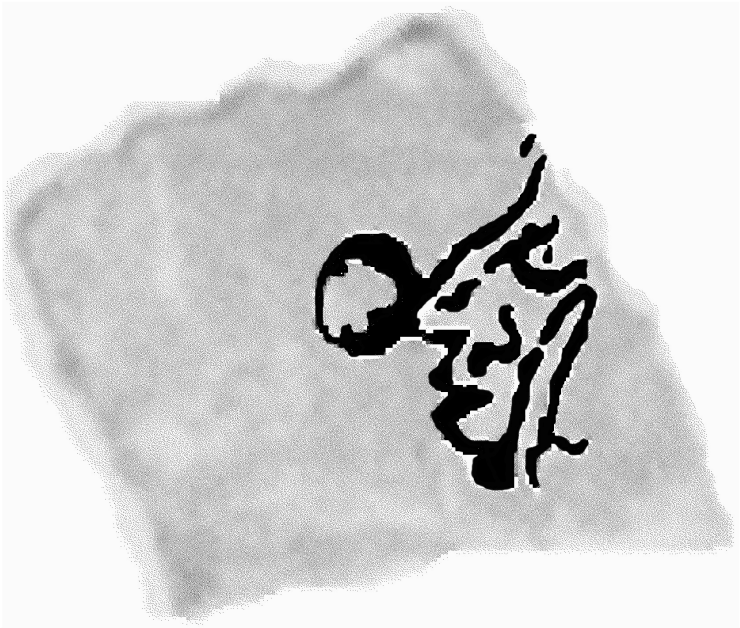
The Belize Valley Archaeological Reconnaissance Project

A Report of the 2008 Field Season



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Cover: Painted ceramic sherd featuring a human face and nasal motif, Baking Pot, Belize. Drawing by Julie A. Hoggarth (2008).

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THE 2008 SEASON OF INVESTIGATIONS

In its twenty-first field season working in the Belize Valley under the direction of Dr. Jaime J. Awe, the Belize Valley Archaeological Reconnaissance (BVAR) project conducted archaeological research focused at the site of Baking Pot, in the Cayo District of western Belize. Following the initiation of the second-phase of settlement research at Baking Pot by BVAR in 2007, Eva Jobbová continued the settlement survey in 2008 and completed the mapping of the nine-square kilometer area encompassing epicentral Baking Pot and connected it with Willey's surveys of Barton Ramie and Spanish Lookout. This created a contiguous block coverage survey area totaling over twenty two square kilometers. Future research will expand this area, in order to provide contiguous coverage to the BRASS project survey transect centered at Bacab Na. Overall, a long-term program of settlement survey is planned by the BVAR project, in order to understand settlement and political organization in the Belize River Valley, extending from Cahal Pech to the confluence of the Mopan and Macal Rivers and downriver to the Roaring Creek Valley. This research will seek to integrate the various BVAR projects at Cahal Pech, Baking Pot and in the Roaring Creek Valley to provide a complex and detailed view of life, politics and occupation in this region.

In addition to the settlement survey, Julie Hoggarth continued the epicentral settlement excavations at Baking Pot through a systematic program of test-pit excavations as well as horizontal excavations of select house groups in Settlement Cluster C. The twenty percent stratified sample of test-pit excavations continued in the 2008 field season, aiming to provide detailed demographic and chronological information about the settlement at Baking Pot. In addition, a small sample of horizontal excavations was initiated in order to understand changes in household and community organization in the Classic to Postclassic transition.

We would like to thank the Institute of Archaeology for permitting us to conduct the research described in this volume. In addition, the staff and administrators of Galen University were integral in setting up the accreditation of the field school. The staff of the Livestock Section of Central Farm has been indispensable by providing the project with space to store equipment and to set up our on-site lab. In addition, throughout the survey research, local landowners have graciously given their permission for us to survey their land. Accommodations were arranged at Midas Resort Hotel, whose staff we thank for their hospitality and assistance. Hode's restaurant served as our "home base" for lectures, meals, and occasional rainy-day workshops. We cannot even begin to express our gratitude for their staff's flexibility and ability to manage a group such as ours. Finally, we want to thank Pacz Tours for transporting us to the site each day, as well as on our various field trips around the valley.

As a project, BVAR strives to continually involve its students and staff in the research and logistical aspects that are necessary to run an archaeological project. As a field school, providing opportunities for learning and advancement is the key for teaching the next generation of Maya archaeologists. Thus, the success of the 2008 season is the result of many. First, we acknowledge the hard work and dedication of the field school students in June and July 2008. Second, we wish to thank the staff for a great season, which any successes are due to their cooperation and teamwork. These individuals include Muggs Alexander, Chris Awe, Andrew Bevan, Reynaldo Cunil, Rafael Guerra, Christophe Helmke, Antonio Itzá, Luis Itzá, Eva Jobbová, Jillian Jordan, Céline Lamb, Shawn Morton, Phylicia Pelayo, Gilberto Puc, José "Jim" Puc, Jim Puc Jr., Ben Russell, Myka Schwanke, Martin Sneddon and Christina Zweig.

Julie Hoggarth – San Ignacio, Belize

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SETTLEMENT AND COMMUNITY ORGANIZATION IN THE CLASSIC TO POSTCLASSIC TRANSITION: RESEARCH METHODOLOGY AND AIMS OF THE 2007 TO 2010 SETTLEMENT RESEARCH AT BAKING POT, BELIZE

Julie A. Hoggarth
University of Pittsburgh

INTRODUCTION

In the summer of 2007, Belize Valley Archaeological Reconnaissance (BVAR) project recommenced settlement research at Baking Pot, which followed–up the settlement pattern research undertaken by Gordon Willey in the 1950s, and continued with BVAR survey conducted by James Conlon during the field seasons 1993 to 2000 (Conlon 1993, 1995, 1997, Conlon and Ehret 2000). Previous research mapped the area on the east from the monumental epicenter of the site, including the settlement of North Caracol Farms. Primary objectives of the 2007 field season were to extend the survey to the west and making it symmetrical with the eastern survey boundaries, for a total of an area of approximately 9 km^2. In 2008 this research was continued, extending the settlement survey to the east to Barton Ramie, and to the west. In addition, a comprehensive program of test excavations within the epicenter of Baking Pot was initiated in 2008, seeking to understand the demographic changes at Baking Pot, as well as to provide a baseline in which to understand changes in community integration and organization, particularly in the transition from the Classic period to the Postclassic period. Ongoing research in the 2009 and 2010 field seasons will focus on the horizontal excavation of select house groups in order to gain a more detailed perspective of how commoner households in the Baking Pot settlement were integrated within their communities; moreover, how community and domestic organization changed through time. This paper will detail the main theoretical and methodological background that f the basis of the author's doctoral dissertation research focusing on household and community organization at Baking Pot in the transition from the Classic to Postclassic period.

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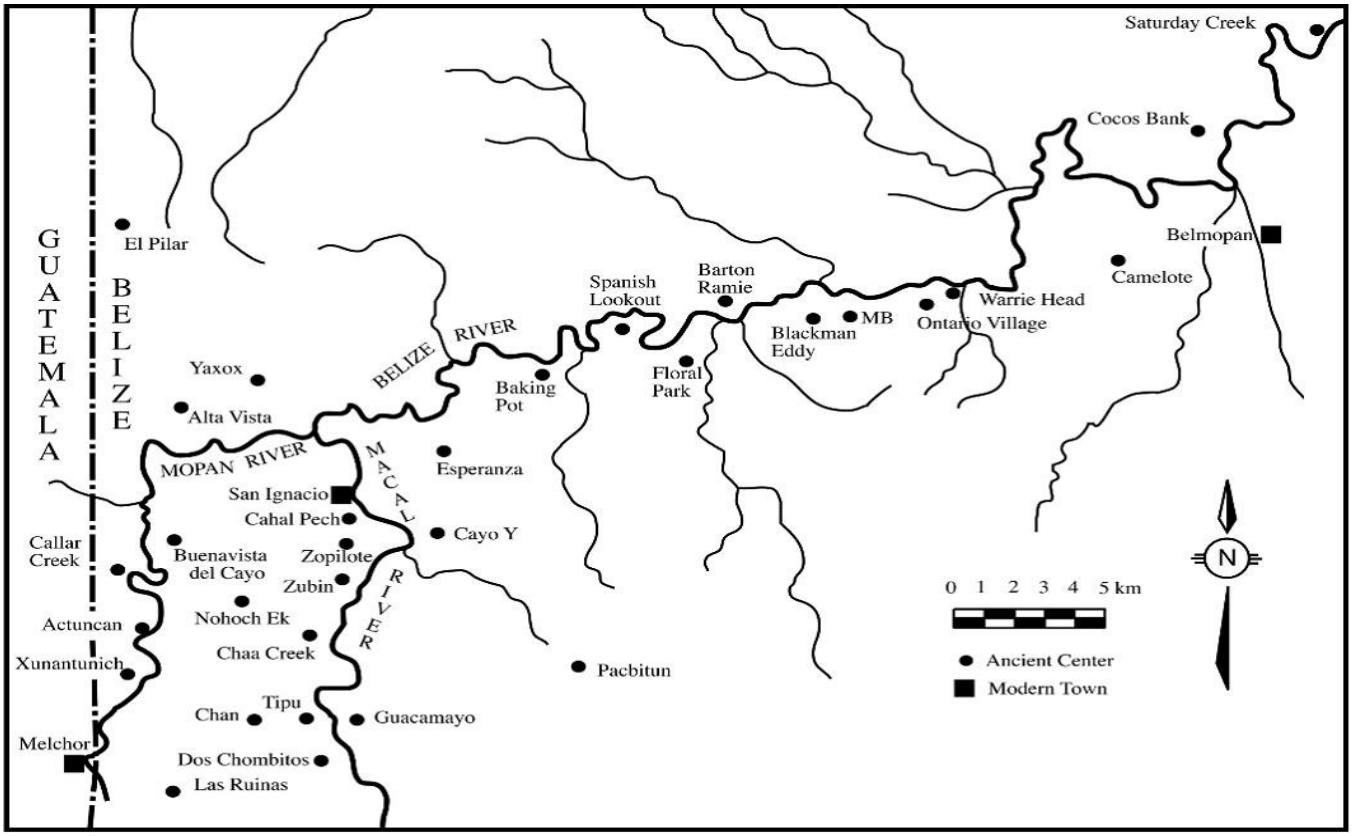

Figure 1: Map of the Upper Belize Valley (from Iannone 2002).

BACKGROUND

The Belize Valley (figure 1) is located in western Belize, and encompasses a region including the confluence of the Macal, Mopan, and Belize rivers into the savanna region of central Belize. The largest settlements in the valley, including Xunantunich, Buenavista del Cayo, Cahal Pech, and Baking Pot, occur near the alluvial floodplain, and tend to be located approximately 10 kilometers apart (Driver and Garber 2004). Epigraphic information, as well as the valley's proximity to Naranjo has led many to infer its political control over the region (Audet 2006; Driver and Garber 2004; Fields 2004).

The site of Baking Pot is located in the Cayo District of western Belize, on the southern bank of Belize River, located approximately equidistant between Cahal Pech to the west and Blackman Eddy to the east. As one of the larger settlements in the Belize Valley, Baking Pot was occupied beginning in the end of the Middle Preclassic period into the Middle Postclassic period, reaching its peak during the Late Classic period (AD 600-850) when it served as the capital to a small kingdom (AD 250-830). Settlement

Figure 2: Epicentral and peripheral Baking Pot (map by E. Jobbová and A. Bevan, 2008).

surveys by Willey *et al* (1965) estimated a Late Classic population around 2,000, confirmed by more recent surveys estimating the population around 2,650. Early investigations at the site were first conducted by Ricketson (1929), as part of the Carnegie Institution of Washington, and later by Anderson's salvage efforts and Bullard's (1963) excavation of the ceremonial epicentral complex. Gordon Willey conducted first settlement survey and mapping of Baking Pot in 1956, and also conducted a series of test excavation of some of the house mounds, as part of his settlement pattern study of Belize River Valley (Willey et al. 1965). His work at Baking Pot was only a portion of his influential work focusing on settlement and occupation in the region (Willey and Bullard 1956; Willey et al 1955; Willey et al 1965). His research at Barton Ramie established the chronological sequence for the Belize Valley, but more importantly, draw attention to settlement patterns, beginning with ordinary households and small settlements, rather than elites at larger centers (Chase and Garber 2004). Despite his attempts at Barton Ramie to select a site which represented the lowest tier in the social spectrum of Maya society, recent research indicates that Barton Ramie is actually a part of the settlement of the much larger site of Lower Dover, on the southern bank of the Belize River (Wolfel et al. 2009).

During the 1992 through 2000 seasons, the Belize Valley Archaeological Reconnaissance (BVAR) project continued settlement research at Baking Pot, expanding and updating the original map of Baking Pot produced by Gordon Willey (Conlin & Ehret 2000). Since Conlin's work, the second phase of settlement research by BVAR, initiated in 2007 has extended Conlin's survey boundaries to the western highway in the south, out to encompass the Bedran group in the west and outward to the east to connect with Willey's surveys of Spanish Lookout and Barton Ramie (Jobbová, this volume). In total, the settlement area mapped to date encompasses approximately 22 km^2 (Figure 3). Within this area, the settlement of epicentral Baking Pot (continuous settlement associated with the monumental epicenter) encompasses an area of 9 km^2, consisting of over 600 assumed "residential" structures.

THEORETICAL CONSIDERATIONS

Settlement and community-based archaeology relies on the collection of data relating to domestic units across the landscape. In the Maya area, domestic units range in size and complexity, ranging from individual structures, grouped domestic units, and neighborhoods, which ultimately make up the settlement of a polity (Ashmore 1981). It is the work of settlement archaeology to create bridging arguments in order to link archaeological materials with human behavior (de Montmollin 1989, 1995). Household archaeology complements settlement archaeology, as it seeks to understand social and economic organization at the basic unit of analysis, focusing on aspects of production and cooperative activity. Archaeologically, the people-focused element of study is often substituted by their archaeological correlates, such as housemounds and the materials found in association with them. Mound function is often only determinable through excavation, through the presence of utilitarian goods, activity areas, and other markers of

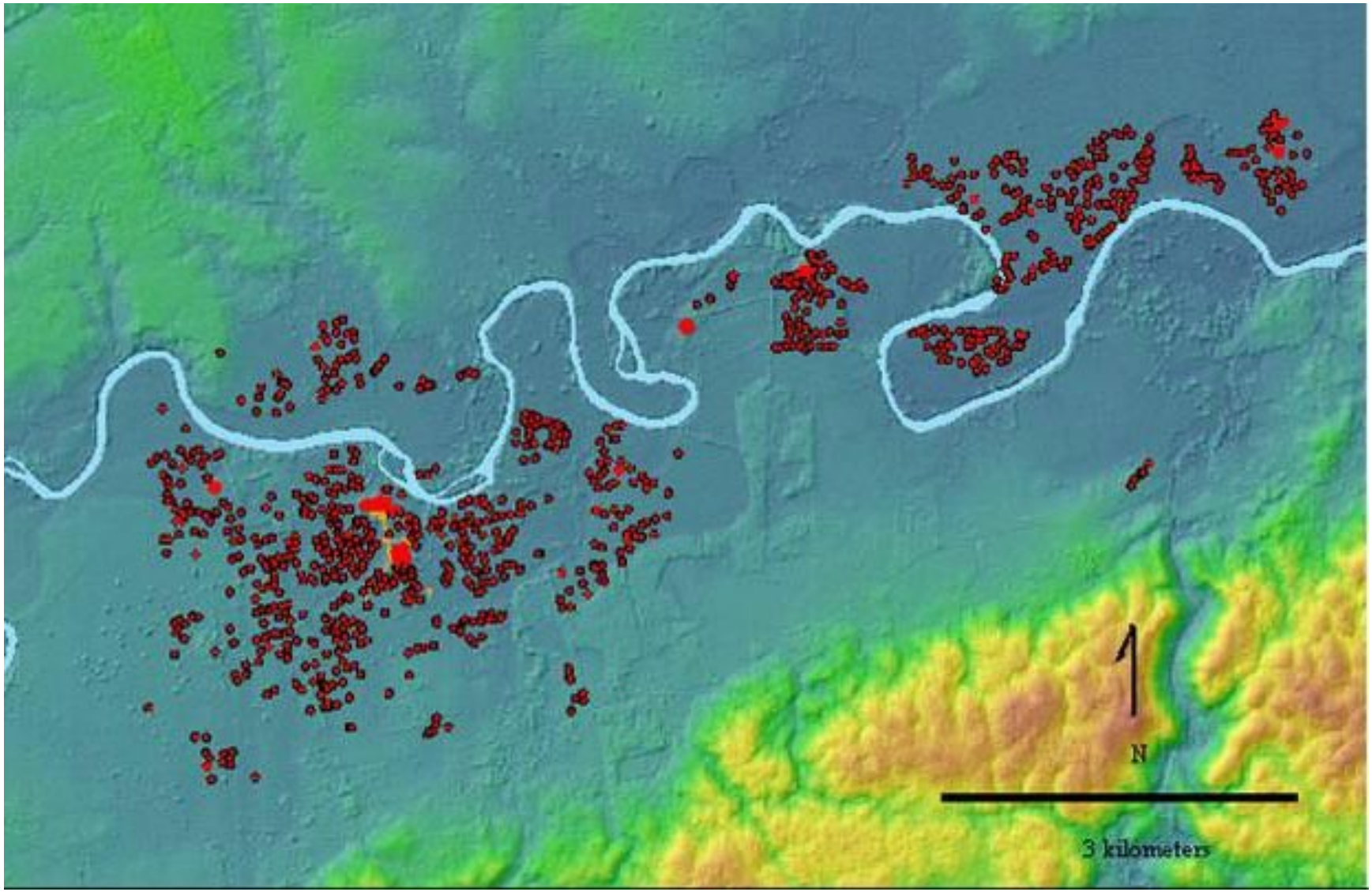

Figure 3: Settlement at Baking Pot, Spanish Lookout, and Barton Ramie (map by E. Jobbová and A. Bevan 2008).

domestic activity, but is often assumed due to the size and location of mounds (Ashmore 1981). The size and number of grouped structures is often used to address differences in status (Netting 1982; Wilk 1991, 1983), the developmental cycle of the household (Fortes 1958; Goody 1972; Haviland 1988; Tortellot 1988), the household as an economic unit (Wilk and Netting 1984), reinforcing shared identity (Wilk 1991), as well as the duration of occupation and claims to land (McAnany 1995). House groups can be determined based on the relationships between structures, including location (distance between structures,), orientation, and shared architectural or spatial features (architectural features adjoining separate buildings, structures oriented around a shared patio) (Ashmore 1981:47-51). The settlement research conducted by the Belize Valley Archaeological Reconnaissance Project in the 2007 season recorded data on domestic groups at Baking Pot, including the location, size and number of structures, orientation, and presence of surface materials in order to understand these variables in relation to the broader theoretical topics linking the material remains that we encounter today and what they tell us about social processes and behavior in the past.

Community-level archaeological approaches in the Maya area have received a significant amount of attention in recent years, particularly those focusing on smaller settlements (see Iannone and Connell 2003; Douglass 2002; Yaeger 2000). Settlement archaeology relies on the material remains of a site, a middle-scale level of inquiry between household and regional studies, in order to infer information about the processes and dynamics of communities as social units through time (Yaeger 2000:27-28). The middle-level perspective of settlement archaeology allows for the investigation of top-down approaches to community, such as the integration of communities into social hierarchies and political systems, as well as the bottom-up approaches emphasizing the interaction of domestic level with political institutions (de Montmollin 1988; Marcus 1983). Settlement research at Baking Pot seeks to apply both of these perspectives, integrating research at the household level with broader community and regional patterns of social change.

RESEARCH QUESTIONS AND METHODOLOGY

Research in 2008 continues to focus on settlement in and around the polity of Baking Pot. The main aim of this research will investigate the question of how settlement within and outside of the polity of Baking Pot changed, focusing particularly on the Classic to Postclassic transition which witnessed drastic shifts in Maya society. This research, started in 2007, has utilized three phases of research in order to understand settlement in and around Baking Pot at various social scales.

The first phase of research addresses the nature of settlement in and around Baking Pot in general. To address this issue, a systematic survey program aims to record several attributes of domestic architecture, including the location, size and height, number of associated structures, visible architectural elements, and associated surface materials (Conlin 2000; Hoggarth and Jobbová 2008). The Belize Valley Archaeological Reconnaissance project at Baking Pot surveyed the extent of settlement in a 9 km^2 block

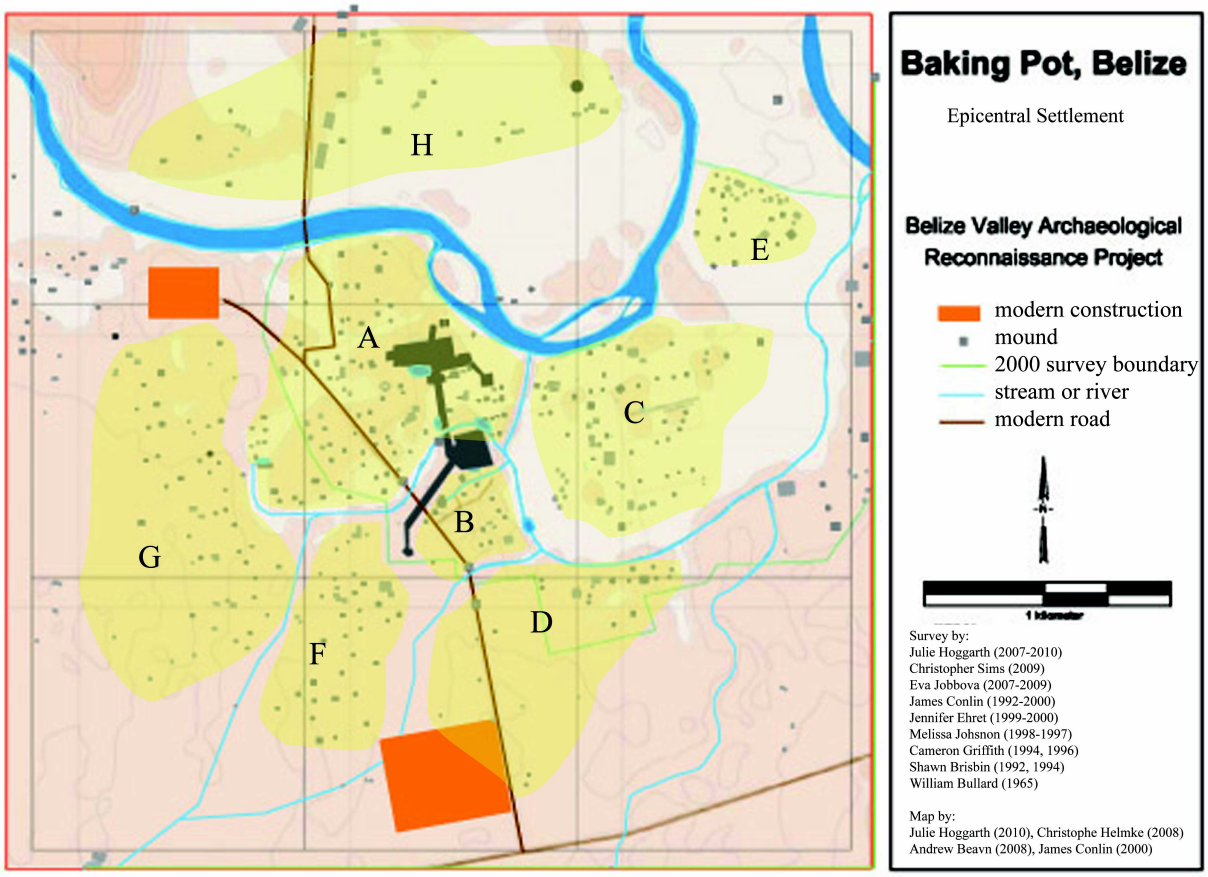

Figure 4: Settlement clusters associated with epicentral Baking Pot (Map by Hoggarth 2009).

(Figure 4) around the monumental epicenter of the site during the 2007 through 2008 seasons, and expanded to the east and west in the periphery of Baking Pot. In the 2009 season, survey will continue to the west, linking up the BVAR survey area with Anabel Ford's (2004) survey from Bacab Na into the karstic limestone foothills to the north. If time permits, the survey will continue westward, eventually connecting the Cahal Pech survey with the Baking Pot survey, which will provide a continuous area from Cahal Pech to Barton Ramie in which to understand the nature and changes in settlement in the Belize Valley from the perspective of centers of various scales of political complexity. This research will extend into the 2010 field season.

The second phase of research to address the periods of occupation within the epicenter of the Baking Pot polity through test excavations of a stratified random sample of 20 percent of the intervening house groups at the site to gain a perspective on how communities within the polity changed demographically, as well as through time. In conjunction with the third methodology of horizontal excavations, this serves to provide a baseline from which to understand changes in ancient communities at Baking Pot. This

second phase of research was started in 2007 and continued in the 2008 field season. This phase of research was initiated in 2008 will be completed in the 2009 season.

The third methodology examines how changes at the community and domestic levels may have been related or integrated through the horizontal excavation of six house groups at various status levels. This research, which is the predominant focus of the 2008 field season, investigates how commoner households adjusted changes in Classic Maya political organization through participation in political, economic, and religious strategies associated with the reorganization of society in the Terminal Classic period. In response this research aims to evaluate nature of social reorganization in relation to how households were integrated within the community, in order to understand how political, economic, and religious strategies may have been utilized by commoner households to take advantage of broader changes in domestic and community activities. Using a community-based approach, the research focuses on strategies of integration and differentiation within communities at Baking Pot, including political activities such as feasting, mercantile activities of trade and exchange, and religious strategies of adopting new religious ideologies associated with "internationalized" pan-Mesoamerican ideology. The following sections detail the theoretical models employed to understand these changes, as well as the methodology utilized to address such questions, and implemented in the 2008 season.

Political Strategies of Integration and Differentiation

Political relationships during this time would have been significantly altered by the cessation of dynastic kingship. The political activities attached to this role included the regulation of tribute, the maintenance of alliances with royal and noble families, as well as a central role in ritual and warfare (Sharer and Traxler 2006). The processes of sociopolitical collapse may lead to the dissolution of centralized political power; however, it also provides options for the appropriation of political power outside of previously controlled hierarchical structures (Brumfiel 1994:10). Several strategies have been proposed for the development of political power, including status competition through the display and exchange of prestige goods (Blanton et al 1996), redistribution (Earle 1977), and feasting activities generating social debt (Clark and Blake 1994, Dietler and Hayden 2001). Although these strategies for the establishment of political power are generally used to account for the development of political power during the centralization of society, the same opportunities may also exist in the context of decentralization (Urban and Schortman 2004).

Using ceramic evidence from Xunantunich and surrounding settlements, LeCount (1999) presents a model of commoner participation in social reorganization through political means. She notes the changing distribution of fineware serving vessels in elite and commoner domestic contexts from the Late Classic to Terminal Classic period, in which these types of vessels were distributed mainly in elite domestic contexts during the Late Classic and changed to a more even distribution during the Terminal Classic period. LeCount uses this evidence to suggest that elites at Xunantunich formed political alliances with high status commoner households, through the hosting of feasts and

distributing elaborate serving vessels to commoners attending these feasts in order to strengthen community integration in the Xunantunich polity. Although LeCount does not suggest commoner hosting of feasts, Ashmore *et al.* (2004) suggests that commoner households may have also used these social strategies in response to changes in Classic political organization.

Changing political strategies through hosting feasts would be indicated by an increase in the proportion of elaborate serving vessel sherds, including those from polychrome and ash-tempered serving vessels, relative to total ceramic sherds. This argument stems from the importance of the visual presentation of food for impressing the attendees of a feast, where decorated serving vessels would be integral to the success of the feast as a means of social differentiation as well as for displaying social relationships and affiliations. Other evidence for the hosting of feasts would be indicated by a greater proportion of sherds from open vessel forms in relation to total sherds. This argument also relates to food presentation, where more food is being served in comparison to typical domestic contexts of comparable size to accommodate the larger number of attendees. The last line of evidence to identify the hosting of feasts relates to the preparation of food, with households hosting feasting having greater proportions of materials relating to the preparation of food, in relation to typical proportions of food preparation remains. Households hosting feasts would be marked by evidence of both higher proportions of remains from food preparation and consumption, as both of these activities as integral to feasting activities themselves. As a result, hosting households may have higher than average proportions of faunal material such as animal bone or jute shell in addition to greater proportions of serving vessels.

In contrast, changing political strategies through attendance at feasts would be differentiated by higher than typical food preparation remains in relation to normal food preparation levels in domestic contexts. As feasts were loci for the redistribution of fineware serving vessels to attendees, households who attended feasts would also have higher proportions of fancy serving vessels, and since they are not hosting the event, attendee households would have proportions of open forms of ceramic vessels that are typical of regular domestic activities. In addition, households attending feasts would not have evidence of increased food preparation, as these activities are assumed to have been performed by the hosts. Turkon (2004) suggests that differential levels of food preparation activities offers an opportunity for understanding social relationships, as the preparation and presentation of food is one means of social differentiation. Thus, the distribution of material remains from food preparation activities can provide the distinction between households which were hosting and attending feasts.

In order to understand if both low and high status commoner households were equally participating in changing strategies of political activities through the hosting of or attendance at feasts, this research will focus investigations at households of various status levels. Households from different status levels will be selected for excavation based on architectural volume and elaboration, which has divided commoner households into high and lower status groupings based on architectural volume and elaboration. Overall, this model provides the opportunity to understand changing political strategies for

participation of commoner households in political reorganization at Baking Pot in response to sociopolitical collapse at the end of the Classic period.

Mercantile Strategies of Integration and Differentiation

Many of the settlements which continued from the Classic to the Postclassic period were situated along waterways, possibly due to the importance of maritime trade during this time (Masson 2000). Masson (2002; Masson and Boteler Mock 2004) presents a model that suggests that the increasing importance of maritime trade in the Terminal and Postclassic periods may have offered greater opportunities for commoner households in the reorganization of society following the sociopolitical collapse of Classic society, with commoners gaining access to greater amounts of luxury goods such as greenstone, marine shell artifacts, and non-local ceramics. Based on Rathje and Sabloff's (1975) mercantile model, Masson presents a model that suggests that following the collapse of Classic period political hierarchies, households retained more of the products of their labor as surplus due to decreased tribute demands (Masson 2000; Masson and Boteler Mock 2002; Masson and Peraza Lope 2004). Major changes in economic organization following the sociopolitical collapse of Classic political systems provided new opportunities for commoner participation in maritime exchange, along with greater access to previously restricted goods. Masson (2002) suggests that both commoner and elite households were engaging in new strategies of mercantile exchange based on small scale production using local resources to exchange for non-local goods. Particularly, she notes that this new strategy allowed commoner households access to luxury goods at a greater amount than in previous periods, in which luxury goods appeared to be far more restricted. Based on available resources, she suggests that commoner households were engaging in these activities at different levels. In addition to luxury goods, utilitarian goods such as obsidian and greenstone adzes were also equally available to commoners as they were to elites, and increased in the transition from the Classic to Postclassic period. At Laguna de On, commoner and elite households were engaging in lithic production and textile manufacture; whereas at Caye Coco, shell ornament production was restricted to elite households, while commoner households may have been producing other goods such as food to trade for non-local goods. In both instances, Masson notes that domestic inventories in both elite and commoner contexts indicate that nearly all artifact classes, including both utilitarian and luxury goods, were close to equally distributed, demonstrating that commoners were actively participating in these activities which were previously restricted to elites.

Changing production and exchange strategies through greater participation in maritime trade may be indicated by increase in the distribution, quantity, and evenness of exchange goods across a community. Hirth's (1998) distributional approach suggests that this kind of distribution would mark the expanding role of trade within ancient settlements. These strategies of increased mercantile exchange would be indicated by higher than typical proportions of non-local utilitarian and luxury goods. In addition, domestic inventories will be examined, to better understand if high and low status commoners were producing goods from local materials to exchange for luxury goods. Households producing goods to exchange for non-local utilitarian and luxury goods

would have higher proportions of raw material and debitage in comparison with typical proportions among households of the community.

Religious Strategies of Integration and Differentiation

The processes of political collapse and changes in the social organization also impacted ritual and religious ideology as well. Another major change following the collapse of Classic period political hierarchies is the spread of a pan-Mesoamerican ideology associated with the spread of the cult of Quetzalcoatl and materialized through a standardized set of symbols and style (Ringle et al. 1998; Smith 2003). In some regions, the adoption of an "internationalized" religious iconography and materials became a new expression of status differentiation in the Terminal Classic period, with the adoption and display of these new forms of ritual practice and paraphernalia by elites (Aimers 2004). Households adopting pan-Mesoamerican iconography and ritual practices would have displayed these symbols on ceramic vessels used in domestic and community rituals, including feasts, dedication and termination rituals, caching rituals, as well as for burials and mortuary rites. The display of paraphernalia associated with this ideology would have been used by households to demonstrate their association with foreign concepts and practices, differentiating themselves from older religious ideology which may have been associated with the failed rulership of the Classic period. In addition to the iconography itself, the adoption of this pan-Mesoamerican ideology may have led to changes in the practice of ritual activity itself.

Although Aimers' analysis mainly focused on elite contexts, different levels of commoner households may have utilized these ideological strategies as well, participating in the changes in ritual and ideology following the end of divine kingship. The distribution of iconographic motifs associated with an "internationalized" pan-Mesoamerican ideology can show what types of households may have access to these materials, particularly distinguishing whether low and high status commoner household adopted these strategies of ideological differentiation. Changes in the proportion of sherds decorated with these motifs in relation to total ceramic sherds will identify if households were adopting this ideological strategy in the wake of religious and ideological reorganization. Iconography commonly associated with the cult of Queztalcoatl includes serpentine and avian symbols, and derived motifs (Miller and Taube 1993:141-142; Smith 2003) and decorating ceramic vessels with these motifs through painting, incision, molding, and appliqué techniques. Additionally, changes in ritual activity, such as burial practices, caching activities, and other ritual practices can identify whether households were changing other forms of ritual practice in response to the introduction of this ideology. Patterns of ritual practices will be identified in the periods before, during, and after the collapse of divine kingship at the end of the Classic period, including the types of ritual paraphernalia, as well as the locations and frequencies of these activities. Burials will be particularly noted, identifying potential changes in burial investment, location, grave goods, position and form, in addition to noting the presence of pan-Mesoamerican iconography on associated materials.

METHODOLOGY

In order to investigate the degree to which commoner households were participating in social reorganization during the Terminal Classic period, various lines of evidence will be utilized to understand how commoner households were employing political, mercantile, and ideological strategies to adjust to these changing conditions. Three main types of evidence, architecture, prestige goods, and burials, will be utilized to understand not only if commoner households were participating in these activities equally, as well as to identify if these social strategies were successful. These three lines of evidence are often used in conjunction to infer socioeconomic status (Smith 1987).

Architecture

Architectural remains provide an important realm in which to understand socioeconomic organization (Smith 1987; Hirth 1993). Architectural evidence will be utilized to select households of various status levels for excavation based on architectural volume. Using architectural volume provides one proxy in which to evaluate relative status of households, as those with more architectural volume would have been more energetically expensive, requiring a greater investment in labor and materials (Smith 1987). A stem-and-leaf plot of architectural volume from house groups at Baking Pot (Hoggarth 2008) indicated three distinct groups, which indicate that each of these sets should be analyzed separately (Drennan 1996:13-15). This information was utilized to create a classificatory typology of non-royal house groups at Baking Pot into three groups: non-royal nobles, high status commoners, and low status commoners, which was further subdivided in order to take into consideration the wide range of variability in each group (Table 1). Architectural volume was used in lieu of number of structures, as this may be more indicative of different states in the developmental cycle (Fortes 1958; Goody 1972). Although these numbers are based on terminal architecture, often familites that first settle a region often continue to dominate the social hierarchy (McAnany 1995). In addition, as this research is interested in the terminal phase architecture, it is appropriate to classify house groups based on terminal architecture. While this classificatory grouping serves as a relative measure of status, its primary function lies in the development of a stratified sampling strategy. Formal approximations of status will utilize data from excavations, including architecture, prestige goods, and burial investment. It also must be noted that this is classification may not correlate with emic divisions of class or status at Baking Pot.

In addition to using architectural evidence for the development of a sampling program stratifying house groups into status groups, architectural evidence will also be used to identify changes in house form, sizes, and elaboration. Changes in architectural form, such as expansion of platforms, addition of structures, and elaboration of construction materials, in conjunction with evidence of activities associated with political, mercantile, and ideological strategies by commoner households, may indicate the success of strategies in the wake of social reorganization. The expansion of house platforms may indicate an increase in the number of members of a household, as more successful households would be able to support additional members to assist in

specialized activities (Hirth 1993:123). The construction of higher platforms would also indicate social success, gaining prestige for households through the visual impact of those house groups on the landscape (Abrams 1991). The construction of additional structures would allow for changes in household composition as families expand (Fortes 1958). Finally, an elaboration of construction materials indicate a household has access to better quality materials and labor, materialized through thicker or better quality floors, cut stone limestone as opposed to cobble stone facing.

Prestige Goods

The measurement of distribution and intensities of prestige goods across a community provides a baseline in which to identify households with above average proportions of prestige goods, as well as for the identification of restricted goods. When combined with evidence from architectural and burial data, changes in the consumption of local and non-local prestige goods at increased levels and locations may indicate successful social strategies in response to the reorganization of political, economic, and ideological orders.

In particular, increased levels of prestige goods in burials, caches, and offerings may indicate greater prosperity, as these valuable items are taken out of circulation. Possible prestige goods included in these contexts include shell ornaments, jade and greenstone artifacts, copper bells, pyrite mirrors, and imported ceramics (Hendon 1991; Smith 1987). Smith (1987:317-318) notes that non-utilitarian luxury goods provide useful indicator for the distinction of commoner and elite households, although their durability often result in low rates of loss and discard. In response to these circumstances, higher than average proportions of prestige goods in middens, burials, and offerings may reflect greater household prosperity.

Burials

Evidence from burials will be used in conjunction with lines of evidence from architecture and prestige goods. Changes in burials, such as the form of burial type, positioning, location, and grave goods will be identified to understand ideological changes associated with the introduction of a pan-Mesoamerican ideology. In addition, changes in burials will be utilized to assess the success of commoner strategies of adaptation. Burial investment, in the form of architectural investment and grave goods will be one line of assessment. Successful households may devote more labor and resources towards the construction of mortuary architecture and grave goods, as to honor individuals regarded as ancestors. Additionally, investment in ancestral rites may strengthen a households' claim to land and other resources (Saxe 1973). Secondly, osteological analysis of the health of individuals, including dietary stress and disease, as well as pathologies and trauma, will provide the second line of assessment. Individuals from successful households may have been healthier in terms of both nutrition and stress from everyday activities, as they would be able to afford basic necessities and could garner the productive capabilities of less fortunate households. All osteological analyses

will be conducted by Dr. Jennifer Piehl, for use in her research investigating regional variation in trauma, stress, and pathology of burials in the central Maya lowlands.

Previous excavations at Baking Pot reveal that burials tend to be under house floors, with individuals interred generally along the central axis of a structure (Piehl 2004). In addition, eastern structures appeared to have been serving as ancestral shrines, and thus tend to have higher amounts of interments than other structures (Welsh 1988). As many house groups at Baking Pot do not have ancestral shrines, a large sample of burials is not anticipated. However, burials from this research project will be compared with the corpus of burials recovered from the site, in order to identify variations in social variability through time. Table 3 includes burials recovered from excavations by the Belize Valley Archaeological Reconnaissance project, and will be used for comparison in this investigation.

In addition to examining changes in architecture, prestige goods, and burials to determine the success of social strategies utilized by commoners in adaptation to the social reorganization of this period, proportions of utilitarian goods in domestic inventories will be compared across households and time to identify changes in daily activities of household maintenance and household production of necessities. In doing so, this research aims to understand the continuity and change in the lives of commoner households at Baking Pot leading up to and following the termination of divine kingship, and how families and the community adjusted to the subsequent social reorganization.

Excavation and Laboratory Procedures

The excavation phase of field work will involve the horizontal excavations of a sample of 6 house groups selected based from the chronological information from the preliminary research. Previous excavations of domestic structures at Baking Pot have focused on horizontal excavations of house groups in the central square kilometer of the site (Audet 2002; Piehl 2004), with limited excavations outside of this area (Conlin and Powis 2002; Conlin 1999). The sample of six household excavations will be drawn from a variety of status levels, based on the typology of house groups from preliminary research, in order to account for the full range of social variability, as well as from households which have evidence of occupation from the Late Classic through Early Postclassic periods, as indicated from the preliminary research. One house group from each of the subgroups representing commoner households (Types 2A, 2B, 3A, and 3B) with continued occupation from the Late Classic through Early Postclassic period, will be selected for horizontal excavations (Table 1 and 2). In addition, two house groups will be selected from groups which were abandoned prior to the beginning of the Terminal Classic period, in order to examine differences between households which continued to be occupied following the collapse of dynastic rule, to understand the success of various social strategies.

Excavation utilize conventional excavation procedures and will expose a portion of internal floors and patio surfaces in the selected house groups, with excavations uncovering a significant portion of each structure and patio areas in the selected house

Group Type	Minimum Volume	Maximum Volume	Total #	Total %
1A	2,000 m^3	------	12	2.9
1B	700 m^3	1,999 m^3	13	3.1
1 (total)	**-----**	**-----**	**25**	**6.0**
2A	320 m^3	699 m^3	18	4.3
2B	200 m^3	319 m^3	26	6.3
2 (total)	**-----**	**-----**	**44**	**10.6**
3A	68 m^3	199 m^3	97	23.3
3B	8 m^3	68 m^3	237	57.0
3C*	0 m^3	8 m^3	13	3.1
3 (total)	**-----**	**-----**	**347**	**83.4**
			416	**100.0**

Table 1: House group classification at Baking Pot (excluding royal residence)
*Group 3C is considered too small to be residential

House group	Volumetric Classification
CONTINUOUS OCCUPATION	
BKP-099	1B
BKP-096	2A
BKP-184	2B
BKP-091	3A
BKP-094	3B
ABANDONED TERMINAL CLASSIC	
BKP-100,101	2B
BKP-108, 109,110,111	3A

Table 2: House groups selected for intensive excavation

group. Each group will be set up in a grid system of 2 m^2 units, arranged according to the orientation of the group, and a portion of each structure will be excavated. The size and location of excavation units will be chosen as to expose terminal architecture, as well as to accommodate the excavation of earlier construction phases. Limited smaller excavations will be excavated to a sterile level, which tends to be between 1.5 to 2 meters below the surface (Hoggarth 2008). In addition, two 2x1 meter units will be placed adjacent to excavated structures to reveal midden deposits, as to increase the sample size of artifacts, especially fineware ceramics and trade goods. These units may be expanded as needed. Soil will be sifted through ¼ inch screen and artifacts collected. Carbon samples will be collected from undisturbed contexts, and will be utilized selectively for radiocarbon dating.

Lab work will begin daily at the site on work days and on Saturdays throughout the field season. A significant portion of basic lab work will completed during the BVAR field school, as a portion of the laboratory analysis instruction. During this time, artifact processing, washing, inventory, and analysis will be conducted. Ceramics will be washed, counted, and sorted by the field school students, while formal ceramic analysis will take place in the evenings and on weekends. Ceramic analysis will be based on the regional ceramic chronology established by Gifford *et al.* (1976), as well as more recently refined ceramic analyses focusing on the transition during the Terminal Classic period (Aimers 2002; LeCount 1999; Chase and Chase 2008; Sabloff 1986) and the Postclassic period (Rice 1985; Graham 1991). In addition, ceramic forms and decoration will be counted and recorded. Lithics will be analyzed according to raw material and tool types (Andrefski 2006), and shell and faunal material will be counted and identified based on species type. Osteological analysis will be conducted by Dr. Jennifer Piehl and will be available for use in this research project.

PROGRESS AND RESULTS

Epicentral and Peripheral Baking Pot Settlement

Settlement research in the Baking Pot's epicenter and periphery has revealed that epicentral settlement at Baking Pot is organized into eight settlement clusters, separated by intermittent streams or low-lying terrain (Figures 2 and 3). These settlement clusters differ from Conlin and Ehret's (2001: Fig. 2) designations, as it does not include the North Caracol Farm peripheral settlement cluster. Peripheral settlement has been designated to include minor centers and groups within the hypothesized territory of the Baking Pot polity, extending approximately five kilometers around the monumental epicenter, but not immediately surrounding the monumental architecture (which has been designated epicentral settlement). This separation of epicentral and peripheral settlement will provide one way to compare settlement variation in and around the site in the future.

Epicentral settlement cluster A consists of the settlement immediately surrounding the monumental epicenter, primarily to the west and north of this area (Figure 2). This settlement cluster is bounded by the Belize River to the north, the intermittent stream bordering the northern portion of Group B to the south, and the same

stream which runs to the west where it forms an aguada. This settlement cluster consists of 120 mounds, which displays a great deal of variability in architectural volume and groupings. Cluster B is a smaller cluster located south of Group B, and is bounded by the monumental epicenters to the north, and an intermittent stream to the south. On the western end, this cluster is spatially separated from Cluster F by distance, in which approximately 150 meters between the groups is unoccupied. This cluster consists of 35 mounds, mainly singular mounds. Cluster C is located to the east of the monumental epicenter, and is bounded by intermittent streams to the south and west, Garbutt creek to the east, and the Belize River to the north. Cluster D is located south of Cluster B and C, bounded by the intermittent stream to the west and north and Garbutt creek to the east. No natural features exist to the south of Cluster D, possibly due to the slight rise in the natural topography.

Cluster E is northeast of Cluster C, bounded by the Belize River on the west, north, and east. Conlin designated this area "Northeast Baking Pot", although he only surveyed a portion of this area, although subsequent surveys have revealed no other mounds to the north. The area has been extensively plowed, and even those mounds (33 total) which Conlin identified in his survey are difficult to identify as they have been severely damaged by modern agricultural activities. No mounds are present in approximately 250 meters that separates Cluster C and E. Cluster F is located south of Cluster A, west of the Structure 190, the southern causeway termini structure. It is bounded on the north, west and south by intermittent streams and is separated from Cluster B by distance. There are 40 mounds in this cluster, with only a small proportion being grouped. Cluster G is the western-most group, and it is the least bounded by natural features. It is separated from Clusters A and F by an intermittent stream to the east and as mound density drops off at the edges of the 9 km^2 area, mounds on the edges of this area are considered peripheral settlement (Figures 2 and 3). The cluster consists of 51 mounds. Cluster H is the northern-most settlement cluster and is located on the northern bank of the Belize River. Settlement here is not clustered immediately across from the monumental epicenter of Baking Pot; rather, it is located approximately 1 kilometer away. The cluster consists of 37 mounds, many large in both size and height., which is reminiscent of the mounds at North Caracol Farm. Despite this similarity, it was decided to keep this cluster within the Epicentral Settlement group at Baking Pot, as the location of the Belize River may have led to a divergence in the normal settlement pattern. In addition, the area immediately north of the river is very low and appears to be unsuitable to permanent settlement due to the potential for flooding. Overall, epicentral settlement at Baking Pot totals 408 mounds spread over 9 km^2. At its height, Baking Pot was estimated to have a population of approximately 2,040 people.

In contrast to epicentral settlement, peripheral settlement is more dispersed. North Caracol Farm (NCF) is located to the east of epicentral Baking Pot, separated from the site by distance and Garbutt creek (Figure 3). There are 51 mounds in this settlement cluster, and the sizes of the mounds tend to be larger (in both size and height) than those in epicentral Baking Pot, although they are comparable to Cluster H. To the west of epicentral Baking Pot, Bedran consists of 18 mounds and a small settlement cluster is located to the north of this group, including the Naxima group, which consists of 9

structures. Additionally, the Northwest cluster (NWB) consists of 44 mounds, concentrated to the west of the large civic structure. When both epicentral and peripheral settlements are taken together, the population in and around Baking Pot would have been close to 2,650.

Horizontal Excavations in Settlement Cluster C

Intensive horizontal excavations of selected house groups began in the 2008 field season, with the groups being selected in order to represent various social levels at the site (see Table 1 and 2). Intensive excavations were initiated at M-091 and M-181 (see Jordan, this volume), M-096, M-101 (see Zweig and Russell, this volume), and M-184a (see Hoggarth et al., this volume) and smaller vertical excavations were conducted at M-112 (see Lamb, this volume), M-094 (see Russell, this volume), and at M-134 and M-137 (see Hoggarth & Alexander, this volume). For details of the results of these excavations, refer to the following chapters. Excavations of these groups will continue in the 2009 season and possibly into the 2010 season. Those structures and groups which were only vertically tested this season will be intensively excavated in future seasons, until the same of horizontal excavations is concluded.

CONCLUSIONS

As settlement research continues at Baking Pot, various other projects in the region are conducting similar research (Iannone et al. 2008, Yaeger et al. 2008). This provides many opportunities for comparative work, which, in addition to the extensive settlement research that has been conducted around Xunantunich by the Xunantunich Archaeology Project/Xunantunich Settlement Survey, can provide a detailed view of settlement in the Belize Valley. In addition, with the initiation of BVAR's regional survey, from Cahal Pech downriver eastward to the Roaring Creek Valley, will provide one of the most intensively-surveyed regions in the Maya lowlands from which to compare. This research, which seeks to implement settlement research at various scales, including regional, community, and household, will provide a dynamic view of life in the polity of Baking Pot, and will help to explain how communities and families adapted to major changes as society was reorganizing. At the regional level, Baking Pot epicentral and peripheral settlement will be compared to settlement from other centers in the region, to identify and understand major similarities and differences in settlement patterns, house group variability, and political organization. At the community level, a comparison of settlement clusters, likely representing ancient "communities" will be undertaken, comparing cluster and house group organization, as well as understanding the occupational demographics among the clusters and their relationship to the developmental history of Baking Pot's monumental epicenter. Finally, at the household-level, which is the main focus on the author's dissertation research, household strategies of adaptation and integration within the changing social, economic, and political organization of Maya society beginning in the Terminal Classic will be explored. Together, this multi-scalar approach to settlement, community, and household organization at Baking Pot will provide a broad view of settlement and politics in the

Belize Valley, emphasizing the experience of the inhabitants of Baking Pot within the broader political system.

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CONTINUING EPICENTRAL SETTLEMENT RESEARCH AT BAKING POT, BELIZE: RESULTS FROM EXCAVATIONS AT M-184A

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INTRODUCTION

Excavations in 2008 by the Belize Valley Archaeological Reconnaissance (BVAR) project at Baking Pot continued the program of the second-phase of settlement research at the site, in order to gain a systemic perspective into the community and household organization of the site, particularly aiming to understand the occupation history of the settlement of the site, and commoner households were actively engaged in the changing political, social, and economic organization at Baking Pot in the transition from the Classic to Postclassic period.

Baking Pot is an upper-level settlement in the central Belize River Valley, approximately 10 kilometers east of Cahal Pech. Early research at Baking Pot by Ricketson (1929) and Bullard (1963; Bullard & Bullard 1965) focused excavations on monumental structures in Group A and B. Later, the site was investigated as part of Gordon Willey's settlement research, excavating several house mounds and mapping the settlement immediately to the west of the monumental epicenter (Willey et al. 1965). The Belize Valley Archaeological Reconnaissance (BVAR) project, directed by Dr. Jaime Awe, started archaeological investigations at the site in 1992 and continues this research today. Within this program, Conlin initiated the first phase of settlement research by BVAR beginning in 1992 and running through 2000, focusing on surveying the eastern portion of settlement around Group B, as well as the neighboring areas of

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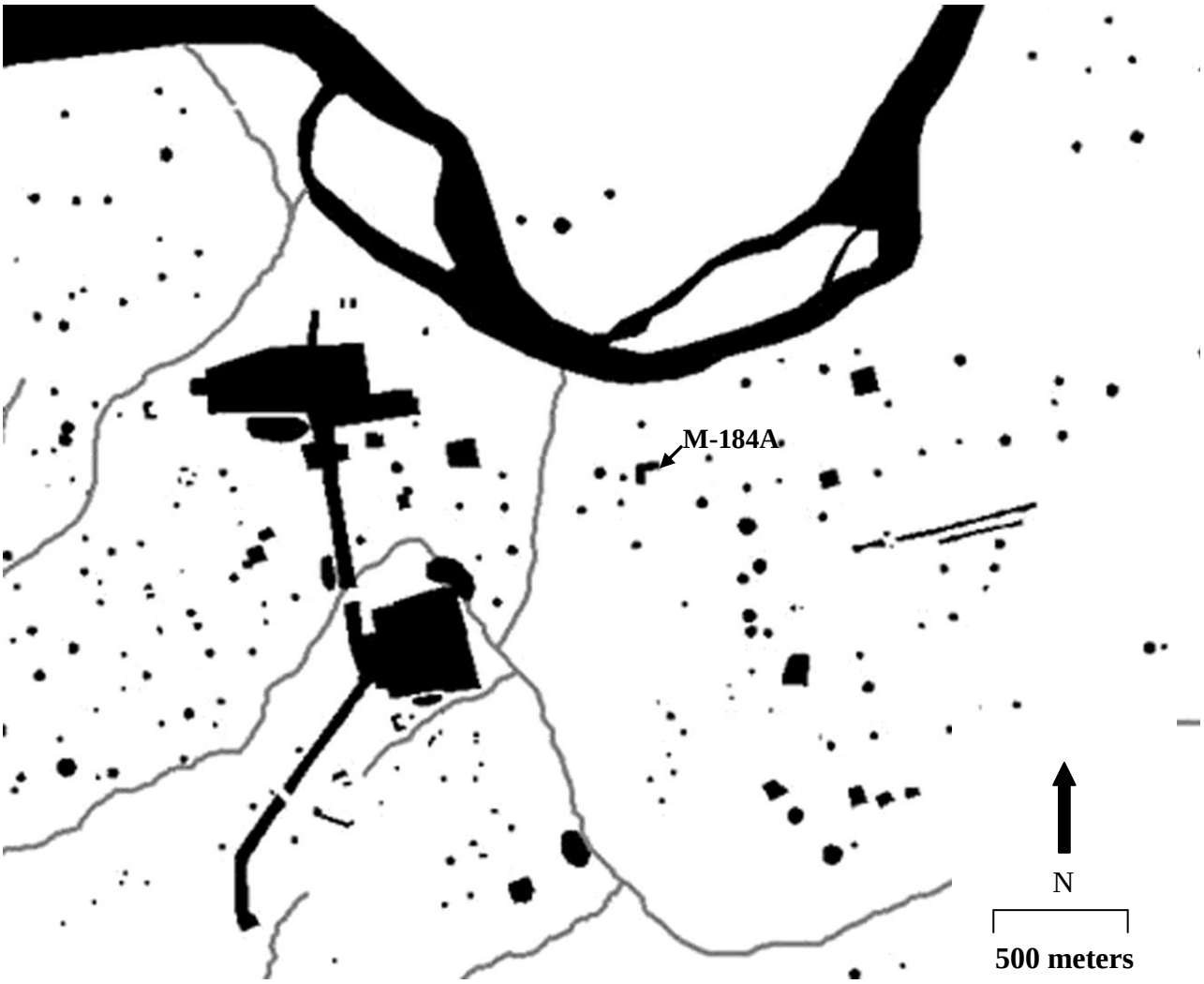

Figure 1: Map of Baking Pot and location of M-184a (modified from Hoggarth et al. 2008, Fig. X by Eva Jobbova and Andrew Bevan).

North Caracol Farm and Bedran (Conlin & Ehret 2000). In conjunction with this research, Piehl's (2004) dissertation focused on changes in health and status of households in the eastern settlement group of the site. Investigations into the monumental construction and ritual activity of the center were investigated by Aimers (1998, 1999), Ferguson (1998,1999), Audet (2003, 2004, 2007), and Helmke (2008). In 2007, the second phase of BVAR settlement research at Baking Pot was initiated by Hoggarth and Jobbova (Hoggarth et al. 2008), which had three main goals: 1) to survey the total area surrounding the monumental epicenter in order to gain a perspective into the spatial organization of the site; 2) completion of a 20 percent stratified sample of test excavations in the 9 square kilometer area which encompasses the epicentral settlement associated with the site; and 3) horizontal excavations of a smaller sample of house

groups in order to understand changing household and community organization and integration, particularly focusing on the transition from the Classic to Postclassic period.

METHODOLOGY

Excavations at M-184 were undertaken as part of the second phase of settlement research conducted at Baking Pot. This settlement research aims to collect a 20 percent stratified sample (based on architectural volume) of test excavations of house mounds in the epicentral settlement in order to understand occupation history of the site. In addition, a sample of eight horizontal excavations of house groups in the eastern settlement cluster (Conlin and Ehret designate this section as zone C, whereas Hoggarth, this volume, designates it as Settlement Cluster C in Baking Pot's epicentral settlement) will be conducted in order to understand changes in household and community organization among commoner households and their role in the changing social organization beginning in the Terminal Classic period. M-184a was selected as one of the horizontal excavations, selected as an example of a medium-status architectural volume house group (see Hoggarth, this volume, for more information on the methodological and theoretical background). M-184a is an "L-shaped" structure, with the northern portion designated as M-184a and the southern portion as 184-b.

Excavations of structure M-184a were conducted using both cultural and arbitrary levels, according to context and quality of preservation. A 3 by 2.5 meter unit (Excavation Unit 10) was placed at the estimated center of the structure, as to uncover the various construction phases in the structure, as well as to identify domestic ritual activity at this location. In addition a 1 by 2 meter excavation was placed to the east of unit 10 (Excavation Unit 21), as to attempt to locate the platform terrace. Artifacts were collected and separated based on context. Artifacts and matrix was screened through ¼ inch mesh. Artifacts collected from 2008 excavations are continuing to be analyzed, and the results will be available in next year's BVAR Lab Reports (Bey and Hoggarth, *forthcoming*).

RESULTS FROM EXCAVATIONS

Excavation Unit 10

Level 1 was the humic level, characterized by homogenous dark brown matrix, with significant roots and vegetation present. Few ceramic and chert pieces were found in this level, and the level was closed at approximately 20 centimeters below datum as an arbitrary level. Level 2 was also characterized by the organic humic layer, with an increasing number of artefacts being recovered, including ceramics, chert, freshwater shell, and daub. At approximately 40 centimeters below datum, a well-preserved plaster floor was encountered, and the level was closed. In association with the terminal plaster floor, the remains of a low, one-course limestone wall was identified running north-south (Figure 3). This wall is interesting, as it appears to have two parallel lines of limestone

M-184a
Mound Profile
North-South
Illustrator: R. Guerra & J. Lynch
Scale: 1:50

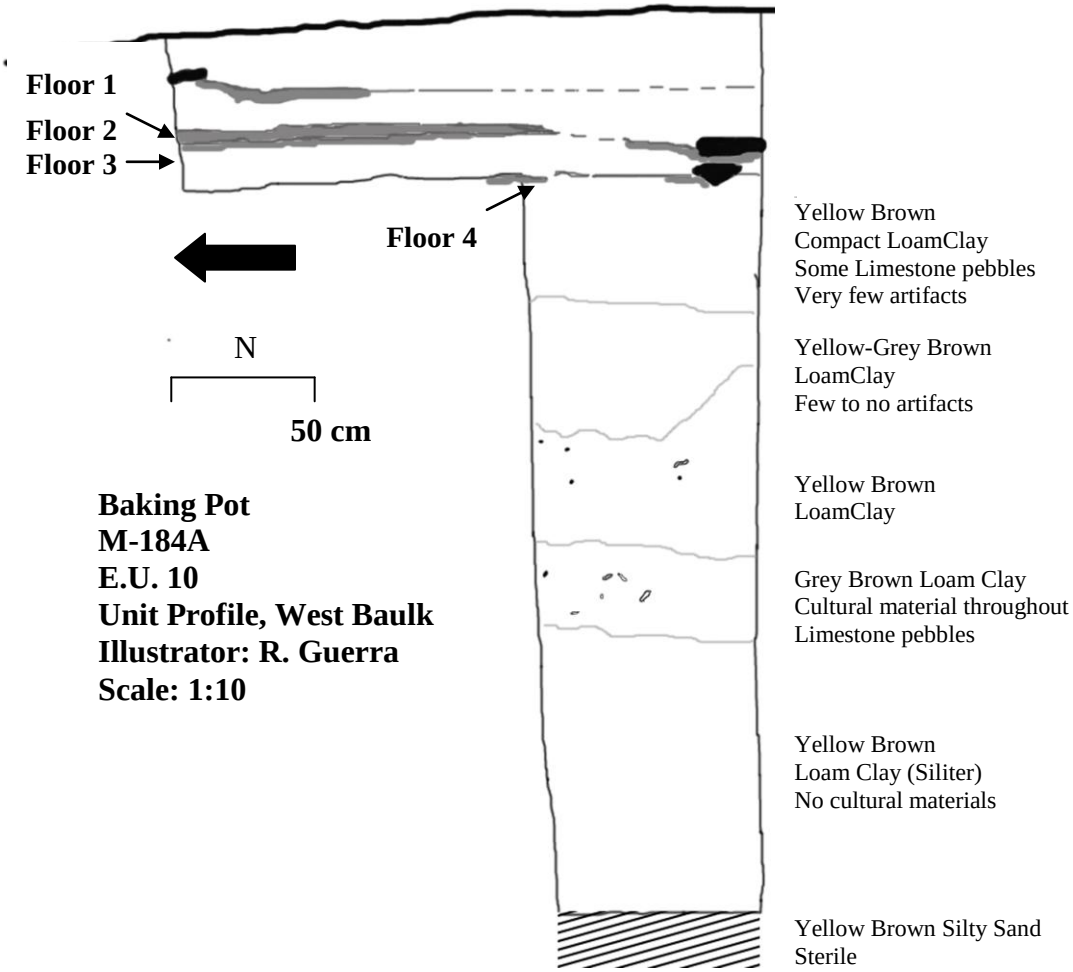

Figure 2 (Above) Structure M-184a, Mound Profile. **Figure 3** (Below) Unit 10 Profile, West

blocks, forming a baulk wall. In addition, in between the two lines of the wall, the plaster floor (Floor 1) is not present. Further excavation in Level 3 revealed the presence of the penultimate floor (Floor 2), which was burned, and was located at approximately 50 centimeters below datum (Figure 4). Overall, it appears that the construction of the terminal phase of architecture was a minor event, where the existing floor was raised approximately 10 centimeters with alluvium and fill materials, and a new plaster floor constructed over. The remains of the two-course wall, which were present in the penultimate phase, were kept in place, and served as a lower wall (one-course) in the same orientation as the previous. In addition, it appears that the wall continued to the north in the terminal phase, as some small limestone blocks were recovered in the northwest corner of the unit. The penultimate architecture included a well-preserved plaster floor (Floor 2), which is uneven across the unit, slumping down in the southern portion of the unit. Additionally, Floor 2 (as well as Floor 1) does not extend entirely across the unit; rather, it is missing at approximately 40 centimeters north from the southern excavation baulk, and in the southwest corner, neither floor is present until near the center of the unit (along the western baulk), at approximately 80 centimeters north of the southern excavation baulk. In the southeast corner of the unit, the plaster floors are present, although they slump down nearly 10 centimeters below the level of the original floors.

Level 4 began at approximately 50 centimeters below datum, and was below Floor 2. It was characterized by small amounts cobble ballast from Floor 2. Evidence of bioturbation was noted by the presence of a small hole in the north central area of the unit. A very well preserved plaster floor, Floor 3 was identified nearly directly below Floor 2. A crude limestone wall was located in this level, although it appears portions of the wall were removed and used for construction elsewhere. Level 5 encompassed the materials below Floor 3, and was characterized by ballast, and compact dark brown loam-clay fill, with ceramics, cobbles, chert, daub, and freshwater shell present in this lot (Lot 1441). Additional evidence of bioturbation was noted in this level, continuing from level 4. Level 4 was closed upon the identification of a weathered plaster floor (Floor 4) at approximately 70 centimeters below datum.

In terms of construction phases, Floor 2 was constructed directly on top of Floor 3, with little to no ballast at all. A portion of both floors were missing, in the middle of the southern area of the unit. Floor 3 was well preserved, although both Floors 2 and 3 were relatively thin (under 5 centimeters thick). The construction phase associated with Floor 3 marked nearly a 20 centimeter increase in the height of the structure, with alluvial fill mixed with probable midden material throughout the level.

At this point, the unit was reduced in size to a 2 by 1 meter unit (running east-west), in order to continue excavations to sterile. Below Floor 4, Level 6 was characterized by yellow-brown compact loam-clay, with dispersed cobbles and small pebbles, as well as some ceramics interspersed throughout the level, particularly directly below Floor 4. As excavation was continued, there was a noticeable drop-off in the frequency of artifacts, and the level was closed at approximately 150 centimeters below

datum in order to resume arbitrary levels until another cultural level was found, or else until the sterile level was reached.

Level 7 was started as an arbitrary level in order to determine if the level had reached cultural sterile. It was characterized by yellow-brown compact loam-clay with very small rock inclusions, with few ceramic sherds (which appear to be Early Classic), chert, and burned daub. The level was ended at an arbitrary 25 centimeters below the previous level, at approximately 170 centimeters below datum. Level 8 began another arbitrary level, although the matrix changed to yellow-brown and was compact in nature. Very few artifacts were found throughout this level (like the level before it), until approximately 220 centimeters below datum, at which time a concentration of ceramics were encountered, confirming that we had not yet reached sterile.

Level 9 was a cultural level, characterized by grey-brown homogeneous fill, mixed with ceramics, chert, freshwater shell, and daub. This appears to be a cultural level, although no plaster floor was present. The change in matrix may confirm that this was a stamped-earth floor, and early examinations of the ceramics suggest occupation in the Early Classic period. It is interesting that there were very few cultural materials between Floor 4 and the beginning of Level 9, in which there is a difference of 180 centimeters. This would indicate a drastic construction phase when Floor 4 was built, in which the platform was raised over 1.5 meters. Although this is not impossible, it seems a drastic change, and the paucity of artifacts in the fill may indicate that the structure was abandoned after the Early Classic occupation level, and reoccupied and reconstructed in the Late Classic period in the construction phase associated with the construction of Floor 4. At approximately 245 centimeters below datum, artifact frequencies dropped off, and there was a change in the matrix. Therefore, the level was closed in order to determine whether a sterile level had been reached.

Level 10 was characterized by yellow-brown loam-clay, which continued to get siltier as we excavated. No artifacts were recovered in nearly 1 meter, and at approximately 370 centimeters below datum, we reached the fine yellow sand that is associated with geological sterile at Baking Pot. At this point, we designated that we had reached a sterile level and the unit was closed.

Excavation Unit 21 and 21 Extension A

In order to gain a better perspective into the size and construction history of the platform, a 1 by 2 meter unit was set up running east-west, along the eastern baulk of Unit 10 (with a 50 centimeter gap between units). Level 1 was the humic level, characterized by dark grey brown matrix with roots and pebbles present. It was closed at an arbitrary 10 centimeters, at approximately 34 centimeters below datum. Level 2 was also humic and was excavated until the discovery of a plaster floor, which is at the same level as Floor 1 in unit 10, it was determined it is a continuation of the same floor. The level was closed at approximately 40 centimeters below datum.

Level 3 was excavated below Floor 4, which appears to have been the thickest in the western portion of the unit, getting thinner as it continues to the east. Below Floor 1 there was cobble ballast, as well as ceramics and chert. At approximately 50 centimeters below datum, the remains of Floor 2 were located, and were marked by a thin plaster floor which was badly preserved, although present across the entire unit. Level 4 included excavations below Floor 2, and although the floor was thicker in the western portion of the unit, we were unable to differentiate between Floor 2 and 3 in this unit (it should be noted that the western baulk of Unit 10 clearly differentiated the two floors, although the eastern baulk they were nearly undistinguishable, most likely due to erosion and slumping). The level was closed at approximately 52 centimeters below datum.

Level 5 encompassed the fill and ballast below Floor 2 / 3 and ended upon the identification of Floor 4 at approximately 55 centimeters below datum. As excavations continued, it became evident that erosion and slumping were causing all of the floors to converge in the eastern portion of the unit, and Floor 4 either ended in the center of the unit, or else the Maya had built floor 3 in order combat the increasing slumping. This would not be unlikely, as houses at Baking Pot tend to have significant amounts of alluvium used as fill, which does not provide as much structural integrity as cobble or limestone fill. Level 5 was closed at approximately 65 centimeters below datum.

Level 6 included the ballast and fill below Floor 4. Excavations revealed a greater amount of large limestone rocks, especially in the southern portion of the unit, which appears to be a portion of the platform wall, located at approximately 90 centimeters below datum. At this same level, the remains of a partially preserved plaster floor was recovered, which was not located in Unit 10. This floor was designated Floor 4B, and the level was ended. In order to maintain consistency with the levels established in Unit 10, this previous level was designated level 6A, whereas below this point was designated level 6B. Excavations in level 6B continued below Floor 4B, to the end of level 6 in Unit 10 at approximately 148 centimeters below datum. Unit 21 and 21 Extension A were closed at this point, as we did not have any additional time to explore futher and we had answered many of our questions about the large amount of fill between the first and second construction phases.

DISCUSSION AND CONCLUSIONS

Overall, the construction history at M-184a indicates 6 construction phases. The earliest inhabitants of M-184a invested minimal resources and labor, as a stamped earth floor characterized the level. The second construction phase, which was identified in unit 21 and featured a small change in Unit 10 and was preliminarily assigned to the Late Classic (based on initial observations as formal analysis has yet to be completed) saw an increase in the size of the structure approximately 40 centimeters, with a plaster floor (Floor 4B) being located in unit 21. The third construction phase increased the height of the platform about a meter, although only a partial floor in the southern portion of the unit was recovered, and a crude wall. The fourth construction phase featured a much more energetically expensive architecture, including a plaster floor and cut limestone

block wall. The fifth construction phase was essentially a re-plastering of floor 4 and only increased the height of the structure a few centimeters. The sixth and final construction phase increased the height of the structure about 20 centimeters, although this terminal phase still utilized the wall, utilizing the upper tier of the two-course wall.

The results of the excavation reveal a complex series of construction and occupation history at M-184a. Initial observations indicate that the terminal phase of architecture is associated with Early Postclassic period, based on ceramics and other materials recovered. This would give the group a great amount of longevity, with its initial occupation in the Early Classic period, it was determined that it probably was not abandoned, although there was differential preservation in both units, it appears that it was continuously occupied throughout this time.

Analysis of the material remains is ongoing; however, comparisons between the architectural remains of M-184a may be made to other settlement excavations at Baking Pot. In terms of architectural complexity, M-184a is comparable to M-91, where Jordan (this volume) uncovered a series of overlying plaster floors. However, it does not appear that M-91 had as long of an occupation as M-184a. In terms of longevity, M-184a is much more comparable to M-112, where excavations revealed only minimal architecture in the terminal levels; however, a significant Early Classic occupation level was revealed significantly below these levels, including a primary and secondary burial. In order to fully understand the nature of M-184a, and the ways in which its inhabitants dealt with the major changes associated with the transition from the Classic to Postclassic periods, additional horizontal excavation must be undertaken. Primarily, additional excavations need to uncover a greater proportion of the platform terrace, in order to understand how the structure changed over time. Additionally, excavations should attempt to locate any middens, which were not encountered in the 2008 excavations (nor were they anticipated, as excavations were placed at the center of 184a). With this additional research, a much more comprehensive view of domestic life at Baking Pot can be achieved.

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EXTENDING INTO THE PAST: A REPORT OF THE 2008 EXCAVATIONS AT STRUCTURE M-101, BAKING POT, BELIZE

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INTRODUCTION

In 2008, excavations at M-101 commenced in order to understand household and community organization in the transition from the Classic to Postclassic periods at Baking Pot, Belize (see Hoggarth, *this volume,* for background on settlement research theoretical and methodological background). Excavations were conducted in order to understand the chronological occupation at the structure, as well as other household activities in the transition from the Classic to Postclassic periods.

Baking Pot (Figure 1) is located in the Cayo District of western Belize. As one of the upper-level settlements in the Belize Valley, the monumental epicenter of Baking Pot consists of two groups (Group A and B) (see Helmke 2008) connected by a causeway. Occupation at the site began during the Late Preclassic period and continued through the Early Postclassic period (Audet and Awe 2004). Settlement research by BVAR at Baking Pot was conducted from 1992 to 2000 (Conlin 2000), mapping the central and eastern portions of the site, and was recommenced in 2007 by Hoggarth *et al* (2008) mapping the remainder of the settlement of Baking Pot, and initiating a 20 percent sampling of housemounds at the site.

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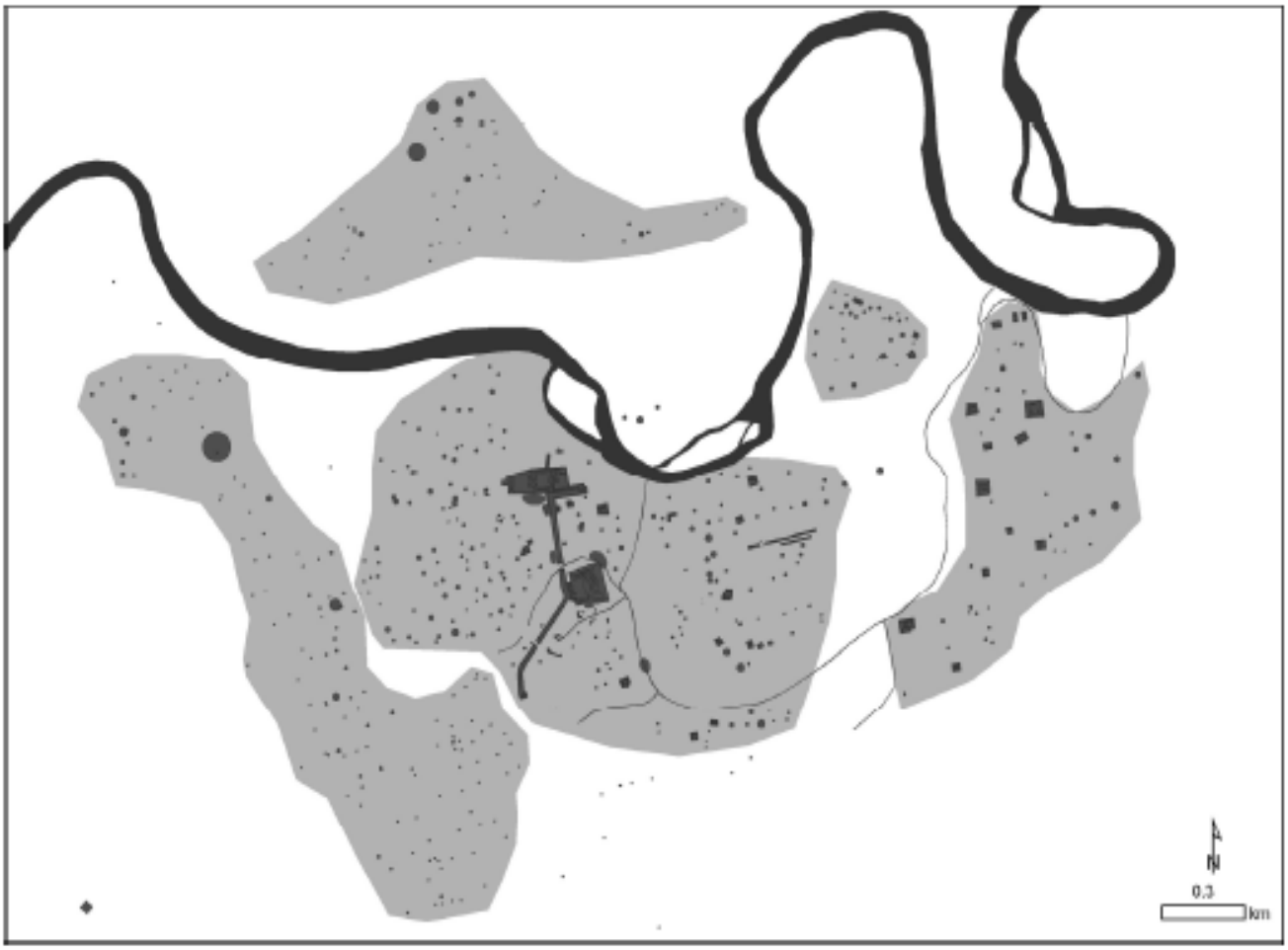

Figure 1: Map of the Baking Pot settlement concentrations (Map by Andrew Bevan and Eva Jobbova).

METHODOLOGY

M-101 was selected for excavation as an example of a medium-status architectural volume house group, in association with M-100. Excavations were conducted using both cultural and arbitrary levels. Artifacts were collected and separated based on unit, level, and lot, and when appropriate feature number. All matrix was screened through 1/4 inch mesh, and in cases of special deposits or burials, 1/8 inch screen mesh. Artifacts collected from 2008 excavations are still being analyzed, and the results will be available in next year's BVAR Lab Reports (Leal and Hoggarth, *forthcoming*). Excavations in M-101 and M-100 will continue to be excavated in the 2009 field season.

Structure M-101 (Figure 2) is located in the eastern settlement cluster (Zone C) at Baking Pot (Conlin 2001, Hoggarth *this volume*). Other structures in the vicinity that are currently under excavation (or future excavations), include M-91, M-96, M-112, and

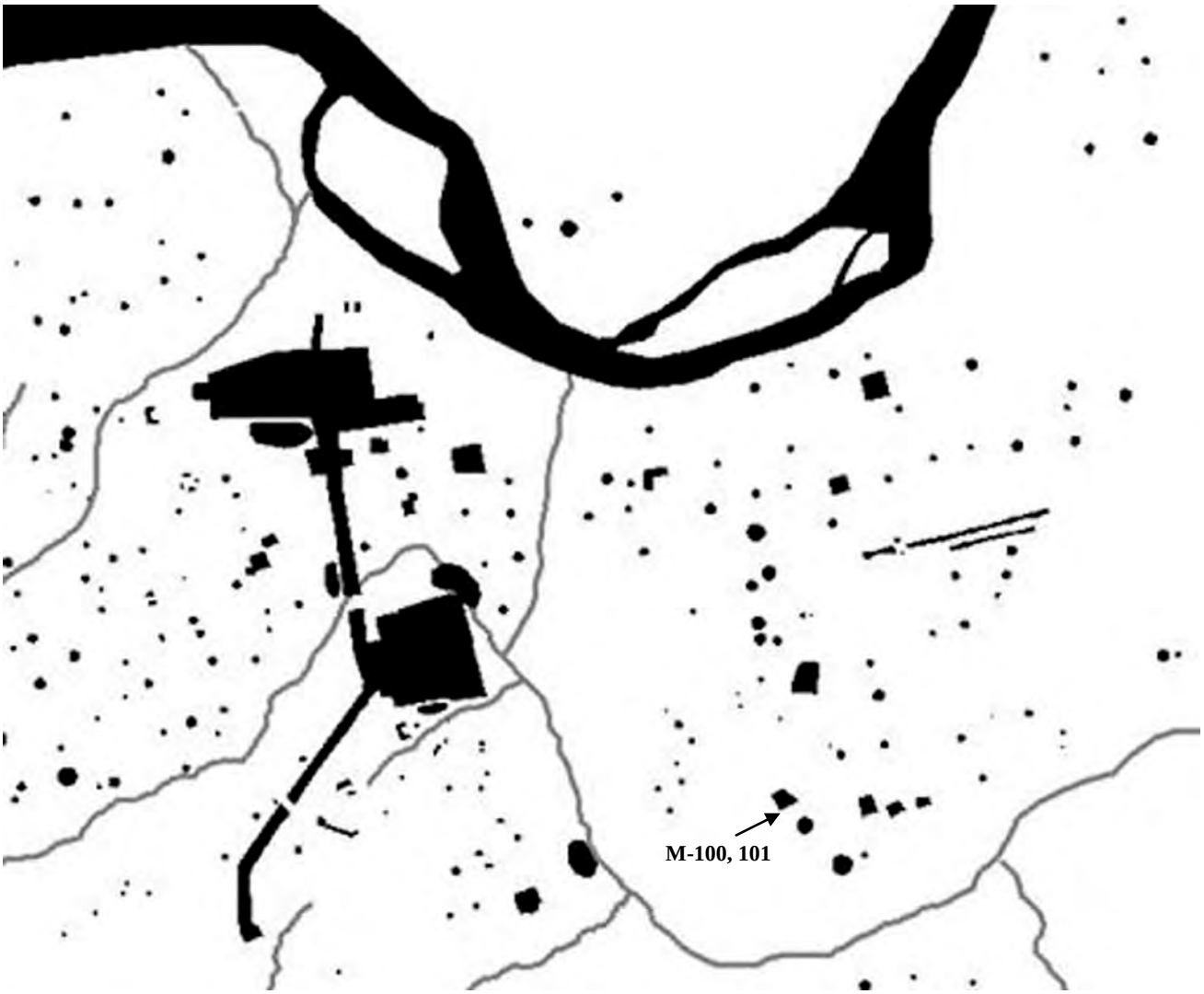

Figure 2: Location of M-101 in relation to monumental epicenter (modified from Hoggarth *et al*. 2008, figure).

M-101. It is located on the premises of the Livestock Section of Central Farm, managed by the Belize Department of Agriculture. Due to this location, the area has been used as pastureland and modern agricultural production.

RESULTS FROM EXCAVATIONS

Excavation Unit 16

Excavation Unit 16 (Figure 5) was a two by two meter unit on structure M-101 located in the center of the structure. Level 1 (Lot 1412) was an arbitrary level of 10 centimeters, which was dark grey-brown humus, with small rocks and roots mixed with small ceramic sherds. Level

2 (Lot 1413) was the second arbitrary level of 10 centimeters and also encompassed the humus layer. A change in soil composition was noted for Level 3 and 4 (Lot 1414 and 1415), likely due to being below the level of the plow zone. The end of Level 4 marked the first cultural level, in which wall collapse was identified in the northeast corner of the unit. This level was continued until the extent of the terminal architecture was uncovered, and excavations resumed in the central excavation unit, where only a poorly preserved floor was located.

Level 5 (Lot 1416) was the first level below Floor 1. Artifacts significantly decreased in this level. Level 6 (Lot 1417) saw a change in matrix, becoming a yellow-brown sandy loam. A 1 meter square area was setup within the southeast corner of Unit 16 (Figure 5). This quad was designated for the purpose of continuing down to sterile levels. Level 7 (Lot 1490) was the first arbitrary level of this quad. It consisted of the same silty loam clay that was described in the previous level (Lot 1416). The initial elevation for this level was about 120 cm below the datum. Cultural material recovered from this level included a steady amount of ceramic sherds and freshwater shells, but also chert, daub, and a small jade bead. This level was concluded when the matrix became siltier. It was very sandy clay with an orange brown color and was compact from moisture, but breaks apart very easily. There were not many rocks or pebbles. This level's ending elevation was 198 cm below the datum.

Level 8 (Lot 1593) was established because of the increased sandy texture of the matrix and was considered a stratigraphic level. This level contained shell, quartz, and chert and was loamy sand. The concluding elevation was about 227 cm below the datum. Level 9 (Lot 1595) was an arbitrary level of 25 cm with a matrix that was very sandy with occasional rocks and pebbles. In this level there was freshwater shell and chert. Level 9 was concluded with an elevation at about 252 cm below the datum (Figure 4). Level 10 (Lot 1596) was another arbitrary level of 25 cm and the matrix continued to be very sandy. The level concluded with an elevation about 277 cm below the datum. Level 11 (Lot 1597) was an arbitrary level of 25 cm in the same loamy sand matrix and was concluded with an elevation at about 301 cm below the datum, at which it was determined that the level was culturally sterile.

Extension A

Excavation Unit 16 Extension A was placed at the northern edge of Unit 16 (Figure 5). The initial elevation for Extension A was about 30 cm below the datum. Unit 16 Extension A Level 1 (Lot 1418) consisted of a humic layer in a solid dark brown color. The level contained the usual mixture of ceramics, chert debitage and some freshwater shell. There was also Special Find #101-1, which was a small adze head about 6.5 cm in length and 4.5 cm in width, probably with a cross section of about one centimeter. It was very polished and made of basalt. The matrix had a considerable amount of broken ceramic pieces. These particular pieces were not collected because their size was not considerable enough for diagnostic purposes. The amount of small and broken fragments was probably due to the series of plowing that occurs in this field. Level 1 was an arbitrary level, and there was an attempt to maintain consistent elevations

Figure 3 (Above): Excavations on M-101, showing northern terrace wall collapse (Photo by C. Zweig). **Figure 4 (Below):** Excavations on M-101, showing 1 meter unit excavated to sterile (Photo by C. Zweig).

with the previous levels in Unit 16, until a cultural level was determined. Level 2 (Lot 1419) was the beginning of an arbitrary level and had an initial elevation of about 43 cm below datum. The matrix in Level 2 was lighter in color and was less compact. The consistency was grainier and less clumpy with small rocks and pebbles. In this level there were pieces of ceramic, chert, and limestone. Level 2 ended when a stone wall was exposed in the southern portion of the extension. The wall extended in an east/west orientation.

Level 3 (Lot 1420) was the beginning of a cultural level and had an initial elevation of about 50 cm. This level was below the humic layer and was composed of loam-clay. The matrix had a compact consistency and was dark brown in color. This level was established to further expose the wall that was encountered initially in Level 2. On the North side of the wall there appeared to be more ceramic materials, although those appeared to be very small, quarter-size pieces. Large stones were recorded in the northeast corner of Unit 16 and Extension A created exposure further north. The large stones appeared to be rubble, possibly from a collapsed wall. This interpretation was based on the stones not appearing to connect to the east/west wall and they did not appear to extend south. Extension A Level 3 was concluded with the discovery of what was documented as Floor 1—found on the north side of the wall. The floor was evident by a poorly preserved plaster floor and the amount of plaster in the matrix. The elevations for the conclusion of Level 3 were about 64 cm below the datum.

Extension B

This extension was conducted to further investigate the east/west wall in Extension A and to further investigate the mass of rocks in the northeast corner of Unit 16. Extension B was a 2 m x 50 cm extension east of Unit 16 and Extension A (Figure 5). Level 1 (Lot 1481) was the beginning of an arbitrary level and had an initial elevation of about 22 cm below datum. This level was in the humic layer that was dark in color (black/brown) and had been disturbed by plowing and bioturbation. Level 1 concluded with a possible collapsed wall that extended east/west and connected with the wall in Extension A. There also appeared to be more rubble from collapse.

Level 2 (1483) was the beginning of a cultural level, indicated by the wall, and began approximately 40 cm below the datum. This lot contains terminal architecture that was a continuation of the wall that was found in Extension A. In Lot 1483 there was collapsed material and this included the collapse located in the northeast corner of Unit 16. This lot was closed because we wished to extend the unit further east with another 50 cm x 1 m extension. The matrix in Level 2 was composed of humic layer soil and materials. Level 2 concluded at an elevation of about 46 cm below datum. Lot 1482 was established for surface collection on the mound. One object included in this lot was a chert biface that was found north of Unit 16. The biface was about 10 cm in length, 5 cm in width, and 1 cm thick.

Extension C

This extension was a 50 cm x 1 m unit east of Extension B (Figure 5). Extension C was initiated to follow the terminal architecture uncovered in Extensions A and B. Level 1 (Lot 1484) was the initial arbitrary level for Extension C and had an initial elevation of about 22 cm below the datum. This lot and level was composed of a humic matrix and was closed because we suspected more architecture. We wanted to expose the architecture in a separate level. Level 2 (Lot 1485) was a cultural level suspected to contain terminal architecture and was in the humic layer. The elevation was about 30 cm below the datum. The suspected architecture was collapse, but there was a small amount of ballast located within this level. This corresponded to ballast that was uncovered in Extensions E and G later. This concluded Level 2 (Lot 1485).

Extension D

Extensions B and C were combined for Level 3 and became Extension D—a two meter square unit (Figure 5). Level 3 (Lot 1486) was a cultural level with an elevation of about 47 cm below the datum. This level was concluded at the elevation of Extension A and had a final elevation of about 66 cm below the datum. The wall that was uncovered in Extension A continued east and was visible within this extension. The floor that was located on the north side of the wall also continued through Extension D.

Extension E

This extension was a one meter square unit located north of Extension A (Figure 5). The intention for Extension E was to locate a possible wall. It was suspected that a wall was located further north to enclose the area that would have contained the floor. Level 1 (Lot 1487) was the initial level for Extension E and had an initial elevation of about 40 cm below the datum. This extension was located on more of a slope than the other extensions for Unit 16. This initial level was an arbitrary level and was composed of a humic matrix. This lot and level was closed when we uncovered architecture at an elevation of about 47 cm below the datum. Level 2 (Lot 1488) was a cultural level that had a humic matrix. Within this level we uncovered ballast and collapse. The architecture was so close to the surface that some of the stones were exposed on the surface. Level 2 was closed with an elevation of about 56 cm below the datum.

Level 3 (Lot 1489) was a cultural level. It contained ballast and stones that indicated a wall underneath. The level was closed with an elevation about 60 cm below the datum and was still within the humic layer. Level 4 (Lot 1548) was excavated in association with Extension G Level 4 (Lot 1547) to remove the ballast that appeared to be covering previous architecture. Following the removal of the ballast the elevation that concluded this level was about 63 cm below the datum.

Extension F

This extension was initiated with the purpose to further unearth the collapse within Extension E. Extension F was 50 cm by 1 m (Figure 5) and had an initial elevation of about 51 centimeters below the datum. Level 1 (Lot 1541) was an arbitrary level that continued until we exposed terminal architecture. Level 1 was a humic layer and contained roots, rocks, and pebbles. The only artifacts found in Level 1 were one piece of ceramic and two pieces of chert. This level ended with an elevation of about 57 cm below the datum. Level 2 (Lot 1542) was a humic layer and was initiated because the top of terminal architecture was exposed. Level 2 contained collapse debris, ceramic sherds, chert pieces, obsidian, and quartz. The matrix contained rocks, cobbles, pebbles, and roots. The elevation at the conclusion of this level was about 60 cm below the datum.

Level 3 (Lot 1543) was a cultural level within the humic layer and contained more architecture and collapse. The matrix consisted of humus with many rocks, pebbles, and roots. Within Level 3 it was difficult to differentiate between architecture and collapse, and the area did not create a large enough frame to fully distinguish the features. The limestone we found was likely the remains of an exterior wall. Level 3 was closed with an elevation of about 68 cm below the datum. However, the unit was not level due to the amount of limestone jig sawed together. To create a larger view we decided to extend west with a 1 m by 2.5 m extension, which became Extension G. Level 5 (Lot 1550) was a cultural level that contained the removed collapse debris that surrounded the exterior wall to the north. This included Extension G Level 5 (Lot 1591). Ceramic sherds and chert were found within this level. Level 5 was closed with an elevation approximately 90 centimeters below the datum.

Extension G

This extension was created to further uncover the architecture we had found in Extension F. We wanted to better understand its construction and configuration. Extension G was 1 m x 2.5 m and was located west of Extensions A, E, and F (Figure 5). The initial elevation of Extension G was about 44 cm below the datum and had a slope of about a 30 cm difference between the highest and lowest points.

Level 1 (Lot 1544) was an arbitrary level in the humic layer and had an elevation that averaged 46 cm below the datum upon its completion. Level 2 (Lot 1545) was also an arbitrary level in the humic layer. We attempted to maintain consistency with the levels from the other extensions, but this was difficult due to the slope of the mound. At the end of this level we could see some of the ballast previously viewed in other extensions. This level contained roots, rocks, cobbles, and pebbles. Some cultural elements found included ceramic sherds, chert, daub, and a celt fragment. This level ended with an elevation about 55 cm below the datum. Level 3 (Lot 1546) was a cultural level. The intent was to further uncover the ballast and a possible wall. This level was still within the humic layer and contained roots, rocks, pebbles, and other cultural finds such as daub, ceramic sherds, chert, obsidian, and freshwater shell. The wall in

Extensions A and D was also found in the southern portion of Extension G. North of the wall was a layer of ballast that seemed cover previous architecture. This level was closed with an elevation of about 60 cm below the datum.

Level 4 (Lot 1547) was a cultural level and contained the ballast layer in Extension G. We removed the ballast and concluded the level with an elevation about 58 cm below the datum. Level 5 (Lot 1591) was a cultural level that had the purpose to remove the collapse surrounding what was interpreted as the exterior wall on the northern side. This also included Extension F, Level 5 (Lot 1550). Following the removal of the collapse and ballast, a higher quality wall made of limestone was evident in the northern portions of the unit extending east to west. There are facing stones and plaster that seemed molded together to form a façade. The concluding elevation was about 77 cm below the datum.

Extension H

This extension was set up on the southern portion of Unit 16 (Figure 5) to test for architecture. It was speculated that there would be an opposing wall from the east/west wall mentioned previously. Extension H was a 1 meter square unit and had a surface elevation of about 34 cm below the datum. Level 1 (Lot 1549) was an arbitrary level within the humic layer and contained roots, rocks, and pebbles. Culturally there were ceramic sherds, chert, faunal remains, fresh water shells, daub, obsidian, and limestone. This level was concluded with an elevation about 36 cm below the datum. Level 2 (Lot 1592) was an arbitrary level and found no cultural features. It was closed with an elevation about 53 cm below the datum. Level 3 (Lot 1594) was an arbitrary level that contained no cultural features. Level 3 was below humus and was light orange/brown sandy clay. The level contained rocks, pebbles, and roots. The cultural materials found included chert, ceramic sherds, and freshwater shells. Extension H was closed due to a lack of time and concluded with an elevation about 68 cm below the datum.

Unit 16 Extensions and Features

The features that were found within the extensions of Unit 16 included the southern wall, the northern wall, floor number 1, and the overlying ballast. Due to lack of preservation of the ballast it was not detected until later on in the excavation. The ballast did not occur throughout the level (Level 3) of the extensions and was mostly seen in Extensions E, F, and G. It was a Maya and generally Mesoamerican tradition to rebuild right on top of previous living surfaces. The ballast was located close to the surface and may have been part of the last occupations on the mound. The northern and southern walls were beneath this layer of ballast and floor number one occurred between the two walls (Figure 3). It is speculated that the walls may have enclosed a narrow room with the southern wall as the interior to the mound and the northern wall as an exterior mound wall. This is supported because the northern wall was constructed with a higher quality than the southern one. The southern wall was made of few limestone rocks and mostly of cobbles, as well as other material. The northern wall not only was constructed with more limestone, but much larger and better quality pieces. Some were facing stones

with a deliberately smoothed side. One large mass in Extension E appeared to have been limestone plaster that was molded to form a larger stone that was included in the construction of the wall. The people who occupied or used this mound utilized masonry construction, at least for the foundation of the walls, but there did not appear to be evidence for any raised platforms. The structure appeared to have masonry bases for the walls and the remaining pieces of daub uncovered indicated that the remaining structure was made of wattle and daub. The ballast was not well preserved and interpreting the quality of its construction was difficult. The underlying floor number 1 was not penetrated and its thickness cannot be gauged. However, its appearance suggested that it would have been thin plaster, which confirmed the existence of such a floor in this structure.

DISCUSSSION AND CONCLUSIONS

Excavation of M-101 revealed a portion of the northern terrace wall and the collapse from that wall. Terminal architecture featured a thin plaster floor, although the floor deteriorated in quality in the center of the mound. Portions of the central part of the structure had no plaster at all. Materials such as Belize Red ceramics indicate that the terminal phase dates at least to the Spanish Lookout phase (Late Classic to Terminal Classic), although materials such as net sinkers, spindle whorls, and notched points may indicate that occupation here lasted into the Early Postclassic period (A.D. 1100 to 1250). Excavations to sterile in the center of the platform showed evidence of two main construction events, with one being the terminal architecture. Although the analysis of the material remains has yet to be conducted, initial observations indicate that the penultimate (and first) construction phase dates to the early part of the Late Classic period, most likely in the Tiger Run phase (AD 550-650).

Architecturally, the materials used to construct M-101 appear to be energetically expensive, including cut limestone and plaster floors (see Abrams 1988 for a discussion of architectural energetics). Although the quality of the floor was not consistent across the platform (and was quite thin to nonexistent in the center of the structure), considerable investment was put into the construction of the platform. Materials found in the fill, collapse, and on the surface of the terminal architecture indicate that this was a domestic structure and that the inhabitants were non-elite. The initial assessment of this group (including M-100) as a middle-status commoner group was confirmed both by the quality of the construction materials, and through the material remains recovered.

In comparison with other excavations conducted within the realm of the second phase of settlement research at Baking Pot, materials and architecture from M-101 appear to be very similar. The architecture is similar to that from M-195 and M-205, and more complex than the architecture at M-20 and M-66, which did not have cut limestone blocks or thick plaster floors (Hoggarth 2008). In addition, the amount of collapse indicates that the platform wall was at least 4 to 5 courses high, this amount of architectural investment is much greater than all of these previous examples, as well as

those from M-188 and many of the concurrent excavations (see Russell, Jordan, and Hoggarth, *this volume*).

Although the excavations revealed a large portion of the structure, further excavations are needed in order to determine the orientation in relation to M-100, as well as to identify the dimensions of the structure itself. Although M-100 is adjacent to M-101, it is still unclear whether the two are connected by a low wall, or if they are two distinct structures. In addition, future excavations at M-100 would provide a more in-depth view into the occupation history and inhabitants of the house group.

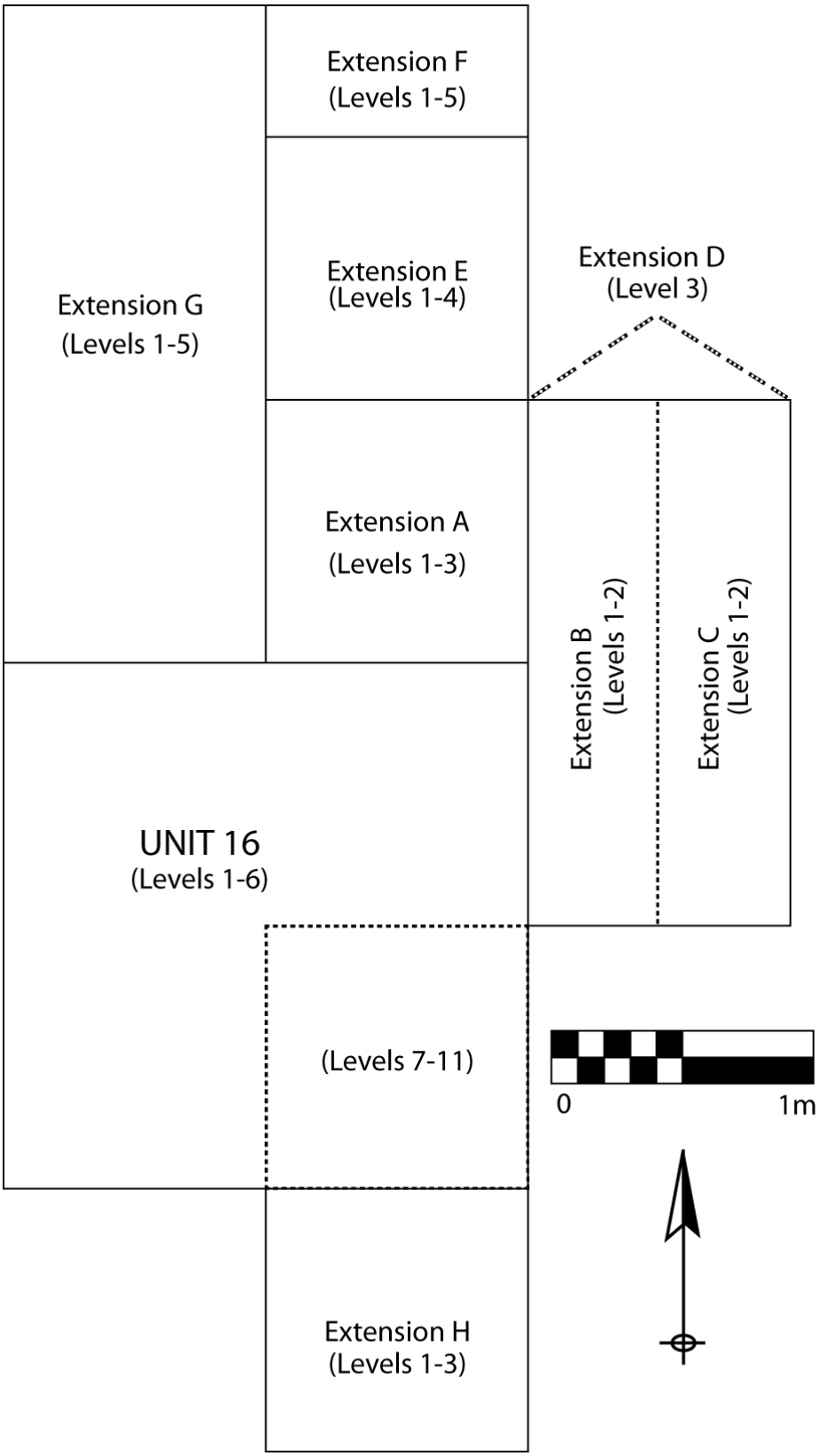

Figure 5: Plan of Unit 16 and Extensions A-H. Dotted lines indicate the smaller units within the larger (1mx1m vertical and the separation between Extensions B and C) (Illustration by C. Zweig).

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EXCAVATIONS AT M-91 AND M-181: RESULTS FROM TWO EXCAVATIONS IN SETTLEMENT CLUSTER C AT BAKING POT, BELIZE

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Excavations in the Baking Pot periphery during the 2008 field season are part of a larger study on settlement which address questions related to how commoner households at Baking Pot adjusted to the so-called 'collapse' of the ancient Maya (see Hoggarth, *this volume,* for a more detailed discussion of the research strategies). The purpose of excavations conducted during the 2008 field season is to better understand the chronology of settlement occupation in the Baking Pot periphery by conducting small, vertical excavations with the goal of identifying multiple construction stages and associated artifacts, specifically diagnostic ceramics. This data will then be analyzed by Hoggarth and used to direct research in the coming years which will focus on conducting large-scale horizontal excavations on 8 housemounds in the Baking Pot periphery. The information included herein details the vertical excavations conducted on M-181 and M-91, two of the five mounds chosen for testing in the 2008 field season.

EXCAVATIONS AT M-181

M-181 is a small mound located to the northeast of the Baking Pot site core and was first surveyed by Connell in the first stage of settlement research at Baking Pot (Conlon 1993, 1995, 1997; Conlon & Ehret 2000). This portion of the site, which Conlin specifies as settlement zone C (Conlin 2001) is circumvented on all sides by intermittent streams, as well as by the Belize River to the north. M-181 was chosen for excavation based on its location within the 9 square kilometer grid and its architectural volume,

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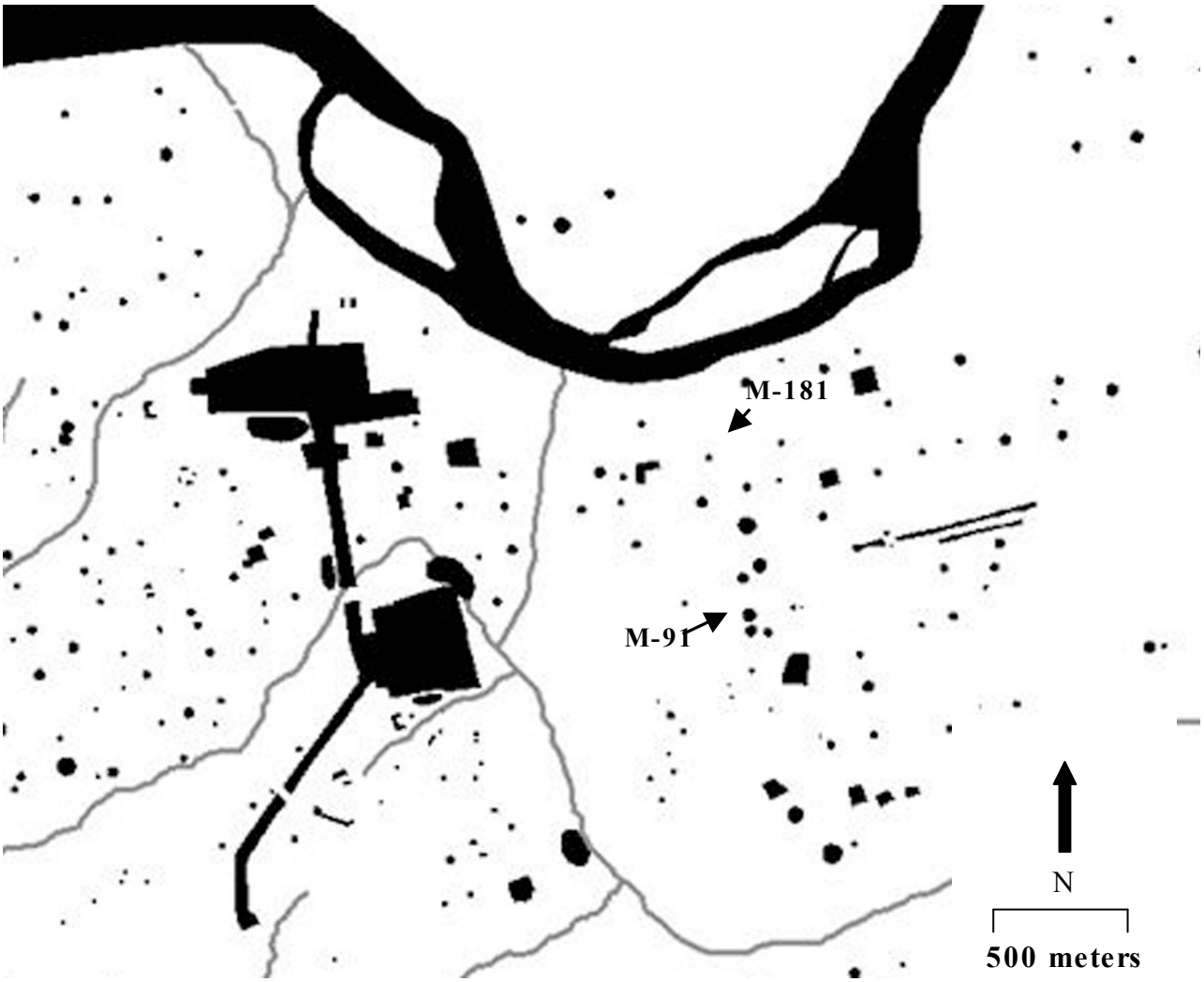

Figure 1: Map of Baking Pot and location of M-181 and M-91 (modified from Hoggarth et al. 2008, Figure X by Eva Jobbova and Andrew Bevan).

approximately 10 meters in diameter and 40 centimeters in height. The western side of the mound has been partially destroyed by the construction of a rice field. This mound is a single mound though is in close proximity to other mounds, such as M-184A, which was also excavated during the 2008 field season (see the report by Hoggarth *et al.*, this volume).

A 1 by 1 meter unit (Unit 11) set up placed in the approximate center of the mound in alignment with magnetic north. The unit was later extended to a 1 meter (N/S) by 1.5 meter (E/W) unit in order to fully expose a ceramic deposit and to better understand the occupation of the mound. A 1 by1 meter unit was deemed an appropriate size for vertical excavations based on the overall size of the structure. A single arbitrary datum was placed just off mound and was used to take all vertical and horizontal measures on M-181. A ¼ inch screen was used to screen all materials. The goal of

excavations on M-181 was to excavate Unit 11 to sterile soil documenting construction stages over time to date the occupation of the mound. This unit was excavated in both arbitrary and cultural levels.

Level 1 is characterized by a compact, dark brown, loam clay humus. It was excavated as a 10 centimeter arbitrary level and concluded when we reached approximately 20 centimeters below datum (10 centimeters below the surface). Level 2 (Lot 1353) is also 10 centimeter arbitrary level and was composed of a compact, dark brown loam clay humus. level was concluded when the unit reached 30 centimeters below datum.

Level 3 (Lot 1355) began as another 10 centimeter arbitrary level but concluded when the terminal floor was identified at 35 centimeters below datum. The matrix again consisted of a compact, dark brown loam clay humus. The terminal floor was very poorly preserved and was composed of river cobbles and tiny, eroded bits of plaster. The terminal floor did not cover the entire unit though this was likely due to poor preservation. A small ceramic deposit was identified at the level of the terminal floor in the southwest corner of the unit (where the floor was not preserved). Unit 11 was extended .5 meters to the west in order to uncover the remainder of the ceramic deposit. As the extension was excavated down to the level of the deposit, three new lot numbers [Level 1(Lot 1358); Level 2 (Lot 1360); Level 3 (Lot 1391)] were assigned to the corresponding levels associated with the excavation of the original 1x1 m unit. The matrix of the extensions was identical to that of the original unit.

Excavation Unit 11, Level 4 (Lot 1356) was extended to a 1 meter (N/S) by 1.5 meter (E/W) unit. After excavating through the ballast of the terminal floor, the matrix of this level 4 was brown loam clay. The artifact density dropped considerably after excavating through the terminal floor. Level 4 was concluded when we reached a crude limestone wall that extended from the southwest corner of the unit to the northeast corner of the unit. The unit was excavated to the base of the wall (approximately 70 centimeters below datum) before changing levels. No floor was associated with the wall. This crude limestone wall likely represents the penultimate architecture of M-181. A plan view was drawn of the penultimate wall (Figure 2) before changing levels.

Level 5 (Lot 1398) began at the base of the penultimate wall and continued until another ceramic deposit was reached at approximately 85 centimeters below datum. The matrix for this level is a dark brown clay loam. The ceramic deposit was confined to the northern portion of the unit. No associated floor could be identified with this deposit. The ceramic assemblage from this deposit dates to the Spanish Lookout Phase, which dates to the late part of the Late Clasic period and the Terminal Classic period (A.D. 800 – 1100). Level 6 (Lot 1401) is characterized by a dark brown loam clay. Very few artifacts were recovered from this level with the exception of a complete chert stem biface. The stem biface was assigned the special find number M-181-1 and given a separate lot number (1402). Level 6 concluded at approximately 155 centimeters below datum. This level change was not associated with any cultural material but rather was

changed due to the fact that there was no change for approximately 70 centimeters and it was thought that the unit may be reaching sterile soil.

Level 7 (Lot 1403) is an arbitrary level characterized again by a dark brown loam clay. At approximately 160 centimeters below the surface the matrix began to include many broken pieces of freshwater shell, which may be indicative of a flooding episode or that the unit is nearing sterile soil. At approximately 175 centimeters below the surface the matrix turned to a nearly pure clay soil and the freshwater shell has nearly completed disappeared. Level 7 concluded at approximately 200 centimeters below datum. This level ended because no artifacts had been recovered from the previous 15 centimeters. As it appeared that unit 11 was nearing sterile soil, the 1 meter (N/S) by 1.5 meter (E/W) was downsized to a 50 centimeter by 50 centimeter unit in order to more expediently locate sterile soil. The downsized unit is located in the northwest corner of the unit and will be excavated in 25 centimeter arbitrary levels until sterile soil is encountered.

Level 8 (Lot 1404) was a continuation of the 50 by 50 centimeter unit. The unit was excavated 25 centimeters below the end of level 7 and no artifacts were recovered. Though this unit did not reach the sandy, yellow soil associated with sterile levels at Baking Pot, the unit was terminated. It was concluded that the complete lack of artifacts below 175 centimeters below the surface suggested that M-181 had been excavated below all cultural levels. Unit 111 was excavated to 225 centimeters below datum. A profile was drawn of the south baulk and the unit was backfilled.

M-181 contains at least two distinct phases of architecture. The terminal architecture is represented by the eroded river cobble floor identified in Level 3 and the penultimate architecture is represented by the cut limestone wall identified in Level 4. The ceramics associated with these two construction phases date to the Late/Terminal Classic Period (A.D. 750 to 1150). The ceramic deposit identified in Level 5 may also represent a separate construction phase though no architecture was associated with this deposit. This deposit also dates to the Late/Terminal Classic period.

EXCAVATIONS AT M-91

M-91 is a medium sized mound located to the northeast of the Baking Pot site core. This mound was also chosen for excavation based on its location within the 9 square kilometer grid and size, as an example of a medium-status commoner house group classified into the medium architectural classification for commoner house groups at Baking Pot (see Hoggarth, this volume, for a discussion on the theoretical and methodological background). M-91 is approximately 12 meters in diameter and 80 centimeters in height. A 2 by 2 meter excavation unit, designated Excavation Unit 17, was set up north/south (magnetic) in the approximate center of the structure. A 2 by 2 meter unit was chosen as an appropriate size for a vertical excavation based on the overall size of the structure. A single arbitrary datum was placed just off mound and was used to take all vertical and horizontal measures on M-91. A ¼ inch screen was used to screen all materials. The goal of excavations on M-91 was to excavate Unit 17 to sterile

soil documenting construction stages over time to date the occupation of the mound. However, due to the confusing nature of the penultimate architecture, a total of 6 extensions (designated extensions A-F) were added to the original Unit 17 with the purpose of understanding the nature of the penultimate architecture before proceeding with vertical excavations to sterile soil.

Level 1 (Lot 1461) is an arbitrary 10 centimeter level characterized by a homogenous dark brown clay loam humus. This arbitrary level had an unusually high number of artifacts for the humic material. This lot was concluded when we reached approximately centimeters below datum (or 10 centimeters below the surface). Level 2 (Lot 1462) began as another arbitrary 10 centimeter level once again characterized by a homogenous dark brown clay loam humus but ended when a plaster floor was encountered at approximately 35 centimeters below datum. A cut limestone wall was also identified in the northern portion of the unit. The wall consisted of three courses of nicely cut limestone, some of which were burnt. The plaster floor (Floor #1) was also burnt in the area where it abuts the wall. The facing stones of this wall face south indicating that the platform faces south. In the southern portion of Unit 17 a pile of rocks was identified. It was later discovered, through excavation of the many extensions (discussed below), that these rocks represent the remains of the terminal architecture. Thus, the burnt floor and wall identified in the northern portion of the unit are the penultimate architecture.

Unit 17 Extension A

Level 1 (Lot 1463) is a 2 meter (N/S) by 1 meter (E/W) extension was placed directly to the west of the original Unit 17 in order to follow the wall identified in Level 2, Lot 1462. Level 1 is a cultural level that was excavated through the humic layer to the top of Floor #1 and concluded at approximately 40centimeters below datum.

Unit 17 Extension B

Level 1, Lot 1464 is a 2 meter (N/S) x 1 meter (E/W) extension placed directly to the west of Extension A in order to continue to follow the wall and to locate the western edge of the platform. As more of the penultimate platform was exposed we began to find small limestone pieces and river cobbles behind that wall that likely functioned as building core. Like in Extension A, Level 1 was excavated as a cultural level through the humic layer down to the level of Floor 1 which concluded at approximately 35 centimeters below datum in level 2.

Level 3 (Lot 1465) was started to excavate through Floor 1 identified in Level 2, Lot 1462. Directly beneath Floor 1 we encountered another burnt plaster floor. Floor 2 is likely the original plaster floor associated with the penultimate architecture while Floor 1 represents a re-plastering episode. The ballast of Floor 1 was very fine and including small pieces of limestone placed directly atop Floor 2. The second floor was much better preserved than the first floor. After completely clearing the second floor it appeared as though the plaster had been purposely cut through by the Maya. The soil resting beneath

the cut floor contained a high density of carbon flecks though none were large enough to collect for dating. Very few artifacts were removed from the ballast layer. A semi-circular, reddish brown soil discoloration was identified in the eastern baulk of this excavation unit. Also, a concentration of large rocks that do not appear to be associated with the penultimate architecture was identified in the southern portion of the unit. Both of these features are further discussed below.

Unit 17 Extension C

Level 1 Lot 1466 is a 2 meter (N/S) by 1 meter (E/W) extension was placed adjacent to the original Unit 17 on its eastern border. This extension was added to further investigation the semi-circular soil discoloration in the eastern baulk of Unit 17. This level was excavated as a cultural level and ended when Floor #1 was encountered. After fully excavating the level, the reddish brown soil discoloration appears to be a large concentration of daub. The concentration of large rocks continues into the southern portion of Extension C.

Level 2 (Lot 1467) is combined from Unit 17 Extensions A and B, as they represent the same cultural feature. This lot was started to excavate Extensions A and B down to the level of Floor 2. Very few artifacts were removed from this level as Floor 1 rests just above Floor 2. Among the artifacts recovered from this level is a carved faunal bone.

Unit 17 Extension D

Level 1 (Lot 1468) Extension D is a 1 by 1 meter unit located to the south of Unit 17 and Unit 17Extension C. This level consists of dark brown loam clay humus. The level ended when we reached the rock concentration, which was identical in composition to the concentrations discussed above. It was concluded that the concentration most likely represent the remains of the terminal architecture, however, due to plowing or the effects of time the architecture has been very poorly preserved and difficult to recognize as architecture versus collapse.

Unit 17, Extension E

Level 1 (Lot 1470) is a 2 meter (N/S) by 1.5 meter (E/W) extension placed to the north of Unit 17 and Unit 17 Extension C. It was started to locate the corner of the penultimate platform. The soil is dark brown loam clay humus. We were unable to locate the corner of the platform in this extension and due to time did not excavate past the top of the penultimate platform which consists of fist-sized limestone rock and river cobbles used as the platform fill.

Unit 17 Extension F

Level 1 (Lot 1521) is the final extension for Unit 17, and is a 2 meter (N/S) by 1 meter (E/W) unit placed to the east of Extension E, again with the purpose of identifying

the corner of the penultimate platform. This level consisted of dark brown loam clay humus and collapsed material from the terminal architecture. The penultimate wall and Floor 2 were identified below the humus and collapsed material and slumped down considerably to the east. Floor 1 could not be identified in this extension, thus, Level 1 consists of all materials down to the level of Floor 2. Two cut stones (aligned in a general north/south direction) were identified in the center of the unit and likely represent what remains of the edge of the penultimate platform. A plan view of all of the units depicts what remains of the terminal architecture as well as the penultimate platform. The remainder of the report on M-91 details the vertical excavations from Floor 2 to sterile soil.

Unit 17 Vertical Excavation

For Level 4 (Lot 1527) the vertical excavations on M-91 were positioned within the cut-into Floor 2, thus, the dimensions of these excavations are 1.5 by 1.5 meters. Level 4 was excavated as a cultural level and extends from Floor 2 until another plaster floor was encountered at approximately 75 centimeters below datum. The matrix consisted of compact light brown, homogenous loam clay. The plaster floor (approximately 4 centimeters thick) consisted of plaster over a small limestone and river cobble ballast. Unlike the plaster floors encountered above, Floor 3 was not burnt.

Level 5 (Lot 1553) was excavated as a cultural level. The matrix consists of compact light brown, homogenous loam clay. This level extends from the base of the third floor until a ceramic deposit was encountered at approximately 115 centimeters below datum. There was no architecture associated with the ceramic deposit; however, a thin lense of grey ash covered the unit at the level of the deposit. In addition to the ceramics associated with this deposit, a granite mano fragment, a single human lower canine tooth and human bone fragment were recovered. Level 6 was excavated as a cultural level. The matrix consists of compact light brown, homogenous loam clay. This level extends from the base of the ceramic deposit until a level of very compact gray clay (at approximately 125 centimeters below datum) which may have been a tamped clay floor. In Level 7 the matrix consists of compact light brown, homogenous loam clay at the beginning of the level and became progressively more sandy beginning at about 156 centimeters below datum. This level extends from the possible tamped clay floor until a second ceramic deposit at approximately 160 centimeters below datum. Once again, no architecture could be identified in associated with this deposit.

Level 8 (Lot 1560) was excavated as an arbitrary level due to the decreasing density of artifacts and the prevalence of sand in the matrix though the matrix is still mostly a loam clay. Level 8 concluded at approximately 180 centimeters below datum. Level 9 was also excavated as an arbitrary level. The matrix consists of light brown sandy clay and the artifact density continues to decrease. This level was concluded at approximately 240 centimeters below datum. Continuing with arbitrary levels, the matrix in Level 10 consists of light brown sandy clay. Level 10 concluded at approximately 165 centimeters below datum. Artifacts removed from this level include. Level 11 (Lot

1613) was excavated as an arbitrary level. The matrix consists of light brown sandy clay at the top to yellow sandy clay at the base which is indicative of sterile soil at Baking Pot. The unit was terminated at approximately 310 centimeters below datum.

In conclusion, excavations at M-91 indicate four construction phases, with the terminal floor (Floor 1) immediately above the penultimate architecture (Floor 2). The first construction phase, associated with Floor 3, appears to have been a stamped-earth floor. After this first construction phase, the height of the platform was increased and a greater degree of architectural investment was made in this phase including cut limestone blocks and a thick plaster floor. Finally, the third construction phase featured relatively small investment, with a re-plastering of the floor in the terminal phase of architecture.

DISCUSSION AND CONCLUSIONS

Excavations at M-181 and M-91 provide insights into the occupation histories and construction sequences at two separate house groups in the eastern settlement area of Baking Pot (Zone C as designated by Conlin & Ehret 2001). Excavation results from M-181 provide an example of a low-status commoner house group with limited architectural investment. In comparison, investment at M-91 (which is an example of a middle-status commoner house group) featured greater investment, including cut limestone blocks and plaster floors.

Laboratory analysis is ongoing, and will be available in a special edition of BVAR Progress Reports, which will feature the analysis of materials from these two structures, as well as the other settlement excavations from 2007 through 2010 (Hoggarth, forthcoming; Ness et al., forthcoming, Ramos & Hoggarth, forthcoming). Although this analysis is still on-going, preliminary examinations confirm the preliminary assessments of household status based on the material remains as well as the architectural remains. Smith (1987) suggests that assessments of status in domestic contexts require multiple factors to be considered, rather than relying simply on architecture or material remains alone. Once the laboratory analysis is completed, an assessment of the domestic inventory will also be made.

In comparison with previous excavations of house groups at Baking Pot this field season, the architecture at M-91 is comparable with that at M-101 (see Zweig & Russell, this volume), with nice plaster floors, cut limestone blocks, and similar platform dimensions. Excavations at M-181 reveal similar architecture and material culture as M-94 (see Russell, this volume) in terms of architectural investment and presence of exotic goods. Both of these structures also represent singular mounds, as opposed multiple-structure groups. Like most house groups at Baking Pot, none of these groups are formally organized, although each can be found in spatial association with other mounds in a loosely arranged cluster. As analysis continues, additional factors can be explored to understand changes in household composition, domestic activity, and strategies of adaptations can be understood. Ultimately, a more comprehensive comparison of house groups will be made in Julie Hoggarth's dissertation, which will include the results of the

laboratory analysis to understand commoner adaptation to the major changes associated with the transition from the Classic to Postclassic period.

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TEST PIT EXCAVATION OF M-112 AT BAKING POT, BELIZE

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INTRODUCTION

In 2008 the Belize Valley Archaeological Reconnaissance (BVAR) project continued settlement research at Baking Pot aiming to understand the occupation history of the settlement of the site, as well as to understand changes in settlement, community, and household organization at the site in the transition from the Classic to Postclassic period. Excavations at M-112 were conducted as part of this research, as one of the 20 percent sample of excavations of housemounds at the site.

Baking Pot is located in the Cayo District of western Belize, on the premises of Central Farm's Livestock Division. The site is considered an upper-level center, comparable in size and complexity to Xunantunich, Cahal Pech, and Buenavista del Cayo (Driver and Garber 2004). Early research at Baking Pot focused on excavation of the monumental epicenter (Ricketson 1929 ; Bullard 1963; Bullard & Bullard 1965) As part of Gordon Willey's settlement research, the settlement around Group A and B were mapped, and several house mounds excavated (Willey et al. 1965). Beginning in 1992, The Belize Valley Archaeological Reconnaissance (BVAR) project, directed by Dr. Jaime Awe, started archaeological investigations at the site. Conlin initiated the first phase of settlement research by BVAR at this time, focusing on surveying the central and eastern portion of the site. Investigations into the monumental architecture were also conducted by the project (see Helmke & Awe 2008 for an overview). In 2007, the second phase of settlement research at Baking Pot was intiated by Julie Hoggarth and Eva Jobbová, with aims of surveying the full extent of settlement associated with the Baking Pot polity, a 20 percent sample of test pit excavations of house mounds in order to gain a thorough view of demographic and occupational changes, and intensive excavations at a sample of house groups in order to understand changing household and community organization during the transition from the Classic to Postclassic periods. Excavations in 2008 at M-112 were part of the second phase of this research, aimed at obtaining a 20 percent sample of test pit excavations at Baking Pot .

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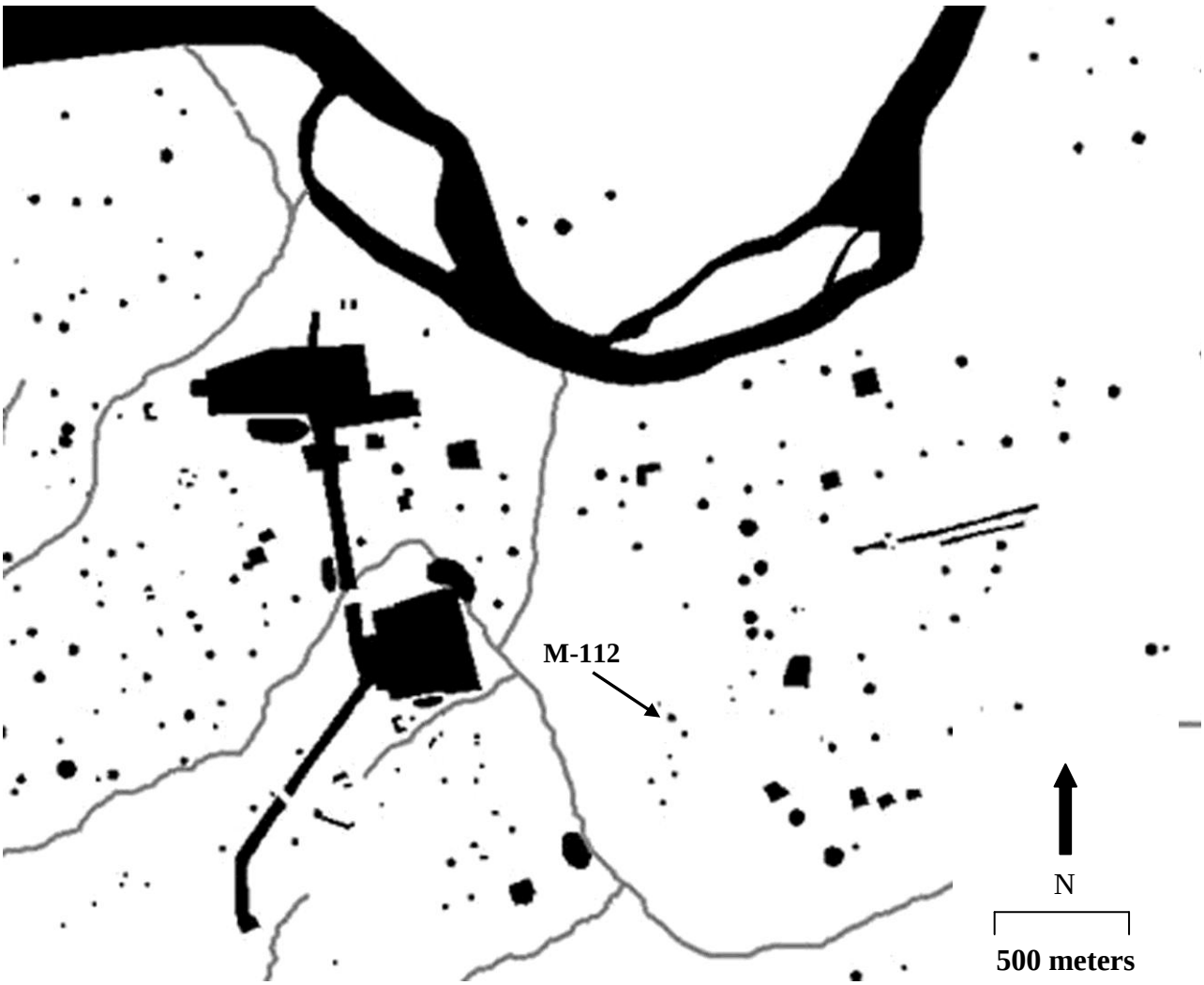

Figure 1: Map of Baking Pot and location of M-112 (modified from Hoggarth et al. 2008, Figure X by Eva Jobbova and Andrew Bevan).

METHODOLOGY

Excavations at M-112 are part of the second phase of settlement research conducted at Baking Pot as part of Julie Hoggarth's doctoral dissertation. As part of this research, settlement at Baking Pot was divided into (9) one kilometer grids, which the monumental epicentre within the central kilometer grid (Hoggarth 2008). In order to understand occupation history of the settlement at Baking Pot, a 20 percent sample of test pit excavations are currently being conducted, stratified based on architectural volume (see Hoggarth 2008, Douglass 2002, and Drennan 1996 for examples of stratified sampling). M-112 was selected as one of these test pit excavations in the East-Central kilometer grid, associated with what Conlin has designated settlement group C (Conlin and Ehret 2000) and Hoggarth (this volume) has redesignated Baking Pot Epicentral Settlement Cluster C. Based on architectural volume, the structure was

selected as an example of a medium-level architectural volume house group (included with M-108, 109, 110, 111, and 113). Excavations of structure M-112 were conducted using both cultural and arbitrary levels, according to context and quality of preservation. A 1 by 1 meter unit (excavation unit 14) was placed at the estimated center of the structure, as to uncover the various construction phases in the structure, as well as to identify domestic ritual activity at this location. In addition a 1 by 2 meter excavation was placed to the south of unit 14, as to uncover a greater proportion of the platform floors, as many of the upper levels of the floors in unit 14 were disturbed. Matrix was all levels were sifted through ¼ inch screens and cultural materials were collected in association within their context (level, lot, and feature). The analysis of material and human remains are currently being conducted and the results of this analysis will be presented in future publications (Bey and Hoggarth, *forthcoming*).

EXCAVATION RESULTS

Structure M-112

Structure M-112 is located approximately 500 meters southeast of Baking Pot's monumental epicenter Group B. The house mound is a little over 1 meter high, and is 14 meters in width (north-south), and 19 meters in length (east-west). A one square meter unit was placed at the estimated center of the mound, recorded as Excavation Unit 14. A datum was established at the north corner of the unit, and a mound profile was drawn. Arbitrary stratigraphy was used until cultural level would be reached.

Level 1 (Lot 1361) commenced approximately at 5 centimeters below datum, consisting of a humic layer, characterised by a dark brown matrix until about 20cm below datum, and underneath it a layer of alluvium soil, characterised by a compact dark brown matrix mixed with plant roots. Very few cultural materials were found (ceramic sherds, chert and daub fragments) present in this level due to modern agricultural activities. The level was ended at approximately 45 cm below datum because of the lack of artefacts, and 10 cm arbitrary levels were used for the next levels. Level 2 (lot 1362) was characterised by a compact and homogenous dark brown matrix mixed with rocks and plant roots. This level also had few artifacts; a small number of chert fragments and flakes were present. This level was ended at approximately 55cm below datum. Level 3 (lot 1363) was characterized by a homogeneous compact brown matrix. Level 3 presented a wider range of cultural material and a higher quantity as well; ceramic sherds, limestone fragments, chert flakes and fragments, and a *jute* shell. However, no architectural elements were present and so the level was closed at approximately 68 cm below datum. Level 4 (Lot 1364 and 1365) marks the beginning of cultural stratigraphy. This level was characterized by a compact and homogeneous brown matrix. At approximately 90 cm below datum, the remains of a poorly preserved plaster floor were found in the north-west corner of the unit, Floor 1. Due to the poor preservation, the remains of this floor consisted in small nodules and particles of plaster; however, no ballast was encountered. No cultural material was found directly on the floor. The cultural materials found above the floor were ceramic sherds, chert flakes and quartz fragments. Also, a large ceramic sherd, possibly polychrome, was found in the

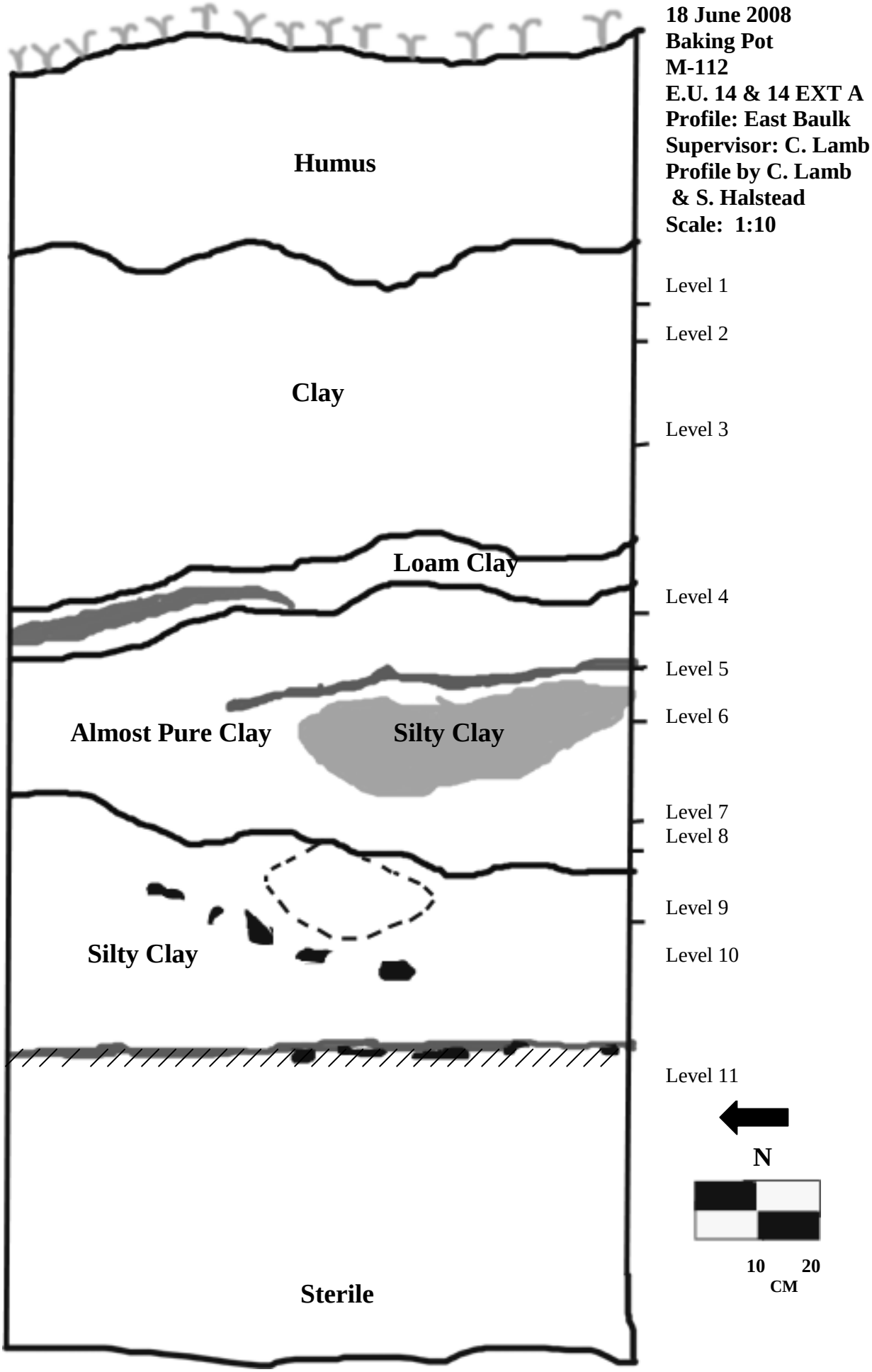

Figure 2: Unit 14 and 14 EXT A profile, west baulk.

At approximately 96 cm below datum, below Floor 1, Level 5 (lot 1366) was commenced, characterized by a heterogeneous grey-brown matrix. At approximately 107cm below datum, in the southern half of the unit, the remains of a poorly preserved plaster floor were encountered, Floor 2 (Figure 2). The poor preservation of the floor seems to be due to bioturbation, possibly large plant roots, burrows or water damage. A carbon sample was the only material recuperated directly on the floor. Floor 2 was cleaned, and Level 5 was ended approximately at 108 cm below datum. Level 6 (Lot 1367) commenced at approximately at 108 cm below datum, below Floor 2, and was characterized by a yellowish light brown loamy clay, which progressively became more sandy on the eastern portion of the unit as excavations advanced. At approximately 111 cm below datum, a ceramic concentration was found in the south-east portion of the unit. In addiction to ceramic sherds, chert and quartz fragments were also recovered. Limestone fragments and rocks, found in the south-east corner of the unit, were clearly associated with this deposit. This ceramic concentration was recorded as Ceramic Concentration 1, and was interpreted as sub-floor core rather then an ordered deposit because it appeared to be weathered midden materials.

Level 7 (Lot 1368) commenced below Ceramic Concentration 1, at approximately 115 cm below datum, and was characterized by a compact light yellowish brown clay loam matrix Because of the little amount of cultural material present, and the depth of the unit, Level 7 was ended in case sterile level was near, at approximately 130cm below datum. Level 8 (lot 1369) was characterized by a compact yellowish brown clay matrix. At approximately 136cm below datum, the remains of a poorly preserved plaster floor in the north of the unit were found. On the same level, a deposit in the north east corner of the unit of some limestone fragments, a ceramic sherd and a couple rocks were found as well. Level 8 was ended at approximately at the level of this deposit and floor. Level 9 (lot 1370 and 1451) was commenced at approximately 136 cm below datum, and was characterized by a compact and heterogeneous yellowish brown clay matrix. The amount of cultural material augmented in this level. The artifacts recovered were chert fragments and flakes, ceramic sherds, including a large diagnostic sherd found in the eastern baulk at 144 cm below datum (lot 1451), freshwater shell fragments, daub and carbon scattered throughout the eastern side of the unit. Level 9 was closed below lot 1451.

Level 10 (lot 1452 and 1453) was opened at approximately 147 cm below datum, and was characterized by a dark brown compact clay in the western part of the unit, and a loose yellowish brown silty soil in the eastern part of the unit. As the excavations advance into lot 1453, the majority of the unit had a silty soil, while only the north west corner was characterized by the clay loam described above. In lot 1452, the cultural material found were daub, carbon, chert, and ceramic sherds, all mainly concentrated in the eastern half of the unit. At approximately 150cm below datum, large stones were found in the western part of the unit. Associated with the limestone blocks was a concentration of ceramic material directly above and below them. Lot 1452 was ended below the stones, at approximately 154cm below datum, were another concentration of ceramics was uncovered.

Lot 1453 is the ceramic concentration below the stones of lot 1452. This deposit, located in all of the unit excluding the north-west corner included large and small ceramic sherds, a complete ceramic vessel, chert fragments and flakes, a basalt

mano fragment, limestone and quartz fragments, carbon, and rocks/river cobble. This deposit, as the deposit of lot 1452, is not ordered and has been interpreted as part of a sub-floor core, as I would consider the large stones. Also, although the concentrations above and below the stones were recorded as two separate lots, I believe they should be considered as a single human action.

Level 11 (lot 1454) was commenced below the ceramic concentration of lot 1453, at approximately 162cm below datum, apart from the north-east corner where one of the larger of the stones of lots 1452 was still in place. This level was characterized by a loose yellowish brown silty soil. A poorly preserved plaster floor was found in the north-western half of the unit at approximately 166cm below datum, recorded as Floor 4. Mixed with the remains of plaster were rocks and river cobble that were interpreted as the floor's ballast. The large stone that was left from Level 10, which was placed directly on this floor, attests that levels 10 and 11 should be combined as they are part of the same sub-floor core deposit. The cultural materials found above the floor were a small obsidian blade, a small quantity of ceramic sherds, and carbon in the western portion of the unit. The floor was cleaned and level 11 was closed at approximately 168cm below datum. Level 12 (lots 1455, 1456, 1457, 1458) commenced with Floor 4. This level was particularly long and will therefore be described lot by lot. Lot 1455 was associated with Floor 4 and its rock and river cobble ballast. This lot was commenced at approximately 168 cm below datum, and was characterized by a compact yellowish brown silty soil, mixed with plaster particles. The cultural materials found were ceramic sherds, chert fragment and flakes, carbon, daub, and marine and freshwater shell.. This lot was closed once the ballast had been completely removed. *Lot 1456 was commenced at approximately 181 cm below datum and was characterized by the same silty soil as lot 1455, but became more silty and loose in the western part of the unit as excavations continued downward. The cultural material found in this lot were large daub fragments, chert flakes, unopened freshwater clams (*Nephronias spp.)* and ceramic sherds, including a rim sherd with a medial ridge and possibly two Xunantunich Black on Orange sherds, diagnostic of the Spanish Lookout complex associated with the latter part of the Late Classic period (LCII). Other diagnostic sherds (bichrome and rim sherds) were present in this lot and will help date this level. The amount of cultural material decreased as excavations continued. The matrix of lot 1456 becomes less silty and more clay/alluvium as excavations descend, light brown with grey specks, compact heterogeneous, and eventually looses its silty nature. Then above wall level, gets silty and a bit sandy in pockets, then wall level clay/ alluvium.

At approximately 270 to 280 cm below datum the top of a wall of limestone blocks and smaller rocks was uncovered. The level and lot was not closed because we wanted to excavate to the base of this wall before doing so. No cultural material was found associated to the wall for almost 20 cm, but was closed at approximately 293 cm below datum when cultural material was encountered (including ceramic sherds and a faunal remain). *Lot 1457 was opened to keep cultural material associated to the wall separated from the rest of level 12 materials. This lot is characterized by a silty light brown alluvial soil, then at approximately 295 cm below datum a light yellowish silty sand matrix mixed with river cobble, which appeared to be the ballast from a poorly preserved floor. At 310 cm below datum, the matrix was almost pure sand/silt. Very little cultural material was found in this lot, only a couple of ceramic sherds and one carbon sample was taken below one of the smaller stones of the wall.

At this level, the limestone blocks had a sort of grey layer on them, indicating that they had been fired. The base of the wall was encountered at approximately 320 cm below datum. At approximately 327 cm below datum, a complete red slipped vessel and a human skull were uncovered east of the wall. Upon cleaning the burial, it became evident that the burial continued into the northern baulk; as a result, we tunneled into this baulk in order to reveal the remainder of the burial. These tunnels are considered part of level 12 as lot 1458 and started below Floor 4. This lot's matrix comprised all the different matrixes in level 12. The materials found were chert fragments and flakes, ceramic sherds including some bichrome sherds, worn quartz fragments, and shell. Upon the discovery of a second skull in the northern tunnel (Burial 112-1-2), it appeared that the burial continued significantly to the north, and thus, an extension was opened in order to completely uncover the burials, recorded as Excavation unit 14 Extension A.

The excavations in the extension did not follow the same levels as unit 14 for timely purpose, but followed the construction phases. A wall was found on floor 4, and this floor was broken above the funerary deposit. Excavations in the extension uncovered the totality of the cist wall. In the extension, some disarticulated human remains were found west of cist wall: one long bone and cranium at 304 cm below datum, which were recorded as Burial 112-1-2 at 275 cm below datum. This deposit appears to be a secondary burial associated below the pelvis of the primary individual (Burial 112-1) (Figure 4)

Level 13 was commenced at approximately 330 cm below datum. This level encompassed the burial remains upon cleaning, and was characterized by a silty/sandy soil, yellowish brown in color. Level 13 comprised two burials: Burial 112-1-1, and 112-1-2. Burial 112-1-1 was a primary burial, composed of a full human skeleton, in "deubitus ventral", oriented towards the south (head south), with grave goods, including three intact ceramic vessels, small jade beads, and two limestone spindle whorls. The burial was 160 cm in length, indicating it was probably an adult. Spindle whorls are often associated to women, who are thought the cloth-producers of society, although further osteological analysis will provide information about the individual's sex. Vessel 1, which was located in the northern part of the unit, was a bichrome bowl like recipient, with a white slip with two red bands at the rim. Vessel 2 was a smaller black vessel, and Vessel 3 was a red slipped ceramic vessel. Complete ceramic analysis is forthcoming with the laboratory analysis. Burial 112-1-2, was a secondary burial, consisting of a human skull, several long bones and a large ceramic sherd. Overall, the burial appears to be oriented primarily towards Burial 112-1-1, as the intact burial and the majority of the grave goods appear to be oriented around this burial. However, some of the grave goods may be associated with the secondary burial (112-1-2). It is also unknown whether Burial 112-1-2 was interred at the time of burial for 112-1-1, or at a later date, or whether the tomb was reopened and the secondary burial placed within the tomb. Tomb reentry is common in the Maya Lowlands, especially due to the ancient Maya's continuing interaction with the dead through ancestor veneration (Welsh 1988). No evidence was recovered which would indicate tomb reentry, so it is assumed that both individuals and the associated grave goods were interred at the same time. Excavations below the burial contained very little cultural material, and a sterile level was reached.

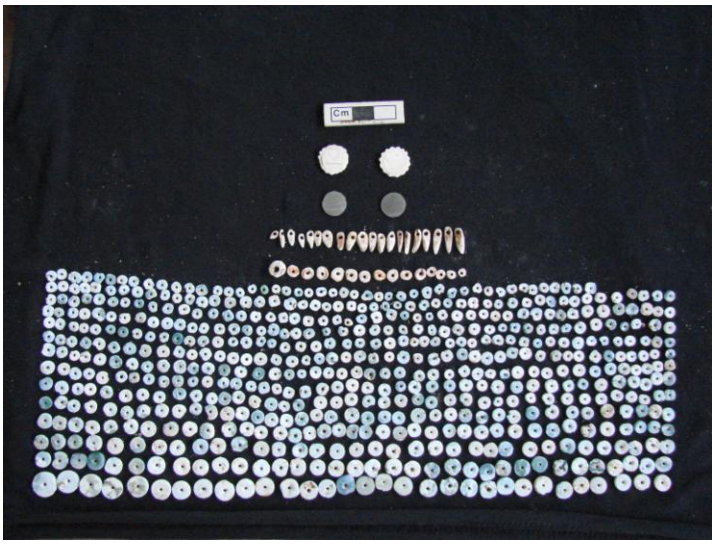

Figure 2 (Top): Burial 112-1-1/2 (Photo by J. Hoggarth). **Figure 3 (Middle):** Burial 112-1-2, showing secondary human remains. **Figure 4 (Bottom):** Greenstone, shell, and obsidian grave goods in burial 112-1-1/2.

DISCUSSION AND CONCLUSIONS

Excavations at M-112 have provided interesting new information about occupation at the structure, as well as an intensive look into the burial practices of its occupants in the Early Classic period. Although the terminal architecture was poorly preserved due to years of plowing, earlier phases of architecture are intact. It appears that the structure had at least 4 construction phases, with the terminal phase of occupation in the Spanish Lookout phase during the Late/Terminal Classic. However, no substantial architecture was recorded for this phase. Although the complete ceramic analysis is ongoing, the pen-ultimate architecture, represented by the first plaster floor appears to date to the Late Classic, and Floor 2, which was located approximately 20 centimeters below Floor 1, appears to also be Late Classic in construction. Floor 3 tentatively appears to date to the Early Classic period, and Burial 112-1-1 and 112-1-2 also appears to date to the early part of the classic period.

The primary interment, together with the secondary burial, indicates that the inhabitants of M-112 were able to procure exotic goods, such as jadeite. This would indicate that the Early Classic household at this location was of relatively high status; however, the location and materials associated with the construction of M-112 clearly indicate that it is the residence of a commoner household. In addition, no other noteable prestige goods were identified in later construction levels, which may indicate a general lowering of status of the group over time, or that this structure was the locus of burial of an important lineage member or ancestor early on, and the structure underwent relatively little elaboration or use over time. Osteological analysis of the human remains is being conducted by Dr. Jennifer Piehl, and the results will be available in future publications.

In comparison with other house mound excavations at Baking Pot, the architectural remains of M-112 are much less extensive and lower quality, with the exception of the mortuary architecture, than many other structures in the vicinity. As it is located nearby a formally arranged patio group (M-108,109,110,111), and next to M-113, it appears to be part of a larger house cluster. Architecturally, this indicates similarities with the Atalaya group, which also yielded modest architectural and material remains (Conlin & Moore 2002). Future excavations in the formally arranged patio group will be conducted in the future in order to understand M-112's association with the group.

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M-94: EXCAVATION OF AN ANCIENT MAYA HOUSEMOUND AT BAKING POT, BELIZE

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INTRODUCTION

In June 2008, excavations were conducted at the ancient Maya center of Baking Pot in the Cayo District of western Belize. As part of the Belize Valley Archaeological Reconnaissance project about 30 students, most with no previous archaeological experience, took part in a large archaeological research program. Because much is already known about the urban elites in the central plazas and large urban structures, the focus of Hoggarth's (2008, *this volume*; Hoggarth et al. 2008) research was on the settlement surrounding the monumental epicenter. It is hoped that economically diagnostic materials such as high quality chert or other raw materials, valuable eccentrics, or grave goods could shed some light on the distribution of wealth at the sprawling residence of an estimated many thousand people who occupied the sites between from the Preclassic to the Postclassic period.

Baking Pot is located approximately 10 kilometers downriver from Cahal Pech on the premises of Central Farm. The area is currently pastureland for the Belize Department of Agriculture, Livestock Division. The immediate surrounding area is both pasture and plowed cropland. With over 300 mounds spread across 9 square kilometers, occupation at Baking Pot peaked around 1,500 people at the site's height of occupation (Jobbova *this volume*). Excavations in the 2008 season focused on test-pit units sampling

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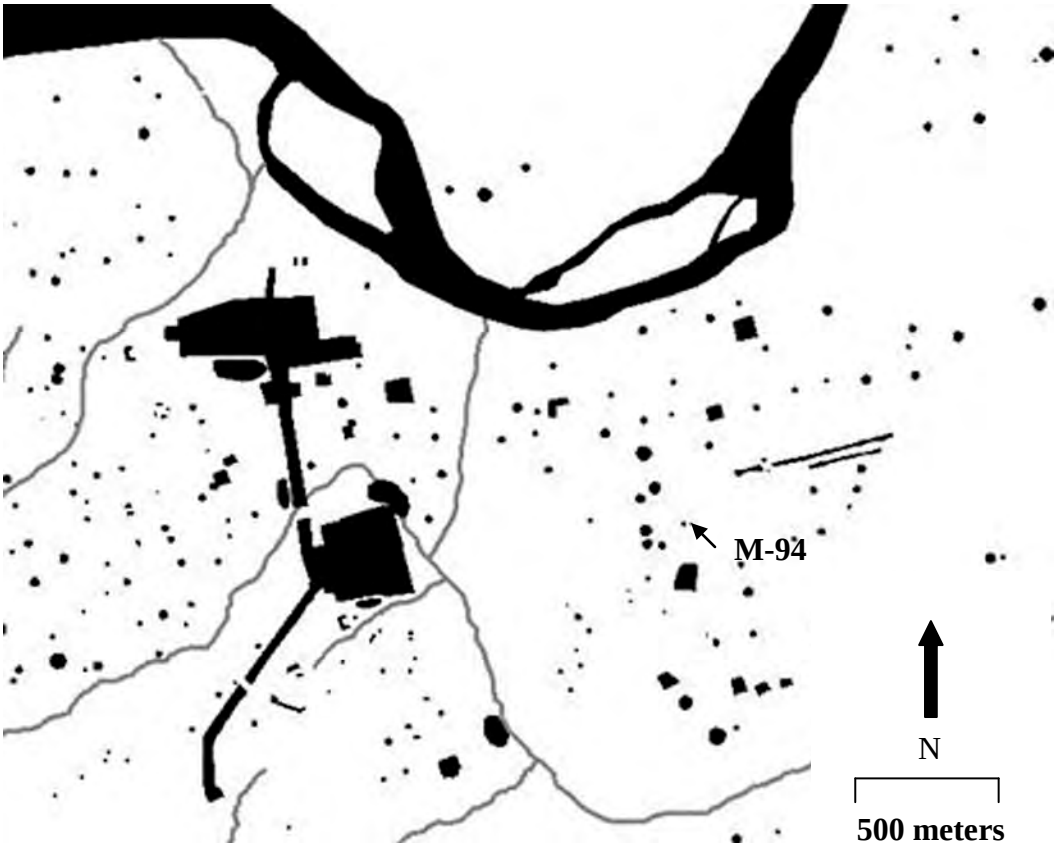

Figure 1: Map of Baking Pot and location of M-94.

(Hoggarth, *this volume;* Zone C as designated by Conlon 2001) of the Baking Pot settlement area.

METHODOLOGY

Excavations at M-94 is part of the second phase of settlement research conducted at Baking Pot as part of Julie Hoggarth's doctoral dissertation. As part of this research, settlement at Baking Pot was divided into (9) one kilometer grids, which the monumental epicenter within the central kilometer grid (Hoggarth 2008; see Hoggarth *this volume,* for an overview of the theoretical and methodology background of the settlement research at Baking Pot). In order to understand occupation history of the settlement at Baking Pot, a 20 percent sample of test pit excavations are currently being conducted, stratified based on architectural volume. M-94 was selected as one of these test pit excavations in the East-Central kilometer grid. Based on architectural volume, the structure was selected as an example of a low-level architectural volume house group.

Excavations of structure M-94 were conducted using both cultural and arbitrary levels, according to context and quality of preservation. A 1 by 1 meter unit (excavation unit 13) was placed at the estimated center of the structure, as to uncover the various construction phases in the structure, as well as to identify domestic ritual activity at this location. Upon additional excavation and the identification of a wall on the edge of the eastern baulk of the unit, a 1 by 1 meter extension unit was placed directly adjoining unit 13 to the east (named excavation unit 13 extension A). Matrix was all levels were sifted through ¼ inch screens and cultural materials were collected in association within their context (level, lot, and feature). The analysis of material and human remains are currently being conducted and the results of this analysis will be presented in future publications (Bey and Hoggarth, *forthcoming*).

EXCAVATION RESULTS

M-94

Excavations at M-94 were recorded in arbitrary 10-centimeter levels due to the severe disturbance of the substrata inside the plowzone. The profile of the mound revealed an elevation above the surface of no more than 60 centimeters over the entire width of the mound, which was approximately 21 meters East to West, and approximately 18 meters north to south. The location for the one square meter unit was chosen at the center of the mound, in order to identify platform floors to identify construction phases, as well as to identify any ritual activity. Levels one

through four are very disturbed by modern plowing activity. Level five began in correlation with a stone feature that ran along the southern wall of the unit. Level 5 went to a depth of 48 centimeters below datum. The stone featured appeared to be the remains of a wall that had been heavily disturbed by plow activity. It ran along and was contained by the southern baulk of Unit 13. An extension, called Unit 13 ext A, was created to the south and ended in sterile soil at a depth of 210 centimeters below the datum.

Level 1 (Lot 1371) was started at surface level. The matrix was humic, grey-brown in color and consisted mostly of vegetative matter and some loose stones. In the first ten centimeters, recovery efforts yielded chert chipping debris and ceramic sherds. The end of this level signaled the beginning of the next arbitrary level. Level 2 (Lot 1372) proceeded another 10 centimeters to approximately 20 centimeters below datum. Level 2 yielded a mix of chert chipping debris and ceramic sherd, with some quartz. Level 3 (Lot 1373) contained the same mix of chert, ceramic, and quartz. The end of this level began to see the first cultural soil. The previous level was called ‘below humus’ and it was characterized by a dark brown soil. The beginning of the interface between the dark brown soil and the underlying yellow-brown soil began to show in the south and western portions of the unit. This interface is obvious in the plan view of EU 13, at about 30 centimeters below datum (Figure 3).

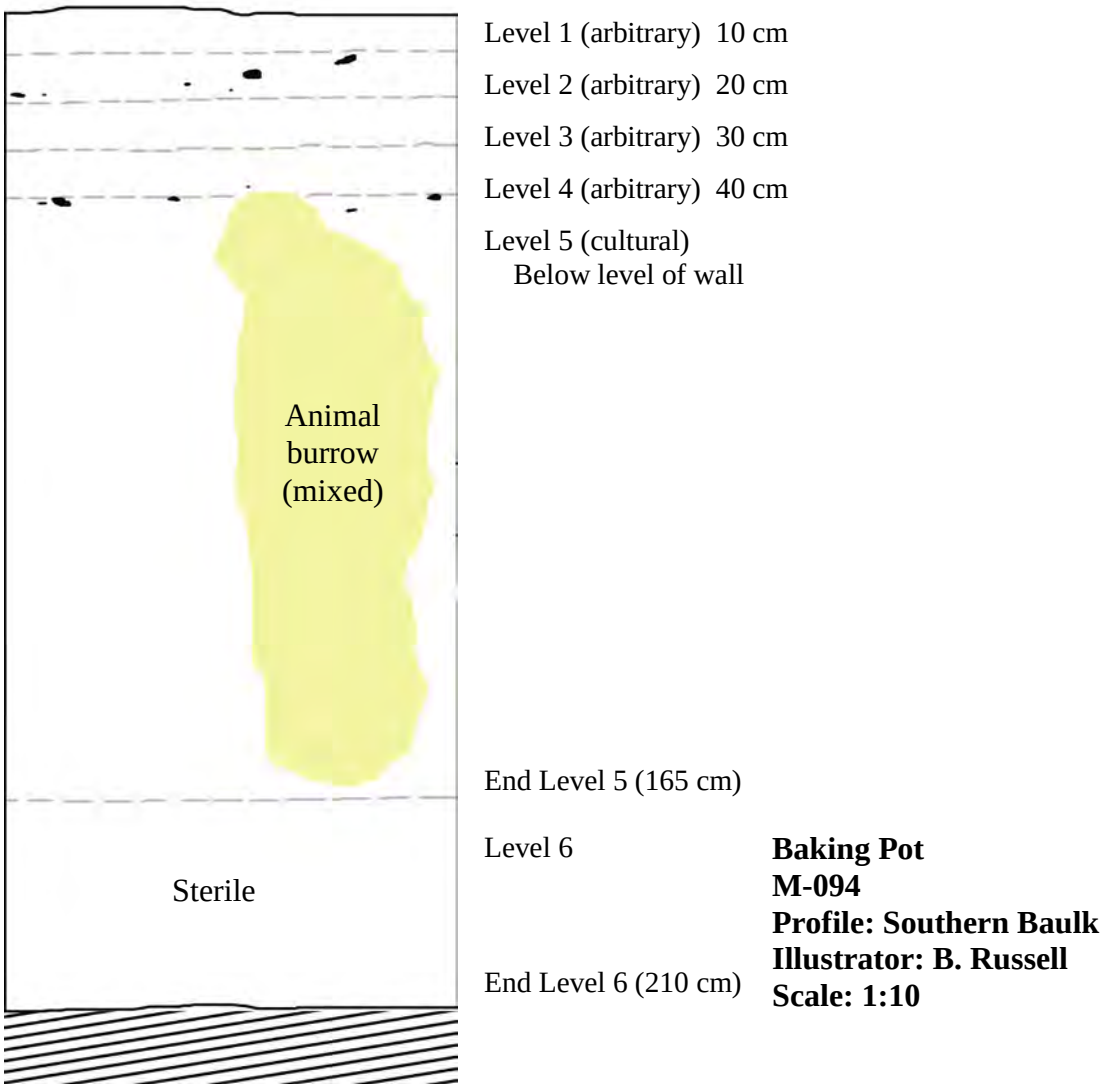

Figure 2: Unit profile for M-94.

An undisturbed horizon would not become uniform across the entire unit, until the end of Level 4. At a depth of about 30 centimeters below datum, level 3 was closed. Levels 4 (Lot 1374) and 5 (Lot 1375) contained the most diverse assemblages in EU 13. Level 4 was the last arbitrary level, it proceeded to approximately 40 centimeters below the datum and contained one piece of very clear quartz, an obsidian bladelet, and a small piece of bone that was classified in the field as faunal remains. These were also in addition to the normal distribution of chert chipping debris and ceramic sherds that were recovered from level 4. Level 4 also contained a large portion of collapsed wall debris. The southwest corner was a mix of jumbled limestone and cobbles. This feature was mapped and photographed but not removed until EU 13 – Ext A reached the same depth as EU 13.

Level 5 (Lot 1375) began approximately 40 centimeters below datum and was closed approximately 50 centimeters below datum. The matrix in this level was consistently yellow brown and a compact loam-clay. After the southern side of the wall was exposed in EU 13 Ext A, Lot 1375 was reopened in order to remove the interior wall collapse. After the collapse was removed and the two units had been excavated to the same depth, excavations continued only in the extension. The artifacts recovered were ceramics, chert chipping debris, obsidian, quartz, and freshwater shell in the form of jute. When Lot 1375 was reopened to remove the wall collapse, only more chert chipping debris and ceramic were discovered.

EU 13 Extension A was a 1 meter by 1 meter unit placed directly to the south of unit 13. The purpose of opening extension A was to expose a stone feature in the southern wall of unit 13. The original plan was to proceed until both units were at the same level on the wall, about 50 centimeters below datum. Then the units would be excavated further until a geologically sterile strata or cultural sterile of 50 centimeters below recovered cultural materials. Levels 1 through 5 are similar to the corresponding levels in unit 13, beginning in arbitrary 10 cm levels until a cultural stratum was reached. Level 1 (Lot 1376) was a humic layer with some small stones and roots. One piece of chert chipping debris along with twelve ceramic sherds were recovered in level 2 (Lot 1377), which was a compact silty fine sand. Some limestone fragments began to show in this level, but further excavation revealed them to be unarticulated. Level 3 (Lot 1378) was again, the first appearance of the interface between the plowzone and the cultural level immediately underneath.. Some ceramic fragments and chert chipping debris were recovered. Level 4 (Lot 1379) was the first strata below plowzone. The soil was a very moist silty alluvium. It was a yellow-brown like that found in the adjacent unit. The stone wall began to be further exposed, but not until level 5 was it cleared and mapped, later being removed for further excavation.

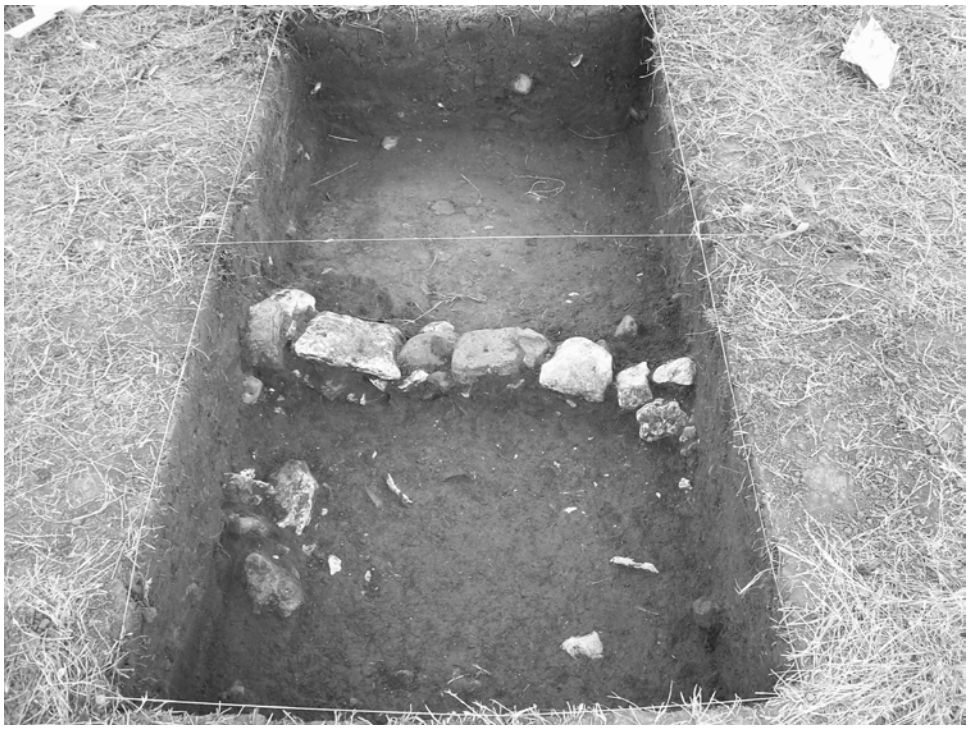

Figure 5: Wall at Level 5, Facing South.

Level 5 (Lot 1380) was below the level of the limestone wall. It contained what was clearly collapse debris from the wall. This jumble of cobbles and burnt limestone was mostly concentrated in the northwest corner of unit 13 Extension A. After clearing the collapse, the wall was oriented North-South and contained only one level of limestone blocks. Also found in level 5 were ceramics and chert. Some carbon samples were collected, although the carbon was very scarce and did not appear in large concentrations. This level began at about 40 cm below datum and in the next 15 cm below datum we recovered a ceramic sherd with a worn hole in it. It appeared to be possibly a makeshift spindle whorl. This spindle whorl was recorded as Special Find 94-1. Continuing excavations recovered more ceramics, chert, some carbon, freshwater shell, and daub. Level 5 continued until about 165 cm below datum. A large vertical animal burrow that was identified in Level 4 and extended until the bottom of the unit, and it appeared that some artifacts from the uppermost levels had fallen into the bottom of the burrow. A geologic change at about 165 cm below datum signaled the beginning of a culturally sterile layer. Any artifacts recovered in Level 6 (Lot 1411) were in close association with the burrow and assumed to be there as a result of bioturbation. The terminating depth for Level 6 was 210 cm below datum, upon which time the unit was closed.

Figure 6: EU 13 at Termination, Facing North

DISCUSSION AND RESULTS

Overall, excavations at M-94 revealed materials that appear to be domestic in nature, confirming the designation of M-94 as a housemound. Architectural remains are modest, with thin plaster floors and a low limestone wall. As a small mound within approximately 35 meters of other mounds (such as M-96 and M-91, which were also selected for excavation), this mound is much smaller than the rest. However, M-94 is located the closest to M-99, which is the largest mound within Conlin's settlement Zone C (Conlin & Ehret 2001), and is likely to have served as the community-focus group where ritual and community activities were conducted.

Excavations by Hoggarth at M-188 were also similar to those at M-94 (Hoggarth 2004). Located along the southern causeway leading to M-190 (the causeway termini structure), M-188 had thin plaster floors, with a single-block limestone platform wall. In

terms of architectural energetic measurements, the dimensions of the two structures are similar, which may indicate that its ancient inhabitants were of similar status.

In comparison with excavations of other housemounds at Baking Pot, the architecture and materials recovered from M-94 seem to be less substantial than the others. Excavations at M-195 revealed much more energetically expensive architecture (Hoggarth 2008), in the form of thick plaster floors and limestone walls with multiple levels of limestone blocks. In addition, materials recovered from M-195 included polychrome ceramics and other prestige goods. Excavations at M-203 were also more energetically expensive, with 5 block high limestone wall and several thick plaster floors. In addition, several shell ornaments and other domestic materials, such as manos and metates, were recovered. In comparison with M-203 and M-195, M-94 appears to be a lower status household, No prestige goods, such as polychrome ceramics or shell ornaments were recovered from its excavations. However, similar utilitarian items were found in all of these excavations, including the spindle whorl, obsidian blades, and chert debitage recovered from M-94. In comparison with excavations in M-20 and M-66, the material culture and architecture was much more similar to M-94, as all of these structures were heavily disturbed by modern activity, and was not very good quality materials or plaster floors.

Overall, excavations at M-94 appear to reaffirm the assertion that the structure is domestic in nature, and appeared to have been occupied by a low-status household. Laboratory analysis is on-going, and will be available in the 2010 BVAR Progress Reports (Bey and Hoggarth, *forthcoming*). When this information is available, the periods of occupation will be identified, and more quantitative data will be available for comparison with other housemound excavations. As the 20 percent sample of housemounds at Baking Pot is completed, a larger comparative sample will be available to gain a comprehensive view of settlement and occupation at Baking Pot. In addition, as horizontal excavations are completed in Settlement Cluster C of Baking Pot, a greater view of household and community organization at the site will be obtained.

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SYSTEMATIC SAMPLING OF HOUSEMOUNDS IN THE EPICENTRAL SETTLEMENT AT BAKING POT, BELIZE: RESULTS OF THE TEST PIT EXCAVATIONS OF M-134 AND M-137

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INTRODUCTION

Excavations in the 2008 field season of M-134 and M-137 continued the program of test-pit excavations of the epicentral settlement at Baking Pot. This excavation program, detailed Julie Hoggarth's report in this volume (chapter 1), aims to test 20 percent of the housemounds in each 1 square kilometer block, stratifying this sample according to architectural volume. With these aims, Michael Alexander supervised the excavation of M-134 and M-137, focusing on identifying different construction phases and the chronological sequence of construction within each structure.

METHODOLOGY

As a part of the program of test-pit excavations which intend to sample 20 percent of housemounds at Baking Pot, excavations at M-134 and M-137 were both 1 by 1 meter units positioned on the top of the platform in order to record the sequence of construction episodes at the structures. The housemounds were selected randomly within the south-eastern grid (Figure 1) that has been established to spatially separate various areas of Baking Pot in order to make the sampling program representative of typical mounds at the site (see Hoggarth 2008 for the methodological background of the program of test excavations). Excavations were conducted using a combination of arbitrary and cultural levels, and cultural materials were collected according to their unit, level, and lot. All materials and matrix was sifted through ¼ inch screen. Artifact analysis is ongoing, and the results of this analysis will be available in a special edition of the 2010 BVAR Progress Reports, which will focus on

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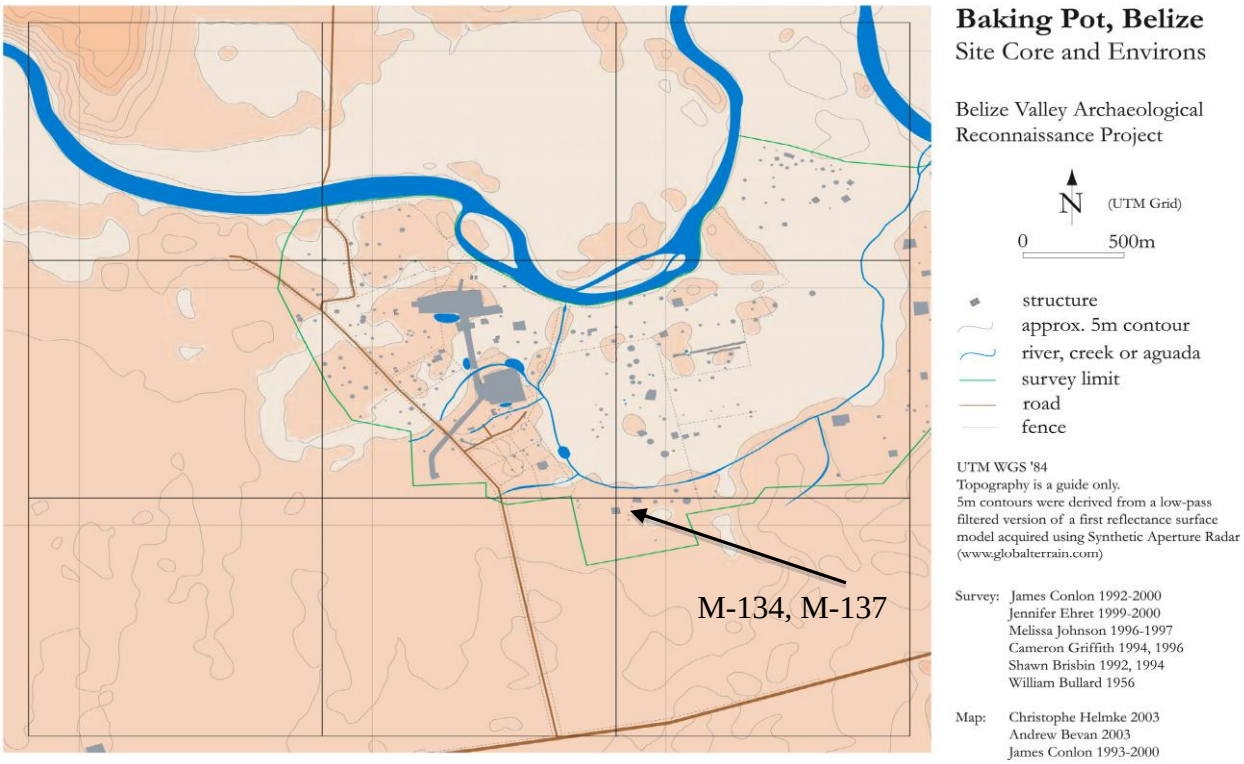

Figure 1: Map of Baking Pot site core and settlement, showing the location of M-134 and M-137 (modified from Helmke 2007).

laboratory analysis from settlement excavations from 2007 to 2010.

RESULTS FROM EXCAVATIONS

Excavations at M-134

M-134 is located in the south-central grid of the area which encompasses the epicentral settlement of Baking Pot. Level 1 was the humic level, and was characterized by dark brown matrix mixed with roots, pebbles, chert, obsidian, ceramic, granite, daub and freshwater shell. There was evidence of modern disturbance, as the unit and the area around it seemed to be uneven and there were ruts, which were most likely left from the plow. The level started at approximately 50 centimeters below datum and ended at approximately 65 centimeters, when the matrix changed to a lighter brown color. From the change of matrix, as well as the artifacts found within Level 2, it appears it is below the plow zone (Figure 2). Observations of plowing machinery and practices on Central Farm indicate

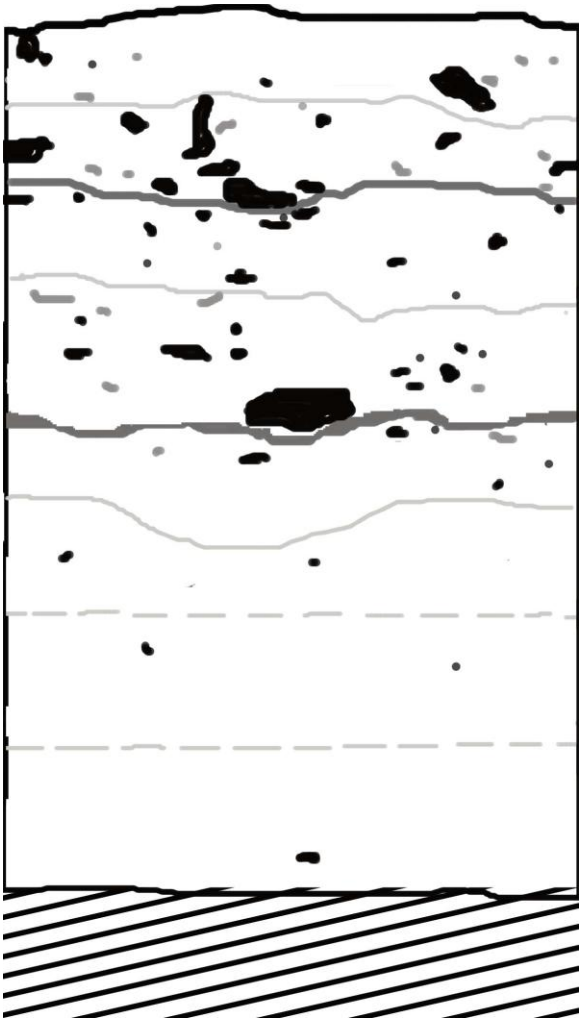

Figure 2: Profile of southern baulk of M-134.

that the plowing rarely go deeper than 15 centimeters. In Level 2, artifacts collected included chert, ceramics, daub and freshwater shell. At approximately 74 centimeters below datum, remains of an eroded floor (Floor 1) were found and the level was closed (Figure 3).

Level 3 was the level below Floor 1 and first encountered cobble ballast, which was situated over loam-clay fill which is medium-grey brown. Artifacts, most likely midden materials used as fill included ceramics, chert, daub, freshwater shell, as well as a chert biface. The lot was ended at approximately 96 centimeters below datum, at which depth the discovery of architecture in the northern and western section of the unit was found (Figure 4). At this level, a portion of a collapsed wall was identified. Level 4 encompassed the collapse from the architecture identified in level 3. Cultural materials collected in this level included ceramics, chert, daub, obsidian and freshwater shell. The collapse was cleared and then removed to reveal the cut-limestone wall and a poorly preserved floor (Floor 2). The largest of the cut limestone blocks was a 60 by 60 centimeter block, and it appears that this is a

Figure 3 (Above): Floor 1, Structure M-134. **Figure 4 (Below):** Collapse associated with architecture of Floor 2.

Figure 5: Base of architecture associated with Floor 2, M-134.

cornerstone, with walls running north and to the east. The level was closed at this level, at approximately 124 centimeters below datum.

Characterized as Fill below Floor 2, Level 5 contained heterogeneous light brown loam-clay, although in the northeast corner the matrix was dark grey brown loam-clay. Cultural materials, such as ceramics, chert, daub, freshwater shell and obsidian, were present in the uppermost part of the level, and began to diminish as excavations continued in this level, and the level was closed at approximately 157 centimeters below datum in order to start arbitrary levels to identify sterile.

Level 6 was characterized by dark brown heterogeneous loam-clay and was an arbitrary level. Artifacts continued to diminished, and only a few ceramics, daub, and chert were recovered in the uppermost part of the level. After excavating 25 centimeters below the previous level, level 6 was closed at approximately 184 centimeters below datum. Level 7 was another 25 centimeter arbitrary level, and was characterized by compact light brown loam clay. No artifacts were recovered in this level, and hadn't been collected in nearly 50 centimeters. At this point, the unit was closed, as it was determined that we had reached a culturally sterile level at approximately 210 centimeters below datum.

Overall, excavations at M-134 revealed two construction episodes. The terminal architecture is minimal, with a very thin (and poorly preserved) plaster floor with small limestone pieces which may have been part of a wall. Floor 2 has more complex architecture, including a wall that was at least 2 courses of stones high, and had cut limestone blocks. Although we were unable to follow the walls, they appear to continue to the north and to the east. Upon completion of the laboratory analysis of the materials recovered from M-134, we will be able to discuss the chronological occupation of the structure and evidence for domestic and/or ritual activities that occurred on the housemound.

Excavations at M-137

M-137 is in the south-central grid of epicentral settlement at Baking Pot. A 1 by 1 meter unit was placed in the center of the structure, as to identify the major construction episodes. Surface materials were recovered (Lot 1561), including a chert biface and a granite mano fragment. Like M-134, evidence of modern plowing indicates a great deal of disturbance, although it is likely restricted to the uppermost level. Level 1 confirmed this assessment of disturbance, with the humic level characterized by heterogeneous dark brown matrix, mixed with roots, cobbles, ceramics, chert, obsidian, faunal remains, freshwater shell, and a ceramic button/adorno. The level, which was started at approximately 35 centimeters below datum, ended at 47 centimeters upon a change in matrix.

Level 2 showed a change in matrix to a medium dark brown which was a compact loam-clay. Cultural materials recovered included daub, ceramics (some painted), obsidian, and freshwater shell. At approximately 57 centimeters below datum, a poorly preserved floor (Floor 1) was encountered and the level was closed. Level 3, which was composed of fill below floor 1 contained ballast and compact loam-clay fill mixed with obsidian, chert, ceramics, granite, quartzite, freshwater shell and faunal remains. At approximately 73 centimeters, a well preserved plaster floor (Floor 2) was revealed and the level was ended.

Level 4 consisted of the ballast and fill below floor 2. It was characterized by dark grey-brown matrix mixed with cobbles, ceramics, chert, quartzite, freshwater shell, obsidian and daub. As excavations continued towards sterile, there were a few minor changes in the matrix and its contents. The first marked the end of the ballast below floor 2 approximately 15 centimeters. At this point, there were fewer cobbles throughout the level. At approximately 30 to 35 centimeters below floor 2, artifact frequencies declined drastically, to practically nothing at the depth of 138 centimeters below datum, at which point the level was closed.

Level 5 was started as an arbitrary unit set up in order to identify if excavations were nearing the sterile level. Practically no artifacts were recovered in this level, with the exception of 1 piece of worked chert, and 1 ceramic sherd (these were not found in situ, and the author suspects they fell out of the wall from above). Matrix changed at this level, in which the clay level became siltier, which often occurs when excavations are close to sterile. Excavations in level 5 reached the arbitrary 25 centimeters below the previous level, and the level was closed at approximately 165 centimeters below datum. Level 6 was the next arbitrary level, with matrix continuing to increase in silt mixed with the clay. No artifacts

were recovered from the level, and it was closed at 190 centimeters below datum. Level 7 marked a slight change in the matrix, changing to an orange-brown, with the clay interspersed with silt. No cultural materials were recovered from the 25 centimeter arbitrary level, and the level (and the unit) was closed at a depth of 220 centimeters below datum, at which point we decided that we had reached sterile, as we hadn't encountered any cultural material in over a meter of excavations.

Overall, excavations at M-137 reveal at least two major construction episodes. The large amounts of artifacts in the humic level may indicate that the terminal architecture did not survive modern plowing activity, although no architecture was encountered in this level which would provide a better assessment of whether there was architecture above Floor 1. As laboratory analysis is not complete, we are unable to provide the complete chronological descriptions of these levels, although due to the depth of the cultural levels, as well as an initial examination of the ceramics, these construction phases appear to date to the Late Classic to Terminal Classic (A.D. 600 to 850).

DISCUSSION AND CONCLUSIONS

In comparison, results from excavations at M-134 and M-137 yielded very similar results. Both structures contained 2 construction phases, each with poorly preserved plaster floors, and some architecture. The poorly preserved floors, most of which were made by applying a thin layer of plaster over river cobble ballast. The construction fill consisted primarily of alluvium mixed with artifacts, particularly ceramics, chert, quartz, freshwater shell, and faunal remains, which likely reflect the use of midden material in the construction process for fill material. In comparison to other structures excavated in the 20 percent test pit excavations, the results from M-134 and M-137 have yielded both similar and contrasting results. First, the construction phases during the Late Classic and the Terminal Classic period appears to be a common practice at Baking Pot, where the majority of housemounds were occupied during these periods. Second, the fact that there were only two construction phases was rather dissimilar to other test pit excavations, such as those at M-112, M-007, and M-009, and M-011, which all consisted of more than two phases of construction. Thus, it may be the case that the settlement in this southern area of Baking Pot may have occurred much later than in the rest of the site. Finally, unlike most of the house groups in Settlement Cluster C, there is no evidence of occupation into the Early Postclassic period at M-134 and M-137. This may indicate that the majority of Early Postclassic (New Town phase) occupation was limited to the area encompassing settlement cluster C (and delimited by the seasonal streams), or further to the north. As the analysis of materials has not been completed, a comparison of the cultural remains will be done at a later date.

COMPARATIVE SETTLEMENT IN THE BELIZE VALLEY: GIS ANALYSIS OF BAKING POT, SPANISH LOOKOUT AND BARTON RAMIE

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University College London

INTRODUCTION

In the summer 2008, Belize Valley Archaeological Reconnaissance (BVAR) project continued the settlement study recommenced in 2007, following up the pioneering settlement pattern study undertaken by Gordon Willey in 1965 (Willey et. al., 1965), and continuing with BVAR survey conducted by James Conlon during the field seasons 1993 to 2000 (Conlon 1993, 1995, 1997, Conlon and Ehret 2000). During the 2008 season, the survey focused on finishing the mapping of the 9 square kilometre area around the monumental epicentre of Baking Pot, but also aimed to extend survey further to the east to connect the BVAR settlement survey with Willey's survey of the minor archaeological centres Spanish Lookout and Barton Ramie located further east downriver (see Fig. 3.1). Once the BVAR survey is merged with Willey's survey area, a total of 13.24 square kilometres of continuous settlement will have been covered, which will make this one of the largest areas mapped in the Belize, and comparable with the larger surveys conducted in the Maya area. This will allow the Baking Pot data to be compared to that of Calakmul, Tikal and Caracol and the information will serve as a comprehensive database upon which to base analyses of ancient Maya settlement. Also, such an increasingly systematic survey, mapping of large areas, and mapping of areas between centres allows various settlement nodes and distributions to be compared and contrasted. The emerging picture has significant implications regarding the social, political and economic organization of Ancient Maya society.

BAKING POT AND SURROUNDING SITES

The ancient Maya site of Baking Pot is located in the Cayo District of western Belize, on the southern bank of Belize River, positioned 9.4 kilometres downriver (roughly northeast) of the modern town of San Ignacio and 26.1 kilometres upriver of the

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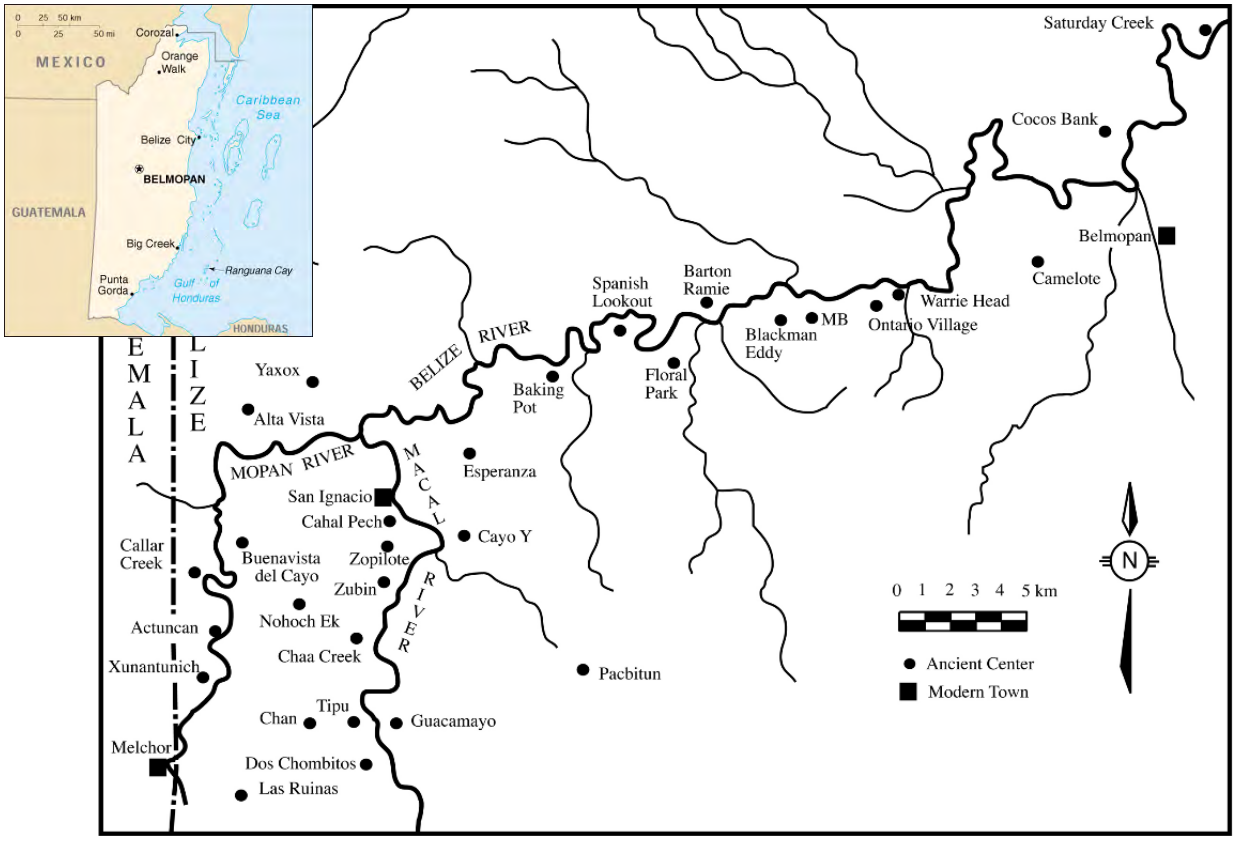

Figure 1: Map of the Belize River Valley (modified from Chase and Garber, 2004, Figure 1).

country's capital, Belmopan (Figure 1). As one of the larger settlements in the Belize Valley, Baking Pot was occupied in the Middle Preclassic period (c. 600 – 300 BC) into the Early Postclassic period (AD 1200), reaching its peak during the Late Classic period (AD 600-850) when it served as the capital of a small kingdom (AD 250-830).

The first archaeological investigations at Baking Pot were conducted in 1924 by Oliver G. Ricketson, Jr. of the Carnegie Institution of Washington (Ricketson 1929). He was followed by A. Hamilton Anderson in 1949, by Willey's team in 1956 (Willey et al. 1965: 305-309) and William R. Bullard in 1961 (Bullard 1963; Bullard and Bullard 1965; Willey et al. 1965: 305 -309). These investigations were focused primarily on the excavation of the monumental epicentre of the site, which consists of two large architectural complexes (Groups A and B) that are linked by the 250-m long Causeway 1 (Helmke and Awe 2008) (Figure 2).

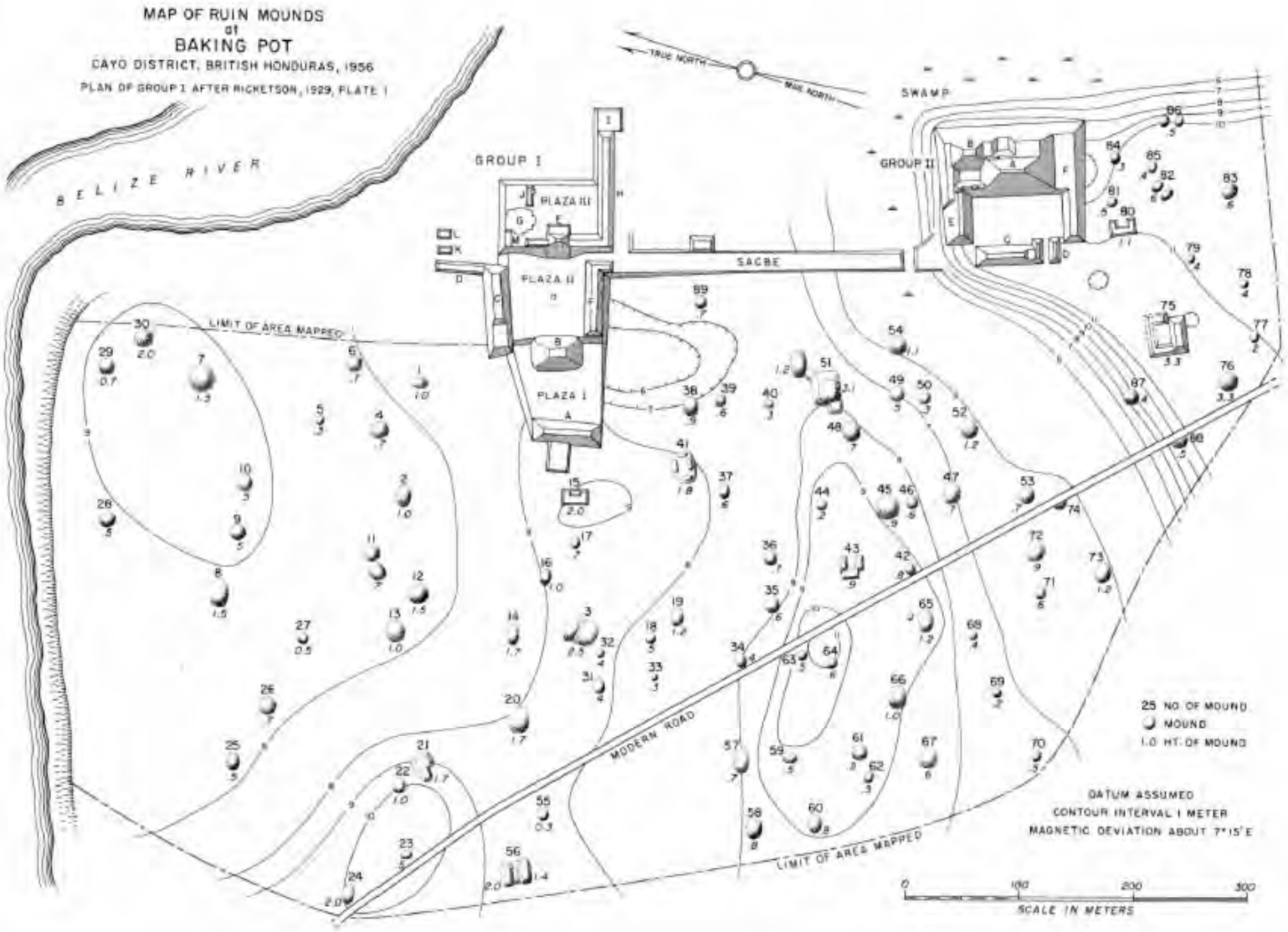

Figure 2: Map of Baking Pot and associated settlement as of 1965 (from Willey et al. 1965, Fig. 177).

The complexes are surrounded by hundreds of house mounds, several formal and informal *plazuela* groups, and a few non-domestic structures, extending out from the monumental epicentre. In 1965, as a part of Gordon Willey's team, William Bullard conducted the first settlement survey and mapping of Baking Pot, and also carried out a series of test excavations of some of the house mounds, as part of his settlement pattern project of Belize River Valley (Willey et al. 1965).

Willey and several researchers conducted settlement research at several archaeological sites in the Belize Valley, including Barton Ramie, Baking Pot, Spanish Lookout and Melhado (Willey and Bullard 1956; Willey et al. 1955; Willey et al. 1965), but the bulk of their work focused on the site of Barton Ramie, where 65 out of 262 mounds were investigated, 13 of them intensively, and the chronological sequence for the Belize Valley was established. Barton Ramie was perceived as a typical settlement found in the Belize Valley, '[S]o dense are these mounds that they form a ribbon strip of virtually continuous settlement for many kilometres along the alluvial flats and higher banks of the stream' (Willey et al. 1965: 561).

The survey at Barton Ramie revealed considerable concentration of settlement, much denser than the settlement in the upper Belize Valley, even around larger sites such as Cahal Pech or Xunantunich (Chase and Garber 2004: 10). This also proved to be true for Baking Pot and Spanish Lookout, both located in the central Belize Valley. Willey's research was considered a breakthrough in methodology for Maya archaeology (Sabloff 1994: 68-72). It was regional in scope, which is still rare in Maya archaeology, and its multidisciplinary nature considerably improved the understanding of settlement and occupation in the Belize Valley by establishing the chronological sequence. More importantly, it also drew attention to ordinary households and small settlements, rather than focusing on elite structures of monumental centres (Chase and Garber 2004: 5-6). However, the social, political and economic organization of these sites individually, or inter-site relationships were never fully explored. Since Willey's study, there has been considerable work done in central Belize Valley, providing new clues to the settlement system. For example the discovery of the site of Blackman Eddy and the excavations conducted there shed light on the possible integration of the Barton Ramie settlement into the valley system (Garber *et al*. 2004), and Driver and Garber's study suggested hierarchical organization and broader settlement patterning of the sites along the Belize River (2004).

the work done in the western part of the valley (Ford 1990; Fedick 1994), Xunatunich project (Ashmore 1998), and also continuing settlement research conducted by BVAR, of which this study is a part. Thus as Chase and Garber (2004: 11) put it: 'the true value of the Belize Valley archaeological data lies in the continued, incrementally additive regional research that has ensued in this location since Willey's Barton Ramie Project in the 1950s'.

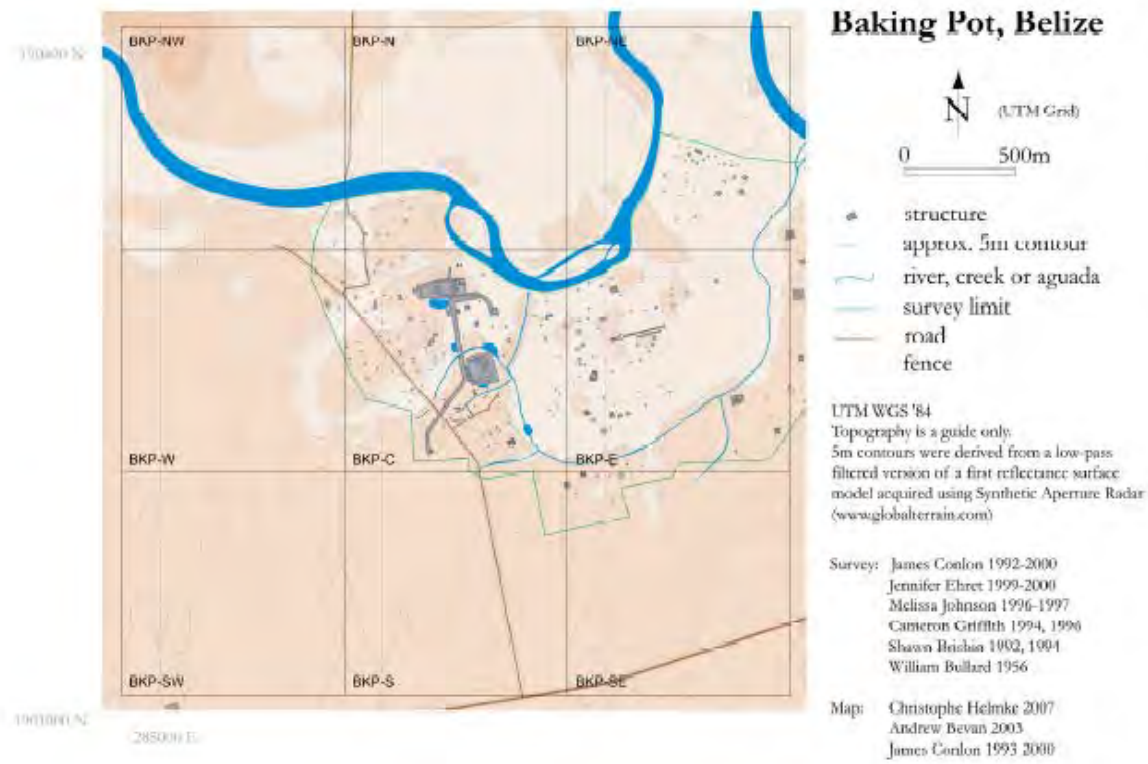

Figure 3: Survey completed by Gordon Willey and colleagues and BVAR up to 2004 (from Hoggarth et al., in press, Figure 4).

BACKGROUND

Previous Research

During the 1992 – 2000 seasons, the BVAR project continued settlement research at Baking Pot, expanding and updating the original map of Baking Pot produced by Gordon Willey. Survey was led by James Conlon over the period of seven seasons, until 2000 (Conlon 1993, 1995, 1997; Conlon and Ehret, 2000, 2001), and sought to identify the settlement distributions at the site of Baking Pot, Yet, still lagging behind in Maya archaeology, especially in the southern lowlands, is systematic survey and mapping of large areas as Willey did at Barton Ramie, and mapping of areas between centres, so that various settlement nodes and distributions can be compared and contrasted. For example at the sites of Tikal (Puleston 1983), Calakmul (Folan et al. 2001) and Caracol (A. Chase and D. Chase 2001) mapping of large areas enables such comparisons. Considerable amounts or regional data were also provided by Laporte for southeast Petén (1994, 1996, 2001 cited in Chase and Garber 2004, 11). The Belize Valley is the only other part of the southern lowlands that has comparable coverage thanks to comparing settlement components in The total area mapped by Willey and BVAR up to 2004 totals 3.87 kilometres^2 and increased the number of mounds recorded at Baking Pot to 328, resulting

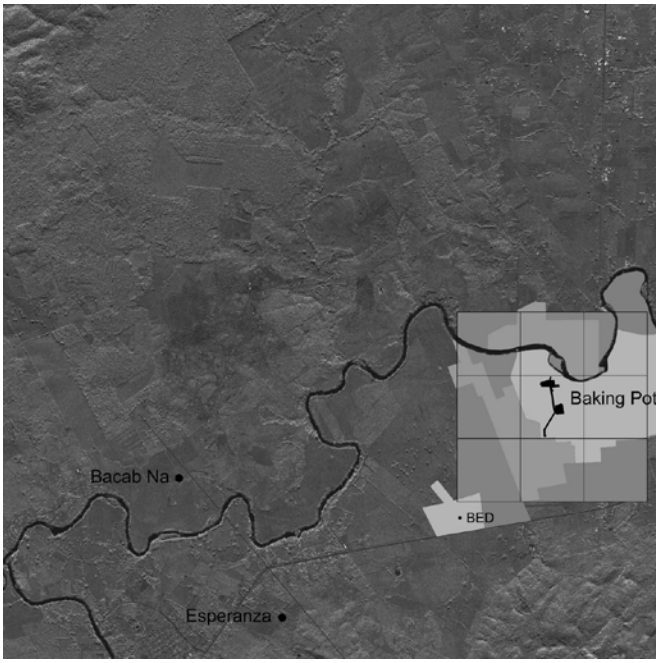

Figure 4: Survey objectives for seasons 2007 to 2008 (in darker grey) Map by Christophe Helmke.

in an overall mound density of 0.85 mounds per hectare and a population estimate of 4.24 people per hectare (Conlon and Moore, 2003, Table 6.1).

CURRENT SETTLEMENT STUDY

In the summer of 2007, BVAR project recommenced the settlement survey. As the previous mapping was focused mostly on the area east from the monumental epicentre of the site, the objective was to extend the survey to the west, making it symmetrical with the eastern survey boundaries, and also to look closer at the northern and southern boundaries of the site, encompassing an area of approximately 9 square kilometres.

Prior to the survey, a site grid was created, based on the previous evidence of settlement distribution of Baking Pot, as well as the distribution of other sites in the valley. Driver and Garber (2004) have proposed a linear pattern for the distribution of major settlements along the Belize Valley, at an equidistance of 9.9 kilometres between major centres, with minor centres located at the boundaries of these districts or settlement territories. This model appears to fit the settlement pattern in and around Baking Pot, with minor centres of Esperanza, Bacab Na, and Spanish Lookout located approximately 5

kilometres from the monumental epicentre of Baking Pot. With these data, the site was divided into nine one-kilometre square grids, with the central square kilometre aligned to the geometric centroid of the monumental epicentre of the site core (Figures 3 and 4).

A total of 234 mounds were recorded during the 2007 season, increasing the total number of mounds at Baking Pot to 554. Previous population estimates were at 1,600, but with the addition of this data, the population estimate (calculated using an average of five individuals per structure) increases to 2,770 people living at the site at its height. The survey boundaries were extended to the west and south of the monumental epicentre of the site and settlement was recorded also to the north of the Belize River, despite that it was originally thought that all signs of the ancient Maya settlement would have been destroyed due the intensive cultivation. However the area of 9 square kilometres was not completed by the end of the field season and the boundaries of the site were not discovered during the 2007 season and this was the primary focus of the 2008 season.

The spatial distribution of housemounds, including the spatial patterning and density of the mounds across the site, has been also looked at by means of preliminary GIS analysis. The observations and results of these analyses are presented below, based on the data from both 2007 and 2008 seasons.

METHOD AND SURVEY STRATEGY

The survey was conducted using handheld GPS receivers to map features and the centroids of house mound architecture. In order to minimize the error brought about by daily drifting of UTM coordinates obtained by non D-GPS receivers, we established a fixed reference point at the gate of the headquarters of Central Farm. Each morning we took a fixed point at this location before the survey. This was repeated at lunchtime, and at the end of the day. The difference in the satellite readings throughout the day provided a correction value that was used to gain more accurate UTM coordinates (the northing and easting) for each survey point. In addition, the EPE (estimated position error) for each survey point was also recorded. On average, the EPE ranged between two and four meters, a level of error that is easily cancelled out by plotting of house mounds on maps at a scale of 1:500 or larger (Chase 1987: 69; Hoggarth et al., in press). Data variables that were collected included field designation, date, time, UTM coordinates as easting and northing, estimated elevation above geoid model of the earth's surface (see Poe, 2005), architectural dimensions (length and width, or diameter and height of mound), whether surface collections were undertaken, and additional notes as needed. The walking distance (5 to 8 meters) between survey crew members, while walking in transects, was decided according to surface visibility.

The majority of the areas that were surveyed have been used for pasture and maize agriculture by Central Farm for several decades. This modern activity allows for better surface visibility, without the impediment of sub-tropical vegetation that characterizes the setting of so many other sites in the region. The area of the site that has been used for maize agriculture had been ploughed and planted a few weeks prior to survey, and these areas were mapped first to ensure surface visibility, while ensuring that

plant damage was kept to a minimum during the survey. Surface visibility in these fields was excellent, with surface materials including ceramics, lithics, grounds tone, obsidian, shell, and other material. Artefacts collected from each mound or artefact scatter were recorded by individual lots to distinguish between spatial and chronological units. The survey was continued in some areas that were overgrown by thick vegetation where it was more difficult to see the mounds and less or no surface material was present (Hoggarth et al., in press).

During 2007 and 2008 seasons, we finished mapping the area of the 9 square kilometres surrounding the epicentre of Baking Pot. The settlement survey was then extended to connect the BVAR settlement survey with Willey's survey of the minor archaeological centres known as Spanish Lookout and Barton Ramie located further east downriver (see Figure 4).

By the end of the 2008 field season, a total of 414 mounds were recorded, increasing the total number of mounds at Baking Pot to 734, and surface collections yielded over 13 500 artefacts. Besides diagnostic material such as ceramics, which will help with the dating, artefacts such as *manos*, *metates* and also stone tools (bifaces, hand axes, spear points, obsidian blades) were collected. Although surface collection is a less reliable indicator than artefacts collected from excavation, it provides valuable information about where houses are located across the landscape. Complete laboratory analysis of these materials is ongoing. The database consisting of corrected UTM coordinates of mapped house mounds and their dimensions has been created by author and is continually updated after each season, when data is plotted into the map for further analysis by Dr. Andrew Bevan.

The data collected during these two last seasons (2007 and 2008), together with the data previously collected by Willey and Conlon comprise the basis for following analysis, observations and results.

RESEARCH AIMS

The aims and objectives are as follows:

1. To examine spatial patterns and house mounds densities within the site of Baking Pot using Geographical Information Systems (GIS) analysis (kernel density) and to ask what the results suggest about intra-site organization (rural, urban space and boundaries).

2. To look at settlement organization and consider the existence of urban planning. GIS and statistical analysis will be used to identify any significant patterns within the data and the implications of the patterns will be discussed with reference to the wider understanding of the planning of the Maya communities.

3. To look at how settlement patterns at Baking Pot fit into the wider settlement patterning along the Belize River; to examine the possible implications in terms of the

social and political relationships of Baking Pot with surrounding communities; to assess where Baking Pot fits in the settlement hierarchy of the Belize Valley.

Limitations working assumptions and biases

1. It has been accepted (for sake of this study) that not all of the mapped house mounds are contemporary. Because the analysis of the artefacts is not completed, it was not possible to include the chronological division of the structures represented by the house mounds.

   However, owing to the fact that most of the land is cleared, we think that we have comprehensive coverage of the house mounds present during the final phase of occupation. Also, due to annual ploughing, occupational material is brought to the surface. The working assumption is that the house mounds we mapped, as well as the artefacts brought to the surface, probably represent the final phase of occupation. Based on the material so far examined, this would have been Terminal Classic.

2. It has been recognized that in this study 'invisible house mounds' are not included in the database. These are structural remains which were missed either because platforms were not present or owing to the existence of perishable architecture.

3. The GIS analyses are based on centroids (the middle point of each of the recovered mounds). However, it has been accepted that the centroid point of the recovered mound could differ from the centre of the original structure.

House mound densities, Urban – Rural dichotomy

Systematic and intensive mapping of large areas, especially around monumental centres such as Baking Pot, provides a better understanding of the relationship between monumental architecture and residential structures, represented by house mounds. In addition, the effect of a civic –ceremonial centre, such as Baking Pot, on the surrounding settlement is also one feature worthy of documentation and analysis. Collected data help to answer questions pertaining to the degree of dispersal and nucleation of settlement around monumental centres and to determine if there is a definable boundary in settlement between 'core' and 'periphery', and/or what we would consider urban and rural space (see Conlon 1997, Conlon and Moore 2003, Ashmore 1981).

Considering the above issues, the questions looked at in the first step of analysis are:

1. Is there a relationship between density of house mounds and the distance from the epicentre of Baking Pot?

2. Do density and spacing of the house mounds follow two clear spatial trends, and is there a definable boundary between them?

To answer these questions, the data have been analysed using an ArcGIS function called kernel density. This function allows the calculation of the density of features in a neighborhood around those features (Silverman 1986). By choosing the radius of the neighbourhood in which the density is calculated, it is possible to see how the density of the features changes with the distance, but also to see if the change is abrupt or gradual.

This method has been chosen for 2 reasons:

1. Conlon and Moore stated that mound density follows a general pattern in which the number of mounds diminishes with increasing distance from the monumental epicentre, declining rapidly within the first 0.5 km from the epicentre and finally leveling out beyond 1.0 km (Conlon and Moore 2003: 60).

2. It has been observed, that *plazuela* groups such as Bedran, North Caracol Farm and house mounds that by their size probably represent a higher-status group north of the river seem to be positioned in relatively similar distances from monumental epicentre of the site (within a range of 1.6 to 2.0 kilometres). This prompted a question if perhaps these *plazuela* groups represent the boundary between what we could consider urban and rural space.

Therefore when applying kernel density analysis to the site of Baking Pot, the radiuses 300m, 450m, and 900 have been chosen to see how the density of the house mounds changes within different areas of the site; especially if the proposed rapid decline within the first 0.5 km will be confirmed, or if any other boundary becomes observable.

The analysis showed that the density of the house mounds is highest in the area directly west of the ceremonial epicentre of the site, represented by large architectural complexes (Groups A and B). The density then gradually diminishes with the distance from the ceremonial epicentre, and no clear definable boundary between what would be an area with high density and the area with lower density is distinguishable (Figure 5). Instead, looking at the results of kernel density with the smaller radius (300m), it becomes clear that the density of the house mounds is, in addition to the distance from ceremonial epicentre, considerably affected by the gaps in the settlement (Figure 6).

These gaps in the settlement can be divided into three different categories:

1. Areas adjacent to the river without any signs of settlement, either due to the potential for flooding or because of the poor preservation in these areas.
2. Areas where modern land use or poor visibility (usually due to vegetation cover) could have prevented detection of house mounds, this includes the areas in which

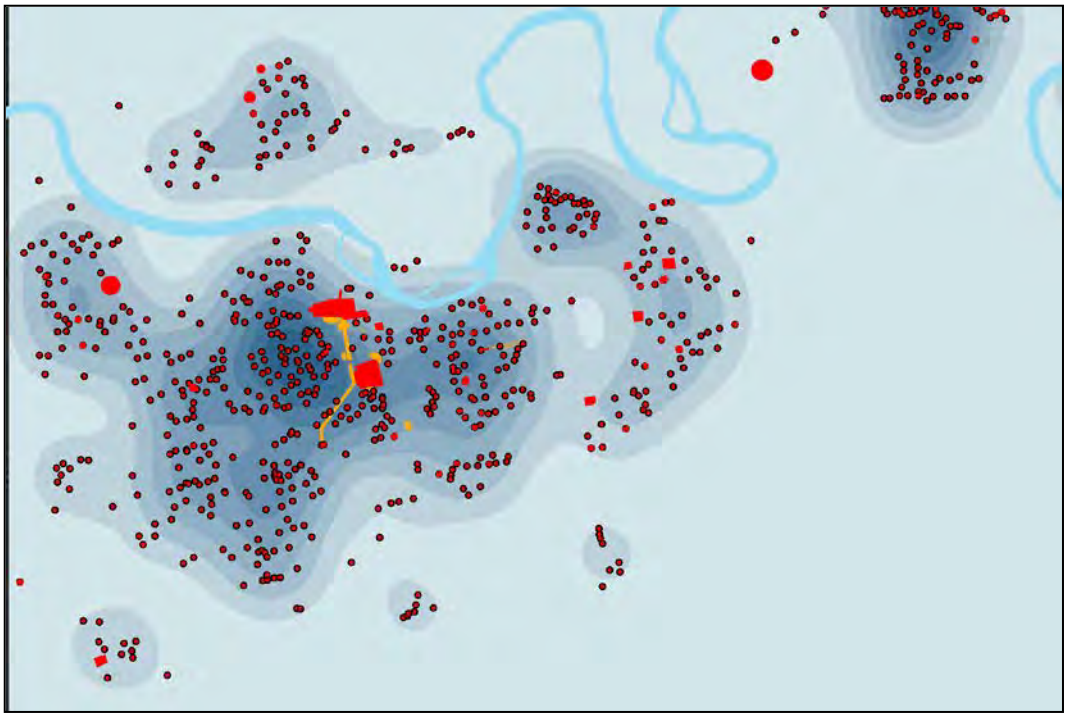

Figure 5 (Above) Kernel density shows gradual diminishing of house mounds density with increasing distance from the monumental epicentre. (Radius= 450m).

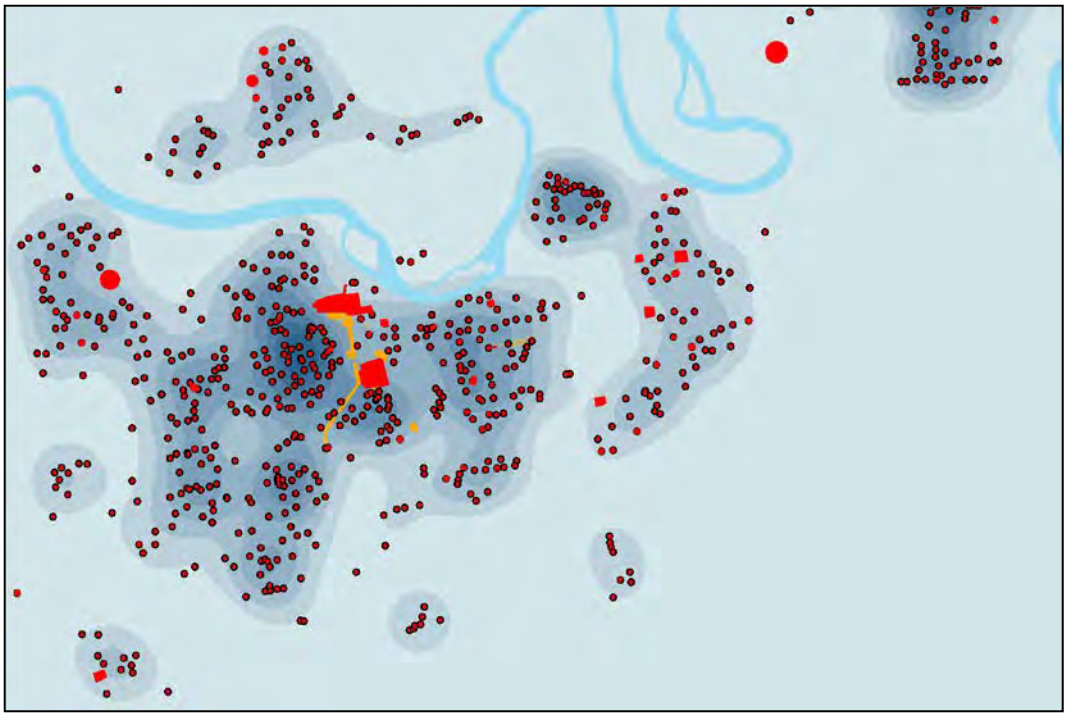

Figure 6 (Below) Kernel density shows that density is also affected by the gaps in the settlement (300m).

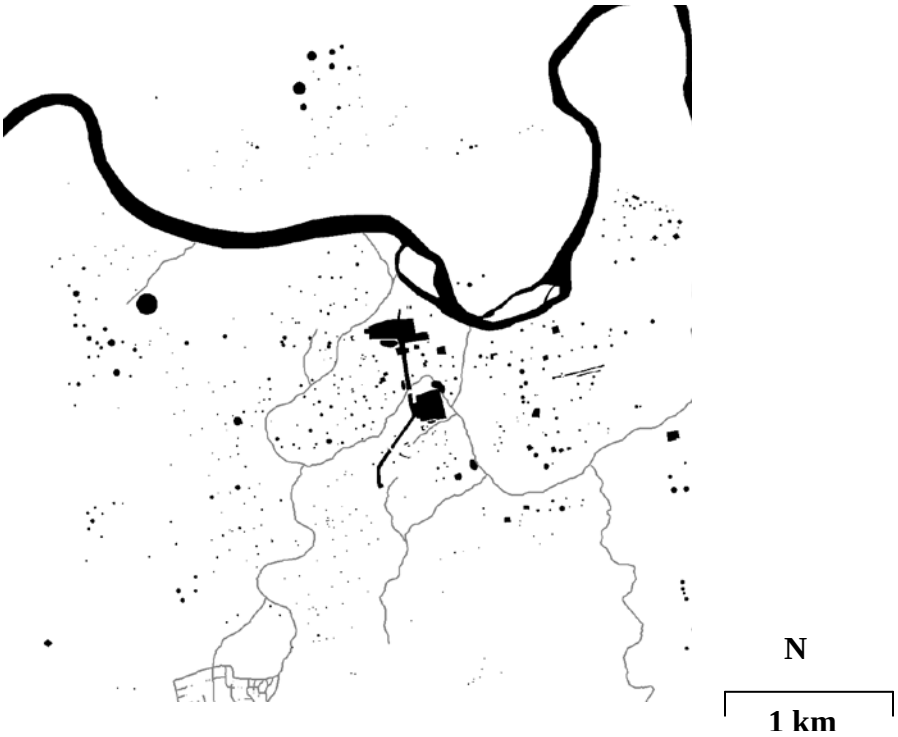

Figure 7: The creeks, dry river beds liable to flooding, the drainages, and the canalization ditches. Also visible is the extensive system of canalization in the Bedran settlement area. Map by Christophe Helmke, Eva Jobbova and Andrew Bevan, 2008

we did not carry out detailed intensive survey, either because of vegetation cover, or due to insufficient time.

3. The areas where the visibility was good and where there is no other reason to presume that the house mounds were destroyed or lay undetected; these areas likely represent real open settlement space.

Based on the map (Figure 7), showing the extent of the creeks, dry river beds liable to flooding, the intermittent drainages and the canalization ditches mapped as of 2007, it becomes clear that majority of the gaps in the settlement indeed are located around these areas.

This suggests that the ancient Maya deliberately avoided areas that were bellow a certain elevation, in proximity to drainages that were liable to flooding (Hoggarth et al., in press). The same applies to floodplain areas adjoining to the Belize River where no evidence of mounds was encountered, as for example the area along the northern shore of the Belize River to the north of Baking Pot (Figure 7). This conclusion is supported by the findings of the settlement survey program conducted in the Roaring Creek Valley (see

Helmke et al. 2004: 11-12). However, there are some areas south of the Belize River, where settlement was detected next to the river (Figure 7), which indicates that in some cases the absence of mounds could be caused by poor preservation in these areas adjacent to creeks, river or drainages. However, the later is less likely explanation than avoidance of these areas altogether, or using them perhaps for different purposes such as *chinampas* (raised fields).

There are few gaps caused by the modern land use and these are easily distinguishable (e.g. Belize Defense Force, Holdfast military base, air strip). In regards to the third category of gaps and the real open settlement space; their existence is acknowledged by the data, but in this study they have not been dealt with separately.

In future, it would be interesting to look at the elevations of all the areas where there are gaps in the settlement and compare them to the elevation of the lowest mound above the level of the river (Willey argues that none of the mounds in Spanish Lookout occur below about 7 m above the dry season level of the river) (Willey et al. 1965: 295). The results of such a comparison could possibly help to distinguish between first and third category of gaps as well.

Therefore, when calculating house mounds density, instead of dividing Baking Pot into different zones based on distance from the site, which was the approach used by Conlon (Conlon and Moore 2003), the site has been divided into parts which exclude blank areas to avoid the bias these gaps bring into the density calculation (see Figure 8)

Mound density of the area around the epicentre of Baking Pot is 1.73 mounds/ha. In comparison, the density of the area further west from the core is 1.17 mounds/ha, the density of the area to the north of the Belize River is 1.09 mounds/ha

This confirms the result of kernel density analysis, that the density of the mounds diminishes with increasing distance from the ceremonial epicentre of the site. However to determine the boundary which could distinguish between rural and urban space would be difficult for several reasons.

With continuing research and more complex understanding of the spatial, social and political organization of the sites, it is becoming clear that the dichotomy of the urban-rural dichotomy is too simplistic. Especially, the differentiation between urban and rural space in the sense that elite lived in the urban space, including priests or craft specialists, whereas peasants lived in rural space, which could be misleading.

In what Conlon and Moore (2003: 61) defined as zone F (Figure 9), and has been referred to as North Caracol Farms in this study, located about 1.65 kilometres east of the ceremonial centre, there are several structures of significantly larger size and exhibiting high-status materials than many of the mounds in proximity to the core. Similarly, in the area north of the river located about 1.6 kilometres from the ceremonial centre, we encountered several large mounds (Figure 10) placed on slight rises above the flood

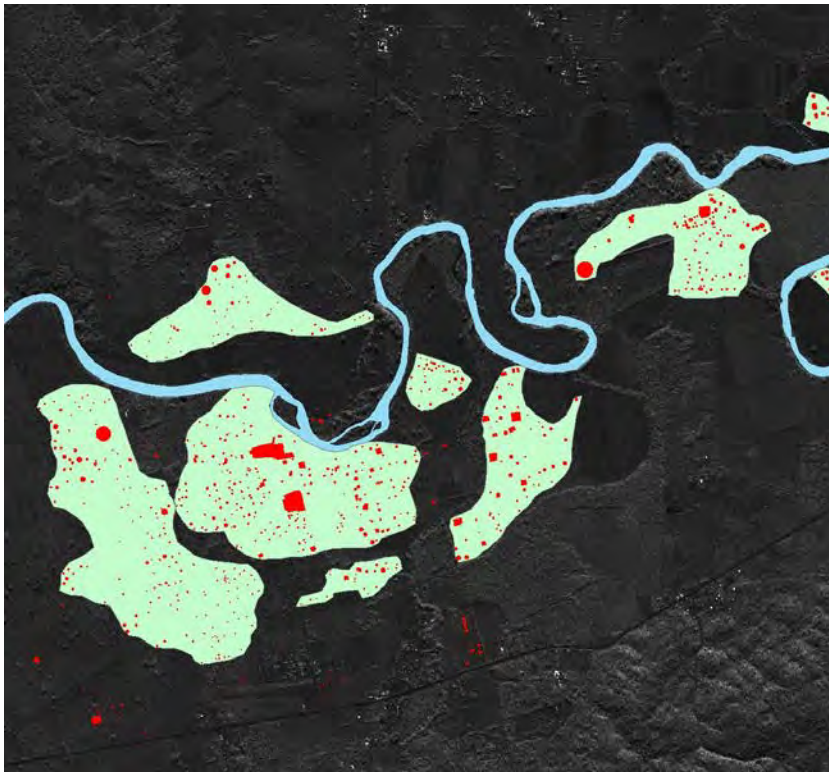

Figure 8: Polygons dividing the sites into the parts, blocking out the gaps in the settlement. Map by Eva Jobbova and Andrew Bevan, 2008

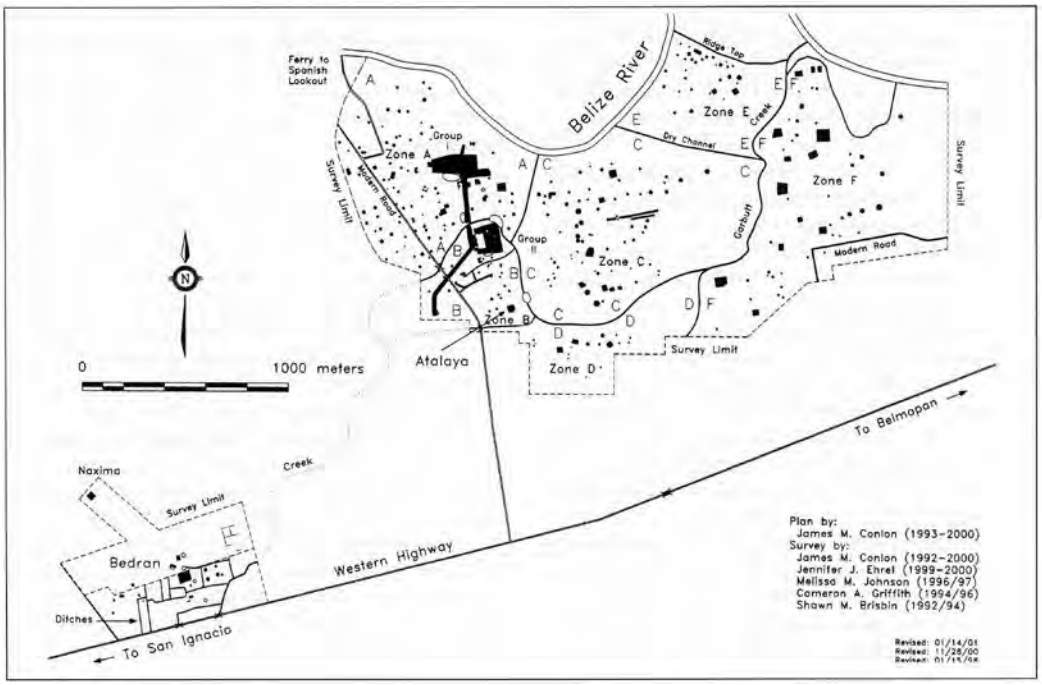

Figure 8 (Above) Settlement zone designations of Baking Pot as assigned by Conlon (Conlon and Moore, 2003, Fig. 6.2).

Figure 9 (Below) Map of the area surveyed during the 2007 season, on the north shore of the Belize River. Map by Eva Jobbova and Andrew Bevan, 2007.

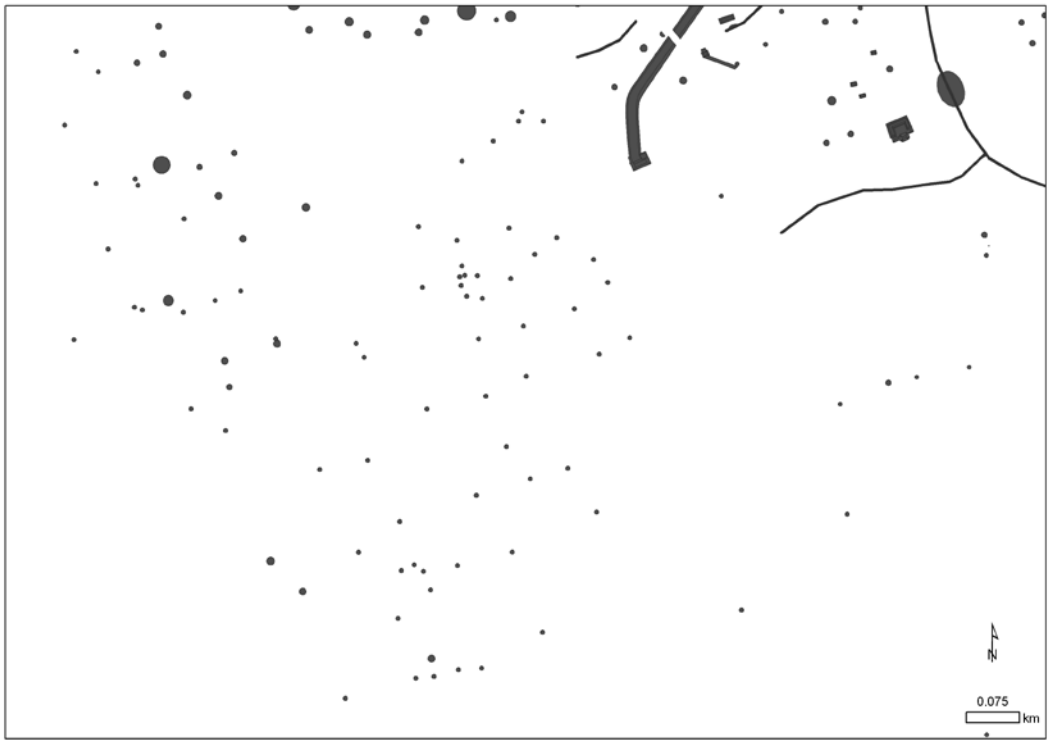

Figure 12 South-western settlement area of Baking Pot surveyed during the 2007 season. The linear arrangement of house mounds might suggest that structures were sited on square plots aligned to roads intersecting at right angles. (Map by Andrew Bevan and Eva Jobbova, 2007)

Large amounts of surface materials, including polychrome ceramics, faunal material, lithics, and shell were collected. In addition, two flint eccentrics and a projectile point were found on the southern slope of M-357, and a perforated pendant and a portion of a limestone mace with possible hieroglyphic inscription (only part of one of the glyph is visible, the rest is broken off) were present at M-395. In general, settlement north of the river, even though more dispersed, tends to cluster around larger house mounds, which exhibit evidence of higher status than those encountered south of the river

Since most of these areas were regularly ploughed for at least last ten years, this cannot be explained by differential preservation. Both these areas are on slightly elevated terrain, which may be one of the reasons for building more elaborate structures at these areas, as it would have reduced the energetic and material costs of construction by utilizing the existing terrain. In addition, construction upon higher ground may also have been favored due to sanitary reasons, since raised terrain drains better and is therefore less prone to waterborne diseases (Abrams 1994: 33-36). As a result the larger residential groups built on higher ground makes sense since more affluent segments of society would have preferred settling on more desirable terrain (Hoggarth et al. 2008).

The third area with mounds of similar size and also exhibiting high-status, located about 2.0 km from Baking Pot is Bedran. As already noted above, these areas with larger mounds, exhibiting high-status, are located at a nearly equal distance from the epicentre of Baking Pot, which might suggest that there is an element of the social structure that is reflected in the spatial patterning of settlement areas around the monumental epicentre (Hoggarth et al., in press).

In regards to possible boundaries of the site, the western boundary still needs to be extended to confirm that the western boundary of the settlement was reached. It seems however that the 2008 survey have reached eastern boundary of the settlement of Baking Pot. As survey progressed eastward within North Caracol Farm area, the mounds got progressively smaller until they diminished completely. Despite careful survey there were no more mounds discovered east of North Caracol Farm. This observation carries important implications for general settlement studies in the Maya area, as within these studies the densities are often projected over large continuous areas. However if settlement studies will prove the existence of buffer zones (which perhaps could have been used as agricultural fields) the densities resulting from such studies would have to be reconsidered.

Settlement pattern within Baking Pot and along the Belize River

However, the observations about the nature of the settlement made during our survey and processing of collected data provoked questions which can not be answered by the density calculations and require further analysis. Many studies of Maya settlements do not proceed beyond the investigation of densities.

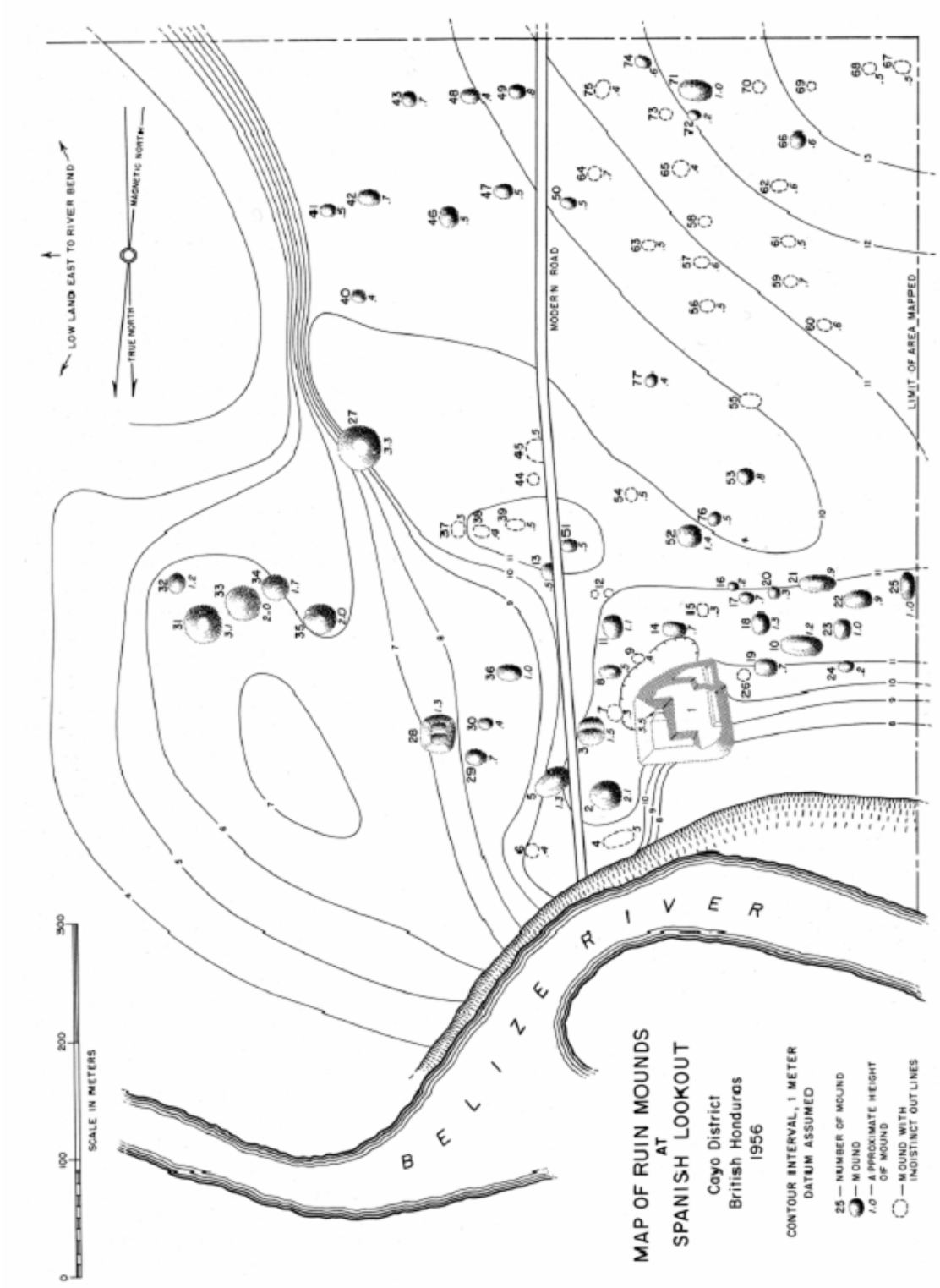

Figure 13 Map of the Spanish Lookout settlement area as of 1965 (Willey et al. 1965: Fig. 173).

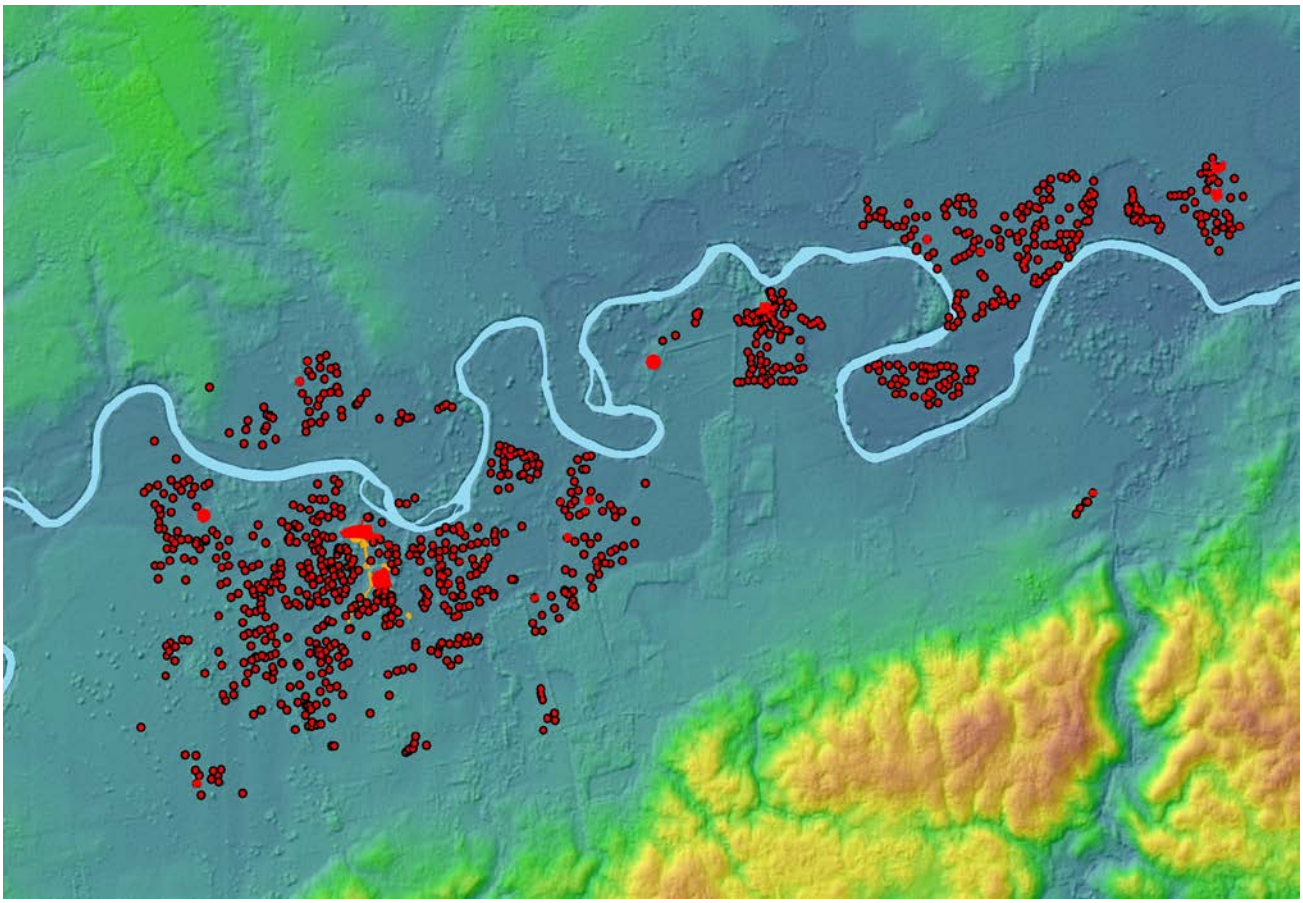

Figure 14 The linear arrangement recognizable in all three sites: Baking Pot, Spanish Lookout and Barton Ramie (Map by Andrew Bevan and Eva Jobbova, 2008).

It was noticed that many of the house mounds at Baking Pot are 'organized' in a linear arrangement, creating rectangular grids and perhaps delineated by roads or paths (Figure 12). The same type of 'patterning' was mentioned by members of the Willey team, based on the map produced for the Spanish Lookout settlement area, located 4 kilometres to the northeast of Baking Pot (Willey et al. 1965: 296) (Figure 13). This pattern continues to be prominent at Baking Pot with the addition of the 2007 and 2008 data to the previous map and needs to be addressed.

Future excavations will investigate space between these mounds to see if a path or roadway can be found, and whether other delineating features could be uncovered (e.g. tree boles from a row of trees, post holes, small rock cairns at the corners, which could all serve to mark the boundaries of land plots) (Ch. Helmke, *personal communication*, 2008, also see Becker 2001, 430-435). Until it is possible to excavate, the possible organization of the house mounds and what it could represent have been looked at by means of GIS and statistical analysis.

Group of house mounds	chi-square result	X coeff.	R^2
1. Baking Pot (BKP)	1.01968E-09	-1.41	0.73
2. North of the river-BKP	0.088916	-0.18	0.58
3. East of the monumental centre BKP	3.54125E-06	-0.71	0.79
4. West of the monumental centre BKP	0.000188	-0.55	0.52
5. Spanish Lookout (SPL)	0.048477	-0.17	0.28
6. Barton Ramie (BAR)	0.117221	-0.21	0.18
7. Central Part of BAR	0.204823	-0.013	0.0015
8. SPL + BAR –'Ox-bow'	0.002436	-0.21	0.19
9. North of the river BKP+SPL+BAR –'Ox-bow'	0.000219	-0.51	0.54

Table 1: Results of chi-square test and regression for 10º W of N.

The results bear on several issues of relevance in Maya studies:

1. With regard to intra-community implications, we hoped to achieve a better understanding of how the community represented by the site of Baking Pot was organized, and whether the settlement pattern we detected involved planning.

2. If planning was involved, are there indications of the level or form of planning?

3. With regard to intra-regional or intra-Belize Valley implications, we hoped to contribute to understanding of how the settlement pattern at Baking Pot fits into wider settlement patterning along the Belize River. This "fit" should reflect the nature of the relationship between Baking Pot and surrounding sites and should also tell us something about where Baking Pot fits in the settlement hierarchy of the Belize Valley.

GIS AND STATISTICAL ANALYSIS

The ArcGIS function called nearest features was used to look at alignments of the house mounds. This function allows the calculation of the distance and bearing between the closest features (one or more of them). The output in this case is the bearing between a given house mound and its nearest neighbour.

However this output would be too general and very hard to interpret, therefore it was necessary to establish some reference bearing for comparison. The monumental architecture in the epicentre of the site of Baking Pot appears to be aligned with the cardinal directions, skewed (depending on the period) between 7º west of north during the Early Classic to about 12º west of north during the Late Classic (Aimers, 1993, Table 5 - 11º W of N; Conlon and Powis, 2004 - 10º W of N, 79; J. Awe, Ch. Helmke, personal

communication, 2009 - 10º W of N). Therefore, a bearing 10º west of magnetic north has been chosen initially as a reference value, with which the alignment of the house mounds across the site was compared.

This reference bearing was in the next step of analysis changed to a few 'random' bearings (0º, 50º west of north, 30º east of north…) which served as a correctness test of the method used, to ensure that the obtained pattern is 'real'. If the significance of the relationship between the directions of house mounds and the cardinal directions, skewed by 10º west of north, will have been proved by first two steps of this analysis, the alignment of the house mounds across the site will be also compared to bearing 7º and 12º. By using this approach I attempt to see if there is a difference in the strength of the relationship between house mounds in the different parts of the site and their respective alignments to 7º, 10º and 12º west of north, and its implication for the possibility of recognizing chronological variability in the different parts of the site.

In the next step the results of GIS analysis were further looked at using chi-square test and regression.

RESULTS

Baking Pot

Based on the chi-square test result and the nature of the relationship from regression lines and looking at x coefficients and r-square values to see which relationship is strongest, it all points to the conclusion that 10º west of north is the most determining local orientation for house mound distribution within the part east and west of monumental centre of the site of Baking Pot and the same results were obtained for the whole site of Baking Pot.

When the same analysis was conducted for part of Baking Pot north of the river, the chi-square test result (0.088916) suggests that it is not very likely that there is a similar pattern. This can be partly attributed to a much smaller sample, but also, as was already mentioned, the settlement north of the river seems to be more dispersed and clustered around larger house mounds, than settlement south of the river. However to argue that this part was organized differently would be premature considering the results from further analysis as presented below

Spanish Lookout and Barton Ramie

The neighbouring sites Spanish Lookout and Barton Ramie were also analyzed. Based on chi-square test and regression, the same pattern as for Baking Pot seems to apply to the site of Spanish Lookout, but not to the site of Barton Ramie. However, settlement of Barton Ramie seems to be divided into three parts. Based on the map with plotted mounds (see for example Figure 14), it seems that the part of Barton Ramie which is

partly secluded from the rest of the site ('Ox-bow'} is organized differently to the rest of the site, and a similar in the organization to that one of Spanish Lookout (and to the north part of the Baking Pot). To test this hypothesis, the same analysis as described above for each individual site was conducted for the central part of Barton Ramie, and also for combination; (9) Spanish Lookout + the part of Barton Ramie –'Ox-bow', and combination (10) the part of Baking Pot north of the river + Spanish Lookout +.the part of Barton Ramie –'Ox-bow'.

Result of the analysis for central part of Barton Ramie suggests, equally as for the whole site of Barton Ramie, that there is not a significant relationship between the directions of house mounds and cardinal directions skewed by 10 degrees west of north. If the house mounds are organized in this part of the site in some fashion, they are organized in a different way. On the other hand, the results for the other two combinations, (9) and (10), show a significant relationship and all these parts of the sites seem to share the same pattern, where 10º west of north is determining orientation for house mound distribution.

Alignments 7º W of N, 10º W of N, 12º W of N – comparison

As the results presented above confirmed the significance of the relationship between the directions of house mounds and the cardinal directions, skewed by 10º west of north, in the next step the same analysis as above were conducted for various parts of Baking Pot, but this time in addition to 10º W of N also with the reference bearing 7º W of N and 12º W of N.

Comparison of the r-square values in individual tables shows that these varies between parts of the sites and different part of the sites show strongest relationship for different bearings. For example, whereas part of the site south-west from monumental epicentre of BKP show strongest relationship with bearing **12º W of N**, the small cluster of house mounds east of monumental epicentre show strongest relationship with bearing **10º W of N.**

As this matter requires further investigation and there is no space and neither it is focus of this study to deal with it in length, implication of these results are only very briefly discussed below instead of in the next chapter.

The alignment of the monumental architecture in the epicentre of the site of Baking pot appears to vary (depending on the period) between 7 degrees west of north during the Early Classic to about 12 degrees west of north during the Late Classic (Aimers, 1993, Table 5 - 11º W of N; Conlon and Powis, 2004 - 10º W of N, 79; Ch. Helmke, personal communication, 2009). Above presented results seem to suggest that also the alignments of house mounds in different parts of the site vary. It would be

Group of house mounds	chi-square result	X coeff.	R^2
1. North of the river- BKP	0.15	-0.13	0.38
2. East of the monumental centre BKP	1.37E-08	-0.69	0.57
3. West of the monumental centre BKP	9.10E-06	-0.42	0.25
4. Small cluster east of BKP	8.71E-10	-0.34	0.35
5. North Caracol Farms BKP	0.60	-0.04	0.05
6. South-west part of BKP	0.003	-0.24	0.48
7. North-west part of BKP	0.001	-0.06	0.04
8. Part around the epicentre BKP	0.008	-0.14	0.08
9. SPL	0.07	-0.15	0.23
10. BAR – 'Ox-bow'	0.02	-0.12	0.21

Table 2. **Results for 7º W of N**

Group of house mounds	chi-square result	X coeff.	R^2
1. North of the river- BKP	0.002	-0.16	0.34
2. East of the monumental centre BKP	3.3E-05	-0.67	0.82
3. West of the monumental centre BKP	0.0004	-0.53	0.53
4. Small cluster east of BKP	3.81E-05	-0.36	0.67
5. North Caracol Farms BKP	0.63	-0.09	0.28
6. South-west part of BKP	4.62E-05	-0.40	0.67
7. North-west part of BKP	0.04	-0.07	0.09
8. Part around the epicentre BKP	0.03	-0.07	0.02
9. SPL	0.0002	-0.16	0.13
Table 4. **Results for 12º W of N** 10. BAR – 'Ox-bow'	0.01	-0.06	0.06

Table 3: Results for 10º W of N

Group of house mounds	chi-square result	X coeff.	R^2
1. North of the river- BKP	0.09	-0.18	0.58
2. East of the monumental centre BKP	3.54E-06	-0.71	0.79
3. West of the monumental centre BKP	0.0002	-0.55	0.52
4. Small cluster east of BKP	3.14E-05	-0.37	0.68
5. North Caracol Farms BKP	0.18	-0.09	0.16
6. South-west part of BKP	0.001	-0.34	0.63
7. North-west part of BKP	0.09	-0.08	0.14
8. Part around the epicentre BKP	0.05	-0.18	0.12
9. SPL	0.05	-0.17	0.28
10. BAR – 'Ox-bow'	0.0002	-0.10	0.08

Table 4. **Results for 12º W of N**

epicentre. However it is a possibility which should be further investigated. If the relationship could be proved in the future, this approach might assist in recognizing chronological variability in the different parts of the site.

DISCUSSION OF THE RESULTS AND CONCLUSIONS

Settlement pattern analysis within Baking Pot and along the Belize River

There has been much discussion and speculation about the levels of cultural complexity and degrees of urbanism achieved in ancient Mesoamerica; however definitions and basic concepts of urbanism continue to be debated (D. Chase et al. 1990: 499; Graham 1999, 2006). As Smith pointed out, discussions about Mesoamerican urbanism has focused on a few large atypical cities, whereas the far Moore numerous smaller towns and cities have been mostly ignored (2005: 405). Closely linked to it are debates about urban, often revolving about the possible cosmological symbolism of ancient cities, praised by some and criticized by others (e.g. Ashmore 1989, 1991, 1992; Ashmore & Sabloff 2000; Aveni 2008; Smith 2003; Šprajc 2000). Most scholars agree, however, that some sort of spatial order existed in ancient cities, not only in Mesoamerica. Smith for example argues that many ancient cities, in all parts of the world, were oriented to the cardinal directions (2007: 29). Similarly, Aveni points out that study of alignments reveal a widespread pattern of systematically deviated orientations, which he uses to argue the influence of astronomical alignments on city layouts (2003: 163). This is further supported by Šprajc, who says that 'systematic research carried out during last few decades has revealed that the orientations in civic and ceremonial architecture exhibit a clearly non-random distribution'…(such as azimuths clustering around certain values occurring at number of sites in different Mesoamerican regions, some of them over long time spans), …' which indicates that the buildings were mostly oriented on the basis of astronomical considerations' (Šprajc 2008: 774).

This is also the case with the site of Baking Pot. As mentioned earlier, it has been noticed that the monumental architecture in the epicentre of the site of Baking Pot appears to be aligned with cardinal directions, skewed (depending on period) between 7 degrees west of north during Early classic to about 12 degrees west of north during Late Classic (Aimers, 1993, Table 5 - 11º W of N; Conlon and Powis, 2004 - 10º W of N, 79, J. Awe, Ch. Helmke, personal communication, 2009).

However, in Smith's (2007: 27) article *Ancient Urban planning* argues that: 'public architecture is usually concentrated in one central district—the epicentre—and planning is almost always limited to buildings in the epicentre, with unplanned surrounding residential zones.' This seems to be supported by organization of settlements surrounding the epicentres of sites like Cahal Pech, Caracol, Xunantunich or Buena Vista (see Ashmore 1998; Ford 2004; J. Awe, personal communication 2008), where settlement appears to be dispersed and mostly organized around formal plazas (plazuela groups). The settlement of Baking Pot however, seems to differ. Not only it is dense and continuous rather than dispersed, but as it was already pointed out during the survey and now confirmed by the analyses, the mounds at Baking Pot are organized in a

linear pattern, creating rectangular grids and perhaps delineated by roads or paths. One of the possibilities which requires considerations is that these grids or 'blocks' represent household plots.

Whereas in the Yucatan there is evidence of fences, low walls and hedges typically delimit household plots, these features are typically absent in the central Lowlands (Becker 2001: 430-435). During reconnaissance in the Roaring Creek Valley small cairns of stones were found nearly equidistant from a *plazuela* group in the Savannah Bank settlement area, along the eastern margin of the valley. These cairns undoubtedly served as boundary markers and these are the kinds of features that could be uncovered by more extensive stripping excavations at Baking Pot (Hoggarth et al., in press). An expedient and revealing way to study these plots and their delineations would be by means of ground-penetrating radar and resistivity readings complemented by a series of test excavations (see Sweely & Trainor 2005; Sweely 2007), a program of research that we hope to integrate in the future (Hoggarth et al., in press).

However, the fact that the pattern seems to spread across the whole site of Baking Pot, and the alignment of the house mounds follows the alignment of ceremonial architecture, opens the door to other possible interpretations.

Possibility of urban planning at Baking Pot

One of the possibilities to consider is that in the Baking Pot community the planning perhaps extended beyond the monumental centre of the site.
Could the fact that the alignment of house mounds corresponds with the alignment of monumental architecture in the epicentre of the site be interpreted as centralized urban planning, where the whole site is planned based on one common urban layout? The question is difficult to answer, especially because in this case the possibility that not all of the recovered house mounds are contemporary (and very likely are not) must be considered again. On the other hand it is not uncommon for the original alignment to have been kept from generation to generation over a very long period of time.

Looking for some reason, or the logic behind such planning which would entail considerable effort, Šprajc and Aveni suggest that the alignments cannot be understood in purely utilitarian terms. They argue that the fact that the same directions are repeatedly occurring in the monumental architecture of civic and urban cores suggests that they must have had an important place in the Maya worldview, and even in the 'cosmologically substantiated political ideology' (Aveni 2001: 148-152, 217-222; Šprajc 1996: 21-22, cited in Šprajc 2008: 775). Given the Maya obsession with the world order, observing the perfect order on the sky, obviously superior to the one on the earth, must have been the primary source of the deification and worship of heavenly bodies. Their cyclical behaviour would be therefore viewed as not being merely correlated with seasonal changes in the natural environment and, for the Maya so important agricultural cycles, but rather as provoking them (Šprajc 2008: 775). These beliefs would then be incorporated into the political ideology of rulers, who as man-gods pretended to be responsible for the proper functioning of the universe (Lopéz Austin 1973; cited in Šprajc

2008: 775). The alignments reproducing significant astronomical directions in civic and ceremonial architecture could then be seen as attempts of the elite to legitimize its power by re-creating and preserving the cosmic order on the earth (Šprajc 2008: 775*).*

If we accept this interpretation, could the fact that in Baking Pot this pattern is applied beyond ceremonial architecture imply that the ruling elite in this way attempted to impose control over the whole site? In the light of what has been argued in regard to the emergence of minor centres such as Bedran, linked to the increase of a stratified elite and a trend toward more effective administration of the expanding communities of the valley, it is not too great an assumption. It should be kept in mind, however, that the reasons behind this patterning and implied 'control' could be pragmatic, and the whole process more subtle and less simplistic than it often is perceived by archaeologists (E. Graham, *personal communication*, 2009).

If the structures represented by mounds at Baking Pot, organized in a linear pattern and creating rectangular grids, really were delineated by roads or paths, this would make the organization of Baking Pot something akin to that in Caracol, where the causeway system unifying the minor centres (termini) with the site epicentre facilitated the administrative control. This does not mean in any way, however, that the two sites are comparable in terms of social, spatial or political organization; rather the causeway analogy is only used to explain that the organization of house mounds into blocks or "streets" could help with administrative control in similar way.

Fitting the settlement pattern discovered at Baking Pot into the wider settlement patterning along the Belize River

The results also suggested that the house mounds are organized with the same alignment also in Spanish Lookout and in part of Barton Ramie. This rises following questions:

Is the occurrence of the same pattern in the site of Baking Pot, Spanish Lookout and part of Barton Ramie related?

1) If no, what are other possible explanations?

2) If yes, does that imply anything about the possible socio-political organization of the sites and settlement hierarchy of the Belize Valley?

1) Let us first assume that shared patterns do not have any underlying significance and are totally independent of each other.

There might be a number of factors influencing the orientation of structures in Baking Pot, Spanish Lookout and Barton Ramie without the sites being necessarily interdependent or related in any way. For example the shape of the valley, or the course of the Belize River, and also religion or astronomy, should be taken into an account as these did indeed play considerable role in all aspects of the ancient Maya lives. All of these factors have one thing in common. If any of these sites (BKP, SPL, BAR) were to have been planned independently, but based on any of these factors (valley shape, river

course, astronomy, religion*) the resulting settlements could share the pattern and still be completely independent and unrelated (*in case of religion, the sites would share the same beliefs, but still could be socially or politically independent). If this is the case, the pattern in itself does not reveal much about the relationship between the sites.

2. Or we can assume that the shared pattern suggests that the three sites were related in some ways and explore further their possible relationship.

Were Spanish Lookout and Barton Ramie subordinate to Baking Pot? Were Spanish Lookout and Barton Ramie equal, or was there difference in their hierarchical status as well? These questions can not be answered just on the basis of the results from this case study, because, as it was discussed above, the shared pattern can be explained in other ways. However, together with some other regularities discovered in Belize valley settlement, it is worthy of investigation.

Based on locations of the sites in the Belize Valley, Driver and Garber (2004: 289-291) have proposed a linear pattern for the distribution of major settlements at equidistance of 9.9 kilometres between major centres, with minor centres located at the boundaries of these districts or settlement territories (Figure 16). Minor centres located in these 9.9 kilometre diameter zones have been further categorized into three locational subgroups; Types 1-3 (Driver and Garber, 2004). Within this categorization, both Spanish Lookout and Barton Ramie have been placed into Type 2 sites, characterized as located beyond the 2 kilometre range and distributed outward from the major centres, with Spanish Lookout in the zone of Baking Pot and Baron Ramie in Blackman Eddy's zone. Driver and Garber further argue that this distribution might have been based on the location of critical resources (water, arable land) and that these minor centres might have functioned as a part of hierarchical political system controlled by a major centre. Their occupants have been perceived as dispersed "elite" in the rural zone, as shown for example in the case of Bedran mentioned earlier (Driver and Garber 2004: 292).

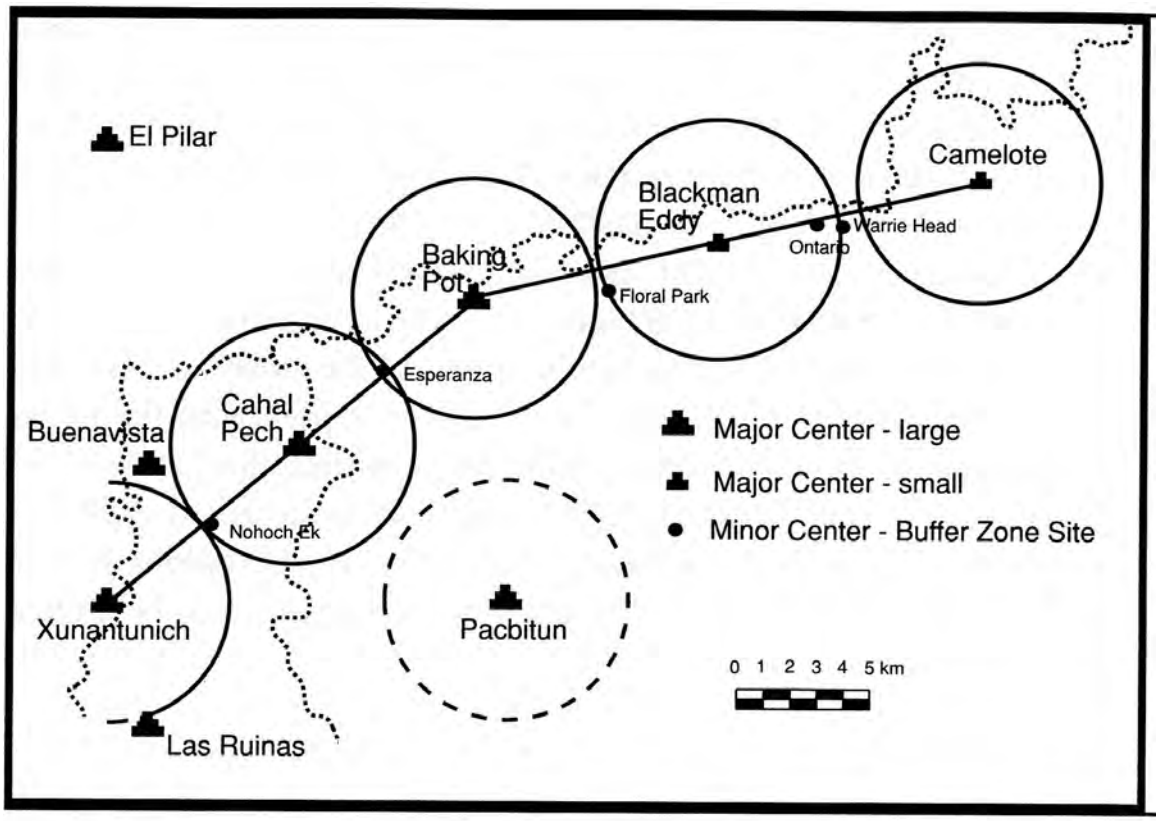

Figure 16 The Belize Valley within 9.9-km 'districts' (from Driver and Garber, 2004).

However, based on the map, while Spanish Lookout fits this characterization well, Barton Ramie lying exactly on the midpoint between Baking Pot and Blackman Eddy would fit better into the category of Type 3 sites, according to their description. The Type 3 sites are described as located at points equidistant between two major centres and perhaps playing the roles related to the marking and maintenance of these border areas (Driver and Garber 2004: 292).

The excavations conducted in Blackman Eddy (Garber et al. 2004) suggest that it served as administrative centre for Barton Ramie, which is only 2 kilometres away. However the limits of Barton Ramie from the point of view of the prehistoric settlement are arbitrary, defined by the limits of the fields cleared for ramie plantation (Willey et al 1965: 30). Therefore the real extent of the site, especially whether the settlement does or does not continue further east between Barton Ramie and Blackman Eddy, is not clear and should be perhaps looked at during further research. The area in between Spanish Lookout and Barton Ramie is also complicated. The area is now used for maize cultivation; as it was only reached at the end of last season (2008), by which time the maize was too high, most of that area was not intensively surveyed to avoid damaging the plants. The parts which have been surveyed did not show any signs of occupation, however. This might be partly due to its position in the meander of the river and the potential for flooding, or due to differential preservation.

Due to these limitations it is difficult to say anything further at the moment, but there is perhaps another possibility worth considering in regards to the difference in the settlement pattern organization between the part of Barton Ramie- 'Ox-bow' and the rest of the site. If the Belize River has changed its course, this could have changed the way the settlement is organized at present, and the 'Ox-bow' part perhaps did not belonged to Barton Ramie, but to Spanish Lookout instead, or was just independent cluster of houses. However, such a significant change of the course seems unlikely, and perhaps better way to look at the matter would be to look at the chronology of the 'Ox-bow' part and compare it to that of the other parts of Barton Ramie. If the 'Ox-bow' part would be chronologically later, that could suggest that it is an intrusive cluster of houses, which could be significant, especially because Blackman Eddy is chronologically older than Baking Pot (for chronology, see for example Willey et al. 1965; Garber et al. 2004).

According to Chase, the spatial relationships described for the sites along the Belize River are to some extent reflected in architectural concentrations in other mapped settlement areas such as Caracol (A. Chase and D. Chase 2001), Tikal (Puleston 1983), Coba (Folan *et al.* 1983), but she points out that the linear Belize River really emphasizes the regularity, and that the possibility of water transport probably conditioned distances, at least to some degree (D. Chase 2004: 347). She also argues that 'the regularity of spacing seen in the Belize Valley settlements must be related to specific social or political factors that were once operational' (2004: 347).

FURTHER RESEARCH

All presented above are very tentative suggestions and questions rather than answers. Much more research is needed to be able to confirm or refute at least some of them. For example, after the artefact analysis is finished, a better idea about the chronology of the site of Baking Pot could help to clarify at least some problems and remove some of the biases with which this case study has been working.

Also, suggested investigation of the whole blocks between the mounds, by means of ground-penetrating radar and resistivity readings complemented by a series of test excavations, to see if mounds have been delineated by roads or paths, will shed more light on the discussion about the linear pattern and perhaps elucidate its meaning. Furthermore, the area around Barton Ramie, especially that between Barton Ramie and Blackman Eddy, should be surveyed to see if there is continuous settlement between them, and also the survey between Barton Ramie and Spanish Lookout should be finished to make sure that house mounds there have not been missed.

With additional data, a similar study could perhaps be conducted for other sites further downriver such as Blackman Eddy, Floral Park, Esperanza to see if the same pattern could be discovered. It would be especially interesting to see if the rest of Barton Ramie which differs from the pattern shared by Baking Pot, Spanish Lookout and 'Ox-bow' part of Barton Ramie shows its own discernable pattern, perhaps one matching that of Blackman Eddy. This could shed more light on many of the questions about the

relationship between the proposed pattern and its implications for socio-political and hierarchical organization of the sites, which this case study has hardly opened.

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