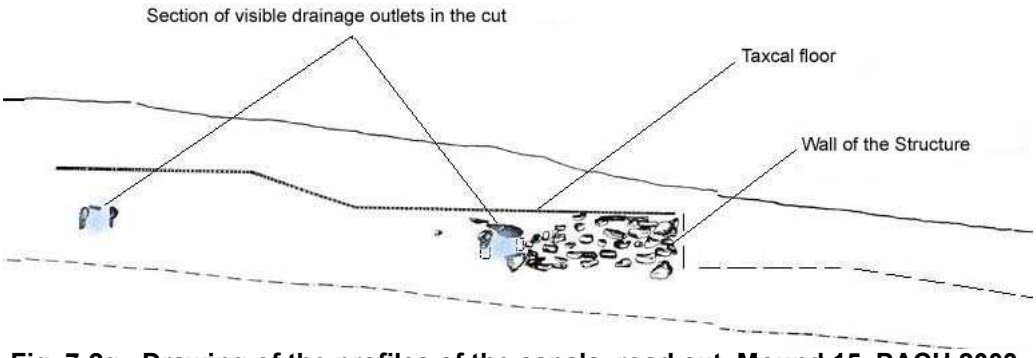


Fig. 7-2g. Drawing of the profiles of the canals, road cut, Mound 15, PACH 2003.

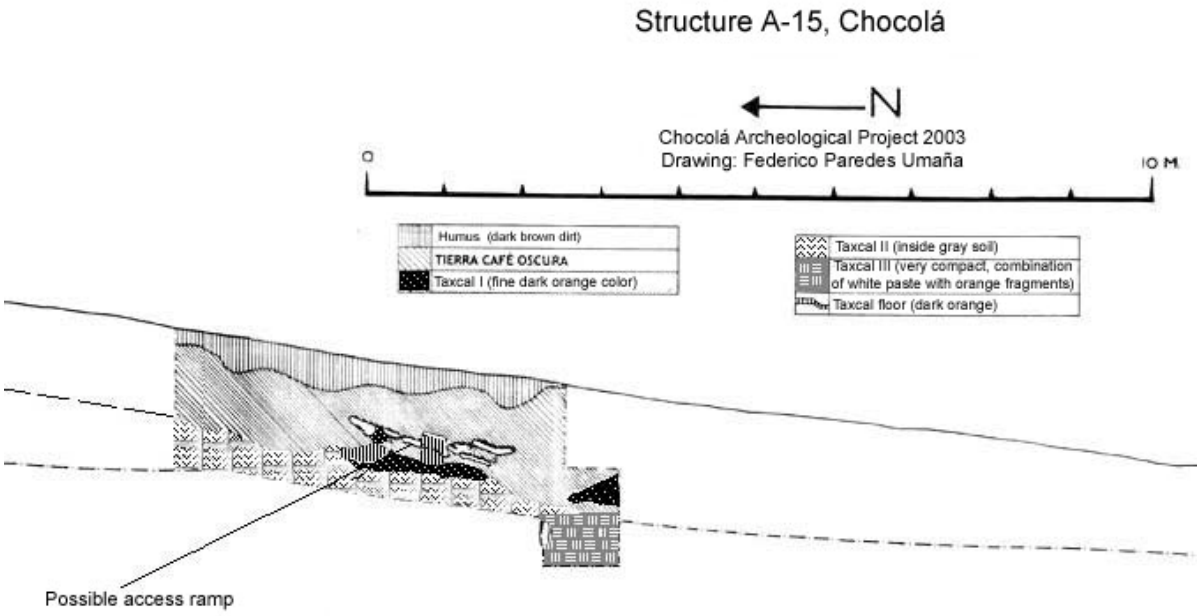


Fig. 7-2h. Drawing of profile, road cut, Mound 15, PACH, 2003.

The verification of the existence of hydraulic works during the 2003 field season in two mounds, 9 and 15 [Fig. 7-3] represents an important aspect for understanding the nature of the achievements attained by the ancient inhabitants of Chocolá.

Fig. 7-3. Section of the underground canal found north of Mound 9.

Such achievements represent a high degree of social complexity, apparently very early within the context of the Maya. The discoveries of the 2003 season, at this site, provided the guidelines to continue investigating the functions of the water

management system as well as the particular aspects of its construction, its extension through other mounds and sections of the site, and its similarities with other systems known from Tak'alik Ab'aj and K'aminaljuyú [Fig. 7-4].

Fig. 7-4. Canals at K'aminaljuyú (photo by Mauricio Acevedo).

The significance and ubiquity of water management systems has been well understood in world prehistory (Scarborough, 2003). The variety in function and magnitude of these ancient networks was relatively large, but the impact on each type of society and culture was less variable. Usually, water management has had the effect of increasing social complexity in a hierarchical manner; leading to the emergence of a bureaucracy with formal attributions assigned to specific groups. The implication is that societies with water systems generated advantages and opportunities that were not transferred to other societies, in the sense of a collective and organized action. However, in Scarborough's view (ibid.), the achievement of these changes in the political evolution of ancient societies depended on the degree of centralization of power. As we may see, the scenario appears to be rather more complex than that described by Wittfogel (1957), who only required a few specific aspects to define a hydraulic society as equivalent to the "absolute power of the state": 1) an entity that surpasses the generation of surplus production; 2) an entity that overcomes the dependency on rain cycles, and 3) an entity below the level of private property as the base of industrial civilization (Wittfogel, 1957:12, quoted in Scarborough, 2003: 17-18). Clearly, ancient Chocolá fulfilled these characteristics, but, does this mean that it was a state with a strong centralization of power? Moreover, Wittfogel's strict determinist model cannot be applied in all its details. However, it may offer us somewhat of a base to explain the complex developments of societies with sophisticated water management systems (Scarborough, 2003: 11-12).

The discovery of hydraulic management in ancient Chocolá is significant towards the understanding of its context –history of its development, functions and uses, and the real implications for the ancient society. In fact, the project is being initiated as long term work and it is not possible at this stage to resolve all issues about the water management system at the site. No doubt this subject will be the focus of future investigations and will surpass the proposal that motivated them at present; like the implications of the presence of intensive cocoa plantations and the monopolized

exchange of this crop to explain the early development of a great Mayan city, considering the water demand that such a crop required. For example, we may reach an understanding of the social structure through additional investigations of the water control systems, as this will allow the identification of the driving forces in the ancient city with respect to their close or distant neighbors and competitors.

Per unit description of the excavations

Pit 4-14

The first pits worked as of SD 3 were excavated by JK and MCV. The first lot at Pit 4-5, which contained humus and dark brown earth was already showing the first large stones of the season on the northwest side of the pit. At the same time, in Pit 4-14 other stones forming an alignment with the stones of the previous pit were located. Two lots were excavated in this pit. In lot 1 there were: 88 ceramic and 13 obsidian artifacts, one piece of glass, one plain stone, and 4 charcoal samples; in lot 2: 68 ceramic and 6 obsidian artifacts, and 11 taxcal samples.

Pit 4-5

Three lots were excavated in Pit 4-5. The first and second lots contained cobbles (on dark brown soil), and the third lot was excavated in an attempt to find a continuation of the stone alignment, but the search proved unsuccessful. In the north profile, three different layers were observed: humus, dark brown earth, and light brown earth, perhaps part of a floor, in view of the large amount of taxcal it contained. Three lots were excavated. Lot 1 contained: 57 ceramic and 17 obsidian artifacts, one carved stone, and 1 taxcal sample; lot 2 contained: 67 ceramic and 22 obsidian artifacts, as well as 16 taxcal samples; lot 3 contained: 49 ceramic and 15 obsidian artifacts, 1 charcoal and 4 taxcal samples, and one stone slab.

Pit 4-4

Other pits were opened with the purpose of locating the continuation of the first stone alignment. We could finally locate the connection of the stone alignment at the northeast corner of Pit 4-4. Pit 4-4 was excavated in three lots. On the east profile of Pit 4-14, and in addition to the alignment, several other stones were present; therefore, Pit 4-15 was excavated to find new stones and one stone slab (the largest of the group), which had probably collapsed from the upper part of the previously located bases. We descended in the three lots to a light brown earth layer, but no further traits were identified. At this point we deduced that the trait of the aligned stones constituted a canal (traits 4-R-1 and 4-R-2), though only just a section of it. In lot 1 we recovered: 115 ceramic and 18 obsidian artifacts, 1 carved stone and 2 taxcal samples. In lot 2 we found: 36 ceramic and 5 obsidian artifacts, 15 taxcal and 3 charcoal samples; and in lot 3: 30 ceramic artifacts.

Pit 4-3

Pit 4-3 was excavated in two lots with the purpose of locating other stones associated with the alignment, previously found in the west profile of Pit 4-4, but nothing regarding the alignment was found. We reached the light brown soil with taxcal (a possible floor) at a depth of 0.80-1.10 m. The second layer (dark brown)

presented a large amount of mica, and in this pit the layer was similar to sand. In lot 1 there were: 84 ceramic and 28 obsidian artifacts, as well as 7 taxcal and 1 charcoal samples. In lot 2 we found: 34 ceramic and 2 obsidian artifacts.

Pit 4-13

Pit 4-13 was excavated in four lots (plus one special excavation inside trait 4-R-3) and we continued with the search for the continuation of the stone alignment; in lot 3 we reached the level of a light brown soil with taxcal, which is the same layer found in Pit 4-3, lot 2. This layer was deepened an extra 10 cm, but no other stones were found. Two different layers were noted in the south profile: the first composed of dark brown sand, and a second one of more granulous sand. We collected samples of both of them, as well as of the light brown layer, for laboratory analysis. In lot 1 we found: 68 ceramic and 6 obsidian artifacts, and 3 taxcal samples; in lot 2 we found: 83 ceramic and 6 obsidian artifacts, and 1 taxcal sample; in lot 3 we found: 55 ceramic and 9 obsidian artifacts, and 3 charcoal samples; lot 4 contained: 53 ceramic and 8 obsidian artifacts. A possible floor was observed in the special excavation inside trait 4-R-3, it was found at an elevation of 0.86 cm below SD 3 and may possibly continue at 1.10 m.

Pit 4-25

We proceeded with Pit 4-25, searching for a trait that could be part of the stone alignment found at Pit 4-15. Here, at 1.24 m, we reached the possible floor, which was left as an indicator. In lot 1 we found: 107 ceramic and 17 obsidian artifacts, and 5 taxcal samples. In lot 2 we found: 65 ceramic and 4 obsidian artifacts, and 5 taxcal samples.

Pit 4-34

Pit 4-34 was excavated to find out whether there was a relation between the pits of DBL (4-84, 4-74, 4-64 and 4-54) and those of MCV. Two lots were excavated to the floor level. Only several small stones were found. Lot 1 yielded: 53 ceramic and 4 obsidian artifacts, and 1 pumice stone. Lot 2 yielded: 28 ceramic, and 25 obsidian artifacts.

Pit 4-33

Pit 4-33 was excavated to locate the light brown floor with taxcal that would connect it with DBL's pits. A possible gravel floor was benched (above which the stones found by DBL at Pit 64 were located) with small stones resting on it; the excavation was stopped when the light brown floor with taxcal was reached. From lot 1 we recovered: 60 ceramic and 3 obsidian artifacts. Lot 2 yielded: 43 ceramic and 8 obsidian artifacts, and one charcoal sample. Lot 3 yielded: 40 ceramic and 2 obsidian artifacts, one charcoal sample, and one stone slab.

Pit 4-23

In the dark brown soil there was a large stone initially believed to be aligned with the traits excavated by DBL at pits 73 and 83, but only small stones were found and benched; when the excavation was concluded we discovered that the stone alignment of DBL's pits formed the east face of Structure 15-1. Three mammiform supports were recovered, one of which was still adhered to a dish fragment. A black

anthropomorphic head was also found. The pit was excavated until the beginning of the floor (light brown floor with taxcal) was reached. In lot 1 there were: 67 ceramic and 9 obsidian artifacts, one charcoal sample, and two stones; in lot 2: 44 ceramic and 3 obsidian artifacts, and 3 taxcal samples; and in lot 3: 108 ceramic artifacts, 3 obsidian fragments, 3 taxcal samples, and 8 figurines. Additionally, the black anthropomorphic figurine was found [Fig. 7-5a, b] in a lot denominated 2/3, which eliminated the bench.

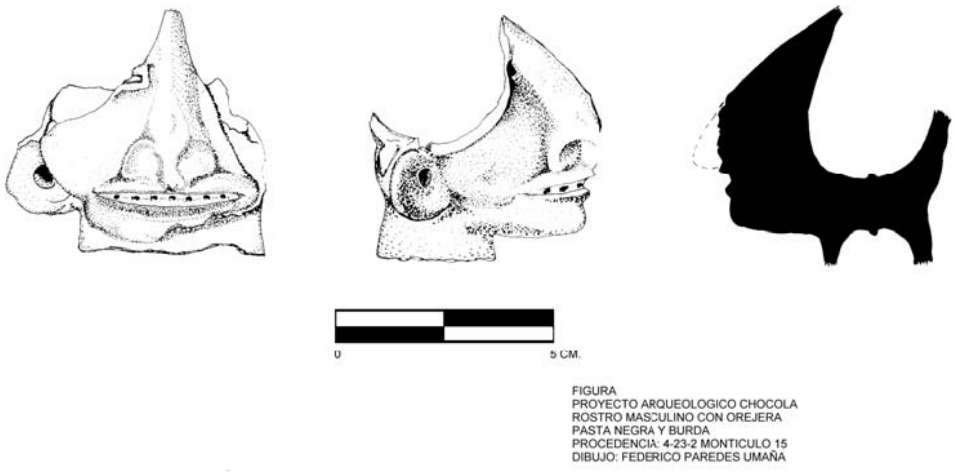


Fig. 7-5a, b. Probable fragment of a black incense burner, recovered in lot 2/3 (the bench), Pit 4-23, at a depth of 0.65 m below SD 3.

Pit 4-6

This pit was initially excavated thinking that we would locate within its perimeter the continuation of the canal found in pits 4-5, 4-4, 4-14, and 4-15. At the north side a bench was excavated due to the presence of a possible floor, evidenced by a change in the color and texture of the soil, which contained more gravel. We found a miniature black bowl, fragmented at the neck, in the third lot, at a depth of 1.89 m and on the south side of the pit; a drawing was made and the corresponding dimensions were recorded for further analysis at the laboratory.

The excavation proceeded after this finding. Other stone slabs were located 10 cm to the west of the miniature (at a depth of 1.99 m), but interestingly, these run on a north-south direction leading us to believe that they were not the continuation of trait 4-R-9 discovered earlier; these slabs continued to the north and the south. Therefore, it was decided to excavate towards the north and to demolish the bench previously excavated, to discern whether it was worthwhile to excavate the next pit to the north. Once the bench was demolished, we could observe that in fact the slabs continued, and that their sizes were larger than the ones previously found.

At the time of discovering the stone slabs (Trait 4-R-9) present at the south side of this pit, we observed that the color of the soil changed from dark brown to light brown on the west side, while the east side maintained its dark brown coloration. The doubt arose at a certain point whether this was a canal (like the one found during the first field season, farther west of the 2004 excavations) or a burial, so we proceeded to remove one slab (the smallest one, and the one that would damage the architectural trait the least). Excavation continued down to a depth of 2.42 m to uncover its interior, where sand was found, confirming that this was in fact a canal.

Pit 4-6 was excavated in five lots plus an additional lot denominated 4/5 inside the canal. In lot 1 we have found: 53 ceramic and 7 obsidian artifacts; in lot 2: 35 ceramic and 7 obsidian artifacts, as well as 2 charcoal samples; in lot 3: 24 ceramic and 10 obsidian artifacts, as well as one charcoal sample, and one small pitcher [Fig. 7-6 a, b, c]; in lot 4: 5 ceramic artifacts; no artifacts were found in lot 5 inside the canal; but in lot 4/5 we found: 7 ceramic artifacts.

Fig. 7-6 a, b, c. Small pitcher found in lot 3, pit 4-6, at a depth of 1.89 m below SD 3.

Pit 4-16

Pit 4-16 was excavated next, and we expected that slabs would be found at a depth of 1.99 m, but the first slab was uncovered at 1.55 m. The north side of the pit was excavated first to see whether the slabs continued towards the north, in Pit 4-26, to simultaneously excavate it, if this was the case. The south side was excavated, leaving at the southwest the root of a tree. The slabs maintained the north to south orientation of Pit 4-6, and were found in the light brown soil. In lot 1 we found: 50 ceramic, 1 metal, and 5 obsidian artifacts; in lot 2: 5 ceramic and 5 obsidian artifacts; in lot 3: 55 ceramic and 5 obsidian artifacts; and in lot 4: 11 ceramic artifacts.

Pit 4-26

Pit 4-26 was the next pit following the orientation of the stone slab alignment. At a depth of 1.40 m a small bench was left to mark a possible taxcal floor associated with the floor of Pit 4-25. The continuation of the slab alignment of the previous pits was found at 1.50 m (higher than the previous ones). In lot 1 we recovered: 75 ceramic and 6 obsidian artifacts; in lot 2: 47 ceramic, and 4 obsidian artifacts, as well as 1 charcoal sample; in lot 3: 52 ceramic and 8 obsidian artifacts, as well as 2 mica, one charcoal, and 6 taxcal samples; no artifacts were recovered in lot 4 (excavated approximately two weeks after the others); and no artifacts were found in lot 5 (excavated one day after lot 4).

Pit 4-36

More slabs were discovered at a depth of 1.51 m in Pit 4-36; when observing the stratigraphy of this pit in relation to the others, we discovered that the light brown earth (yellow) with abundant taxcal was placed above the slabs and at the sides, the other possibility is that the natural soil layer had been dug up to put the canal in place. This section of the canal presented a curve, it was no longer located in the middle of the pit like the previous ones, and it leaned towards the west. For that reason it was decided to excavate Pit 4-45 instead of 46, like we had previously planned. In lot 1 we found: 35 ceramic and 22 obsidian artifacts, one carved stone, one white stone, 8 taxcal samples, and one nail; in lot 2: 46 ceramic and 9 obsidian artifacts; in lot 3: 33 ceramic and 3 obsidian artifacts; no artifacts were found in lot 4 excavated approximately two weeks later.

Pit 4-45

Pit 4-45 was somehow bizarre, as slabs were expected to appear at a depth of approximately 1.40 m, though in fact they were seen, just like in Pit 4-36, at 1.53 m, these continued towards the north but adjacent to the eastern profile of the pit. This led us to excavate Pit 4-65 (Pit 4-55 could not be excavated because there was a tree precisely within its perimeter). Pit 4-45 was selected as the main pit through which we would obtain the largest possible amount of ceramic material we could recover associated with the canal; 17 lots were excavated to a depth of 3.80 m (in relation to Subdatum 3) where we opted to end the excavation due to the absence of materials. In lot 1 we found: 6 ceramic and 52 obsidian artifacts, and one white stone; no artifacts were found in lot 2; lot 3: 63 ceramic and 6 obsidian artifacts; lot 4: 20 ceramic artifacts; lot 5: 34 ceramic and 5 obsidian artifacts; no artifacts were found in lots 6 to 17. Therefore, it appears that the occupational phases associated with the canal and probably with any presence of human life, encompass lots 1 to 5 with a maximum depth of 1.60 m below the datum.

Pit 4-65

In this pit, we switched the point of reference to SD 4, located 0.60 m above the benchmark. This SD was the one used by Diana Belches, who had initiated the excavation of this pit several days before and had left it in the third lot. Work at this pit was very tedious, because even at a depth of over 1.70 m no slabs were found, and this was the depth we had anticipated for their location in relation with the other pits. A headless figurine of a human body was recovered at 1.76 m [Fig. 7-7], and we continued excavating down to 2.45 m, but found no slabs. Only then we understood that exactly under the tree that hindered the excavation of Pit 4-55, the canal made a turn to introduce itself under the structure (denominated Structure 15-1 for being the first one found in the season) [Fig. 7-8a, b] that was being excavated, simultaneously, by DBL. In lot 1 we found: 165 ceramic and 28 obsidian artifacts, and one charcoal sample; no artifacts were found in lots 2 to 6.

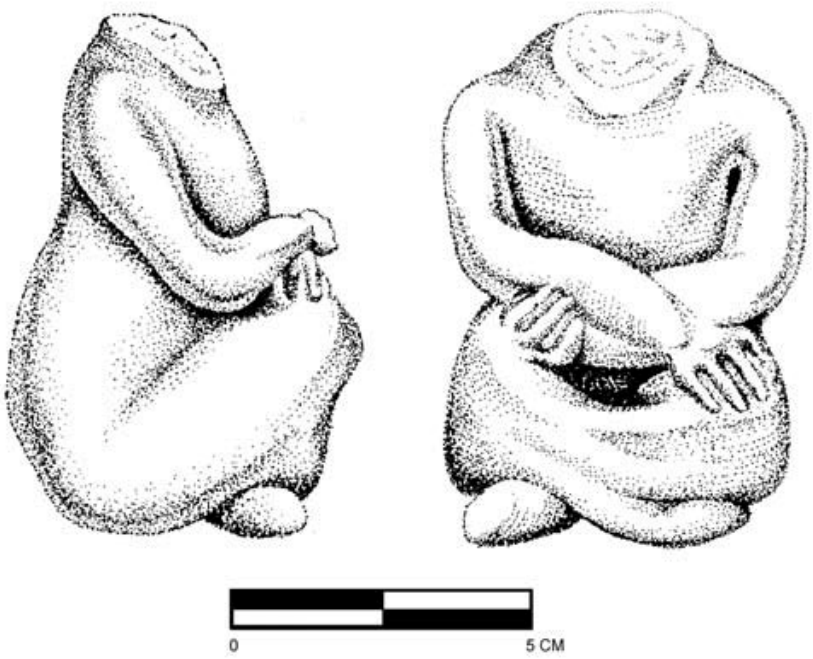


Fig. 7-7. Seated headless figurine with hands resting on its knees, found in lot 4, pit 4-65, at a depth of 1.76 m below SD 4.

Fig. 7-8. Pits 4-65 and 4-64 show the clear continuation of the canal from the outside of the house to the inside, following the water reservoir (not visible in this photo).

Pit 4-64

The following pit was Pit 4-64, already excavated by DBL, but after finding stones on the west profile, I continued excavating only the east side, and stopped upon reaching a depth of 1.65 m. The pit was re-excavated with the purpose of locating the canal. At 2.05 m the slabs we had anticipated finally appeared, still curving towards the west and penetrating underneath the structure; for this reason work in

this pit was discontinued, as doing otherwise would have implied removing stones that shaped Structure 15-1. In lot 1 we found: 121 ceramic and 17 obsidian artifacts; in lot 2: 75 ceramic and 8 obsidian artifacts, and one stone; in lot 3: 75 ceramic and 10 obsidian artifacts, and a few rocks for matrix description; in lot 4: 74 ceramic and 3 obsidian artifacts; no artifacts were recovered in lot 5; ceramic 40, obsidian 30; in lot 6: 21 ceramic artifacts and 8 taxcal samples.

Pit 4-486

To resume the study of the canal without causing damage to DBL's work, it was decided to try to locate the canal that was positioned towards the south; we therefore moved to Pit 4-486 (this pit was out of the IG - Initial Grid - so a new grid was added, with numbers between 401 and 500). Its reference was Subdatum 2, located at the same level than the datum but 15 m towards the southeast. This pit was placed at the south of Pit 4-6. Pit 4-496 was in between pits 4-6 and 4-486 but was not going to be excavated to avoid wasting time searching for connections we already knew existed. At 0.60 m we observed 3 large stones which we benched to carry on with the excavation. Additional stones and a large stone slab were discovered during our excavation of the south and northeast of this pit. These stones, unlike the previous ones, were located below the dark brown earth, and sat on the earth with abundant gravel (the same soil texture on which the stones of Structure 15-1, excavated by DBL, were placed). In lot 1 we found: 103 ceramic and 16 obsidian artifacts; and in lot 2: 52 ceramic and 14 obsidian artifacts.

Pit 4-496

The previous pit yielded no slabs, like the ones found earlier, in its entire extension. Therefore, Pit 4-496, between pits 4-6 and 4-486, was excavated to try to understand the connection between those two pits and the reason for the absence of slabs, considering the possibility that it could be due to a wall or another structure. Large stones were observed in Pit 4-496 at a depth of 0.60 m, but only in the upper part of the west side. In lot 3 we finally saw the slabs that were the continuation of those in Pit 4-6, and at the center of the lot, we saw the part of the canal with no slabs, leading us to conclude that the lack of slabs was part of the construction system. In the east side of the lot a grinding stone was found, face down, reused as a lateral stone of the canal. The complete canal was uncovered, revealing that it was built on dark brown earth. In lot 1 we found: 65 ceramic and 17 obsidian artifacts, 2 carved stones, and one conical stone; in lot 2: 50 ceramic and 6 obsidian artifacts, as well as one charcoal and 2 taxcal samples; in lot 3: 8 ceramic and 2 obsidian artifacts, and one charcoal sample; no artifacts were found in lot 4.

Pit 4-476

In this pit we found the continuation of the canal towards the southwest. The canal followed the natural slope of the terrain to the south. We were certainly impressed, as we had expected that the course of the canal would proceed towards the southeastern slope of the terrain. At this stage of the investigation, the height disparity observed in the walls of the canal led us to consider a possible different architectural trait, an assumption we would later dismiss. The stones were positioned on dark brown earth with gravel. At the same level of the canal stones in lot 4 of this pit, we discovered a tripod vase with designs of black paint on buff, placed under a stone (possibly collapsed) at the center of the canal [Fig. 7-9 a, b, c]. Lot 1 yielded: 80 ceramic and 15 obsidian artifacts; lot 2: 21 ceramic and 7 obsidian artifacts; lot 3: 7 ceramic and 4 obsidian artifacts; no artifacts were recovered in lot 4.

Fig. 7-9a, b, c. Painted tripod vase found in lot 4, Pit 4-476 at the same level of the canal stones.

Pit 4-477

With the purpose of understanding the context of this section, we continued with Pit 4-477, east of Pit 4-478. Anticipating that we would find the canal (because of the drop in the terrain), we verified there was indeed a canal, but with a different alignment than that of the previous one. At this point we realized this was a canal branch located between pits 4-476 and 4-477, with a fork situated in a southeast direction, and another one in a southwest direction. Lot 1 yielded: 34 ceramic and 10 obsidian artifacts; lot 2: 21 ceramic and 8 obsidian artifacts; no artifacts were found in lot 3.

Pit 4-466

Pit 4-466 was excavated to confirm the continuity of the canal towards the southwest. In lot 2 we verified that the canal here was a ramification that descended

along the slope of the terrain. The stones lied on dark brown earth with gravel. Less than 100 m away there was a depression where possibly the canal ended, or where water possibly arrived from Structure 15-1.[1] In lot 1 we found: 30 ceramic and 12 obsidian artifacts; in lot 2: 31 ceramic and 9 obsidian artifacts; no artifacts were found in lot 3.

Pit 4-456

Pit 4-456 was excavated with the purpose of investigating whether the canal also continued towards southwest. The excavation proceeded following the possible orientation of the stones, expecting they would not present such an abrupt curve as the one observed in the northern sections of the canal. At 1.64 m we located half of the face of a figurine (mouth and chin). Some stones appeared at the center and south of the pit, but none gave the impression of being part of a stone alignment for a canal. The reason for the interruption of the canal may have been a nearby reservoir for water storage, a trait that was not sought, or perhaps the roots may have simply displaced the canal stones. Another option is that these stones were stolen at some later stage, after the trait was abandoned. In lot 1 we found: 41 ceramic and 11 obsidian artifacts, as well as one carved stone; in lot 2: 50 ceramic and 15 obsidian artifacts, and one charcoal sample; in lot 3: 43 ceramic and 15 obsidian artifacts, one charcoal sample, and the figurine [Fig. 7-10]; and in lot 4: 51 ceramic and 7 obsidian artifacts, and one carved stone.

Fig. 7-10. Figurine found at lot 3, pit 4-456, at a depth of 1.64 m below SD 2.

Pit 4-467

Pit 4-467 was excavated with the purpose of finding some special trait, but only two slabs on the floor at a depth of 1.50 m were uncovered; the slabs merged with the east wall of the canal section of Pit 4-466, since there was no large stone associated with them and no indication that they were fallen canal covers, we concluded that very probably that was their original position. Only one lot was excavated, which yielded: 85 ceramic and 32 obsidian artifacts.

---

[11] Structure excavated by Diana Belches, See Report on Field Methodology # 2, Chocola, School of History, USAC 2004 (Informe de prácticas de campo No. 2, Chocolá, Escuela de Historia, USAC, 2004).

Pit 4-455

We continued with Pit 4-455, in the belief that the canal had a curve that placed it further southwest (pits 4-466 and 4-456 were excavated in their north and south portions respectively, as there was a very large tree occupying this space). In lot 2 of Pit 4-455, a number of stones were located to the north, but they lacked any arrangement and showed no continuity with regard to the previous ones. Upon deepening the excavation to 1.50 m, we only found the light brown earth layer. In lot 1 we found: 70 ceramic and 20 obsidian artifacts, and 2 taxcal samples; in lot 2: 29 ceramic and 21 obsidian artifacts, 3 pumice stones, and one charcoal sample; and in lot 3: 31 ceramic and 19 obsidian artifacts.

Pit 4-465

Only half of Pit 4-465 was excavated, due to the presence of tree roots. We found two stones of the continuation of the west wall of the canal from Pit 4-466, but there was no other prolongation of the trait. In lot 1 there were: 21 ceramic and 3 obsidian artifacts; in lot 2: 27 ceramic and 13 obsidian artifacts; in lot 3: 30 ceramic and 3 obsidian artifacts; and in lot 4: 10 ceramic and 3 obsidian artifacts.

Pits 4-433, 4-443, 4-434

The pits we excavated next were pits 4-433, 4-443, and 4-434, with the purpose of finding some sign of the canal's continuation, but only very distant and small stones were found, which were benched and drawn up. An agglomeration of light sand on the southeast profile of Pit 4-434 was located at 1.30 m. No artifacts were found.

Pit 4-487

Pit 4-487 was excavated again in the search of the eastern bifurcation (Trait 4-R-13). Only half of this pit was excavated as the purpose was merely to locate the east wall of the bifurcation and to observe whether it was connected with the stones of Pit 4-486. In the west of this pit we saw the stones of the wall with a curve built with small stones, the ramification could be clearly observed. No artifacts were found.

Pit 4-478

In Pit 4-478 we intended to locate the route the canal followed towards the southeast. As was the case with pit 487, only half of this pit was excavated since the dirt from other pits had been placed exactly in its space. Lot 3 showed the stone alignment that went along the slope of the terrain, and we saw that it was increasingly oriented towards the east, making it necessary to excavate Pit 4-468. Lot 1 yielded: 40 ceramic and 2 obsidian artifacts, as well as one carved stone; lot 2: 47 ceramic and 1 obsidian artifacts; lot 3: 12 ceramic and 5 obsidian artifacts; and lot 4: 19 ceramic and 1 obsidian artifacts.

Pit 4-468

In this pit only the west wall of the canal was excavated, since this was the most disordered or disturbed stone alignment observed so far. Nonetheless, we were able to locate the wall, with the stones located at a level that preceded the level of the stones from Pit 4-478. In lot 1 we found: 35 ceramic and 3 obsidian artifacts; in lot 2:

51 ceramic and 5 obsidian artifacts; in lot 3: 25 ceramic and 2 obsidian artifacts; no artifacts were found in lot 4.

Pit 4-459

To proceed with the observation of the alignment, we excavated Pit 4-459 in order to define whether this was the end of the canal, since this was not clear in the previous pit where the stones were very disordered. At a depth of 2.40 m the first stones of the canal were found, corresponding to the west wall of the alignment; this section was well preserved and the canal could be clearly observed. In lot 1 we found: 40 ceramic and 20 obsidian artifacts, as well as 17 taxcal samples; in lot 2: 23 ceramic and 4 obsidian artifacts; no artifacts were found in lot 3.

Pit 4-469

Pit 4-469 was excavated to uncover the east wall of this section of the canal. Only half of the pit could be excavated (due to the hindrance by dirt from other pits present on its surface). A large sherd consisting of a rim and body placed face down was found at a depth of 1.80 m on the northwest profile; it was drawn up and photographed before being removed. The east wall here was surrounded by dark brown earth, but when we cleared the stones to uncover its facade, we observed the change to light brown earth. No artifacts were recovered.

Pit 4-460

Continuing our investigation of the slope of the terrain we excavated Pit 4-460, and at a depth of 2.90 m we uncovered another section of the canal that was very poorly preserved, consisting of stones of different sizes, and in great disarray; only three of them could be interpreted as being part of the wall, while the others were considered to have had caved in. Unlike the stones in the previous pits, these stones rested on light brown earth with abundant taxcal. No artifacts were found.

Pit 4-450

We believed that the previous pit represented the end of the canal, and that this was the reason why it was so poorly preserved; to verify this fact Pit 4-450 was excavated, revealing the presence of new stones at a depth of 2.74 m; in this pit, the stones were surrounded by light brown earth with taxcal. Much to our surprise, this section of the canal was in perfect condition. There is a section in the southeast of the pit where no stones were found and therefore our efforts were intensified in that section, uncovering stones inside the canal, positioned as a floor. Initially we thought these were stones that had fallen down, but as the excavation proceeded inside the canal, we saw that those stones at the bottom were part of the construction system; therefore, it was decided to work inside the canal in every pit where it was possible. To uncover this “floor”, all pits of the southeast bifurcation were excavated, as well as those of the southwest bifurcation. As a result, we found that the entire southeast bifurcation presented bottom stones, and no slabs serving as lids; in contrast, the southwest bifurcation had no stones at the bottom (and no slabs on the surface). No artifacts were found in the six lots excavated.

Pit 4-631 and 4-641

Pit 4-641 was excavated with the purpose of finding the continuation or a curve in the canal, but only one stone from the east wall of the canal was found; consequently, Pit 4-631 was initiated to search for the continuation of the alignment. We found the face of a female figurine, located face down at a depth of 2.90 m at the north of the pit [Fig. 7-11]. At a depth of 3.30 m both walls of the canal could be observed in a good state of preservation but with some collapsed stones, which made the canal look narrower. At this point we observed an additional curve along the route of the canal descending in a southward direction. Excavation proceeded inside the canal uncovering its base, which again rested on dark brown earth. An accumulation of sherds was found inside the canal at a depth of 3.82 m, at the south of the pit; drawings were made and the materials found were placed in a separate bag, in the belief that perhaps they could be a part of a same vessel. This was the last pit excavated to the south.

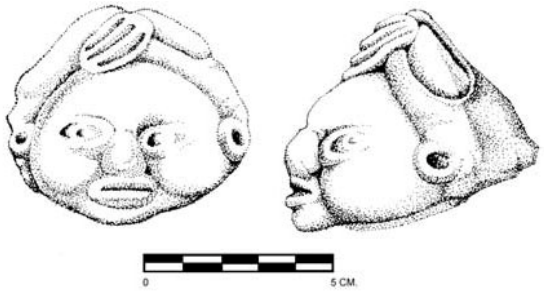


Fig. 7-11. Female figurine found in lot 1 of pit 4-631 at a depth of 2.90 m below SD 2.

Pit 4-17

To conclude with the fieldwork of the 2004 season, it was decided to re-excavate Pit 4-17 (west of the previously described excavations, and close to the road cut in the mound), excavated during the first field season by CVL and FPU. This pit presented a well preserved section of the canal, with slabs serving as covers. The purpose was to elucidate the route of the canal, to further understand the nature of the ramifications located in the subsoil of Mound 15. We needed to understand whether it was connected to sections of the canal excavated in 2004, or whether it joined a different section of the canal excavated by DBL in 2003, located approximately 6 m south of Pit 4-17.

Pit 4-735

After having located the already known portion of Pit 4-17, Pit 4-735 was excavated south of Pit 4-17 (according to the 2004 grid, Pit 4-17, from the 2003 season, would be Pit 4-745) [Fig. 7-12 a, b]

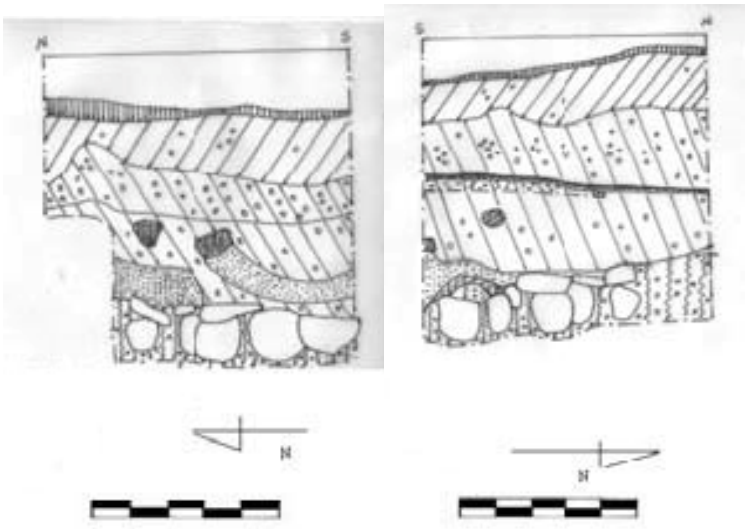


Fig. 7-12 a, b: (a) East profile, Pit 4-735; (b) West profile.

Taking Pit 4-17 as a reference, Pit 4-735 would have to be excavated to a depth of approximately 1.50-1.60 m to locate the stones that formed the canal. A floor was found consisting of a very compact layer of reddish brown mud at 0.90 m, it was 0.01 m thick, and placed on another sandy gray layer with pumice stone, that gave the sand a lighter coloration, which was 3 cm thick. Under this sand there was a layer of light brown, almost yellow earth, with abundant taxcal of all colors, it was still possible to define whether this was a filling or a part of the floor. This last layer was 5-10 cm thick. This floor was observed only on the west half of the pit. Upon examining the south profile of Pit 4-17 we found light brown earth with taxcal both on top and below the canal. The height of the floor in Pit 4-75 was measured with respect to the canal of Pit 4-17, and the result was that the floor appeared 0.62 m above the canal.

Excavation continued only in the east portion of the pit, where at a depth of 1.33 m a zoomorphic figurine was discovered, probably a whistle in the shape of a bird. Then, at a depth of 1.60 m, horizontal stones began to appear in the northeast; these stones were the lids of the canal but they were not slabs like those we had seen so far, they were instead, a different type of stone, thicker than the slab lids.

We initiated our work on the canal and observed that one part of it (in the southeast) had no lids like those present in the north. To find out whether they had collapsed into the canal, we excavated inside the canal down to the base of the lateral stones, verifying that there were no lids and no floor stones. Perhaps the absence of lids and a floor could be explained because this section was located “outdoors”, for daily use. This is a perfect example of the canal with and without lids. On the south profile we made a window 50 cm deep to locate the route of the canal, and observed that this section was connected with the section excavated by DBL in 2003 (pits 4-6 and 4-4).

In the ten excavated lots we found an abundance of taxcal in lot 4, probably a part of the floor; in lot 5 the zoomorphic figurine [Fig. 7-12 a, b], in lot 6 a large ceramic fragment, in lot 7 horizontal stones, and in lot 9 the base of the lateral stones.

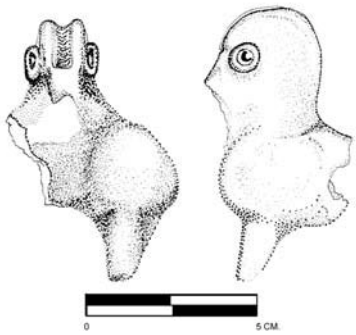


Fig. 7-12 a, b. Zoomorphic figurine in the shape of a bird found in lot 5 of pit 4-735 at a depth of 1.33 m below SD 2.

Description of layers

The three upper layers (E-1, E-2 and E-3) were studied the most, due to their association with the traits uncovered, while those in the lower levels proved very difficult to analyze because they were very similar to each other, only differentiating themselves by the density of their component materials. In general, they visually presented an identical color, with a predominance of a light brown coloration, and a decrease in the amount of taxcal as depth increased.

LAYER 1 (E-1)

Humus. Very dark brown, it was moist at the time of description. Munsell color chart: 10 YR 2/2.

LAYER 2 (E-2)

Dark brown earth. Clayish, sandy soil of a granulous consistency, loose, abundant frequency of artifacts: sherds from 15 to 5 cm in length and obsidian. Munsell color chart: 7.5 YR 3/2.

LAYER 3 (E-3)

Light brown earth. About 50% of its composition consists of small, rounded and irregular gravel; it includes taxcal, gravel, green stone and pumice. Munsell color chart: 10 YR 3/4.

Color of the layers as of samples of Pit 4-45

Samples were collected from Pit 4-45 (the main pit) at each change of layer or inclusion to facilitate our work. They were taken to the laboratory and placed on a wooden board for drying, to obtain a dry and different color of layer. Once the layers dried, we proceeded to define the colors with the help of the Munsell chart.

Then we prepared a layers color chart, painting the humid layer on a watercolor 207 GSM/”acid free” type paper. The color of the layer was applied on the sheet together

with the name and code corresponding to the Munsell chart, but much to our surprise, the same layer produced different color keys for the dry and water-colored sample. This has posed a problem which will eventually be solved.

From Pit 45 we took 12 samples of different layers or inclusions, including those previously described in this chapter; 1: humus; 2: dark brown earth; 3: light brown earth with inclusions of black stones, taxcal, mica, pumice, a very granulous layer; 4: light brown with no inclusion of stones, it looked clean, and had less mica; 5: yellowish, sand with mica. Seven additional samples were collected; 6: it corresponded to a yellowish brown patch, lighter than the previous samples, with inclusions of taxcal and mica; 7: an orange patch in the plan view, with taxcal; 8: one patch in the plan view, gray sand; 9: dark brown, granulous; and 10, 11 and 12, representing light brown colors that are difficult to define.

One very particular characteristic in two of the pits (4-26 and 4-36) was a layer of a very strong orange, almost red color, around the east of the canal, not found in the adjacent pits. This color was due to a large accumulation of red and orange taxcal. A sample was collected for laboratory analysis.

According to Cruz Salquin (excavator) the composition of the canal was well defined and could be observed in Pit 4-45. There was a border, where the canal ended and the surrounding earth was light brown, hard, compact, and more solid; this earth was located at the sides of the canal and the earth that surrounded this compacted earth changed to very loose light brown-yellowish sand. This indicated that earth of a very strong consistency, fit to support the weight of the canal stones, was used to build the canal.

Description of artifacts and special traits

Some figurines were found during the excavations, and as they were associated with the canal they may help us date its style; however, these artifacts were apparently found within the context of the filling and not as offerings. Also, two vessels, which possibly were offerings, were located close to or inside the canal. The descriptions presented below were prepared by FPU.

Figurines

*Pit 4-631-1 [Fig. 7-11**]***

FEMALE FIGURINE. It has a headdress and ear flares, fat face, almond-shaped eyes, headdress formed by band tied in a knot in the upper part of the head.

Pit 4-631-2

FRAGMENT OF FIGURINE'S HEADDRESS. It represents a topknot made with three horizontal bands with bundles at the tips.

Pit 4-641-3

FRAGMENT OF ANTHROPOMORPHIC FACE. The material is a red paste with mica, quartz, pumice and obsidian. It only presents the mouth and a few traits of the nose.

Pit 4-735-5 [Fig. 7-12a, b]

BIRD-LIKE FIGURINE. It was made with a coarse red paste with quartz and mica. It shows evidence of smoke and has very thin white paint.

Pit 4-65-4 [Fig. 7-7]

SEATED HEADLESS FIGURINE WITH CROSSED LIMBS. It is made of an orange paste with mica, pumice and quartz, shows evidence of smoke and has a thin, white paint. The feet seem to be appliqués.

Pit 4-23-2/3 (the bench) [Fig. 7-5a, b]

FRAGMENT OF FIGURINE. A male face with ear flares. Fragment of effigy from incense burner, coarse black paste, and hollow.

Pit 4-450-5

FRAGMENT OF FIGURINE. Face of a female figurine similar in style to 4-641-3, 4-631-1 and 4-456-3.

Pit 4-456-3 [Fig. 7-10]

FRAGMENT OF ANTHROPOMORPHIC FACE. It presents white paint around the mouth, inside the mouth and on the cheekbones and chin. It is made of a red paste with quartz.

Vessels

Pit 4-6-3 [Fig. 7-6 a, b, c]

MINIATURE PITCHER. It is made of a light brown paste, vertical handle on the rim, with signs of smoke on the outer surface.

Pit 4-476-3 [Fig. 7-9 a, b, c]

TRIPOD VASE. It has straight, cylindrical, hollow supports. Cream slip and designs painted in dark brown, with geometrical designs in its middle section framed by horizontal bands ornamented with motifs of inverted “Zs”. The style suggests it dates to the second half of the Early Classic period and the Tzakol phase of the Maya lowlands. It represents a phase of the Teotihuacan style.

Traits

TRAIT 4-R-1, small canal

This trait corresponds to the finding of a canal segment (pits 4-4, 4-5 and 4-14) that presented no continuation elsewhere. Only the two lateral walls were found at a depth of 1.50 m as of the datum. The canal segment is positioned in a northwest-southeast direction. A possible explanation for the existence of this segment is that it was a canal destroyed by natural causes, or that the stones were robbed for the construction of the long canal. Absolute dates could support the interpretation that they represented different construction phases of the water management system at Mound 15.

TRAIT 4-R-2, small canal

It corresponds to the stone slab and other stones located near Trait 4-R-1, but which was not aligned and showed no possible connection with the previous trait. The orientation of this small canal was taken at the center (taking as one single canal, traits 4-R-1 and 4-R-2), at 305º Az.

TRAIT 4-R-9, long canal

It constitutes the 18 m of the entire north-south alignment of the canal, including the portion that reaches Structure 15-1. The construction variants include sections with and without lids, while none of the sections presented a floor in the interior of the canal. The traits presented two classes among the bifurcations, categorized by the construction differences in each one of them and their orientation. The orientation is 356º Az following a straight line from Pit 4-6 to 4-36, and 340º Az in the curve from Pit 4-36 to Pit 4-64 [Fig. 7-13].

Fig. 7-13. Section of the long canal.

TRAIT 4-R-13, southeast bifurcation of the long canal

This section of the canal was categorized separately based on the fact that we did not know whether this bifurcation that heads southeast, was part of the same canal oriented from north to south. This bifurcation is 12 m long. It includes sections with no cover and with floor-type stones placed inside the canal. The orientation is 335º Az from Pit 4-631 to Pit 4-641, 317º Az from Pit 4-641 to Pit 4-459, and 305º Az from Pit 4-459 to 4-486 **[Fig. 7-14]**.

Fig. 7-14. Bifurcation of the long canal.

TRAIT 4-R-35, southwest bifurcation of the long canal

This bifurcation class was similar to that of Trait 4-R-13, consisting of the bifurcation that heads towards the southwest. Its construction system changes as it presents no lids and no floor-type stones inside the canal. The orientation is 37º Az from Pit 4-455 to Pit 4-465, and 20º Az from Pit 4-465 to Pit 4-486[2] **[Fig. 7-14]**.

TRAIT 4-R-36, floor

This is the floor located in Pit 4-735, made of 0.01 m thick, very compact reddish-brown mud, located on top of another gray sandy layer with pumice stone which gives sand a lighter coloration; this sandy layer was 3 cm thick. Under this sand, there was a light brown, almost yellow layer with abundant taxcal of different colors; at the moment we do not know whether this was a filling or part of the floor; its thickness varied between 5 and 10 cm. This floor was found only at the west side of the pit, at a depth of 0.90 m (measurement taken with respect to the datum) **[Fig. 7-15]**.

[2] Both orientations of the bifurcations were taken to the red stone located at the center of the branching.

Fig. 7-15. Floor and canal at the west side of Pit 4-735.

TRAIT 4-R-37, section of the canal with covered and uncovered portions [Fig. 7-15a, b]

This trait was found inside Pit 4-735, just like the previous one, but this section of the canal presented one covered and one uncovered segment, and continued in the same alignment as Pit 4-17 excavated in 2003. The orientation of the canal with respect to Pit 4-17 was 310º Az and with respect to Pit 4-735 was 330º Az [Fig. 7-16].

Fig. 7-16. Sections of the canal with and without a cover: section of the canal discovered in the 2003 season, re-excavated in 2004.

Conclusions

Construction systems[3]

When observing the entire exposed canal, we noted different construction systems; at this time we are unable to assert whether these were systems or construction manners typical of the canal, or whether the use of each one was determined by its convenience to the masons. Twelve construction modes were identified; they have been listed below together with the pit number of each example.

1. Two flat, elongated, vertically placed stones, with a small stone on top of them as a wedge and a horizontal lid [**Fig. 7-17**].

Fig. 7-17. Construction systems: two flat, elongated, vertically placed stones, with a small stone on top of them as a wedge and a horizontal lid (west wall of Pit 4-6).

2. Three stones horizontally placed on top of two vertical, flat stones [**Fig. 7-18**].

[3] Paredes Umaña et al, 2004.

Fig. 7-18. Construction systems: three horizontally placed stones on top of two vertical, flat stones (west wall, Pit 4-476).

3. One horizontal stone placed on top of a flat, vertical one [Fig. 7-19].

Fig. 7-19. Construction systems: one horizontal stone placed on top of a flat, vertical one (Pit 4-45; another example of this is the east wall of Pit 4-476).

4. Coarse elongated vertical stones [**Fig. 7-20**].

Fig. 7-20. Construction systems: coarse, elongated vertical stones (east wall, Pit 4-466).

5. Cover on top of vertical, coarse stone, placed on top of a horizontal one (east wall, Pit 4-36).

6. Two horizontal stones on top of a vertical one with floor-type stone inside of the canal (east wall, Pit 4-477).

7. One large, fat and coarse stone with stones inside the canal (south wall, Pit 4-477).

8. Edge-on stone with stones inside the canal (north wall, Pit 4-478; and west and east walls, Pit 4-5).

9. Large horizontal stone on top of a vertical one, with stone inside the canal [**Fig. 7-21**].

Fig. 7-21. Construction systems: large horizontal stone on top of a vertical one, with stone inside the canal (east wall, Pit 4-641).

10. Three small, coarse stones, supported at the back by a large, coarse stone (west wall, Pit 4-476).

11. One long horizontal stone on top of two stone columns made of two horizontally placed stones each (south wall, Pit 4-72).

12. One horizontal stone placed on top of two adjoining vertical stones (west wall, Pit 4-72).

The canal may present two, three, and even four stone courses one on top of the other on the sides, placed both horizontally or vertically. The use of lids and bases for the canal in the manner of floors is variable, and probably responds to specific needs derived from the topography of the site or from the practical uses of the fluid distribution system.

Among all the variants, those that always persisted inside the canal and in the construction system were the following: lateral walls with no lids and no horizontal stone in the inner surface, lateral walls with lids, and lateral walls with horizontal stones in the inner surface.

We have observed the presence of covered sections followed by uncovered sections as part of the construction system of this canal. The reason for such change probably originated in the fact that the canal also received rain waters along its route

that were stored at some given place; the uncovered spaces may also have been used for convenience, allowing people direct access to this resource.

The width of the canal changed along its route from 0.30 m to 0.60 m. The materials used in the construction varied between andesite stones and metamorphic rocks with a heavy concentration of iron, used as lateral walls. Some sections of the canal show slab-type carved lids. Additional constructive elements included small stones (0.05 to 0.15 m in diameter) and middle size stones (0.20 to 0.35 m in diameter), which served as wedges to reinforce the construction; the small ones were used to fill-in the holes, and the middle sized ones to adjust the level of the lateral walls in order to support the horizontal lids.

One significant characteristic of the materials used in the construction of the canal was the reuse of grinding stones. Two grinding stones were found (both in a fragmented condition) used on the lateral walls, one was found face down, while the other was standing.

General description of the canal[4]

The canal extends in a north-south direction with bifurcations towards the southeast and southwest. A span of 34 m of the canal has been excavated and there are continuation traits towards the southeast that have not been investigated so far.

Of these 34 m, only 18 m run from north to south; 2 m run to the southwest, and the remaining 14 m run to the southeast, the two latter sections being the result of a bifurcation. The branching that headed southeast, in spite of being the longest, was sealed to avoid the passage of water. The southwest ramification is shorter, and its end is poorly preserved because of the presence of tree roots.

The entire southeast ramification presents horizontal stones on the inner surface which follow the slope of the ground. There are very abrupt steps with stones placed as landings in 90º angles, perhaps to diminish the impact of the descending water course, possibly to avoid erosion of the soil or to diminish its permeability.

At the point where the canal forks, there is a red, round stone, placed exactly to interrupt the water course that led to the southeast bifurcation; this is strange, because this is the longest bifurcation and one would expect it to have a free pass, while it would have been more reasonable to close the smaller bifurcation to the southwest.

Because of this, we expected to find traits of some kind of reservoir at the end of the southwest bifurcation, but this was not the case, making the interpretation of this trait even more difficult.

---

[4] Ibid.

There is no doubt that the red stone was used as a closing of the water course, as it was placed at the same level than the lateral stones of the canal, but below this red stone there was a slab laterally placed (this slab was 25 cm long, from the base of the red stone to the floor of the canal), that definitely served the same purpose as the red stone; these two stones (the red stone and the slab) were very well coupled to the lateral stones, suggesting that this closure was built to prevent water from running below, on top, and at the sides of this bifurcation.

Another interesting piece of information regarding the construction of the canal was present in Pit 4-466, where the east wall was not at the same level of the west wall (there is a 20 cm difference in the height of both walls), which would have caused water to overflow, being the east wall at a lower level following the slope of the terrain.

The canal runs exactly under Structure 15-1. This is a rectangular structure with its major axis positioned in a north-south direction. By the middle of July, two sections of the canal had been located at a depth of 1.50 m under the construction of the structure. One section of the canal shows covers and follows the north-south alignment. An adjacent section shows no covers, in contrast to what we expected to find under a structure. This may suggest that Structure 15-1 and the canal were not contemporary.

Preliminary considerations on the evidence[5]

1. The canal lies more than one meter below the structure, and has no relation to it. The structure is a later construction, placed above a canal that very probably was no longer in use or remained under the ground while being used from a different source. The more convincing evidence of this was the lack of covers for the section of the canal that extended under the house.
2. The canal presents two sections: one below the surface and another one on the surface, giving rise to uneven terrain that perhaps marked the structural bodies of Mound 15. To this date, the construction fillings of Chocolá show large amounts of taxcal and clays, but they do not evidence profiles with slopes consistent enough to substantiate the presence of the architectural bodies of the structure.
3. The bifurcations show differences in construction, and this may be a consequence of having been built at different times, or of the fact that the branching that heads southeast simply contained a new element of construction: horizontal stones in the inner surface to help water follow its route along the natural slope.
4. If Structure 15-1 and the canal were related, one of the functions of the canal may have been supplying water to the interior of the structure, or to an earlier version of it. Evidence of another stone course below the sloping wall in the

[5] Considerations 1 to 4 were taken from the paper “Un sistema de manejo de aguas en el grupo Norte de Chocolá”, presented at the XVII Symposium of Archeological Investigations in Guatemala, 2004.

west of Structure 15-1 possibly supports this hypothesis. In this case the function of the structure may have been residential, or a building for the management of this resource, as in its interior there is a box for redistribution of the flow along two different branchings.

5. Interestingly, in some parts of the southeast bifurcation, the canal was in very poor conditions, and following those sections, there were other ones in a very good state of preservation.
6. Perhaps the southwest bifurcation only evacuated water at a very short distance.
7. The red stone was definitely placed to obstruct the water course, and this notion is supported by the slab found below the red stone.
8. Initially, we believed that the canal had been introduced into the bedrock, but later this notion was disregarded when we observed that the filling found around the canal was very compact, but that the farther it was from the canal, the looser its consistency became.

The investigations accomplished at Mound 15 in 2005, have led us to ask ourselves:

1. Where and how was the water control system initiated in the north?
2. Is there additional evidence of this draining system outside the northeast corner of Structure 15-1?
3. Why was the longest canal closed?
4. Where does the southeast bifurcation end? Could it be a case similar to K'aminaljuyú, where initially it was believed that the canal followed the slope of the ground and later it was seen that it headed towards an agricultural field?
5. In other cases, was its function to evacuate and at the same time carry water to certain locations?
6. From which drain did the water carried by the canal originate?
7. Why is there a destroyed section of the canal (traits 4-R-1 and 4-R-2) not related with the canal that runs from north to south (trait 4-R-9)?

These and other questions may only be answered through additional investigations that will probably be undertaken in 2005, inside Mound 15, one of the mounds with canals.

Acknowledgements

The trainees from the Universidad de San Carlos de Guatemala who joined the work team during the months of June and July were: Álvaro Ambrosio Soto, Edgar Arévalo Bendfelt, Diana Belches Luin and Antonio Portillo. The workers who joined our team were: Cruz Salquin, Rogelio Tuy, Felix Tuy, Mario Tambriz, Carlos Vásquez and Marcos Ztic, whom I thank very much for all their help.

CHAPTER 8

South Group Excavations: Structure 5-1

Oscar Rolando Gutiérrez, Damien Bazy and Sonia Cañada Cañada

With contributions by Jonathan Kaplan, Juan Antonio Valdés and Federico Paredes Umaña

Fig. 8-1: Excavations at Mound 5 during the 2004 season.

Introduction

The work plan for excavating Mound 5 was initiated late in the 2003 season [Fig. 8-1]. Under the supervision of the directors, this investigation, denominated Operation 14, was the second one formally systematized by PACH during the 2004 season. Excavation work in that area of the site began at the end of June.

The first evidence regarding Structure 5-1 was discovered in the 2003 field season. A test pit denominated II-D-25 was arbitrarily placed, jointly with another pit (II-D-22) at the base of Mound 5, with the purpose of investigating the construction of the ancient building. In this pit we found a well built stone alignment oriented towards the north [Fig. 8-2] at 0.60 m below the modern surface of the ground, or in other words, in the third arbitrary lot of 0.20 m. Therefore, this trait was taken for: (1) some kind of hydraulic device, for example a retaining wall, or (2) a larger section of the wall

representing the southern boundaries of the ancient city. These pits were later refilled, and plans were made to further investigate this alignment in 2004.

Fig. 8-2: Discovery of one portion of the large platform, PACH 2003.

During the 2004 season, new pits revealed the continuity of the trait in a north-south direction. With the help of gradiometric surveys (see Chapter 4), other areas were investigated on top of, and around Mound 15, and after six weeks of work the vertical and horizontal dimensions of a large platform [Fig. 8-3a, b] were exposed. Time restraints hindered the excavation of the north and east façades. The north façade was excavated by Gutiérrez, Bazy and Cañada Cañada, the east façade was excavated by Gutiérrez and Bazy, the latter was responsible for drawing the plan and profiles of the façade; Cañada Cañada in turn, created plan drawings and profiles of portions of the west of the north wall of Structure 5-1.

Fig. 8-3a, b: (a) Plan view of Structure 5-1; (b) North wall of Structure 5-1 during the 2004 field excavation.

The methodology of excavation involved horizontal excavations to expose the architectural traits; this means that whenever the last basal stone of a wall was exposed, the vertical excavation was interrupted to avoid initiating the investigation of possible earlier structures or substructures. This was an important decision to make because, in addition to Structure 15-1 located in the northern section of the site, Structure 5-1 still remained as the second example of major architecture exposed in the ancient city. Thus, it was considered that collecting data fit to provide the physical dimensions of a structure that apparently corresponded to a building of a certain time or occupational phase was a necessary thing to do, prior to advancing in the search of answers to more specific questions related to water management and intensive agriculture. In the future, whenever we find structures with similar characteristics to those of Structure 5-1, we shall no longer need to excavate them in full, as in the present case. Besides, the 2004 research was unable to conclude all works planned due to time restraints, and many crucial questions regarding architectural details have remained unanswered, as is the case with the construction phases and its abandonment, or the function or functions of the structure.

The major characteristics of Structure 5-1 may be briefly described. First, emphasis should be made on the large size of this platform; even though the function or functions of this construction are uncertain so far, the size itself undoubtedly points to its past significance and probably reflects an administrative role or at least its public or corporate character. The ritual or religious significance is indicated by the orientation towards the four cardinal points and the probable stairway or ramp with a beam oriented to the east, the birth of the sun and the access to life. We can also mention the possible presence of a mask made with cobbles that forms a part of the east wall, found in Pit 14-66. We have also noted the unusual occurrence of large amounts of fired mud, manifested in the finding of apparent bricks precisely outside

the north wall and specifically in the large trait (Trait 14-R-6) of the central pits. We observed the rare division between light soil and dark soil immediately outside the east wall. Finally, we think we it is important to mention the finding of a fragment of monument with cupped depressions located nearby at the outside of the southern beam's corner, which leads us to establish a comparison with similar monuments found outside many buildings, as is the case in Tak'alik' Ab'aj.

Location

The construction located under the surface of what can be seen as a convex shaped mound covered with earth, known as Chocolá's Mound 5, will be referred to as Structure 5-1 hereafter.

It is located at the southern section of the site, in the area surveyed during the 2003 field season, in land that is part of three different estates; however, most of the work was conducted within land that belongs to Mr. Felipe Carrillo, one of the successful bidders of the Empresa Campesina Agrícola de Chocolá. The plot may be reached by land through the road that connects to the main highway that goes to Santo Tomás La Unión, precisely at the place known as "el Aguacatal". Its satellite location is found in the UTM coordinates 1614697 N. and 669466 E.

Mound 5 is located at 16º14''690 North in latitude, and 6º69''470 West in longitude. The summit of this mound is at 749.4920 meters above sea level. Operation 14 was opened at Mound 5, located south of the settlement of the village of Chocolá, and it resulted in the discovery of Structure 5-1. It was conspicuously placed, with other mounds at the south (3 and 4) which most probably were directly related with one another in their spatial arrangement. Located between two brooks and forming an artificial space, this architectural compound is important with regard to the control of the entrance to the site through the coastal route to the Altiplano. In ancient times, Mound 5 would have been one of the first buildings with a panoramic view, fit to watch people who traveled along that route exchanging goods. Presumably, Mound 5 represents one of the largest platforms south of Chocolá. We know Chocolá was part of the ancient colonial route to the city of Santiago (Oscar Hauesler, personal communication). Let's consider for a moment the impact that seeing a large building generates: what goes through peoples' minds? What kind of building was this: was it military, and simultaneously the symbolic representation of a ruler? Was it related to corporate work? The visual objective was probably fulfilled, first due to the large dimensions of the mound, and second due to its cover, made of huge cobble stones (Gutiérrez, 2004).

Excavations

The methodology of excavation has been described in Chapter 5 of this report; however, we should outline that the grids generated for the system of controlled investigation were gradually developed according to our research requirements, and should be consulted in the grid map below [Fig. 8-4].

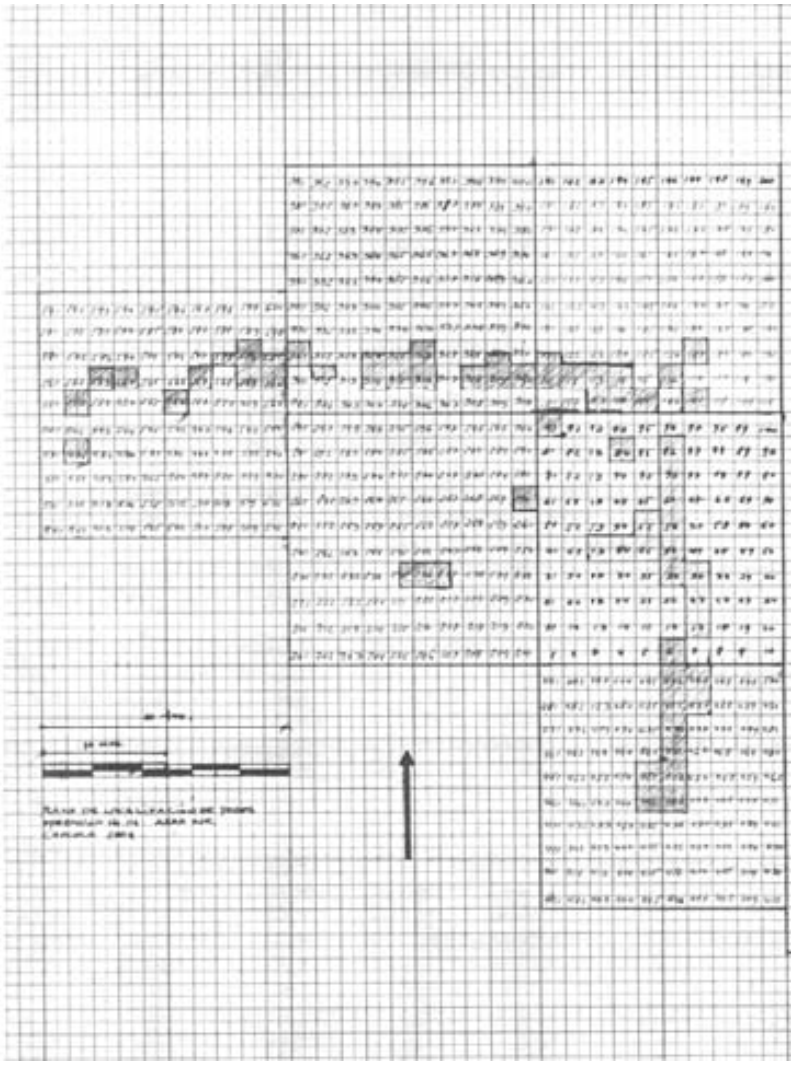


Fig. 8-4: Map of the grids showing those excavated in the 2004 season.

With this system of excavation, however, we faced difficulties to establish the grids due to the inadequacy of the terrain, as we were in the plots of a coffee plantation with its inherent inconveniences. Before tracing the grids with the station, the ground had to be cleaned. The earth on the surface was very disturbed by the continuous agricultural work, so the wooden stakes that marked the grids were not fixed, and required to be reset on a daily basis.

Upon tracing the 2 x 2 grid, the surface was measured at its 4 cardinal points. The Subdatum (SD) was used to take these measurements. The SD was marked in a fixed point, usually a tree, indicating its height from the surface, which we later converted into meters above sea level. The main reference for Mound 5 was Datum 1, or Benchmark (BM) 50, with an elevation of 742.3380 meters above sea level; this was located using a very precise GPS and calibrated with the Total Station, to define its precise location within the full map of the site. To reference the excavations described in this chapter, we have used the datums and subdatums (SD) (see the table below and Fig. 8-5).

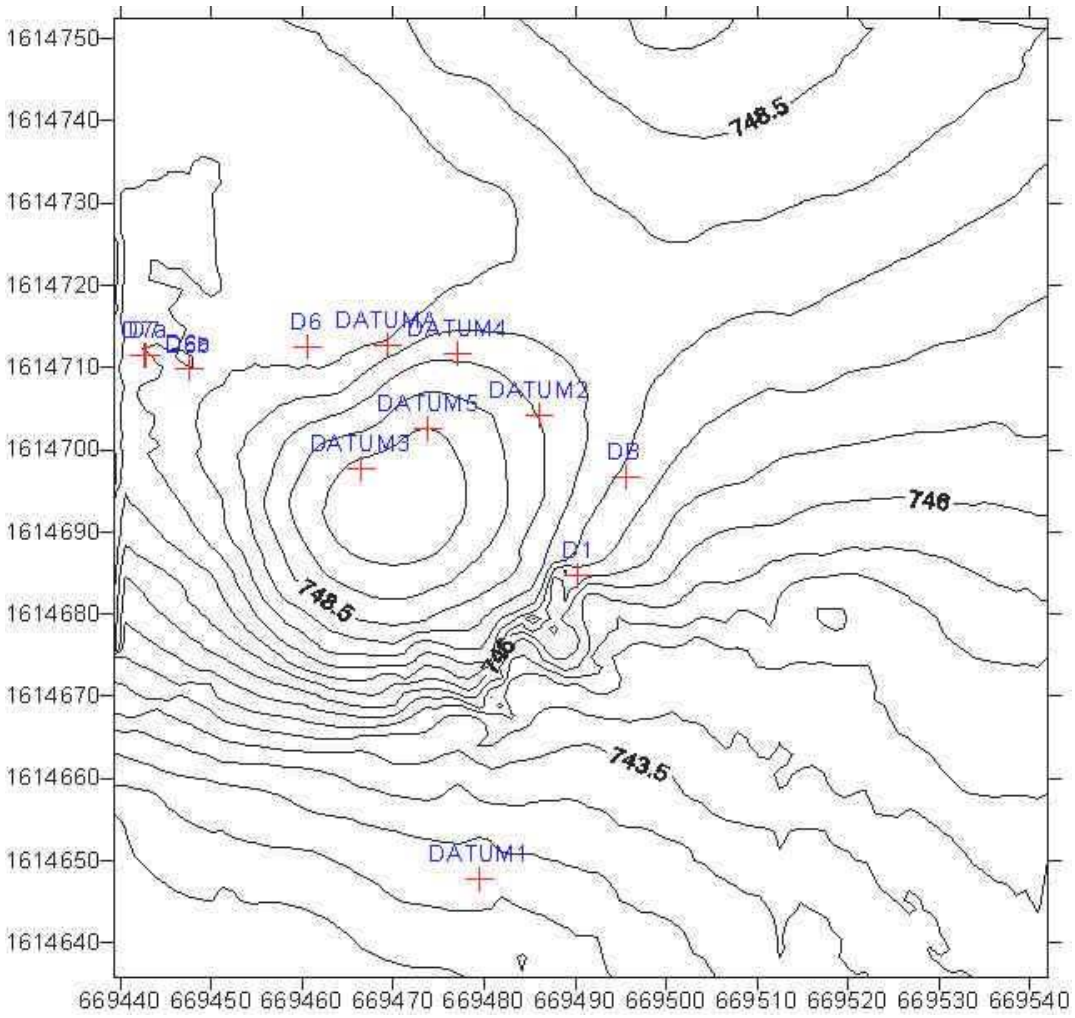


Fig. 8-5: Datums used in the excavations at Mound 5.

In the excavations, the following datums and subdatums were used[1]:

DATUM	SUBDATUM	HEIGHT ABOVE THE SURFACE (m)	HEIGHT ABOVE SEA LEVEL (m)
2	1	1.00	747.5568
3	3	0.50	750.4920
4	2	1.00	747.5695
5			748.8735
DA	2	1.00	748.2397
D1			745.9076
DB	5	1.00	746.4237
D6	6	0.20	749.1366
D6a			749.0784
	D6b		748.1092
	D7		748.0077
D7a	7	1.25	747.0284

[1] All SDs were set by using the Total Station, and therefore worked like a datum.

Dimensions

The mound has large dimensions, considering that from the plaza level at the south to the plaza level at the north, there is an extension of 70 m, and in the axis of the plaza level at the west to the plaza level at the east there are some 78 m in length; therefore, we are talking of a total surface of at least 4,900 m^2. The civic and ceremonial spaces used, however, are larger since they have abutting plazas on the east and north façades, in addition to the terrace that extends to the south towards mounds 2 and 3. There is no adjoining plazas to the west, where there is a kind of small plain and then, 40 m from there, the terrain turns uneven and abruptly descends to one of the creeks; these creeks provide a year-round water supply, and farther away form the Chichoy River, they are a resource that probably supplied the people that guarded this strategic place.

Chronology

Preliminary studies conducted this season allow us to approximate the time of occupation of this platform to the Pre-Classic period. However, the central pit requires more excavation. For now, we may only refer to the outer remains, consisting of ceramics, that point to the Middle or Late Pre-Classic periods; on the other hand, the interior of the structure is yet to be investigated, further formal excavations should be conducted within the structure to help us solve issues regarding its construction and temporality.

Architecture and the Construction System

The large dimensions of the structure make its architecture very complex, as it was built with stone walls and mud fillings. Walls were made of rounded cobble stones extracted from the river banks. This may be observed in its north wall, which resembles a retaining wall and probably forms the upper body of the structure, its stones are voluminous, measuring between 0.30 to 0.40 m, and are arranged in five or six horizontal courses. At first sight, the stones of the upper course are the largest, while those of the remaining four courses below the surface seem to be smaller because their largest portion remains hidden in the interior of the wall and within the mortar used as a filling between one stone and the other.

Although most of the construction elaborated with cobble stones extracted from the river banks was well preserved, the other sections built by simply placing mud and taxcal (for example the floors) hardly differentiate from the natural layers, complicating our understanding of the architecture of the structure and our research work. Besides, it is important to mention that the location of the mound within the plots of the coffee plantations, which were sugar cane plantations in the past, has caused severe damage to the archaeological relics.

The stone course that finishes the top of the wall is at an almost perfect horizontal level, particularly one stone that appears to occupy its original position and is even carved to fit with another one, as if placed there by the builder to enhance some architectural detail. The mortar in-between the stones was prepared with light brown

earth with small stones that work like gravel, and therefore provide the cohesion and amalgam of the mix to firmly hold the stones together.

For what we know, this is a large, rectangular platform composed of one or several bodies with rounded cobble stone masonry. The mortar in-between the stones was prepared with light brown earth with small stones and taxcal pebbles. The use of stones of a smaller size is evident in some areas; these measure between 0.15 to 0.20 m and serve as support and/or as a wedge for the larger stones, filling in the small spaces between them. The foundation or base that supports the construction consists of a mix of taxcal with sand and tiny remains of micaceous material, and it is here where the stones of the first course were placed, from bottom to top. We consider this the original floor of the plaza, an architectural detail observed in the east profile of Pit 14-113 and confirmed in Pit 14-329. However, we need to excavate deeper into this level to support this hypothesis. The exhaustive revision of the details in Pit 14-113 allowed us to determine that the stones of the lower course are held together by a type of refill made of taxcal, which generally includes small traces of vegetal charcoal (we do not know of this is the result of intentional burning to strengthen this architectural feature which supports the five stone courses observed in that pit). This is apparently similar to what was discovered and described by Burkitt, and published in 1930 (Gutiérrez, 2004). The mound has a surface of roughly 1920 m^2 and a height of 5 m above the plaza level.

In some areas we observed the use of stones of a smaller size, 0.15 to 0.20 m that serve as a support and/or wedge for the major stones, also filling in the small spaces between the large stones. The foundation or base that supports the construction consists of a mix of taxcal and sand with tiny remains of micaceous material, and it is there where the stones of the first course were placed, from bottom to top. We believe this level is the floor of the north plaza; these details were observed on the east profiles of pits 14-112 and 14-113. Some spaces of the wall were filled with sand only, whenever the large and small stones formed spaces; this technique resembles some examples seen in the colonial constructions of La Antigua Guatemala.

The average height of the wall center is 1.25 m, from the base to the upper course; however, the east side of the wall ends in three rows of small stones forming some type of wedge, while on the west side, also ended with a wedge, only one stone was used. This is also the case in the façade that forms the east wall, where the southeast corner ends with just one stone course [Fig. 8-6].

Fig. 8-6: Southeast corner of Mound 5 ending in one stone course.

The inside presents material with different mixes of earths, evident in the colorations observed in the stratigraphic changes. Some of these mixes were probably subjected to special firing treatments, and these fired sections are more easily visualized, while the unfired areas blend with the other natural layers making it difficult to morphologically define the structure, consequently hindering the excavation works. The structure's position is conspicuous regarding the other mounds located south (3 and 4), which very probably are directly interrelated in their spatial arrangement, as they form a kind of line or corridor that runs on a north direction towards the higher section of the settlement. Farther north there is what we think is the civic-ceremonial center, with the largest group of buildings of what may have been the ancient great city of Chocolá, with the possible function of controlling the exchange of goods on their way to the central highlands.

Since the 2003 field season we have been observing the construction of elaborate mud structures present in mounds 15 and 2, places where we confirmed what Burkitt had stated in 1930, "that the mounds were of earth and that in excavating them only earth was found, that they were round and that it was not the case that they were constructions without corners, but rather, that these had already collapsed". After his personal experience in the highlands, he said that the mounds were made of earth and were rectangular pyramidal in shape; this was not observed in Chocolá due to difficulties in defining which ones were the façades.

His information only included profiles, diameters and heights, but there was no investigation on how the layers were arranged. This information would have helped to define possible forms. We know through research accomplished by the Museum of Tobacco and Salt from Tokyo, Japan, (Ohi, 1994) that there are architectural

features built with mud at K'aminaljuyú which present characteristics similar to those of Chocolá, such as the use of refined talpetate strata and layers of simple mud, or mud used as filling or agglutinant for other materials. The test pits from Cerro Partido (Mound 2) in 2003, revealed construction materials in earths and muds of grayish, and light brown coloration, with occasional patches of a reddish color or areas in black reflecting obviously burnt surfaces whose way or process of elaboration is unknown to us; surfaces exposed to heat present a constant thickness – 0.02 m – in the interior of the burnt areas large river stones or round cobble stones were found, the mortar was made of sand with mixtures composed of small stones that appear in colored taxcal of the red, yellow, green, blue type and their variants. This type of burnt areas was recurring in Mount 2 or Cerro Partido, as reported in Burkitt's work [Fig. 8-7], and as was later explored by Shook in 1978 and by Oscar Gutiérrez in 2003.

Fit. 8-7: Pit of 3.5 m below the surface of the refuse dump from Mound 2, showing the remains of burnt materials; below, round river cobble stones and the also burnt contact lines between the strata. PACH 2003.

The burnt sections form areas that resemble concave or convex upside-down bowls, these are superimposed causing the mud surfaces to elevate in the form of pyramids through the repetition of the construction process. This technique of surface burnings was observed in Structure 5-1 at Pit 14-56, where the last lot excavated shows the half that is close to the structure as having a burnt color with remains of charcoal, taxcal and small pumice stones. There is evidence of arrangements of this form of strata from the excavations at Cerro Partido in 2003 [Fig. 8-8].

Fig. 8.8: A sample of how the layers are arranged forming the concave and convex sections in the upper sections inside Mound 2 or Cerro Partido. PACH 2003.

Also, the thorough examination of details in pits 14-113 and 14-112 has allowed us to observe that the stones of the lowest course rest on a type of refill made of taxcal, where there generally are small traces of plant charcoal (we do not know if they are the result of intentional burning to strengthen this architectural feature that supports the five horizontal stone courses). Regarding this latter observation, there is an apparent similarity with Burkitt's discoveries and descriptions. We believe this could represent a continuous and long lived construction pattern. The research of the Tobacco Museum (Ohi, Oniaki: 1994:107) reports that the burning of buildings may have been caused by the violent end of a social era, but we believe this is not the case and that this could be an architectural construction pattern typical of the highlands and the southern coast, like in the specific case of the archaeological site of Chocolá.

In regard to these construction forms of mud and taxcal, Hiroshi Minami (1994) says: "some of them may be 10 m long and roughly 1.5 m high or deep, and may cross one another in a north-south or east-west direction"; these sections were filled with different mixtures of material, and their function was to join together or to attach the component shapes of these structural bodies. This type of construction system is also known from Mound B-V-5 at K'aminaljuyú, studied by the Miraflores Project and dated to the Middle Pre-Classic (Martínez et al, 1996:397). There are also other antecedents of mud constructions at Tak'alik' Ab'aj, such as Structure 5-12.

Stratigraphic Description

Because the excavations conducted in that season have not led us to truly deep levels, the stratigraphy seems to be very simple. However, the constraints derived from the rainy season, and the context of the coffee plantation parcels, previously sugar cane plantations, have hindered the identification of stratigraphic details or have made them fade away, and agriculture causes phenomena of removal of strata that are to be taken into account at the time of analysis. Consequently, each one of the archaeologists responsible for an excavation differed on the visual characteristics

of the stratigraphy; in any case, in most sub-operations the stratigraphy turned out as follows:

Layer 1 - Very dark brown layer of humus with coffee-tree roots and other organic material. It is found in arbitrary lot 1, from the surface.

Layer 2 - Dark brown earthen layer directly under the level of humus. It is found in arbitrary lot 1 and continues in arbitrary lot 2.

Layer 3 - Brown earthen layer with inclusions of mica, and scarce or abundant taxcal according to the floor's proximity. It is found in arbitrary lot 3 and down to the floor. The floor consists of an earthen light brown layer of a compact texture with plenty of taxcal in blue, yellow, red or orange colors. The amount of mica inclusions is larger.

Evidently, some pits present a more complex stratigraphy. This shall be described further on.

Trait Descriptions

Trait 14-R-1 north wall

This trait corresponds to the north wall façade of Structure 5-1, and was found in operations 14-111, 14-112, 14-113, 14-114, 14-314, 14-315, 14-316, 14-318, 14-319, 14-320, 14-321, 14-369, 14-379, 14-380, 14-578, 14-579, 14-580 [Fig. 8-9, 8-10, 8-11]. This part of the wall has an east-west orientation. Its structure, in Pit 14-111, is formed by five cobble stone courses, its height is of approximately 1.25 m, the lower stones on which these stone courses rest are 2.13 m below SD 2 of the mound, which is located 1.00 m above the natural surface, the upper level of the stones that crown the wall is at 0.94 m below the SD. Important note: in some sections there are five stone courses, while in others there are six, depending on the width of the stones forming the courses. The stones are irregular in size, as we found them in sizes from 0.12 m to 0.28 and 0.30 m; they show no signs of having been modified, but only of having been placed aligned as components that give shape to the wall.

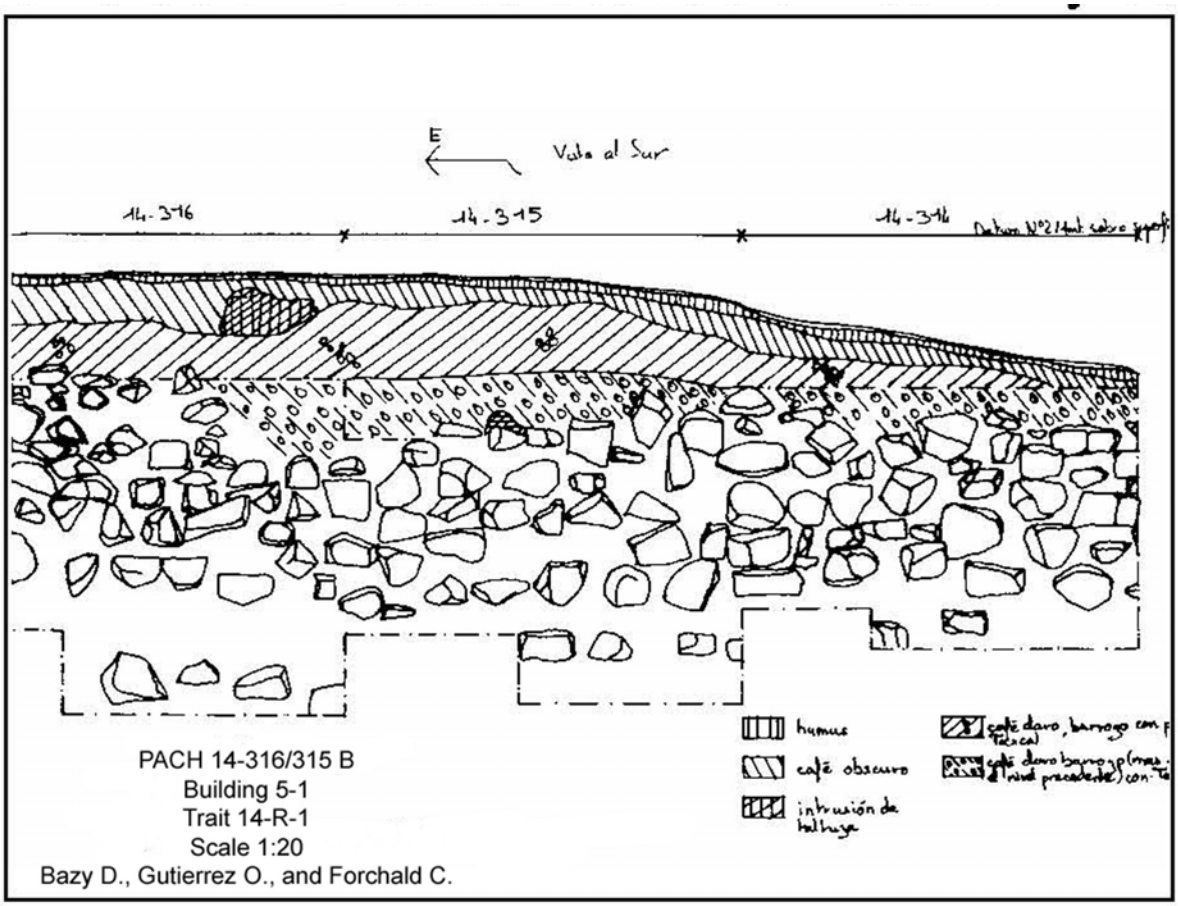


Fig. 8-9: Profile of trait 14-R-1 from pit 111-114 and 320.

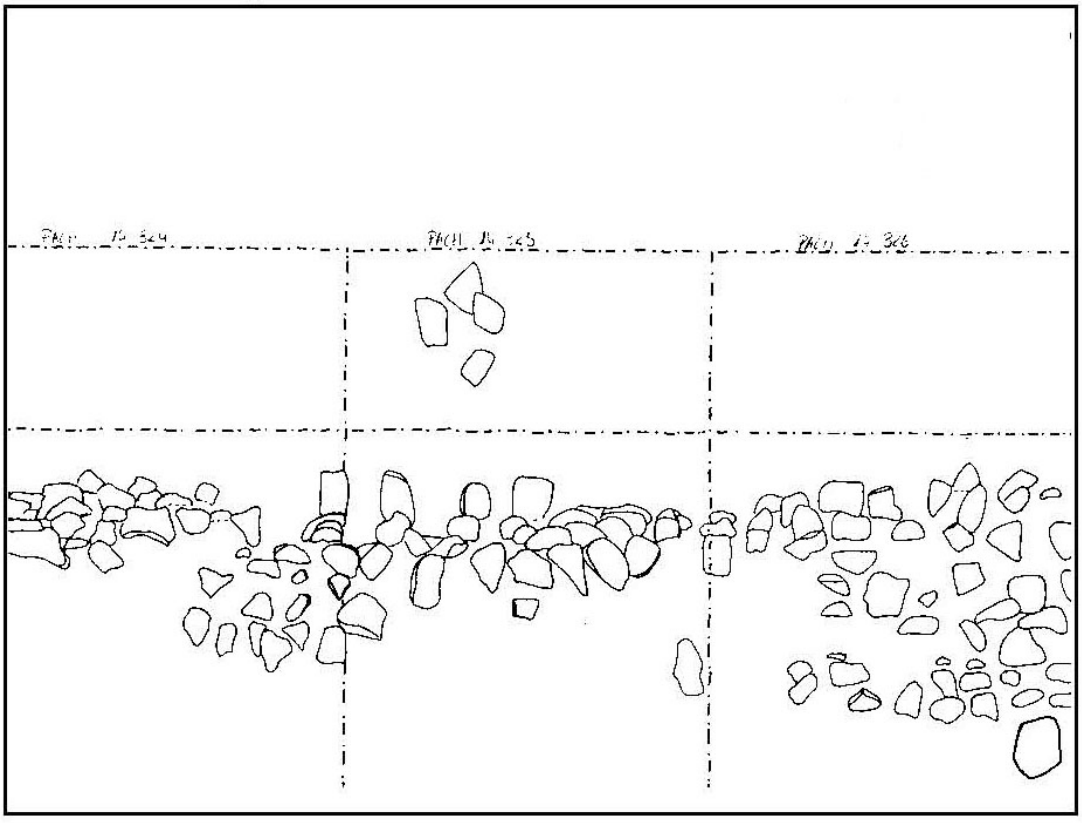


Fig. 8.10: Plan view of center of northern façade, trait 14-R-1.

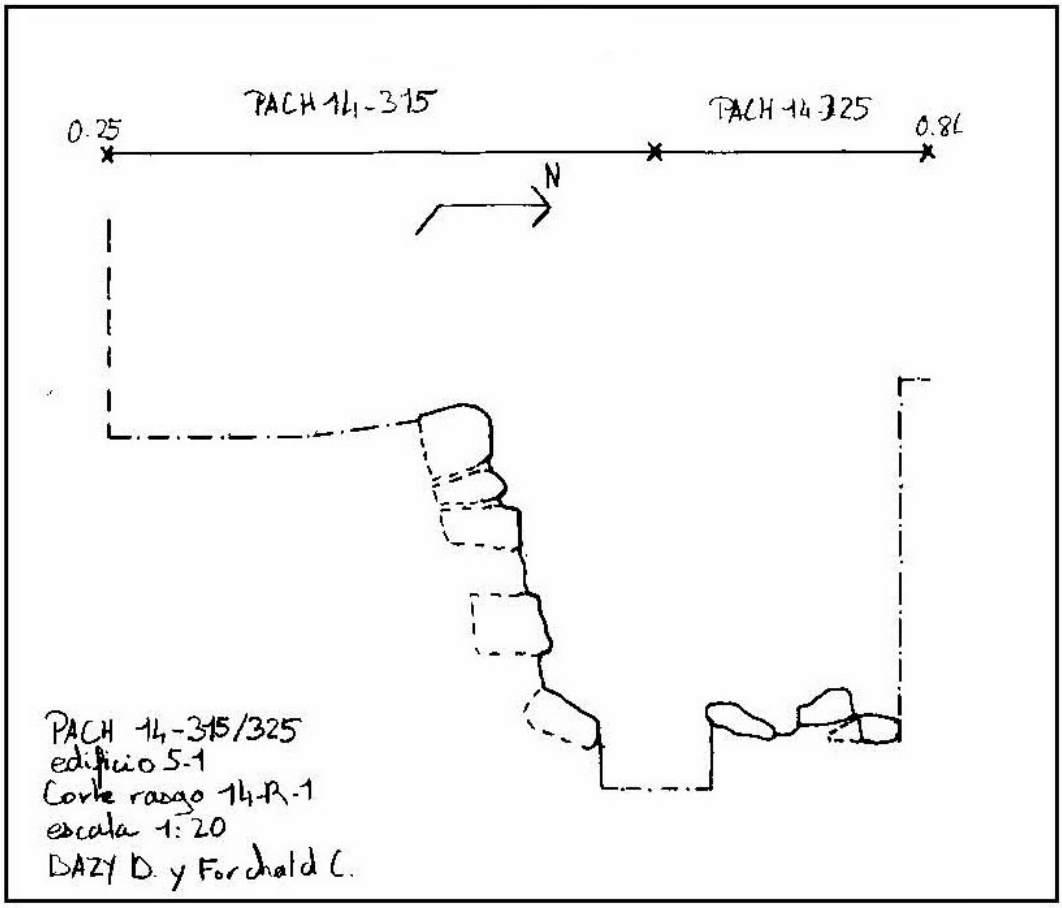


Fig. 8-11: Section of center of the façade, trait 14-R-1.

We believe that there is a plaza floor at the level of 1.91 m below the SD; this floor is probably located at the top of the deepest stone course found, but a follow-up of this trait will be necessary in future seasons of excavation. It was not possible to define the precise location of the floor in the first upper stone course of our excavation, but it is assumed that it may be at the level of 1.00 m below the SD.

In Pit 14-112 the wall tends to decrease its height in the east, to approximately 1.80 m below the SD. In Pit 14-113 the wall is even lower, reaching a height of 1.70 m below the SD, this is where we could observe how the structure that forms the wall is ended in a wedge shape with only three courses of small stones, the smallest ones present in the construction of the wall. At the northwest corner of the Structure, the wall begins to decrease in height from two stone courses to just a single one, and this is also the case with the southeast corner, which after presenting two courses, ends with only one stone course, this course is made of middle size stones relative to the general size of the rest of the stones. This architectural trait at the northeast corner was difficult to elucidate during the excavations because we anticipated it would form a corner; this is why we have considered it as atypical, different to those of the opposite corners in the west and south [Fig. 8-12]. The angle measured for the overall slant of the wall was of 45 degrees.

Trait 14-R-1 apparently makes a southward change of direction in the east profile that forms Pit 14-113, but there is no continuation or alignment in that way; on the contrary, we observed that the continuity of the façade of the north side of Structure 5-1 is abruptly ended.

Fig. 8-12: Northwest corner of Mound 5; wall ending in a single stone course.

Pits 14-318, 14-319, 14-320, continue the trait 14-R-1 along the east-west axis towards the center of Mound 5, 6 m further to the west. We know that this trait continued to the west through the excavations that were conducted from where we thought the central axis of the mound was. The total surface of the wall excavated in both directions from its center towards the east and west formed the great front façade in the north of Structure 5-1. The entire length of the north wall is of 44 m. In general, the wall consists of cobble stones extracted from the river and joined together with a mud amalgam, this particular wall features three different construction modes.

First mode of construction of the wall: The first mode can be found in pits 14-111, 14-112, 14-113 situated at the east edge of the north wall, and in Pit 14-320. Inside these pits, the construction mode can be characterized as follows: one or two stone courses that are larger at the top and the base to support the wall. Between the base and the top of the wall there are smaller cobble stones. The number of stone courses depends on their size and the height of the wall. The stones are irregular in size, and vary from 0.12 m to 0.28 and 0.30 m, and as we stated earlier, they were not cut or modified. The general incline degree of the wall is 45 degrees.

Second mode of construction of the wall: The second form is visible in pits 14-316, 14-315 and 14-314. It appears made up of 5 or 6 cobble stone courses almost aligned under some type of sloping wall with a 42 degrees slant, formed by a core of small stones. The stones of the wall itself are of a similar size, with an average length of 0.25 to 0.35 m. The slant of the wall in those pits is smaller, approaching a 90 degree angle. In pits 14-316, 14-315 and 14-314 the wall rests on one last stone

course with a flat base that protrudes some 0.20 m from the rest of the wall. Probably, the role of this course was to secure the base of the floor.

Third mode of construction of the wall: The third mode is found in the entire west half of the north façade. A drastic decrease in the height of the wall is noticeable from Pit 14-320. In fact, less than three courses compose the wall in this section, decreasing to just a single one at the west end. The stones are aligned cobble stones of a regular size. The height of the wall is gradually reduced towards the west from a maximum height of 0.70 m to 0.30 m.

From our present knowledge, we can state that the total length of Trait 14-R-1 of operation 14 is of 43.10 m. In general, the North wall presents an east-west slope of 0.02 m at its base. Precisely at this level it is possible to follow the same slope of the floor, which consists of light brown muddy earth with abundant mica particles and taxcal with yellow, red, blue and orange pebbles. This floor coincides with the base of the wall throughout most of its extension. Only the east end (Pit 14-113) seems to be different, due perhaps to some collapse that we will make an effort to explain later.

The east half of the north wall presents a total height that averages 1.20 m. The maximum height is 1.58 m and the minimum is 1 m. The west half presents a maximum height of 0.80 m while the minimum is 0.20 m.

Within the structure of building 5-1, our research was unable to expose any interior floor, but just like the base of the wall in the upper part, the ground continues sloping down westwards, that is down towards the river.

The east profile formed by Pit 14-113 presents an apparent change of direction of Trait 14-R-1 to the south, but there is no prolongation or alignment following that direction; on the contrary, the continuity of the north façade of Structure 5-1 is abruptly cut.

Trait 14-R-2, piled up stones in possible corner

This trait corresponds to an accumulation of apparently irregular stones which may have formed the northeast corner of Structure 5-1 [Fig. 8-13]. No alignments were found that suggested a rounded form, or a 90 degree angle; the trait is located at the east end of the north wall, a situation that did not allow us to define the probable original shape of the corner.

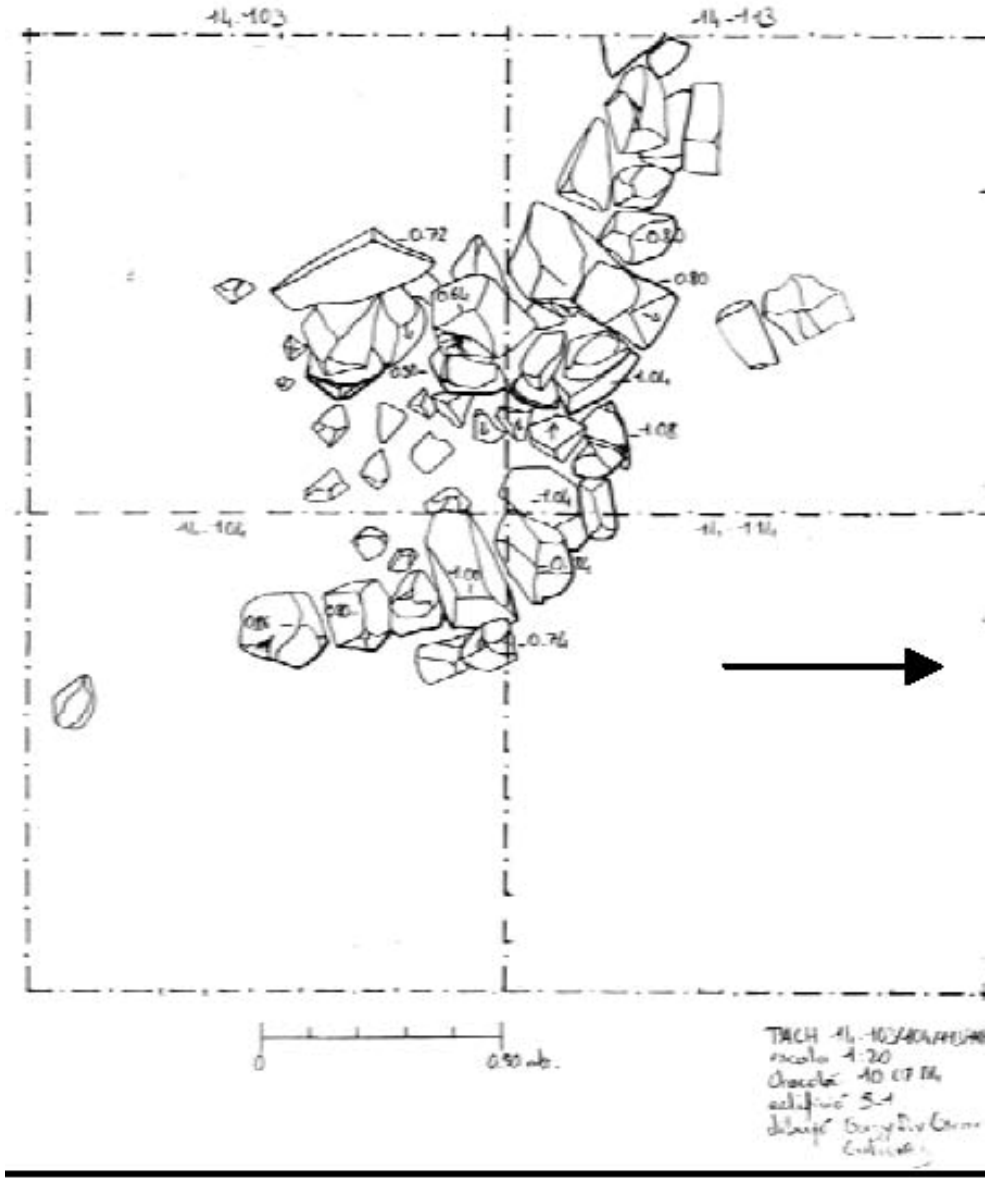


Fig. 8-13: Plan view of northeast corner, Structure 5-1.

It is precisely under this stone accumulation in Pit 14-113 where there is a crossing of a probable corner without the expected continuity; however, it looks like a wall which ends perfectly in an abrupt vertical cut of 90 degrees and three stone courses, giving the impression that the wall crosses towards the south. In spite of the several inspections accomplished below this stone accumulation, to the north and south of the stone courses, no positive results were obtained in the detection of a corner, as is customary in other buildings. The inspections were conducted from the southeast corner of Pit 14-113 towards the south.

A similar search strategy was applied in pits 14-103 and 14-104, from east to west in the two southern quadrants of the pits, in an attempt to find the possible wall forming the continuity of the probable corner. This wall, which we logically expected to spot, was not located, and therefore it was not possible to define an east corner in our north wall.

We do not know whether the stone accumulation belongs to a collapsed corner or to some architectural feature of an unknown shape. Interestingly, this trait includes very

large stones, in comparison with the rest, suggesting that they constituted an important part of the façade that ends in the east. We made an inspection towards the north in the southeast corner of Pit 14-103 in an attempt to find the wall, but this search also proved unsuccessful.

The top of the stone accumulation is at a height of 0.90 m below the SD, and is made of larger stones; the small stones of the base are at a height of 1.10 below the SD, this detail is probably what is left of the rectangular crest of a beam that perpendicularly jutted out towards the east wall to form the east façade.

The feature that may have been an upper decorative corner, displays the presence of a stone approximately 0.60 m long with two faces that form a wedge with an angle that is smaller than 90 degrees. The corners rest on an apparent floor at 1.70 m below the SD. In Pit 14-103, the larger stones rest on the upper floor forming the final course of the wall that represents the north façade at a height of 1.07 m below SD 2.

In summary, our research failed to find alignments that would suggest a rounded shape, or that could directly form a 90 degree angle. The trait is found at the east of the north wall, a location that prevented us from defining the probable original shape of the corner. However, at first sight and in plan views or profiles, we were able to note the presence on the surface of two alignments of large stones with the same shape. They are located at a similar height of 1 m from SD 2 – as a continuation of the alignment that crowns Trait 14-R-1. The most southern alignment rests on a level of compact and muddy earth, light brown in color and with taxcal pebbles. It is located in the prolongation of Trait 14-R-1 forming a curve to the south. The second arrangement materializes with an alignment of stones of the same size than the previous ones. It forms a corner with a right angle towards the south from the east façade of the stones located 0.70 m away from the eastern border of Pit 14-113. The stone that crowns that vertical alignment defines a possible corner and is 0.60 m long. The last stones of the east-west profile are those that rest on the floor found at 1.70 m of SD 2 at Pit 14-113. Between those two stone alignments there is an irregular concentration of small stones.

In conclusion, the group of stones makes structural sense, but the excavation was unable to prove the existence of a corner, as no prolongation to the south was found. However, in Pit 14-84 we observed two stones apparently following the alignment of Trait 14-R-2 and placed in front of the last stones at the north end of Trait 14-R-3. They were found at 1 m from SD 2. From this we can infer that an inset corner may have existed. We keep in mind that no tests regarding such considerations could be carried out during the excavation. The reasons may be multiple: type of construction (partly made of mud, for example), the presence of a huge cohune palm tree, land disturbances as a consequence of the coffee plantation activities, or the intentional destruction to extract stones to be reused in other constructions.

Trait 14-R-3, east façade portion of wall

This trait corresponds to the wall aligned in a north-south direction that constitutes the northern half of the east façade of Mound 5. It begins at the northwest quadrant of Pit 14-76, towards the south. This is the northernmost part of the façade but this is also the place where its continuity towards north is lost. In the south, it is next to the northern portion of the ramp or stairway (Trait 14-R-4) that climbs to the top of the structure. The corner with the stairway is located at Pit 14-36 and is marked by the

presence of a large stone 0.40 m high. Thus, Trait 14-R-3 remains inside pits 14-76, 14-66, 14-56, 14-46 and 14-36.

Trait 14-R-3 is 9 m long and has a slant with an average 45 degree angle. The maximum height is 0.90 m, the minimum is 0.50 m. It extends from north to south with three superimposed rows of stones of a regular size (0.25 – 0.40 m long). The rows are separated from one another by a space of roughly 0.10 m. Like in the north façade, Trait 14-R-3 presents a slope towards the south of 0.2 m per meter. The floor level, composed of a light brown muddy earth with red, yellow, blue and orange taxcal, follows this slope more or less down to the base of the wall.

Like in Trait 14-R-2, we ignore so far the reason why the prolongation of this trait is absent. The base of the stone where the wall ends rests 1.68 m below the mark of SD 2. The largest stone that may have constituted the final portion of an architectural feature is located 1.45 m below the SD. These two stones are the end of the wall and are not similar to the material of the cobble stones, as they are easily broken and they show a rusty coloration (iron oxide). To the east of them, that is, in front of them, lie the last two cobble stones that mark the end of the south-north alignment. The end of this trait is seen on the west face of Pit 14-76, and reaches a height of 0.30 m from the north face of the previously mentioned pit; its upper faces are 1.65 m below SD 2, and the lower faces at 2.02 m. The stratigraphy of Pit 14-86 seems to corroborate the notion of a collapsed façade, or else it may suggest that the stones in that section of the trait were removed, as we observed another layer, previously identified as a component part of the building's filling, at the level of the last stones of the trait. This layer is a very muddy earth with abundant particles of mica and taxcal pebbles. Farther north in the pit, it blends with the natural stratigraphic layer of light brown earth with no taxcal [Fig. 8-14].

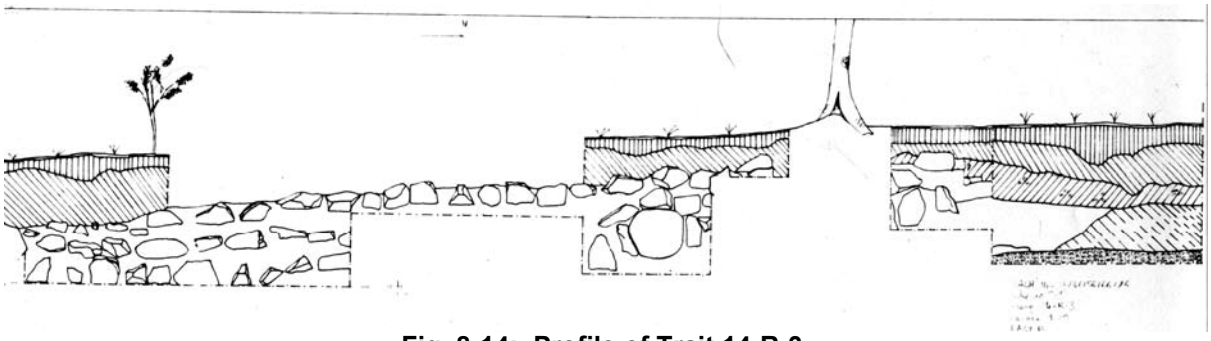


Fig. 8-14: Profile of Trait 14-R-3.

The last stones of the trait are well below SD 2, and consequently, they definitely do not correspond to the height of Trait 14-R-2. We should remember the presence, in Pit 14-84, of two stones located at a distance of 1 m from SD 2. We are under the impression that this placement indicates that they are the remains of a possible inset corner. Unfortunately, this last pit was not excavated further, while Trait 14-R-3 presents a slope towards the south. With that consideration and the fact that the last stones of Trait 14-R-3 are located at a lower level, we may assume that Pit 14-84 is to be deepened to find the missing portion, to properly understand the northeast corner of building 5-1.

Pit 14-66 presents three stone courses. The upper course is 1.46 m below the SD, and the lower course at 2.40 m. Two courses are observed, on top and below them there is a round stone of 0.50 x 0.50 m with an even face placed between two stones

of 0.30 m vertically, with a width of 0.20 m. This trait corresponds to the south-north wall alignment, and constitutes the eastern façade of Mound 5. It begins at Pit 14-76, in its north-west quadrant towards the south; this is the northernmost part of the façade but, once again, it is here where the north continuity is lost.

We ignore why it is not possible to detect the presence of additional wall remains corresponding to the corner, or remains of a wall continuing northwards. The base of the stone where the wall ends rests at 1.68 m below the mark of SD 2. The largest stone that may have constituted the final portion of an architectural feature is located 1.45 m below the SD. These two stones represent the end of the wall and they are not similar to the material of the cobble stones, as they are easily broken and their color is ocher (iron oxide), as if they had been burnt. Farther east from them, that is, in front of them, are the two last cobble stones with which the south-north alignment ends; this ending is located on the west face of Pit 14-76, and ends or finishes at 30 cm of the north face of the pit, while the upper faces are 1.65 m below SD 2, and the lower faces at 2.02 m (see profile of Trait 14-R-3 [Fig. 8-15]). Actually, the wall in this section ends with some sort of wedge (similar to the east corner of Trait 14-R-1], and therefore, it ends with a smaller size than the rest of the wall at the south.

Fig. 8-15: Trait showing the end of the wall that departs from the northern beam of Mound 5.

In Pit 14-66 it continues south of the wall and this time we observe three stone courses. The upper course at 1.46 m below the SD, the lower at 2.40 m; two courses are visible in the upper level, and below them there is a stone with particular characteristics and dimensions of 0.50 x 0.50 m, somewhat round in shape, with elongated type of stones at its sides placed in a vertical position; we feel this could be the support to form a figure (its position is almost in the middle between the beam of the north side and the east corner of the north wall's façade); this decorative feature or figure may have had a highly perishable finishing, having therefore disappeared [Fig. 8-16a, b].

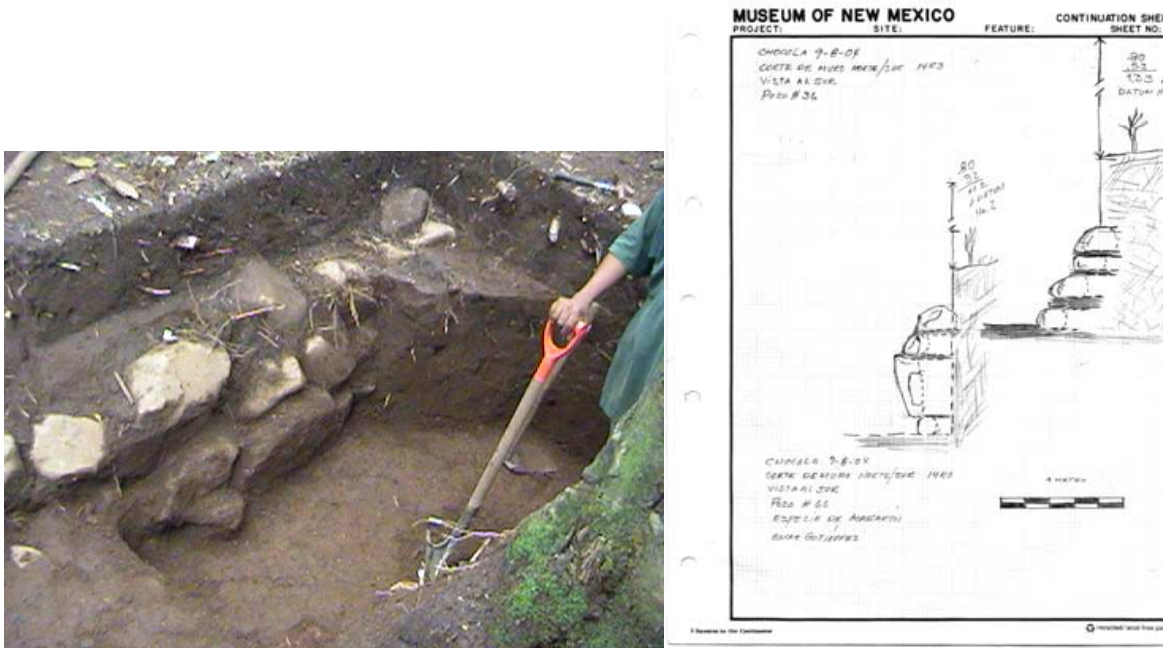


Fig. 8-16a, b: (a) Excavation of stone believed to have been a figure on the wall; (b) profile.

Pit 14-56 shows a continuation of the south-north alignment, of which only its upper stone course was found; its summit is 1.63 m below the SD in the northern section of the pit, while the upper face or floor that supports it is located at 1.82 m below the SD. As opposed to the south, the summits of the stones are at 1.64 m and the lower face at 1.84 m from the SD. These measures show a slight descent from north to south from this part of the wall. We have observed that the arrangement of the stones in the course covers the 2 m space of the pit with an average of five to six stones, depending on the size of the stones used (average length, 0.30 m).

Pit 14-46 was excavated to the lower level of the three stone courses; the upper part or apex is at a height of 1.71 m in the northern section, and the lower face of the last course is at 2.55 m below the SD. On the south side, the highest part of the first stone course is at 1.89 m, while the lower face of the last stone course, that is our third course, is at 2.57 m; all these measurements were taken with respect to SD 2.

Pit 14-36 is where our Trait 14-R-3 ends, as this wall crosses towards the east. On the north side of the pit, the apex of the upper stones is at 2.00 m, and on the south side at 2.05 m; the levels of the lower face of the stones forming the last course are found north, at 2.61 m, and also south, at 2.61 m (this data takes SD 2 as reference). On the east crossing, the corner presents a large stone that makes this point stand out, making it more noticeable.

Trait 14-R-4, north beam, eastern façade

This trait corresponds to the north beam of the east access to Structure 5-1. It is perpendicular to Trait 14-R-3, and its presence is visible in pits 14-36 and 14-37. On the contrary, it is observed that the cobble stone wall gradually descends eastwards with a slope of 0.75 m per meter, forming a ramp. But we shall see that the stairway probably has a series of 4 treads. The stone courses change from a group of 3 to just 1 from west to east. The size of the stones is similar to those of Trait 14-R-3.

The course of stones in the apex is 2.12 m below SD 2, and the lower faces of the lower course are at 2.66 m, while this small wall has a height of 0.55 m, measured in its westernmost section. The base of the wall is at 1.48 m from SD 4, resting on the probable floor of light brown muddy earth with particles of mica and taxcal pebbles of varied colors. The uppermost stone of this trait is at 2.12 m from SD 2, and the inferior faces of the lower course, are found at 2.72 m. The top portion of the wall is 0.60 m high, measured in its westernmost section. The lowest stone of the wall is at 1.40 m of SD 4, where the wall is 0.08 m high.

Trait 14-R-5, quadrangular stone accumulation

This trait is present in pits 14-37, 14-27, and seems to be the final portion of Trait 14-R-4; it is square-shaped, measuring 1.00 m x 0.90 m from north to south and from east to west, respectively. It is on top of the east portion of Trait 14-R-4. Its shape is almost square, with dimensions of 0.86 m from east to west, and 0.90 m from north to south [REDUNDANT?], being located at 0.86 m from SD 4, or 0.62 m from the floor. The stone core is small in size and rests on top of a layer of muddy, light brown earth, with little taxcal. The stones show signs of having been part of an area of light combustion. The probable function of this stone group may have been that of an altar (Miguel Orrego, personal communication, 2004). Inside Pit 14-27 and south of Trait 14-R-3, we noted the presence of several stones, though it is uncertain if they belong to the upper part of this trait, they rather look like the result of a collapse. The surface where they rest is at the same depth than the seat of Trait 14-R-4, at 1.48 m from SD 4.

The apex of the trait is located 1.96 m below SD 2. Towards the south, there are several fallen stones, though we ignore whether they belong to the upper portion of this trait, or are a collapse of a different part of the building; we assume it may have been the capping that marked the end of the beam, and descended down to the center of the east plaza. The surface where they rest is at 2.58 m from SD 2, the same depth of the seat of Trait 14-R-4. The continuity of this trait is not apparent. No traces of it were found in the north or the east, only the irregular stone grouping on the south side, which looses its continuity and is not connected with any other architectural feature. There is no other visible architectural element in its vicinity. One detail that caught our attention is that most stones were small in size, if compared with the remains of the other constructive features that form Structure 5-1; in other words, it was more skillfully and carefully built, and the area shows signs of having been used for light combustion.

Trait 14-R-6, fired mud

This trait [Fig. 8-17 a, b, c] was found in the central pit and in its western extension (14-235); it consists of several blocks of fired mud of a compact reddish earth present in lot 8 of Pit 14-236, and in lot 7 of pit 14-235, at a depth that varies between 1.13 m and 1.95 m above SD 3 at 0.50 m; apparently, these blocks are associated with the traits mentioned below, as they were found at the same elevation.

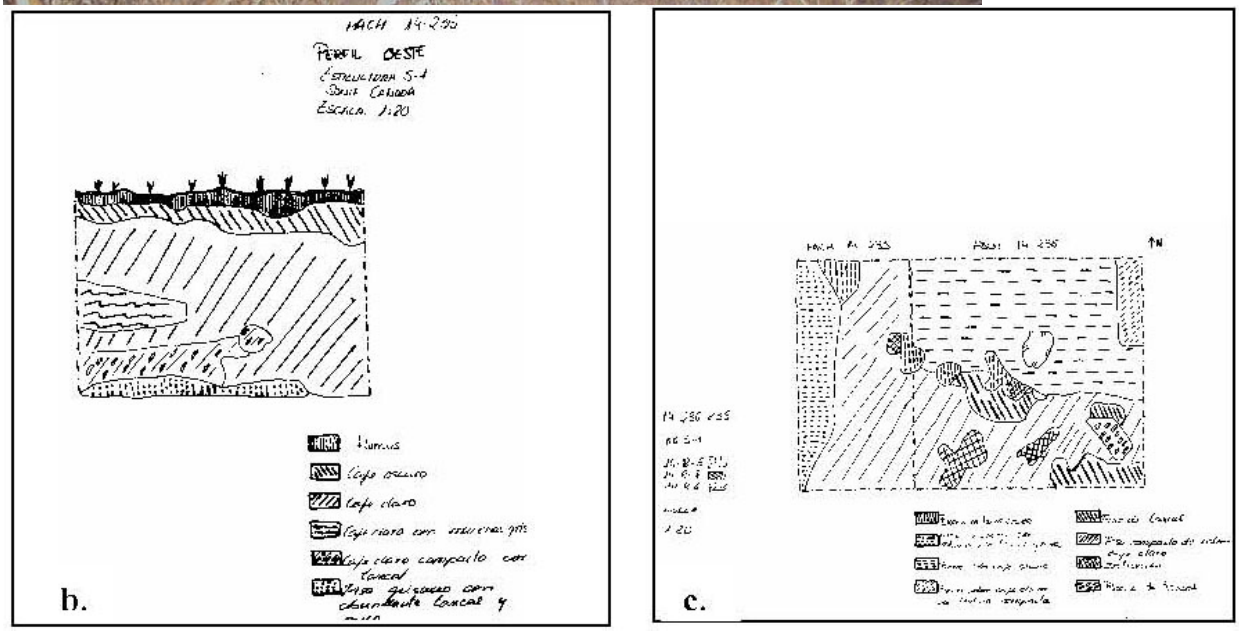


Fig. 8-17a, b, c: (a) Trait 14-R-6 found in pits 14-235 and 14-236; (b) trait profile; (c) plan view.

Trait 14-R-7, taxcal floor

This trait was found only in lot 8 of Pit 14-236. It consists of a taxcal floor with a gray hue and brown patches of a loose texture and just a few cm thick. The fragility of this possible floor is the reason why only few of its remains were found, very poorly preserved. It is located at an elevation of 1.95 m with reference to SD 3 at 0.50 m above the surface, in apparent association with Trait 14-R-6.

Trait 14-R-8, taxcal floor

This trait consists of a second floor that appears immediately under Trait 14-R-7, and extends along pits 14-235 and 14-236. This floor is of a greater consistency than the previous one. It is formed by a light brown earth with abundant taxcal and mica and its texture is consistent; it is well delimited. It appears at an elevation of 1.90 m with reference to SD 3, at 0.50 m above the surface, on the east section of Pit 14-236 and descending towards west to 2.00 m. In Pit 14-235 it once again begins to ascend to 1.90 m, to reach in its western end a maximum elevation of 1.79 m. Here, it is cut by a refill of gray earth with abundant taxcal.

Trait 14-R-9, south beam, east façade

This trait was found and defined as the possible beam of the south side of the east façade of Structure 5-1, and was located in pits 14.486 and 14-487. For what we know, the beam is 2.82 m long from east to west. But due to the presence of a large tree (a *volador*), its west part collapsed and it has been assumed that Trait 14-R-9 must have had a length similar to that of the north beam, that is, 4 m. It descends at a rate of 0.90 m per meter. The number of courses decreases from 3 to 1. The tallest part of the wall is at 1 m of SD 5, and the base of the trait is on the floor, at 1.52 m of SD 5. The lowest part is at 1.25 m of SD 5. Alike the north beam, its greatest height is of 0.60 m.

Close to the beginning of Trait 14-R-9, possibly a beam, lies the northeast quadrant of Pit 14-486, where half a stone metate was found showing an approximate diameter of 0.45 m, a concavity of 0.22 m in diameter, and a depth of 0.28 m, that is, it had a large capacity for the transformation of foods or other collectively used materials. The excavation level of 1.18 m to 1.38 m below the SD corresponds to the fifth lot of the pit, so in our view this constructive phase has many artifacts and represents a settlement of many years at the city of Chocolá. This is where the materials that were turned into refuse were placed to increase the constructive volume of the building; such hypothesis could also include mounds 3 and 4; the opposite case would be that of Mound 2 intervened by Robert Burkitt between the 1920s and 1930s, as the amount of remains of ceramic and lithic artifacts proved insignificant, suggesting that there were very ancient constructions in the region, and particularly in Chocolá.

This architectural trait (9) is the southern end of the possible stairway to access Structure 5-1 at Mound 5. It differs from the trait found on the north side because it lacks the almost one square meter capping, in a way that the structure presents two apparently different architectural features, but when incorporated to the building they both form the visual center of a possible entrance to the higher section of Structure 5-1, as well as the symmetrical arrangement exhibited by the south and north walls of the east façade from its beginnings at the beams.

Trait 14-R-10, access to the structure

This trait corresponds to the possible stairway to access Structure 5-1, and is located in pits 14-496 and 14-497 [Fig. 8-18]. For what we know, the stairway consists of

four treads. The treads are mud-made and the risers consist of edge-on standing stones and mud. The treads have variable dimensions and the risers are 0.20 m high, separated by a horizontal distance of 0.70 m that forms the treads; this type of detail was repeated in Pit 14-497. (Recommendation: it would be convenient in the following seasons to explore in this direction and towards the center of the structure for the full definition of the stairway to the summit of the mound).

Fig. 8-18: Access and possible beams, east wall of Structure 5-1.

Trait 14-R-11, wall of east façade

This trait comprises the wall of the east façade in pits 14-476, 14-466 and 14-456; it begins on the south side of the southern beam towards the southeast corner of Structure 5-1, and is oriented in a south-north direction. This trait was lost in Pit 14-445, in what must have been the southeast corner of the structure. To the north, Pit 14-455 was excavated and stones found that did not follow the alignment to the east, where the east façade ends at level 5 (1.60 to 1.80 m) below SD 5; the excavation did not show either part of the trait we were trying to find. Pit 14-456 is the one that shows the last stone course ended with a single stone in the shape of a wedge, there where the trait should cross to form the supposed southeastern corner of the large Structure 5-1; this is where the continuity of our trait was lost, the trait that came from the north from pits 14-466, 14-476, 14-486, 14-496 and which would form the symmetrical part or architectural balance of the façade, with the wall section of the northern beam. This wall forms the symmetry with Trait 14-R-3, defining for the east façade a length of 38 m, including the two beams and the access area to the upper part of the structure, right at its center.

Trait 14-R-13

This trait corresponds to the west façade of the structure and represents the most extended point of the excavations conducted at Structure 5-1 in the 2004 season [Fig. 8-19a, b]. In view of the step and the apparent beams at the center of the east

façade of the structure, it would be advisable to place test units farther south, aligned with pits 14-532 and 14-552.

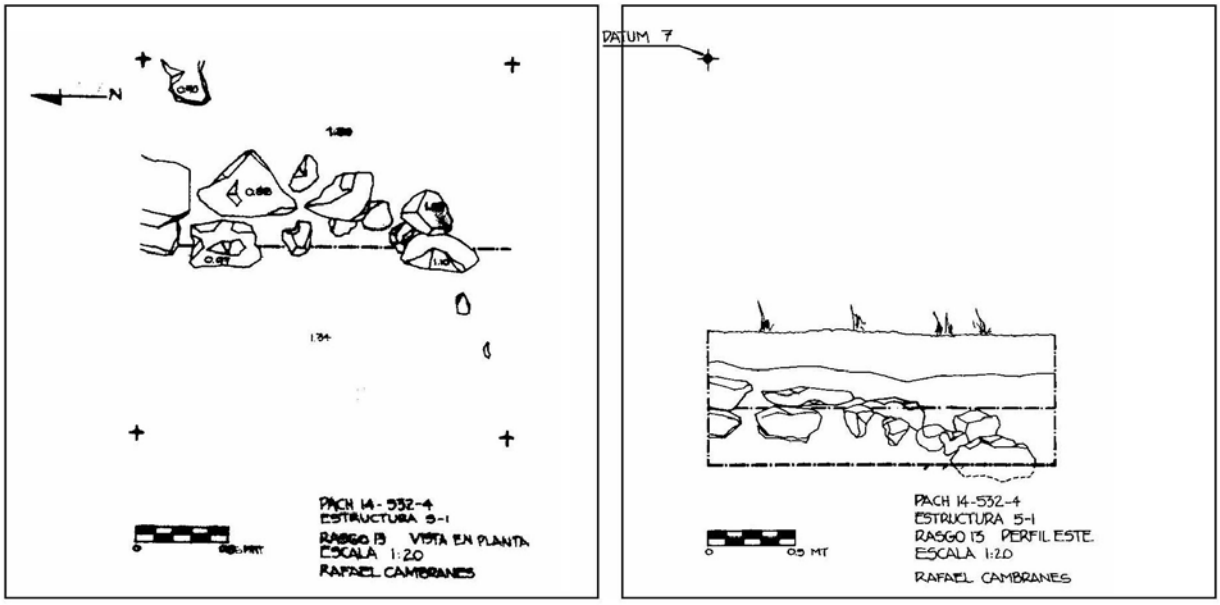


Fig. 8-19a, b: East façade near the northwest corner of the structure: (a) plan view of Pit 14-532; (b) profile of the pit.

Description of pits, northern and eastern wall

Pit 14-6

Three lots were excavated in this pit, with the purpose of trying to locate the existing discontinuous part of Trait 14-R-5. In lot 1, 12 ceramics were found. Lot 2 yielded one figurine, with just one part of the trunk, arm and neck, and we recovered ceramic 157, obsidian 5, taxcal and charcoal chunks. No architectural traces or evidences were found.

Pit 14-17

Four lots were excavated in this pit, with the purpose of trying to locate part of Trait 14-R-5, as its continuity to the south was lost, and finding step remains that climbed to the upper section of Structure 5-1; none of these traits was found. In lot 1 we found: ceramic 37 and obsidian 3; in lot 2, ceramic 119 and obsidian 8; in lot 3, ceramic 50 and obsidian 7; and in lot 4, ceramic 55 and obsidian 4.

Pit 14-27

Six lots were excavated in this pit, again with the purpose of locating a portion of Trait 14-R-5. One part or irregular grouping of collapsed stones from Trait 14-R-5 was found, in the south side of the pit; here, the continuity of the beam to the south of Structure 5-1 was lost. In lot 1 we found: ceramic 54 and obsidian 4; in lot 2 ceramic 58, obsidian 3, and taxcal samples; in lot 3 ceramic 86 and obsidian 8; in lot 4 ceramic 17; in lot 5 ceramic 24 and obsidian 2; and in lot 6, ceramic 13 and obsidian 2.

Pit 14-36

Six lots were excavated in this pit, and Trait 14-R-3 appeared on its west side following a south-north direction, gradually descending to the south and ascending to the north; this detail was observed in pits 14-36, 14-46, 14-56 and 14-66, having as well observed in lot 4 that the wall formed a corner that followed a west to east direction. A stone of a size larger than the others was the one that defined the crossing to the east. This trait, denominated 14-R-4, had three horizontal stone courses with an average height of 0.50 m. See description of traits. In lot 1 we found ceramic 35; in lot 2 ceramic 146 and obsidian 6; in lot 3 ceramic 26 and obsidian 3: in lot 4 ceramic 66, obsidian 7, and cut stones 2; in lot 5 ceramic 33 and obsidian 1; and in lot 6 ceramic 25 and obsidian 3.

Pit 14-37

This pit was excavated in five lots, and the purpose was to define the small wall that runs in a west to east direction, the east plaza of Structure 5-1. The alignment was found in the second lot, and in the third we confirmed that the stones were irregularly grouped and were smaller, compared to the rest of the others found; it was 2.5 m away from the corner. This new trait, defined as 14-R-5, was excavated to the floor. The trait ended in a square-shaped grouping. In lot 1 we have found: ceramic 40 and obsidian 2; in lot 2 ceramic 54 and obsidian 2; in lot 3 ceramic 39, obsidian 5, and taxcal samples; in lot 4 ceramic 63 and taxcal samples; and in lot 5 ceramic 14 and taxcal samples.

Pit 14-43

This pit was excavated in three levels only, and the initial intention was to check whether on top of Trait 14-R-3 there were steps to access the upper section, or a second upper body of Structure 5-1. What we were looking for was not found, but instead, just one stone with no apparent association was located that possibly collapsed from above intruding in the structure. In lot we have found: ceramic 31, obsidian 2, and taxcal 8; in lot 2 ceramic 137, obsidian 6, and taxcal 35; in lot 3 ceramic 45 and obsidian 6.

Pit 14-44

Four levels were excavated in this pit, again with the objective of finding steps or an upper body within the structure, but no architectural trait was found. The presence of ceramic and obsidian remains was high compared to other pits from outside the structure. In lot 1 we found: ceramic 31, obsidian 2 and taxcal 8; in lot 2 ceramics 50, obsidian 4 and taxcal 6: in lot 3 ceramic 77, obsidian 14 and taxcal 14; and in lot 4 ceramics 133, obsidian 17, taxcal 16 and one charcoal sample.

Pit 14-45

This pit was also excavated in four levels, with the purpose of locating either steps or an upper body within the structure. No construction features were found that responded to these architectural details. Like an interesting feature in this pit, in level 2 we found a fragment of glazed ceramic and one coin of one cent of Quetzal from 1964, indicating that we could consider a 40-year span for the formation of this level, or otherwise, the disturbance of the terrain at a remarkable scarce depth, caused by agricultural activity. At level 4, a reused, round-shaped sherd (black polished) of 1.5

cm was found, though we ignore for what crafting or ludic activity it was designed for. In lot 1 we found: ceramic 26, obsidian 2 and taxcal 10; in lot 2 ceramic 40, obsidian 8, taxcal 9, one fragment of glazed ceramic, as indicated above, and one cent apparently dating to 1964; in lot 3 ceramic 101, obsidian 6, carved stone 1, and taxcal 23; and in lot 4 ceramic 59, obsidian 14, taxcal 24, one charcoal sample, one ceramic tablet, two ceramic figures, and one stone with color.

Pit 14-46

This pit was excavated in seven levels, with the purpose of discovering Trait 14-R-3; as of level four we could observe the first horizontal stone course, and in levels five and six we confirmed the presence of three cobble stone courses. This trait extended to pits 14-56, 14-66 and 14-76; the last course rests on a material made of pebbles and taxcal, with light brown earth with abundant particles of mica and charcoal remains, similar to that on which Trait 14-R-1 rests, in pits 14-111, 14-112 and 14-113. We discovered one of the thickest utilitarian ceramics found along our excavations. In lot 1 we found: ceramic 30, obsidian 4 and taxcal 2; in lot 2 ceramic 72, obsidian 8 and taxcal 7; in lot 3 ceramic 51, obsidian 4 and taxcal 8; in lot 4 ceramic 45, obsidian 13, taxcal 80 and one charcoal sample; in lot 5 ceramic 45; in lot 6 ceramic 48 and obsidian 2; and in lot 7 ceramic 24, obsidian 2 and taxcal 18.

Pit 14-55

This pit was excavated in four levels, with the purpose of finding out whether there were steps or bodies inside the structure; here, we observed as well a strong presence of ceramic artifact remains. At levels one and two there was plenty of charcoal, but it was not collected because it was too superficial and we had the antecedent of having found glazed ceramic and one coin from 1964, a fact that pointed to a strong disturbance caused by agricultural activities.

At level four, precisely in the upper portion of the first stone course of Trait 14-R-3, three logs that formed some kind of hearth were found and sent to the laboratory for further analysis; however, we were uncertain on whether they were old or modern, as they presented very fine cuts to assume some kind of prehispanic work [Fig. 8-20]. In lot 1 we found: ceramic 57 and obsidian 2; in lot 2 ceramic 95 and obsidian 6; in lot 3 ceramic 90, obsidian 8 and one carved stone; and in lot 4 ceramic 19.

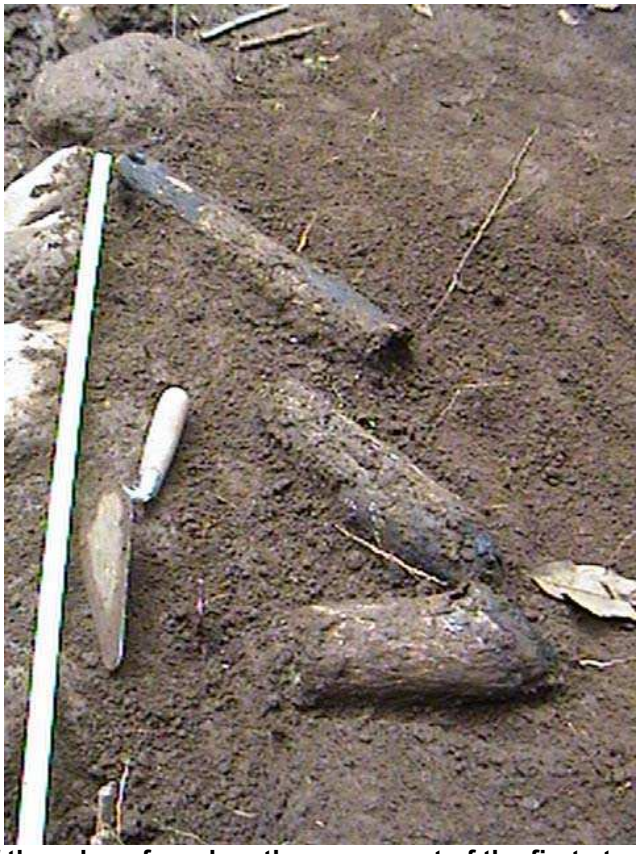


Fig. 8-20: Sample of three logs found on the upper part of the first stone course of the wall known as Trait 14-R-3.

Pit 14-56

This pit was excavated in four lots, with the purpose of locating Trait 14-R-3 in a south-north direction; this was the area previously excavated in 2003; at level four Trait 14-R-3 was found once more, but was not excavated deeper because it showed some kind of burnt diagonal with a material of two different tones that run in a northwest-southeast direction. The burnt section was at the west side abutting the structure, and contained remains of taxcal and small pumice stones; the lighter section remained outside the structure in this sector, though it probably introduced itself inside Structure 5-1. We believe this trait could be assimilated to those found in the excavations of Mound 2, as the contact lines between one color and the other are perfectly visible (Gutiérrez 2003) [Fig. 8-21]. In lot 1 we found: ceramic 8, obsidian 1 and taxcal 50; in lot 2 ceramic 32, obsidian 5, and a fair amount of taxcal, 142; in lot 3 ceramic 30, obsidian 5 and taxcal 5; in lot 4 ceramic 33, obsidian 1, charcoal samples 5 and carved stones 6.

Fig. 8-21: Pit 14-56: contact lines of the material showing two different colors.

Pit 14-66

Seven levels were excavated in this pit with the purpose of further exposing Trait 14-R-3 in a south-north direction. The second level showed the stones of the east wall alignment of pits 14-36, 14-46, 14-56, 14-66, providing the visual impression of going up to a level higher than that of the courses present on the south side. This trait presented again four horizontal stone courses, from level three to levels four and five, and in the latter one there is was stone that stood out among the others for its large size, 50 x 54 cm in height, occupying a space of three of the four courses that form the wall; at the sides there were vertically placed stones, apparently forming a pair of ears from a face; we believe this feature may have been an ornamental architectural detail (possibly a mask or some other ornament) [Fig. 8-16a, b]. Again, there is a repetition of the trait. Below the last course the layer changes to another one with a greater content of taxcal and taxcal pebbles, small pumices and a very light brown earth. In lot 1 we found: ceramic 49; in lot 2 ceramic 54 and obsidian 2; in lot 3 ceramic 40; in lot 4 ceramic 34; in lot 5 ceramic 34 and obsidian 3; in lot 6 ceramic 15 and one charcoal sample; and in lot 7 ceramic 6 and taxcal.

Pit 14-75

As a consequence of the loss of Trait 14-R-3 in Pit 14-76 to the north, we proceeded to explore this pit, assuming that the corner had made a turn towards the interior of the structure; at level three a large stone was found, without an association. We were unable to find the continuity of this trait to the north. In lot 1 we found: ceramic 17; in lot 2 ceramic 17; and in lot 3 ceramic 8.

Pit 14-76

This pit was worked in six levels, with the purpose of finding out whether Trait 14-R-3 continued northwards. At level 3 the first stone course appeared and continued through levels 4 and 5 where the second stone course appeared, with levels 4, 5 and 6 showing layers that changed to a lighter color.

At level six, no other stones were found. Here in this pit the south-north alignment of the wall was also lost.

In lot 1 we have found: ceramic 12; in lot 2 ceramic 28; in lot 3 ceramic 18; in lot 4 ceramic 24; in lot 5 ceramic 8 and taxcal 1; and in lot 6 ceramic 22.

Pit 14-84

This pit was excavated in three levels inside the structure, with the purpose of trying to locate the alignment lost in the north-east part of Trait 14-R-1 (north wall of the large platform); the amount of ceramic artifact remains was larger than that present in pits outside the structure. Neither the continuity of Trait 14-R-1 was found nor the continuity of Trait 14-R-3, assuming that both met right there to form the inset corner. In lot 1 we found ceramic 44 and taxcal; in lot 2 ceramic 89, obsidian 8, and one sample of glazed taxcal; and in lot 3 ceramic 61, obsidian 9, and taxcal.

Pit 14-86

This pit was excavated in seven levels, with the purpose of locating the continuity of Trait 14-R-3, aligned along pits 14-36, 14-46, 14-56, 14-66 and 14-76. No evidence of architectural remains was found. We believe that maybe this trait was destroyed by natural causes, like the roots of big trees, or the reuse of materials in other plaza sectors from Mound 5. In lot 1 we have found ceramic 42; in lot 2 ceramic 70 and one carved stone; in lot 3 ceramic 72 and obsidian 4; in lot 4 ceramic 43; obsidian 2, taxcal and one charcoal sample; in lot 5 ceramic 44, obsidian 2 and taxcal 28; in lot 6 ceramic 47 and taxcal 30; and in lot 7 ceramic 10 and an abundant amount of taxcal, 50.

Pit 14-91

This pit was excavated in three levels, with the purpose of finding out whether Structure 5-1, as of the upper level of the north wall, contained an upper body or steps that climbed to the south, considering that pit 14-111 showed in its south side a stone that suggested an alignment oriented that way; we found no architectural traits whatsoever that could be associated with the wall of the north façade of Structure 5-1. In lot 1 we have found ceramic 29 and obsidian 3; in lot 2 ceramic 75 and taxcal 30; and in lot 3 ceramic 88.

Pit 14-103

This pit was excavated in six levels, with the purpose of locating an architectural trait in the north side of Mound 5, as at the time of the previous excavation no trait was found that defined a constructive characteristic of Structure 5-1. From level 1 it showed three stones of regular size, including one of 50 x 30 cm; the second level also presented several river cobbles, with the constructive characteristic that the stones had not been joined together with mortar, giving the impression of having

been deposited without any relation to walls or other decorative forms. The southern section of the pit presented no stones deposition. The presence of ceramic artifact remains in level 4 was strong; they were seemingly domestic and quite thick, a sign that the construction was accomplished at a time when the community already had enough ceramic remains to achieve large constructive volumes. In lot 1 we have found ceramic 40 and obsidian 2; in lot 2 ceramic 39 and obsidian 4; in lot 2 just one sherd; in lot 3 ceramic 30, obsidian 5 and taxcal 6; in lot 4 ceramic 69, obsidian 3 and taxcal; in lot 5 ceramic 98, obsidian 7 and taxcal; and in lot 6 ceramic 80 and obsidian 6.

Pit 14-104

This pit was excavated in five levels, with the purpose of further gaining knowledge on the association of the stones found at Pit 14-103; also, and as of the first level, three stones were found with no apparent context association and irregularly arranged along a south-north direction, with a concentration towards the northwest portion of the pit; this pit was also excavated in a limited manner trying to find a wall alignment that showed the south-north alignment of the east façade. The architectural trait we were looking for was not found. In lot 1 we recovered ceramic 62, and obsidian 1; in lot 2 ceramic 34 and obsidian 3; in lot 3 ceramic 28, obsidian 6, taxcal and one charcoal sample: in lot 4 ceramic 16, obsidian 5 and taxcal 5; and in lot 5 ceramic 40, obsidian 10 and taxcal 30[2].

Pit 14-105

This pit was excavated in three levels, with the purpose of finding part of a trait exhibited in the survey analysis accomplished by Dr. David Monsees. It only showed in level 2 and on the west side of the pit, one stone in the shape of a wedge resting on a pebble and taxcal mortar. We found no feature that provided any information of an architectural character. In lot 1 we found ceramic 47 and obsidian 5; in lot 2 ceramic 48 and obsidian 13; and in lot 3 ceramic 16.

Pit 14-107

This pit was excavated in three levels, with the purpose of confirming the accuracy of the information provided by Dr. David Monsees through his analysis of radio penetrating waves; we neither found any architectural evidence that would give us information regarding the shape of our Structure 5-1. In lot 1 we have found ceramic 23 and obsidian 2; in lot 2 ceramic 34, and in lot 3 ceramic 28 and obsidian 2.

Pit 14-111

This pit was excavated in eight levels, with the purpose of locating the alignment corresponding to the stones irregularly arranged in Pit 14-112; in level three the first six stones appeared, aligned in an east-west direction of the northern façade, with an average length of 30 cm, and with the presence of stones in level four; in level five the size of the stones varied, as the course included eight stones and continued in lots six, seven and eight.

---

[2] In this pit two cards were written down with the different amounts of artifacts.

Lot eight marks the end of the lower stone course. In some areas there are five vertical stone courses; others show an apparent maximum of six, depending on the size of the stones.

In lot 1 we found ceramic 24, taxcal 26 and one metal fragment; in lot 2 ceramic 102, obsidian 4 and taxcal 27; in lot 3 ceramic 37, obsidian 3 and taxcal 14; in lot 4 ceramic 37, obsidian 3, taxcal 25 and one charcoal sample; in lot 5 ceramic 28 and obsidian 2; in lot 6 ceramic 18, obsidian 3, one black stone, taxcal 2, and metal fragments 2; in lot 7 ceramic 38 and stones 3; and in lot 8 ceramic 17.

Pit 14-112

This pit was excavated in nine levels, with the purpose of locating the continuity of the façade of the north face of Structure 5-1. Level two presented the first six stones in an east-to-west alignment, including one of a size larger than the rest, with its long side following a north-to-south direction. As to ceramics, there was one cream sherd with a red rim, and the handle of a very large and thick bowl, a ceramic artifact probably used to store grain or other types of food.

Level four was associated with ground taxcal material with small ceramic remains; it seemed as if it had been fired, and was associated with the base of the third lower stone course; it was located in the outer part of the structure.

Lots 5, 6, 7, 8, are consistent with the stone courses. One part of lots 8 and 9 correspond to the material where the stone courses rest, or in other words, the foundation.

In lot 1 we recovered ceramic 63, obsidian 2 and taxcal 19; in lot 2 ceramic 90, obsidian 16 and taxcal 30; in lot 3 ceramic 61, obsidian 3 and taxcal 14; in lot 4 ceramic 33; in lot 5 ceramic 42 and obsidian 1; in lot 6 ceramic 20 and obsidian 1; in lot 7 ceramic 53 and obsidian 2; in lot 7 ceramic 53 and obsidian 2; in lot 8 ceramic 28 and obsidian 2; and in lot 9 ceramic 14, taxcal 13 and one charcoal sample.

Pit 14-113

This pit was excavated in seven lots, with the purpose of locating the continuity of Trait 14-R-1, that is to say, the north façade and the possible crossing of the corner towards the side of the east façade. As of level one, we found an irregular accumulation of stones associated with the south pit, 14-103, but without defining any alignment or architectural form.

In level four, a search was conducted at the north side of the pit in an attempt to locate the corner, to no avail. In level five a portion of a figurine with female characteristics was found, representing the torso, but we ignore whether it was in a seated or standing position.

Level six presents a change in the material of the mix, now including abundant taxcal; thus, we believe this could be the floor that supports the last stone course.

Level seven could be the material refill, as it presents small taxcals with mica inclusions.

In lot 1 we found ceramic 108 and obsidian 12; in lot 2 ceramic 37, obsidian 4, and one metate fragment; in lot 3 ceramic 23; in lot 4 ceramic 78, obsidian 9, taxcal and one charcoal sample; in lot 5 ceramic 49, obsidian 8, taxcal 20 and the already mentioned figurine; in lot 6 ceramic 57, obsidian 1 and taxcal; and in lot 7 ceramic 10.

Pit 14-114

This pit was excavated in five lots. The purpose was to locate part of the façade of the north section or other architectural traits that could widen our knowledge on Structure 5-1; lots two and three revealed several stones on the west side of the pit, but with no association to the east. No architectural evidence was found to the east. We only found evidence indicating that the stones found were a part of the irregular accumulation present in Pit 14-113.

Level six showed evidence of a change in materials, with a larger amount of pebbles and taxcal.

In lot 1 we recovered ceramic 103, obsidian 5 and one carved stone; in lot 2 ceramic 88, obsidian 14; in lot 3 ceramic 35 and obsidian 13; in lot 4 ceramic 62 and obsidian 14; and in lot 5 ceramic 103, obsidian 14, taxcal 63 and one charcoal sample.

Pit 14-116

This pit was excavated in five lots. The purpose was to locate what was suggested as a part of a structure, in the magnetic study accomplished by Dr. David Monsees; this pit did show small amounts of taxcal in the upper levels, and in level three, three medium sized stones were found that were not forming a wall, and neither were they aligned in some way that could suggest they had rolled down from a higher part of the mound.

In level five, at the northeast side of the pit, a medium sized stone, seemingly carved, was found resting on mortar prepared with taxcal.

In lot 1 we found ceramic 37 and obsidian 3; in lot 2 ceramic 20 and obsidian 3; in lot 3 ceramic 30, obsidian 6 and taxcal 4; in lot 4 ceramic 44, obsidian 2 and taxcal 7; and in lot 5 ceramic 3 and obsidian 1.

Pit 14-118

This pit was excavated in three lots. Our purpose was to locate what was suggested by the gradiometric study of Dr. Monsees. Again, no evidence of an architectural character, or of any other character, was found. At level three we found an incised post-fire sherd, but burnt in its external part. The presence of ceramic artifact remains was not significant.

In lot 1 we collected ceramic 23 and obsidian 2; in lot 2 ceramic 43 and obsidian 10; and in lot 3 ceramic 32 and obsidian 4.

Pit 14-121

This pit was excavated in six lots. The objective was to make enough room to observe better the Trait 14-R-1 in Pit 14-111; levels one to six have only yielded

ceramic artifact remains, but no remains or evidence of architectural traits to complement the north façade of Structure 5-1; no collapsed stones were either found.

Level six yielded some interesting sherds, red, smoothed, with grooves.

Lot 1 has yielded ceramic 15 and taxcal 27; lot 2 ceramic 3, obsidian 4 and taxcal 9; lot 3 ceramic 7 and one carved stone; lot 4 ceramic 6, obsidian 5 and an abundant amount of taxcal, 102; lot 5 ceramic 16, taxcal 12 and one charcoal sample; and lot 6 ceramic 74, obsidian 9, taxcal 29 and one charcoal sample.

Pit 14-127

This pit was excavated in three lots. The objective was to locate the traits suggested in the study accomplished by Dr. Monsees. There were small taxcals at the first level and a stone in the second, with no architectural association. There was one piece of glass, showing disturbances very probable caused by contemporary agricultural works.

In lot 1 we recovered ceramic 17; in lot 2 ceramic 33, obsidian 4, glass 1 and metal 1; and in lot 3 ceramic 21 and obsidian 7.

Pit 14-235 (central pits)

Pits 14-235 and 14-236 were initiated to investigate the architecture and stratigraphy of the platform's center (large platform), to learn about the occupational sequence and to find out whether there were earlier constructions below the present building. Pit 14-235 was opened to observe the continuation of traits 14-R-6 and 14-R-8 found in Pit 14-236 to find out whether they were associated with other traits that would allow for their identification. A pit of 1 m in an east to west direction was opened, with 2 m in a north to south direction, with measures taken as of SD 3. In this lot we found Stratum 1 consisting of a humus level of dark brown earth with intrusions of coffee-tree roots. Stratum 2 consisted of a dark brown earth that extended along lot 2.

The third stratum begins in lot 3 and extends to lot 6, with a final elevation of 1.66 m. This level consists of a light brown earth with a loose texture (10 YR 5/8 of the Munsell color chart).

Lot 5 yielded the head of a ceramic figurine with Olmec traits.

Stratum 4 begins in lot 7 at 1.66 m; this stratum consists of dark brown earth with gray patches (10 YR 4/6 of the Munsell chart). Stratum 4 continues to an elevation of 1.71 m (within the same lot), where we observed a change of level with a very light brown earth and abundant mica (10 YR 5/6, of the Munsell chart), that formed Stratum 5. At the end of this lot we found Stratum 6 at 1.86 m; this stratum is consistent with stratum 5 of Pit 14-236, which forms the floor, with a compact texture and a light brown color (19 YR 4/6 of the Munsell chart).

This stratum was excavated to an elevation of 2.40 m (lot 10) and we observed it had not revealed all of its potential. One of the characteristics in this stratum was the scarcity of ceramics found, which would confirm that we were in front of a floor level; only one ceramic fragment was found, a dish with a rounded rim and grooves of

orange slip. In the remaining levels we recovered remains of ceramic, taxcal and obsidian.

In lot 1 we have found ceramic 4; in lot 2 ceramic 5 and taxcal 18; in lot 3 ceramic 8 and taxcal 39; in lot 4 ceramic 4; in lot 5 a figurine's face, in lot 6 ceramic 5 and taxcal 19; in lot 7 ceramic 6, obsidian 1 and taxcal 14; in lot 8 taxcal 34; in lot 9 taxcal 34; and in lot 10 ceramic 2 and taxcal.

Pit 14-236

We intended to excavate this pit to its sterile levels, but this was not possible due to time restraints; therefore, we could only reach an elevation lower than 2.10 m. The excavation of Pit 14-236 was initiated on July 20, 2004, under the supervision of Oscar Gutiérrez. A pit of 2 x 2 m was opened at the hypothetical center of the structure. Levels were taken as of SD 3. Stratum 1 was formed by one humus layer of a dark brown color with intrusions of coffee-tree roots. This stratum was formed by lot 1, with elevations of 0.51 to 0.71 m.

Stratum 2 includes lots 2, 3, 4, and 5, with an upper elevation of 0.71 m and a lower one of 1.51 m. This level was formed by a level of light brown earth.

Stratum 3 begins at lot 6 at a height of 1.51 m and extends up to the end of lot 7 with a height of 1.91 m. With the purpose of maintaining this level, a mound of earth was left in the east section of the pit. This level consists of a light brown earth of a more compact texture than the former level with abundant mica and taxcal.

At 1.91 m we observed a number of orange patches indicating a change of level, and we found ourselves in level 8, the last one excavated, reaching a level of 2.10 m. At this level is where the traits found in the central pit begin to be seen. We found a first floor of a grayish taxcal and loose texture probably corresponding to Stratum 4: Trait 14-R-7. This possible floor is very thin and is placed on a second, more consistent floor. This second floor is Trait 14-R-8, formed by a brown earth with reddish tones, very compact in texture and with abundant mica and taxcal, forming Stratum 5. We observed how the traits 14-R-6 and 14-R-8 have continuity in the west side of the pit, while Trait 14-R-7 could continue towards its east side. All levels yielded ceramic material, taxcal and obsidian.

In lot 1 we recovered ceramic 11; in lot 2 ceramic 22; in lot 3 Ceramic 6 and taxcal 25; in lot 4 ceramic 10 and taxal 20; in lot 5 ceramic 18, taxcal 18 and one charcoal sample; in lot 6 ceramic 11 and taxcal 43; in lot 7 ceramic 10, taxcal 44 and one charcoal sample; in lot 8 ceramic 6 and taxcal 23; and in lot 9 ceramic 13 and taxcal 10.

Pit 14-237

In this pit two lots were excavated, with the purpose of locating an additional portion of Trait 14-R-6; the excavation was not completed due to time restraints in this season. Lot 1 yielded ceramic 8, and lot 2, ceramic 11.

Pit 14-270

In this pit six lots were excavated, in an attempt to locate steps or bodies within the structure. Only at level three a big stone was found, with no relation or association with other architectural features.

Levels four and five include taxcal, pebbles with light brown earth, and a probable floor level.

Lot 1 yielded ceramic 23 and obsidian 1; lot 2 ceramic 57 and obsidian 7; lot 3 ceramic 20 and taxcal 45; lot 4 ceramic 24; lot 5 ceramic 24 and obsidian 1; and lot 6 ceramic 26.

Pit 14-312

This pit was excavated in two levels. Lot 1 yielded ceramic 10 and obsidian 2; lot 2 ceramic 31, taxcal 15 and charcoal samples 4.

Pit 14-314

The objective of this pit was to observe the continuity of the north wall towards west. A 2 x 2 m pit was opened, with the elevations taken as of SD 2. The first arbitrary level corresponding to lot 1 is excavated, which consists of a humus level of a very dark brown color and abundant roots of coffee trees, and scarce ceramic fragments. We went down to a final elevation of 0.57 m. This level would represent Stratum 1.

The second level turns gradually lighter in color, indicating that the humus level has ended. It is here at this second level where the first uncut, rounded stones that formed the first course of the north façade were seen, which corresponded to lot 2. This second level formed Stratum 2, composed of an earth with a dark brown color.

Lot 3 marks the beginning of Stratum 3, composed of light brown earth with a loose texture. This level extends along the entire excavation of the north wall, to reach lot 7 at a final elevation of 1.77 m.

In lot 8 we observed a change of level that could represent Stratum 4; this new level was found at 1.88 m, and is characterized for presenting a much more compact texture with abundant taxcal and pebble. This stratum is formed by a dark brown earth. To proceed with the excavation we left a reference point of 50 m x 50 m. We confirmed that this new level extends to lot 9 and ends at an elevation of 2.10 m, where the last stone course was discovered. This last stone course juts slightly out of the other courses towards north, and it could be the base of a wall. We found this trait more clearly defined in 14-315. All levels included remains of ceramics, taxcal and obsidian.

Lot 1 yielded ceramic 12 and taxcal; lot 2 ceramic 18, obsidian 1 and taxcal; lot 3 ceramic 15, obsidian 1 and taxcal; lot 4 ceramic 12 and taxcal; lot 5 ceramic 12 and taxcal; lot 6 ceramic 16 and taxcal 39; lot 7 ceramic 18, obsidian 1 and taxcal 77; lot 8 ceramic 20 and obsidian 2; lot 9 ceramic 12.

Pit 14-315

This pit was opened with the purpose of observing the union of the north façade between pits 14-314 and 14-316, due to the change in the slope observed at Pit 14-316, in the shape of an apron. A square of 2 x 2 m was opened, with the elevations taken as of SD 2. Stratum 1 consists of a level of humus of dark brown earth with coffee tree roots that comprises lot 1, with elevations of 0.20 to 0.40 m.

In lot 2 is where Stratum 2 begins, with a light brown earth and a loose texture. This level is present up to the 2.00 m, corresponding to lot 9. Stratum 3 consists of light brown earth with gray patches and could be related to Stratum 4 of Pit 14-316.This new level is found at 2.00 m in lot 9. A reference point of this level was set, and excavation continued to 2.40 m in lot 11, where the last stone course of the north façade was finally discovered. This last stone course consists of four stones of a medium size placed about 20 cm farther north than the rest of the façade, thus remaining as the base of the wall. All levels showed ceramic material, taxcal and obsidian. One charcoal sample was recovered in lot 4 (0.80–1.00 m).

In lot 1 we recovered taxcal only; in lot 2, ceramics 33 and taxcal 13; in lot 3 ceramic 51, obsidian 6 and taxcal 36; in lot 4 ceramic 59, obsidian 6, taxcal 35 and a charcoal sample; in lot 5 ceramic 19, obsidian 1 and taxcal 14; in lot 6 ceramic 16, carved stones 2, and taxcal 19; in lot 7 ceramic 12 and taxcal 46; in lot 8 ceramic 15, obsidian 3 and taxcal; in lot 9 ceramic 17 and taxcal; in lot 10 ceramic 14 and taxcal; and in lot 11 ceramic 4 and taxcal 7.

Pit 14-316

The purpose of this pit is to observe the continuity of the north wall towards west. A 2 x 2 m pit was excavated, and elevations taken as of SD 2. The first level consists of a first level of humus of a dark brown color where the fragment of a *mano* was recovered as well as several ceramic and obsidian fragments that formed Stratum 1.

The next Stratum 2 consists of a light brown earth with taxcal. This stratum begins in lot 2 and continues to lot 7 with a final elevation of 1.58 m. In lot 3, at 0.64 m, the first stone of the north façade was found. We observed the presence of dark earth and a much more compact texture joining together the stones that formed the façade. This characteristic persisted along the entire north wall. The incline of the north wall was not so abrupt here as in the rest of the façade, forming some kind of talus with a 42 degrees incline.

At 1.38 m, in lot 6, the wall incline becomes more vertical and acquires the same slanting than the rest of the north façade. All of these lots include ceramic materials, taxcal and obsidian.

As of lot 7 the excavations at Pit 14-316 cannot be continued, because the north façade occupies the entire pit; this forced us to open Pit 14-326, to proceed with the excavation.

In lot 1 we recovered ceramic 41, obsidian 4, taxcal (one bag) and one *mano*; in lot 2 ceramic 48, obsidian 6 and taxcal 6; in lot 3 ceramic 42, obsidian 14 and taxcal (one bag); in lot 4 ceramic 31, obsidian 3 and taxcal (one bag); in lot 5 ceramic 16 and taxcal (one bag); in lot 6 ceramic 6 and taxcal 24; and in lot 7 ceramic 12 and taxcal 57.

Pit 14-318

This pit was excavated in seven lots, with the purpose of locating the continuity of the alignment of Structure 5-1's north façade. Level three yielded one piece of common, decorated glass, suggesting that this level was disturbed by modern, intensive agriculture in the surroundings of Mound 5. In level six we located the cobble stones that align with the north façade of the structure. Level seven shows an alignment farther out of the façade similar to steps, but we rather believe it is a collapse, though we do not fully understand the situation of this portion of the trait.

Lot 1 produced ceramic 94, one carved stone and taxcal 34; lot 2 ceramic 77, obsidian 8 and taxcal 46; lot 3 ceramic 27 and one glass; lot 4 ceramic 36 and obsidian 6; lot 5 ceramic 141, obsidian 9, taxcal and one charcoal sample; lot 6, ceramic 103 and one charcoal sample; and lot 7 ceramic 60, obsidian 6 and a charcoal sample.

Pit 14-319

Eight lots were excavated in this pit. The purpose was to locate the east-west stone alignment of Trait 14-R-1 at 1.40 m of SD 2 in Suboperation 14-320. In this pit, the first very large cobble stone appeared at a depth of 1.26 m as of SD 2, within arbitrary lot 6, and it was a smoothed stone. The first stone course was seen at a depth of 1.70 and 1.84 m from SD 2. It may be observed that inside the building the refill consisted of light brown earth with taxcal cores and with a compact texture. Even the exterior of the earth is of a light brown color composed of taxcal and mica, though the texture is loose.

Lot 1 produced ceramic 39 and taxcal 46; lot 2 ceramic 31, obsidian 3 and taxcal (one bag); lot 3 ceramic 36, obsidian 1 and taxcal 39; lot 4 ceramic 1, obsidian 1, taxcal 36 and one charcoal sample; lot 5 ceramic 61, obsidian 7 and taxcal (one bag); lot 6 ceramic 19, obsidian 1, taxcal (one bag) and one charcoal sample; lot 7 ceramic 31 and taxcal (one bag); and lot 8 ceramic 25 and taxcal (one bag).

Pit 14-320

This pit was excavated in five lots, with the purpose of locating the alignment that continued in Pit 14-111. Level three shows once more the alignment with seven cobble stones, level four shows the second and third stone courses, level five revealed the fourth stone course which are small and differentiate from the rest of the structure; we believe this is a different feature of an architectural character.

Lot 1 produced ceramic 64 and obsidian 9; lot 2 ceramic 111, obsidian 2 and taxcal 8; lot 3 ceramic 91 and obsidian 3; lot 4 ceramic 14; and lot 5 ceramic 21 and obsidian 1.

Pit 14-321

The objective of Pit 14-321 was to locate the west corner of the north façade of Structure 5-1. A 1 x 2 m pit was opened, with levels taken as of SD 2 at one meter from the surface (the elevation of drawings were taken from SD 6, but here, the heights will be indicated as of SD 2). The first level found is a humus level of a dark brown color with roots of coffee trees which extends along lot 1 and forms Stratum 1, with elevations of 1.26-1.46 m. This level exposed two large stones located in the

north-south axis of the pit, crossing it in its half. The stones found were at a height of 1.25 and 1.31 m. These stones seem to have collapsed from an upper course of the north wall which may have been altered by recent agricultural works conducted in the coffee plantation. Stratum 2 begins at the end of lot 1, at 1.46 m, and extends to the end of the excavation of the pit, at 2.56 m, in lot 6. The earth that forms this level is of a light brown color and a loose texture.

In lot 2 we observed the base of the stones described earlier, at 1.66 m, but no indication of other stones below these ones was detected.

Lot 3 presented three stones at the south of the pit, with an east-to-west alignment and at 1.48-1.64 and 1.78 m.

In lot 4 other stones were observed, aligned with those found on the east-west axis.

In lot 5 we found the second stone course in the southwestern section of the pit, while in the southeastern section only the already discovered course was found.

We went one lot deeper, lot 6, to verify that there was no stone alignment below the ones previously discovered. All lots have yielded ceramic materials, taxcal and obsidian. Charcoal samples were recovered from lot 2 and lot 5.

Lot 1 produced ceramic 5 and one carved stone; lot 2, ceramic 19 and taxcal 26; lot 3 ceramic 39, obsidian 1 and taxcal 61; lot 4 ceramic 23 and taxcal 44; and lot 5 ceramic 34, obsidian 2, taxcal 14 and a charcoal sample; lot 6 ceramic 13 and taxcal 36.

Pit 14-324

This pit was opened to help in the excavation of Pit 14-314; because the north wall occupies almost the entire pit, we were forced to open a new space at its north section in order to proceed with the excavation. A 1 m pit in a south-north direction and 2 m in an east-west direction was opened, taking the altitudes as of SD 2. A first level corresponding to lot 1 was excavated, descending 0.70 to 0.90 m, to find a humus level of a dark brown earth which forms Stratum 1.

Lot 2 is the beginning of Stratum 2, which consists of a dark brown earth with abundant taxcal and mica. This level extends to lot 7, with a final elevation of 2.10 m, where the excavation of Pit 14-324 was ended. All levels presented ceramic, taxcal and obsidian remains.

In lot 1 we recovered ceramic 6 and obsidian 1; in lot 2 ceramic 33 and obsidian 1; in lot 3 ceramic 33 and taxcal 45; in lot 4 ceramic 50 and obsidian 1; in lot 5 ceramic 37, obsidian 1 and taxcal 99; in lot 6 ceramic 48, obsidian 1 and taxcal 53; and in lot 7 ceramic 33 and obsidian 1.

Pit 14-325

This pit was opened in the north section of Pit 14-315 to facilitate the excavation of the northern façade. We opened a pit of 1 m in the south-north direction and 2 m in the east-west direction, with measures taken as of SD 2. The first level found was a humus level of a dark brown color with roots of coffee trees, with elevations of 0.55 to 0.75 m forming lot 1, denominated Stratum 1.

Stratum 2 begins in lot 2 at 0.75 m and consists of one level of light brown earth and a loose texture that extends to lot 8, with 4 stones that seem to be an old collapse of the north façade at a height of 2.07 m; as of their base, the earth changes to a more compacted texture with a more abundant content of taxcal an mica of a light brown color: this is Stratum 3, which goes down to an elevation of 2.35 m in lot 9. This is where the excavation was ended at Pit 14-325, upon reaching the base of the stones found. All levels presented ceramic materials, taxcal and obsidian.

In lot 1 we recovered ceramic 13; in lot 2 ceramic 24; in lot 3 ceramic 32, obsidian 5 and taxcal 16; in lot 4 ceramic 23, obsidian 1 and taxcal 27; in lot 5 ceramic 25, obsidian 2 and taxcal 27; in lot 6 ceramic 34, obsidian 5 and taxcal 29; in lot 7 ceramic 39 and taxcal 50; in lot 8 ceramic 39, obsidian 2 and taxcal; and in lot 9 ceramic 34, obsidian 3 and taxcal 23.

Pit 14-326

This pit was opened with the purpose of making room to proceed with the excavation of the northern façade of the structure observed in 14-316. The pit had 2 x 2 m, and the heights were taken as of SD 2. The first level corresponds to lot 1 and consists of a level of dark brown hums with roots of coffee trees. The elevation of this level exceeds 0.52 m, while the lower elevation is found at 0.72 m, forming Stratum 1.

The second level observed begins in lot number 2 at 0.72 m, and ends in lot 6 at an elevation of 1.52 m. We have called it Stratum 2, and it consists of dark brown earth with a loose texture.

As of lot 5 and at 1.32 m it was decided to open only one square of 1 m in a south-north direction, and 2 m in an east-west direction. Stratum 3 was found as of lot 7 at 1.52 m. This level consists of a light brown earth with a compact texture and abundant mica and taxcal. A reference point was left of this stratigraphic level at 1.92 m. At an elevation of 2.12 m in lot 9, we found a new change of level which would be Stratum 4. This stratum consists of an earth with a looser and sandier texture and of a much lighter color. The earth shows patches of a light gray color with abundant mica. At 1.77 m the stones seem to disappear under a refill of very dark brown earth, only to reappear at an elevation of 2.18 m. Stones are detected in this refill, but some 40 cm towards its interior, making excavation impossible. Lot 10, with an elevation of 2.32-2-52 m, we decided to excavate only a strip close to the north wall, to verify the continuity of the façade and to maintain the earth level found, which is very similar to the one located at the base of the façade of the pits previously opened. In this strip, the earth is still of a light brown color with gray patches. No other stone alignment was found below the previously discovered ones. All levels include ceramic remains, taxcal and obsidian.

Lot 1 produced: ceramic 14, obsidian 1 and taxcal 93; lot 2 ceramic 71, obsidian 4 and taxcal 31; lot 3 ceramic 62, obsidian 7 and taxcal 19; lot 4 ceramic 21 and taxcal; lot 5 ceramic 45, obsidian 2 and taxcal 47; lot 6 ceramic 32 and taxcal 60; lot 7 ceramic 54 and obsidian 3; lot 8 ceramic 31, obsidian 4 and taxcal 76; lot 9 ceramic 36, obsidian 4, taxcal 18 and one sample of earth; and lot 10 ceramic 20, obsidian 2 and an abundant amount of taxcal 93.

Pit 14-329

An exploration was made, 1 m wide from north to south, to locate the continuity of the stone alignment found in Pit 14-319. In Pit 14-9, arbitrary lots were excavated down to the probable floor. It was in the eighth arbitrary lot where the first two stone courses of Trait 14-R-1 began to appear.

Lot 9 presented the last stone course of the north façade, resting on a level of muddy earth of a very light brown color, with abundant blue, yellow, red and orange taxcal. The stones that apparently collapsed from the wall are placed on this probable floor, thus confirming the reality of this trait. In fact, we failed to locate the presence of Trait 14-R-1 closer to the surface because it collapsed in ancient times.

In lot 1 we have found ceramic 3, obsidian 2 and taxcal (one bag); in lot 2 ceramic 44, obsidian 2 and taxcal (one bag); in lot 3 ceramic 31, obsidian 2 and taxcal (one bag); in lot 4 ceramic 37, obsidian 3 and taxcal (one bag); in lot 5 ceramic 39, obsidian 4 and taxcal (one bag); in lot 6 ceramic 47, obsidian 3 and taxcal 18; in lot 7 ceramic 40, obsidian 4 and taxcal (one bag); in lot 8 ceramic 38 and taxcal 11; and in lot 9 ceramic 48 and taxcal (one bag).

Pit 14-445

This pit was excavated in four lots, with the purpose of locating the southeast corner of Structure 5-1. The pit was excavated down to lot 4 to follow the continuity towards south of Trait 14-R-11 (east façade). In this pit, the large roots of a *volador* (Myrobalan) and a laurel disturbed the entire stratigraphy and probably threw down the only alignment of the east façade in continuation of the course exposed in Pit 14-455. No evidence of construction was detected here. However, the composition of Stratum 3 would suggest that in this pit we are inside the structure's refill. It consists of muddy earth of a light brown color with cores of pebble and taxcal. The composition is identical to the one observed in Pit 14-319 behind the north wall. Stratum 3 is seen from arbitrary lot 3 at a depth of 1.60 m as of SD 5.

In lot 1 we have collected ceramic 5; in lot 2 ceramic 22 and obsidian 2; in lot 3 abundant ceramics, 123, and a charcoal sample; and in lot 4 ceramic 21.

Pit 14-455

This pit was excavated in five levels or lots, with the purpose of locating the southeast corner of Structure 5-1. In level three we found three stones with the appearance of a corner, and we believe this is a trait that is repeated at the northwest corner of the structure. Although it apparently turns to the west, this could not be confirmed in levels four and five. The stones rest on pebble and taxcal with a light brown earth.

Lot 1 yielded ceramic 13, obsidian 1 and glass 2; lot 2 ceramic 17; lot 3 ceramic 33; lot 4 ceramic 24 and one charcoal sample; and lot 5 ceramic 6 and taxcal 11.

Pit 14-456

This pit was excavated in three levels. We excavated down to arbitrary lot 3 with the purpose of following the Trait 14-R-11 (east façade) from Pit 14-466. In arbitrary lot 2, between 1.34 and 1.54 m, there are three cobble stones in the continuation of the

north-south alignment of Trait 14-R-11. The objective was to locate the south-north alignment of the structure's east façade. Apparently, this is where the trait of the alignment at the south side of the structure ends, precisely in level two and with one single stone; as we may see, the continuity of the wall was lost. This trait, apparently simple, is in our belief what defines the size and particular shape of this body of the structure, which we assume may have had several lower bodies that will require to be excavated in the future.

Lot 1 produced ceramic 20; lot 2 ceramic 23 and obsidian 5; lot 3 contained no artifacts.

Pit 14-466

This pit was excavated in four lots down to arbitrary lot 4, with the objective of following the east façade from Pit 14-476. The objective was to keep trying to locate the south-north alignment of Trait 14-R-3 on the south side of the east façade. In lot 2 at a depth of 1.38 m from SD 5, we saw the first cobble stones following the same alignment than Trait 14-R-11.

Lot three revealed the first stone course, a trait that is repeated in Pit 14-476 to the north, associated with a gray earth with pebbles and taxcal. The rest of the pit presents a light brown earth with mica remains. At the base level of the last stones in lot 4, we observed the presence of a sample of burnt baked earth.

Lot 1 yielded scarce ceramic; lot 2 ceramic 47; lot 3 ceramic 53, obsidian 3, and one charcoal sample; and lot 4 ceramic 24 and taxcal.

Pit 14-476

This pit was excavated in six levels. The objective was to locate the wall of the east façade more to the south, having found in level two a five-stone alignment which corresponded to the trait at the north of the beam, that is to say, Trait 14-R-3; in our belief, this may be the symmetrical part on the south side.

Levels five and six have shown taxcal and pebbles.

In lot 1 we have recovered ceramic 31; in lot 2 ceramic 46; in lot 3 ceramic 49 and one carved stone; in lot 4 ceramic 22; in lot 5 ceramic 17 and one carved stone; and in lot 6 ceramic 15 and taxcal.

Pit 14-486

This pit was excavated in six levels down to lot 6, with the purpose of locating Structure 5's east façade. Our objective was to continue searching for the south-north alignment of the east façade. In level five we found the remains of the façade alignment that had been destroyed by the roots of a *volador*; this pit also showed what we think is the south beam of the structure's east side access, which opens to the huge plaza (it is the largest and flattest part in the surroundings of the mound) that probably existed at the east of the mound. The first stones of that façade appeared in lot 4 between 0.88 and 1.08 m from SD 5.Then in lot 5 Trait 14-R-9 was found. This is the possible southern beam of the entrance located at the east of Mound 5. In this same arbitrary lot, at 1.36 m from SD 5 a grinding stone was found

(Monument 25), cut in its half. The base of the beam is located at a depth of 1.56 m as of SD 5.

The finding of the remains of the façade alignment led us to consider that the access to the Structure is located in pits 14-496 and 14-497, corresponding to the steps; in level six the base or foundation of the beam was located. In level five of this pit we found one half of a grinding stone with a 50 cm diameter. A cultural artifact that was used, in our view, to prepare large quantities of grains and other foods and which is consistent, besides, with the large size of sherds and handle remains of a very thick pottery; therefore, possibly, and very close to Structure 5-1, there was a space for the preparation of food, if we consider that mounds 2, 3 and 5 may have been precisely the areas of access and rest of the city of Chocolá, plazas where people engaged in the exchange of goods for consume, comfort and luxury in such a complex society as the prehispanic society was, using such spaces to spend the night.

In lot 1 we recovered ceramic 9 and obsidian 1; in lot 2 ceramic 22 and obsidian 1; in lot 3 ceramic 31 and obsidian 1; in lot 4 ceramic 37, obsidian 1, and one charcoal sample; in lot 5 ceramic 35, taxcal 27 and one charcoal sample; and in lot 6 ceramic 9.

Pit 14-487

This pit was excavated in four levels to arbitrary lot 4, with the purpose of following the south beam or Trait 14-R-9 towards east. The two beam alignments appeared in lot 4, at a depth between 1.20 and 1.40 m. The beam seems to continue towards the east in Pit 14-488. The objective was to locate the continuity of the south beam towards the east at the plaza.

At level four two stone courses were found associated with the beam. The beam ends at east, at 55 cm from the east face of the pit.

Lot 1 produced ceramic 13; lot 2 ceramic 67 and obsidian 4; lot 3 ceramic 18, and lot 4 ceramic 30 and obsidian 3.

Pit 14-496

This pit was excavated in five levels with the objective of locating the east face of Mound 5 and the possible south beam of the entrance, as well as finding the access to the stairway between the two beams of the structure. In lot two at a depth of 0.55 m as of SD 5 we observed the first cobble stones following a north-south alignment similar to that of Trait 14-R-3, and we found as well the evidences of the constructive system in one stone that aligns with Trait 14-R-3.

In lot 3 at 0.66 m of SD 5 and 70 cm away from the trait we found a couple of stones placed in a vertical position, which may have possibly formed the riser of the stairway (Trait 14-R-10).

In lot 4 at 0.92 m of SD 5 and at 0.72 m more to the east of the second stone alignment, we found other stones in a vertical position that corresponded to a second step, or else formed another tread.

Level five shows another apparent step in a fourth cobble stone alignment 0.50 m more to the east and at a depth of 1 m of SD 5, running parallel to Trait 14-R-3.

In lot 1 we recovered ceramic 35 and taxcal; in lot 2 ceramic 54, obsidian 4, taxcal 17 and one charcoal sample; in lot 3 ceramic 18 and obsidian 2; in lot 4 ceramic 20, obsidian 1, one *metate* fragment, taxcal 13, and a charcoal sample; and in lot 5 ceramic 29, obsidian 2 and taxcal 21.

Pit 14-497

This pit was excavated in five arbitrary lots with the purpose of finding out whether what we identified as stairway treads in Pit 14-496 is still a stairway in this pit. Here the stones were very disorderly placed; therefore, that section of the mound needs to be further excavated to accurately define the form of the stairway or ramp. Only in level three we observed constructive evidence of the south beam made with cobble stones.

Level four revealed several stones which look like a collapse or are a part of a step located in Pit 14-496. Level five exposed additional stones but with no apparent architectural connection, so their function could not be properly defined.

In lot 1 we recovered ceramic 20, obsidian 1; in lot 2 no artifacts were found; in lot 3 ceramic 67, obsidian 11 and two charcoal samples; in lot 4 ceramic 63 and obsidian 5; and in lot 5 ceramic 31.

Pit 14-532

This pit was intended to investigate the west façade of the structure. It was excavated in four lots. In lot 1 we found ceramic 9, obsidian 1 and taxcal; in lot 2 ceramic 43 and taxcal 13; in lot 3 ceramic 41, obsidian 2 and taxcal; and in lot 4 ceramic 14, obsidian 3 and taxcal.

Pit 14-552

This pit was opened to proceed with the investigation of the west façade of the structure. It was excavated in four levels. In lot 1 we recovered ceramic 5 and taxcal 40; in lot 2 ceramic 52, obsidian 2 and taxcal 33; in lot 3 abundant ceramic, 89, and taxcal; and in lot 4 ceramic 42, taxcal, one charcoal sample and one burnt baked earth sample.

Pit 14-556

The first square opened was square number 14-556, as in that part of the structure we found an elevation of the ground that led us to believe we had come across a new trait. A 2 x 2 m pit was opened, and measures taken as of SD 6. We descended three lots in this pit containing two differentiated strata. Stratum 1 corresponds to a layer of humus with an elevation of 0.16-0.36 m. Stratum 2 is formed by lots 2 and 3 and presents a final elevation of 0.76 m. This level is made of a light brown earth. The excavation was ended at this level of the pit with no constructive evidence observed. All levels produced ceramic materials, taxcal and obsidian.

Lot 1 yielded ceramic 20, obsidian 2, and taxcal 9; lot 2 ceramic 12, obsidian 1 and taxcal 28; and lot 3 ceramic 29, obsidian 1 and taxcal 14.

Pit 14-563

This pit was opened to proceed investigating the west façade of the structure. It was excavated in four levels. In lot 1 we found ceramic 5 and taxcal 14; in lot 2 ceramic 17 and taxcal; in lot 3 ceramic 52, obsidian 1 and taxcal 4; and in lot 4 ceramic 34 and obsidian 3.

Pit 14-564

In this pit the study of the west façade of the structure was continued. It was excavated in three levels. In lot 1 we recovered ceramic 3 and taxcal; in lot 2 only taxcal; and in lot 3 ceramic 42, obsidian 1 and taxcal 56.

Pit 14-567

Pit 14-567 was opened with the purpose of locating the northwest corner of the building. A square of 2 x 2 m was excavated and measures taken as of SD 6. There was a first level that formed Stratum 1. It was a layer of dark brown humus with elevations of 0.28-0.48 m, integrating lot 1.

A second stratum begins in lot 2 and extends to lot 3, with an elevation below 0.88 m. This level is composed of a light brown earth.

Stratum 3 consists of a dark brown earth which comprises lots 4 and 5, with a higher elevation of 0.88 m and a lower elevation of 1.28 m. Excavation of this pit was ended in this level without having found any evidence of construction. All levels yielded ceramic materials, taxcal and obsidian.

In lot 5 with an elevation of 1.08-1.28 m there was a piece of modern crystal, indicating a contemporary intrusion in the excavated levels.

In lot 1 we recovered ceramic 1 and taxcal 2; in lot 2 ceramic 5 and taxcal; in lot 3 ceramic 28, obsidian 3 and taxcal 13; in lot 4 ceramic 18 and taxcal 13; and in lot 5 ceramic 81, obsidian 6, taxcal 18 and a charcoal sample.

Pit 14-569

This pit was opened with the purpose of discovering the northwest corner of the building. A pit of 2 x 2 m was opened, with the elevations taken as of SD 6. Stratum 1 consists of a first layer of humus found in lot 1, at an elevation of 0.35-0.55 m.

Lot 2 marks the beginning of Stratum 2, consisting of a light brown earth that extends to lot 4 at an elevation of 0.95 m. This is the level of Stratum 3, where the color of the earth switches to a dark brown that extends to lot 5 at 1.35 m, where the excavation of the pit is ended with no constructive evidence found except for the south face of the stones that were seen in the section of Pit 14-579. Like we may observe from previous descriptions, the north façade gradually decreases its size to a single stone course. This has led us to believe that we were very close to the northwest corner. This is the reason why several pits were opened with the hope of locating said corner, but no evidence of it was found.

In lot 1 we have recovered ceramic 4 and obsidian 1; in lot 2 ceramic 16 and taxcal; in lot 3 ceramic 28, obsidian 3 and taxcal; in lot 4 ceramic 41 and taxcal 35; and in lot 5 ceramic 81, obsidian 6, taxcal 18 and a charcoal sample.

Pit 14-570

Pit 14-570 was opened with the objective of locating the northwest corner of the building. One 2 x 2 m square was opened, with heights taken from SD 6. Lot 1 shows an elevation of 1.22-1.42 m. It consists of a layer of humus of a dark brown color, which forms Stratum 1.

The following level is formed by a light brown earth which extends to lot 4, with a final elevation of 2.02 m, where excavation of the pit was ended without having found any constructive evidence. These lots form Stratum 2. All lots contained ceramic remains, taxcal and obsidian.

In lot 1 we have found ceramic 32, obsidian 2 and taxcal; in lot 2 ceramic 29, obsidian 5 and taxcal; in lot 3 ceramic 28 and obsidian 1; and in lot 4 ceramic 34 and obsidian 4.

Pit 14-578

Pit 14-578 was opened with the purpose of locating the northwest corner of the building. A 1 m square with a south-north direction, and 2 m with an east-west direction were opened. Heights were taken from SD 6. A first level of humus comprising lot 1 was excavated, with elevations of 1.10-1.30 m that formed Stratum 1. Stratum 2 is formed by a dark brown layer with elevations of 1.30-1.50 m that form lot 2. The excavation of this pit was interrupted, as we found no constructive evidences. All levels contained ceramic remains, taxcal and obsidian.

In lot 1 we have found nothing but taxcal; in lot 2 ceramic 26, obsidian 3 and taxcal.

Pit 14-579

Pit 14-579 was opened with the purpose of locating the northwest corner of the building. A 2 x 2 m square was opened, with heights taken from SD 6. There was a first layer of humus which comprised the entire lot, with elevations of 0.77 m to 1.17 m, forming Stratum 1. This lot revealed the only three stones we were to find as evidence of the north façade, located at a height of 1.06, 1.05 and 1.08 m adjacent to the southeast section of the pit. The last stone towards the west presented three flat faces, which led us to consider a possible corner stone and to open Pit 14-569. Stratum 2 is formed by a light brown earth that extends from lot 2, with an initial elevation of 1.17 m, to lot 3, at a height of 1.37-1.57 m. This is where excavation stopped, as no other constructive evidence was revealed besides the three stones we have referred to. All levels contained ceramic remains, taxcal and obsidian.

In lot 1 we found ceramic 16, obsidian 4 and taxcal; in lot 2 ceramic 32 and taxcal; and in lot 3 ceramic 14, obsidian 1, and taxcal.

Pit 14-580

Pit 14-580 was opened with the purpose of locating the northwest corner of Structure 5-1. In this pit a square of 1 m in a south-north direction, and 2 m in an east-west

direction were excavated. The heights were taken from SD 2, 1 meter above the surface (in the drawing, the heights are taken from SD 6, but here they shall be presented from SD 2). We found a first layer of humus of a dark brown color which comprises lot 1, with heights of 1.51 to 1.71 m, forming Stratum 1.

In lot 2 we found a darker brown earth that extended to lot 3, with an upper elevation of 1.71 m and a lower one of 2.11 m. This new level would form Stratum 2. Lot 2 revealed the first stone course, aligned with those found at square 321. These stones were found at a height of 1.88 m.

As of lot 4 we found a new change of color in the earth, indicating Stratum 3. This stratum consists of a light brown earth that extends to an elevation of 2.51 m corresponding to lot 5, which is the last one excavated. In lot 4 (2.11-2-31 m) we found the second stone course, formed by four stones of a large size, whose base rests at 2.51 m. All lots include ceramic materials, taxcal and obsidian. In lot 4 we collected a charcoal sample (211.2-31 m).

In lot 1 we have collected ceramic 3 and taxcal; in lot 2 ceramic 14, obsidian 2 and taxcal; in lot 3 ceramic 1 and taxcal 22; in lot 4 ceramic 12, obsidian 1 and one charcoal sample; and in lot 5 ceramic 13, obsidian 1, taxcal, and one sample of earth.

Conclusions

1. In pits 14-43, 14-44, 14-45, 14-55 and 14-84, test excavations were conducted in the attempt to detect architectural traits or to locate the steps that climbed from the façade in front of the east plaza, but our efforts proved unsuccessful, as no traces of such features were found.
2. In pits 14-91 and 14-270 test excavations were conducted, also trying to locate the architectural traits or steps that ascended from the façade at the front of the north plaza; those features were neither found and our search proved unsuccessful. However, it helped us to define and understand that Structure 5-1 had at least one body from the floor level of the plaza or from the base found, probably the upper body, provided other lower bodies existed, as in fact we still ignore whether there is a substructure.
3. Structure 5-1 at Chocolá was built with stones, mixed with different types of materials including sands, taxcals or other earths which are to be specified through lab analysis. This is evident because of the occasional presence of different colors; some most probably have undergone firing treatments and are very easily observed, but this is not the case with those that have undergone combustion, as they are easily mistaken with the remaining strata.
4. We are also aware of the fact that several portions of Structure 5-1 have complemented their architectural construction with boulders or river cobbles, to achieve the stability of other materials, like mud, or the mixes of different types of materials and taxcal. This material forms that which defines the façade walls, beams, and stairway accesses.
5. We suggest that mounds 3, 4 and 5 are a part of the controls established to access Chocolá; there is a creek that provides a water supply all the year round, and besides, the mounds are located in the flat portion where the city begins, with a direct access to the road that would lead to the ceremonial mounds, beginning with Mound 2 or Burkitt's Mound, which has in its north

base a large plaza, and then with the next mounds located at a similar distance, northwards, where there is a large concentration of structures in the tallest geographical area of what would be the city of Chocolá, which ends where the mountain itself begins.

6. Pit 14-66 is a part of the excavations conducted to expose Trait 14-R-3, which presented a stone formation with the appearance of a mask that probably decorated the east façade, considering that ideological and religious issues also had a place at the city of Chocolá.
7. Pit 14-37 allowed us to appreciate some sort of square which marks the end of Trait 14-R-4 and which opens to the east plaza; this architectural trait could be some sort of altar.
8. Pit 14-43 helps to understand that Structure 5-1 includes at least one body from the plaza floor, but we ignore whether there is a substructure at its deepest part below the walls we already know of.
9. We know that the stairway exists as an access to the upper part of Structure 5-1 in the east façade, in pits 14-27, 14-17, and 14-497, with a 10 m width.
10. We know that the upper body of Structure 5-1 was investigated by applying a symmetric deduction; its east façade is 38 m long, its north façade is 44 m long, and its approximate height is of 6 m.
11. Pit 14-486 during the excavation revealed a portion of the south beam, a metate of a considerable size which could be related to the handling of large amounts of grain or other foods requiring a previous preparation process in relation to remains of ceramic artifacts (thick sherds and huge handles) inferring the existence of large storing bowls, all of which suggests a peripheral activity area, previous to the construction of Structure 5-1, as the artifacts remains referred to were used as refill for the constructive volume. Both artifact remains suggest an exchange of goods in the study area through a storage center, which would be pointing to a society with luxuries and comforts of other types.
12. Pit 14-45 contained a round sherd of approximately 1.5 cm in diameter, though we ignore whether it was manufactured as a toy for children or as a part of some craft activity. It is a reflection of the social or craft-related life of those who inhabited Chocolá.
13. We consider that the building of Structure 5-1 served a function of security and control at the entrance of Chocolá, like some sort of guard with the corresponding features that prevented any external intrusion; let's keep in mind that ethnohistoric accounts refer to garrisons in cities like Utatlán or Iximché for the Postclassic period. Therefore, it would not be a remote possibility the existence of this habit of guarding the city gates since earlier times in the development of prehispanic societies.

Recommendations

Future field seasons should include the following excavations:

1. Intensive excavations in specific areas, such as the part bordering the wall, to determine whether there are floors under the plaza, or excavations closer to the center of the plaza at east or north, to find out whether there is some other body or structure besides the one we already know of, Structure 5-1;
2. Excavation of the stairway to access the upper part of the structure, as treads and risers of this architectural trait were detected in Pit 14-486;

3. Excavation of the southwest corner of Structure 5-1;
4. Excavation of the section corresponding to the access stairway in the east façade of Structure 5-1;
5. Excavation of the plazas located east and north, to find the floors that would provide us with information on remodeling, integration and floor levels;
6. Excavations of the sections located under the walls of the east and north façades, to determine whether there is only one body in Structure 5-1, or on the contrary, there is more than one body;
7. Excavation of the walls corresponding to the south and west façades, as we were able to detect only the beginning of walls that are initiated at the northwest and southeast corners;
8. Excavation of specific pits down to the natural level to determine the possible construction date of Structure 5-1;
9. Excavation in the tallest part, to determine the constructive phases of Structure 5-1;
10. Excavation of middens, to try to locate as much evidence as possible regarding the date of construction of Structure 5-1.

PIT, LOT, ELEVATION AND STRATUM

PIT	STRATUM	LOT	ELEVATION	DESCRIPTION
14-6	1	1	0.45-0.65	Dark brown, humus, organic material, pebble
	1	2	0.65-0.85	Dark brown
	2	3	0.85-1.15	Light brown, micaceous remains
14-17	1	1	0.79-0.87	Humus, organic material
	2	2	0.87-1.07	Light brown
	2	3	1.07-1.27	Light brown, pebble, taxcal
	3	4	1.27-1.47	Light brown, pebble, taxcal
14-27	1	1	0.42-0.62	Humus, organic material
	2	2	0.62-0.82	Light brown
	2	3	0.82-1.02	Light brown
	2	4	1.02-1.22	Light brown, small amount of pebble
	2	5	1.22-1.42	Light brown with taxcal and pebble
	2	6	1.42-1.62	Light brown with taxcal and pebble
14-36	1	1	1.31-1.51	Humus, organic material
	2	2	1.51-1.71	Light brown
	2	3	1.71-1.91	Light brown, small amount of pebble
	2	4	1.91-2.11	Light brown, small amount of pebble
	2	5	2.11-2.31	Light brown, small amount of pebble, micaceous remains
	2	6	2.31-2.51	Light brown, small amount of pebble, micaceous remains
14-37	1	1	0.48-0.68	Humus, organic material
	2	2	0.68-0.88	Light brown
	2	3	0.88-1.08	Light brown
	2	4	1.08-1.28	Light brown, with pebble
	2	5	1.28-1.48	Light brown, with pebble and micaceous remains
14-43	1	1	0.49-0.70	Humus, organic material
	2	2	0.70-0.90	Light brown
	2	3	0.90-1.10	Light brown
14-44	1	1	0.72-0.92	Humus, organic material
	2	2	0.92-1.12	Light brown, occurrence of taxcals

	2	3	1.12-1.32	Light brown, intrusive areas of sand
	2	4	1.32-1.52	Light brown, no pebbles, mica
14-45	1	1	0.96-1.16	Humus, organic material
	2	2	1.16-1.36	Light brown, micaceous remains
	2	3	1.36-1.56	Light brown, micaceous remains
	2	4	1.56-1.76	Light brown, with pebble
14-46	1	1	1.19-1.39	Humus, organic material
	2	2	1.39-1.59	Light brown, pebble
	2	3	1.59-1.79	Light brown with pebble and micaceous remains
	2	4	1.79-1.99	Light brown, taxcal and micaceous remains
	2	5	1.99-2.19	Light brown, no taxcal found
	2	6	2.19-2.39	Light brown, pebble, micaceous remains
	3	7	2.39-2.60	Light brown, burnt taxcal
14-55	1	1	0.87-1.07	Humus, organic material
	2	2	1.07-1.27	Light brown, pebble
	2	3	1.27-1.47	Light brown, micaceous remains, small amount of taxcal
	2	4	1.47-1.62	Light brown, micaceous remains, pebble
14-56	1	1	1.14-1.35	Humus, organic material
	2	2	1.35-1.54	Light brown
	2	3	1.54-1.74	Light brown
	2	4	1.74-1.94	Light brown, micaceous remains
14-66	1	1	1.17-1.37	Humus, organic material
	2	2	1.37-1.57	Light brown
	2	3	1.57-1.77	Light brown, pebble
	2	4	1.77-1.97	Light brown, micaceous remains
	2	5	1.97-2.17	Light brown, micaceous remains
	2	6	2.17-2.37	Light brown, abundant micaceous remains
	2	7	2.37-2.57	Light brown, abundant micaceous remains
14-75	1	1	0.89-1.09	Humus, organic material
	2	2	1.09-1.29	Light brown
	2	3	1.29-1.49	Light brown with micaceous remains
14-76	1	1	0.99-1.20	Humus, organic material
	2	2	1.20-1.40	Light brown color
	2	3	1.40-1.60	Light brown color
	2	4	1.60-1.80	Light brown color, pebble
	2	5	1.80-2.00	Light brown color, significant micaceous contents
	2	6	2.00-2.20	Light brown color, pebble, taxcal, small pumice stone
14-84	1	1	0.68-0.88	Humus, organic material, pebble
	2	2	0.88-1.08	Light brown
	2	3	1.08-1.28	Light brown color
14-86	1	1	1.00-1.20	Humus, organic material
	2	2	1.20-1.40	Light brown
	2	3	1.40-1.60	Light brown, micaceous remains
	2	4	1.60-1.80	Light brown, pebble, small stones
	2	5	1.80-2.00	Light brown, pebbles, micaceous remains
	3	6	2.00-2.20	Light brown, taxcal
	3	7	2.20-2.40	Light brown, taxcal, and micaceous remains
14-91	1	1	0.18-0.40	Humus, organic material

	2	2	0.40-0.60	Light brown
	2	3	0.60-0.80	Light brown, pebble
14-103	1	1	0.58-0.78	Humus, organic material
	2	2	0.78-0.98	Light brown
	2	3	0.98-1.20	Light brown, micaceous remains
	3	4	1.20-1.40	Light brown, pebble, taxcal, micaceous remains
	3	5	1.40-1.60	Light brown, micaceous remains, pebble
	3	6	1.60-1.80	Light brown, micaceous remains and taxcal
14-104	1	1	0.71-0.91	Humus, organic material
	2	2	0.91-1.11	Light brown
	2	3	1.11-1.31	Light brown, pebble, micaceous remains
	3	4	1.30-1.50	Light brown, micaceous remains, pebble, taxcal
	3	5	1.50-1.70	Light brown, micaceous remains
14-105	1	1	0.88-1.08	Humus, organic material
	2	2	1.08-1.28	Light brown, pebble, micaceous remains
	2	3	1.28-1.48	Light brown, pebble, sand intrusion, micaceous remains
14-107	1	1	0.88-1.08	Humus, organic material
	2	2	1.08-1.28	Light brown, pebble, micaceous remains
	2	3	1.28-1.48	Light brown, pebble, micaceous remains
14-111	1	1	0.43-0.63	Humus, organic material
	2	2	0.63-0.93	Light brown
	2	3	0.93-1.13	Light brown, pebble
	2	4	1.13-1.33	Light brown, pebble
	2	5	1.33-1.53	Light brown, micaceous remains
	2	6	1.53-1.73	Light brown, micaceous remains
	2	7	1.73-1.93	Light brown, micaceous remains
	2	8	1.93-2.13	Light brown, micaceous remains
14-112	1	1	0.50-0.70	Humus, organic material
	2	2	0.70-0.90	Brown color, micaceous remains
	2	3	0.90-1.10	Brown color, micaceous remains, pebble
	2	4	1.10-1.30	Brown color, area of fired taxcal
	2	5	1.30-1.50	Brown color, micaceous remains
	2	6	1.50-1.70	Brown color, micaceous remains
	2	7	1.70.-1.90	Brown color, micaceous remains, pebble
	2	8	1.90-2.10	Brown color, micaceous remains, pebble
	3	9	2.10-2.30	Brown color, micaceous remains
14-113	1	1	0.73-0.93	Humus, organic material
	2	2	0.93-1.13	Light brown
	2	3	1.13-1.33	Light brown, pebble
	2	4	1.33-1.53	Light brown, pebble
	2	5	1.53-1.73	Light brown, micaceous remains
	2	6	1.73-1.93	Light brown, pebble, micaceous remains
	3	7	1.93-2.13	Light brown, taxcal, micaceous remains
14-114	1	1	0.78-0.98	Humus, organic material
	2	2	0.98-1.18	Light brown, pebble
	2	3	1.18-1.38	Light brown, pebble
	2	4	1.38-1.58	Light brown, pebble
	3	5	1.58-1.78	Light brown, pebble, taxcal, micaceous remains

14-116	1	1	0.73-0.93	Humus, organic material
	2	2	0.93-1.13	Light brown, micaceous remains, small amount of taxcal
	2	3	1.13-1.33	Light brown, micaceous remains
	3	4	1.33-1.53	Light brown, taxcal, micaceous remains
	3	5	1.53-1.73	Light brown, micaceous remains
14-118	1	1	0.88-1.08	Humus, organic material
	2	2	1.08.-1.28	Light brown, small amount of taxcal
	2	3	1.28-1.48	Light brown, micaceous remains
14-121	1	1	0.60-0.80	Humus, dark brown, pebble
	2	2	0.80-1.00	Light brown, micaceous remains
	2	3	1.00-1.20	Light brown, micaceous remains
	2	4	1.20-1.40	Light brown, micaceous remains
	2	5	1.40-1.60	Light brown, micaceous remains
	3	6	1.60-1.90	Light brown, pebble, taxcal
14-127	1	1	0.89-1.09	Humus, organic material
	2	2	1.09-1.29	Light brown, pebble, micaceous remains
	2	3	1.29-1.49	Light brown, pebble, micaceous remains
14-235	1	1	0.46-0.66	Humus
	2	2	0.66-0.86	Dark brown
	3	3-6	0.86-1.66	Light brown
	4	7	1.66-1.71	Dark brown with patches
	5	7	1.71-1.86	Light brown with mica
	6	7	1.86-2.40	Compact floor
14-236	1	1	0.51-0.71	Humus
	2	2-5	0.71-1.31	Light brown
	3	6-7	1.51-1.91	Compact light brown
	4	8	1.95	Taxcal floor
	5	8	2	Compact floor
14-237	1	1	0.65-0.85	Humus
	2	2	0.85	Light brown
14-270	1	1	1.04-1.24	Humus, organic material
	2	2	1.24-1.44	Light brown, micaceous remains
	2	3	1.44-1.64	Light brown, micaceous remains, pebble, taxcal
	2	4	1.64-1.84	Light brown, pebble, micaceous remains, taxcal
	3	5	1.84-2.04	Light brown, micaceous remains, taxcal
	3	6	2.04-2.24	Light brown, taxcal, pebble, micaceous remains
14-314	1	1	0.37-0.57 m	Humus
	2	2	0.57-0.77 m	Dark brown
	3	3-7	0.77-1.77m	Light brown
	4	7-9	1.88-2.10 m	Compact light brown
14-315	1	1	0.20-0.40 m	Humus
	2	2-9	0.40-2.00 m	Light brown
	3	9-11	2.00-2.40 m	Light brown with patches
14-316	1	1	0.37- 0.57 m	Humus
	2	2-7	0.57- 1.58 m	Light brown
14-318	1	1	0.25-0.40	Humus, organic material
	2	2	0.40-0.60	Light brown, small taxcals
	2	3	0.60-0.80	Light brown, micaceous remains, pebble

	2	4	0.80-1.00	Light brown, pebble, micaceous remains
	2	5	1.00-1.20	Light brown, pebble
	2	6	1.20-1.40	Light brown, micaceous remains, pebble, taxcal
	3	7	1.40-1.60	Light brown, micaceous remains, taxcal
14-320	1	1	0.41-0.60	Humus, organic material
	2	2	0.60-0.80	Light brown, micaceous remains
	2	3	0.80-1.00	Light brown, micaceous remains
	2	4	1.00-1.20	Light brown, micaceous remains
	2	5	1.20-1.40	Light brown, micaceous remains
14-321	1	1	1.26-1.46 m	Humus
	2	2-6	1.46-2.56 m	Light brown
14-324	1	1	0.70-0.90 m	Humus
	2	2-7	0.90-2.10 m	Light brown
14-325	1	1	0.55 7 0.75 m	Humus
	2	2-8	0.75-2.07 m	Light brown
	3	8-9	2.07-2.35 m	Compact light brown
14-326	1	1	0.52- 0.72 m	Humus
	2	2-6	0.72-1.52 m	Dark brown
	3	7-8	1.52-2.12	Light brown
	4	9	2.12-2.52	Loose light brown
14-445	1	1	1.25-1.45	Dark brown, humus, organic material
	1	2	1.45-1.65	Dark brown, pebble
	2	3	1.65-1.85	Light brown, pebble, abundant taxcal
	2	4	1.86-2.05	Light brown, pebble and taxcal
14-455	1	1	0.80-1.00	Dark brown, humus, organic material
	1	2	1.00-1.20	Dark brown
	2	3	1.20-1.40	Light brown, pebble
	2	4	1.40-1.60	Light brown, pebble and taxcal
	2	5	1.60-1.80	Light brown, pebble and taxcal
14-456	1	1	1.14-1.34	Dark brown, humus, organic material
	1	2	1.34-1.54	Dark brown, pebble
	2	3	1.54-1.74	Light brown, pebble, mica
14-466	1	1	0.75-0.95	Humus, organic material
	2	2	0.95-1.15	Dark brown
	2	3	1.15-1.35	Light brown, micaceous remains, taxcal
	3	4	1.35-1.55	Light brown, pebble, taxcal
14-476	1	1	0.52-0.72	Humus, organic material
	2	2	0.72-0.92	Light brown, pebble
	2	3	0.92-1.12	Light brown, micaceous remains
	2	4	1.12-1.32	Light brown, pebble, micaceous remains
	2	5	1.32-1.52	Light brown, micaceous remains, pebble
	3	6	1.52-1.72	Light brown, pebble, taxcal, micaceous remains
14-486	1	1	0.28-0.48	Dark brown, pebble, organic material
	1	2	0.48-0.68	Dark brown, pebble
	2	3	0.68-0.88	Light brown, micaceous remains
	2	4	0.88-1.08	Light brown, pebble
	2	5	1.08-1.28	Light brown, taxcal
	3	6	1.28-1.58	Light brown, micaceous remains, taxcal
14-487	1	1	0.59-0.80	Dark brown, organic material, humus

	1	2	0.80-1.00	Dark brown, pebble
	2	3	1.00-1.20	Light brown, micaceous remains
	2	4	1.20-1.40	Light brown, micaceous remains
14-496	1	1	0.08-0.28	Humus, organic material
	2	2	0.28-0.48	Dark brown
	2	3	0.48.0.68	Dark brown, pebble
	2	4	0.68-0.88	Dark brown, pebble, small amount of taxcal
	2	5	0.88-1.18	Dark brown
14-497	1	1	0.38-0.58	Humus, organic material, dark brown, pebble
	1	2	0.58-0.78	Dark brown, taxcal pebbles
	2	3	0.78-0.98	Light brown, pebble, small amount of taxcal
	2	4	0.98-1.18	Light brown, micaceous remains, pebble
	2	5	1.18-1.38	Light brown, micaceous remains, pebble
14-532	1	1	0.54-0.74	Humus
		2	0.74-0.94	Dark brown pasty mud
		3	0.94-1.14	Dark brown sandy mud
		4	1.14-1.34	Light brown mud
14-552		1	1.68-1.88	Humus
		2	1.88-2.08	Dark brown mud
		3	2.08-2.28	Dark brown mud
		4	2.28-2.48	Light brown mud
14-556	1	1	0.16-0.36	Humus
	2	2-3	0.36-0.76	Light brown
14-563		1	1.30-1.50	Humus
		2	1.50-1.70	Dark brown mud
		3	1.70-1.90	Dark brown mud
		4	1.90-2.10	Loose dark brown mud
14-564		1	1.00-1.20	Humus
		2	1.20-1.40	Dark brown mud
		3	1.40-1.60	Dark brown mud
14-567	1	1	0.28-0.48	Humus
	2	2-3	0.48-0.88	Light brown
	3	4-5	0.88-1.28	Dark brown
14-569	1	1	0.35-0.55	Humus
	2	2-3	0.55-0.95	Light brown
	3	4-5	0.95-1.35	Dark brown
14-570	1	1	1.22-1.42	Humus
	2	2-4	1.42-2.02	Light brown
14-578	1	1	1.10-1.30	Humus
	2	2	1.30-150	Light brown
14-579	1	1	0.77-1.17	Humus
	2	2-3	1.17-1.57	Light brown
14-580	1	1	1.51-1.71	Humus
	2	2-3	1.71-2.11	Dark brown
	3	4-5	2.11-2.51	Light brown

CHAPTER 9

Rescue Operations: Operation 15

Jonathan Kaplan, Federico Paredes Umaña and Rafael Cambranes

Emergency Situation

A number of archaeological salvage events took place during the second field season of the project. One such event, designated Operation 15, was initiated on August 5, 2004, and completed on August 11. Together with RC, JK was driving to Mound 5 to check how work was progressing. The road was small and bad, with mud and scattered stones –it currently serves as a local route to transport banana harvests- a local dweller asked us to stop, pointing to an object in the middle of the road. The location was roughly 75 m north of the rural path to the village of La Ladrillera. We stopped and examined a rim or border of an apparently very fine vessel visible in the mud. We decided to explore further, and having found other vessels we devoted the following three days to the recording and excavation of an apparent offering, partially destroyed; the possibility existed that this was the burial of some important individual, for the way how the vessels were placed forming half a rectangle. The operation concluded with the recovery of 11 complete vessels plus fragments of others [**Fig. 9-1 a, b, c, d, e, f, g, h, I, j**] (see **Table 1**). This finding, together with the discovery of Structure 5-1, a large stone platform (see Chapter 7), and jointly with the accidental discovery of other fragments of very fine ceramics in the same area (395 m NNW – up to UTM 1614871.744N 669576.213E from 1614494.103N 669692.756E), led us to reconsider the ancient function and meaning of the southern area. These ceramic artifacts were found within a distance of 0.396 km, with the following UTM specifications: 11 complete vessels, North 1614491 East 669680; fragment of elite dish, North 1614868 East 669564. These findings lead us to consider the possibility or probability of elite residences present in the area in the past, as it was not merely an area of common population, but it also included other social levels and ranks. Our current interpretation is that the platform probably functioned like an administrative building to monitor the agricultural work, maybe even the cocoa plantations. Thus, the presence of individuals from the elite may have been as bureaucrats, overseeing the work of common laborers. In any case, the finding of fine pottery presents a different aspect of the life and function of the southern area, in apparent contrast with the interpretation previously held, which considered that only dwellings for common people were present in this area.

Excavation

Considering that initially the evidence was limited to one rim, we decided to conduct a salvage operation, or in other words, to recover the vessel we saw; at the time we did not fully understand the meaning of the discovery, and the place where the vessel was located, right in the middle of the road, made us quickly consider the possibility of its loss, either as a result of the vehicles traveling along that road or by having it taken by someone else.

After the GPS points were recorded, when the vessel was excavated we realized that it was possibly complete. When the excavation continued the presence of other vessels was noted. At that point we decided to explore the context of the vessels excavating 2 x 2 m units to explore the finding as a formal deposit made in ancient times, mapping the artifacts *in situ* [**Fig. 9-2**], with the purpose of recuperating not only the visible artifacts but also those that were not visible at the moment, considering the entire context of the deposit.

We began by establishing a relative datum in a *coxte* tree located immediately on top of the road cut. An interview with the owner of the adjacent plot led us to conclude that the road had cut a mound or an ancient platform. We placed the datum near the top of the mound's surface, with an elevation to the excavation level of 1.20 m below it.

We believed that the time we had to proceed with the salvage intervention was limited due to the vulnerability of the finding, so we came to an agreement with ECA to close the access to that road, stipulating that we would proceed as quickly as possible; even though we had a conversation with the owner of the plot adjacent to the road, he approached the ECA officials to complain about our activities –with unjustified criticisms because the road belongs to the community; so once again we explained to him our reasons as archaeologists, specifically in regard to the ancient site of Chocolá and the significance of the project.

With the placing of Cartesian units of 2 x 2 m oriented towards the north, we began to work with one pit. The position of the first unit was restricted in order to place the pit within the road to avoid the deep ditches at its sides, while we were trying to place the first vessel finding, preferably, at the center of the pit. The proximity of the ditch gave us the opportunity to make a profile of the stratigraphy on the east side of the pit. We cleared and cut the profile to find a mud layer of an orange-brown color with abundant mica as the matrix of the vessels. We soon found that the two vessels found at a higher elevation consisted of a type with a black-brown slip and thin body [# 11], placed inside a tripod bowl with mammiform supports and appliqué decorations of a larger size and with an orange slip [# 10]. It should be noted that portions of the orange slip remained in the mud due to the gummy consistency of the matrix. This pair was carefully removed with special wooden tools. Other two vessels were exposed, one of them was upside-down: a tripod bowl with conical supports, orange slip and a surrounding incision below the rim [# 9], and a tripod bowl with an orange-red slip. The fifth vessel discovered the same day was a dish with an orange-red slip with three cake-type supports [# 7]. All vessels were found within a few centimeters of separation from one another, and all appeared at no more than 30 cm from the road's surface, while the first one was found [# 10] directly on the surface of the road. Six vessels were removed. When the explorations continued five additional vessels were found: three dishes and two bowls, apparently complete, with fragments of other incomplete ones. One of the dishes exhibited an everted rim and notched lip; another dish found presented a carved green stone in contact with the base. We observed that the soil around the center of the unit was softer than the soil outside the center, probably suggesting what was left of the activity of burying the contents of the offering or of the corpse. Proceeding with the excavation we cut a 0.50 m window to the east, to find two other vessels, # 5 and 6, forming half of the rectangular deposit with # 1, 2, 3 and 4. Providing additional evidence, besides the fact that this was a special deposit, in regard to the ideology and intention that originated it, vessel # 4 was placed immediately above # 1; both vessels were small bowls. We infer that originally these bowls, like the other vessels, contained some

substances, possible food for the gods or the deceased. By the end of the second day of work, we left a night watchman to protect the non-excavated findings (five vessels).

The following days, FPU collaborated in the efforts of drawing, mapping, taking pictures, and in the removal of the remaining vessels. Excavating 1.64 m below the datum, or approximately 1.60 m below the current surface of the mound, we noted that the matrix around the vessels presented an identical context, suggesting an ancient filling not mixed or disturbed at a later time. When we removed the soil down to the seat of the visible or existing vessels, we discovered a stone alignment, with stones of sizes averaging 10 x 15 cm, as well as other smaller stones. The alignment formed a “V” that widened to the north, still inside the non-excavated area.

As mentioned above, the vessels had been placed on a stone floor in the shape of a half a rectangle [**Fig. 9-3**]. This pattern led us to the excavation of another unit of 2 x 2 m, immediately north of the previous one, in an attempt to locate the apparent continuation of the rectangle. The new pit produced no other complete artifacts. With the exception of a number of sherds from a mammiform support probably belonging to a ceramic type similar to that of the already excavated vessels, this pit produced no important cultural materials. Significantly, the man-made stone floor did not continue. Oddly, the other edge of the pit represented the limit of the stone alignment. In support of the notion we were considering –that we were finding the south portion or one half of an offering or burial- the soil matrix in the pit immediately to the north changed dramatically to a context of a lighter orange color, remarkably granular and with the aspect of having been recently disturbed.

To make sure that there were no other archaeological remains, during the following two days we returned to the place of the findings, to excavate at the same level another unit of 2 x 2 m at the south of the first pit. Excepting for a few small sherds, no indication was found that pointed to the continuation of the deposit. The southern portion of the east window of the first pit was also removed, and again, just a few small sherds were found. The last day of Operation 15, JK went back to remove the stones present in the alignment to find out whether there were additional cultural traits and to further investigate the apparent intentional deposit of these stones, excavating 0.15 m below them. Nothing further was located.

The excavation was concluded when we reached another sand and earth matrix of a gray color, completely devoid of artifacts or evidence of human activity. We started to refill the three pits or trench that measured 2 x 6 m.

The vessels were taken to the laboratory and stored with their soil or natural, original context. Later, we transported all the complete vessels with their corresponding soils to the storehouse of the Miraflores Museum, in the capital city, under the supervision and care of Dr. Juan Antonio Valdés, co-director of PACH and curator of the Museum.

Preliminary Analysis

With no other evidence, we must conclude that the findings represent a special offering or possibly the burial of an important individual, possibly disturbed at a recent time perhaps by the construction of the road. We speculate that during the

construction of the road, possibly the northern half of the deposit was accidentally uncovered. The elevation of this section may have been greater than that of the southern half, following the slope of the ground. The exposure of fine vessels and possibly other artifacts triggered the discoverers to take the artifacts, and refilled the hole again to level the road.

As we mentioned, this finding poses a number of problems regarding the project's previous hypothesis of three general divisions of the ancient site: 1) north area, with elite residences, 2) central area, large administrative and public activity buildings, for example religious ceremonies, and 3) southern portion, area of common residences, workshops, intensive agriculture or corporate works. We may still think that our notion is correct regarding the first two areas, and perhaps we should revise our view that the southern area only involved common people and common activities. The very fine quality of the vessels found in the deposit indicates a different conclusion.

Table 1: List of Vessels Recovered

Date	No.	Description	Provenience	Comment
6-8-04	1	Bowl with orange slip	PACH 15-1-1	Found above the bowl (# 4)
6-8-04	2	Dish with orange slip	PACH 15-1-1	Carved green stone associated with base
6-8-04	3	Dish with orange slip, everted rim and notched lip	PACH 15-1-1	Notches in lip
6-8-04	4	Bowl with orange slip and conical solid supports	PACH 15-1-1	Found under the bowl (# 1)
6-8-04	5	Dish with orange slip	PACH 15-1-1	Found in pit extension, west corner
6-8-04	6	Bowl with orange slip	PACH 15-5-1	Found in pit extension, northwest corner
5-8-04	7	Dish with orange slip and 3 cake-like supports	PACH 15-1-1	
5-8-04	8	Orange-red tripod bowl	PACH 15-1-1	
5-8-04	9	Tripod bowl with solid conical supports and orange slip; surrounding incision below rim	PACH 15-1-1	Found in an upside-down position
5-8-04	10	Tripod bowl with mammiform supports, orange slip, appliqué decoration	PACH 15-1-1	It contained the vase (# 11)
5-8-04	11	Black-brown vase, thin body, cake-like supports, decoration of *apotate* coating	PACH 15-1-1	The only black-brown artifact

Figures, Chapter 9

Fig. 9-1a, b, c, d, e, f, g, h, I, j. Excavation sequence and salvage operation

Fig. 9-1a

Fig. 9-1b

Fig. 9-1c

Fig. 9-1d

Fig. 9-1e

Fig. 9-1f

Fig. 9-1g

Fig. 9-1h

Fig. 9-1i

Fig. 9-1j

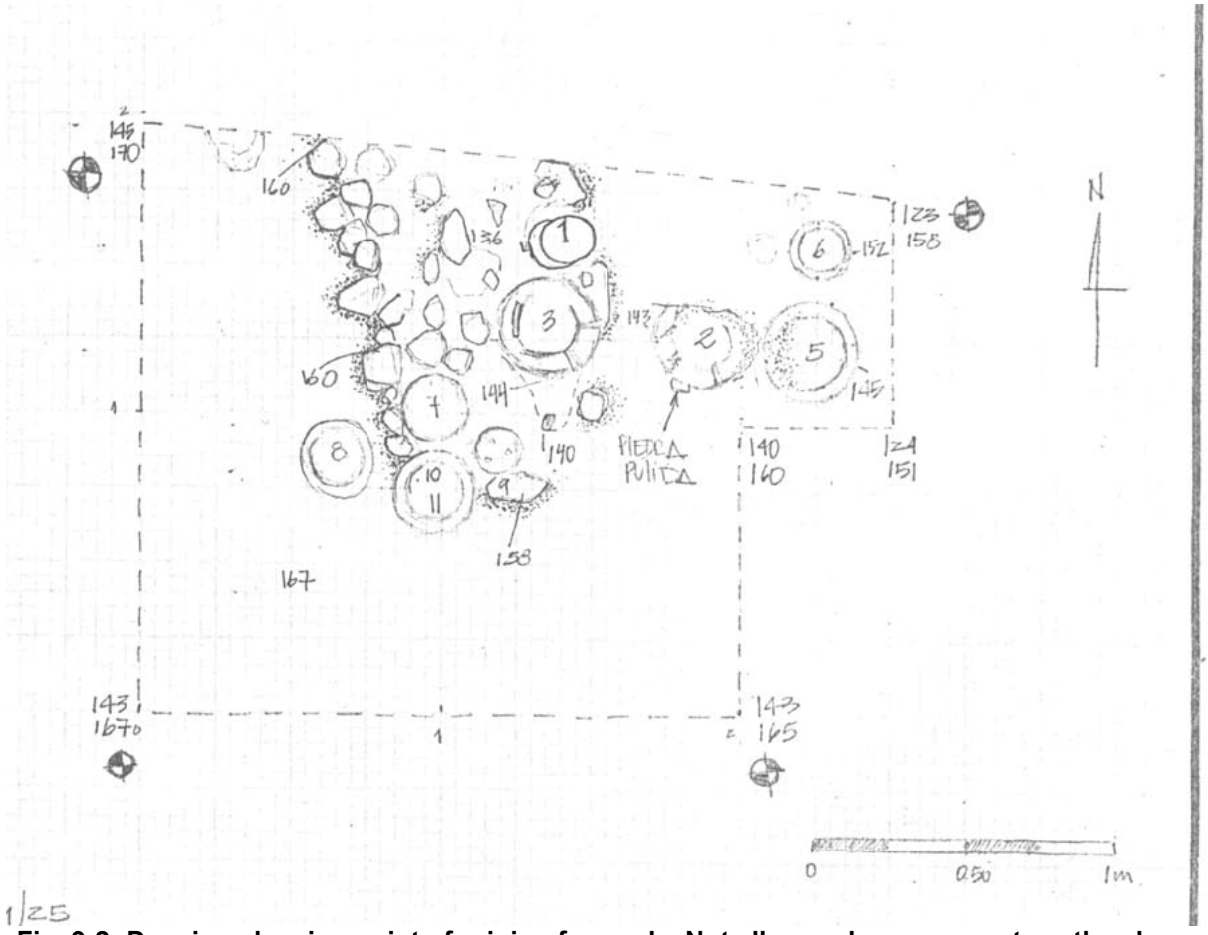


Fig. 9-2: Drawing showing point of origin of vessels. Not all vessels are present, as they have been already excavated. Because of the urgency to extract the vessels, some of the places must be reconstructed.

Fig. 9-3: Vessels placed on a stone floor forming half of a rectangle.

CHAPTER 10

Archaeological Salvage at the Central Group, Chocolá August 4, 2004

Federico Paredes Umaña and Rafael Cambranes

Emergency Situation

The morning of the 4th of August began at PACH headquarters with the usual rush. The different work teams were preparing to be at their different excavation areas on time. Rafael Cambranes was getting ready for a solitary survey to take GPS references of architectural traits in the ancient settlement of Chocolá, in the current urban center. Federico Paredes Umaña had just finished delivering field materials to the excavators when one neighbor of Chocolá showed at the laboratory's door, to report that the works for water introduction that were being conducted in the central area were exposing archaeological materials. These water introduction works were carried out by different neighbor committees from Chocolá. Each neighborhood or sector was in charge of excavating a portion of trench of at least 0.40 m below the surface and 0.25 m in width, along the entire road located in front of their homes. These works began to gradually reveal sections of ancient canals that run across the site in a northeast-southwest direction. Given the urgency of the case, Dr. Jonathan Kaplan, the PACH director, asked Federico Paredes Umaña and Rafael Cambranes to spend a day inspecting the works to record any architectural trait revealed, as well as any associated materials. The archaeological salvage consisted in the first place in identifying ourselves with the local people, explaining the situation we were facing. The introduction of plastic pipes for the potable water supply was disturbing the soil. Each worker had to excavate as deep as it was required, while preserving the necessary drop so that the pipe allowed the water to flow by gravity. This activity, for the accomplishment of the mission entrusted by the water committee, involved the removal of all obstacles. These obstacles were frequently sections of ancient canals.

The task of communicating the problem to the community took plenty of precious time, as while we were discussing it with a local committee, just a few meters away, workers kept on removing materials. These works are carried out very quickly. The entire community is mobilized, and while some of the neighbors dig the trench, others measure the drop and still others introduce the pipe, they join it together, and then the trench is closed.

By the end of the day we had collected charcoal samples associated with one portion of the canal, and taken GPS references for the localization of 5 canal sections built with lateral stones, bottom stones, and lids consisting of irregular stones. Some examples were different from most of the flagstones that cover the canals of mound 15.

Below is a summary of technical specification of trait location, trait description, associated materials and work accomplished.

UTM	Description	Associated Artifacts	Work Accomplished
1616698N 669492E	Canal section that runs from northeast to southwest, with lateral stones and stones at the bottom. Lid with selected stone, uncut. Different to those of mound 15.	One bag of sherds. Some of them have already been photographed.	It was preserved by laying the plastic pipe below the bottom of this portion of canal. When PACH arrived to this place the stone lids had been removed. Once the laying of the plastic pipe was completed, the stones were put back in "place".
1616685N 669466E	Possible canal section running from northeast to southwest. A burnt area of 45 cm in diameter and 15 cm in height was found. This area was located below the stones. Approximate height from the surface, 45 cm.	One bag of sherds and obsidian was recovered, plus two abundant charcoal samples, one of them with a sherd in direct association. In this lot of materials a grinding stone fragment was included, although it was not directly associated with the stone trait described.	Charcoal samples were recovered. The pipes were introduced below the trait but preservation was not possible, as at the time of our arrival plenty of stones had already been removed.
1616682N 669457E	Stone possibly cut found in the trench opened to lay plastic pipes. Looks like a corner stone.	A fragment of incense-burner was recovered, which was not directly associated with this trait.	The potable water pipes were introduced under the stones, with no serious damage or disturbances.
1616749N 669525E	Portion of canal with lateral stones located on the road to Xojolaj. Upon our arrival in the place, the stones had already been removed, and there were flagstone fragments scattered on the ground. One stone still in place showed a yellowish color and a porous surface.	At approximately two meters, on the east border of the road and following the trench, we observed part of a flagstone exposed by the workers' excavation. A bag of sherds was recovered.	On the west border of this road, roughly six meters away from this stone canal, another canal section was identified, which was completely removed by the workers before PACH could arrive at the place.
1616774N 669577E	This reference was taken at the east side of the road to Xojola. The works for the introduction of plastic pipes crossed the road and headed east, towards the water reservoir. Here, a fragment of a mushroom-head stone and one sherd were recovered.	Five meters east of this reference a portion of a stone canal was identified, with a northeast-southwest orientation. When PACH arrived to the place it had already been destroyed.	The identified portion of the canal is located at the foot of a mound whose number must be found as of the nearest UTM. On that mound there is a potable water reservoir.

Conclusions

This unexpected incident, other than destroying several fragments of the canal, has shown that the ancient water management system in Chocolá was not limited to the north group, and this, in our view, represents the most significant contribution of the day.

It is peculiar, in a way, how these recent water introduction works have revealed the presence of the ancient water systems, and it will be even more peculiar for future researchers, to find a plastic pipeline below the prehispanic stone canals. In any case, this is the agreement we managed to make with the community in order to preserve some of the traits and allow the modern works to proceed.

The endeavors of the water committees are not directly supervised by the management of ECA Chocolá, but instead, by smaller local power entities and by the general foreman of the water works, don Favián Zapeta, who repeatedly mocks us whenever we try to explain to him the serious damage he is causing with his destructive and unplanned actions.

CHAPTER 11

Industrial Archaeology at Chocolá

Edgar Mendoza

Fig. 11-1a, b: (a) The workshop; (b) Dryer, coffee mill, Chocolá.

Introduction

One of the objectives of the Chocolá Archaeological Project -PACH- is to gain knowledge on the context where the different archaeological structures are located (Kaplan and Valdés, 2003; Valdés et al, 2003). One such context is constituted by the presence of the machine shop [**Fig. 11-1a, 12-2**) and the coffee mill [**Fig. 11-1b**], which include a variety of machineries used in this industry. According to the Industrial Archaeology Program (*Programa de Arqueología Industrial, or* PAI), the antiquity of the machines would place their origins at the final portion of the 19th century, a dynamic time in the economic, social, cultural and political arenas (McCreery, 1981, Piedra-Santa, 1981). These pieces of machinery have survived through the years, and are physical evidence of historic events that have taken place both in the country and in the community of Chocolá. They are material artifacts that substantiate the presence of industry in the country. This gives rise to the following research question: how can a machinery-archaeology connection be established? One possible answer could come through the study of the machines *in situ,* taking them as archaeological artifacts positioned in some time and space, as well as within a historical context.

Fig. 11-2: Machine shop.

The railroad [**Fig. 11-3**], the Cantel yarn factory, the soap factory, the Central American brewery and other smaller factories were simultaneously functioning in the 19th century in Guatemala, (Cifuentes et al. 1993). This substantiated the significance of machinery imports for the production of a specific product or as spare parts for the already existing machines. It also implied a better administration of all these machines and the products they yielded.

Fig. 11-3: Railroad remains, Chocolá.

We may say that since the beginning and throughout the period of consolidation of the Industrial Revolution in Europe, there were constant imports of machinery destined to the transformation of natural resources of the Latin American countries (Ashton, 1990; Iglesias, 1981). We know that the industrialization process was a crucial stage in the development of capitalism in Latin America (Cueva, 1986; Poitevin, 1977).

This caused that parallel to the arrival of that machinery, travelers and explorers came to these lands with the purpose of exploring the natural resources of Latin American countries; later, they would send their reports to their respective governments so that in turn, they could implement the importation of the machinery required for the exploitation of those resources (Mendoza, 1997). In the case of Guatemala, there was a strong influx of imported industrial machinery from 1870 until 1940 (predominantly of German origin) for the modernization of the country supported by Liberal governments (García Laguardia, 1985). However, we should not forget that since 1920, the importation of U.S. made machines grew and gradually replaced German manufacture. The use of those machines was focused on the manufacture of paper, coffee roasters, tobacco, sugar (*ingenios*), textiles, metal, wood, etc. As time went on, these machines were forgotten once their mission was accomplished, and they were completely abandoned in the same areas where different products used to be processed, as was the case with the coffee plantations in the German estates (Cambranes, 1975, 1977, 1996; Mosk, 1958; Wagner, 1987, 1994, 1996 and 2001) [**Fig. 11-4**], where the labor force was mostly indigenous (Figueroa Ibarra, 1981).

Fig. 11-4: Coffee beans drying outside the mill. After abandoning the coffee processing machines, people today have returned to less sophisticated methodology.

The report presented here mainly attempts to make an account of a first scholarly contact with the machinery of the coffee mill and the machine shop, through an archaeological record or inventory of the machinery existing in the community. This descriptive report represents a first step in the comprehension of the historical context of the era represented by these machines. We are not attempting at this time to display a series of generalizations, which would be an important step, but which is not our major purpose at this stage of the investigation. This report has been divided in five sections. The first one is the present introduction, the second one involves the methodology used in the record, the third one is a general description of the mill and the shop, the fourth one contains a number of possible comments about this first stage, and finally, the general bibliography and addenda (PAI's proposal 2004-2007, record card - see Addendum 2- plans of façades and elevations, and in a separate file the folders that include the digital pictures corresponding to each printed card).

Methodology

The program for industrial archaeology of the Chocolá Archaeological Project seeks to create a complete record of the coffee machinery powered by hydraulic energy, in existence in the Chocolá community. Industrial archaeology as an archaeological practice is new in Latin America. In general terms, it attempts to apply the archaeological methodology of classification, record and dating to the industrial remains, in this case of the machines used for the coffee production. The machines as a study object are a part of the archaeological investigation, and may be classified, photographed, measured, drawn, the materials of which they are made studied, etc.

This way of doing archaeology is absent in Guatemala, because traditional pre-Hispanic archaeology predominates. In Guatemala the term “archaeology in non-traditional areas” is used, to denominate the areas that are out of the circuits of the Maya lowlands, highlands, and southern coast. The study of non-traditional areas allows for the discovery of links or connections that give way to a deeper understanding of more complex areas, increasingly facilitating a global view of the archaeological areas in Guatemala, as is the case with the archaeological site of Chocolá, in the Boca Costa region of the country.

Objectives in Phase 1

- We intend to create a record and/or inventory of the machines
- A study of this nature may be of help in the historic research of the industrialization process in Guatemala
- Dissemination of the industrial archaeological patrimony
- To create a record-inventory with the purpose of organizing a catalog of industrial archaeology

Characteristics and scopes of PAI:

- Theoretical discussion on industrial archaeology
- The strengthening of archaeology in Guatemala

Tasks for Phase I of Season II (May 15 to August 30, 2004)

- Record, machinery inventory
- Photographic record of machinery areas
- Detailed photographic record of machinery areas
- Field survey of the central area of the property
- Interview with workers and/or operators in charge of the machinery, descendants of operators or workers; in this case we interviewed Florentín Gómez Chávez (former worker) and Héctor Vitelio Gómez Chávez (in charge of the machinery shop). Both interviews were recorded in tapes of 60 minutes each. However, the transcription of these interviews will be accomplished

during Phase II, when the contrast of the functions of the machines is drawn. For the moment our interest is focused only on the record of the machinery.

General Description

The purpose of the description is to show the state of preservation of the coffee mill and the machine shop in the period of investigation. It represents a way to ethnographically describe, as anthropologists say, the study object within its context. First we shall present the description of the mill, then the shop, and finally the surrounding areas.

Coffee mill [Fig. 11-a, b, c]

In front of the hotel's entrance and the project's house there is a portal of access to the central area of the property, consisting of two columns painted yellow and pink with an approximate height of 2.30 m; between both columns there is a black gate. One of the columns presents an original sundial. The sundial is 43 cm tall and 61 cm long, with numbers VI, VII, VIII, IX, X, XI, XII; number XII shows the lamina that represents the sun mark. Then there are numbers I, II, III, IV, V, VI, in the shape of a kind of protractor, that is, a half circumference of 180 degrees; the metal type seems to be a copper plate that marks the hour, with a dimension of 0.25 cm, a 90 degrees angle, and 35 degrees in its most acute angle.

Fig. 11- a, b, c: Coffee mill, Chocolá.

Leaving the administrative central area of the property, from the black gate at the entrance that opens in two parts towards the inside and is supported by the two columns, the mill can be seen approximately 100 m away, and the machine shop, 60 m away. The building has a façade that is 86 m long and has several windows, a gray gate, the windows are orange, possibly painted later, it is a two-level building and the lower part has a kind of basement that leads to one of the major hydraulic machines. The mill has a water entrance at the south. The gate is old; adjacent to it there is an administration booth, and at left are the stairs that climb to the second level. In this first level we see the five Guardiola dryers, three of which are water powered, while the other two are electrical. The space shows several stout wooden pillars that support the second level. At the right side there are several tools, there are wheels close to the area where water is introduced. One sector shows the pulleys that control the speed of water, and there is a shaft that crosses the entire mill; there are numerous pulleys with their corresponding speed belts and levers, gear-changing levers and supporters, which are the ones that made the main shaft of the pulleys spin round.

The hydraulic dryers [**Fig. 11-1b**] are of a gray color, they have their pulleys and several pipes to carry the heat. The other dryers are of identical shape and size, with the exception of the remaining two that are electrical; they all have heat pipes, and each one of them has at its inside a series of flanges that carry and dry the heat. The floor is the original one, and the tracks of the carts that transported the coffee sacks are still in place. The hullers or peelers that were used for peeling the coffee beans are found at left, there are approximately seven small blue peelers, with their corresponding levers; the peeled coffee beans then passed to some sort of tray where they were picked. In this section there is an abandoned electrical gasoline engine used to set one of the machines in motion. Between these five dryers there is a space that may be crossed to reach a series of pulleys, belts, and heat controllers. Between the two electrical dryers and the other Guardiola machines, there is a space with abandoned tools; at the left there are pools where coffee was taken through a number of canals that dragged the coffee towards that sector for the corresponding washing.

First level [Fig. 11-6]

Fig. 11-6: First level, Coffee Mill.

The first level already shows drying machines, and the abundant number of columns at the second level is remarkable; also the tracks are visible, running towards a ramp that opens to a gate, from which the small carts with coffee would set out. This upper part shows the blue peeling hullers with their water faucets, quite deteriorated but still fit to work. We may also observe the large amount of electrical cables that show the complicated power system of the entire mill. Once in the first level one may see the gate from the inside with its big hinges; in spite of its large size, this gate is of the sliding type. At the first level, if we go to the sector where water is introduced from the shop, there is a machine that moves the sluices, and there the powerful sound of water running down at a considerable speed to vertically fall on the other lower level (the cellar) can be heard. Opposite to the sluicing machine there is another one in the shape of a boat's steer, which is the one that controls the chain that maintains part of the sluice closed, and defines the velocity of the fall; the levers that were used

to open and close are visible from the first level; this machine located in the second level, to avoid the inconvenience of climbing to the first level, could simply be closed from the cellar below. We could also observe the machine that changes the belt by means of a lever. There are a number of abandoned machines with the following legend on their side: ATP Gs CrossWare McDermont Bucklaw, and there is also a very peculiar wheel with curved rays that resemble those of a sun, which is also some sort of pulley.

Fig. 11-7: José Guardiola's patent, Coffee mill.

The floor of the first level, which is the original one, has a wooden section that may be lifted; there are a series of lids that show the bottoms of the vaults where coffee was unloaded, and the belt with a number of small baskets used to transport coffee to the second level, as shall be further explained when referring to the upper level. The mill is abandoned, and it was occasionally rented for different purposes. Between the machine that exhibits the patent and the other Guardiola machine [**Fig. 11-7**], there is a weight and some steps that were cut, leading to the area with the five furnaces that correspond to each dryer, as shall be described later. There is a wooden floor in a number of spaces, many abandoned tools and one anvil in the first level. There are 20 stout wooden pillars with the corresponding lintels which support the second level. There is a rather elevated ramp that leads to an ancient gate with hooks and no locks; they are rather old hooks that were used to hold the gate closed; this in turn opens to the other side of the compound where the vertical red dryers are, as shall be described later. The ramp was used to direct the coffee that came from the yard after its initial drying, while the second drying was made with Guardiola drying machines; in other words, coffee was dried twice, the first time under the sun, followed by an artificial machine-drying, so that it was well dried by the time it reached the section located at the second level where it was selected.

Furnaces

There is one sector that is interrupted and leads to a storeroom with sacks of coffee and the five furnaces, each furnace corresponding to each one of the dryers with

their corresponding engines. We have one section here that has something to do with electrical power, and near the furnaces there are a number of pulley machines displaying the following legend: DF Sturtevant Massachussets No. 3; another one reads Ford Machines and Forgeste Sturtevant, Boston, Massachusetts. In that section near the modern furnaces, the older furnaces used before the electrical ones arrived were also found. The old furnaces used firewood and were located in the storage area where wood was stored; the ancient furnaces with their corresponding conduits and pipes for heat transmission, were manually fed with all the firewood that was cut. There is another storage space purely for coffee, with a furnace that corresponded to the Guardiola machine driven by an English belt engine of Gordon and Company Engineers, London; this is the machine that exhibits the patent plate. Obviously, the mill underwent several remodeling events at different times. The section of the electric vertical dryers contributed to the expansion of the sector.

In the back of the mill there is a ravine and a series of canals where coffee was introduced and taken out. There is a section known as the store in this first level as well, it is on the way to the cellar, and has a rather recent metal door, for storing tools, files and some deteriorated spare parts, barrels, pipes, canals, ancient hullers, pulleys and wooden wheels. There is a series of shelves for depositing different utensils such as gas lamps, now obviously abandoned and rusty. Then there is a space that descends through some steps that lead to the lowest part, roughly 11 m down. The stairs are rather old, tough, and have a handrail; there is a smell of humidity, and there is abundant bat excrement, as there are numerous bats living in this sector. In the lower part of the mill rests the main engine that produces all the rotation movement by means of two huge pulleys; this is the one that produces the drive and generates the rotation of the lower and upper pulleys, setting in motion the main shaft of the pulleys in the first level; the entire process is completely hydraulic. Water runs down vertically producing the energy which in turn produces the drive; however, this sector is quite humid, deteriorated, and there are pieces scattered around, but nonetheless represents the most important part of the mill.

Second Level [Fig. 11-8 a, b, c]

Fig. 11-8 a, b, c: Second level, Coffee mill.

Before reaching the second level there is a small intermediary level between the first and the second that architects call mezzanine, which houses several machines painted in a silver color and include their corresponding inventory numbers; there are dispersed wooden pulleys, water powered engines which read John Gordon and Company, London, several heat conduits, and one machine manufactured by Kinon Limited and Engineers, Haverten, Scotland; therefore, there are English, Scottish, U.S. and German machines. The structure where all these machines are located is made of tough wood painted white, a bit damaged by the moths, but the blocks are stout, there is a pulley at about the middle of the structure, bearings to provide pressure to the pulleys, and major quite strong wooden pulleys. They all have a number, and probably there are 100 pulleys of varied sizes that once controlled the entire mill. There are coffee falls as well, and one machine that reads D. Engelbert Huel Company, Syracuse, New York.

Climbing the steps to the second level there is a first landing; the steps are painted red. The second level has a more ample spatial distribution than the first. The second level has administrative and storage spaces. There is a large storage room with wooden doors and bars to the right, another large room to the left, and the coffee falls in the middle. The metallic, square shaped falls correspond to the modern electric dryers, and the other ones made of old wood, correspond to the Guardiola water powered dryers. There is a machine also used to refine coffee, with a logo that reads: CL Limited, in a golden color, and there are cleaning machines with factory names such as John Gordon and Company, London [**Fig. 11-9**], displaying in Spanish: Size No. 2, 11081, London Pulley 75 Revs for Minute (revolutions per minute), John Gordon and Company, London. There are many old wooden pulleys that still work in this level; the colors of the machines are different

grays, and the coffee falls are painted white. The north profile shows a section that has been added on, where the red dryers are located; this addition was built in the 1960s', and then there is the yard for the outdoors drying of coffee, which is the original one.

Fig. 11-9: The John Gordon and Company's patent.

There are several types of conduits to transport coffee to the upper sector for the selection of beans brought by the dryers, lifted by hydraulic power through a number of belts that would bring a kind of small metal baskets where coffee was lifted and then brought down to the lower section in sacks, through some wooden conduits that allowed the coffee sacks to fall to this section. There is a room towards the north that was used for storage, with a sort of tubes that would carry the coffee being introduced from the vertical dryers (the addition mentioned earlier), could be placed in a sort of small carts to be taken away for selection, while the process of putting coffee into sacks went on.

The rear part of the mill with the main chimney, approximately 30 meters tall, can be seen. In this sector there is a number of pulley machines, as well as some kind of basket that descends with a cable to lift and lower the sacks, like an elevator. There is a sector probably used for administrative matters, and then in another sector towards the south profile, women worked sorting and selecting coffee. This is where machines that were used to sort and select the coffee that was to be packed in the sacks are. All these machines, ten in total, were used to select coffee. There was a wooden stand where sacks were placed, a ramp or slide where sacks would slide down, and trucks parked outside the mill were ready to receive them. There was a trademark (template with letters) that read: Fincas Nacionales, Product of Guatemala, Clean Coffee, Spain Net y 195 - with a space to insert the number of the last year. This was placed like a sort of serigraphy label on the sacks, and then a black painting was added.

The upper part of this south profile is very dilapidated; the windows have no glass, they've been broken. The balconies are falling down, the wood is completely rotten, and the room is large, with approximate dimensions of 7 x 12 meters. There is old furniture in its upper part, in some kind of attic. The doorways have the shape of a curved arch with metal pillars. The machine shop can be seen from this south profile towards the west. The wooden structure appears quite strong when walking towards

the upper section. After the mill, the place was expanded to house two vertical dryers and a patio for the coffee.

The Mirador [Fig. 11-10]

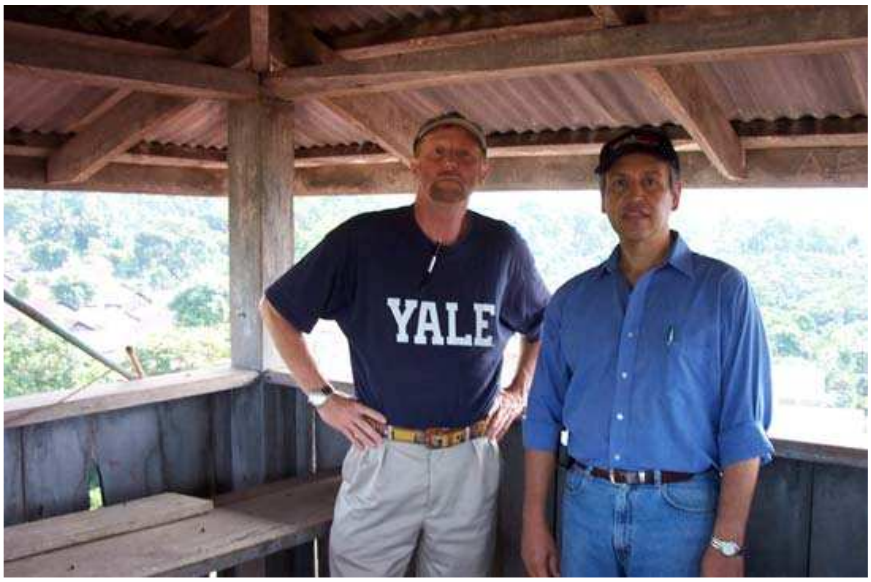


Fig. 11-10: PACH directors at the Mirador, Coffee mill.

Heading towards the *mirador* of the mill, which looks like a small tower, from the second level, one has to walk through very slanting narrow steps, then there is a landing, other inclined steps, and then the entire wooden structure becomes gradually visible; it is old and deteriorated, with porcelain switches and bulbs. From the *mirador* we can see the machine shop which in the old days had a clock (with a date of 1895) right in the middle, and which is now located towards the west; we can also see the water canal that comes from the upper area of the community. We observe the so-called hotel (presently a school with power problems), where the group of archaeologists is staying. We see the administrative house as well, and the church built by the Germans with a bell that exhibits a date of 1913. The *mirador* provides a view of the entire town, its urban growth, the German-style houses showing that the architecture is maintained and continues, the major residences that housed the German staff, administrators, managers, payroll chiefs, foremen chiefs and others. The town has expanded to the south and north, and in a lesser degree to the east, because there is a ravine where a river flows; urban growth is also observed westwards.

Machine shop [Fig. 11-11 a, b]

Fig. 11-11 a, b: (a) Machine shop.

Standing in front of the shop we can see the mill's façade and the shop to the left; from the front, the machine shop looks very deteriorated, it is completely made of wood, with very little metal structure just like the mill; the old tower can be seen where the clock used to be located, it has a few very decorative edges, as does the following tower with its bell. The store is to the left. Standing in front of the two columns at the entrance of the central area of the property, we can see the shop with different sheet metal and wood windows. There is an old picture on what apparently is a concrete wall, but in fact it is wood or sheet metal, painted white. To the west one may see the feeder canal that carries water from the upper sector of the community and takes it straight to the Pelton wheel inside the shop, then it passes underground across the shop and reaches the mill at an increased speed, due to the slope of the terrain.

From the shop's entrance and to the right, the water powered Pelton wheel is visible, while to the left there are a series of spaces that house unused trucks. There are two rooms in the back that function as a small warehouse. There is a large table, together with a number of old tables close to the entrance. There are three presses on the left, and a back room on the left side which is the store, with two levels. Near the right rests the machine used to bend the canals or to manufacture the metal canals (card 11). We may see here the entire electrical structure, formed by old cables. This space has approximately 14 columns. Then there are a number of closets for the forge, with numbers on small plates, 5.36, and there is a closet with lathes, where there are compasses, files, screwdrivers, spare parts and chains. The last two closets contain electricity materials.

Each sector has its own closets, for example the lathes section has its own closets. Then there is the forge (card 3) where iron is melted, one anvil, the original floor, cement squares, large presses, and all the lathe machines. There is as well an air engine, and the crucible to receive the liquid metal. We may also observe the lathe machines (cards 1 and 2), in the same manner, in the upper part there is a number of shafts with approximately 40 large pulleys. We have the lathe machine (card 8), greased and functioning, and the drill (card 5), and adjacent to them on the floor there is a number of spaces covered with wood where the water runs below. There are five wooden lids that cover the lower part. Then we see the master lathe (card 2), the largest of all lathes. On the floor there is grease, oil, as well as pieces of wood and metal, dispersed across the shop area. The area of the machine used to fix

pulleys works as an auxiliary Pelton wheel, and is very deteriorated, the pulleys are large and the belts old.

Carpenter's shop [Fig. 11-12]

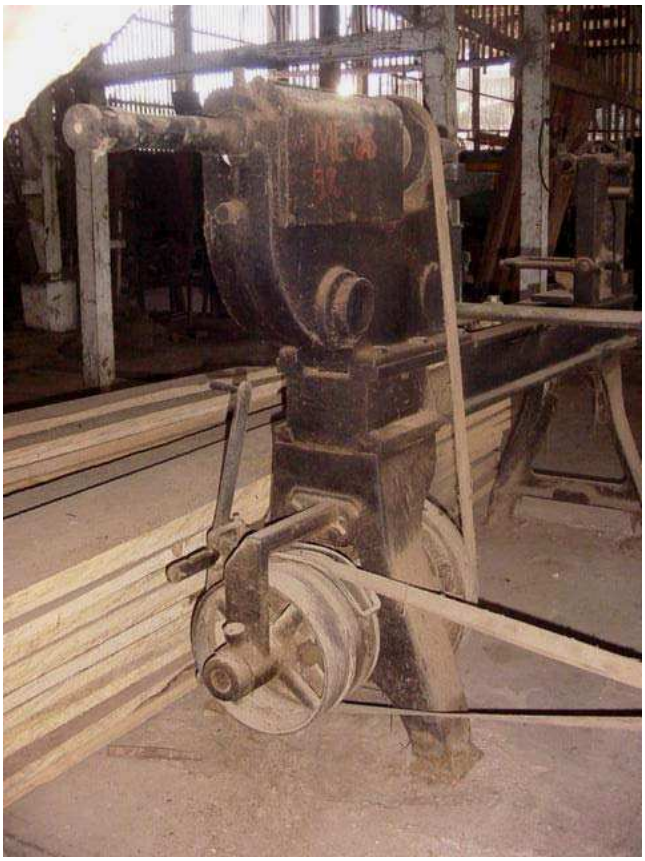


Fig. 11-12: The carpenter's shop.

We will now describe the carpenter's shop and/or sawmill. Some young men are currently taking a carpentry course in this area and they go there to practice using the machines. In the sawmill area there are several loose, abandoned pieces. Looking up, we observe that the entire shears structure is made of wood with metal sheets, the master wooden pillars support the roof, and there are tall squares. The sector is large, it shows scattered pieces, as well as belts and machines in use. This sector houses the machines (cards 9 and 10). From the southern sector we may see the machines in perspective, with the pulleys spinning round, and most of the beams show spider webs and rusted sheets. This sector has a gate through which wood was introduced, and there is a machine with a track where wood was placed (card 14) and transported to the saw. This sector is abandoned, and a ramp used to carry the wood still exists. If we stand in front of the ramp in a straight line, we may see the space where timber was stored outside this sawmill to be later removed and cut, so this entire sector is covered with timber refuse.

The place is quite abandoned, and there are remains of timber, metal, tables, bamboo, unused planks piled up and destroyed, the sawmill machine is entirely deteriorated, dirty and neglected; there is a machine made in Vermont, and the saw (card 14). This sector is quite abandoned; there is a wheel on a wall, with an approximate diameter of three meters, and some steps that lead to an added space

where there is one machine with two pulleys. On the opposite side there is an entrance, the floor presents parts with the original stone, and everything looks somewhat deteriorated. On the floor, there are a number of small wheels used to run the track. There is a small room between the two pulleys with another abandoned machine, precisely the one that was used to bring the timber. It is said that one individual sat on the machine to direct it towards the direction where wood was to be transported; the machine has lost one of its pulleys. This machine, used to pull timber, displays initials on its left side which read: CH JUCHO 689, and on the opposite side it reads: 37; these initials were imprinted in the metal, they are not a scrape but an incision, and are filled with grease and oil. In this southern sector there is a lateral gate, with an original metal base and a sheet of a circular crank; this gate is quite old, and close to it there are some pieces of wood, some hullers used in the mill, heating tubes, etc. In short, this sector has become a depot for refuse materials and remains of useless machines.

The shop, seen from the western sector, shows on the left the pulleys that drive the Pelton wheel, and the entire floor of the wooden frame which is quite stout, though it is remarkably damaged. In the upper portion we may observe all the beams, shears and columns that support the shop; there are no metal frames, all is wood. It is obvious that the shop, like the mill, has undergone a number of successive constructions, some pictures show a protuberance in the shape of a shed in front of where the clock used to be; now it no longer exists. Walking from west to east, we have a view of all the machines, the open closets, there is a large amount of old pulleys, screws, nuts, machines used in the past which are quite deteriorated, there are carpenter's squares, screwdrivers, and lathe materials corresponding to the master lathe.

Pelton wheel [Fig. 11-13]

Fig. 11-13: The Pelton wheel.

The Pelton wheel (card 13) has an approximate diameter of 10 m, and powers three belts, by spinning a shaft full of pulleys that crosses the entire shop. The Pelton wheel has a concrete base covered with a sheet, the wheel cannot be seen, but there is one position where a part of it is visible, and it is a wooden wheel with a small square hole, where one may see the wooden wheel with steps where water is deposited, spinning around; the main pulley that pulls the entire carpentry sector has a belt of at least 10 m long, several wooden pulleys simultaneously spinning around; the pulleys, because of their use, are quite clean, shiny and silvery. On the opposite side of the wheel is the carpentry sector; from that point the two wheels may be seen, two pulleys and the two gears that make the Pelton wheel spin round, this is visible from the side opposite to the one where we described the concrete base of the wheel, or the side of the carpenter's shop.

The clock [Fig. 11-14a, b]

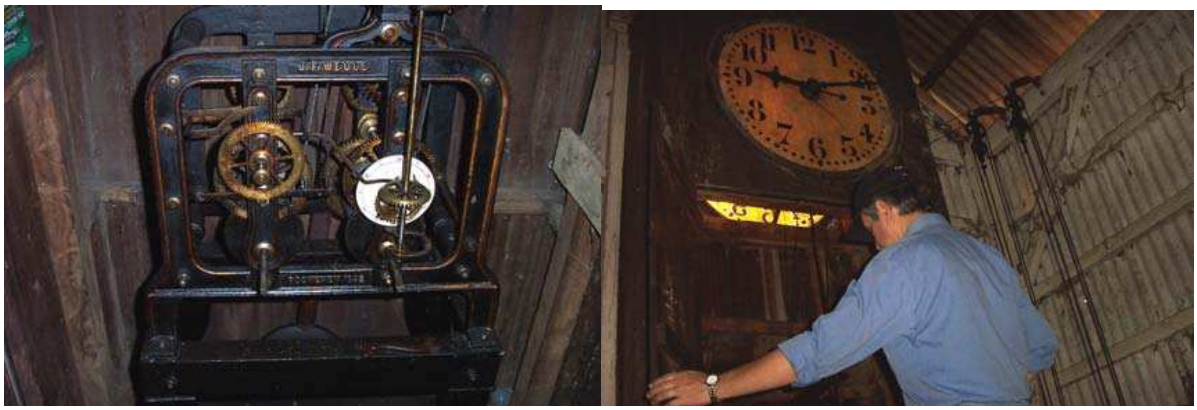


Fig. 11-14a, b: The clock.

To reach the clock (card 15) there are some rather narrow wooden stairs of approximately 70 cm with a marked incline, it has 17 steps and then a landing of approximately 3.36 m, then another 10 steps that reach the base with the closet that houses the clock. The closet is quite old and neglected, and it is almost 3.30 m high. The clock occupies the lower part of the closet and adjacent to it are the weights (a large one and a small one), downwards; that means that the spring must be running out, so the weights must be lifted, and that is accomplished by winding the clock with a curved crank. The support that bears the base of the clock is a small wooden room with a concrete base located under the steps.

This clock works just fine, all of its pieces are bronze-made, the frame is of iron, a XIX century style. The poor security provided to this clock is remarkable, there is no padlock, the closet has no key and can be easily opened; its wooden structure is full of spider webs and there are leaks in the roof, as is evident when it rains, in addition to other holes. The clock has several gears, a mechanism to wind it, and the base shows four pedestals and one pendulum. The lower portion reads Bockhenen 1895, the manufacturing house, and then it reads J.L. Weul, which is the name of the manufacturer. Thus, we have the date and the house of the manufacturer.

There are as well, on top of the closet, two hour markers at both sides with their corresponding numbers and needles. One is seen from inside the shop by the workers, and the other is seen from the outside, by the entire community. The clock has cables that reach the bell, and there are two other cables that support the two

weights. The clock is pretty well oiled and greased, and is winded each 8 to 10 days. The floor is full of oil and grease. In ancient pictures, the clock initially is seen in the central portion of the machine shop, but later it was changed and moved to this tower further west, where it has remained during the past years.

The mill, the shop, and surrounding areas

In the administrative sector (central area of the property), entering through the gate and the two columns, straight ahead is the so-called hotel (which currently houses a very precarious school); according to some local inhabitants, it used to accommodate travelers and other people who visited the property. The files, which are in a state of neglect, have been deposited at the hotel. At the right is the house that was restored for the Chocolá Archaeological Project, where the team of archaeologists is staying. In the past, the house was inhabited by the administrators, though there were specific houses for the chief of the shop, the manager, the administrator, etc. The house features an architectural style typical of the XIX century, and includes a large outer corridor and several rooms, in two levels. The house has a large kitchen. In the garden there are some metal sheets, where probably the German owners used to clean the mud from the soles of their boots. To the left there is a quite large garden. This garden surrounds the hotel completely as well as one part of the front of the house.

Across the garden is the administrative house, that is, the house from which the administration of the property was run. Presently it is occupied by the active board of directors of the Associated Peasant Enterprise *(Empresa Campesina Asociada,* ECA) which represents the local power in the community. The house has a ridged roof, like the mill and the shop, though the house typically features four sides, each one with a ridged roof, or in other words, eight sides of roof. In front –above- of each side, there are some large tilts. There are six beams at each side located up front to support it, and in its upper part there is a bell tower. To enter the house there is a stair with 12 steps. In the portion that faces the current street, we observe once more the sheets on the floor that were used to clean the mud from boots. The architecture of the house is made of wood, including the roof, which has been restored (by the communal authorities). There is a space that was probably used to keep horses. The four sides are well taken care of, the windows show their original frames, there are metal balconies, and a small garden in the back, with a yellow and red floor which seems to be the original one.

At the back of the administration house there is a deteriorated small booth with rotten beams where the sanitary installations are found; interestingly, it maintains the architecture of the ECA house, but in small dimensions. Nearby, there is a canal that probably transported water for the garden. At the left of the ECA house there are some dispersed square blocks that were a part of two columns similar to those found at the house and hotel entrances, which, according to the local inhabitants, were in ancient times located at the entrance of the stable. Today, the former stables are a multiple-use room where another school is functioning.

The church is located towards the north, and close to it on the west side, there are several houses for the administrators, located around the central area of the property. Those houses are presently used to house people, and maintain their ancient architecture; there are about six, and are located close to the water canal.

Farther north we may see the commissariat of the German owners. Standing at one side of the ECA house we may observe the slaughterhouse where meat was distributed, and then the old hospital whose rooms are currently used to house people; close to the hospital was the so-called “cepo”, where, according to one of the locals, workers that had committed a crime were locked up; it was a dark room with poor ventilation. Across the hospital is the canal that carries water from the upper section of the community, and is introduced straight into the shop and the Pelton wheel. At the right of this canal there is an ancient stone canal, perhaps for drainage, different than the other one, with a base of concrete to support a metal canal that extends to the shop.

Comments

The use of the term Industrial Archaeology illustrates the end of this survey. As indicated in the introduction, this phase 1 consisted of a first approach to create a complete record of the different coffee machines located at the mill and machine shop. It was a descriptive but significant phase in the development of the research. We intended to create an archaeological record, inventory and/or machines catalog. Our interest led to a bibliographical research connected with industrial development in Guatemala, mainly during the XIX century; there is a treasure of informative sources in Chocolá, but much more study is required, and mainly, the preservation of the archives [Fig. 11-15 a, b, c, d]. This would be a way to relate archaeology to history, an objective that reaches beyond the scope of this archaeological record, based on the method of description used in archaeology. A record card was designed (see Addendum 1) to record and describe the machines. This exercise encouraged the bibliographical search of industrial terms, such as pulleys, crucibles, levers, belts, etc.

During our search regarding the function of each one of the machines we turned to the interview technique, mainly with Don Héctor Vitelio Gómez and Don Florentín Gómez, who were of great help with the information they provided. We may say that industrial archaeology is a field with a great future in Guatemala and the world, as the Industrial Revolution of the XIX century has left evidence or witnesses of this development in every country.

Fig. 15a, b, c, d: The Chocolá "files" of the post-industrial era, in a jumble.

Addendum 1

1. Industrial Archaeology Program – PAI – (2004-2007):

Research questions:

- How may we encourage the construction of a collective memory?
- Is it possible to strengthen the local administration through studies of industrial archaeology?
- What is the nature of the urbanization process in the community?
- Is it possible to suggest salvage policies for historic centers?

Research issues and subjects

- Industrial history
- Collective representations at industrial spaces
- Industrial archives
- Reuse and social organization of industrial spaces by the community
- The industrial patrimony
- Archaeological industrial patrimony

Major social actors

- The State (IDAEH)
- Municipal Administration
- Communal social groups (ECA)
- Archaeologists (locals and from abroad)

Strategic fields of activity

***** Research

- Development, execution and creation of research programs
- Field work in semi-urban areas
- Organization, supervision, dissemination and evaluation of investigations
- Bibliographical research of industrial studies in Guatemala
- Creation of a record or catalog of theses and projects
- Training of experts in industrial archaeology
- Exchange with foreign scholars (University of New Mexico and other institutions)

* Teaching

- Collaboration between the Area of Archaeology of the School of History of USAC and the University of New Mexico, as well as other institutions.
- Thesis and research work orientation
- Seminars, lectures and short courses on Industrial Archaeology.
- Creation of an instrument for results dissemination (Magazines, Bulletins, etc.)
- Exchange of experiences with foreign scholars

* Field practices

- Support field practices students from the area of archaeology of USAC and from other institutions
- Production, dissemination and training-related actions (courses, seminars, symposia, workshops, publications, conferences, etc.), at different levels, such as universities, basic organizations, etc., jointly with the University of New Mexico

Work Chronogram (2004-2007)

I PHASE (2004) Archaeological record, inventory of machinery

II PHASE (2005) Archive and documentary search (General Archive of Central America,
AGCA, Academy of Geography and History –AGHG) (Primary sources)

III PHASE (2006) General bibliographical survey of industry in Guatemala, historical, Economical and social contexts in the XIX-XX centuries (1870-1944) (Secondary Sources)

IV PHASE (2007) Writing of the final report corresponding to the three previous Phases conducted along four seasons.

Addendum 2

Chocolá Archaeological Project, University of New Mexico-USAC
San Pablo Jocopilas, San Antonio Suchitepéquez, Guatemala
II Season (May 15-August 30, 2004)
Industrial Archaeology Program – PAI
Researcher:
Date: / /

RECORD CARD No.

Function of the machine **Original inventory No.**

Date of Manufacture **Country** **Area (1) Mill (2) Machine shop** **Location (wall)**

(N) (S) (W) (E)

Total dimensions **Frontal elevation** **Rear elevation** **Length**

(Meters) **Left profile elevation** **Right profile elevation** **Width**

Type of metal: **Steel** **Iron** **Bronze** **Alloy**

All of the above

State of preservation of the machinery: **Complete** **Incomplete** **Rebuilt** **Deteriorated**

Not used

Associated parts:

Photographs **Front** **Rear** **Left profile elevation** **Right profile elevation**

Plan view

(numbered according to exhibit) **Isometric (width, length, height)** **View of localization and context**

Interview with:

Observations:

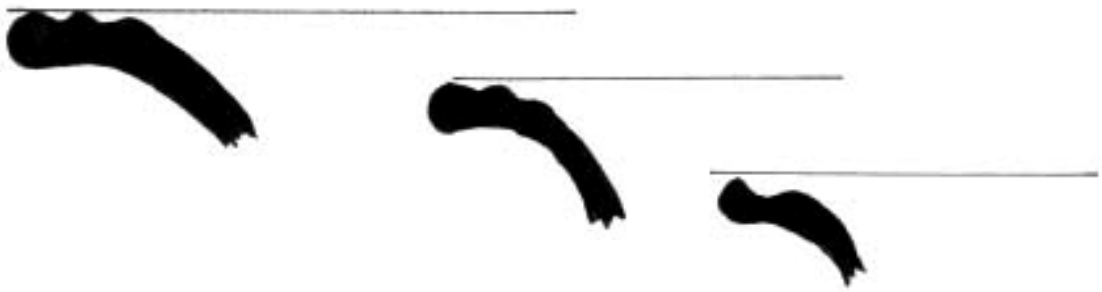
CHAPTER 12

Introduction, Background and Objectives of the Chocolá Project

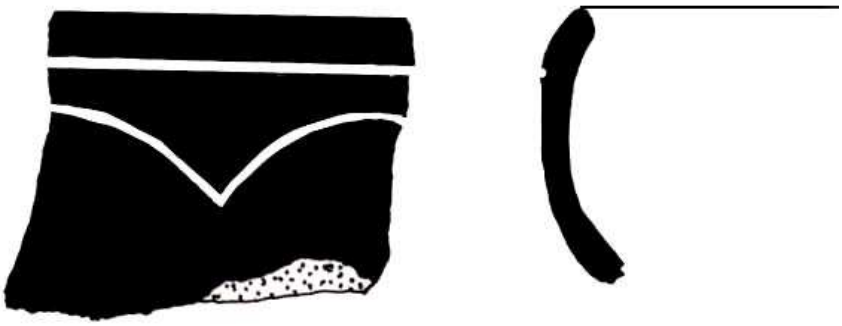
Federico Paredes Umaña

Comparative ceramic dating

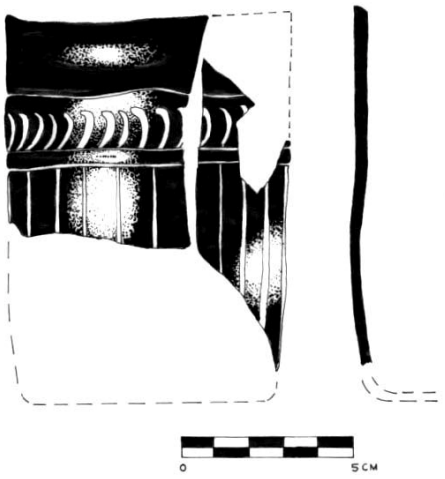
Since the 2003 season PACH has been concerned with conducting comparisons of the ceramics recovered in test pits and grid monitored excavations. Different experts have expressed their opinions on the material (Arroyo, Bové, Clark, Genovés, Hatch, Love, Shieber, Orrego, personal communications during field visits in 2003 and 2004); this material was contrasted with refined typologies from sites of the highlands and the Pacific Coast at IDAEH's ceramic archives. The 2003 season yielded a rich collection of surface ceramics that were systematically collected, which provided data to confirm that the occupation of the site extended at least from the Middle Pre-Classic to possibly the Post-Classic periods, with samples of diagnostic materials from all periods. We present some examples below:



Dishes with a glossy orange slip and fluted in the inside. Middle Pre-Classic period.



Bowl with a black slip, incision below the rim and an arched surrounding motif. Middle Pre-Classic period.



PACH I-B
Cylindrical vase
Black slip

PACH I-B
Fluted bowl with esgrafiado decoration
Black slip

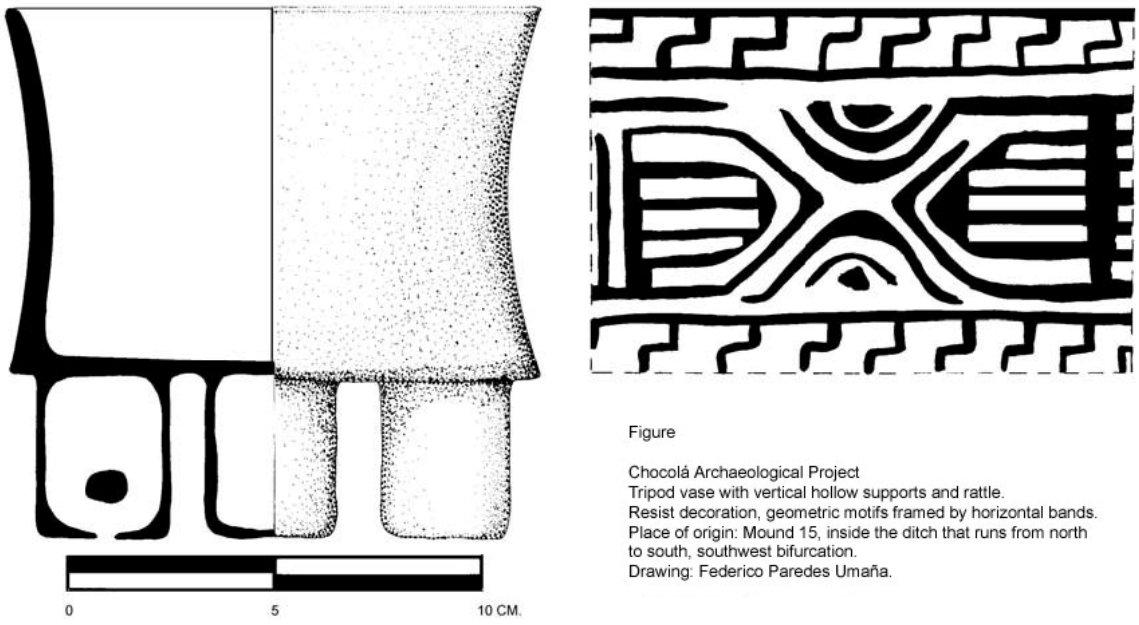
Bowl with straight side
Dark brown polished slip

Pitcher with straight vertical neck
Dark brown slip

Bowl with vertical side
Black slip

Globular, hollow support with hole
Course outer finishing

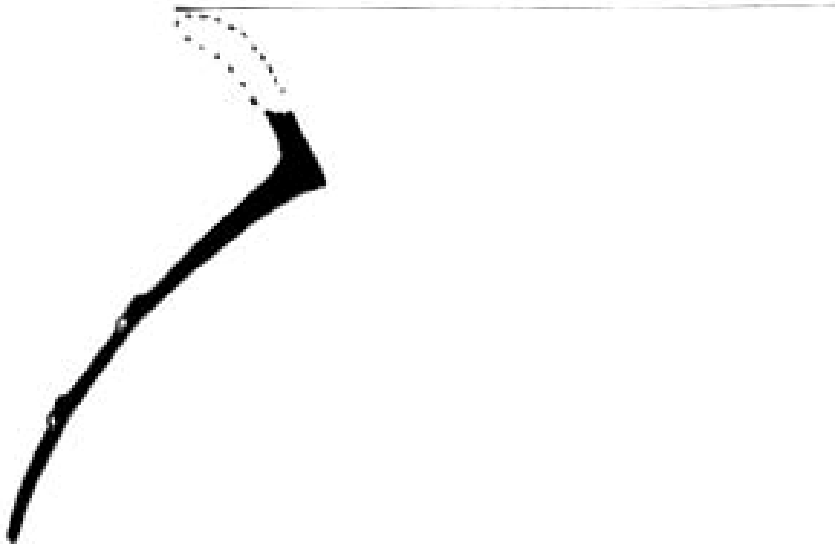
Black slips. Late Pre-Classic period.



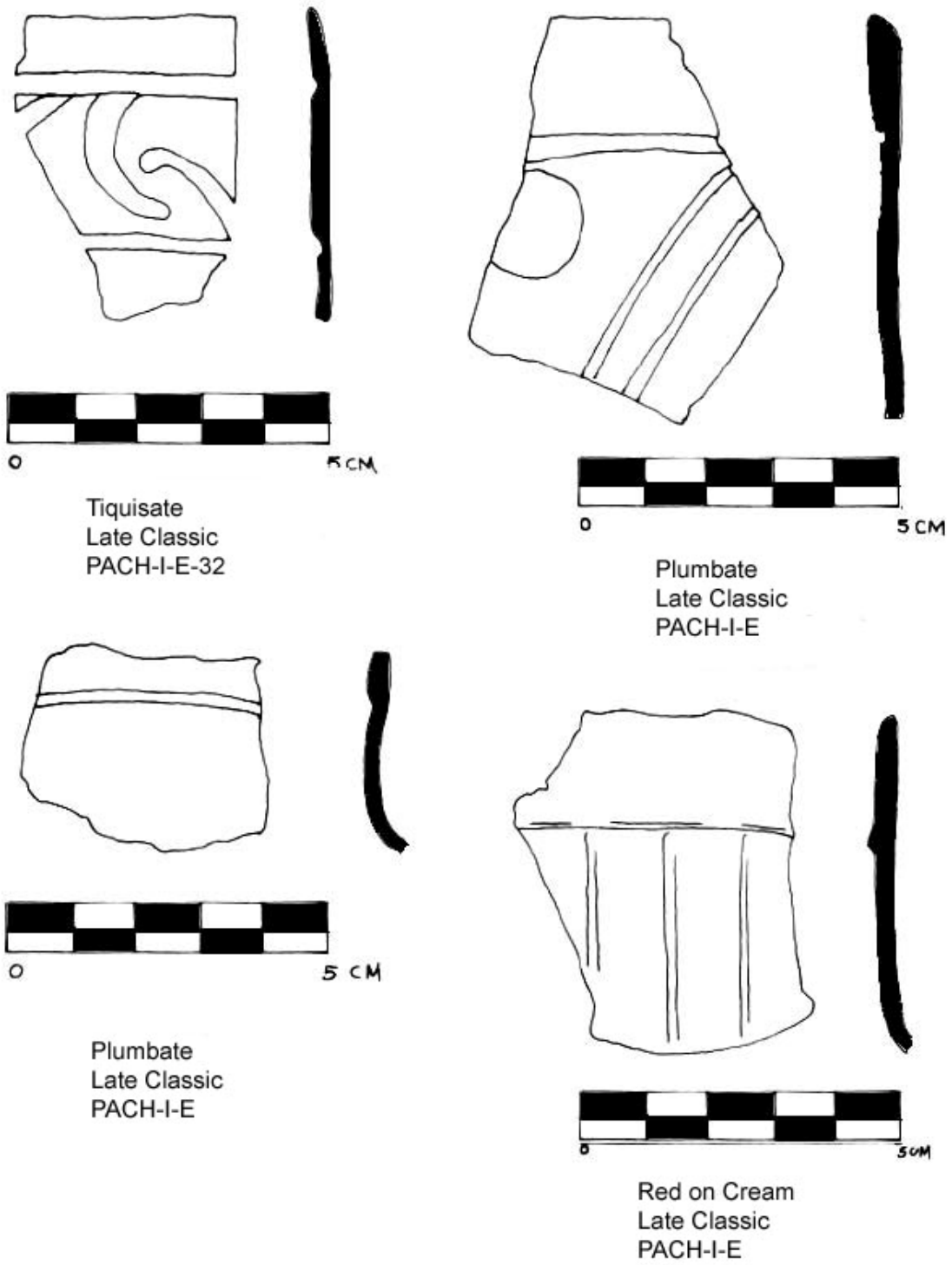
Figure

Chocolá Archaeological Project
Tripod vase with vertical hollow supports and rattle.
Resist decoration, geometric motifs framed by horizontal bands.
Place of origin: Mound 15, inside the ditch that runs from north to south, southwest bifurcation.
Drawing: Federico Paredes Umaña.

Tripod vase with cylindrical supports and painted designs. Second half of the Early Classic period.



Pitcher with "Firpo" type appliqués on the body. Middle Classic to Late Classic periods.



"Plumbate" and "Tiquisate" ceramic fragments, Late Classic period.

Typological Analysis

The typological analysis is being carried out by means of the adequate construction of a database, fit to provide typological information as well as horizontal and vertical localizations, to conduct cross references. PACH intends to elaborate a ceramic sequence preferably based on absolute dates. The Guatemalan Boca Costa lacks an appropriate chronology. The characteristics of the preservation of the ceramic materials found at T'akalik' Ab'aj' are unfortunately inadequate to fulfill such

objectives. The area has lacked absolute dates obtained through specialized laboratory methods, and work has been usually conducted through macroscopic comparisons with sequences corresponding to other regions.

Incised orange paste

San Bartolomé Cream-on-Orange

Figurine collection originating from excavations and surface collections

Absolute dates and ceramic chronology, a particular case from the North Group at Chocolá

This section intends to discuss the results of five calibrated ^{14}C dates from Operation 4 in pit 72, located at the North Group in Chocolá. The total number of successfully tested ^{14}C samples during the 2004 season amounts to 7. Considering that 5 of them originated in sequential lots that corresponded to pit 72 and the remaining two came

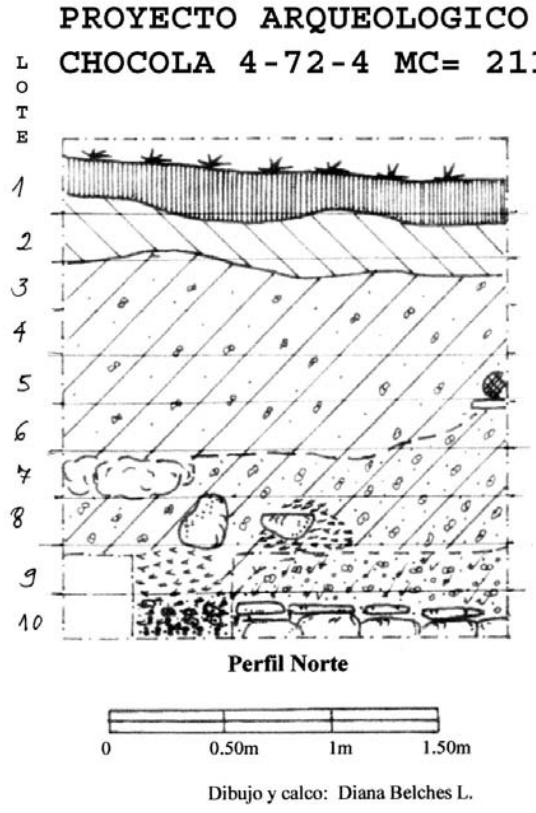
from an adjacent pit and equivalent lots, only the first ones shall be used for this discussion.

At this stage of our analysis, it is relevant to note the different Strata and Lots of the Operation, for this purpose we have prepared graphics that include: pictures of the ceramic material, calibrated ^{14}C dates, drawings of the profile of pit 72 with its arbitrary levels, and the identified strata, all of which will provide guidelines to the readers and will allow them to arrive to their own conclusions.

From the ceramic analysis of this pit we are in a position to suggest that lots 4 to 6 include materials from the Middle Pre-Classic, the Late Pre-Classic and the Early Classic periods. Lots 7 and 8 include materials from the Middle Pre-Classic and the Early Pre-Classic periods as well as a change of stratums that begins in lot 7 and an additional change of stratum that begins in lot 9. However, the ^{14}C samples would appear to very consistently indicate that both strata III and IV had significant activity between the mid-Middle Pre-Classic and the end of the Late Pre-Classic periods. Why then are there sherds that point to the Early Classic period, mixed with materials from earlier stages? It is only as of lot 7 that we do not find materials from the later periods any longer. Could it be something wrong with our macroscopic method of ceramic dating? Or perhaps there are intrusions of a later stage? For the moment we favor the latter possibility. If we accept the calibrated ^{14}C dating, then we should pay attention to materials dated through means different than this method, namely strata 1 to 3, and 9 to 12.

Let us consider then the connection between Structure 15-1 and the Trait of water management that extends underground as uncertain. It should be noted that according to observations made by Diana Belches, the stones delimiting Structure 15-1 are located on Stratum III.

Consequently, the accurate dating of lots 8 to 11 could provide concluding data. The apparent dating of lots 3 to 6 is already known to us (B.C. 390-80).



^{14}C (cal) B.C. 390-190

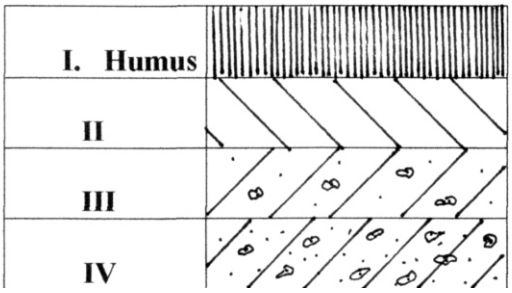
PACH 4-72-4
Field Sample 211
Stratum III

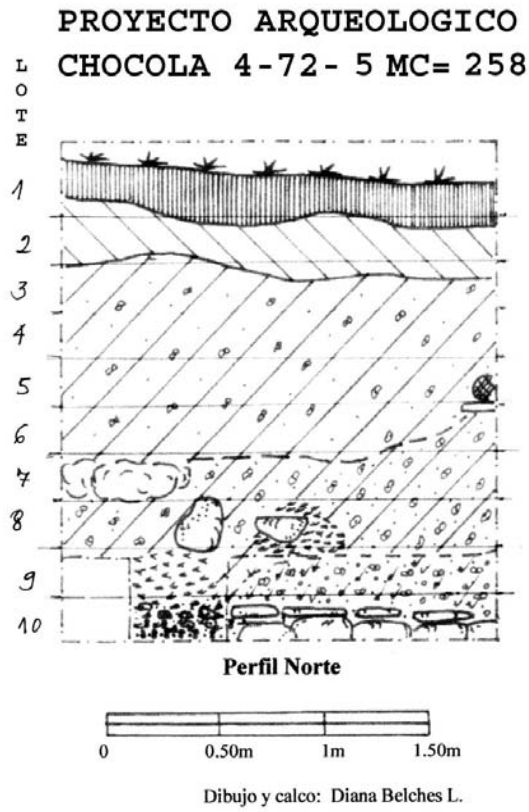
Represented by a yellowish dark brown (10 YR 4/6) sandy clay, with taxcal and pebbles. This stratum may present itself with a minimum width of 0.50 m and an approximate maximum width of 1.20 m, and maybe wider. The texture is not too granular and the consistency is compact, with some small roots that do not exceed a 2 mm width. In general, and in relation to Stratum II, the amount of sherds seems to have a diminished concentration in the area, but the amount increases due to the size and thickness of this stratum, which represents the largest source of material found. Rich in mica, very small colored sand, the percentage of taxcal stones or rocks, gravel, green stone (not identified) and probably pumice stone inclusions is as follows: 15% small stones; 70% irregular stones of roughly 0.25 to 0.50 m in diameter; 10% stones larger than 5 cm in diameter. There are inclusions of charcoal with a diameter smaller than 1 mm in some areas.

Charcoal samples were collected for PACH 4-72-4. This is the stratum directly associated with the bowl found in the niche (PACH 4-91 – lots 4, 5 and 6), at the center of the structure, identified as Trait 14; besides, it is the same stratum where most stones of Structure 1 are found. This stratum is as well associated with Strata II and IV.

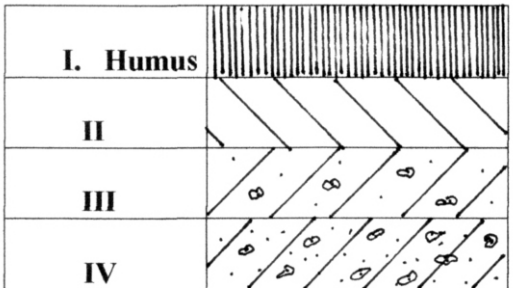
Ceramics from this lot show incised black-coffee slips, one fragment of an anthropomorphic figurine quite common in Chocolá, a resist decoration of the Usulután type, and seemingly later sherds, such as Flesh an Amatle; however, the calibrated ^{14}C sample indicates B.C. 390-190, that is to say, from the end of the Middle Pre-Classic to the beginning of the Proto-Classic periods.

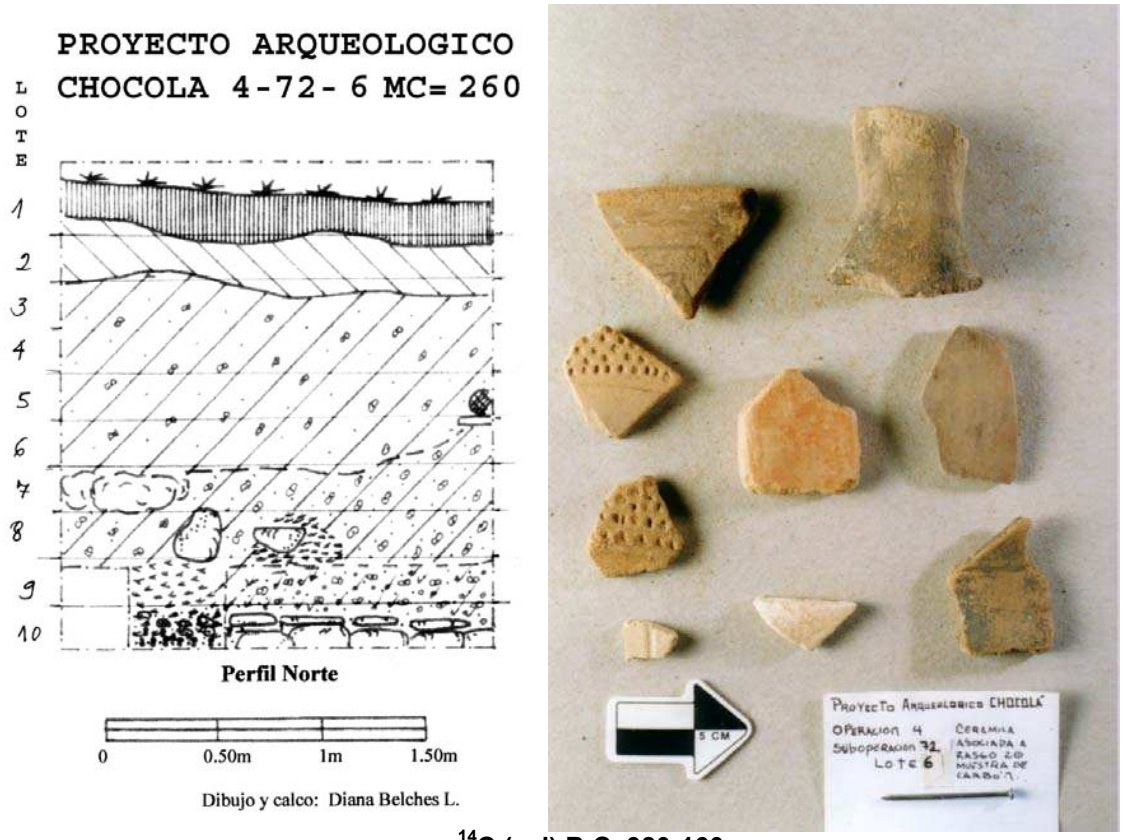
KEY FOR STRATA IDENTIFICATION



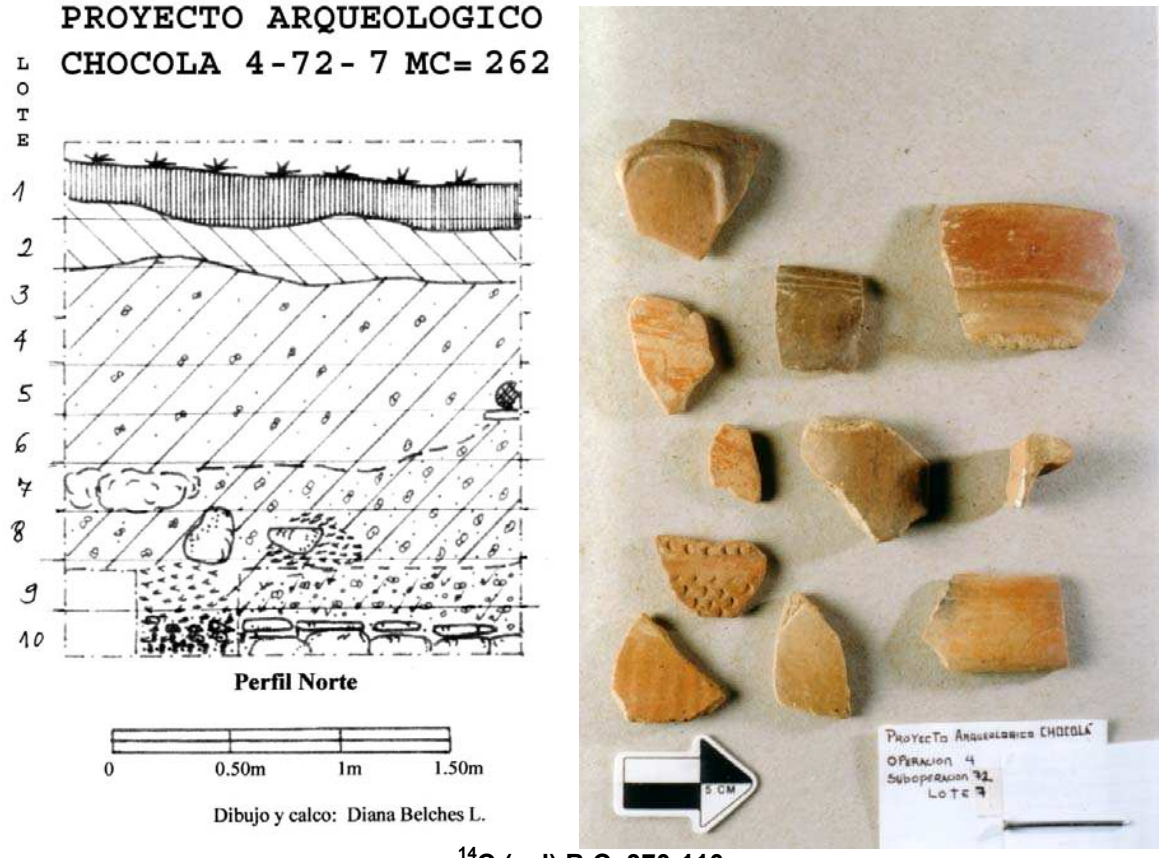


^{14}C (cal) B.C. 390-80.

PACH 4-72-5 Field Sample 258 Stratum III The characteristics are similar to those of the previous lot. As observed in the graphic, we are referring to the same Stratum III. The field notes suggest that the charcoal sample collected in this level is of approximately 0.13 m. The ceramic paste is soft and has pumice as degreaser. There are glossy orange slips, and several incised designs. The calibrated date for the ^{14}C sample indicates B.C. 390-80, or the period between the end of the Middle Pre-Classic and the beginning of the Late Pre-Classic periods.	**KEY FOR STRATA IDENTIFICATION** 



^{14}C (cal) B.C. 380-160.

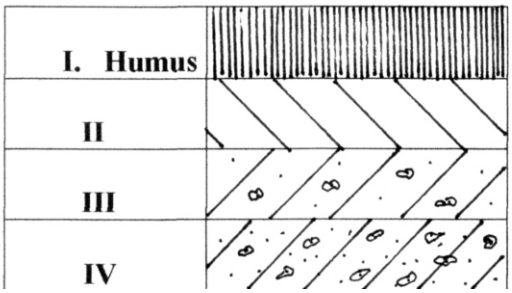


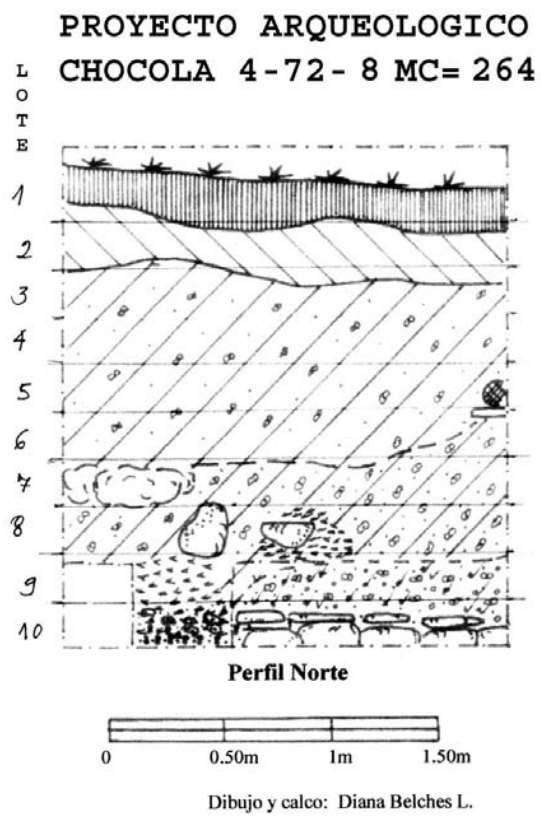
^{14}C (cal) B.C. 370-110.

PACH 4-72-7
Field Sample 262
Stratum IV

Stratum IV has been already described, but it is level 7 the one that clearly shows its very particular nature. Here there are no Early Classic materials; instead, there are sherds that in the south coast were dated to B.C. 600-400, which is exclusively Middle Pre-Classic, together with other punctured or fluted ones with an earlier appearance. The calibrated ^{14}C date indicates B.C. 370-110, which is from the final portion of the Middle Pre-Classic to the mid-Late Pre-Classic period.

KEY FOR STRATA IDENTIFICATION





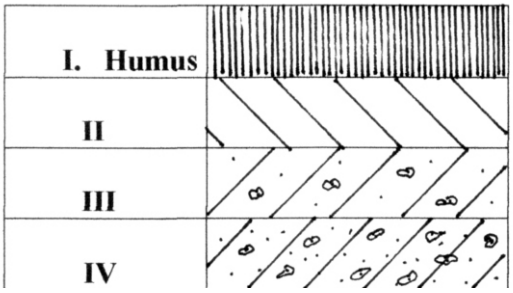
C14 (cal) B.C. 500-460 / B.C. 430-A.D. 20.

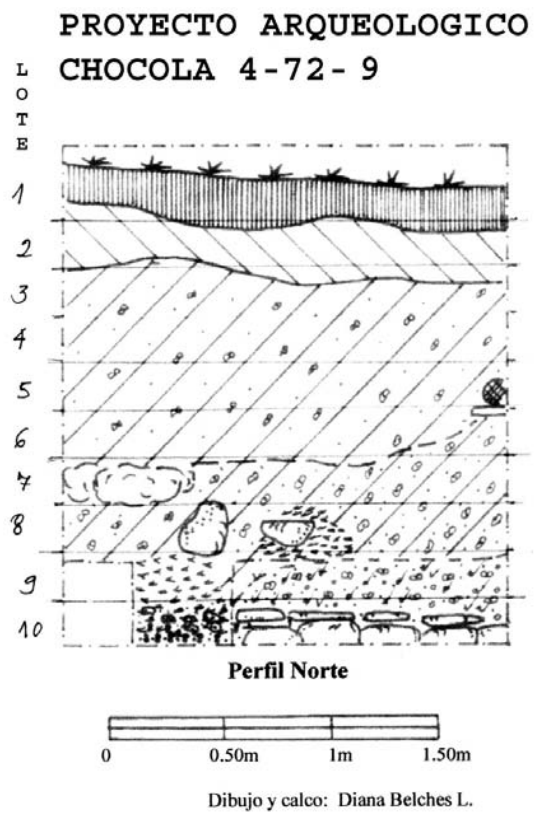
PACH 4-72-8
Field Sample 264
Stratum IV

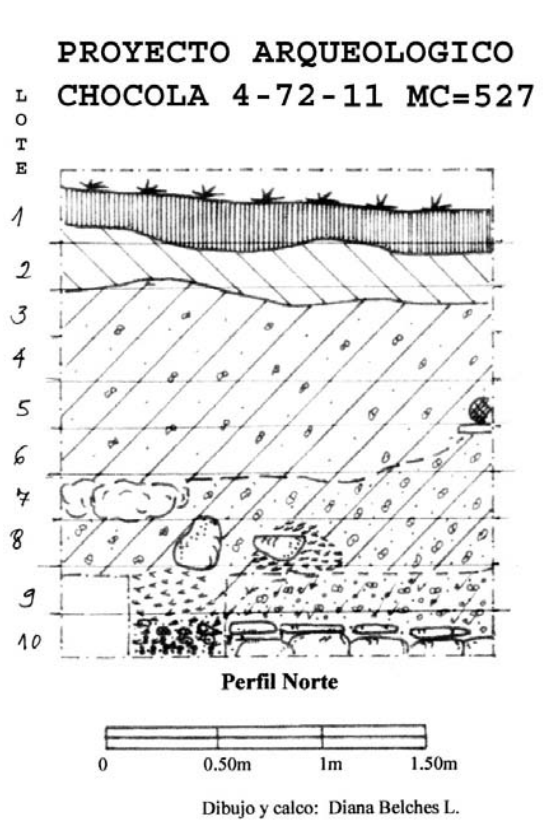
This is where stratum IV ends, with the presence of a stone trait understood as a ditch but covered by a thick layer of very hard taxcal.

What we have here is ceramic from the Middle and Late Pre-Classic periods, corroborated by the ^{14}C calibrated date that indicates the widest range in our entire sample, B.C. 500-460 / B.C. 430-A.D. 20; however, the consistency of the ranges is maintained, extending from the mid-Middle Pre-Classic to the end of the Late Pre-Classic period.

KEY FOR STRATA IDENTIFICATION



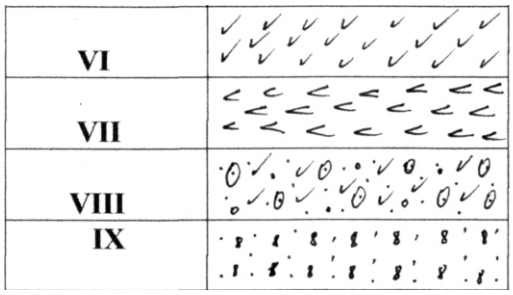




PACH 4-72-11
Field Sample 527
Inside the ditch

Material recovered from inside the ditch; the sherds, as a result, are very deteriorated. The description of the field card elaborated by Cristina Vidal refers to a very sandy soil with an abundant mix of orange taxcal. Very compact and mixed with chunks of grayish taxcal of a similar texture and hardness. She notes that this forms the bottom or floor of the ditch, which in this pit runs from east to west (see the plan view) as well as that of the one that runs from north to south.

The ceramics recovered show an orange slip, red and white pastes, and blackened fragments with an incised black-brown slip.



CHAPTER 13

Catalog of Monuments at Chocolá

Federico Paredes Umaña

Introduction

This chapter represents an advanced submission of the thesis research conducted by the author, previous to opting for the Bachelor's Degree in Archaeology at the University of San Carlos de Guatemala. The background and justification for the research are presented, as well as the Catalog of Monuments at Chocolá with the information available at the moment. The research is in progress, and probably other monuments will be added in the months to come; therefore, in no way this chapter is to be seen as a completed task.

Miscellaneous data on Chocolá sculptures

Archaeological investigations in Chocolá were initiated in the 1920's by a British archaeologist at the University of Pennsylvania. Robert Burkitt's mission consisted in obtaining pieces for the collection of the University Museum in Philadelphia, for which purpose he decided to conduct excavations in at least three structures from that site. While his excavations failed to produce the results expected (he was trying to locate a tomb inside Mound 2, which he never found), instead, he revealed the absence of stone architecture in the filling or façades (Burkitt, 1930) and his stay allowed him to collect fragments of one monument that had been hit by sugar cane plowing (Monument 1, Chocolá). Monument 1 is today the only referent for the archaeological community of the significance of Chocolá in the development of Maya culture. The monument features an important lord ornamented with royal symbology in an early style known as "Miraflores", dated for the transition between the Late Pre-Classic and the Epiclassic periods. It has been considered, together with the "Arenal" style, as proto Maya (Parsons, 1986:8).

Burkitt published nothing about this monument, in spite of having written a report for the University of Pennsylvania Museum in regard to its acquisition. In a letter written in 1929 he requested to the Museum authorities the publication of a photograph of Monument 1 in the Museum Journal, where an article written by him about his investigations in Chocolá was to be published (in fact, the sole existing publication about his stay at the site, published in 1930). The final edition reproduces his excavations and a map with the mounds location, but omits any reference about the finding of the monument. Later, Burkitt would criticize this publication with the following words: "…The Museum Journal you are referring to is a disgrace… and far from wishing to send you or anybody else a copy, my wish was that no friend of mine, ever, would see it. The thing has been printed under my name, but in fact, it is not mine. It is a compilation of my old letters made by someone at the museum, but full of errors and forgeries. One of the main drawings is even a total forgery. The Museum was urged to come out with the Journal, and I guess they realized they had lost my drawing; so to avoid wasting time contacting me (I'm positive this is what

must have crossed their minds) they came up with a drawing of their own inspiration! You may imagine the state of the text"[1]. (Robert Burkitt to Miss McHugh, University of Pennsylvania Museum, March 27, 1931, pp. 1-2).

Franz Termer, a German geographer and archaeologist, visited the site a few years after Burkitt. There is correspondence between them dated by 1939 (Termer 1973:51), where Burkitt describes a zoo-anthropomorphic monument with the arms on the knees, to which he refers as a humanized bird from the nearby site of Palo Gordo. Termer conducted excavations at Palo Gordo, which at the time administratively belonged to the Chocolá Plantagen Gesselshaft in Hamburg, a company that owned numerous agricultural lands and had its seat in the central area of the Chocolá property. Apparently, Termer conducted several minor excavations at Chocolá (Carlos Navarrete, personal communication 2003), and during his surveys he came across the fragment of a bas-relief sculpture that would later be recorded by Edwin Shook (Shook Archive, Department of Archaeology, Universidad del Valle de Guatemala), referred by him as a part of the Nottebohm collection. With these three archaeologists, information regarding the sculptural art of Chocolá began to emerge. Edwin Shook visited the central area of the *finca* in 1943, and described the sculptures exhibited in the so-called park of the property, a *mirador* with a kiosk ornamented with flowers and pre-Hispanic sculptures. In 1978-79 Shook returned to the site to conduct minor excavations at the mound previously intervened by Burkitt, together with John Graham, an archaeologist from the University of Berkeley who was conducting investigations in the neighboring site of Tak'alik Ab'aj. Graham (personal communication 2003) points out that during his reconnaissance he located the fragment of an anthropomorphic sculpture lying at the edge of the sugar cane road, and that he took pictures of it. Graham donated these slides to PACH in 2003, in an added effort to rebuild a corpus of the site. In 1986, Christopher Jones, also from the University of Pennsylvania, published in Expedition magazine an article about Chocolá's Monument 1, describing the circumstances of the finding; he also lists, using Burkitt's confusing notes, nine additional monuments found at the same time that Monument 1 was found. Robert Sharer in *La civilización Maya*, published by the Fondo de Cultura Económica, reproduces the picture of a pot-bellied figure wrongly assigned to Chocolá. Sharer admits he had limited information on the photograph (Sharer, personal communication, 2004); besides, a thorough comparison with the pot-bellied figures from Monte Alto reveals this is Monument 4.

The above data summarizes the brief and scattered history of the discovery and the available references regarding the Chocolá monuments. This is the first time that someone attempts to gather the entire information to elaborate a proposal for both style and period of origin.

The significance of this proposal resides in being the first systematic effort to gather all the available information about the sculpture of Chocolá. The research achieves an archaeological character, as it works with cultural materials product of ancient societies, while it simultaneously handles documentary and archival information, without which it would be impossible to access a notion on the origin of the carved pieces, as much of the sculpture we shall refer to hereafter has been removed from their original contexts.

[1] The underlining is Burkitt's.

This contribution adds information to an archaeological discussion brought forth several years ago regarding the cultural interactions in the southern strip of the Mayan area. The Guatemalan Boca Costa is a region that has witnessed the emergence of complex society. The ethnical interaction established between Mixe-Zoque groups and proto-Maya speakers in the region is an archaeological issue difficult to attest, but different attempts have been made to clarify such matter.

For instance, the proposal of ceramic spheres set forth in 1986 by Demarest and Sharer illuminated a perspective of comparative analysis regarding the materials from two of the largest sites of the Late Pre-Classic period, such as Chalchuapa and Kaminaljuyú (Demarest and Sharer, 1986:196). The Providencia and Miraflores ceramic spheres have been interpreted as evidence of cultural homogeneity through sites such as Chalchuapa, Atiquisaya, Santa Leticia in El Salvador, and Monte Alto, Bilbao and Kaminaljuyú in Guatemala, which represent within the coastal area a division roughly from the center of the region towards the east. However, when making a revision of sculptural motifs in these sites in an attempt to identify such "cultural homogeneity" in a ceramic and sculptural correlation, we see that the most outstanding and repeated form is the motif of the pot-bellied figures or the Monte Alto style (Parsons, 1986). However, the pot-bellies are not exclusive of this chain of sites. Even though Kaminaljuyú has a rather large corpus of these sculptures, it is in the department of Escuintla where they are mostly concentrated.

Resuming the discussion, this approach attempts to create a controversy around another possible sphere of relations, now towards the west, defined by a sculptural style also peculiarly denominated Miraflores (Parsons, 1986: 63-73) defined within the following framework: "The early phase of the Miraflores art is contemporary to the Verbena phase from Kaminaljuyú, though there are major Proto-Classic manifestations as well. Significantly, this style concentrates in the highlands, in Kaminaljuyú, with just a few remarkable examples present in Abaj Takalik, Chocolá and Bilbao, on the Pacific coast" (Parsons 1986:63).

Recently, Jonathan Kaplan (2000:39) discussed the political Miraflores sphere, as follows:

> "… it may have consisted of a wide region that extended from Kaminaljuyú to the Arizona property, 100 km to the south (Shook' 1945; Kidder, Jennings and Shook, 1946:46), which may have included the territory around the sites of El Baúl and Bilbao, of the Terminal Pre-Classic period and the Proto-Classic period, respectively. This sphere may have extended to Chalchuapa in El Salvador, 110 km to the southeast, with 'unquestionable and strong ceramic links' (Sharer, 1978:126), as suggested by hieroglyphs (Anderson, 1978: 155, 168-9), though it might as well have included Chocolá, 90 km to the east (Parsons, 1986: 70, 95, cf. Burkitt, 1930) and El Portón, 60 km to the north (Sharer and Sedat, 1987:434). Based on historic and artistic similarities, it reached Abaj Takalik, 175 km away in the southwest coast of Guatemala (Miles, 1965: 240-8, 257-64; Parsons, 1986: 67-8, 95; Quirarte, 1973); but if we take into account V. Smith (1984: 36-43) we find strong historic artistic evidence of links with non-Maya sites (probably Zoque), like Izapa, 180 km away in the west-northwest of Mexico's Pacific coast (Miles, 1965: 240-64; Norman, 1976: 283, 289; Parsons 1986: 95; Quirarte, 1973; Kaplan, 1995, pp 191-192), and even with Chiapa de Corzo, 350 km north of the Isthmus of Tehuantepec (Agrinier, 1960:13; Parsons, 1986:70)."

It is our belief that the sculpture catalog of Chocolá will represent an added effort to establish a future correlation on ceramic spheres and sculptural spheres, possibly clarifying the validity or invalidity of political spheres within a context of probable Maya-Zoque connections, where the differentiation between both has not been fully resolved (Kaplan, 2000:41).

This work intends to provide a basic notion of the sculptural corpus of Chocolá and its adjacent region in a catalog format, to comply with the grant received by PACH from FAMSI in 2003. The major objective is to create a document that can be easily consulted,for which purpose we have invested time in high quality illustrations elaborated by Federico Paredes Umaña, who was assisted by Kristian de León and Antonio Portillo. We have opted for a catalog, as it is a consulting tool which enables readers to establish comparisons with the sculptural corpus of the Maya area, and more specifically, with the scarce documents of this type available for the Bocacosta and the southern coast.

As a reference, we have turned to the format used by Sergio Rodas in his catalog of Guatemalan pot-bellied figures (Utz'ib Vol. 1, N 5), with some slight modifications for our particular case. Like the author indicates, the model intends to gather general and specific information on each sculpture, organized in the following manner:

1. Name of the sculpture: name with which it is known, followed by its alphabetical or numeric order. If the piece has a local name, it must be written between brackets.
2. Dimensions: the dimensions of the piece expressed in centimeters. Height, Width, Thickness, Diameter.
3. Material: with what kind of rock was the sculpture made.
4. Original Location: given the fact that Chocolá features a scarce number of sculptural *in situ* examples, in this section we shall turn to Robert Burkitt's letters, where he refers to the original location of monuments 1 to 10. For the other cases, and whenever necessary, we shall refer to the PACH excavations conducted in 2003 and 2004,
5. Current Location: here we shall refer to pieces that are under PACH's custody, such as monuments that changed place within Chocolá or are now in private collections.
6. Description: the sculpture shall be described in a general manner and the details that could complement the visual information provided by illustrations will be outlined.
7. History: information on the date of discovery. Changes of location after the discovery, descriptions in previous archaeological reports, etc.
8. References: The oldest and more significant references, if available, shall be reproduced in this section in chronological order.
9. Preservation: the physical state of the monument.
10. Earlier illustrations and/or recent illustration: for some of the monuments only the sketches elaborated by R. Burkitt are available, which we are therefore forced to use.

The histories of the monuments and their references (sections 7 and 8 of the catalog) are currently in preparation, and have been possible through bibliographical consultations and personal interviews conducted by Federico Paredes Umaña. The most useful sources were: 1) Edwin Shook's field notes, consulted at the Shook

Archive in the UVG between 2003 and 2004, 2) The Palo Gordo excavations report by Franz Termer, published in German in 1973, together with previous articles from specialized magazines, and the Termer original manuscripts, provided by Carlos Welz, the administrator of the Palo Gordo plantation, 3) the most enriching material, though not too clear or accurate, are Robert Burkitt's letters to the University of Pennsylvania, the Burkitt letters, as well as copies of letters from the museum of the University of Pennsylvania written to him, have been obtained thanks to a trip made by Jonathan Kaplan to the museum, early in 2003, 4) finally, John Graham, former director of the Archaeology Department of the University of California Berkeley, has been of great help accepting personal interviews, corresponding with us, and providing slides with images of what Chocolá looked like at the end of the 1970's.

The study of the region adjacent to Chocolá poses the need to record the unknown monuments to gain a wider comprehension of the local sculptural styles. Progress in this objective resides in the localization of such monuments and photographing them, while the graphical record with drawings is still pending, as well as its inclusion into a regional catalog. This work has been accomplished by Juan Antonio Valdés and Federico Paredes Umaña.

The regional catalog has the same format, with the variant of having a correlative and universal number. The monuments to be included from the region adjacent to Chocolá include several neighboring locations. Most of them present archaeological sites previously reported, but without previous work of a monument record.

Department of Suchitepéquez

1. Santo Tomás La Unión
2. San Francisco Zapotitlán
3. San José El Ídolo
4. Santo Domingo de Suchitepéquez
5. Palo Gordo
6. La Ceiba
7. San Antonio Suchitepéquez
8. Mazatenango

Department of Sololá

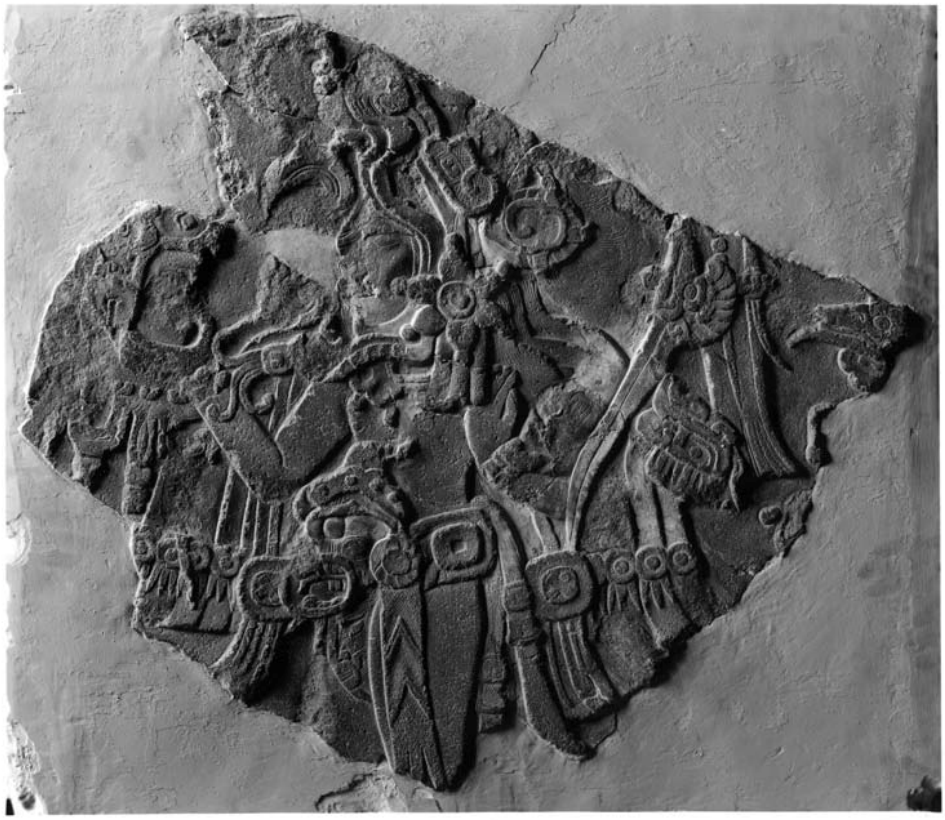
1. Chuajij

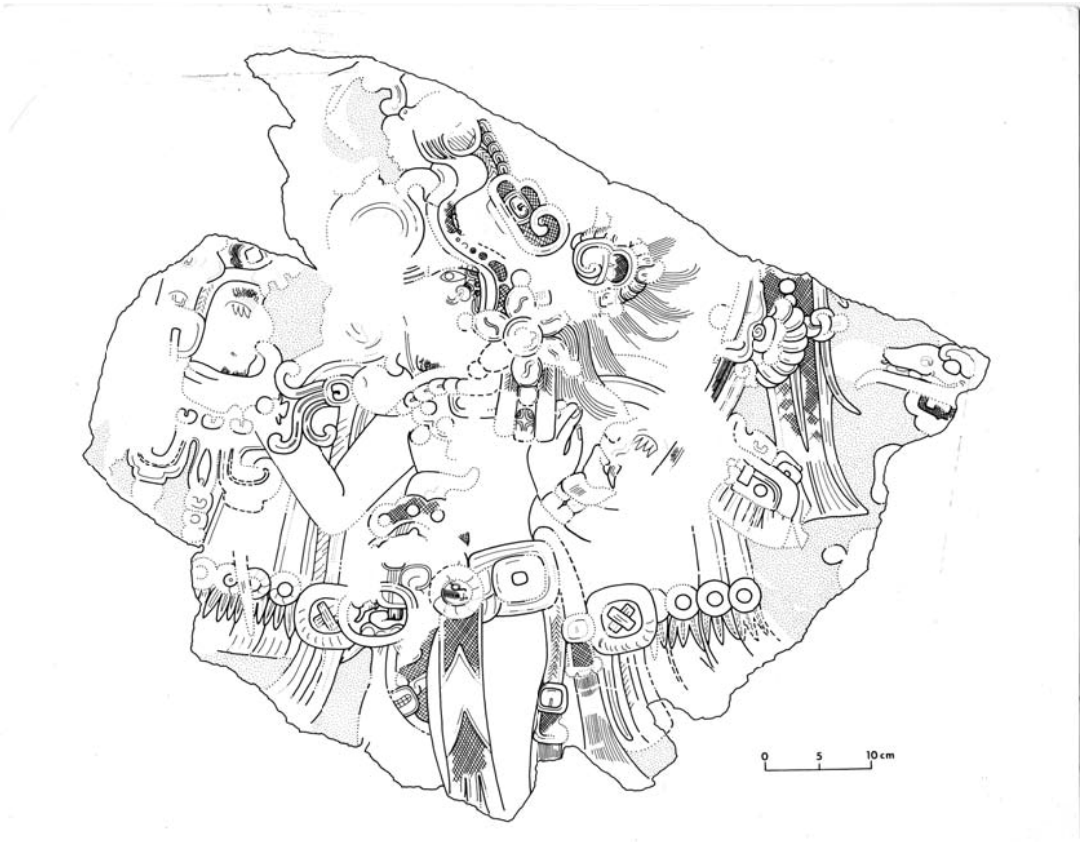
Department of Retalhuleu

1. El Asintal and the Departmental Museum of Retalhuleu

CATALOG

1. **Monument 1, Chocolá** [Fig. 13-1a, b, c, d, e, f, g].
2. Height: 80 cm. Width: 60 cm. Thickness: 30 to 60 cm.
3. Undetermined, rock of a dark gray color, extremely hard.
4. According to Burkitt, roughly three hundred meters east of Mound “D”, or Mound 11 (in PACH nomenclature).
5. University of Pennsylvania Museum.
6. Triumphant ruler with decapitated heads in both arms. “Miraflores” style, dating to the end of the Late Pre-Classic period.
7.
8.
9. As the piece was reassembled, cemented and restored, we ignore how much of its graphic content is a contribution of the restorer and how much corresponded to the original monument.
10. Previous drawings: on the left, drawing by Carl Beetz and photograph by Christopher Jones, outlining the limitations of an excessive restoration, and on the right, a drawing by J. Porter with hypothetical strokes regarding the acceptance of an arguable restoration.




0 5 10 cm

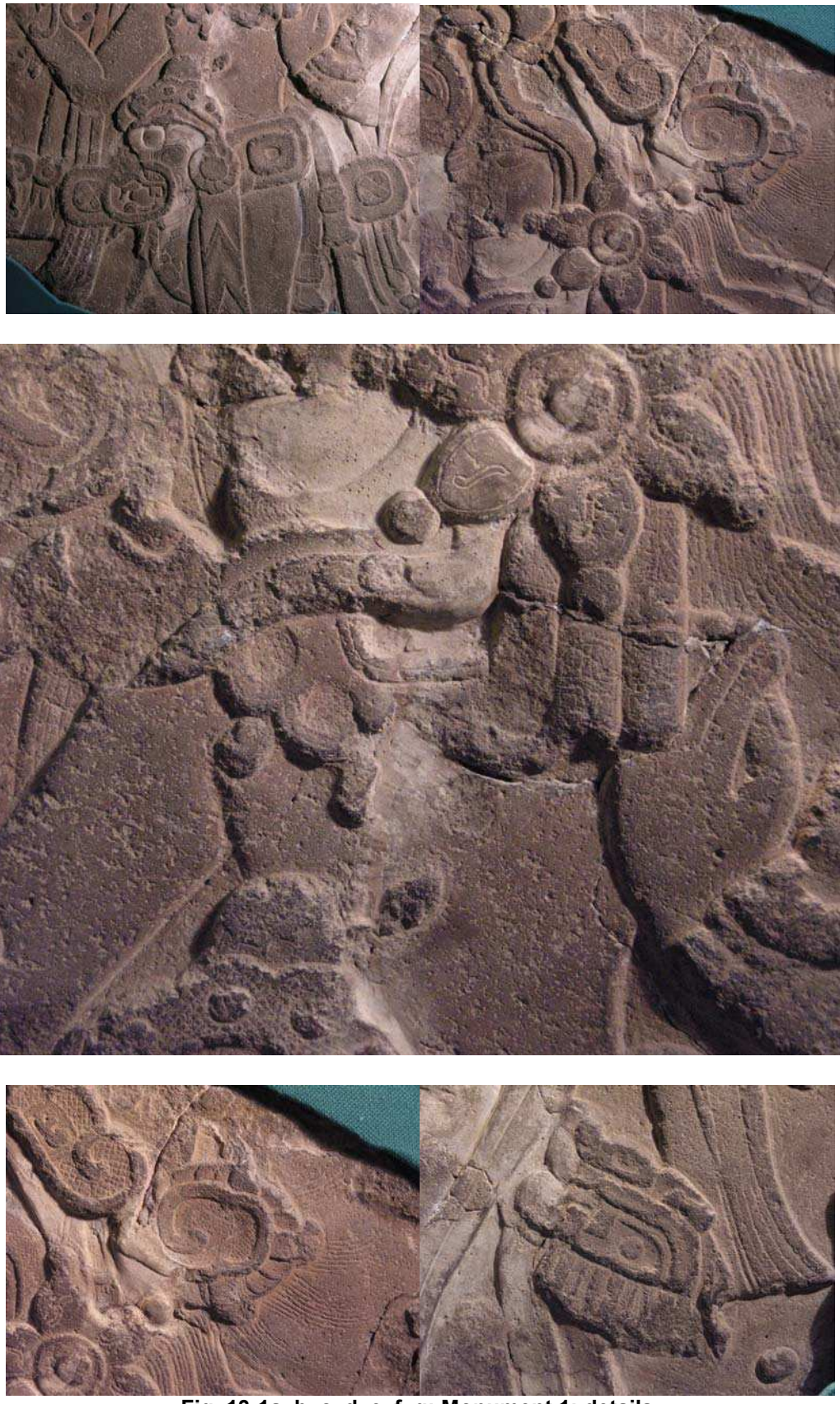


Fig. 13-1a, b, c, d, e, f, g: Monument 1; details.

1. **Monument 2, Chocolá** [Fig. 13-2].
2. Height: Aprox. 2 m. Width: 1 m (according to Burkitt's reports).
3. ?
4. At the southeast of Mound H (in Burkitt's nomenclature), or Mound 22 (in PACH nomenclature).
5. Destroyed by masons working at the property.
6. Plain block cut in a rectangular shape.
7.
8.
9. Destroyed monument.
10.

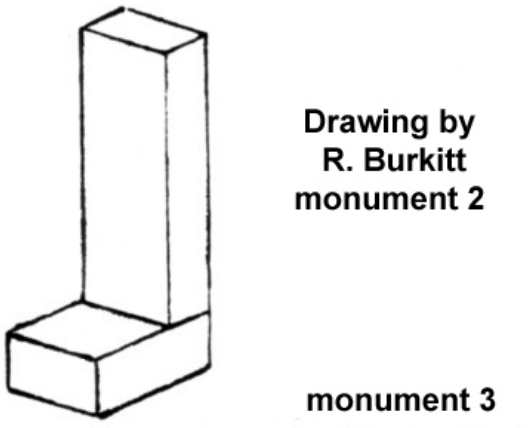


Fig. 13-2: Monument 2 in relation to Monument 3, apparently as a stela (Drawing with no graphic scale).

1. **Monument 3, Chocolá** (square altar with cupped depressions) [Fig. 13-3 a, b, c,].
2. Length: 110 cm. Width: 100 cm. Thickness: 50 cm.
3. Basalt.
4. At the northwest of Mound E (PACH 7?), or at the southeast of Monument H (PACH).
5. On the east band of the Football Field.
6. Ten or eleven cupped depressions in its upper face. The deepest is the one found at the center measuring approximately 25 cm, with a depth of 12 cm. This is the only one that presents straight vertical walls: the others are concave.
7.
8.
9. Good state of preservation, but probably endangered, as it is used as a bench for watching the football games.
10. Drawing of Monument 3, Chocolá, by Kristian de León; photograph of the Burkitt Archive published by Jones (1986) and PACH's.

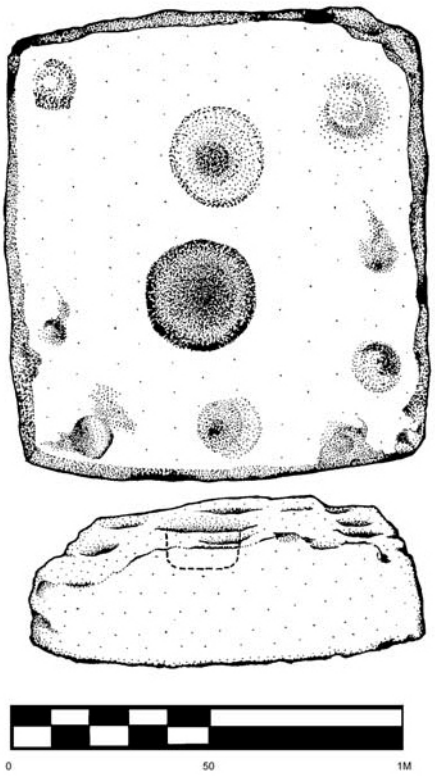


Figure
Chocolá Archeological Project
Monument 3 of Chocolá, named by Robert Burkitt
View: Plant and lateral
Location: Football field
Drawing: Kristian De Leon

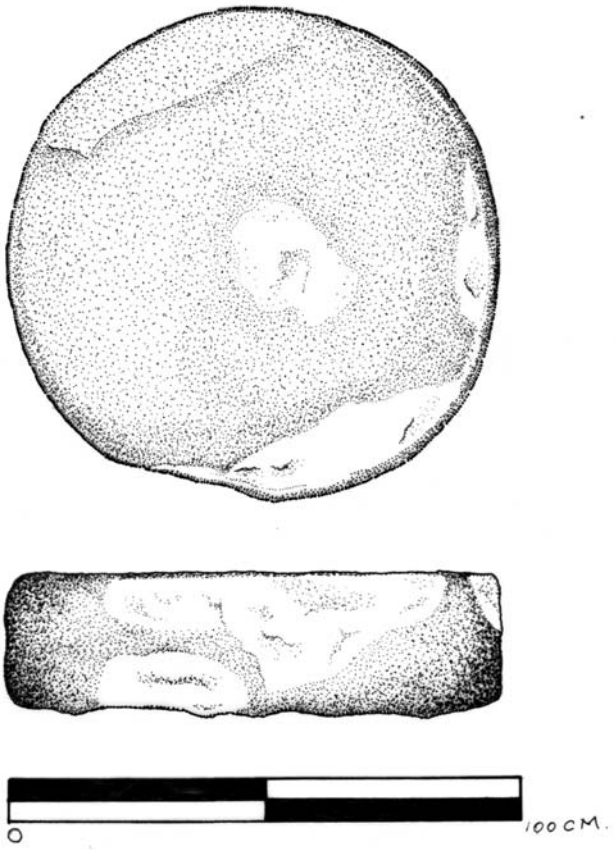
Fig. 13-3 a, b, c: Monument 3: (a) drawing; (b) old photograph; (c) *in situ.*

1. **Monument 4, Chocolá** (square-shaped altar with cupped depressions).
2. According to reports by Burkitt and Shook its dimensions were very similar to those of Monument 3.
3. Basalt?
4. East of Mound D (PACH Mound 11?)
5. Unknown.
6. Quadrangular altar and cupped depressions. The descriptions made by both Burkitt and Shook are simple. They just say that it resembles Monument 3, in dimensions and motifs.
7.
8.
9. Unknown.
10. There are no known photographs or drawings.

1. **Monument 5, Chocolá** (square-shaped altar without cupped depressions)
2. ?
3. Basalt?
4. At the east or northeast of Mound D (PACH Mound 11?).
5. Destroyed by the masons working at the property.
6. Quadrangular altar with dimensions similar to those of Monuments 3 and 4, but with no cupped depressions.
7.
8.
9. Destroyed monument.
10. There are no known drawings or photographs.

1. **Monument 6, Chocolá** (monolith)
2. Height: 250 cm. Width: approx. 150 cm
3. ?
4. At the south of –the very irregular- Mound E (PACH Mound 7?)
5. Destroyed monument.
6. The news about this monument came from Robert Burkitt.
7.
8.
9. Destroyed monument.
10. There are no known drawings or photographs.

1. **Monument 7, Chocolá** (circular altar) [Fig. 13-4a, b, c].
2. Diameter: 100 cm. Thickness: 25 cm.
3. Basalt.
4. At the east of Mound E (Mound 7).
5. East band of the Football Field.
6. Plain, circular basalt altar.
7. In his notes, Robert Burkitt describes two circular altars, and Edwin Shook reports two of them in the park's collection, in 1943. There is no way to make a distinction between them, as their features are practically identical. For reasons of order, we have assigned our own numbers to these circular altars (monuments 7 and 10).
8.
9. Good state of preservation, somewhat exfoliated. Being located in front of the football field, it risks being used as a bench.
10. On the right, a sketch of a sculptural arrangement with Monument 7 at the base. Sketch drawn by Burkitt according to information provided by a worker of the Chocolá property. On the right, Monument 7 drawn by Antonio Portillo and inked by Federico Paredes Umaña after re-excavation in 2004.



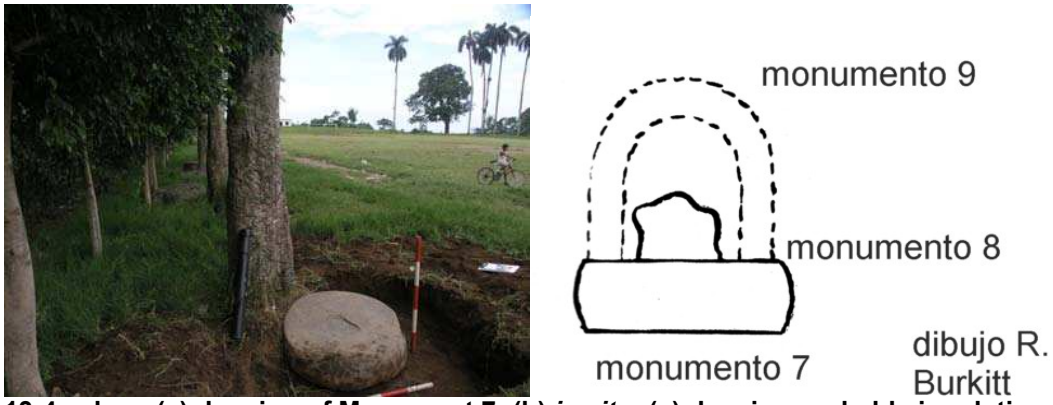


Fig. 13-4 a, b, c: (a) drawing of Monument 7; (b) *in situ*; (c) drawing probably in relation with Monuments 8 and 9.

1. **Monument 8, Chocolá** [Fig. 13-5].
2. Width: approx. 30 cm. Height: approx. 35 cm
3. ?
4. Located on top of Chocolá's Monument 7, it was a part of a rather unusual sculptural arrangement. This entire complex is, according to Burkitt's notes, located at the east of Mound 3 (PACH Mound 7).
5. Lost.
6. An amorphous conglomerate of uncut stone.
7.
8.
9. Unable to determine.
10. Drawing without a graphic scale.

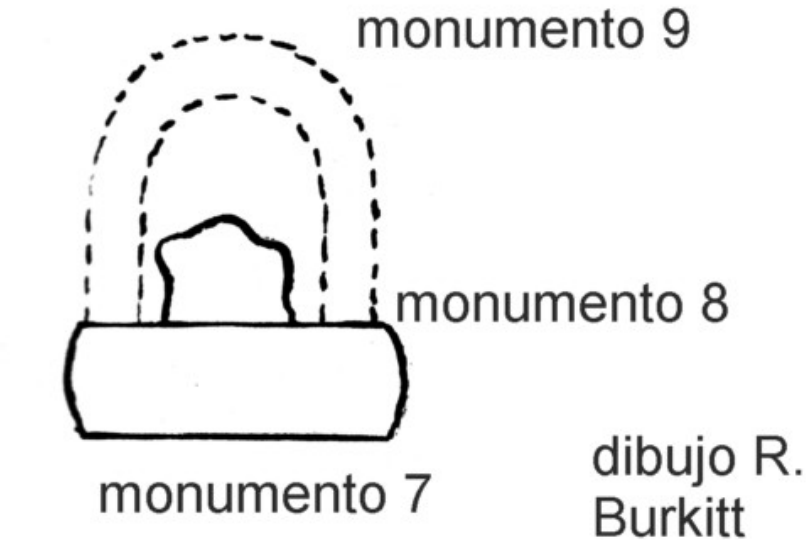


Fig. 13-5: Monument 8 in relation with Monuments 7 and 9.

1. **Monument 9, Chocolá** [Fig. 13-6].
2. Height: approx. 150 cm.
3. ?
4. Located on top of Chocolá's Monument 7, it was a part of a rather unusual sculptural arrangement. This entire complex was located, according to Burkitt's notes, at the east of Mound E (PACH Mound 7).
5. Destroyed.
6. An unusual stone arch that stood on a circular altar and framed an amorphous stone conglomerate.
7.
8.
9. Destroyed.
10.

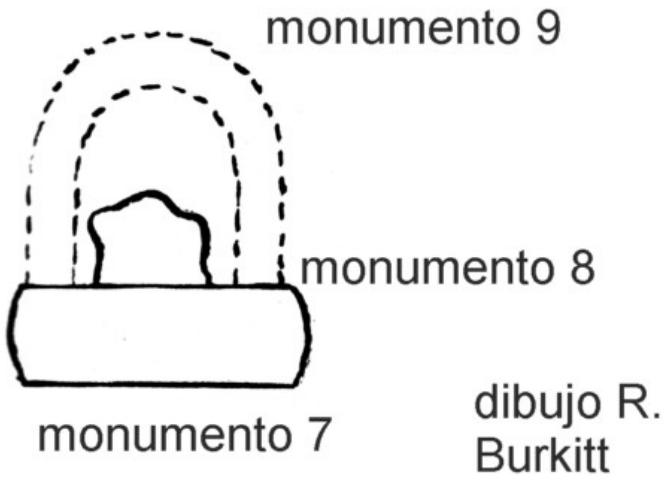


Figure 13-6: Monument 9 in relation with Monuments 7 and 8.

1. **Monument 10, Chocolá** (flat circular altar) [Fig. 13-7a, b].
2. Diameter: 100 cm. Thickness: 35 cm.
3. Basalt.
4. At the east of Mound D (PACH Mound 11?).
5. Presently located in the east band of the Football Field
6. Flat circular altar.
7.
8.
9. Good state of preservation in spite of being exposed to be used as a bench to watch the football games. It is painted with aerosol paint and a bit exfoliated.
10. Drawing of Monument 10 by Kristian de León. Inking by Federico Paredes Umaña.

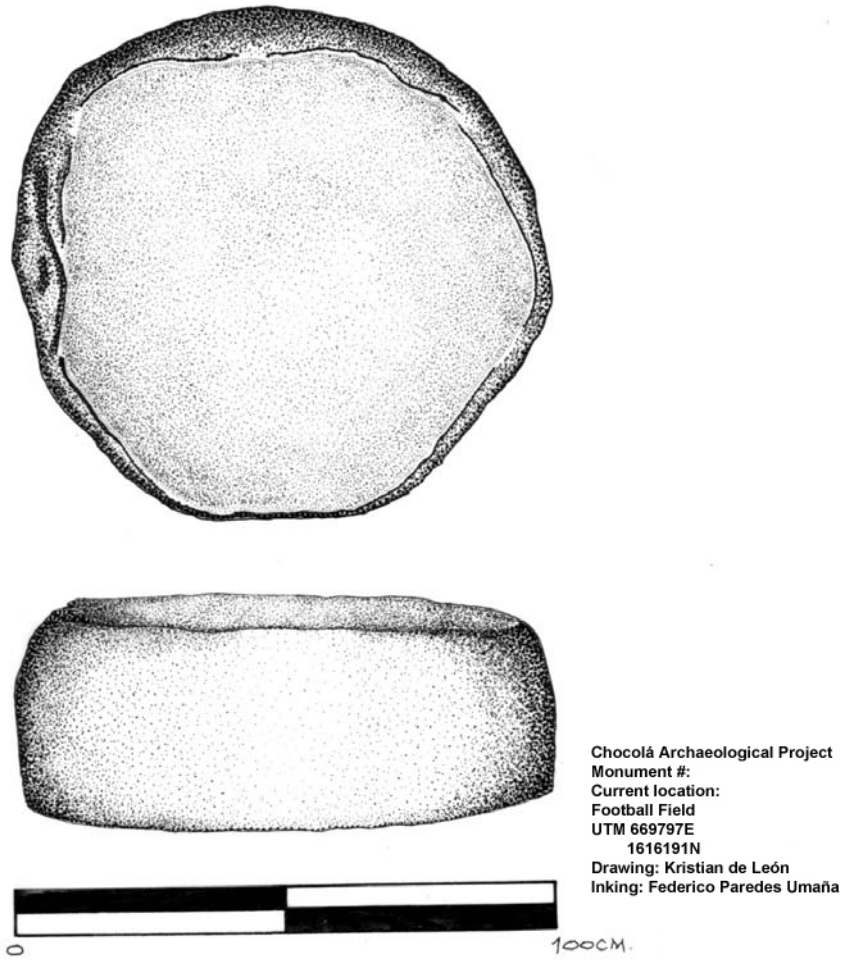


Fig. 13-7a, b: Monument 10, drawing and *in situ* photograph.

1. **Monument 11** (“The Captive”) [Fig. 13-8 a, b, c, d].
2. Height: 20 cm. Width: 30 cm. Thickness: 18 to 22 cm.
3. Stone of a volcanic origin.
4. Unknown origin.
5. Presently at the PACH deposit. Chocolá, Suchitepéquez.
6. Carved human statue of a captive with his arms tied at the back, at the hip level. His arms are crossed and bound by a strong knot. The carving is very naturalistic. The representation of the binding knot is very finely made. His torso is straight and slightly leaning backwards. It is fractured, from the elbows up. The places where the legs and the abdomen meet are concave and the carving is not too delicate, though the dimensions are normal. Between the legs the surface of the groin protrudes, but there is no representation of the genitals. The line that separates the gluteus is represented, and is located exactly between the hands that fall on the gluteus. The carving of the hands is of an evident anatomical perfection. Fragment recovered by Jonathan Kaplan and Juan Pablo Herrera in 2003.
7.
8.
9. In spite of being fractured, the piece is in a good state of preservation. Because it remained outdoors for many years, it now shows a layer of moss that breaks out anew whenever it is cleaned off.
10. Drawings and inking: Federico Paredes Umaña.

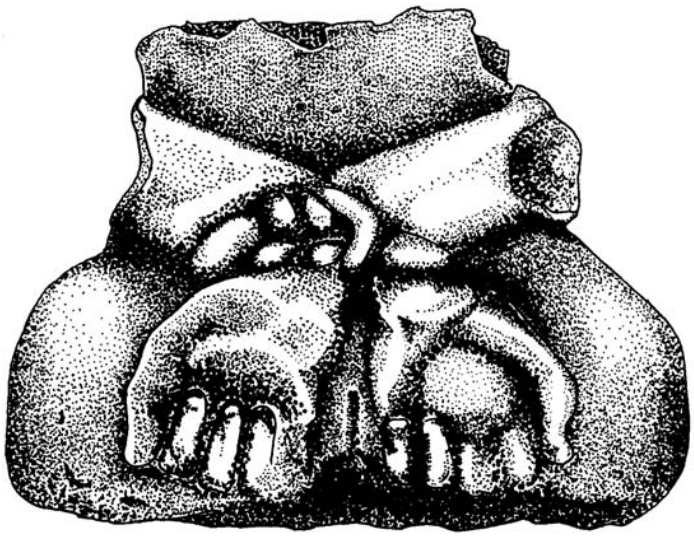


Fig. 13-8a, b, c, d: Monument 11.

1. **Monument 12, Chocolá** (“The Monkey”) [Fig. 13-9 a, b, c].
2. Height: 17 cm. Width: 15 cm. Thickness: 17 cm.
3. Basalt.
4. Its original localization is unknown.
5. Presently in the PACH deposit. Chocolá Suchitepéquez.
6. Portable cut zoomorphic in bulk seated on a bench with no legs. Its spinal cord is represented by a vertical groove from the hips up. It presents a tail and lower limbs in bas-relief, carved after the body lines. It presents as well a small plate placed at the front and under the belly, just between the legs and the beginning between the base and the figure. The information that this plate may have contained is eroded. Fragment donated in 2003.
7.
8.
9. It is fractured from the middle of the torso upwards, and is charred. It also presents microflora.
10. Drawings and inking: Kristian de León.

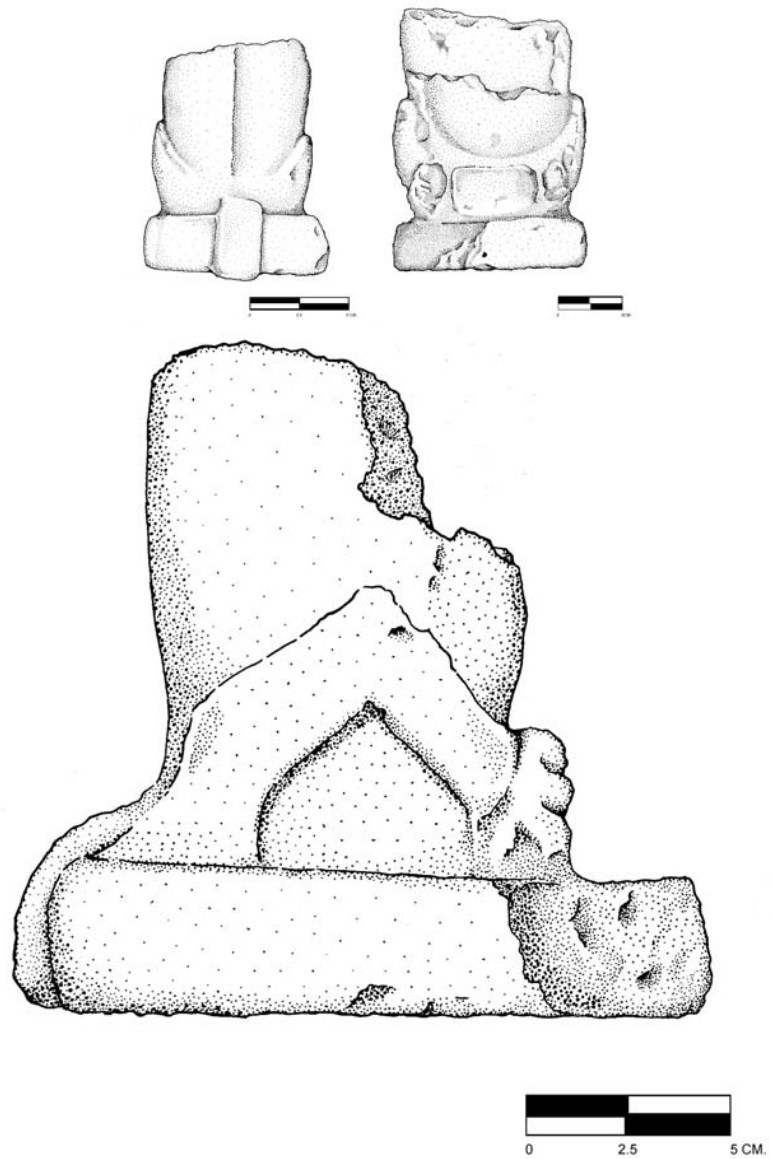


Fig. 13-9 a, b, c: Monument 12

1. **Monument 13, Chocolá** (Fragment of portable anthropomorphic sculpture) [Fig. 13-10].
2. Height of the full piece: approx. 25-30 cm.
3. Basalt.
4. Approximate location, northwest of Mound 51. UTM: 1616796 N, 669606 E.
5. Presently in the PACH deposit. Chocolá Suchitepéquez.
6. Anthropomorphic arm featuring a hand with five stylized and chubby fingers. A careful examination of the piece reveals that it is a part of a known type of portable sculptures of human figures on benches, occasionally featuring mushroom-shaped heads. The characteristics this one reveals is the interior carving of the arm –the one that faces the body-, as it has been worn out with elliptical movements which create an irregular concavity by separating the arm of the original bulk. Fragment recovered thanks to Jonathan Kaplan's intervention in 2003.
7.
8.
9. In spite of being fractured, it is in a good state of preservation.
10. Drawing: Federico Paredes Umaña.

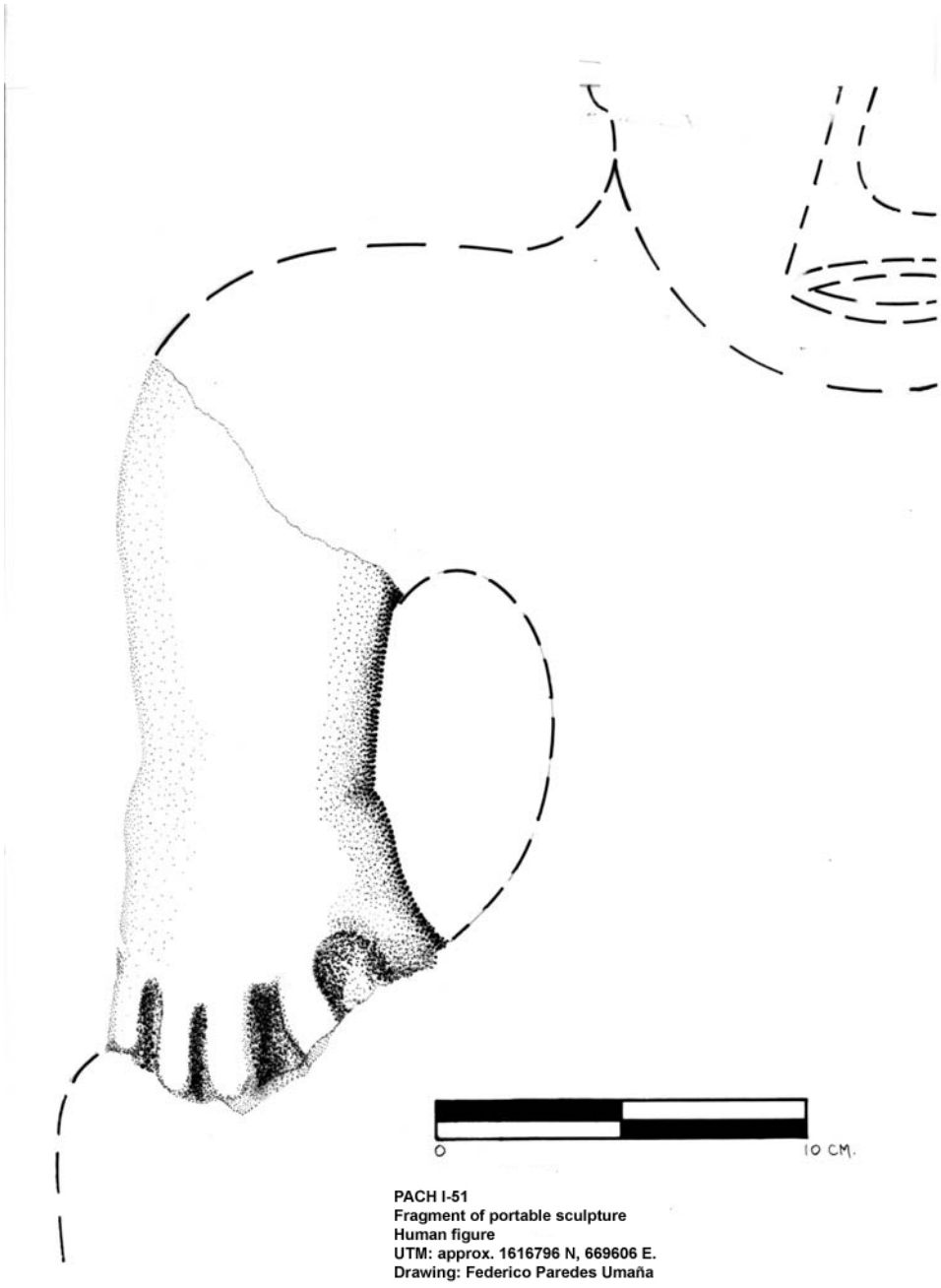


Fig. 13-10: Monument 13.

1. **Monument 14, Chocolá** (“María Ba’tz”) [Fig. 13-11]
2. Height: 110 cm. Width: 30 to 70 cm. Thickness: 32 cm.
3. Porous and soft sedimentary rock, of a cream color.
4. Summit of Mound 9.
5. In front of the “Hotel” (Chocolá’s communal house, PACH headquarters).
6. Bulk carving of an indefinite figure. It may have gone through different stages of use along its lifetime, as it presents the rudimentary carving of a face, as well as radial, vertical grooves in the upper section, with the widest ones in the lateral ends (4 to 7 cm in width). It presents as well irregular holes at the base of the upper section. At some different stage it may have been kept laid down, as it presents a not too deep cupped depression in its lower part. The rear face shows a rather accentuated depression in the entire lower surface. Excavated by Dr. Cristina Vidal in 2003 as a result of information submitted to PACH.
7.
8.
9. The state of preservation in regard to how it was discovered in 2003 has not greatly varied; it is protected by a perishable roof, though it keeps being hit by the rain.
10. Drawing: Federico Paredes Umaña.

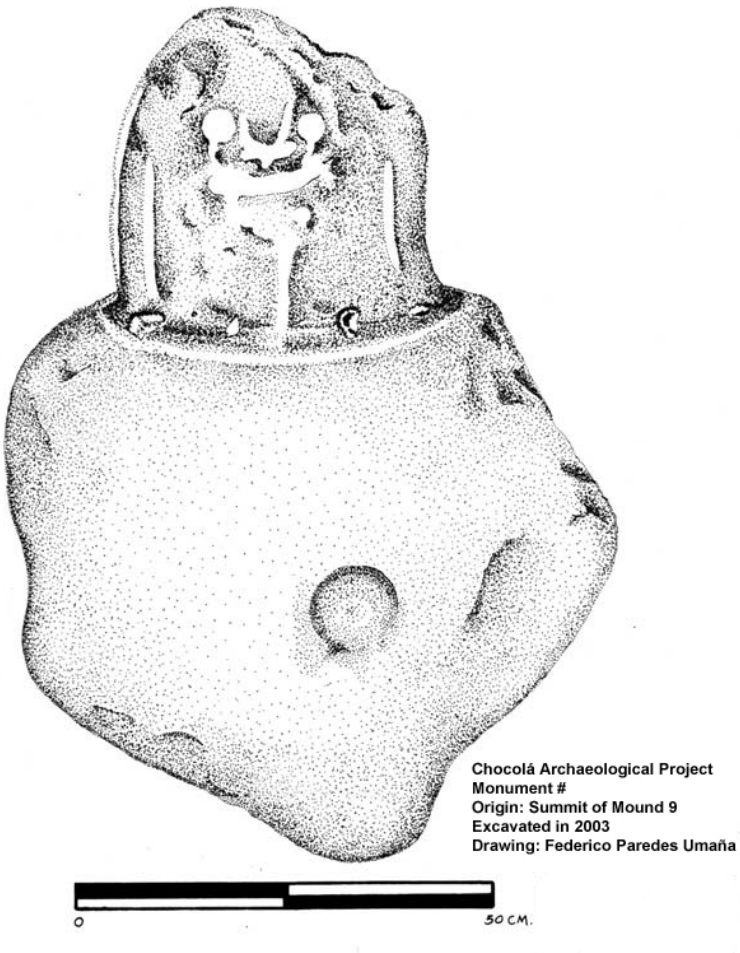
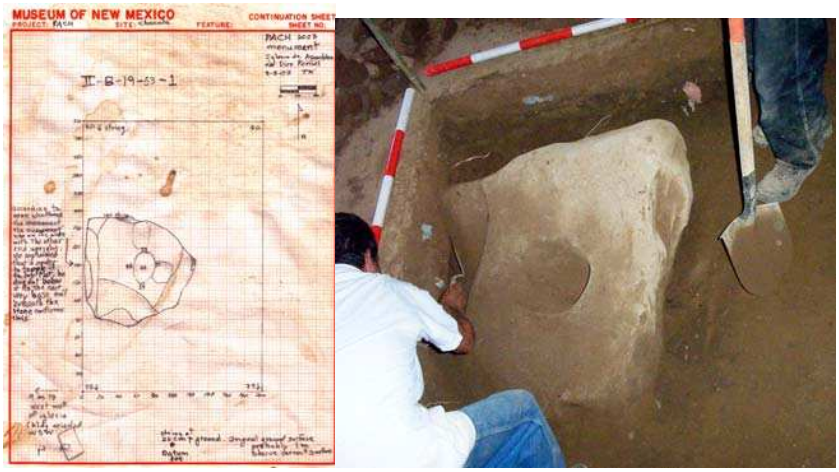


Fig. 13-11: Monument 14.

1. **Monument 15, Chocolá** [Fig. 13-12 a, b, c].
2. Height: 110 cm. Width 95-100 cm. Thickness: 35-60 cm.
3. Basalt.
4. Found during the construction works of the Penniel Evangelic Church, prior to 2003.
5. Today it is on the façade of the communal house, the “Hotel” that functions as PACH’s headquarters.
6. Massive rock with depressions in one of its faces, which is the only face worked. It shows a rather deep depression at the center, of 36 x 24 cm in diameter and a 20 cm depth; the depressions located above and below this one are almost imperceptible due to their short depth. The upper one measures 20 x 16 cm in diameter, and the lower one 18 x 18 cm. They are less than one centimeter deep.
7.
8.
9. Good state of preservation. A roof made of perishable materials was built, but it is still at risk since it is located in the play yard of a school located in the old German house.
10. Left: Drawing of Monument 15 when it was re-excavated by Jonathan Kaplan in 2003. Right: Photograph by Jonathan Kaplan of the 2003 excavation. Below: drawing of Monument 15 by Federico Paredes Umaña.



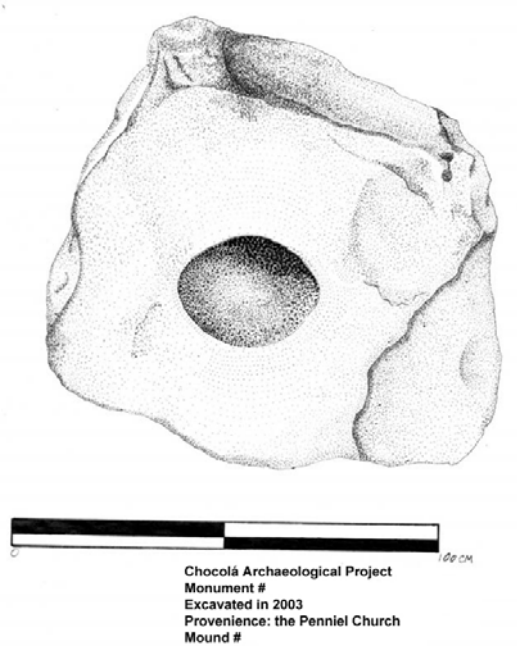


Fig. 13-12 a, b, c: Monument 15.

1. **Monument 16, Chocolá** [Fig. 13-13 a, b, c, d].
2. Height: 37 cm. Width: 65 cm.
3. Basalt or andesite.
4. North area of Chocolá.
5. Municipal park of SantoTomás La Unión, Suchitepéquez.
6. Torso of human figure carved in stone, very realistically done with two bands of bracelets with an inscribed circle, and a pectoral or necklace with a scroll motif.
7.
8.
9. The monument has been located, therefore it is not probable that it will be lost again; however, it has been significantly altered, with the addition of a head and some retouching of the original details.
10. Above: photographs by John Graham in 1978. Below: photographs by Federico Paredes Umaña in Parque Santo Tomás La Unión, 2004.

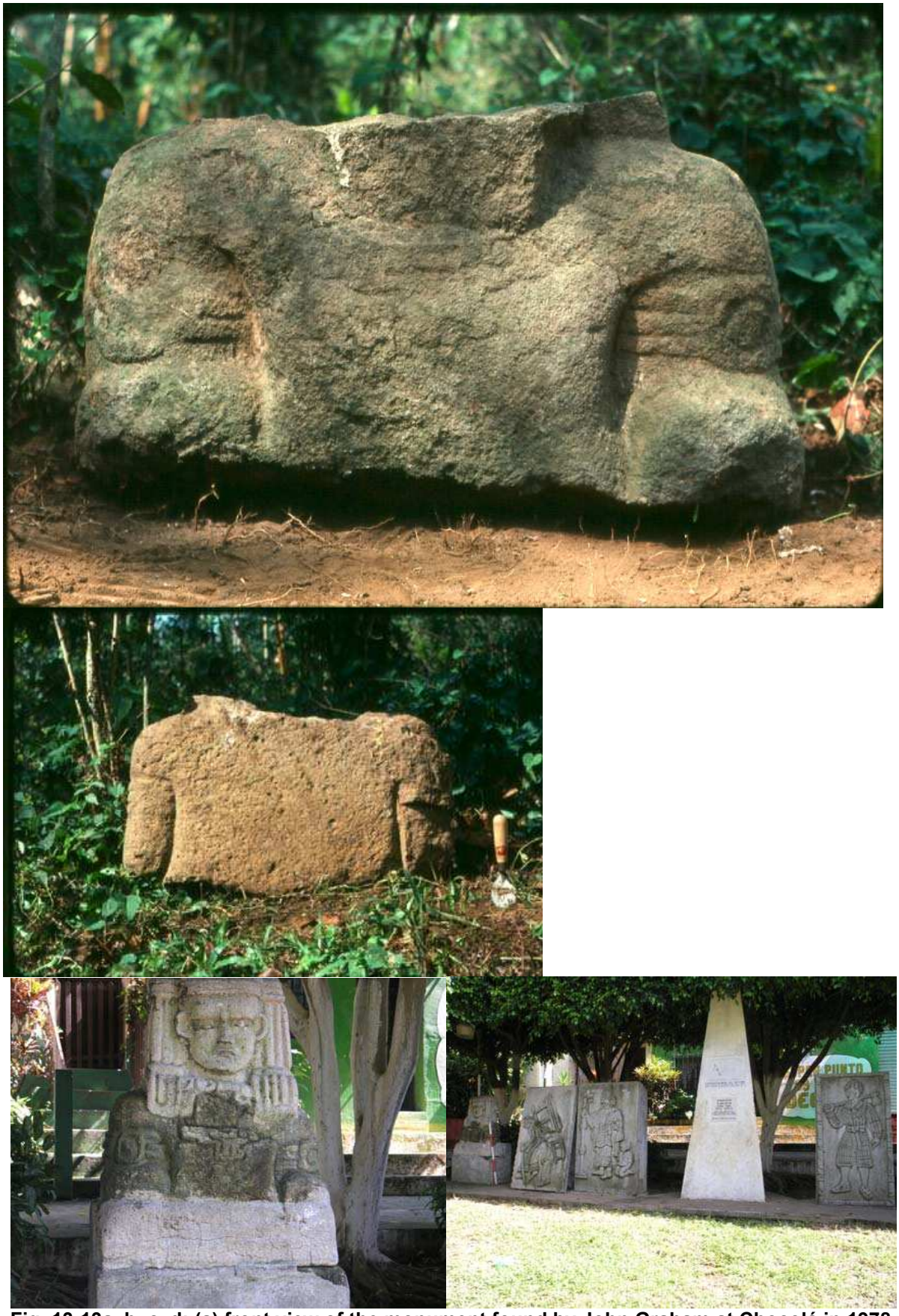


Fig. 13-13a, b, c, d: (a) front view of the monument found by John Graham at Chocolá in 1978, (b) rear view, (c, d) altered in recent years by the local sculptor Saúl Solares, and relocated at the park of Santo Tomás La Unión.

1. Monument 17, Chocolá (a stela?) [Fig. 13-14]-
2. Height: 50 cm. Width: 20-35 cm. Thickness: 12 cm.
3. Basalt.
4. Cemetery group (B) northern area of Chocolá.
5. Presently stored at the PACH deposit. Chocolá Suchitepéquez.
6. Basaltic rock with human work on one side; it exhibits bands approximately 4 cm thick. One of the sides drawn as a rear view was never found, on the contrary, the front view shows that efforts were made to flatten the surface, either for preparing the monument for carving, or for eliminating the carved surface.
7.
8.
9. The face probably carved has been destroyed. Its current state is good and it is adequately stored.
10. Drawing: Federico Paredes Umaña.

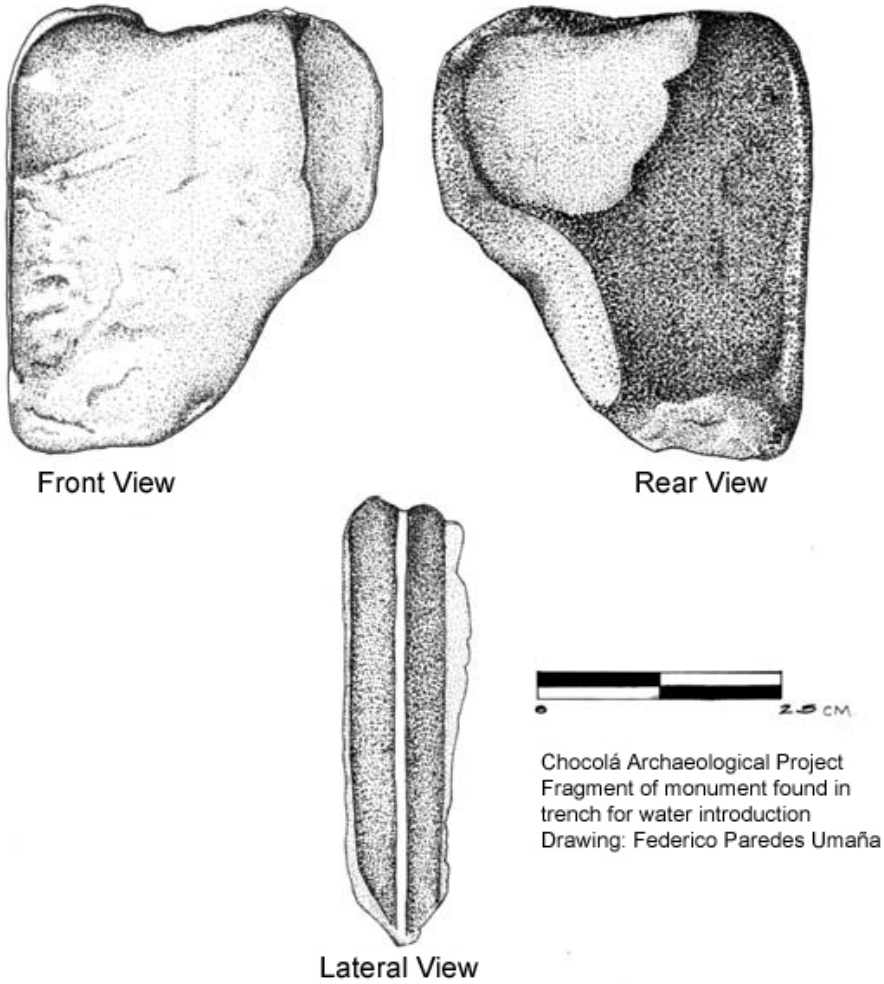


Fig. 13-14: Monument 17.

1. **Monument 18, Chocolá** [Fig. 13-15a, b, c].
2. Height: 145 cm. Width: 100 cm. Thickness: 30-34 cm.
3. Basalt.
4. Original location unknown.
5. Currently located at the east band of the Football Field.
6. It is a solid basalt block with human work. The motif is incomprehensible, but one end shows the carver's intention to separate a semi-quadrangular surface from the rest of the surface, using bas-relief techniques.
7.
8.
9. The state of preservation is good, though because of its location in the east band of the football field, it risks being used as a bench.
10. Drawing: Kristian de León. Inking: Federico Paredes Umaña.

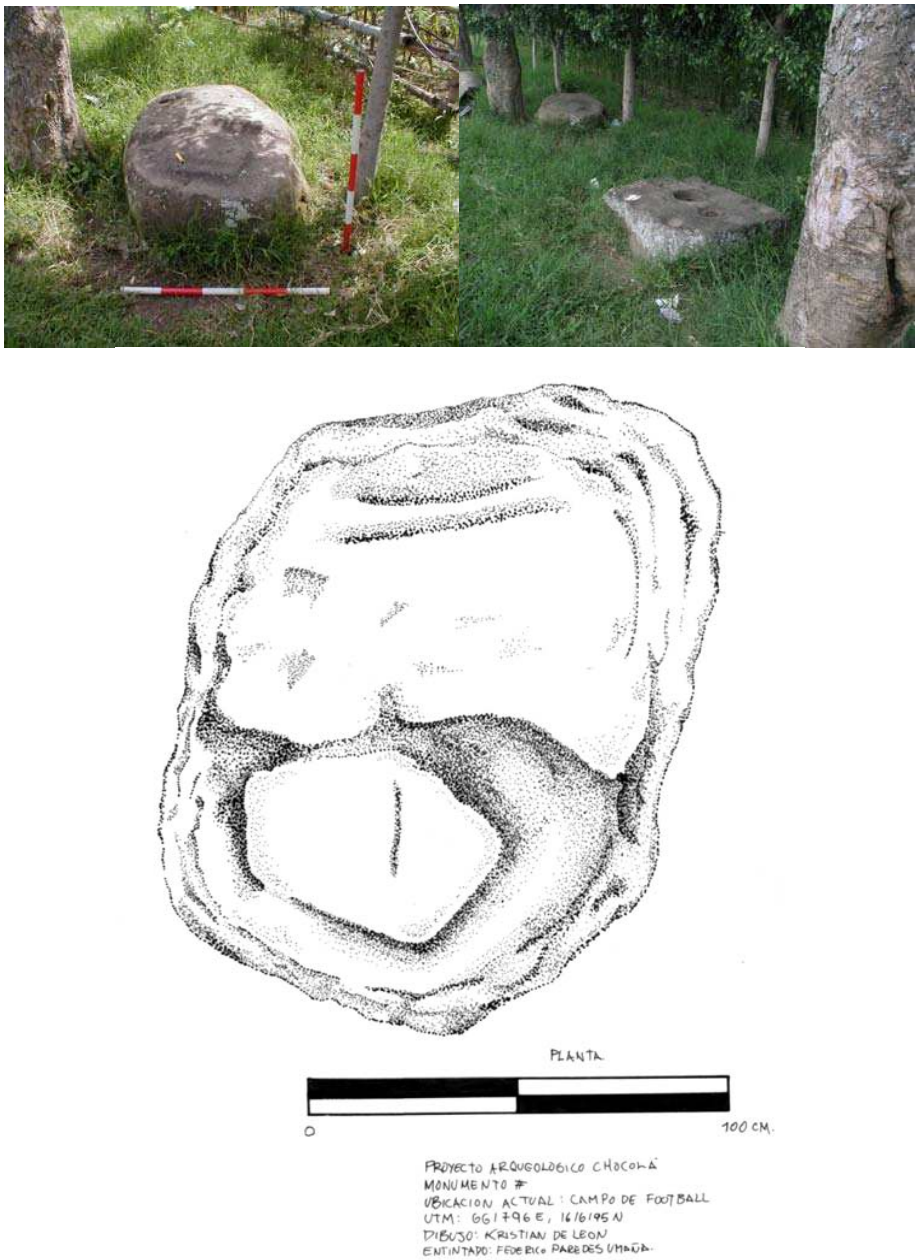


Fig. 13-15: Monument 18a, b, c: (a) *in situ* photograph; (b) in relation to Monument 3; (c) drawing.

1. **Monument 19, 20 and 21, Chocolá** (Fragments of circular altars) [Fig. 13-16 a, b].
2. Variable dimensions.
3. Basalt.
4. Presumably originating in the central area of Chocolá.
5. They are located on an earthen incline that covers a drainage system built by the Germans. UTM location?
6. The drainage contains some fragments of cut stone, presumably pre-Hispanic monuments. The fragments seen in the illustration are fragments of massive circular altars, with dimensions that exceed those of Monument 10 or Monument 7 from Chocolá.
7.
8.
9. They are fragmented and were reused as supports or lids for a draining system, and are located outdoors.
10. Panoramic drawing of Monuments 19 and 20; Monument 21 is not shown in the drawing.

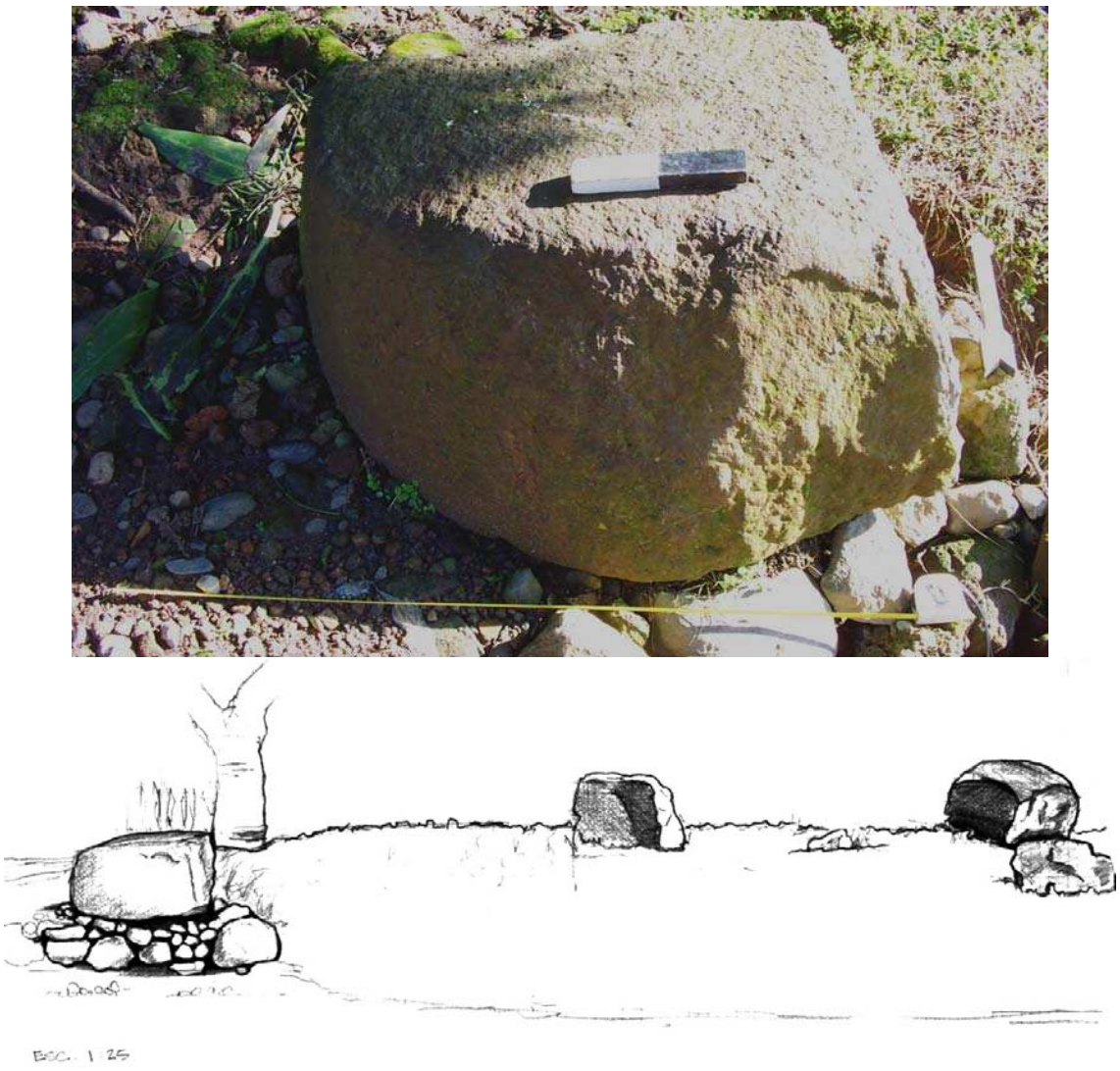


Fig. 13-16a, b: Monuments 19 and 20: (a) Monument 19; (b) drawing showing the association of the fragments.

1. **Monument 22, Chocolá**
2. Height: approx. 35 cm. Width: approx. 20 cm.
3. ?
4. Found as a fragment in a road within the Chocolá property.
5. Nottebohm Collection.
6. Anthropomorphic profile with phytomorphic lip ornament and headdress. It shows parallel incisions in the face, crossing the profile horizontally; the eye is open.
7.
8.
9. State of preservation unknown.
10. Ink illustration, probably by Edwin Shook.

Fig. 13-17: Monument 22.

MONUMENTS IN ADJACENT REGION

Fig. 13-18a, b: Monument 1, Santo Tomás La Unión (Balam Abaj). Found in the San Francisco neighborhood. Drawing: Federico Paredes Umaña.

Fig. 13-19a, b, c, d: B'alam Ab'aj of Chuajij.

Fig. 13-20a, b: B'alam Ab'aj of La Ceiba.

Jaguar, vertical spike
San Francisco Zapotitlan
fotos: Federico Paredes Umaña
Proyecto Arqueologico Chocolá.

Fig. 13-21a, b, c: Jaguar, vertical spike, San Francisco Zapotitlán.
Photos by Federico Paredes Umaña

Fig. 13-22: Ab'aj T'akalik. Zoomorphic sculpture in vertical spike, on bench with scrolls.

Fig. 13-23: Monument 44, Abj'aj T'akalik. Captive carved in mass.

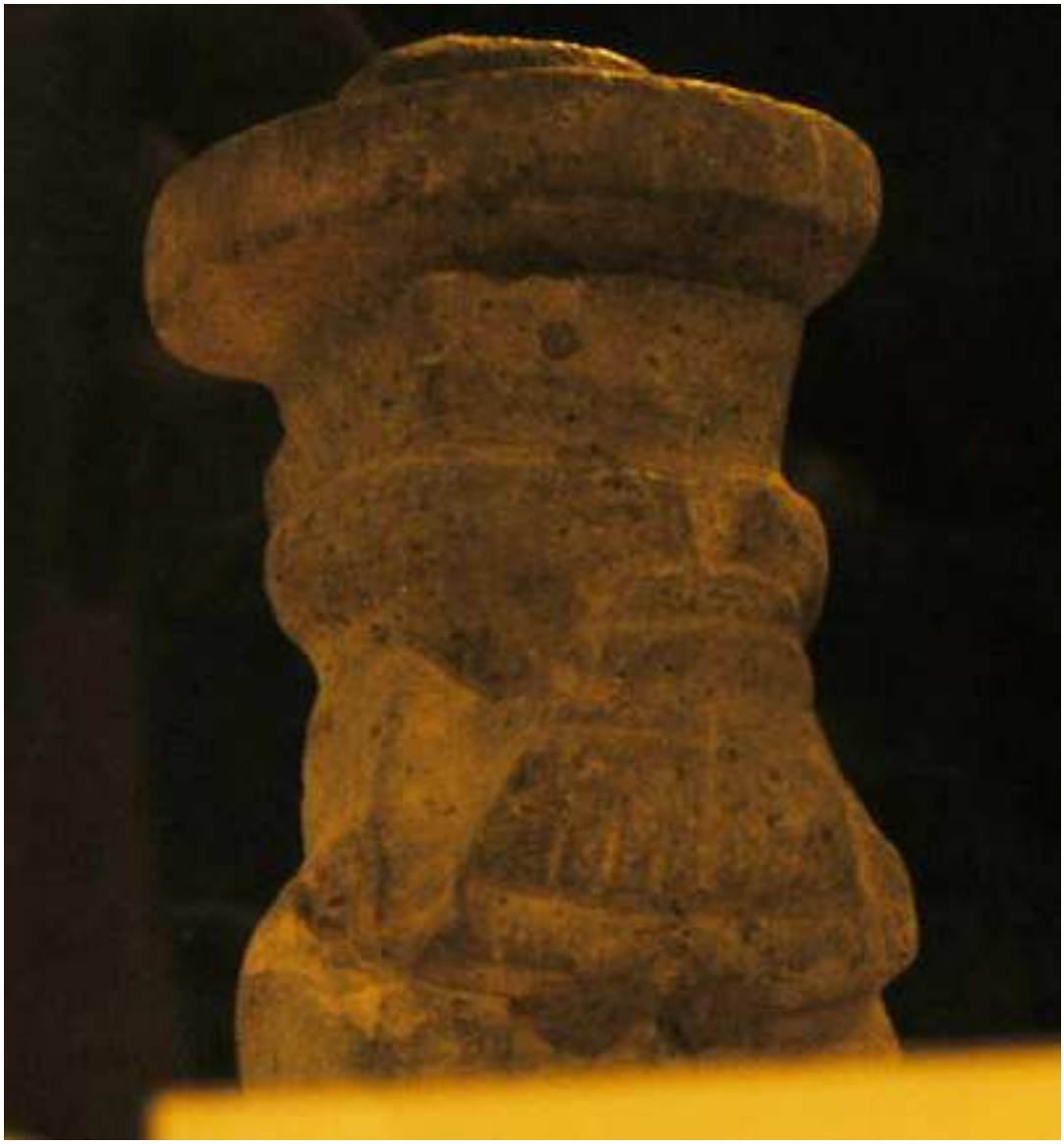


Fig. 13-24: Captive carved in mass. Retalhuleu Regional Museum.

Fig. 13-25a, b: Figure of captive with hands tied at the back. Retalhuleu Regional Museum. Photos by Federico Paredes Umaña

Fig. 13-26: Round altar known as the "Shook Altar". Provenience is unknown. Shook and Heizer referred to this monument in 1986, but all they said about its origin was: "near San Antonio Suchitepéquez". Photo: Shook Archive, courtesy of the Department of Archaeology, UVG.

Fig. 13-27: Miniature pot-bellied figure carved in mass. Carlos Escobedo Collection. San Antonio Suchitepéquez.

CHAPTER 14

The lithics of Chocolá: 2004 Season

Edgar Carpio

Presentation

This preliminary report includes the results of the descriptive study of obsidian materials recovered in the excavations conducted by the Chocolá Project during the 2004 season. It presents the analysis of obsidian artifacts corresponding to Operation 14, conducted in Structure 5.

The report includes the methodology of analysis, comments about the results obtained, as well as graphics and tables that allow for a better understanding of the text. It should be noted that for the classification phase of the samples and for the presentation of results in graphics I was efficiently assisted by the advanced student Juddy Arelí Carrillo Vallejos, who was conducting a laboratory practice.

Methodological Procedure

For the descriptive study of obsidian, we proceeded to create a table with the Excel program, establishing the major variables to be analyzed: type, use, retouch and source. With such variables we may have a quick and accurate panoramic view of the essential characteristics of the material. The annex shows a copy of the finished table, as well as all the tables completed with the corresponding information. Other columns showed the data of Operation, Sub-operation and Lot.

The procedure for the classification of the material consisted in writing down in the corresponding columns the number of artifacts contained in each bag per each one of the types and sources, writing down as well how many of them were used or retouched. The established types were:

1. prismatic blade
2. irregular blade
3. flake
4. bipolar flake
5. core
6. refuse
7. bipolar core
8. point
9. other (they include irregular chunks, columnar chips, pieces with a cortex, etc.)

As to the sources, the origin was established through visual analysis or macroscopic technique, accomplished through the observation of the physical characteristics of the obsidian by means of assessing the three major components: color, texture, and

inclusions. The proximity of the deposits, exchange routes, information from previous studies and the technological types generated were added to these criteria.

The sources considered in the sample were: El Chayal and San Martín Jilotepeque. A third one was also included, with the denomination of “other”, for those materials whose origin was still in doubt. We recommend that some samples be sent for neutron activation analysis or X-ray fluorescence, to confirm the trend observed and ratify the accuracy of our analysis.

As to the characteristics of erosion and modification presented by the artifacts, we established the variables of use and retouch. This makes it possible to have some idea on how much they were used and if some technique was required to extend their useful life.

At the end of the table there is a space for observations, where several particularities presented by the artifacts that were not included in the variables, were annotated. Finally, we proceeded to add each variable to know the cumulative frequency of artifacts. Then the percentage of each variable was obtained, and several connections among them were established.

I must add that being this a preliminary analysis several quantitative variables such as length, weight and thickness were not taken into consideration. This will be accomplished later on, taking as main samples the type of prismatic blades where this type of variables offer the greatest possibilities of statistical analysis.

Results

The annexes include the graphics and charts with the results of the analysis accomplished. It is in this space where we shall write down comments about the results and their interpretation. The results are presented at the general level of the sample.

Types

Of a total 794 artifacts, the prismatic blade type represented 30.8% of the sample, followed by the flake tool with 23.2%. The so-called bipolar flakes amounted to 18.7 %, while refuse amounted to 16.1%. The irregular blades, manufactured through percussion, reached 2%, and bipolar cores represented 1.2%, while only one prismatic, worn out core was found, representing 0.12% of the sample. The type “others” included different artifacts not particularly representative, such as irregular chunks, small fragments with cortex and some columnar chips. These amounted to 5%. We had no projectile points but we did find an arrowhead on a prismatic blade.

This analysis shows that the predominant technological type in Operation 14 is that of prismatic blades, closely followed by the flake type. This trend is occasionally observed at sites from the southern coast, in residential contexts where blades and flakes combine as daily used tools.

Since the Middle Pre-Classic period, the prismatic blade is the most usually found obsidian artifact in archaeological contexts. Because of its morphologic characteristics, the prismatic blade is easily adapted to cutting activities both at domestic and specialized levels. The absence of exhausted cores may indicate that blades might have arrived at the site already made, as was the trend in other sites west of Escuintla between the Middle Pre-Classic and the Early Classic periods (Carpio, 1997). However, a modest *in situ* production should not be ruled out, as the possibility exists that some exhausted prismatic cores may have been reduced later through the bipolar technique.

An interesting piece of information is the high percentage of bipolar flakes, together with the bipolar core type and the bipolar columnar chip. The presence of such artifacts may suggest that many artifacts, the prismatic blades in this case, after their useful life as such, may have undergone a maintenance process involving the renovation of the edges or the obtainment of small flakes with sharp edges, turning these pieces into bipolar cores.

The most dramatic example of the utilization of the bipolar technique for maintenance purposes is found in the obsidian from Balberta, Escuintla, where the bipolar technique is used for the creation of new artifacts using older types (Carpio, 1989). This may be the consequence of the lack of a constant supply of new tools, which involves carrying out a recycling process with the artifacts at hand.

In any case, we know that in this sector of Chocolá, the local inhabitants counted with a variety of technological types adequate to serve the needs of a tool fit to cut.

Use and Retouch

In the variables that express the degree of alteration or wearing out of the pieces, we find that 29.9% of the artifacts evidenced, visible traces of wear. We must say that no observations were conducted using a magnifier or stereoscope, which may have shown the presence of striations by cut or other erosion marks very difficult to observe without the help of optical precision instruments. Nevertheless, the piece of information is suggesting that one third of the artifacts were used.

The type of marks corresponds to those made as a result of cuts or scrapings made on hard materials (see pictures and illustrations). They may as well be the result of the constant use of artifacts throughout an extended period of time, gradually causing visible erosion.

The other variable involved in the use of objects is retouch. However, this amounted only to 2.3%. The most frequently observed retouch was the bipolar on prismatic blades, on the edge and the tips. One was aimed at the creation of new edges, as said, and the second, to obtain small flakes.

In the report submitted by Rafael Castillo corresponding to the obsidian sample of Chocolá recovered in the 2003 season, it is observed that 16.4% (161) of the artifacts presented retouch, mostly performed on prismatic blades. Also, the report states that one of the most frequent retouches was the bipolar one, coinciding with the trend observed from the obsidian recovered in Operation 14, during the 2004 season.

Again, we could think that in the absence of a constant supply, several techniques were applied for the optimization of the tools at hand, until they were finally discarded. The case of Chocolá is not among the most dramatic ones from the southern coast, but such possibility should be taken into account to explore the economic behavior that the use of obsidian is suggesting.

Sources

As already indicated, the visual technique was applied for the identification of sources. The results indicated that the materials originating in El Chayal were the majority, representing 56.4%, followed by the source of San Martín Jilotepeque with 41.4%. The materials considered as coming from unidentified sources represented 3.1%.

Although El Chayal is predominant, this is not so categorical, as it is closely followed by the most proximate ones originating in San Martín Jilotepeque. This may indicate that Chocolá, or at least the investigated portion of Chocolá, participated in exchange networks at an inter-regional level, making way for the flow of products derived from the obsidian industry to different places, in this case, the Mayan area. These networks were fully active towards the Middle Pre-Classic period (Carpio, 1999) and allowed for the supply of products from the prismatic blades industry from both el Chayal and San Martín Jilotepeque towards the southern coast.

In the Rafael Castillo report, we see that in the sample of the 2003 season, the predominant source was El Chayal, with 55%, followed by San Martín Jilotepeque, with 25.3%. The difference is wider here; however, we must take into account that the material is more superficial and may correspond to different occupational periods. Anyway, the trend remains the same, and El Chayal seems to be distributed in larger quantities than San Martín Jilotepeque's.

This situation may have responded to political and economical reasons that linked Chocolá to producer and distributor materials centers from both sources, with a greater emphasis on El Chayal (see Carpio, 1997).

Another aspect to consider is that obsidian is being redistributed in a similar proportion, as in the recovered lots the percentage is similar to that of the general sample. This phenomenon has been observed in other collections from the southern coast. Possibly, new excavations will reveal materials that could break this trend, though for the time being and at least at a domestic level, this is the overview.

Comments

The preliminary study of the obsidian from Chocolá recovered in the 2004 season and corresponding to Operation 14, has revealed a number of interesting aspects about the implementation of these artifacts in one particular sector of the site. In short, the tendency indicates that there was a routine role for the obsidian utensils, among which the prismatic blades were the preferred tools. This is complemented by flakes of different types and for different uses. Also, we observed that two obsidian sources with their corresponding producer centers were supplying this sector of the

site, and they are, in order of significance, El Chayal and San Martín Jilotepeque, indicating a participation in the established exchange networks.

It is not possible to talk of a local production of obsidian tools, at least as far as prismatic blades are concerned, because they may have been already made at the time of their arrival or they may have been the result of discreet core reductions. The amount of existing carving refuse is not enough to suggest the presence of workshops.

On the other hand, we should keep in mind that the artifacts were located in the construction filling of Structure 5-1, and therefore the reconstruction of activity areas for the moment is somewhat difficult. Nevertheless, there are a number of deposits with associations that may directly refer to situations in the past regarding the use of obsidian tools. However, as we have mentioned, the trend points towards utensils that were a part of daily work at the domestic level. An exploration in the surroundings of the structure may or may not corroborate that trend.

The analysis of the other operations conducted in 2004 will enable us to establish very useful comparisons and to determine whether the evidence revealed by obsidian in Structure 5 and that of the explorations conducted in the 2003 season, are consistent with the role of obsidian in other sectors of the site.

Fig. 1: Preliminary Classification Table of the Obsidian at Chocolá, 2004 Season

Op	Sub Op	Lot	Arti-fact	Blade	Flake	Flake	Core	Re-fuse	Core	Point	Ot-her	Characteris tics		Source			Total	Comment
			Blade	Irreg		Bi polar			Bi polar			Use	Re-touch	EC	SMJ	Ot-her		
14	6	2	1	1	1	1						2	1	3	1		4	
14	6	3	2	2	1			2				3		5	2		7	
14	17	1			3									3			3	
14	17	2	2		3	1		2				1		4	4		8	
14	17	4	1	1	1						1	2		4			4	Other-carving remains
14	17	3	3					4						2	5		7	
14	27	1	2		1	1						3	1	3		1	4	
14	27	2	1		2							2	1	3			3	
14	27	3	4			1		2	1			4		2	6		8	
14	27	5	2									2			2		2	A very light one
14	27	6			1			1						1		1	2	
14	27	1	1		1							1		1	1		2	
14	27	2	1						1			1		1		1	2	
14	27	3			2	1		2						4		1	5	
14	36	2	2					3			1	1		6			6	Other-carving remains
14	36	3	1	1							1	1		2	1		3	Other-columnar chip
14	36	4	3			4						1		5	2		7	Some with a cortex
14	36	5			1										1		1	
14	36	6	2		1							2		3			3	
14	37	1	1		1							1	1	2			2	
14	37	2	1			1						1		2			2	
14	37	3			2	1		2				1		5			5	
14	43	1	1			1						1		1	1		2	
14	43	2	2		1	1		2				2		2	4		6	
14	43	3	1		3			2				3			6		6	
14	45	1	1					1				1		2			2	
14	45	2	1	1		1		5				2		8			8	Some with a cortex
14	45	3	1		1	3		1				2	1	4	1	1	6	
14	45	4	2		1	4		7				2		11	2	1	14	
14	46	1	3		1							4		1	3		4	
14	46	2	2		5	1						3		5	3		8	
14	46	3	2		1	1						3		1	3		4	
14	46	4	7		3	2		1				5	2	11	3		13	
14	47	6			2										2		2	
14	47	7			1	1								2			2	
14	55	1	2									2		1	1		2	
14	55	2	1		2	1		2				1		5		1	6	Blade-Possible San Martín Jilotepeque
14	55	3	5		1			1			1			4	3	1	8	Flake-Cortex/other-carving remains
14	56	1							1					1			1	
14	56	2	2		1	2						1		2	3		5	
14	56	3	1					3	1			1		3	2		5	

14	56	4				1						1			1		1	
14	66	2	2									1		2			2	
14	66	3	3					1				3		4			4	
14	66	5			1	2						1		3			3	
14	66	6						1						1			1	with a cortex
14	76	1	1	1							1			2	1	3		Other-carving remains
14	84	2	5		2			1				3		1	7		8	
14	84	3			5	3		1						5	4		9	
14	86	2	1	1								1			2		2	
14	86	3	1			1		1				1		1	2		3	
14	86	4	2									2			2		2	
14	86	5	1						1			1		1	1		2	
14	91	1			1	2								2	1		3	
14	103	1			1	1						1			2		2	
14	103	2	2		1			1				2	1	2	2		4	
14	103	3	1			3					1	1		3	2		5	Other-carving remains
14	103	4			2	1								1	2		3	
14	103	5	2		3	1		1				1		3	4		7	
14	103	6	2			2		1			1	1		2	4		6	Other-carving remains with a cortexa
14	104	1		1								1			1		1	
14	104	2				1		2						2	1		3	
14	104	3		1	1	2		1			1	1		1	3	2	6	Other-carving remains /some with a cortex/Other-(Questionable source)
14	104	4		1	1	1					3	1			4	1	5	Other (Uncertain source) Flake with a cortex
14	104	5	4		1	3			1		1	2		3	7		9	Other - carving remains
14	105	1	2			2			1			1			4	1	5	
14	105	2	5			6		1			1	2		7	6		13	Other – Arrowhead
14	107	1		1		1						1	1	1	1		2	
14	107	3				1					1			1		1	2	Other-carving remains
14	111	2	1		1	2						1		2	2		4	
14	111	3	1		1			1				1		3			3	

14	111	4			1	1					1	1			3		3	Other-carving remains
14	111	5				2								2			2	
14	111	6	1		1						1	1		2	1		3	
14	112	1		1				1						1	1		2	
14	112	2	4		3	2		4			2	2		8	8		16	
14	112	3				2		1				1		2	1		3	
14	112	5			1							1			1		1	
14	112	6	1									1	1	1			1	
14	112	7	1			1						1		1	1		2	
14	112	8	1		1							1		1	1		2	Flake-With a cortex
14	113	1	4	1	1	6		1				3		4	8		12	
14	113	2			1	2			1			1		2	2		4	Core with a cortex
14	113	4	2		1	2		4				2		4	5		9	
14	113	5	1		5	1		1				3		5	3		8	Some with a cortex
14	113	6	1									1			1		1	
14	114	1	1		3	1						1			5		5	Some with a cortex
14	114	2	7		1	3		2			1	6	1	2	12		14	Other-carving remains with a cortex/resembling an arrowhead
14	114	3	3			7		2			1	2		7	6		13	Other-carving remains with a cortex
14	114	4	5			5		2			2	4		3	11		14	Used edge of prismatic blade/ carving remains
14	114	5	4		4			6				3		7	6		13	Some with a cortex
14	116	1	1			1		1						3			3	
14	116	2	2			1						1		2	1		3	
14	116	3	3			3						3	1	3	3		6	
14	116	4	1			1						1		1	1		2	
14	116	5				1									1		1	Posible SMJ
14	118	1	1			1						1	1	1	1		2	
14	118	2	4		4	2					1	3	1	6	4		10	Some with a cortex / Some Very light
14	118	3				1		3						4			4	Very light
14	121	2	2	1							1	3		1	3		4	Other-carving remains
14	121	4		1	1	2		1				1		2	3		5	
14	121	6	2	1		2		5				2		8	2		10	
14	127	2	1		1	1		1				1		3	1		4	
14	127	3	4		1	1		1				2		4	3		7	
14	235	6	1	1								2		1	1		2	
14	235	7				1								1			1	
14	270	1	1									1			1		1	

14	270	2	1		5	1								7			7	
14	270	5	1									1	1	1				Horizontal swift, abundantly used and with one retouch
14	312	1	2									1		1	1		2	
14	314	2	1									1			1		1	
14	314	3		1								1		1			1	
14	314	7		1											1		1	
14	314	8			2									2			2	
14	315	3			1							1		1			1	
14	315	4	3			3						5		2	3	1	6	Blade-Uncertain source
14	315	8	1		1	1						2		2	1		3	
14	316	1	2		1			1				2		1	3		4	
14	316	2	2		1	1		2				3		2	4		6	Flake-Cortex
14	316	3	4			3						3		13	1		14	Remains with a cortex (Uncertain source)
14	318	2	3	1	3	1						1		5	2		7	
14	318	3	1		1			1						1	1	1	3	
14	318	4	2		1	2		1				1		6			6	
14	318	5	1		2			4				1		6	3		9	Other-carving remains
14	318	7			6							2	2	5	1		6	A very light one/some with cortex/Flake in the shape of a point
14	319	2		1	2							1		2	1		3	Some with a cortex
14	319	3	1									1			1		1	
14	319	5	5		2							4		4	3		7	
14	319	6			2			1				1		2	2		4	Other-columnar chip
14	320	1	3		2	1		3				2		4	3	2	9	
14	320	2	2			2		3				2		5	1		6	
14	320	3			1	1		1						2		1	3	
14	320	5				1						1			1		1	
14	321	3		1								1		1			1	
14	321	5	1		1							1		1	1		2	
14	324	1	1												1		1	
14	324	2			1										1		1	
14	324	4	1									1			1		1	
14	324	5			1									1			1	
14	324	6				1						1			1		1	
14	324	7	1									1			1		1	

14	325	3	2		3							1		1	4		5	
14	325	4			1									1			1	
14	325	5		1				1				1		1	1		2	One with a cortex
14	325	6	3		1							2		2	3		5	Other-carving remains
14	325	8		1		1						2		2			2	
14	325	9			1	2						2		2	1		3	
14	326	1			1									1			1	
14	326	2	3		1							2		3	1		4	San Martín Jilotepeque-it has a rugged texture and a not too dense granulosity
14	326	3	4			2		1				3		3	4		7	
14	326	5			2							1	1	1		1	2	Flake in the shape of a point
14	326	7	1		2							1		1	2		3	One with a cortex
14	326	8	2	1		1						1		3	1		4	
14	326	9	3		1							2		3		1	4	
14	326	10			1			1						2			2	
14	329	1				2						1		2			2	
14	329	3	1									1		1		1	2	Other-Entirely opaque
14	329	4	1		1			1				1		2	1		3	
14	329	5	3		1							1		2	2		4	
14	329	6	1		1			1				1		3			3	
14	329	7	2	2								1		2	2		4	
14	445	2			1			1						1	1		2	
14	455	1			1										1		1	
14	456	2	1		3									3	2		5	Other-columnar chip
14	466	3	2		2							1		4			4	
14	486	1	1									1			1		1	
14	486	2			1									1			1	
14	486	3	1									1		1			1	
14	486	4		1								1	1	1			1	
14	487	2			2			1				1		4			4	
14	487	4	2	1								2		1	2		3	
14	496	2			1			3						3	1		4	
14	496	3			2									2			2	
14	496	4		1								1			1		1	
14	496	5			1									2			2	
14	497	3			3			1						3	1		4	Some very light ones
14	497	1				1								1			1	
14	497	4			5									3	2		5	
14	532	1						1						1			1	

14	552	2	1		1							1			2		2	
14	552	3				1									1		1	
14	556	1			1									1	1		2	Other-carving remains
14	556	2												1			1	Other-carving remains
14	556	3						1						1			1	
14	563	3							1					1			1	
14	563	4			1	1		1						2	1		3	
14	564	3			1									1			1	
14	567	1	1									1			1		1	
14	567	3	1	1	1							1		2	2		4	Other-carving remains
14	567	5	1		1	1		1						3	1		4	
14	569	1														1	1	Bipolar columnar chip with a cortex
14	569	3	1					1				1		1	2		3	
14	569	5	2		2		1	1				1		3	3		6	
14	570	1			1									2			2	Other-carving remains
14	570	2	2	2	1							3		4	1		5	
14	570	3	1									1			1		1	
14	570	4			2			1	1					1	3		4	
14	578	2	1		2							1		2	1		3	
14	579	1	1	1		1						2		2	2		4	
14	579	3		1								1			1		1	
14	580	2	1					1				1			2		2	
14	580	4	1									1			1		1	
14	580	5			1									1			1	
			Artifact	***Blade***	***Flake***	***Flake***	***Core***	***Refuse***	***Core***	***Point***	***Other***						***Total***	
			Blades	***Irregular***		***Bipolar***			***Bipolar***								***Sample***	
			245	**36**	**185**	**149**	**1**	**128**	**10**	**0**	**40**	**238**	**19**	**445**	**329**	**25**	**790**	

CHAPTER 15

The PACH Laboratory, 2004 Season: Construction, Organization and Methodology

Federico Paredes Umaña

Construction

At the time of initiating the second field season, we faced the need to design an adequate space that would function as a Laboratory of Archaeological Materials. The mission was to furnish PACH with a permanent space fit to be used as a laboratory. After studying the feasibility of renting a house for that particular purpose, or investing in remodeling a Victorian house known as “the hotel”, used as residence and operation headquarters by the PACH team, we opted for the second option.

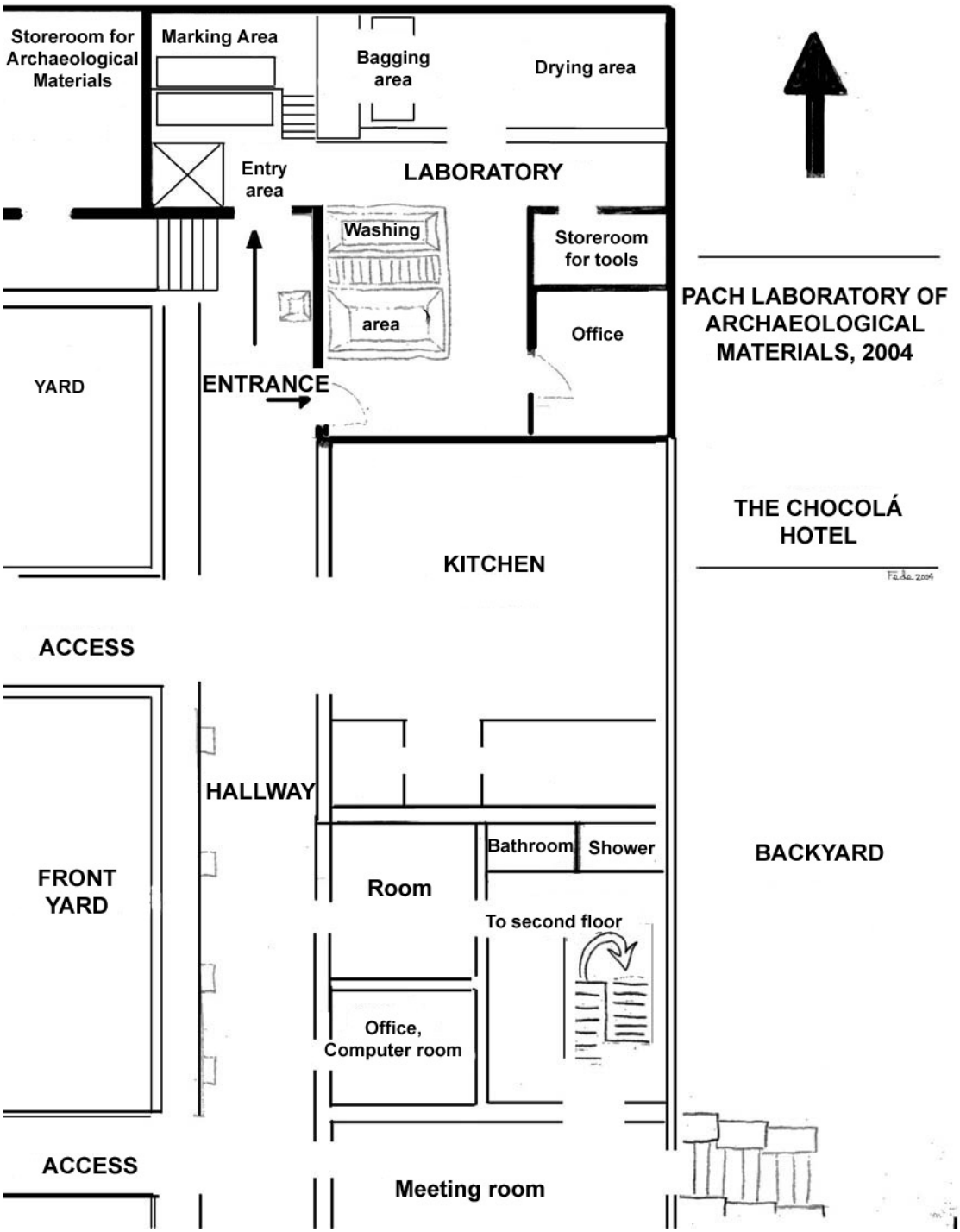
The design and remodeling of the physical space was to consider three major factors: 1) security, 2) sufficient space for the internal circulation of materials and individuals, 3) respect for the original design of the building. The first objective was achieved thanks to the short distance that mediated between the laboratory and our place of residence and daily activity. The second was achieved because the space in question used to be an area previously occupied by troughs and storerooms, with two tiled-roofed rooms adjacent to the area where the present dining room is located. The utilization of this previously open space was achieved by building two perpendicular walls in a ninety-degree angle on the north end of the outer hallway of the “hotel’s” façade. The third objective was certainly the most difficult one to achieve, as we were altering an original design and modifying the function of the older space. Anyway, we preserved the line of design by using ancient doors we found in one of the storerooms, and by respecting the lintel ornamentation. The entire construction was made of wooden planks for lining with board rules made of hard wood trees.

Organization

The mission of a field laboratory is to provide the necessary treatment and order to the material brought in day by day. The different artifacts come from surface collections and systematic excavations conducted by the PACH team. The other materials entered are donations from members of the community. Each one of these three entry categories has a particular protocol that needs to be followed.

The organization of the physical space of the laboratory is arranged in function of the most voluminous and uninterrupted activity: the treatment of excavated materials (see graphic). They must be deposited on a board at the entrance of the laboratory, and a card must be filled whose details will be presented in the next section. The materials come straight from the field, in plastic bags with labels that indicate their origin. Once they are formally admitted into the laboratory, they are taken to the washing area where they are washed in the laboratory troughs. Then, they are taken to a drying section in frames made of wood and a metal mesh, where they are displayed and exposed to the sun. Once they are dry, the person in charge of

rotating the materials picks them up and packs them again in cloth bags manufactured at Chocolá by local artisans. These bags have a paper label in the outer part, with a detail of their contents. The next step is marking. Only ceramics and major lithics artifacts are marked with the provenience number. Only the ceramics with a diameter larger than a token of 25 cents are marked. All minor fragments are counted and recorded in the card, and will not be discarded until they are properly observed by the ceramist. Obsidian is packed separately, with the corresponding place of origin label. Charcoal samples, with their correct labels, are left intact in plastic flasks that contain the sample wrapped up in aluminum foil. The material is marked with a line of white ink on which the word PACH is written, followed by the number of Operation, Sub-operation and Lot, in black India ink. Once this is dry, transparent enamel is applied to seal and protect the code. Following this procedure and placing the correct identification of the material on labels outside and inside the cloth bags, the process of sample circulation inside the laboratory is done. Then the bags are taken out of the laboratory to a contiguous room that serves as storage space for field materials.



Methodology

The laboratory works as a link between theory and practice, as the reliability of the data regarding the place of origin of all PACH materials depends on its adequate performance.

In this section it is suitable to explain the nomenclature used to mark the place of origin of artifacts, and in what way that information is transferred to the corresponding cards.

Materials originated in controlled excavations

Operation	It identifies a structure or a plaza.
Sub-operation	It identifies the excavation unit (pit, trench, or record).
Lot	It identifies the stratigraphic level in each excavation.

If the tag reads **PACH 4-2-1**, it means that the material in that bag comes from: the Chocolá Archaeological Project, **Operation 4** (mound 15), **Sub-operation 2** (pit 2), **lot 1** (at a level of 0-0.20 m).

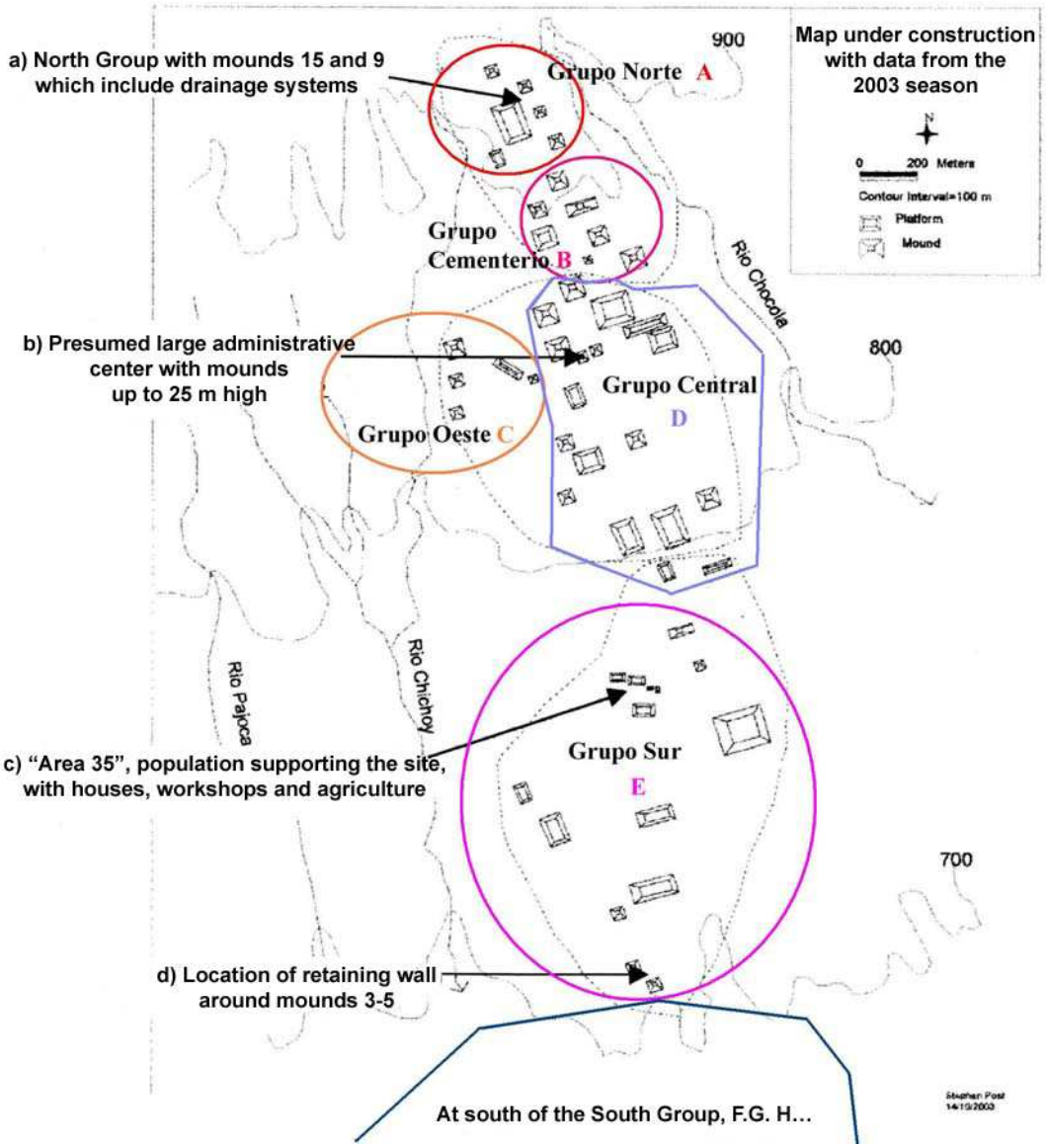
The Operations conducted in the 2004 season were as follows:

Mound 15 = Operation 4
Mound 5 = Operation 14
Salvage of vessels found in the street = Operation 15

Materials originated in surface collections

All artifacts originating in a surface collection bear the PACH I code; "I" stands for surface collection, and a letter is added to it, to identify the area of origin. If there is a reference of a mound number, this is added after the letter. Thus, a sherd collected at the cemetery group will be labeled **PACH I – B**. And a sherd from the surface of mound 15 in the north group will be labeled: **PACH – I – A-15**. We shall now present a preliminary map of Chocolá showing the architectural groups identified since the first season, with the associated letters, as follows:

North Group (A)
Cemetery Group (B)
West Group (C)
Central Group (D)
South Group (E)
Groups at the south of the South Group (inclusion in the map, pending) (F, G, and H)



Schematic map of Chocolá
Showing the architectural groups and the capital letters used for their identification in the marking of surface materials

Laboratory cards

Two different cards are used to record the place of origin of the laboratory materials: the Materials Count card and the Field Samples card.

The first is aimed at controlling the materials entered into the laboratory, and counting the different artifacts per lot. This card is filled-in by the excavator when the materials are entered into the laboratory. The second is aimed at facilitating the entry of the information into a database (under construction). The different artifacts originated in a lot have a similar FS, or field sample number. This number is obtained following an order of arrival to the laboratory, and it is universal and correlative. The FS number is used in the information card of materials count, and in the labels of the bags with materials, for a quick identification. The FS numbers are particularly useful for example at the time of working with charcoal samples, abbreviating the

nomenclature (see the report on Analysis of the pertinence of charcoal samples, 2004 season, by Paredes Umaña and Belches Luín).

Laboratory Card
Materials Count

Instructions:

Once the lot is dry, bagged once again, and relabeled, you will be able to complete this card with the amount of materials per lot. Do not leave incomplete the **FS (field sample)** field.

Operation:	**Sub-operation:**	**Lot: / MC:**	Excavator:
Ceramic:	Mica:	Carved stone:	Metal:
Obsidian:	Jade:	Glass:	Others:

Example of headline and format of the card used for material counts at the laboratory.

PACH 2004 FIELD SAMPLE CARD

Date	Field Sample	PP Number	Trait	Structure	Room	Operation	Unit or Sub-operation	Stratum	Lot	Initial Elevation	Final Elevation	Responsible	Comments

Example of headline and format of the card used for field samples at the PACH field laboratory, 2004.

The Laboratory in figures

The remodeling of the space and the construction of the laboratory amounted to Q. 10,000.00, including the salaries of four workers for two weeks, the timber, the electrical installation, the metal sheets, and other building materials.

The approximate total of recovered artifacts amounts to 35,000 single objects duly marked at the end of this season. Dr. Judith Mitchell, from the La Trobe University, Australia, is working on the initial steps to create a typology of the ceramics of Chocolá. Prof. Edgar Carpio has begun with the analysis of the obsidian artifacts.

Summary of artifacts originated in controlled excavations treated in this season at the field laboratory:

Operation 4	**Operation 14**	**Operation 15**
Ceramic: 17325	Ceramic: 12301	Complete vessels: 11
Obsidian: 2699	Obsidian: 826	Ceramic fragments: 41
		Obsidian fragments: 2

CHAPTER 16

Achievements of the 2003 Season of the Chocolá Archaeological Project

Jonathan Kaplan and Juan Antonio Valdés

The second season of the PACH has proved successful from every point of view. The potential of the site located in this area, so poorly investigated and paradoxically so crucial in regards to the early developments of the southern Mayan area, has become evident in different and sound ways. A major task of the heads of the project is bringing recognition to the site's value both by the Mesoamerican archaeological community and by the rest of the world, in the widest sense of the word. To develop such a mission, multiple efforts will be required which will involve the work of scholars, volunteers and institutions, whom we thank and encourage to join us in the challenge of showing the significance of this site as a cultural patrimony of the nation and the world. The general issues that shall now be unfolded are closely related to the PACH objectives, namely, scientific investigation in conjunction with community development.

The 2004 results

Based on surface collection, test pits and remote sensing surveys using gradiometry, specific areas were excavated within the area of Chocolá, and materials were removed, marked, and stored. The analysis of the stored material, which includes ceramic, green stone, obsidian and utilitarian artifacts in general, has been focused on conventional issues such as dating and extrapolation of the information regarding the ancestral works and economic organization.

The data obtained from the first and second seasons suggests a spatial expansion, and now, with confirmed absolute dates, knowledge of the timeframe and duration of the ancestral remains provide information about the social, political and economic organization, as shown by the excavations in the ancient structures. In addition to the GPS survey that has expanded the known area of the ancestral remains of Chocolá to 5.5 x 2.0 km, the grid excavations and the mapping with a Total Station, were carried out for; three important excavations of ancient structures: 1) an apparent elite compound 2) a large platform with apparent beams and stepped accesses 3) a very extended canal system.

The size of the elite residence was of 12 x 6 m, it was positioned in an orientation towards the cardinal points and located in Mound 15, at the northern edge of the city, an area with a large number of low platforms whose existence was revealed through the excavations conducted in 2003 and 2004. They were built with river cobbles extracted from the Chocolá River, located 100 m to the east, in a very pronounced drop. These excavations also lead to the discovery of underground constructions, specifically conduits of different sizes to carry water through a complicated canal system placed in and out of the structure and associated to a possible well. This showed that the Chocolá inhabitants not only channeled the water to prevent an erosive action on their structures, but also redirected the fluid for domestic uses. One complete vessel recovered from inside a pit and a second one in the center of the elite compound, were probably used to extract water. The radiocarbon tests conducted by the project this season reveal social complexity as far back as the Late Pre-Classic period (B.C. 400), and, since these examples were collected from strata located above the systems of underground water conduits, we expect very early achievements to be documented in future fieldwork.

The dimensions of the platform, located 3.5 km south of the elite compound, are of 45 x 40 m, and it is also oriented towards the four directions. The building, with eight stone courses in its north wall, apparently with beams and a stepped access on its east wall, suggesting a main access, with another possible access on the west, like the platforms of Tak'alik Abaj', Chocolá's remarkable neighbor, where sculptures seem to have been placed at intervals in the periphery of the platform; a fragment of a concave vessel, or what in some contexts has been defined as a monument (there are altars with several cupped depressions in the habeas of the Chocolá sculptures) was located outside the limits of the platform in the east. The pits excavated near the center of the platform reveal traces of burnt mud that may represent activity related to the preparation of meals (Chocolate?).

Recent excavations in Mound 15 have revealed a ditch system, cleverly built with selected stones, with slabs used as lids, and taxcal, the latter is a material that abounds in Chocolá and Tak'alik' Ab'aj; it extends 34 m to the south of the elite compound, and includes ramifications to nearby areas, as was revealed during the 2003 season. During the 2004 season, an improvised archaeological salvage showed the occurrence of these traits 1.5 km to the south of Mound 15, showing the large expansion of this system. Several construction techniques show the sophistication of this system, which depends on the conditions of the local physiography as well as on the needs shown by its design. At least four different types of documented constructions reflect the intention to provide curvature, bifurcations, sluices, an open flow, and water administration inside the residences, as well as the control of the descending water flow through uneven constructions.

In 2004, a total of 29,678 ceramic fragments, plus 16 complete vessels, and 3,527 obsidian pieces were collected, washed and marked; 50 figurine fragments and a large amount of artifacts such as grinding stones, manos, pestles and other stone instruments were collected. Making the distinction between sculptures for ritual use and utilitarian, carved stone artifacts

(therefore, not including a large amount of stones whose function is the abrasion for the preparation of foods or other matters), the project has yielded a count of around 25 sculptures including several found in situ through controlled archaeological excavations; should we add to this count the carved stones with cupped depressions, the number would be much larger. One monument, Stela 1, was the only one piece known as originating in Chocolá; the researcher Robert Burkitt, over 70 years ago, mentioned other nine in his unpublished letters. From the survey, the gathering of information through local interviewees and the careful reading of notes written by earlier researchers, we have succeeded in distinguishing the sculptures originated in Chocolá, still found at the property, the disappeared ones, and those that were brought to the property from nearby archaeological sites. The statistical analysis provides evidence of how the local sculpture shows both regional and local styles in the historical sequence of the art in the southern Maya area. The catalog includes plain stelas, carved stelas, circular altars, quadrangular altars with and without cupped depressions, portable sculptures representing zoomorphic figures, mass carvings with the motif of the captive, figures in benches and vertical pedestals, possibly miniature pot-bellied figures and other forms.

Student training and advanced work of future investigators of the Maya Area

The long-term study of the Chocolá ceramic has been initiated under the Project's leadership; Dr. Judith Mitchell, Dr. Peter Mathews' student at the La Trobe University, Australia, will be working on the ceramics of Chocolá for her second doctoral degree. Two doctorate students from the University of New Mexico will initiate work in the 2005 season under the guidance of the Project's directors. It is expected that several students from the Universidad de San Carlos de Guatemala, who have concluded their field practices at the site in 2003 and 2004, will return to continue with their training in the 2005 season. The past two seasons have included a good number of students doing their practices, with the participation of students from France and Spain.

The importance of communitary development for the Research Project

The archaeological site of Chocolá is at great risk, because the economic situation of the region exerts a constant pressure which results in damages to the ancient buildings. The Project attempts to develop the conditions so that the modern inhabitants of Chocolá may have in the days to come and under the form of an archaeological-eco-tourism, a source of income as an alternative to the failed strategy of small agricultural parcels that presently prevails as a model. Besides, we have contemplated the training and hiring of many local inhabitants for such purposes.

It is our belief that the Chocolá archaeological program and its amazing buried past cannot be successfully accomplished without the cooperation of the

modern residents, the municipal authorities, the authorities of the Suchitepéquez Department, and all Guatemalans, in general. Based on the petition and the data provided by PACH, the Government of Guatemala has agreed to declare three quarters of the site as Cultural Patrimony of the Nation. However, prior to proceeding with land expropriations from the present owners –a right of the State-, PACH is trying to find alternatives through contacts with local authorities to arrange a land exchange or a land sale for the formation of an archaeological park. The other initiative under consideration is the creation of an archaeological museum where to preserve the pieces recovered by the Project with their respective informative guides. Two expert curators from the New Mexico Museum shall be invited by the PACH director to meet with government authorities during the coming season. Through a grants fund, the Project is organizing the possibility that two or three students each year may obtain free college education or carry out studies at the Universidad de San Carlos de Guatemala at Mazatenango. In addition, efforts have been made to maintain the garbage collection system, with a truck that passes once a week. The problem of garbage is a reality, and a feasibility study will be conducted soon to define possible solutions, by generating data for the search of such solutions.

Conclusions

The Mesoamerican culture is one of the six great cultures of the ancient world; inevitably, the Mayan civilization is the most extraordinary among those that emerged in this geographical and cultural space. Even though a large number of studies have been conducted focusing on the Maya culture, ironically, there are still sites in the southern Maya area that have hardly been investigated. Since this recent work has been carried out, the ancient site of Chocolá, which may be justly called a lost city, has begun to reveal itself as having a large size, an extended duration and an early beginning. It is anticipated that new discoveries will lead to the documentation of more early Maya architecture, bringing about the task of preservation of the site as part of a precious world patrimony.

In addition to the investigative potential of the site, we feel that through the construction of an archaeological park, a museum and other developments, jobs could be created for the modern local residents, impoverished by the difficult economic situation they are enduring. The 2004 season has yielded significant advances towards such objectives, and hopefully, the 2005 season will prove equally fruitful.

Acknowledgements

In the first place, the PACH directors wish to thank Lic. Guillermo Diaz-Romeu, Director General of Cultural and Natural Patrimony of Guatemala, for his wonderful cooperation and the trust he placed in the Project. Other members of the department like Lic. Ervin Salvador López, Chief of the Monuments Department, and the Assistant Chief Licda. Yvonne Putzseys Gonzalez, have also been of great help contributing to the success of each enterprise undertaken to this date. Also, Mrs. Sheila Flores, the inspector for our Project, has been a remarkable help, together with the regional inspector Mr. Byron Lemus; we wish to extend to both of them our most sincere thanks for their cooperation, as they have been of help not only for the investigation but also for the preservation of significant portions of the Cultural Patrimony. Many other Guatemalan archaeologists, in their professional performance and with their sincere friendship, have helped us immensely; they are, among others, the directors of the Tak'alik' Ab'aj National Project, Miguel Orrego and Christa Schieber de Lavarreda.

Dr. Fred Bove, Dr. John Clark, Dr. Michael Love and Dr. Marion Popenoe de Hatch have greatly contributed with their sound knowledge of the southern Maya area and the Pacific coast. Dr. Michael Coe, Dr. T. Patrick Culbert, Dr. John Graham and Dr. Robert Sharer continue supporting the project with their advice and encouragement to keep on working, and we are greatly indebted to them.

The representatives and former ECA officials, including its curent president Pedro Rendón Raxuleu, and former presidents Lic. Gustavo Camey, Maximiliano Cac Carrillo and Don Moisés Ovalle Argueta, deserve our respect and gratitude for their decision of making this project possible and for considering the opportunities involved for Chocolá. Some important members of the Chocolá community, Don Álvaro Pacheco García, Don Felipe Carillo Alsacajá, Don Byron Danilo Amaya Rodríquez, Francisco Lacán Pérez, Don Mario Martín Martínez, and others, have repeatedly expressed their approval in regard to our work. With remarkable warmth, Don Diego Macario Coc, mayor of the township of San Pablo Jocopilas has shown his good faith to assist in this project, particularly with the initiatives involving community development.

We wish to thank our workers Rogelio Tuy, Félix Tuy, Mario Tambriz Ambrosio, Cruz Salquil, Eustaquio Morales Tulul, Felix Menchú Monroy, Isaías Guarcas Macario, Isaías Yax, Aníbal Carrillo, Egidio Cifuentes, Rodolfo Vásquez, Víctor Díaz Can, Eric Amaya Rodríguez, Marcos Ztic, Moisés González Can, Elmer Roberto Vásquez Menchú, Domingo Gonzalez, Carlos Vásquez, Juan Bravo and others not only for their input in the daily work of excavating, but also for their company and good advice. We are indebted as well with the students of the Universidad de San Carlos de Guatemala and the Universidad del Valle, for their hard work and dedication to learning, while they simultaneously provided valued assistance to the project. They are: Diana Belches-Luín, Margarita Cossich Vielman, Rafael Cambranes, Edgar Arévalo, Antonio Portillo, and Carlos Chiriboga.

Our sponsors include mainly the Earthwatch Institute, which will continue to support the project in 2005, the New World Archaeological Foundation, the Brennan Foundation, the Foundation for the Advancement of Mesoamerican Studies, Inc., (FAMSI) and for

2005, the National Geographic Society and the Tyche Foundation. In addition, many particular individuals have participated with donations, namely, Dr. Gordon Baty, Miss Gina Duffin, Mrs. Katherine Rollins, Mr. Richard Clarke, Mrs. Virginia Inman, Mrs. Martha Sewell, and Earl and Mrs. Suzanne de Berg.

APPENDIX I

Global Positioning System Survey
Chocolá Archaeological Site

17 November 2003

Wm. Clay Poe, Ph.D, RPA
Professor of Archaeology
Sonoma State University

Objectives

The objective of the GPS survey project for 2003 was to define the locations of twelve concrete monuments placed as mapping and survey control points throughout the archaeological site of Chocolá for the Proyecto Arqueológico Chocolá (PACH), a long-term research project in the Guatemalan piedmont which is directed by Dr. Jonathan Kaplan of the University of New Mexico.

Grid data

The maps most commonly used by archaeologists in Guatemala are the 1:50,000 Universal Transverse Mercator Grid series prepared by the Instituto Geográfico Milatar (IGM) Guatemala, with the collaboration of the Defense Mapping Agency Inter American Geodetic Survey. These maps use the 1927 North American Datum (NAD27) as the horizontal datum and Mean Sea Level (MSL) as the vertical datum. These conventions provide a strong argument for reporting data in these same systems. However, there are even stronger reasons for favoring the current WGS84 datum with Height Above Ellipsoid (HAE) as the vertical reference. WGS84 is the native system for GPS receivers and the receivers compute the UTM coordinates and the HAE directly from the WGS84 Cartesian Geocentric Coordinates. GPS receivers and post-processing software translate from WGS84 to NAD27 as well as to other coordinate systems and refer to a database to convert from HAE to MSL or to a Geoid model to convert to Orthometric height. Not all equipment and software support well these legacy systems. The greatest consistency given a variety of equipment and software is obtained by adhering to the WGS84 datum. The grounds of consistency and equipment capacity are compelling for reporting the data in WGS84 datum with HAE as the vertical datum.

Instrumentation and methodology

The instrumentation and methodology for gathering field data in this project is based upon and consistent with the guidelines of a number of publications listed in the bibliography. The controlling documents have been the Federal Geodetic Control Subcommittee, Federal Geographic Data Committee (USA), *Geospatial Positioning Accuracy Standards, Part 2: Standards for Geodetic Networks*, FGDC-STD-007.2-1998, The Intergovernmental Committee on Surveying and Mapping (ICSM), (Australia), *Best Practice Guidelines, Use of the Global Positioning System (GPS) for Surveying Applications*, Version 2.0 - 1 November1997 and The National Geodetic Survey, (USA), *Guidelines for Geodetic Network Surveys Using GPS*. Draft 4, May 15, 2000. These document are current, are detailed in their description of appropriate field methods, and are appropriate to the equipment used in this survey project.

Instrumentation

Three GPS receivers were used to collect the data for the control point survey. Two of the receivers are Trimble 4000SSE Geodetic Surveyors These are dual frequency L1/L2 receivers configured in this survey with geodetic antennas equipped with ground planes. Trimble specifies a horizontal accuracy of 5 mm + 1ppm times the baseline length and a vertical accuracy of 10 mm + 1ppm times the baseline length. The third receiver is a 4000SE GIS Surveyor. For this receiver Trimble specifies an accuracy of +/- 1 cm + 2ppm times the baseline length.[1]

The antennas were mounted on fixed length GPS rover poles stabilized with bipods.

Field Methods

The field survey was conducted on 4 August 2003. The object of the field method was to establish for each of the twelve control points a minimum of two local baselines to other points among the twelve. Each of the twelve control points would also have a baseline to the CORS station in Guatemala City. Time and transport of equipment constraints required a single occupation of each control point and propagation of the network through occupation of proximate control points. Requirements of moving the equipment from point to point combined with local environmental conditions precluded kinematic techniques. A static survey was recorded on each of the twelve control points. Ten of the control points were occupied for one to two hours. Point 50 was occupied for twenty-one minutes and point 19 for thirty-three minutes. The three receivers were moved one at a time so in a pattern to produce a minimum of two local baselines per control point. The pattern of propagation resulted in times of common occupation of local baselines of between 6.75 minutes and 71.42 minutes with an average of 32.52 minutes. The local receivers were set to record at five-second intervals. Thus there were between 81 and 857 common epochs of data recorded with an average of 390. There were a total of twenty baselines recorded among the twelve Chocolá control points.

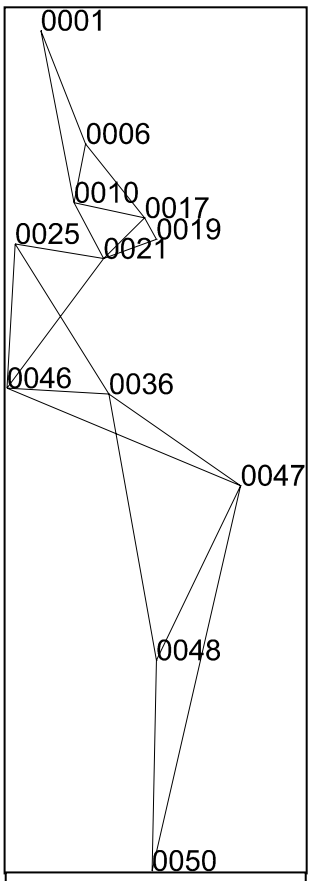


Fig 1 Chocolá control points

Data processing and analysis

All of the GPS data were postprocessed using by the program GeoGenius™ by Spectra Precision Terrasat GmbH, Hoehenkirchen, Germany. This program is designed to integrate terrestrial and satellite data and produces a number of reports permitting evaluation of the quality of the data and providing for the transfer of the data to the GIS system.[2]

The Guatemala City CORS records at thirty-second intervals. Data downloaded from the CORS site produced eleven usable baselines between Chocolá control points and the Guatemala City CORS with between 42 and 246 common epochs of data with an average of 156 common epochs.

---

[1] The GPS receivers were provided by Trimble Navigation Limited, Sunnyyvale, CA.

[2] The GeoGenius™ program was provided by Spectra Precision.

The GeoGenius™ GPS postprocessing software computes the carrier phase solution to the baseline vector. The carrier signal from the satellite to the receiver consists of an integer number of complete cycles plus a fraction of a cycle. The GPS receiver can measure the time elapsed since the last phase shift in the carrier signal to about 1/100 of a cycle, that is near 2 mm for the 19 cm Ll carrier and the 23 cm L2 carrier. The unknown number of complete cycles between the satellite and the receiver is known as the integer ambiguity. Carrier phase processing software attempts to resolve this integer ambiguity.

The principal sources of possible error in GPS positioning are ionospheric delay of the GPS signal and errors in the satellite and the receiver clocks. The amount of delay in the ionosphere is a function of the frequency of the signal. Using dual frequency receivers in conjunction with a model of the ionosphere effectively eliminates the error due to the ionosphere. Clock errors are eliminated by phase differencing techniques. Single differences are the differences between the carrier-phase observations of two receivers of the same satellite at the same epoch. Since the differences are of the same satellite, the satellite clock error is canceled. Double differences are the differences of two single differences of the same epoch that refer to two different satellites. Since double differences are from the same receiver, the receiver clock error is canceled. The triple difference is the difference between the double differences at two receivers, that is, the carrier-phase observations between two receivers, two satellites and two epochs. Because the integer ambiguity is a constant in time, the triple difference does not depend on this variable. The integer ambiguity only depends on the initial observation. The receiver keeps track of the number of whole cycles that it has received since first acquisition of the signal. The triple difference is used to detect and recover from cycle slips in the count. It also provides a first solution to the receiver position.

With confidence in the cycle count, the program computes a double difference float solution. It is called a float solution because the integer ambiguities are permitted to float, that is the algorithm does not force them to be integers. The double difference solution allows processing correlated double difference carrier phase data. With dual-frequency data, additional baseline solutions will be provided for the various combinations of L1 and L2 known as Lw, Lc and Ln.

A search for a more accurate solution is conducted within a window that is defined as twenty times the sigma value of the double difference float solution. The algorithm constrains the ambiguity to integers and searches the volume for the solution with the smallest sum of squares residual error. Statistical testing is used to verify the correctness of the ambiguity resolution. First a Fisher test is performed with the ratios of the variances of the second to the best fitting solution with a reliability requirement of 99.99%. Then a Chi-square test is performed on the a posteriori variance of the residuals with a default of a 95% minimum probability. If this process is successful the solution is said to be a fixed solution; if it is not successful the solution is said to be a float solution.

Sixteen of the twenty local baselines at Chocolá and four of the ten baselines Guatemala City CORS are fixed solutions. Because of the degree of redundancy in the network, all of the control points are points on at least one fixed baseline. Two have one fixed local baseline and one of those has a fixed solution to Guatemala City CORS. Four of the control points have two local fixed baselines; two have three fixed baselines and four have four fixed baselines. This provides for a high degree of confidence in the accuracy and the precision of the network.

ArchMapBZ control point network accuracy and precision

When used in the context of GPS mapping the *accuracy* refers to the confidence with which the absolute location of the receiver is known and the term *precision* refers to the confidence with which the base line between the base station and the rover is known.

Network accuracy

The network accuracy of the Chocolá control point network was determined by a least squares adjustment of baselines among the control points and the Guatemala City. Ten of the control points within the survey fall within the Federal Geographic Data Committee[3] 5-centimeter horizontal classification. The degree of error in this adjustment is displayed in the table below. The postprocessing program, *GeoGenius*, reports the adjustment error as error ellipses. The FGDC classification is based on a 95% Confidence Error Circle. This figure is computed as the mean between the two values of the error ellipse.[4] It is this figure that is the basis for the assignment of the accuracy of a station to an FGDC horizontal classification. The vertical classification is based upon the height error reported

Network accuracy, adjustment biased by CORS

Control Point	2 sigma error, mm.			95% circle	FGDC H Class	FGDC V Class
	North	East	Height			
1	66.7	84.5	197.6	75.6	1-Decimeter	2-Decimeter
6	49.9	62.7	165.4	56.3	1-Decimeter	2-Decimeter
10	38.0	46.9	124.9	42.5	5-Centimeter	2-Decimeter
17	37.5	52.6	120.1	45.1	5-Centimeter	2-Decimeter
19	35.7	37.8	96.1	36.8	5-Centimeter	1-Decimeter
21	24.9	34.3	86.3	29.6	5-Centimeter	1-Decimeter
25	30.3	41.9	116.2	36.1	5-Centimeter	2-Decimeter

[3] Federal Geographic Data Committee, Federal Geodetic Control Subcommittee, *Geospatial Positioning Accuracy Standards, Part 2: Standards for Geodetic Networks*, Table 2-1, Accuracy Standards, p. 2-3

The Federal Geographic Data Committee is established by Office of Management and Budget Circular A-16, the Federal Geographic Data Committee (FGDC) promotes the coordinated development, use, sharing, and dissemination of geographic data. The FGDC is composed of representatives from the Departments of Agriculture, Commerce, Defense, Energy, Housing and Urban Development, the Interior, State, and Transportation; the Environmental Protection Agency; the Federal Emergency Management Agency; the Library of Congress; the National Aeronautics and Space Administration; the National Archives and Records Administration; and the Tennessee Valley Authority. Additional Federal agencies participate on FGDC subcommittees and working groups. The Department of the Interior chairs the committee. FGDC subcommittees work on issues related to data categories coordinated under the circular. Subcommittees establish and implement standards for data content, quality, and transfer; encourage the exchange of information and the transfer of data; and organize the collection of geographic data to reduce duplication of effort. Working groups are established for issues that transcend data categories.

[4] Federal Geographic Data Committee, Federal Geodetic Control Subcommittee, *Geospatial Positioning Accuracy Standards, Part 3: National Standard for Spatial Data Accuracy.* p. 3-6

36	28.6	39.2	100.6	33.9	5-Centimeter	2-Decimeter
46	27.8	38.2	96.3	33.0	5-Centimeter	1-Decimeter
47	29.6	40.0	103.5	34.8	5-Centimeter	2-Decimeter
48	34.9	43.5	113.7	39.2	5-Centimeter	2-Decimeter
50	42.4	49.0	124.4	45.7	5-Centimeter	2-Decimeter
GUAT	68.0	111.3	174.0	89.7	1-Decimeter	2-Decimeter

These data are within the Network Accuracy Standards minimally acceptable levels of differential relative positional accuracy required of a United States Government cadastral survey.[5]

ArchMapBZ control point coordinate values

Control Point WGS84 coordinates

Point Number	X[m]	Y[m]	Z[m]
1	-154108.070	-6171630.157	1600741.029
6	-153946.352	-6171710.835	1600324.559
10	-153991.873	-6171749.464	1600108.722
17	-153730.608	-6171762.635	1600049.989
19	-153688.485	-6171782.943	1599972.674
21	-153885.308	-6171794.963	1599904.016
25	-154212.436	-6171770.002	1599958.785
36	-153870.771	-6171883.238	1599406.108
46	-154248.757	-6171870.408	1599430.753
47	-153386.706	-6171967.489	1599069.374
48	-153706.620	-6172074.446	1598430.012
50	-153732.105	-6172232.012	1597661.624
GUAT	-56062.996	-6174980.368	1596665.507

Control Point UTM coordinates, latitude and longitude, WGS84, UTM 15N

Point Number	North[m]	East[m]	HAE	Orthom. Height [m]	Latitude	Longitude
1	1617973.581	669048.916	923.002	923.542	N 14°37'47.53206"	W 91°25'49.44451"
6	1617552.483	669215.485	891.961	892.511	N 14°37'33.79321"	W 91°25'43.97581"

[5] United States Department of Agriculture, Forest Service, United States Department of the Interior, Bureau of Land Management, *Standards and Guidelines For Cadastral Surveys Using Global Positioning System Methods*, March 21, 2001, p. 6.

10	1617333.339	669172.466	875.928	876.491	N 14°37'26.67259"	W 91°25'45.46404"
17	1617276.653	669434.329	867.540	868.098	N 14°37'24.76914"	W 91°25'36.72681"
19	1617197.294	669477.489	866.650	867.209	N 14°37'22.17728"	W 91°25'35.30301"
21	1617125.241	669281.556	865.688	866.255	N 14°37'19.87709"	W 91°25'41.86687"
25	1617180.196	668953.578	863.268	863.841	N 14°37'21.73902"	W 91°25'52.81370"
36	1616621.490	669301.775	825.053	825.636	N 14°37'03.48189"	W 91°25'41.30784"
46	1616643.574	668923.492	827.989	828.581	N 14°37'04.28557"	W 91°25'53.94298"
47	1616280.877	669790.076	809.925	810.506	N 14°36'52.28914"	W 91°25'25.07043"
48	1615631.138	669477.474	759.801	760.412	N 14°36'31.21902"	W 91°25'35.66624"
50	1614847.696	669461.348	719.089	719.725	N 14°36'05.73166"	W 91°25'36.38635"
GUAT	1614480.619	767173.488	1521.572	1519.880	N 14°35'25.44851"	W 90°31'12.63839"

Appendix 1: GPS receivers

Geodetic surveyors

GPS Receiver	Trimble	**GPS Antenna**	Trimble
Model	4000SSE Geodetic Surveyor	**Model**	Geodetic with ground plane
Part No.	18292-01	**Part No.**	14177-00
Serial No.	3244A01763	**Serial No.**	
Firmware	7.29		

GPS Receiver	Trimble	**GPS Antenna**	Trimble
Model	4000SSE Geodetic Surveyor	**Model**	Geodetic with ground plane
Part No.	18292-01	**Part No.**	14177-00
Serial No.	3610A14748	**Serial No.**	3017A00164
Firmware	7.29		

GIS Surveyor

GPS Receiver	Trimble	**GPS Antenna**	Trimble
Model	4000SE GIS Surveyor	**Model**	Compact L1
Part No.	18292-01	**Part No.**	
Serial No.	3301A02301	**Serial No.**	
Firmware	7.23		

Appendix 2: NGS data sheet for Gueatemala City CORS

ITRF 00

GUATEMALA CITY (GUAT), UNIDENTIFIED DEPARTMENT OF GUATEMALA

Retrieved from NGS DataBase on 10/29/02 at 15:50:01.

Antenna Reference Point (ARP): GUATEMALA CITY CORS ARP

PID = AI7441

ITRF00 POSITION (EPOCH 1997.0)

Computed in Aug. 2001 using every third day of data through 2000.

X = -56063.630 m latitude = 14 35 25.45425 N

Y = -6174978.670 m longitude = 090 31 12.66007 W

Z = 1596665.249 m ellipsoid height = 1519.869 m

ITRF00 VELOCITY

Predicted with HTDP_2.5 in Aug. 2001.

VX = 0.0036 m/yr northward = -0.0012 m/yr

VY = -0.0003 m/yr eastward = 0.0036 m/yr

VZ = -0.0012 m/yr upward = 0.0000 m/yr

NAD_83 POSITION (EPOCH 2002.0)

Transformed from ITRF00 (epoch 1997.0) position in Mar. 2002.

X = -56062.996 m latitude = 14 35 25.44852 N

Y = -6174980.368 m longitude = 090 31 12.63838 W

```
|     Z =   1596665.507 m     ellipsoid height = 1521.572   m
|
|
|
| NAD_83 VELOCITY
|
| Transformed from ITRF00 velocity in Mar. 2002.
|
|     VX =   0.0117 m/yr      northward =   0.0013 m/yr
|
|     VY =   0.0006 m/yr      eastward  =   0.0117 m/yr
|
|     VZ =   0.0012 m/yr      upward    =  -0.0004 m/yr
|
|_____________________________________________________________________________
_______|
|
|
| L1 Phase Center of the current GPS antenna: GUATEMALA CITY CORS L1 PC
C    |
| -------------------------------------------------------------------------
--    |
| The D/M element, chokerings, -radome antenna
|
| (Antenna Code = TRM29659.00) was installed on 07/28/00.
|
|        The L2 phase center is 0.018 m above the L1 phase center.
|
|                              PID = AI7442
|
|
|
|
|
| ITRF00 POSITION (EPOCH 1997.0)
|
| Computed in Aug. 2001 using every third day of data through 2000.
|
|     X =    -56063.630 m     latitude    =  14 35 25.45429 N
|
|     Y =  -6174978.776 m     longitude   = 090 31 12.66005 W
|
|     Z =   1596665.278 m     ellipsoid height = 1519.979   m
|
|
|
| The ITRF00 VELOCITY of the L1 PC is the same as that for the ARP.
|
|
|
|
|
| NAD_83 POSITION (EPOCH 2002.0)
|
| Transformed from ITRF00 (epoch 1997.0) position in Mar. 2002.
|
```

```
|     X =    -56062.996 m     latitude    =  14 35 25.44856 N
|
|     Y =  -6174980.474 m     longitude   = 090 31 12.63836 W
|
|     Z =   1596665.536 m     ellipsoid height = 1521.682   m
|
|
|
| The NAD_83 VELOCITY of the L1 PC is the same as that for the ARP.
|
|_____________________________________________________________________________
_______|
```

* Latitude, longitude and ellipsoid height are computed from their corresponding cartesian coordinates using dimensions for the GRS 80 ellipsoid: semi-major axis = 6,378,137.0 meters
flattening = 1/298.257222101...\other relevant points at the site and on GPS equipment, consult the link ftp://www.ngs.noaa.gov/cors/.html/guat.log.txt

* The NAD_83 position & velocity were revised in Mar. 2002.

Bibliography

United States Department of Agriculture, Forest Service, United States Department of the Interior, Bureau of Land Management, *Standards and Guidelines For Cadastral Surveys Using Global Positioning System Methods*, March 21, 2001.

The Intergovernmental Committee on Surveying and Mapping (ICSM), Australia, *Best Practice Guidelines, Use of the Global Positioning System (GPS) for Surveying Applications*, Version 2.0 - 1 November1997

US Army Corps of Engineers, Engineering And Design, *NAVSTAR Global Positioning System Surveying Engineer Manual*, EM 1110-1-1003, 1 August 1996

National Geodetic Survey, Guidelines for Geodetic Network Surveys Using GPS, Including Federal & Cooperative Base Network Surveys, User Densification Network Surveys, Gps Orthometric Height Surveys, DRAFT 4, May 15, 2000, National Geodetic Survey, N/NGS2, NOAA, 1315 East-West Highway, Silver Spring, Maryland 20910-3282, email: davez@ngs.noaa.gov or steve@ngs.noaa.gov

Birchall, C. J. and R. N. Jenkin, *The Soils of the Belize Valley, Belize*, Vol. 1 and 2, Land Resources Development Centre, Supplementary Report 15, 1979.

Dr. Jonathan Kaplan

Report Date: 12/20/2004

Material Received: 11/17/2004

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 198188	2240 +/- 40 BP	-25.6 o/oo	2230 +/- 40 BP
SAMPLE : 4-72-4 211			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 390 to 190 (Cal BP 2340 to 2140)			
Beta - 198189	2220 +/- 60 BP	-26.5 o/oo	2200 +/- 60 BP
SAMPLE : 4-72-5 258			
ANALYSIS : Radiometric-Standard delivery (with extended counting)			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 390 to 80 (Cal BP 2340 to 2030)			
Beta - 198190	2250 +/- 40 BP	-28.2 o/oo	2200 +/- 40 BP
SAMPLE : 4-72-6 260			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 380 to 160 (Cal BP 2330 to 2120)			
Beta - 198191	2240 +/- 40 BP	-28.5 o/oo	2180 +/- 40 BP
SAMPLE : 4-72-7 262			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 370 to 110 (Cal BP 2320 to 2060)			
Beta - 198192	2250 +/- 110 BP	-27.5 o/oo	2210 +/- 110 BP
SAMPLE : 4-72-8 264			
ANALYSIS : Radiometric-Standard delivery (with extended counting)			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 500 to 460 (Cal BP 2450 to 2410) AND Cal BC 430 to Cal AD 20 (Cal BP 2380 to 1930)			

Dr. Jonathan Kaplan

Report Date: 12/20/2004

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 198194	2220 +/- 40 BP	-26.7 o/oo	2190 +/- 40 BP
SAMPLE : 4-91-6 231			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 380 to 160 (Cal BP 2330 to 2100)			
Beta - 198196	2120 +/- 40 BP	-24.9 o/oo	2120 +/- 40 BP
SAMPLE : 4-91-8 235			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 350 to 310 (Cal BP 2300 to 2260) AND Cal BC 210 to 40 (Cal BP 2160 to 1990)			

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.6:lab. mult=1)

Laboratory number: **Beta-198188**

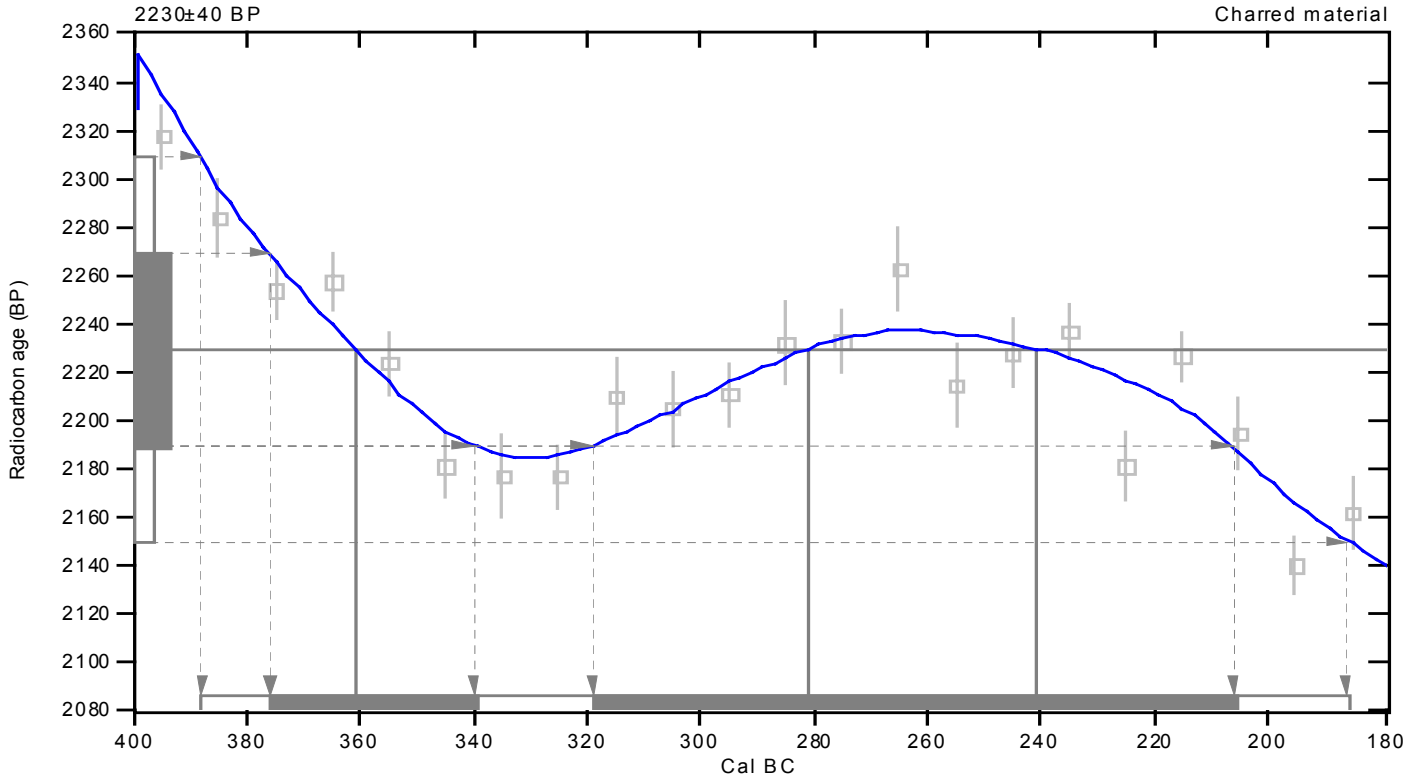
Conventional radiocarbon age: **2230±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 390 to 190 (Cal BP 2340 to 2140)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 360 (Cal BP 2310) and
Cal BC 280 (Cal BP 2230) and
Cal BC 240 (Cal BP 2190)

1 Sigma calibrated results: (68% probability) Cal BC 380 to 340 (Cal BP 2330 to 2290) and
Cal BC 320 to 210 (Cal BP 2270 to 2160)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.5:lab. mult=1)

Laboratory number: **Beta-198189**

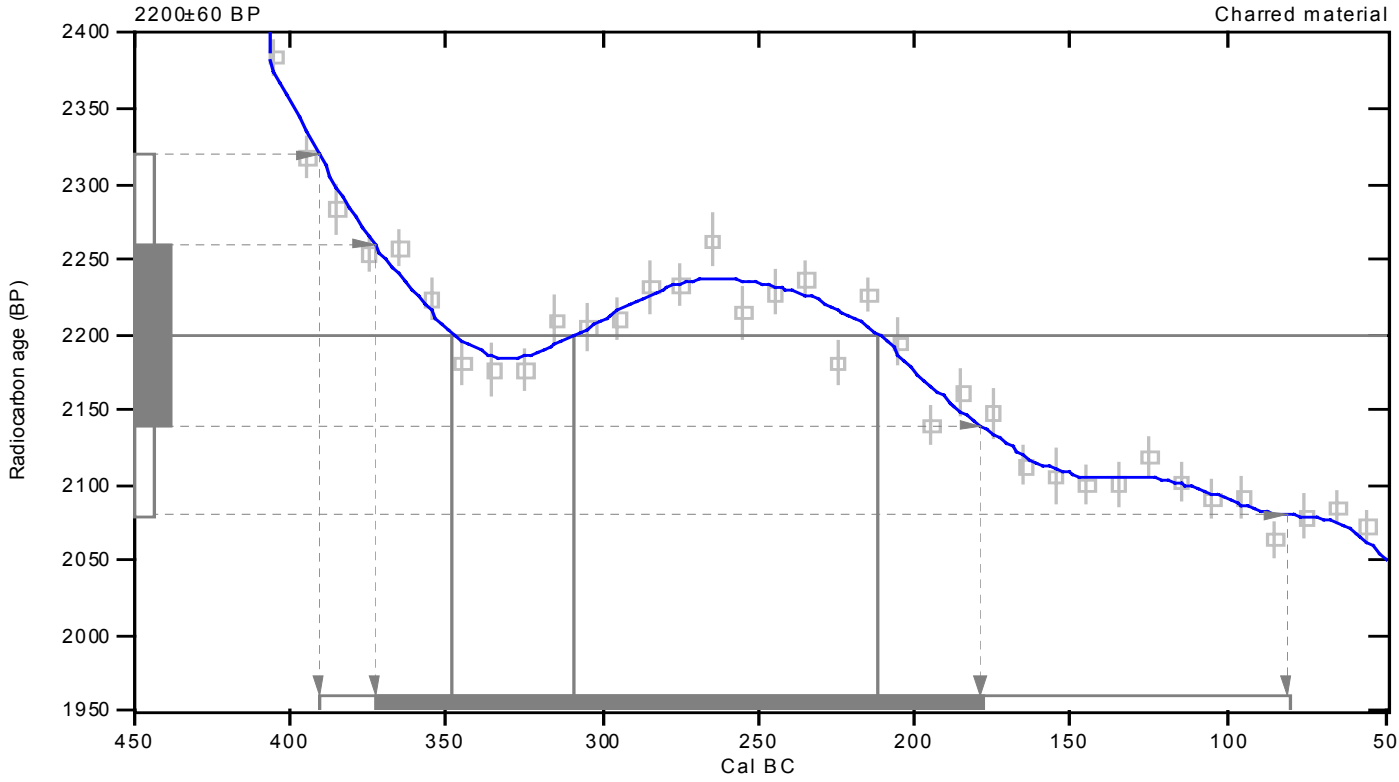
Conventional radiocarbon age: **2200±60 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 390 to 80 (Cal BP 2340 to 2030)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 350 (Cal BP 2300) and Cal BC 310 (Cal BP 2260) and Cal BC 210 (Cal BP 2160)

1 Sigma calibrated result: (68% probability) Cal BC 370 to 180 (Cal BP 2320 to 2130)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-28.2:lab. mult=1)

Laboratory number: **Beta-198190**

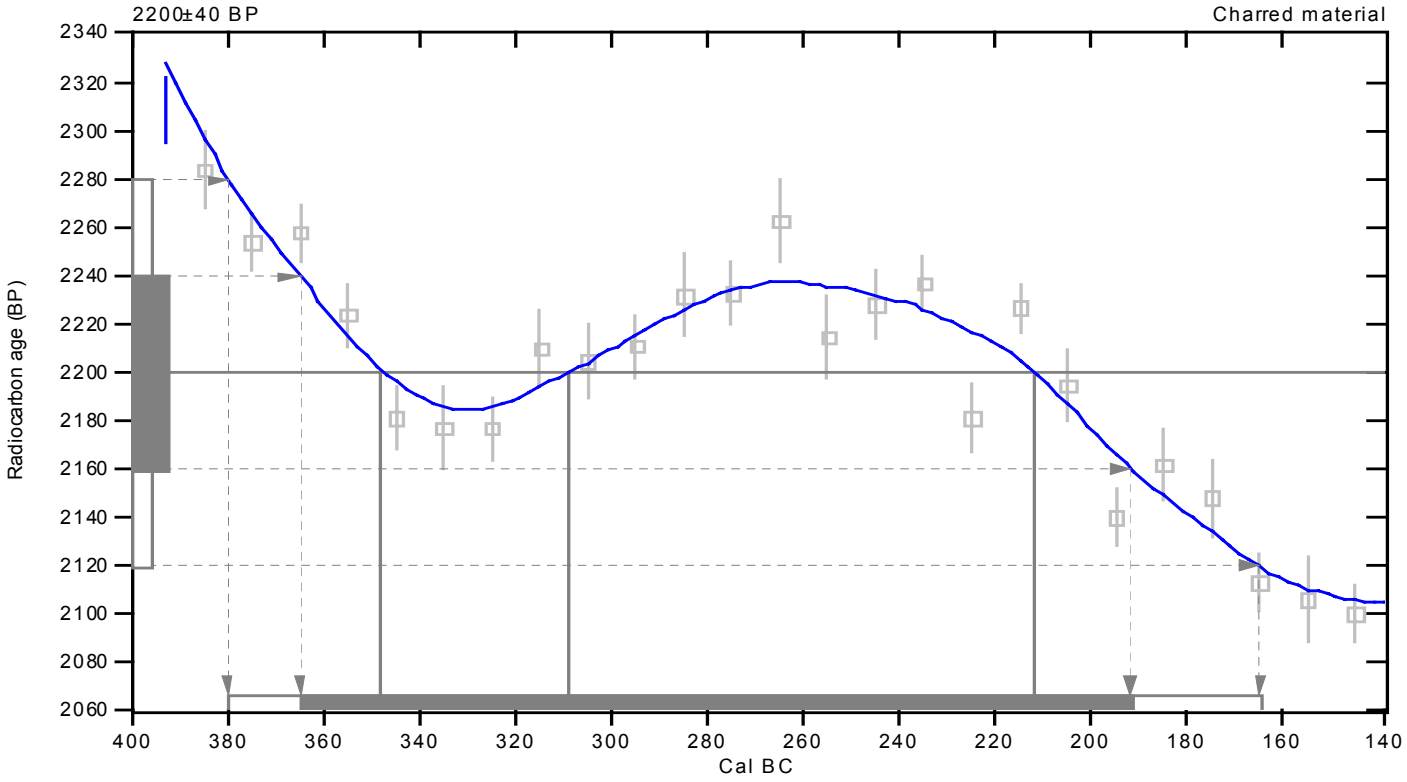
Conventional radiocarbon age: **2200±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 380 to 160 (Cal BP 2330 to 2120)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 350 (Cal BP 2300) and Cal BC 310 (Cal BP 2260) and Cal BC 210 (Cal BP 2160)

1 Sigma calibrated result: (68% probability) Cal BC 360 to 190 (Cal BP 2320 to 2140)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-28.5:lab. mult=1)

Laboratory number: **Beta-198191**

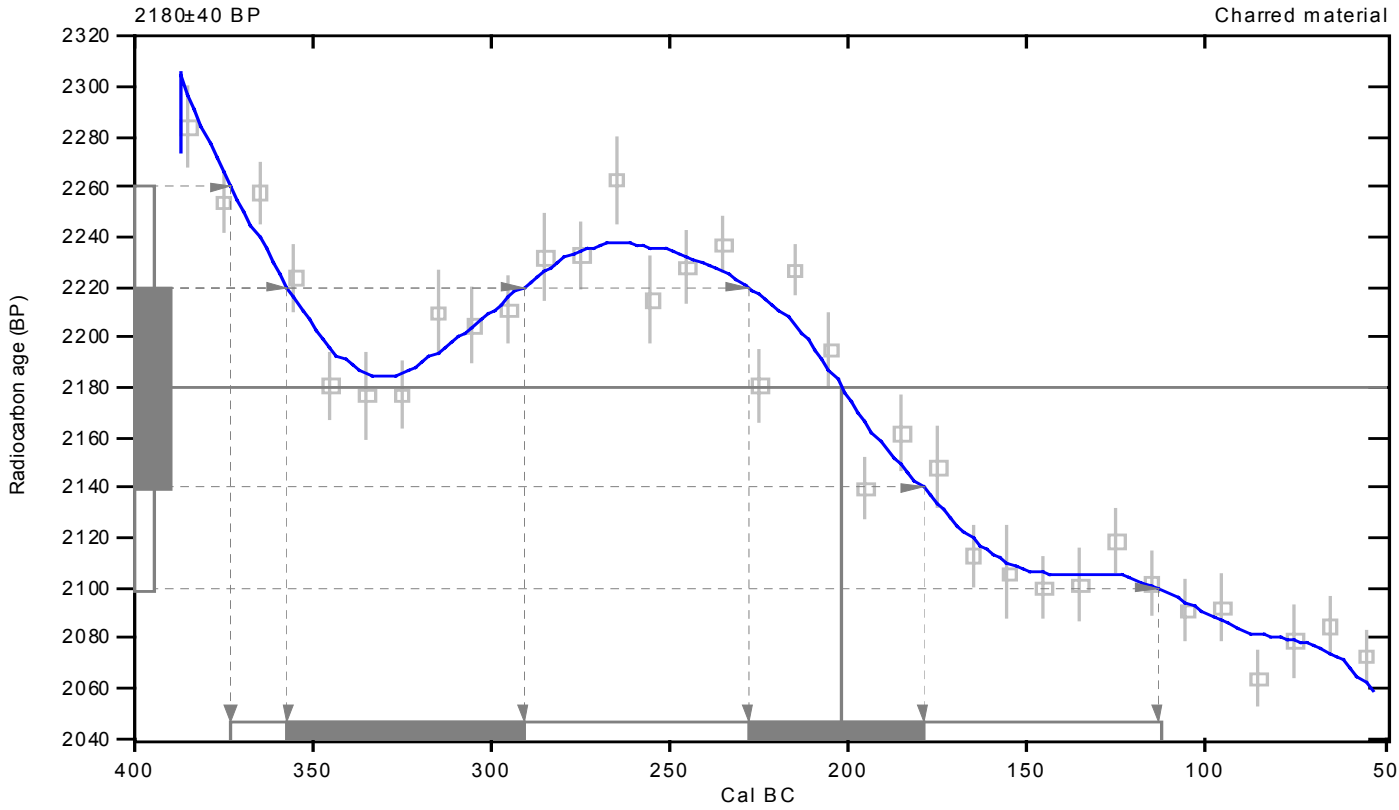
Conventional radiocarbon age: **2180±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 370 to 110 (Cal BP 2320 to 2060)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 200 (Cal BP 2150)

1 Sigma calibrated results: (68% probability) Cal BC 360 to 290 (Cal BP 2310 to 2240) and Cal BC 230 to 180 (Cal BP 2180 to 2130)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-27.5:lab. mult=1)

Laboratory number: **Beta-198192**

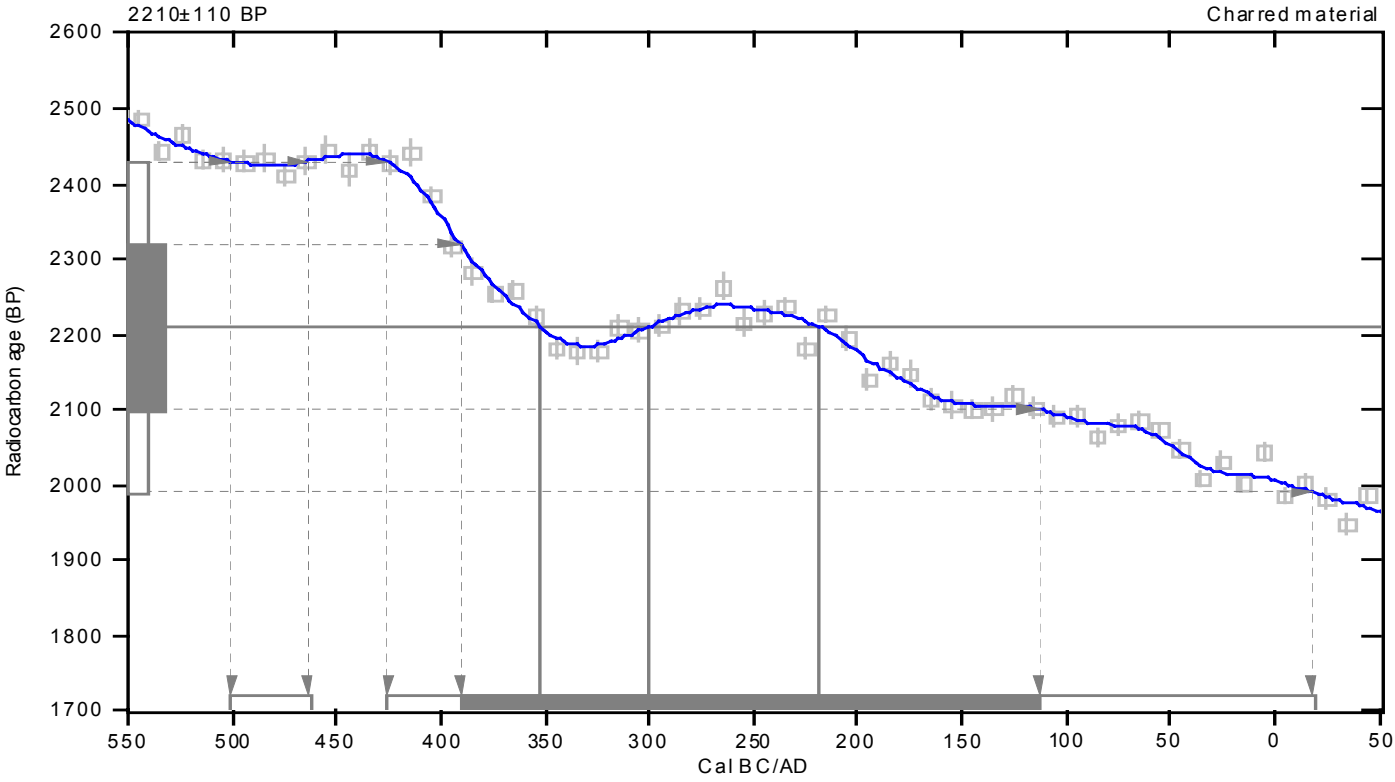
Conventional radiocarbon age: **2210±110 BP**

2 Sigma calibrated results: **Cal BC 500 to 460 (Cal BP 2450 to 2410) and**
(95% probability) **Cal BC 430 to Cal AD 20 (Cal BP 2380 to 1930)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 350 (Cal BP 2300) and
Cal BC 300 (Cal BP 2250) and
Cal BC 220 (Cal BP 2170)

1 Sigma calibrated result: Cal BC 390 to 110 (Cal BP 2340 to 2060)
(68% probability)



References:

Database used
INTCAL98
Calibration Database
Editorial Comment
Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii
INTCAL98 Radiocarbon Age Calibration
Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083
Mathematics
A Simplified Approach to Calibrating C14 Dates
Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.7:lab. mult=1)

Laboratory number: **Beta-198194**

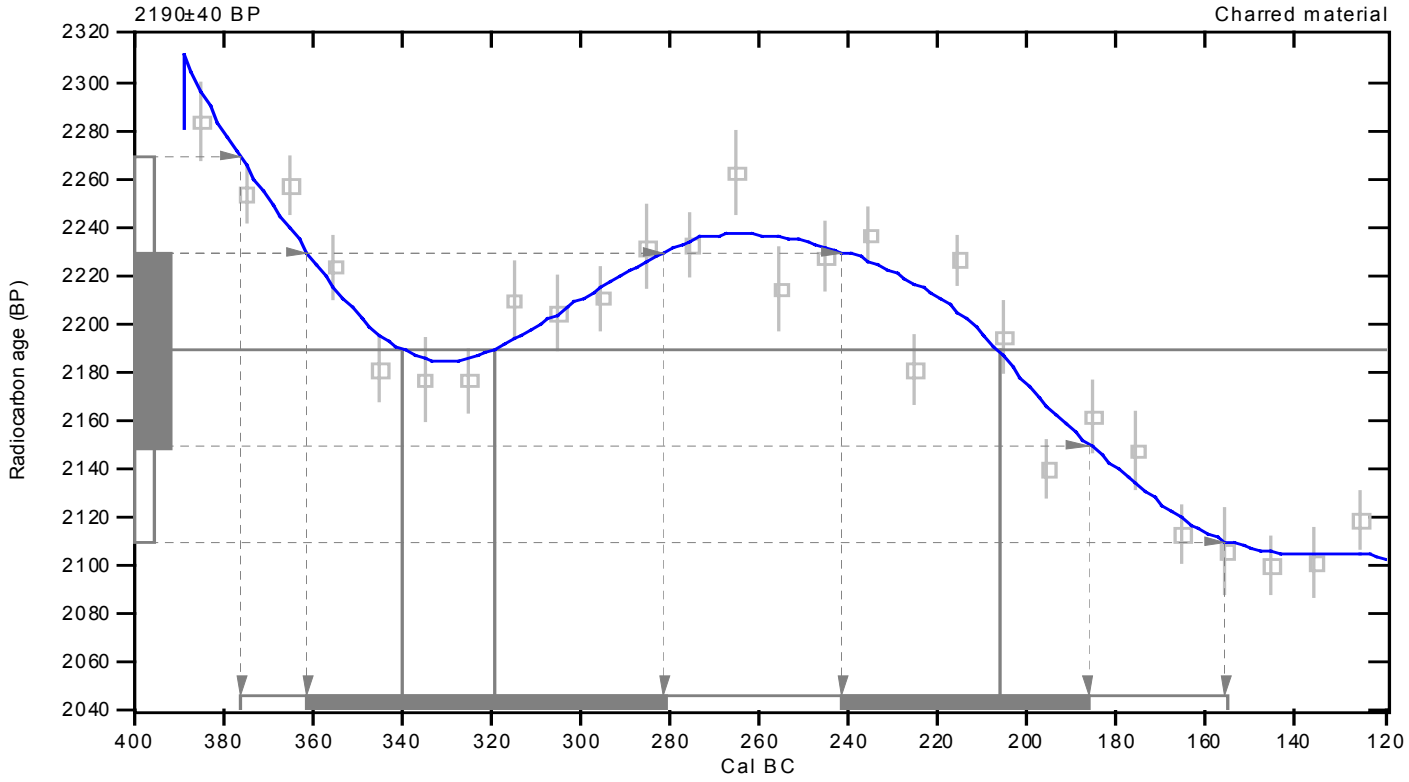
Conventional radiocarbon age: **2190±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 380 to 160 (Cal BP 2330 to 2100)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 340 (Cal BP 2290) and Cal BC 320 (Cal BP 2270) and Cal BC 210 (Cal BP 2160)

1 Sigma calibrated results: (68% probability) Cal BC 360 to 280 (Cal BP 2310 to 2230) and Cal BC 240 to 190 (Cal BP 2190 to 2140)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-24.9:lab. mult=1)

Laboratory number: **Beta-198196**

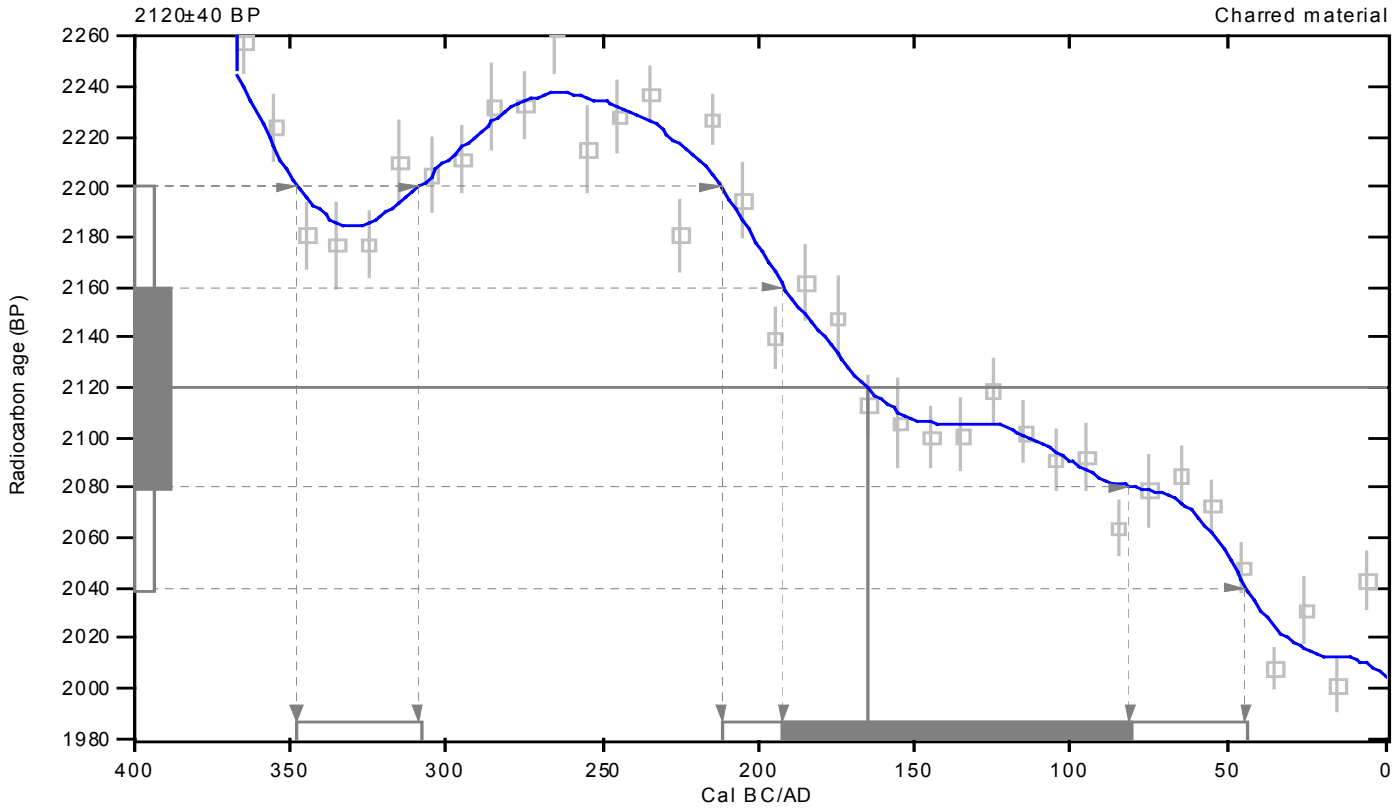
Conventional radiocarbon age: **2120±40 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 350 to 310 (Cal BP 2300 to 2260) and Cal BC 210 to 40 (Cal BP 2160 to 1990)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 160 (Cal BP 2120)

1 Sigma calibrated result: (68% probability) Cal BC 190 to 80 (Cal BP 2140 to 2030)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

Field Methodology, Mound 5, Chocolá, 2004 Season

La operación sobre el Montículo 15 fue abreviada en la nomenclatura de PACH como Operación 14. Features on Mound 5 which had been discovered during the 2003 season and which were suggestive of permanent architecture were deemed sufficiently interesting to explore in a fuller manner in 2004. The decision was taken to undertake intensive excavations employing a Cartesian grid system of 2 x 2 m grid units. In similar manner to that described above for excavations on Mound 15, JK instructed David Monsees to gradiometrically prospect the mound to help decide where to begin excavations, in this case out and around from the stone alignment discovered during the last days of the 2003 season, and which lay approximately one m below ground surface toward the east off the gentle slope of Mound 5. Using a total station a permanent benchmark (BM 50) anchored the shooting in of datums and subdatums to create the grid. The original 20 x 20 m grid, established with stakes and triangulation, reading from the total-station located datums and subdatums, later was expanded such that several 20 x 20 m grids around the original were established during the course of the excavations as necessary dependent on the findings below ground of what turned out to be a massive stone-walled platform structure extending from the furthermost east point – the east wall of which part belonged to the 2003 feature – 45 m west to the west wall and, to the north, from the north wall 40 m south to what we believe constitutes the south wall, based on the finding of an apparent southeast corner. The entire structure – if our estimated dimensions and orientations are correct – constitutes nearly the entirety of the topographically elevated Mound 5, with some allowance for collapse and other taphonomic processes such as crop turbation, other human interventions and disturbances, chiefly agricultural, and millennia of weather and longer-term geophysical cycles and events.

Once gradiometric prospection had been completed and hot-spots noted, excavation was guided by prompt discoveries of major cobble wall architecture, with the north wall emerging first, followed by the east wall. Continuing to adhere

to a Cartesian grid unit procedure – rather than, as is sometimes practiced in the lowlands, by excavating architecture without a systematic grid recovery of information – excavators were instructed to pursue by grid units west along the north wall and south along the east wall. In this manner, precise provenience information was obtained, controlled by constant tie-in to datums which had precisely known locations through measurements with the total station and by relation to BM 50.

In addition to seeking horizontally to delineate the outline of the platform, at least once the probable floor contemporary with the first course of the eight-course north wall was reached, vertical or diachronic investigations were undertaken, the location selected being the center of the mound. However, these latter investigations also ceased with discovery of a major burned clay feature; further investigations of this feature are contemplated for the future. These central pits, like all the other units, were tied in to the absolute locations known from BM 50.

BIBLIOGRAFÍA

Ashton, T. S.
1990 [1948] La revolución industrial 1760-1830. Fondo de Cultura Económica, Colección Breviarios. Chile Trad. Francisco Cuevas Cancino

Balcarcel, Beatriz
1997 Reporte 2 Investigación arqueológica 1989-1990 (Abaj Takalik). Miguel Orrego, ed. El Asintal, Retalhuleu, Guatemala. Ministerio de Cultura

Burkitt, Robert
1930 Excavations at Chocola; The Museum Journal 21:5-40. University of Pennsylvania Museum

Burkitt, Robert
Correspondence to Miss McHugh, from the University of Pennsylvania Museum. 27 de marzo de 1931. Pp. 1-2. Robert Burkitt Archives. Museum of the University of Pennsylvania

Calderón, Estuardo
2000 Paradojas inéditas en tierras guatemaltecas. Política Agraria y génesis de la conflictividad étnica en el pasado contemporáneo de Guatemala. IIHAA, Escuela de Historia, USAC y Facultad de Ciencias Políticas y Sociología. Universidad Pontificia de Salamanca. Guatemala

Cambranes, Julio C.
1975 Aspectos del desarrollo económico y social de Guatemala: a la luz de fuentes históricas alemanas, 1865-1885. IIES-USAC

1977 El imperialismo alemán en Guatemala: el tratado de comercio de 1887. IIES-USAC

1996 Café y campesino: los orígenes de la economía de plantación moderna en Guatemala, 1853-1897. Editorial Catriel-España

Carpio Rezzio, Edgar Humberto
1989 Las Herramientas de Obsidiana en Balberta: Tecnología y Función**.** Tesis de Licenciatura en Arqueología. Escuela de Historia, Universidad de San Carlos de Guatemala (USAC)

1997 Propuesta para el intercambio de la obsidiana en la Costa Sur. Taller Arqueología de la Región de la Costa Sur de Guatemala. Instituto de Antropología e Historia, Ministerio de Cultura y Deportes. Guatemala

1999 La obsidiana de Abaj Takalik: los estudios preliminares. Ponencia presentada en el VII Encuentro de Arqueología Maya del Centro Universitario de Petén (CUDEP). Santa Elena, Petén

Cifuentes, Edeliberto
1984. Los cafetaleros antes de 1871: sus demandas y contradicciones. IIES-USAC

Cifuentes, Edliberto, et.al.
1993 Historia del proceso de industrialización en Guatemala, 1871-1900. Cuadernos de Investigación, DIGI-USAC, No. 8-92

1998 Economía y sociedad en el siglo XIX: los impactos de la globalización. IIES-USAC

Cueva, Agustín
1986 El desarrollo del capitalismo en América Latina: ensayo de interpretación histórica. Siglo XXI. México

Demarest, Arthur A. y Robert J. Sharer
1986 Late preclassic ceramic spheres, culture areas, and cultural evolution in the southeastern highlands of Mesoamerica. En The Southeast Maya Periphery; Patricia A. Urban y Edward M. Schortman, eds.;194-223; University of Texas Press, Austin

Documento: Instrucciones para trabajo de campo. Proyecto Arqueológico Chocola. 2004. 6 págs. smdb.

Domínguez Rueda, Mario
1985 Evaluación de funguicidas en el control de la Roya del Cafeto (Hemileia vastatrix, Berk & Br.1869), Chocolá,. Tesis. Facultad de Agronomía. Universidad de San Carlos de Guatemala

Facultad de Ciencias Económicas
1984 Reglamento de jornaleros, Decreto No. 177 del 3 de abril de 1877. IIES-USAC

Figueroa Ibarra, Carlos
1980 El proletariado rural en el agro guatemalteco. Editorial Universitaria de Guatemala-USAC:Guatemala

García Laguardia, Jorge Mario
1985 La reforma liberal en Guatemala. Editorial Universitaria, USAC

Gutiérrez, Oscar Rolando

2003 Informe 1 Primera temporada 2003 Proyecto Arqueológico Chocolá. P.p. 116-134 Editores. Juan Antonio Valdés y Jonathan Kaplan. Informe entregado al IDAEH, Guatemala

2004 Comprendiendo la arquitectura del sector Sur de Chocolá. Ponencia presentada en el XVII Simposio de investigaciones arqueológicas en Guatemala.

Iglesias, Francisco
1981 A revolucao industrial. Editora Brasiliense, Brasil

Jones, Christopher
1986 A ruler in triumph: Chocolá Monument 1; Expedition 28(3):3-12

Kaplan, Jonathan
2001 Algunas consideraciones del apogeo “Miraflores” en el Preclásico Tardío de Kaminaljuyu; en XIV Simposio de Investigaciones Arqueológicas en Guatemala; Juan Pedro Laporte, Ana Claudia de Suasnávar, and Bárbara Arroyo, eds.; 39-46; Ministerio de Cultura y Deportes, Instituto de Antropología e Historia, Asociación Tikal, Guatemala

2004 Early Monumental Architecture at Chocolá, a Major Regional Center in Guatemala's Bocacosta: Nature and Comparison to Kaminaljuyu and Other Preclassic Sites of the Seminal Southern Maya Zone. American Anthropological Association annual meeting, Atlanta

____ Métodos, Teorías y Avances del Proyecto Arqueológico Chocolá. Paper presented at the XVIII Simposio de Arqueología Guatemalteca, Guatemala City

2005 The Hubris of Cacao: Some speculations about the rise of social and cultural complexity in the Maya trajectory in the Guatemalan *Bocacosta* at the site of Chocola. 23rd Maya Weekend, University of Pennsylvania

Kaplan, Jonathan and Juan Antonio Valdés
2004 Chocolá, an Apparent Regional Capital in the Southern Maya Preclassic: Preliminary Findings from the Proyecto Arqueológico Chocolá (PACH); Mexicon XXVI:76-84

Lowe, Gareth W., Thomas A. Lee Jr. y Eduardo Martínez Espinoza
1982 Izapa: An introduction to the ruins and monunments. Papers of the New World Archaeological foundation No. 31. Brigham Young University, Provo

Martínez, Gustavo, Tannia Cabrera y Nancy Monterroso
1995 Urbanismo y diseño en la plaza Mirador de Kaminal Juyu, Guatemala. IX Simposio de Investigaciones Arqueológicas en Guatemala. PP. 397. Editores J.P. Laporte y H. Escobedo Museo Nacional de Arqueología y Etnología. Guatemala

McCreery, David
1981 Desarrollo económico y política nacional: el Ministerio de Fomento de Guatemala, 1871-1885. CIRMA

Mendoza, Edgar S. G.
1997 Posiciones teóricas en la arqueología de Guatemala. Escuela de Historia USAC.

Monografía Mínima de Chocolá. 2001. Chocolá, Suchitepéquez, Guatemala. Smdb.

Mosk, Sanford
1958 Economía cafetalera de Guatemala durante el período 1850-1918; en Economía de Guatemala; 161-182. SISG

Ohi, Kuniaki
1994 Kaminaljuyu, Museo del Tabaco y Sal, Tokio, Japón. Vol. I y II

Orrego Corzo, Miguel
2004 Entrevista personal sobre posible funcionalidad de la Estructura 5-1 de Chocolá

Paredes Umaña, Federico, Margarita Cossich Vielman, Diana Belches Luin, Jonathan Kaplan y Juan Antonio Valdés
2004 Un sistema de Manejo de Agua en el Grupo Norte de Chocolá; en XVII Simposio de Investigaciones Arqueológicas en Guatemala; Juan Pedro Laporte, Bárbara Arroyo, eds., Guatemala

Parsons, Lee A.
1986 The Origins of Maya Art: Monumental Stone Sculpture of Kaminaljuyu, Guatemala and the Southern Pacific Coast. Studies in Pre-Columbian Art and Archaeology No. 28; Dumbarton Oaks Research Library and Collection, Washington, D.C.

Piedra-Santa Arandi, Rafael
1981 Introducción a los problemas económicos de Guatemala. Editorial Universitaria, USAC

Poitevin, René
1977 El proceso de industrialización en Guatemala. EDUCA, Costa Rica

Popenoe de Hatch, Marion
1997 Kaminaljuyu/San Jorge: Evidencias Arqueológicas de la Actividad Económica en el Valle de Guatemala. 300 A.C. a 300 d.C. Universidad del Valle de Guatemala

Scarborough, Vernon L.
2003 The Flow of Power: Ancient Water Systems and Landscapes. School of American Research Resident Scholar Book, SAR Press, Santa Fe

Schieber de Lavarreda, Christa
1991 Abaj Takalik. Un caso de arquitectura de barro del Preclásico medio. Tesis de graduación. Escuela de Historia. Universidad de San Carlos de Guatemala

Schieber de Lavarreda, Chista y Miguel Orrego. Abaj Takalik. Galería Guatemala, Fundación G&T Continental. Guatemala. 2002. Pps 19, 22, 23, 36 y 37

2002 Los Senderos Milenarios de Tak'alik Ab'aj. Folleto. Ministerio de Cultura y Deportes, Dirección General del Patrimonio Cultural y Natural / IDAEH. Guatemala. 2002. P 19

Shook, Edwin M.
Notas de Campo (241)-1943. Conferencias, Costa Sur y Altiplano occidental de Guatemala; 68-74. Departamento de Arqueología, Universidad del Valle de Guatemala

1978 Enero Febrero. Chocolá. Departamento de Arqueología, Universidad del Valle de Guatemala

Valdés, Juan Antonio
2004 The Strategic Site of Chocolá and its Relation to Kaminaljuyu, Guatemala, in the Southern Maya Area. Society for American Archaeology, Montreal.

Valdés, Juan Antonio, Jonathan Kaplan, Oscar Gutiérrez, Juan Pablo Herrera y Federico Paredes Umaña
2003 Chocolá: un centro intermedio entre la Bocacosta y el Altiplano de Guatemala durante el Preclásico Tardío. En XVII Simposio de Investigaciones Arqueológicas en Guatemala. 449-460. Museo Nacional de Arqueología y Etnología

Wagner, Regina. Los Alemanes en Guatemala, 1828-1944. Segunda edición. Guatemala. 1996

Wagner, Regina
1987 Actividades empresariales de los alemanes en Guatemala, 1850-1920. Mesoamérica No. 13:87-123

1994 Historia social y económica de Guatemala (1524-1900). ASIES

1996 Los alemanes en Guatemala, 1828-1944. Editorial Afanes S.A

2001 La historia del café de Guatemala. Villegas Editores-ANACAFE

Wittfogel, Karl A.
1957 Oriental Despotism: A Comparative Study of Total Power. Yale University Press, New Haven