POWERFUL BUILDINGS: THE EVOLUTION OF NON-DOMESTIC ARCHITECTURE AND SOCIAL INTERACTION IN THE PUUC

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DEDICATION

To Papa, Mama, Trey, and Sarah Gray.

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CHAPTER I

POWERFUL BUILDINGS: AN INTRODUCTION

1.1 Introduction

Each day we move in and out of buildings. We perform various activities such as cooking, working, and gathering with friends in them, giving little thought to how the properties of these places influence our actions[1]. Buildings do more than provide shelter- elements of the built environment contain subtle and not so subtle cues that guide our behavior and relay information regarding the power and status of various social groups. These messages are encoded in the way that buildings demarcate space and the architectural decoration that embellishes them, making structures powerful tools in the development and maintenance of sociopolitical inequality. Manipulation of the built environment to control social interaction is especially evident in buildings designed to display and reinforce the power of elites. Archaeology has traditionally overlooked the influence of the built environment in shaping sociopolitical organization in part because of the difficulty in interpreting ideological messages encoded in architecture. To this end, the extent to which the built environment played a role in the production and reproduction of social relations in ancient societies is still not well understood (Fisher 2007; Inomata and Coben 2006:11; Ringle 1999).

[1] In contemporary scholarship, there is much debate centered on the precise definitions of terms such as 'place', 'space', and the 'built environment' (e.g. Casey 1996; Knapp and Ashmore 1999; Lefebvre 1991; Lawrence and Low 1990). I approach 'space' as neutral or a tabula rasa, while 'place' is inscribed on space and contains power and social memory (Casey 1996). The term 'built environment' is somewhat generic, like space, but refers to the products of human building activity or physical alterations of the natural environment (Lawrence and Low 1990:454).

The influence of the built environment on social production can be seen in many ways: architecture serves as the stage upon which public ceremonies and rituals are performed; it shapes and is shaped by the way in which agents/individuals interact socially; and it serves as a physical statement of the ideology of a community (or certain segments of it). Because of this capacity to shape social interactions and influence social production and reproduction, Maya elite used the built environment, and more specifically, non-domestic architecture, to expand and legitimize their position in society.

The present research examines the strategies used by Maya elite to manipulate the built environment, especially non-domestic architecture, in order to legitimize and expand their power and authority. In order to fully explore the nature of social interaction in the built environment, an integrated approach that includes both nonverbal communication (e.g. Rapoport 1980, 1988, 1990a) and spatial syntax analysis (Hiller and Hanson 1984) is employed. I will demonstrate that the following architectural elements formed a suite or nonverbal code that conveyed messages of power and authority: ambientality, or the ability to be viewed from all sides; height, or proximity to ground level; and location within a site. Changes in the elements of this code reflect changes in, while simultaneously reinforcing the *status quo* of, the nature of power and authority from the Preclassic to Late Classic periods. Additionally, the way in which buildings demarcate space offers important insight into which places (i.e. rooms or courtyards) were likely centers of social interaction. Spatial analysis uses access between spaces within a structure and paths of movement to explore social interaction. When combined with the elements of nonverbal communication listed above, this integrated approach provides an innovative approach with which to explore the dynamics of social interaction within a place.

While the primary component of the research is to identify the suite of architectural elements used to encode meaning, it is the changes in these elements through time that provides clues to the transformation of social organization. Therefore, the second aim of the research is to trace changes in the nonverbal elements from the Middle Preclassic through the Late/Terminal Classic periods and explore what these mean in terms of associated changes in ritual and the manipulation of social interaction. Though centered in the Puuc region at the site of Kiuic, the patterns are framed in comparison with trends in the Northern and Southern Maya lowlands (Figures 1.1, 1.2).

In order to explore the link between the built environment and sociopolitical relations, the dynamic role that performance (especially public ceremonies and rituals) played in structuring social relations in ancient Maya society must also be understood. Studying the ritual-power relationship archaeologically is problematic for several reasons, one of which is the difficulty of inferring ideology from material culture. A second difficulty is that the material remains of ritual (musical instruments, costumes, masks, etc.) are rarely encountered in the archaeological record and even less frequently found in their original use-context. Because of these difficulties, non-domestic architecture, viewed as a physical manifestation of the ideologies that created it, becomes a crucial source of information for studying performance in ancient societies (DeMarrais et al. 1996; Fisher 2007:11; Inomata and Coben 2006).

1.2 Organization and Overview of Research

The remainder of the chapter is dedicated to providing an overview of each chapter and general framework for the dissertation.

Chapter 2 Chapter two establishes the value of the present research by presenting previous and current approaches to studying the sociopolitical development of Maya society. Because Kiuic is located in the Puuc region, special attention is given to the history of archaeological expeditions in this area. Additionally, discussing the work-to-date in the Puuc establishes the value of the in-depth stratigraphic excavations undertaken at Kiuic and how the BRAP has expanded our current understanding of the occupational history of the region.

As the literature review demonstrates, architecture has always played a central role in Maya archaeology and especially the studies undertaken in the Puuc. However, the role these studies have attributed to the built environment has changed greatly since the late 1800s when the field was in its infancy. The majority of architectural studies are descriptive and classificatory in nature, rarely acknowledging the dynamic relationship between architecture and social production. By tracing the general theoretical approaches within Maya archaeology, we can see how present trends within the discipline, including this research, are shaping current discourse involving the role of the built environment in social production.

Although landscape studies are just becoming *de rigueur* in archaeology, they have been influential in other fields for quite some time (e.g. Lefebvre 1991; Lawrence and Low 1990). During the processual period, archaeologists approached space/place/built environment as a passive backdrop and attributed the locational choices of societies to environmental factors. The rise of post-processual theory in the 1970s introduced a new dimension to landscape studies that emphasized agency and the sociopolitical and ideological/symbolic components of place. One such general approach focuses on how architecture and place function as symbolic components of human culture (e.g. Bender et al.

1997; Daniels and Cosgrove 1988:1; Lawrence and Low 1990; McAnany 1995). Taking this approach a step further are the techniques of semiotics and spatial syntax analysis that propose architecture can be read as a language (Brusasco 2007; Carlson 1989; Hanks and Rice 1989; Parmentier 1994; Preucel 2002, 2010; Preziosi 1983). In these paradigms, the formal characteristics of the built environment are seen as codes or sign systems that represent the ideology of the culture that produced them. While semiotics sees architecture as representative of underlying mental processes, access analysis (Hillier and Hanson 1984; Hillier et al 1976) focuses on the symmetric/asymmetric distribution of space and the way in which access to spaces is controlled.

Both semiotics and access analysis have been criticized for approaching the relationship between architecture and social production as static and uni-directional. In order to address these criticisms, agency is now routinely incorporated into the discussion (e.g. Bourdieu 1977). It is this version of 'landscape theory' that is becoming popular archaeology today and the final section of Chapter two addresses how Maya scholars are using this approach.

Chapter 3 While Chapter two describes the theoretical trends within the discipline of archaeology that have produced the current discussion of landscape, Chapter three establishes the link between agency, the built environment, and social production. The chapter begins by using a combination of structuration and performance theory to demonstrate how place/architecture influences the production and reproduction of social relations. Structuration theory provides a platform for studying architecture and social production because it defines social structure in terms of rules and resources and establishes the importance of the physical context interaction (Bourdieu 1977; Ferguson 1996:3; Giddens 1979, 1984, 1989; Giddens and Cassell 1993). The places in which social occasions occur contain cues that indicate the appropriate behavior and convey information about sociopolitical ideology (Baines 2006; Giddens 1979, 1984; Giddens and Cassell 1993; Inomata and Coben 2006:17; Mendelssohn 1974; Trigger 1990).

The second portion of Chapter three explores how ritual functions in society and more specifically, how Maya elite used public performance and rituals to promote and maintain their sociopolitical power (Ardren and Hutson 2001; Bachand and Bachand 2005; Bell 1992, 1997; Freidel and Schele 1988; Inomata 2006; Inomata and Coben 2006; Lucero 2006; Turner 1967, 1969). A brief review of several popular definitions of ritual are presented but I emphasize that the aim of the current research is not to define what ritual *is*. Rather, I feel that it is important to focus on how ritual and other types of performance communicate information and meaning, or what ritual *does* (Fischer-Lichte 1992; Parmentier 1994:129-134, 1997; Rappaport 1999; Triadan 2006). While there are many different genres of ritual, Maya elite used political rituals to expand, legitimate, and maintain their power. Political rites function to integrate and establish the identity of a community and to create, maintain, and subvert asymmetrical power relations (Inomata and Coben 2006).

Political rituals allowed early leaders with specialized ritual knowledge to draw upon the symbols and symbolic actions with longstanding roots in a communal ideology to gradually consolidate and expand their own personal power (Bell, 1992, 1997; Lucero 2006; Ringle 1999:186). By aligning their own personal agenda with the perceived cosmic order of things, the power of individual leaders gradually came to be viewed as a part of the 'natural' order of society.

Finally, rituals are found throughout all levels of society in public, semi-private, and private contexts. In fact, one ritual event can contain elements of one, two or all of these contexts, reinforcing the idea that rituals are not monolithic but contain multiple layers of meaning (e.g. Geertz 1973). The final portion of Chapter three addresses the different performative aspects of each context as well as characteristics of the material remains of each.

Chapter 4 Chapter four presents an overview of the integrated approach developed by Grahame (2000) and Fisher (2006) to studying the built environment. The approach was developed in response to the disembodiment of society that traditionally characterizes archaeological studies and combines the quantitative methods of space syntax analysis with the qualitative approach of nonverbal communication (Rapoport 1980, 1988, 1990a, etc,). Spatial syntax analysis was developed as a method of representing, quantifying, and interpreting the spatial arrangement of both buildings and settlements (Hillier and Hanson 1984; Hillier and Leaman 1973; Hiller et al. 1976). The approach emphasizes how the spatial configuration of the built environment influences the nature and types of social encounters and allows archaeologists to construct a relationship between architectural function and social meaning (Bafna 2003:18; Ferguson 1996:11-12; Fisher 2007:70).

After introducing the basic theoretical concepts, Chapter four outlines the mechanics of access analysis. Important terms are defined and the processes behind the creation of associated graphs and tables are outlined. The variables used in the current research (real relative asymmetry, control value, and step depth) are described and the formulas used to determine each variable are given. Finally, the general theoretical and methodological critiques of space syntax are discussed as well as specific problems associated with the application of the approach to archaeological datasets.

While space syntax analysis can be used to discover patterns of possible interaction, the second portion of the chapter addresses the application of the nonverbal communication approach. Nonverbal communication, or communication without the use of words, is produced by both human and material behaviors. Materially, information can be communicated through the spatial arrangement of the built environment and certain architectural elements such as building height or materials (e.g. Fletcher 1989:33; Knapp and Hall 2002:5). A culture-specific code indicates which architectural elements convey important information or when differences in the elements communicate information (Preziosi 1979:2). Through the processes of enculturation and socialization, individuals acquire knowledge about how to 'read' the rules for appropriate behavior encoded in architecture (Giddens 1984, 1990, 1991, etc.). Because the built environment influences social interaction, it has a direct role in the production and reproduction of society.

Since the society that created the nonverbal code cannot be directly observed, elements are documented and inferences regarding behavior are made based on environment-behavior and ethnographic research. The present research uses elements of the built environment that have well-established meaning in Maya archaeology: ambientality, or the ability to be viewed from all sides; height or proximity to ground level; and location within a site (Bachand and Bachand 2005). Each of these elements affects the type of social interactions possible within a space in a different manner and, together, they suggest what types of interactions were more likely to occur. Modifications made by Maya elite to these architectural elements reflect changes in, while simultaneously reinforcing the *status quo* of, the nature of power and authority from the Preclassic to Late Classic periods.

Alone, access analysis determines the likelihood of social interaction occurring within a space while elements of nonverbal communication help archaeologists understand the potential nature of this interaction. When the two approaches are combined, they allow archaeologists to explore the interaction potential a space, or the likelihood of a particular space to host certain types of social interactions.

Chapter 5 The fifth chapter is dedicated to presenting the data from the archaeological excavations within the Yaxche Group at Kiuic. Kiuic is a Maya site located in the Bolonchén District of the Puuc in the modern-day state of Yucatan, Mexico (Figure 1.2). The site has been the primary focus of excavations for the Bolonchén Regional Archaeological Project (BRAP), which operates within the Kaxil Kiuic: Helen Moyers Biocultural Reserve, nonprofit entity established in Mexico. The Bolonchén District is characterized by low hills, wide valleys with rich soil, and scarcity of surface water (Duch Gary 1988; Dunning 1992:36-52; Dunning and Kowalski 1994). The unique environment of the area plays an important role in landscape formation, especially on settlement patterns and land-use. After presenting a summary of the ecology and geology of the region, the excavation methodology is described, followed by a detailed analysis of the excavation of an elite residential group at the site- the Grupo Yaxche.

The excavations at Kiuic have been groundbreaking in terms of re-evaluating the occupational history of the Puuc region. Once thought to have been unpopulated until the end of the Maya florescence, evidence of Preclassic occupation in the Puuc has been found at Kiuic, Paso de Macho, Xocnaceh, Huntichmul, and Xcoch (Bey 2006; Bey and May C. 2005; Gallareta C. et al. 2009; Gallareta N. and Ringle 204; Ringle 2005; Ringle et al. 1998; Smyth and Ortegón Zapata 2006, 2008). Excavations from these sites support the idea that local traditions were established in the Middle Preclassic and developed primarily *in-situ*, with some diffusion from other areas, until the arrival of the Spanish.

The Yaxche Group is an elite residential group in the site center of Kiuic and represents a typical civic-ceremonial architectural plan found throughout the Puuc. As detailed in Chapter five, the area was first occupied during the Middle Preclassic period and appears to have been occupied continuously until the late Terminal Classic period.

Archaeological excavations reveal four major periods of construction activity that represent a break from the previous pattern of spatial organization: Middle Preclassic, Early Classic, Late Classic, and the late Terminal Classic. Chapter five presents a summary of architectural and archaeological information for each of these periods. The area initially contained modest house platforms that surrounded a free-standing civic-ceremonial platform and developed in complexity until the creation of the elite residential group during the Late Classic period. The creation of this group enclosed the original civic-ceremonial platform, restricting access to the once open area.

The creation of the Yaxche Group as a formally defined architectural unit included the definition Plazas Icim, Dzunun, and Ulum, and Patios A, B, and C. The basic occupational history of each plaza is described in order to establish the architectural evolution of the group. Because Plaza Ulum is the primary focus of archaeological excavations for the present research, a detailed description of the archaeological excavations in this plaza is given. After the evolution of the architecture and spatial characteristics of the group has been established, it is then possible to apply the integrated approach.

Chapter 6 Chapter six presents the application of access analysis and the nonverbal communication approach to the Yaxche Group data. Incorporated into this analysis is a discussion of how the design of the built environment influenced social interaction and conveyed sociopolitical messages. Access analysis requires a complete architectural plan of the building or settlement to be analyzed and because this information is not available prior to the Late Classic, access analysis was only performed on the Late and Terminal Classic period plans. Following a brief review of the measures used in spatial syntax and nonverbal communication, their application to the Kiuic dataset is discussed.

While each variable (control value, real relative asymmetry and step depth) contributes to the overall analysis of the group, it is the particular combination of variables that predicts which spaces within the built environment were more likely to host social interactions. Because the current research is focused on the role of ritual and non-domestic architecture in the promotion and legitimization of sociopolitical authority, spaces more likely to host social occasions (as opposed to brief, informal social gatherings) are examined in detail. After discussing the general access patterns to the group from the formal and informal entrances, the internal access patterns are discussed. The latter establishes the physical (and visual) relationship of each space and how a person would have experienced moving through the group. The real relative asymmetry and control values are then incorporated into the discussion to fully explore which spaces were more likely to host social occasions. The data for the two basic types of spaces in the group- patios/plazas and the rooms (i.e. open spaces versus enclosed rooms) are compared and contrasted.

While access analysis provides information on which spaces are more likely to be centers of social interaction, it does not provide information regarding the **type** of interactions. In order to discuss the nature of interactions, the location within the site, proximity to ground level, and ambientality (the elements of nonverbal communication introduced in Chapter four) are used to explore the social meaning of the spaces. Included in these variables is a discussion of the area and occupant load of each space, which provides important information regarding the possible size of social occasions. In addition to the number of persons capable of occupying a space, the area influences the ways in which information was communicated. For example, rituals that occurred in larger spaces would have relied more heavily upon gestures and costume elements to convey information while in smaller spaces, facial expressions or a normal speaking voice would have been sufficient.

As with the measurements for access analysis, the data from the rooms and patios/plazas are compared and contrasted. When all of this data is combined, the spaces most likely to have been loci for social interaction and the types of social interaction possible can be indentified.

Chapter 7 Chapter seven provides a more traditional approach to examining non-domestic architecture and ritual/public performance in the Maya area. As described in Chapter four, many important dimensions of ritual are rarely, if ever, preserved in the archeological record. They include many material correlates of performance such as masks and costumes, as well as sensory components like the music played and dances performed. While the integrated approach sheds light upon which spaces were more likely to host social occasions and the general size of or communicative aspects of these occasions, it does not address the experiential side of ritual. In order to understand the sensory components of public performance, ethnohistorical documents from Colonial Period Yucatan are examined. They provide valuable insight on what it was like to experience a ritual, despite the changes that occurred in Maya society after contact with the Spanish.

After exploring the experiential dimension of Colonial period rituals, the remainder of Chapter seven uses material remains and iconographic evidence to further explore the nature of Maya ritual. While studying the meaning of ritual via the archaeological record is complicated because of the problems of inferring behavior and belief from such data, three components can be used to explore performance archaeologically (e.g. Inomata and Coben 2006; Triadan 2006): theatrical space, images and iconography, and objects used in performance.

Together, the information obtained from these varied sources demonstrates how Maya elite organized and controlled both space and behavior (e.g. Brady 1989; Demarest

1992; Freidel et al. 1994; Gann and J.E.S. Thompson 1931; Hammond 1972a, 1991; J.E.S. Thompson 1970, 1975; Vogt and Stuart 2005). Data from the Southern and Lowlands (including the Puuc) are included in order to understand how the relationship between the manipulation of the built environment, ritual, and Maya social organization was manifest in each area (and over time). The complexity of applying access analysis prohibits it from being used to explore such a large amount of data, but changes in the elements of nonverbal communication can be discussed. As will be demonstrated, the theatrical spaces of each period exhibit general architectural characteristics that can be examined and discussed using the same elements of nonverbal communication applied to the Kiuic dataset. Material remains such as mortuary traditions and caching practices associated with dedication and/or termination rituals also form patterns that evolve through time, providing clues to the social organization of Maya society. Iconographic evidence from each time period is the final line of evidence used to explore Maya ritual and provide support for inferences made using the integrated approach.

1.3 General conclusions

As the present research will demonstrate, Maya elite consciously manipulated non-domestic architecture in their efforts to structure sociopolitical relationships and to shape identities. These manipulations are manifest physically in the built environment in the ways in which spaces are demarcated and a suite of architectural elements that encodes behavioral cues and information. The combined use of access analysis and the nonverbal communication approach allow these trends to be identified and related to the sociopolitical development of Maya society. Supplementary material from ethnohistoric evidence and iconography can be used to enrich our understanding of Maya ritual and the role of place in contributing to the atmosphere and experience of public performance.

FIGURES FOR CHAPTER ONE

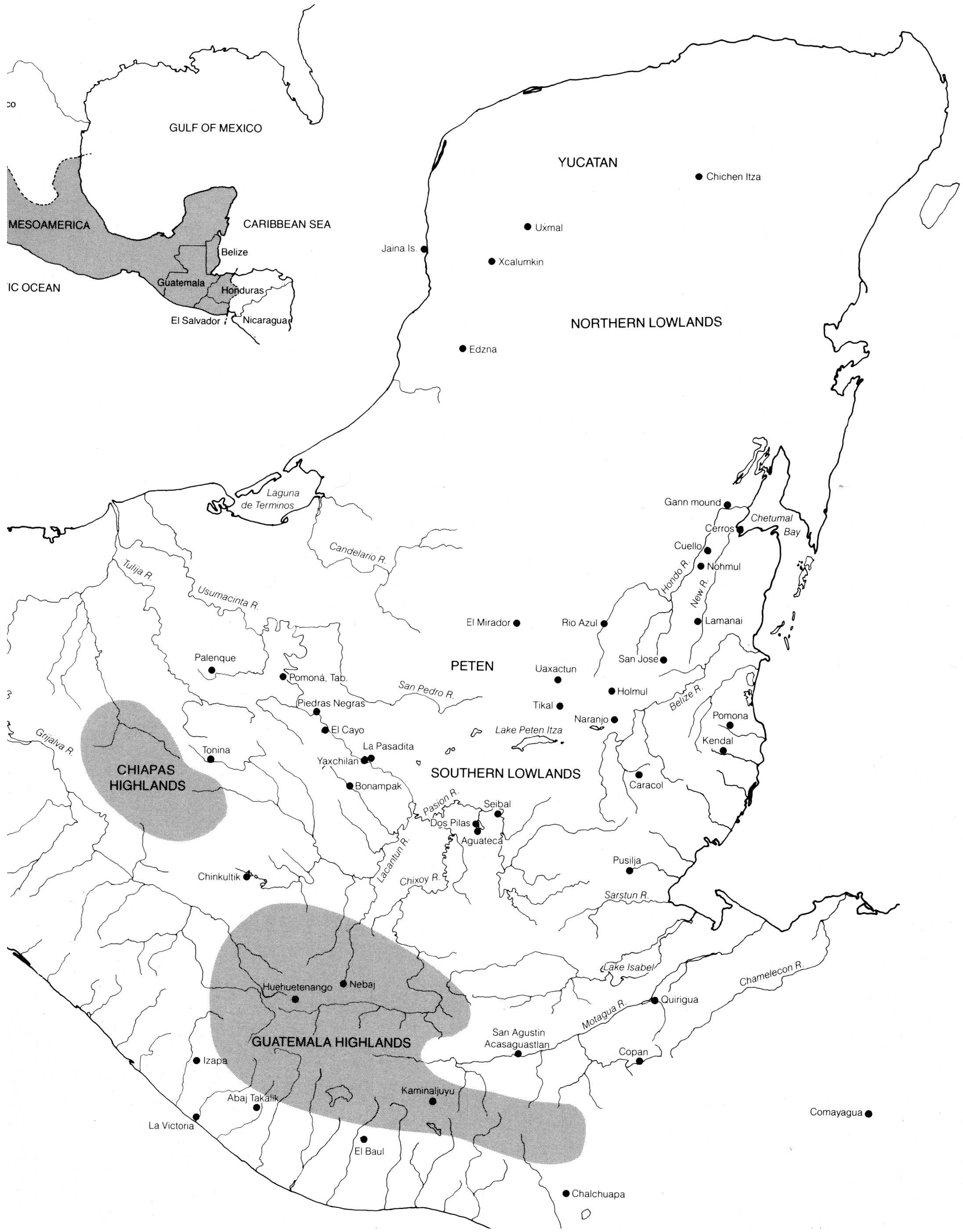

Figure 1.1: Map of the Maya area (after Schele and Miller 1986:fig 1)

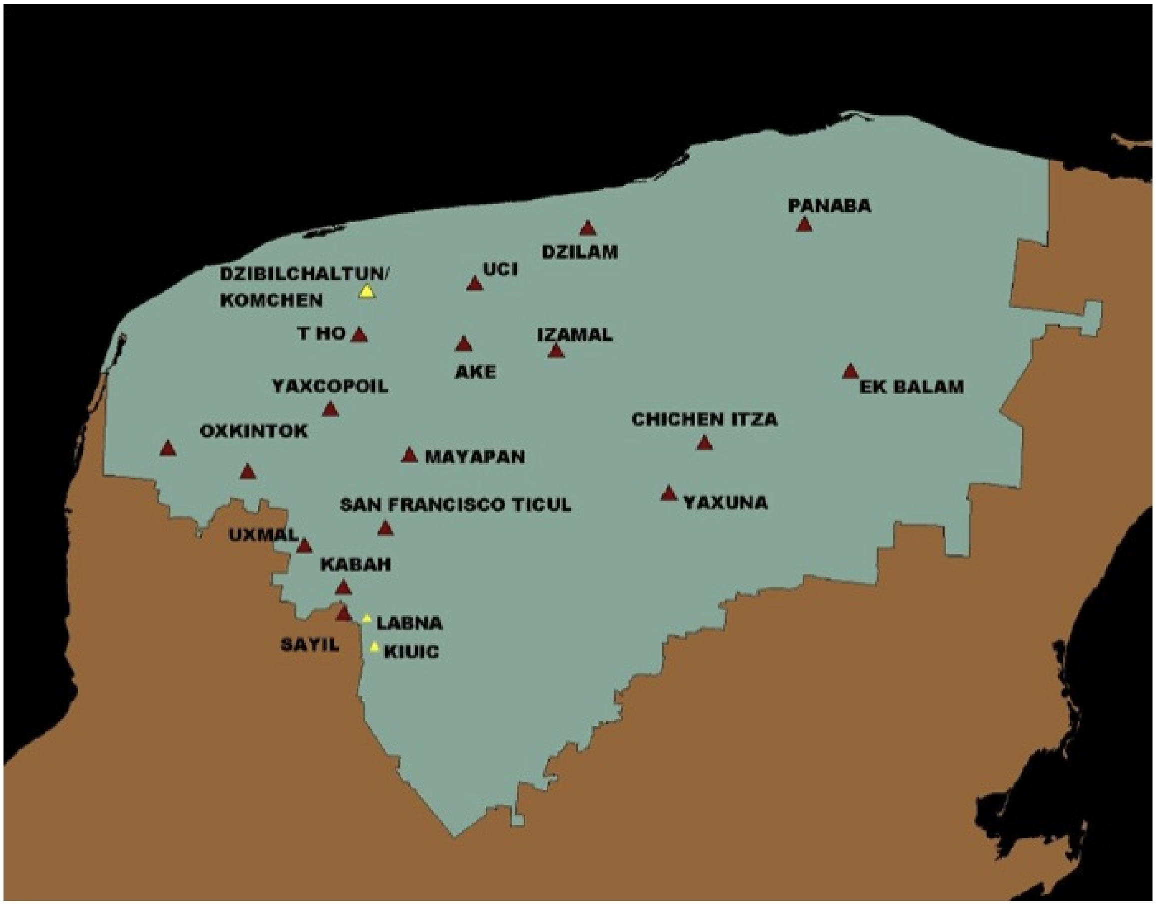

Figure 1.2: Map of the Yucatan Peninsula, Mexico with important sites listed (courtesy of Dr. William Ringle)

CHAPTER II

OVERVIEW OF ARCHAEOLOGY IN THE PUUC AND SYNTACTICAL APPROACHES

2.1 Introduction

The present research attempts to study the sociopolitical dynamics of Maya society through the syntactical and nonverbal elements of its architecture. The current chapter highlights the value of such a study by presenting a summary of past and present approaches to studying the sociopolitical development of Maya society. While the architecture has always been an important artifact and central to the study of ancient Maya society, the role of the built environment has changed greatly since the early days of archaeological studies. Therefore, it is important to trace previous attitudes toward architecture in archaeology and how present theoretical trends within the discipline are shaping the discourse of the build environment in influencing (and being influenced by) social production.

A key concern in the Maya region is how Maya elite used architecture to reinforce and solidify their growing power in the Middle-Late Preclassic period. While there is debate over the primary impetus of this social development, several interrelated factors including agricultural intensification, population growth, and the specialization and escalation of inter-regional systems of production and exchange were all likely contributing factors (e.g. Andrews 1981; Hammond 1985a, 1985b; Freidel 1979, 1981; Matheny 1987; Pendergast 1981). Materially, these changes are manifest in new forms of non-domestic architecture, iconographic themes, and changes in material goods (see Chapter 7). While changes in non-domestic architecture have been extensively documented (e.g. Tikal and Copan), the role these structures played in influencing the rituals and other social interactions that occurred within has been relatively ignored. The present chapter begins with a review of past and present approaches to studying the Maya (with a focus on the Puuc region) and ends with a review of the use of spatial syntax analysis in archaeological contexts.

2.2 Past and Present Perspectives in Maya Archaeology

While the Puuc region represents a geographically, architecturally, and culturally unique area of the Maya lowlands, the general trends that characterize study of other Maya regions are applicable. Unlike the great southern lowland centers such as Tikal or Caracol, Maya cities in the northern lowlands remained occupied in the Postclassic period and were visited by the Spanish at the time of contact (e.g. Lopez C. 1996; Relacion Breve 1872; Graham 1992). Early Spanish missionaries and conquistadors collected manuscripts, sculptures, and ethnographic data, which were then sent to European collections. These artifact collections are important in establishing the rich material history of the New World, but the artifacts often arrived with little or no explanation concerning their place of origin and importance. Ethnohistoric documents produced during this period provide invaluable resources for modern scholars about the everyday life, beliefs, social organization, etc. of the Maya (e.g. Barrera Vásquez 1965; Ciudad Real 1929, 1976; Relaciones de Yucatan 1900; Tozzer 1941; see Chapter 7 for more discussion of these works). Although the work of these early explorers and evangelizers begins the period of exploration of Yucatán, it was not until the mid-1840s that the Maya appear in popular media.

It is during this period of Maya scholarship, between 1840 and 1914, that the descriptive background for Mesoamerica was created. Perhaps the most well-known adventurers of the time were John L. Stephens and Frederick Catherwood (1842, 1843), whose site descriptions and drawings first introduced the ancient Maya to the public. After 1880 the first group of archaeologists, including figures such as Le Plongeon, E.H. Thompson, Alfred Maudslay, and Teobert Maler (Brunhouse 1973, 1975; Graham 1992), began to recreate the nature of ancient Maya society. The explorations of these early scholars produced basic architectural descriptions, plans, and details of façade decoration but do not constitute a systematic study of the ruins. Most of the work during this period focused on sites in the southern lowlands and little was done in Yucatán, especially in the creation of chronological sequences.

The largely descriptive and classificatory approach that characterized early Maya archaeology led scholars to theorize that the Classic Maya were an egalitarian society (e.g. Gann and J.E.S. Thompson 1931; Morley 1946). They believed Maya sites consisted of large pyramids and palaces inhabited by shaman-rulers who communicated with the gods and ancestors on behalf of the commoners. These "vacant ceremonial centers" were surrounded by agricultural land that was worked by commoners, providing food and labor for their rulers, in return for divine protection/intervention. General theoretical trends focused on creating artifact classifications and typologies while ignoring context and function; additionally, there was an almost exclusive focus on elite material culture. Also contributing to this theory were early ethnographies (e.g. Redfield and Villa Rojas 1934; Vogt 1964) describing contemporary Maya society as lacking clearly defined social stratification and an interpretation of Maya iconography that emphasized worship (e.g. Joyce 1914, 1927; Spinden 1913; J.E.S. Thompson 1952). These beliefs about Maya society dominated the field until the 1960's when a contextual-functional analysis of artifacts and appreciation of cultural evolution became popular.

Even before the processual archaeology of the 1960's, some work contradicted the vacant ceremonial center theory. Early settlement studies, like the work of the Ricketsons at Uaxactun (Ricketson and Ricketson 1937), demonstrated that Classic Maya cities had high population densities that extended far from the site cores. Despite this evidence to the contrary, the paradigm of the vacant site center persisted until the University of Pennsylvania project began work at Tikal (e.g. Carr and Hazard 1961; W. Coe and Haviland 1982). The settlement survey of Tikal (Puleston 1983) supported the work of the Ricketsons at Uaxactun, emphasizing that Maya cities had been densely populated and contained both elite and non-elite structures. This new knowledge concerning Maya settlement patterns forced scholars to reconsider the degree of social complexity and organization of the Maya.

Another line of evidence that gave credence to the new, more complex view of Maya society was the decipherment of many monuments at Piedras Negras by Tatiana Proskouriakoff (1960). Her work produced evidence that many of the people depicted on Maya monuments were historical persons and the accompanying texts described political events. The post-Pennsylvania paradigm of Maya archaeology focused on the "material" remains left behind by the Maya, rather than the role of ritual and religion in sociopolitical development (Puleston 1967; Rathje and Sabloff 1973; Sanders 1962; Satterthwaite 1965; Satterthwaite and Ralph 1960; Smith and Willey 1969). When ritual was examined (e.g. Kubler 1974; Lounsbury 1978; MacLeod and Puleston 1978), it was often as a peripheral phenomenon. Throughout all of these theoretical shifts in the field, the built environment was considered a passive backdrop and the role of human agency in creating the landscape was ignored.

2.3 History of Explorations in the Puuc

Modern explorations of the Puuc began with the famous adventures of John L. Stephens and Frederick Catherwood in the 19th century (Stephens 1963). Similar to work done in the Southern Lowlands, early archaeological work in the Puuc focused on architectural surveys of visible structures. These studies created an abundance of information on building forms and style but little deeper understanding of the region and its history. Such surveys include those done by Teobert Maler (1997), who took early photographs and wrote architectural descriptions of sites (including Kiuic, Huntichmul and Labna) in the 1880's, and F.H. Mariscal (1928), who also photographed and described Puuc structures. It was the work of Teobert Maler that first clearly distinguished the Puuc architectural style as different from that of other regions in the Maya area. Though architectural surveys dominated early scholarship, Edward Thompson's (1892, 1897) examination of Maya households and community structure represents an exception. While working with the Carnegie Institution of Washington in the 1930s and 1940s, Harry Pollock (1980) compiled one of the most comprehensive architectural surveys of the region. Most recently, works by George F. Andrews (1986, 1995), E. Wyllys Andrews V (1979), Nick Dunning (1990, 1992), and Jeff Kowalski (1987) have added to the repertoire of knowledge on the Puuc architectural style.

The focus of recent work in the area has shifted away from this descriptive-classificatory approach in order to address the lack of understanding of the occupational history of the Northern Lowlands. The Komchen project (Andrews IV and Andrews V 1980; Andrews V and Ringle 1992; Andrews V 1979; Ringle 1999) was the first project to recognize that the peninsula was not initially settled by during the Classic period (e.g.

Ashmore 2004:180; Dunning 1992:120). While it had been previously thought that Yucatan had little or no occupation during the Formative period, recent stratigraphic excavations have yielded extensive evidence of settlement dating to this period from sites throughout the peninsula (e.g. Izamal, Mayapán, Acanceh, Cobá, Kiuic, Xocnaceh, Labna, Huntichmul).

Though many projects have provided evidence that supports a long occupational history of the Peninsula and restorations of these sites have been undertaken by INAH, few of the projects have been located in the Bolonchén district of the Puuc (Figure 1.2). The Sayil project, initiated by Jeremy Sabloff and Gair Tourtellot, was one of the first large-scale settlement surveys in Bolonchén district (Sabloff and Tourtellot 1991; Smyth and Dore 1992; Tourtellot and Sabloff 1994). Other major projects in the area include those at Labna (Gallareta N. 2003a), Chak II (Smyth 1998, 2003; Smyth et al. 1998), Xcoch (Smyth and Ortegón 2008), and Kiuic (Gallareta N. et al. 2001-2008). Puuc sites outside of the Bolonchén that have been investigated include: Oxkintok (Rivera Dorado 1991, 1994), Uxmal (Barrera R. et al. 1989; Huchim and Toscano 1999), Xkipche (Prem 1991, 1994, 2003a,b; Reindel and Prem 2003), Kabah (Carrasco and Perez 1993), Xculoc-Xcochkax-Chunhuhub (Becquelin 1994; Michelet et al. 2000) and Xcalumkin (Bequelin and Michelet 2003). Extensive regional settlement surveys of the region were conducted by Garza Tarazona and Kurjack (1980) and Dunning (1990, 1992; Dunning and Kowalski 1994).

Although more research remains to be done in the Puuc area, it appears that ritual architecture in the Northern lowlands differed from that of the Petén or the Olmec heartland, suggesting a regionalized evolution of social complexity (Ringle 2005; Gallareta N. and Ringle 2004). The earliest truly non-residential civic-ceremonial architecture in the Petén took the form of E-groups (Hansen 1998:77), while in Yucatan early mounds were generally platforms and rarely funerary in function (Ringle 2005; Smyth and Ortegón 2008).

Three examples of early non-domestic architecture in Yucatan are the acropolises at Poxila, Xcoch, and Xocnaceh, which were likely flat-topped platforms without superstructures and no evidence of associated burials. Even at Late Preclassic Komchen and Yaxuna, the monumental architecture was designed to accommodate large numbers of people, while corresponding structures in the Petén are built for increasingly smaller numbers of participants. The plan for non-residential architecture in the Olmec area is modeled after La Venta and characterized by platforms and plazas arranged along a north-south axis; this plan is found at sites across the Isthmus of Tehuantepec and over to Chiapas, such as Chiapa de Corzo, Mirador, and La Libertad (Clark and Hansen 2001:3-12; Ringle 2005).

As noted above, while a vast amount of information has been gathered on the architectural style of the Puuc, few stratigraphic excavations have been undertaken. Architectural and settlement studies are based on visible sequences of remains rather than subsurface remains, ceramic studies, or absolute dates; this has resulted in a synchronic picture of the region. Through a series of excavations, surveys, and artifact analyses, the Bolonchén Regional Archaeological Project (BRAP), which began excavating in 2000, is helping recreate the complex history of the area. Though the majority of work has been focused on Kiuic, considered a Rank III site (Dunning 1992:86; Tarazona and Kurjack 1980), the project has conducted research at a number of other sites in the region, including Labna, Paso del Macho, Escalera al Cielo, Xocnaceh, and Huntichmul (Bey et al. 2005; Gallareta N. 2003a, 2003b; Gallareta N. and Ringle 2004; Gallareta N. et al. 2001-2007; Hill 2006, 2007; Hill and Bey 2003; May Ciau et al. 2003; Ringle et al. 2003, 2005, 2006a, 2006b, 2007). Both stratigraphic and horizontal excavations, as well as intensive inter- and intra-site surveys, have focused on answering questions related to the nature and evolution of the political, social, and economic organization of the Bolonchén.

2.4 Landscape, Space, and Place

One of the biggest problems with the current interest in landscape is the use and meaning of the actual terms 'landscape', 'space', and 'place'. For some scholars, landscape is distinct while space and place are interchangeable and for others, each term represents something different. As Ashmore (2004:99) points out, the primary difference among the current approaches to studying the landscape is the degree "to which they implicate human presence and involvement". The use of landscape as a background first appears in the art (Western art) of the Romans but do not become a subject in their own right until the 17th century (Cosgrove 1984, 1985, 1994; Jackson 1984, 1995). The tradition of landscape painting developed during the Renaissance and became associated with picturesque or ideal 'landscapes' and often reflected no human presence (Jackson 1984, 1994, 1995). In these paintings, the viewer is asked to pretend that what they are seeing is pristine and untouched by human hands when in fact, every detail has been engineered. Thus begins the subject-object dichotomy that is inherent in landscape studies today.

Two influential landscape theorists, John Jackson (1984) and Denis Cosgrove (1984), present different solutions for reconciling this intrinsic subject-object dichotomy. Jackson (1984:42) attempts to resolve the issue by dividing the landscape into political versus inhabited, where the former is deliberately created "in order for men to live in a just society" and the latter evolves organically through daily life. His functional division does not address the tension between subject and object, however, because both aspects are present in every landscape.

Cosgrove (1984:13) attributes the conflict within the concept of landscape to the relationship between how we study landscapes (empirically) and how they are produced (subjectively). Tensions also arise because landscapes are imbued with socially constructed meaning while they are interpreted and experienced on an individual level. Rather than a functional division of landscape, Cosgrove attempts to address the problem through the related concepts of habitus, structuration theory, and agency. These ideas explain the link between the individual and the collective, where shared social knowledge is taught but the agency of the individual allows him to take this information and interpret it or transform it (Bourdieu 1977; Giddens 1984). Ultimately, Jackson and Cosgrove believe landscape represents both the way in which people see their society relating to nature and through which their own social roles and values are communicated.

While Jackson and Cosgrove prefer the term landscape, other scholars use 'space' and 'place' to refer the same or similar concepts. This debate is particularly relevant in the discipline of archaeology because it resonates with problems of defining a 'site' in (e.g. Stanish 1999). Site is one of the most frequently-used words among archaeologists. Despite this, there is not always a general consensus on exactly what a site **is**, especially when there are no features such as a wall or clearly delimited settlement pattern to say 'x marks the spot' (Stanish 1999:120). Sites are generally defined by material features and, any sense of the agency, memory, or experience (described below) that are generally considered crucial components of a place are missing.

In reviewing the literature, it quickly becomes apparent that certain scholars prefer one or the other term for personal reasons but also that, while Lefebvre (1991) uses 'space' where Casey (1996, 1997) and Relph (1976) would use 'place', they ascribe the same general characteristics to the preferred term. A rose is a rose by any other name, so to speak. In light of this, rather than trying to sort out which scholars use which term, I will briefly discuss the general attributes of the concepts, which differ in the degree of human involvement in the production of the space/place.

Space is most often approached as a *tabula rasa*, or a neutral medium that is 'inscribed upon' by culture (e.g. Casey 1996:14)[1]. If space is generally conceived of as vague and disembodied, then place is the local, the specific, and the meaningful (see Lefebvre 1991 for use of 'space' as the specific, embodied). Two of the most important characteristics that define place are the role of the human body in experiencing it and place's ability to gather things, both mental and physical (Casey 1996:44; Relph 1976). In order to really understand a place, it must be experienced, which is not a passive viewing of a landscape or acceptance of the socio-political message but a dynamic one in which the person can modify the message as they are experiencing it (Casey 1996:16, 1997). This conceptualization of space is important because it goes beyond the static, passive role traditionally attributed to place and acknowledges its flexibility, ability to adapt, and role in social production (e.g. Bourdieu 1977; Giddens 1984).

The second component of the term is that places are not just a physical piece of ground but contain and gather both animate and inanimate things. It is the particular configurations of these things (i.e. experiences, languages, thoughts, memories) that make up that particular place; thus both time and history come together in place (Casey 1996, 1997; Lefebvre 1991 for space). Additionally, it is important to recognize that while each place is special in its own right, a place does not exist in isolation. Because of this, it is important to address the relationship or meaning of a place in relation to other places. For example, in a

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[1] A problem arises when Casey states that human beings are always 'emplaced' and there is no such thing as a pre-cultural place (1996:46); in saying this, Casey reduces the utility of the term space to being a foil for place.

study of Andean pilgrimage routes, Nielson (2002) demonstrates that it is the journey between the beginning and end of the route that gives the deeper meaning to each and unites them.

Several components of place influence how we identify with it, including the static physical setting (both natural and built), the activities that occur, and the meanings of the place (Relph 1976:46). These components, which are more concrete than the 'place' of Casey, create a place that we can explore more easily through the archaeological record. The physical location can be described and experienced, some of the activities performed can be documented from material remains, but still we can only guess at the meanings behind place or the 'sense' of place. Our sense of place creates an image of it, which can vary from individual to individual and is composed of physical attributes as well as memories, experiences, and social knowledge (Relph 1976:56). A socially agreed upon image/identity becomes the basis of the individual's mental image and this interaction is the link between the individual and collective through which meaning is negotiated. The identity of a place, therefore, is maintained as long as it fits the socio-political scheme but once social or environmental conditions change and the identity can no longer be legitimated, its image changes (Relph 1976:60).

2.5 Landscape Archaeology and Spatial Syntax Analysis

Archaeology differs from other branches of social sciences in many ways, two of which are that we study almost exclusively the material remains of cultures and that these societies no longer exist. Both of these have a downside in that we cannot directly 'get at' the mental component of the cultures; we cannot question people on their experiences, impressions and ideas but must infer what we can from the material traces that they leave behind. Until the 1970's, many archaeological studies focused primarily on the material remains of ancient cultures, rarely taking into consideration or mentioning the social or symbolic components of culture. As a result of this, landscape and the built environment were seen as a "passive backdrop against which archaeological remains are plotted" (Knapp and Ashmore 1999).

With this mentality, human actions were generally explained by either cultural factors (e.g. Canter (1991) on the organization and form of the built environment) or genetic factors, or innate elements independent of the role of the built environment (Sanders 1990). After World War II the interactive/sociological-ecological model, which bridged the gap between the mutually exclusive genetic and cultural models, became popular (see Chapter 4 for more detailed discussion). A key component of the interactive model was its explanatory power that allowed for both culturally specific and cross-cultural comparisons.

During the era of processual archaeology in the 1970s and early 1980s, sites were viewed in functionalist terms and described using quantitative methods (e.g. Clarke 1977; Dickens 1977; Fletcher 1977). Locational choices were dependent on the site's adaptive possibility or cost-benefit maximization (e.g. Carneiro 1970; Sanders 1977; Stewart 1955; Willey 1953) and the socio-symbolic dimensions of the cultural landscape were rarely, if ever, addressed. It is the theoretical positions of Postprocessual archaeology that lay the foundations for current interest in landscape archaeology, beginning with the belief that interpretation is always hermeneutic and the material record is like a text, with multiple interpretations that can only be understood through contextual clues (Hodder 1991; Geertz 1973, 1983; Johnson 1999; Trigger 1989).

A review of anthropological literature on the built environment by Lawrence and Low (1990) uses specific sets of research questions to explore four categories of theoretical approaches to the issues. The three approaches that are most relevant to the present research are the "psychological", "symbolic", and "social production" approaches (Lawrence and Low 1990:455-476)[2]. In the psychological approach, the built environment is conceived of as an extension of the self and, consequently, explores how the spatial contexts of human behavior are shaped by (and shape) mental processes. The foundations of this approach are rooted in the work of Edward Hall (1966, 1972) on proxemics. Hall (1966) suggests that all humans have an innate concept of personal space that is influenced by culture. While this approach has been used to study the relationship between humans and the natural environment (e.g. Cashden 1983; Dyson-Hudson and Smith 1978; Godelier 1979) it has not been used frequently in relation to the built environment (Hirschon and Gold 1982; Suttles 1968). The approach has been used even less in archaeology because of the difficulty in recreating the sociocultural attitudes regarding territoriality and personal space (e.g. Fisher 2007; Fletcher 1977; Moore 1996b; Smith 2009).

The dramaturgical approach of Erving Goffman (1959, 1963) represents one of the best examples of how cultural concepts of personal space influence social interaction. Although the dramaturgical approach incorporates the physical context of interactions (front stage/back stage), the built environment functions as a stage for the "drama" of social production (e.g. Houston 2006; Inomata 2001, 2006; Pearson and Shanks 2001; Triandan 2006). Related to the dramaturgical approach of Goffman are theories that focus on the role of ritual in imbuing the built environment with meaning (e.g. Turner 1967). Studies of this nature focus on how rituals convey symbolic and social significance to elements of the built environment (see Crumrine 1977; Vogt 1969a for examples). Rituals can be used to activate

[2] The other approach looks at the relationship between social organization and the built environment, with a particular focus on residential structures (e.g. Lawrence and Low 1990:458; Rapoport 1969).

the meaning of architectural elements (e.g. Ardren 1999; Ardren and Hutson 2001; Hugh-Jones 1979) as well as transform the meaning of particular space (Pavlides and Hesser 1989; Raglan 1964). Also falling under this category are the environmental psychology and environment-behavior studies (Rapoport 1990a, 1990c) that seek to understand how place influences human action and experience (Canter 1991:11-12). Recent studies focus on the context and meaning of places (e.g. Feld and Basso 1996; studies in Low and Lawrence-Zúñiga eds. 2003) and how identity is often linked to place. Because of archaeology's traditional avoidance of mental explanations and denial of individual agency, psychological approaches have rarely been used in the field (Moore 1996a,b)[3].

Despite a dislike of mental explanations, it is becoming more common for archaeologists to examine landscapes from a subjective and culture-specific view (e.g. Bender 1993; Bradley 1993a; Earle and Preucel 1987; Knapp 1996; Preucel 1990; Trigger 1986; Tilley 1994). Related to this approach is the phenomenological perspective, which emphasizes the importance of subjective sensory experiences that create a link between personal identity and place (Lawrence and Low 1990:475). While developed outside of anthropology (e.g. Korosec-Sefarty 1985; Relph 1976; Seamon 1979, 1989; Seamon and Mugerauer 1985; Tuan 1974), the approach has become popular in the field (e.g. Jackson 1996; Tilley 1994; van Dyke and Alcock 2003)

While the psychological approaches focus on the individual level, the symbolic approach examines the meaning of the built environment on a collective level. In doing so, symbolic approaches seek to understand how architectural forms are concrete expressions of culturally shared mental processes (Lawrence and Low 1990:466). Architecture is seen as a communicative device that uses symbols to express and reaffirm social relations (e.g. Bender

[3] For archaeological examples see Grøn (1991), Moore (1996a), or Sanders (1984, 1990).

et al. 1997; Daniels and Cosgrove 1988:1; McAnany 1995). The most well developed symbolic approach is structuralist in orientation and posits that the built environment is a physical representation of unconscious patterned behaviors (Lawrence and Low 1990:468). Perhaps the best-known example of this approach was conducted by Claude Levi-Strauss (1963), who examined settlement organization among non-western societies. Levi-Strauss believed that an underlying system of binary oppositions was a universal characteristic of human thought and influenced Trobriand settlement patterns (Levi-Strauss 1963:132-163)[4].

The view of structuralism that social structure is based on an underlying (and often unconscious) system of signs is particularly influential in the semiotic and metaphor-based approaches to studying the built environment (Lawrence and Low 1990:471). Semiotics, like structuralism, attempts to make implicit mental processes explicit in the architectural details of structures, which are 'read' as components of a language (e.g. Brusasco 2007; Carlson 1989; Hanks and Rice 1989; Parmentier 1994; Preucel 2002, 2010). In this paradigm, the formal characteristics of the built environment are seen as codes or sign systems that represent the ideology of the culture that produced them. For example, Preziosi (1983) employs the semiotic approach to explore the underlying order of the "spatial harmonics" of the Minoan built environment (Preziosi 1983:xvii; see also Clark 2007; Kokkonen 1984; Nash (ed) 1997; Preucel 2006, 2010; Steadman 1996).

The syntactic approach developed by Hillier and Hanson (1984; Hillier et al. 1976) is fundamentally structuralist in orientation, although they do not believe that underlying mental processes generate built forms. Rather, spatial syntax analysis focuses on the symmetric/asymmetric distribution of space and the way in which access to spaces is controlled. In structuralism, the relationship between built forms and social processes is

[4] See Lawrence and Low (1990:467-469) for more detail on structuralist approaches to the built environment.

unidirectional- with architecture being an expression of unconscious mental structures. In spatial syntax analysis, the relationship is dynamic and the built form is both an expression of social processes and important in shaping and directing them (Hillier and Hanson 1984).

A final structuralist approach focuses on the built environment as a metaphor, or a concrete representation of abstract cultural rules, ideologies, or cosmologies (e.g. Fernandez 1977, 1984, 1986). Scholars using this approach believe that people use metaphors as a way to order experience and approach the study of architecture as a "metaphor writ large" (Lawrence and Low 1990:473). Studies by Griaule (1954) and Preston Blier (1987) use the metaphoric approach to study non-western architecture, interpreting it within the context of body, personhood, and social structure (Lawrence and Low 1990:473-474).

While popular, structuralist approaches are often criticized as presenting a static view of the built environment; in this paradigm architecture reflects society rather than being actively contributing to social production. Criticisms of this nature have given rise to theoretical approaches that incorporate individual agency and practice (Hodder et al. 1995:243). Pierre Bourdieu's (1977) analysis of the Kabyle house represents one of the best-known of these studies. Bourdieu (1977:90-91) examines how the house can be read as a "book" from which children learn their vision of the world (see Chapter 3 for further explanation of the relationship between agency, architecture, and social production). The work of Bourdieu serves as a foundation for the final group of approaches, the "social production" approaches. They are particularly concerned with the relationship between space and power and, examine the recursive relationship between social production and forms (Lawrence and Low 1990:455). Unlike semiotic approaches that "read" the built environment like a language, many post-structuralist theories view architecture as analogous to texts, which are produced to *do* something (Hodder 1989:69; Grahame 2000). Another group of scholars within environmental design emphasize the ability of landscapes to be 'read' on multiple levels and not as a monolithic construct (e.g. Hayden 1981, 1997; Jojola 1990; Rainey 1997; Stilgoe 1982, 1998; Swentzell 1990; Zube 1994). Both perspectives emphasize the dynamic relationship between agency and the built environment and how characteristics of places influence social production.

Foucault was important influences for Anthony Giddens (1984, etc.) who developed structuration theory in an attempt to bridge structuralist and action-based paradigms (see Chapter 3 for more detailed discussion). Structuration theory provides one way in which to incorporate human agency with the built environment, where the latter is seen as a consequence of the purposeful acts of human beings (e.g. Ferguson 1996; Fisher 2007; Gillespie 2001; Grahame 2000; Ortner 2006; Pauketat 2001; Smith 2009).

2.6 Recent Theoretical Approaches to Landscape in the Americas

The theoretical trends influencing landscape studies have also shaped recent scholarship in the Maya area. While scholars differ concerning how much archaeologists can understand about human involvement from studying landscape, the general approach since the 1980's has been *conjunctive* (Ashmore 2004:100-101). By combining aspects of archaeology, iconography, and epigraphy with ethnohistory and ethnography, the conjunctive approach bridges the scientific with more humanistic approaches (Ashmore 2004:100; Diehl 1984).

Early influences on the study of landscape or environment in the Maya area were rooted in cultural ecology and economic themes (e.g. Fedick 1996; Sheets 2002; Webster 2002). Cultural ecology led archaeologists to a focus on landscape as environment, especially the resources and risks involved in settlement patterns (Crumley 1994; McIntosh et al. 2000;

Schmidt 1994). In the Maya area, swidden farming[5] produced foodstuffs and economic resources included exotic items such as cacao, obsidian, and jade. During this period, the idea developed that it was the resource-deficient environment in which the Maya lived that influenced both the rise and collapse of their civilization (e.g. Carneiro 1970; Rathje 1971; Sabloff 1973; Sanders 1977; for Andean examples see Erickson 1999; Kolata 1991; Kolata and Ortloff 1996). Gradually, more detailed excavations revealed that the Maya practiced both intensive forms of agriculture and swidden agriculture (Ashmore 2004; Gleisman et al 1985; Lambert 1985; Mathewson 1985; Sluyter 1994).

In addition to recognizing a more complex interaction between the environment and ancient Maya populations, conceptions of place/landscape were also altered in the 1970's by influences from astronomy and new iconographic decipherments (Ashmore 2004; Aveni 1977; Broda 1972; Schele and Freidel 1990; Schele and Mathews 1998). A new understanding of the influence of astronomy on both building and site construction demonstrated that the ancient Maya approached the landscape with more than just resources in mind (e.g. Aimers and Rice 2006; Aveni 1980; Aveni, Hartung, and Broda 1991; Broda 1982; Carrasco 1991). Textual evidence revealed site names, wars of conquest, and alliances that gave life to the ancient Maya landscape and insight into how the Maya themselves perceived their spatial world (e.g. Ashmore 1991, 1992; Looper 1995; Reese-Taylor 2002; Schele and Freidel 1990). Contributions from these sources gave archaeologists new insight into how land was used and how it was conceptualized, adding an experiential dimension to place that had been largely missing.

Ashmore (2004:101-107) notes that the expanding approach to landscape among Maya scholars has three important facets: expanding the definition of landscape, blurring the

[5] We now know that a more complex agricultural system including diverse agricultural practices and cultigens was used by the Maya (see Fedick 1996).

boundaries between built and natural places, and recognizing the full extent to which human activity (and time) influence landscapes. Iconography and epigraphic studies have demonstrated that the landscape of the ancient Maya included more than just the visible earth (e.g. Aveni 1992, 2002; Freidel et al. 1993). Instead of seeing the spatial organization of a site strictly in terms of land-use, it was discovered that terrestrial landscapes were designed to reflect celestial ones, each telling the story of creation (Freidel et al 1993; Kappelman 1997, 2001; Koontz et al 2001; Schele and Freidel 1990; Schele and Mathews 1998; Stone 2002).

The second area in which landscape studies have been targeted is blurring the distinction between man-made and natural places (e.g. Bradley 1993, 2000; Erickson 2000; Richards 1996; Tilley 1994; Tuan 1977). For example, the Maya conceived of plazas set with stelae as a "forest of kings" (e.g. Schele and Freidel 1990) while pyramids were analogous to mountains and caves to the underworld (e.g. Brady and Ashmore 1999; Gillespie 1991). Among research of this nature, the influence of cosmology on the spatial layout of Maya sites is the dominant focus (e.g. Ashmore 1991, 1992; Brady and Ashmore 1999; Looper 1995; Schele and Kappelman 2001).

While the work of the first two categories discussed expand the concept of place and landscape, the places themselves remain passive backdrops against which human action is set. It is Ashmore's third category, with the incorporation of human activity and agency, which touches upon the most recent trends in landscape theory. What the previous approaches do not make explicit is the role of human activity in ordering the landscape. In order to integrate cosmology and the physical environment or astronomy and site plans, human activity is necessary (e.g. Ingold 1993; Schama 1995; Van Dyke and Alcock 2002). Landscape is a "spatial matrix of experience, memory, and meaning" and it is through social interaction that places are imbued with meaning (Ashmore 2004:104). The approach has become more popular in Mesoamerica in recent years (e.g. Houston and Taube 2000; Inomata and Houston (eds) 2006; Kappelman 2001; Kappelman and Stone 2002; Koontz et al. 2001; Lucero 2003, 2006) and is frequently employed by South American scholars (e.g. Dillehay 2004; Janusek 2004; Moore 1996a, 1996b; Sallnow 1987; Sherbondy 1992; Topic 2003; van de Guchte 1996).

While many Mayan archaeologists hesitate to incorporate the phenomenological perspective into their study of landscape, it is easier to do in cases where ethnohistoric documents are available. Studies by Maria Martinez (2001) in Puebla de Los Angelos or William Fowler (2004) in Ciudad Vieja, El Salvador, represent two examples that incorporate agency and sensory perceptions with a study of the built environment in Colonial period towns (for Andean examples see Abercrombie 1998; Rasnake 1988; Robinson 1989; Stern 1982)

Finally, the approach to studying landscape, including both natural and man-made places, has changed drastically throughout the course of Maya archaeology. Included in these trends is the study of the architecture itself, which has been explored from numerous functional perspectives. These include: room arrangement (Harrison 1970, 1986; Stuardo 2003), associated features and artifacts (Coggins 1967; Hendon 1991; Satterthwaite 1937), performance space (Freidel and Suhler 1999; Schele and Freidel 1990), iconography (Fash et al. 1992a; Schele and Freidel 1990; Paxton 1999), symbolism (Kowalski and Dunning 1999; Miller 1988), and ethnohistoric accounts (Harrison 1970; Tozzer 1941). While all of these perspectives contribute valuable information regarding the form or function of structures, it is important to look at the structure within the context of its total built environment (Gottdiener 1986:215; Rapoport 1982:40; Unger 1982:8; Webster 1998:24).

2.6 Conclusions

For archaeologists, a primary goal is to understand how ancient peoples lived their lives. However, the nature of the material record makes the explication of past behaviors an elusive task (e.g. Binford 1968a, 1981; Trigger 1984). As has been discussed, human geographers, semioticians, ethnographers, architects, sociologists, and environmental psychologists have studied the relationship between the built environment and behavior. Each approach has a wide array of methods and produces models that 'explain' how/why architecture encodes cues that guide social interactions (which reflect general cultural values). Trends within each discipline and archaeology in general, have contributed to the current holistic attitude that prevails in landscape studies. The result is that structures are viewed as an important material remains through which to explore past behaviors because of recursive relationship between social production and architecture.

CHAPTER III

PERFORMANCE AND SOCIAL INTERACTION IN THE BUILT ENVIRONMENT

3.1 Introduction

Reconstructing the role of architecture in structuring sociopolitical relations is a complex undertaking, especially in archaeological contexts where limited information is available. Though past societies can be studied through the material remains they left behind, the degree of preservation of these artifacts varies. Conditions in the Maya area, especially those of the Puuc region, are rarely ideal for the preservation of delicate items such as paper or cloth and, because of this, structures are one of the most common artifacts.

Additionally, many sites in the Puuc region lack the hieroglyphic texts found in other regions of the Maya area that describe important ritual events such as wars of conquest or political accessions (e.g. Freidel and Schele 1990:chap 3). With such limitations in mind, archaeologists are confronted with the problem of how to study sociopolitical relations using only the archaeological record. In this chapter, a combination of structuration theory and performance theory is used to demonstrate the dynamic roles of architecture and performance in the production and reproduction of society and why the architectural features of the built environment encode information regarding the ideology of its creators (DeMarrais et al. 1996; Fisher 2007:1; Inomata and Coben 2006:12; Rapoport 1969, 1988, 1990a; Sanders 1984).

In order to explore how Maya elites used the built environment, especially non-domestic architecture, to expand and legitimize their power and authority, the role of the place in producing and reproducing social relations will be established using a combination of structuration and performance theory. Structuration theory provides a platform for studying architecture and social production in two ways: 1) it allows us to view social structure in terms of rules and resources and, 2) it establishes the importance of the spatial contexts in which social interaction occurs (Bourdieu 1977; Ferguson 1996:3; Giddens 1979, 1984, 1989; Giddens and Cassell 1993).

Structuration theory proposes that the rules that structure society are produced and reproduced through the social interactions of individuals (Giddens 1979, 1984, 1989; Giddens and Cassell 1993). Rituals represent a specific type of social interaction and performance theory will be used to explore how ritual produces and transforms society. For the ancient Maya, public performance and rituals were crucial elements of social production and reproduction and the maintenance of power (Ardren and Hutson 2001; Bachand and Bachand 2005; Bell 1992, 1997; Inomata 2006; Inomata and Coben 2006; Turner 1967, 1969).

Because of the relationship between the built environment and social production, scholars can use the material remains of rituals, which include non-domestic architecture, iconography, and ritual paraphernalia (where available) to study performance archaeologically (Inomata and Coben 2006:29; Triadan 2006). Spatial syntax analysis and nonverbal communication, which will be explored in Chapter 4, will be used in order to address the specific ways in which Maya elite manipulated the built environment. The integrated approach proposed above will allow me to analyze the ways in which Maya elite manipulated non-domestic architecture to shape behavior and promote their ideologies.

3.2 Structuration Theory: Social Production and the Built Environment

A major problem in studying societies archaeologically is that we cannot directly observe behavior or social structure; we only have the material record created by the activities and actions of individuals. From physical remains such as buildings, archaeologists must make inferences regarding the intangible aspects of society such as behavior. Structuration theory bridges this gap by asserting that architecture plays a primary role in the constitution of society because of how it influences the interactions of agents (Bourdieu 1977; Giddens 1979, 1984). After establishing how this occurs, spatial syntax analysis can then be used to explore how actors manipulated the layout of the built environment to control movement.

The Duality of Structure As an action-based approach, structuration theory centers on the idea that human beings "know what they do while they do it" or, are knowledgeable agents and conscious of the conditions and consequences of their daily actions (Giddens 1984:xxii-xxiv). In many social theories, there is an implicit dichotomy between the individual (agent) and social systems (structure)[1] that places social institutions and structure outside of human agency. Structuration theory, however, proposes that there is a 'duality of structure', meaning that agency and structure are indivisible because it is through the daily social interactions of agents that the social structure is reproduced and transformed (Table 3.1). Social interactions, or direct interchanges between people that are face-to-face or mediated through some other form of communication[2], are the means through which the social structure is

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[1] The *structure* of a society is the "set of recursively organized rules and resources used in the reproduction of social systems" (Giddens 1984:377). Structure is the particular cultural framework that guides and influences the daily actions of agents, which produce and reproduce social systems (Giddens 1984:25-29).

[2] Originally, communication was limited to face-to-face interactions. The rapid changes in technology have changed the nature of communication in the modern world, to include mediated forms such as telephone conversations and email (Giddens 1984; Giddens and Cassell 1993:176-211).

produced and transformed (Giddens 1984:19). By recognizing the role of individuals and spatial context in social production, structuration theory establishes the link between society, rules, and resources that allows archaeologists to study physical remains (resources) and make inferences regarding structure that created them (Ferguson 1996; Fisher 2007; Giddens 1984; Sewell 1992).

Rules and Resources In structuration theory, rules and resources are intimately linked and become embodied through their recursive application in social production. Rules (or schema) outline sets of procedures and conventions that guide the actions of agents; they also establish meaning and sanction modes of social conduct (Giddens 1984:17-25, 1989:255; Sewell 1992). The flexibility of rules and the ability of agents to interpret them are important because they allow for social change and the transformation of society, rather than creating a static social structure (Giddens 1984:17-25, 1989:255-256). The intangible social rules are manifest physically in social production through the use of two types of resources: *authoritative resources* (human) and *allocative resources* (nonhuman)(Table 3.2)(Giddens 1979:92, 1984:xxxi, 258-262; Sewell 1992: 10-13).

While archaeologists cannot directly observe rules or cultural schema in the archaeological record, we can examine resources and, from them, make inferences about the social forces that produced them (Ferguson 1996:10; Sewell 1992:10-13). Resources incorporate and actualize cultural rules, which implies that these rules can be inferred from human and nonhuman resources. For example, the built environment (allocative resource) functioned as a tool through which Maya elite could reinforce their power by influencing social interaction and reproduction. By examining the material remains of structures, archaeologists can begin to understand how the persons who created these remains were attempting to organize and control place and behavior.

Locales, Regionalization and Social Interaction Through the processes of enculturation and socialization, individuals acquire knowledge about rules for appropriate behavior, or practices (Bourdieu 1977; Giddens 1979, 1984, 1990, 1991). Cues to 'proper' behavior are encoded in the spatial context of social interactions, linking architecture to the recursive production of society (Dovey 1999; Ferguson 1996; Fisher 2007; Rapoport 1969, 1980, 1988, 1990a). The significance of the built environment in this relationship is conceptualized by the importance of *locale*, or the context of social interactions that can be described by physical properties (Giddens 1979:206, 1984:118; Giddens and Cassell 1993:181)[3]. Because a locale influences the social interactions that occur within it, they have a direct role in the production and reproduction of society.

Though social interactions are the foundation for the production of structure, the spatial and temporal components of these interactions also shape the behavior of agents (Bourdieu 1977:89-90; Ferguson 1996; Giddens 1979, 1984; Giddens and Cassell 1993). Locales provide the spatial component for the *contextuality* of interaction, including the physical setting (locale), the co-present actors, and the communication involved (Giddens 1984:119). Physical properties are one component of locales, but they also include symbolic and mental components. Two critiques of Giddens' concepts of locale and regionalization are important to mention: they are treated as fixed rather than socially constructed and, they are viewed as the context for action rather than the outcome of action (Urry 1991). It is important to recognize the dynamic relationship between place and social interaction because the meaning of a place is deeply rooted its social construction and the actions that occur within it.

[3] Goffman (1959:106) uses the term *region* to describe the physical setting of social interactions where the place itself is "bounded to some degree by barriers to perception". It is equivalent to Giddens' use of *locale*. Goffman (1963:18) uses the term *situation* to describe the socio-spatial environment in which mutual monitoring occurs; this is similar to Giddens' term *context*.

Drawing upon the work of Goffman (1959, 1963), Giddens (1984:122-126) distinguishes another important way in which locales can be regionalized- front and back regions. Though the dramaturgical approach employed by Goffman considers place as a passive backdrop, actors can use the concepts of front and back regions to help in organizing the contextuality of interaction. Front regions are typically considered a "façade," associated with public activities and in-authenticity. Back regions, in contrast, express what is real or substantial and are related to private activities (Giddens 1984:124). Giddens (1984:127) argues that this dichotomy is not always clear and that often, especially in ritualized situations, the entire locale is considered a front region and there is no true back region. The performers are always "on stage," whether getting dressed, performing before a physically co-present audience, or alone performing for a god or ancestor. The design of the built environment in these situations facilitates the performances that occur within them and contains elements that direct the behavior of both performers and spectators.

The physical qualities of a place, including the behavioral cues it contains, the corporeality of the agent, and limitations on mobility of the body combine to shape social interaction. As will be described in Chapter 4, the nonverbal communication approach and spatial syntax analysis can be used to examine the built environment for these qualities. The former explores the cues encoded in architecture that guide behavior while the latter focuses on how the spatial arrangement of features influenced social interaction. For example, a plaza with a large area and few visible barriers would easily accommodate a large social occasion and facilitates social interactions. On the other hand, a small, one-room temple atop a high pyramid is designed so that presence-availability and co-presence are limited and social interaction does not occur easily. These examples illustrate how architecture can be used to shape social interactions by dictating the presence-availability of actors.

<u>Co-presence in Social Interactions</u> In structuration theory, the routines of day-to-day life are necessary to the production of society and these encounters between two or more agents are defined by a mutual monitoring of actions by others who are co-present (Giddens 1984:67-72; Giddens and Cassell 1993:176-211). The idea of *co-presence* originally comes from the work of Erving Goffman (1959, 1963:17) and exists when agents sense that others are close enough to perceive their actions. In this sense, co-presence is rooted in the sensory perceptions of the body and the spatial context of interaction.

While Goffman believes co-presence only occurs when there is unmediated contact (face-to-face interaction) between individuals, Giddens extends the concept to include situations of mediated communication such as telephone conversations or mail (Giddens 1984; Giddens and Cassell 1993:176-211). The expansion of the concept in this manner is especially important when conveying messages of power because it allows agents to extend their influence in time and place, beyond the limitations of the physical body.

Both Goffman and Giddens believe that co-presence always includes some form of communication (mediated or unmediated) between at least two individuals but neither addresses the idea of imaginary co-presence. *Imaginary co-presence* is considered to occur when an audience is not physically in attendance but imagined to be by the actor and is an important dimension of co-presence (Bell 1997; Houston 2006:141; Urry 1991). As will be discussed later in the chapter, situations of imaginary co-presence are particularly important when the type of social occasion concerned is a ritual. On such occasions, the "presence" of a supernatural or ancestor would have been just as real and important as a living person-audience.

The importance of co-presence extends throughout all levels and types of social interaction. The present research uses Goffman's concept of the *social occasion*, which is a "wider social affair, bounded in regard to place and time" (Goffman 1963:18), rather than focusing on small-scale daily encounters. Rituals (or public performance), as a specific type of social occasion, involve many people and recognize a certain code of conduct or behavior as appropriate. Participants in social occasions are differentiated in some way (e.g. social status, level of participation) and there is often a group of individuals (or particular individual) responsible for directing the ritual, though the composition of groups and degree of involvement of participants may change throughout the occasion itself. Social occasions range from highly- to non-structured, or in other words, each occasion has a set of rules or a code of conduct that is rigid (e.g. at funerals), loose (e.g. at a music concert), or somewhere in-between. Regardless of flexibility of the behavioral code, social occasions and other interactions of co-presence foster social integration (Giddens 1984:142-143; Goffman 1959, 1963; Inomata and Coben 2006; Inomata 2006; Lucero 2006).

3.3 Rituals and Public Performances

Defining Ritual Ritual has been studied by all of the major schools of thought: structuralists (e.g. Lévi-Strauss 1969; Goffman 1959, 1967), functionalists (e.g. Durkheim 1995; Mauss 1967; Radcliffe-Brown 1964), and symbolic anthropologists (e.g. Turner 1969, 1974; Geertz 1980; Leach 1968). While these more traditional approaches attempt to define what ritual *is*, recent studies focus on the ways in which ritual and other types of performance communicate information and meaning, or what ritual *does* (Fischer-Lichte 1992; Parmentier 1994:129-134, 1997; Rappaport 1999; Triadan 2006). Regardless of the approach used, most scholars agree that the function of ritual is complex and that it is an essential component of the construction of both social and human identity.

Public rituals and performance were an important part of the sociopolitical development of ancient Maya society (Freidel and Schele 1988; Inomata 2006; Inomata and Coben 2006; Lucero 2006). They contribute to the production and transformation of society because they are an ideal means through which emerging rulers can insert and legitimate their own agendas into existing social norms.

As has been discussed in detail in Section 3.2, social structure is produced through the daily interactions of agents and provides choices and constraints that guide these actions (Bourdieu 1977; 1990; Giddens 1979, 1984). Rituals mirror social structures but also mediate between these structures and the tensions of a particular situation by offering a release of social tension and the incorporation of change (e.g. Sahlins 1985 or Ortner 1978, 1989). For example, rulers often replicate and expand on household rites but, until they have accumulated enough power, they cannot radically alter or discard these traditional rituals (Lucero 2006:23; McAnany 1995). Because of their role in social production, it is important to outline what is considered a ritual and how rituals themselves contribute to the social process.

While finding a single definition that encompasses all of the nuances, variety and characteristics of ritual may be impossible, it is important to outline what is considered *ritual activity* or, performance. There are three general approaches to defining ritual: the all-inclusive, the middle-road, and the narrow. The last of these, the narrow definition, focuses on "highly circumscribed and prescribed acts in formalized theaters" and is not discussed in the present work (Inomata and Coben 2006:14). At the all-inclusive end of the spectrum is the work of Erving Goffman (1959, 1967) and others (e.g. Bauman and Briggs 1990; Butler 1990, 1993; Derrida 1988; Parker and Sedgwick 1995), who believe that ritual includes all of the informal, daily activities of human interaction, including preparing food or greeting others. While the all-inclusive approach does view performance as a communicative and expressive act involving both performers and observers, this definition is too broad.

In narrowing the scope of what is considered ritual, the present research considers ritual acts as set-off or markedly different from daily ritual-like activities (Bell 1992, 1993, 1997). This is in-line with the middle-ground view, which approaches ritual as "a gathering centered around theatrical performance of a certain scale in clear spatial and temporal frames, in which participants witness and sense the presence of others and share a certain experience" (Inomata and Coben 2006:16). In addition to being bounded in space and time, performance goes beyond daily routines and is something "creative, realized, achieved, even transcendent of the ordinary course of events" that is interpretable, reportable, and repeatable in the domain of cultural intelligibility (Hymes 1975:13-19). Bell (1992:73-74) elaborates upon this "definition" of ritual by advocating that attention be paid to how and why actors differentiate certain activities as ritual. For her, ritualization becomes a culturally specific set of strategies that privileges certain activities, creating a dichotomy between sacred and profane. These complementary definitions of the term highlight several essential characteristics of ritual: it is recognizable as performance by both observers and participants; it is a cultural behavior where a person assumes the responsibility of an audience (whether one is physically present or not); it is bounded both temporally and spatially; and it is a communicative behavior. Certain ritual activities can therefore be considered performance even if an audience is not bodily co-present and is actually gods or supernaturals (Schechner 1988:30).

There is great debate among archaeologists over the meaning of the terms *ritual, spectacle,* and *performance* (e.g. Inomata and Coben 2006). Regardless of the term chosen, rituals link the physical domain of behavior and the materiality of the human body to meaning and ideology. Bell (1992, 1997:72-83, 1998) argues that "primacy of the body" is the central quality of ritual- through movement and senses, the body experiences and receives information that orders the environment, while simultaneously defining and imposing values on it. Visual and auditory information such as the manipulation of movement through a place, hearing music then seeing actors enter a plaza, costumes, instruments, chanting, and dancing are all important physical elements of ritual that are designed to impart meaning via sensory modes of communication (Freidel and Schele 1988; Triadan 2006:167-168).

Though there are many genres of ritual, the present research focuses on *political rites* or, ceremonial practices specifically designed to "construct, display, and promote the power of political institutions… or the political interests of distinct constituencies or subgroups" (Bell 1997:128). Rather than merely giving form to established political ideology, rituals play an active role in constructing and transforming the very nature of political power in societies. In instances where ritual is used to legitimize political authority it draws upon a pre-existing system of beliefs that is appropriated and modified (Bell, 1992, 1997; Lucero 2006; Ringle 1999:186). In utilizing an established symbolic and religious system, early political leaders who would not have had significant power or authority, were able to slowly expand their influence until it was considered part of the natural order of society.

Function of Ritual in Society: Integration and Power While it is difficult to find an all-encompassing definition of ritual, determining its function within society is only slightly less complicated. Ritual serves to establish relationships of authority and submission (Bell 1992, 1997; Kertzer 1988; Ringle 1999) but also releases social tensions (e.g. Malinowski 1984; Turner 1974; van Gennep 1960), marks places (e.g. Basso 1996; Knapp and Ashmore 1999; Brady and Ashmore 1999), and is an economic resource (e.g. Adams and Brady 1994, 2005; Brady 2001; Woodfill 2005). Because rituals serve many functions and are performed at all levels of society, it is difficult to isolate a single meaning or function for a certain type of performance. However, two important general functions of political rituals are: 1) their ability to integrate and establish the identity of a community and, 2) how they create, maintain and subvert asymmetrical power relations (Inomata and Coben 2006).

Political rituals use symbols and symbolic action rooted in shared ideology to depict a group as a coherent, ordered community (Bell 1997). In order to reinforce the legitimacy of the values promoted by these rituals, political leaders present them in line with the established views of cosmic order. While rituals promote social cohesion on the surface, at the individual level, they can be interpreted in a variety of ways (Bell 1992:176; Geertz 1980). This is due in part because they focus on "common symbols, not on statements of belief" (Bell 1992:183) and the basic symbols of a community's ritual life are often unclear. The ambiguous nature of symbols and rituals allows agents a freedom of choice within which to operate while seeming to adhere to the prescribed ideology (Bell 1992:186; Kertzer 1988:95).

Despite the ambiguity of symbolic elements, the repeated employment of a limited repertoire of powerful symbols plays an important role in instilling belief (Kertzer 1988:95). These symbols are often encoded in the built environment in order to display and reinforce messages of power; in order to interpret the symbols and messages in the archaeological record, the nonverbal communication approach (see Chapter 4) makes use of their repetition in order to infer behavior. Having discussed how ritual functions to foster a sense of community integration, the discussion now turns to how ritual promotes the development of asymmetrical power relationships. Political rituals are effective at legitimating ideology by using traditional symbols to evoke a sense of cultural continuity while at the same time, differentiating the new from the old (Bell 1992:195, 1997:149; Kertzer 1988; Lucero

2006:18). Not only is ritual a useful tool for those already *in* power but the inherent layering of power in rituals allows some individuals to increase their power and authority.

All rituals involve people with various levels of knowledge, such as specialists with the expertise and authority to conduct the ceremonies or spectators with no special knowledge. Although each group uses the same cultural knowledge to interpret the rituals, the stratification of involvement creates "relationships of authority and submission" (Bell 1992:130-140; 1997:82; DeMarrais et al. 1996; Fisher 2007; Giddens 1984; Inomata and Coben 2006; Plog 1995; Plog and Solometo 1996; Triadan 2006:160-161). Thus, there is an inherent dichotomy in ritual: it fosters community cohesion through identification with the group while at the same time giving individuals with specialized ritual knowledge power that can be exploited for political or social gain (Aimers, Power and Awe 2000; Anderson 2000; Bell 1992, 1997; Cohen 1995; Freidel and Schele 1988; Norberg-Schulz 1984). Rituals are an ideal arena in which emerging rulers can insert and justify their own agendas (Kertzer 1988:30) and offer elites a way to take credit for the success of the community and the continuation of cosmic order. By demonstrating that their actions benefit all members of the society, leaders are able to expand their influence outside of their own group and further expand and consolidate their power (Godelier 1977:111-119; Inomata 2006).

Public, Private and Semi-private rituals Regardless of the function or definition of ritual, they are performed in both the public and private spheres of social life. While some spatial configurations or settings clearly indicate whether the rituals performed within them were public or private, the division between the two is not always distinct. Additionally, one ritual event can contain elements that fall into different categories, reinforcing the idea that rituals are not monolithic or single-focus but contain multiple layers of meaning, communication and symbolism (e.g. Geertz 1973). Rituals can be categorized based on a combination of the spatial properties of the physical environment, audience, and artifacts. While the material remains of ritual, such as costumes, art, or other ritual paraphernalia are key in conveying information, they are rarely found archaeologically. Therefore, we often rely heavily upon the information encoded in the built environment to study ritual and performance.

Public rituals[4] occur in spaces designed to accommodate a large audience and often contain a "stage," where the performance takes place (e.g. Barrett 1994:57-58; Bradley 1998; Inomata and Coben 2006; Moore 1996; Thomas 1999:228-229; Woodfill 2007:560-561). Ethnohistorical documents indicate many public rituals took place in open plazas, where a significant portion of the community could gather and have visual access to the performance (Barrera Vásquez 1965; Ringle and Bey 2001:275; Restall 2001:344-345). The objects associated with this type of ritual are generally prestige items, such as decorated ceramics or elaborate costumes, and the built environment often exhibits a high degree of architectural modification (e.g. the Nunnery Quadrangle at Uxmal).

Private rituals include small-scale occasions that occur in restricted, secluded areas with little or no room for an audience (Brady 1989:404-407; Woodfill 2007:560-561). While private ritual is not necessarily the same as domestic ritual, the line between them is vague. In fact, if Maya elite replicated and expanded upon household ritual to establish their power, then the difference between the material remains and function/meaning of "public" (large-scale) and "private" (small-scale) rituals should be a matter of scale (Lucero 2006:64). Traditional household rituals at all levels of society would be considered private and though these rites were likely similar throughout space and time (e.g. Ashmore et al. 2004; Houston 2006; Lucero 2006:54-66; McAnany 1995, 1998, 2001). Private rituals do include social

[4] Public rituals are most often correlated with spectacles (e.g. Houston 2006).

occasions where there is imaginary co-presence, such as when supernaturals or ancestors were the intended "audience".

The final category of ritual discussed is semi-private rituals, which can be thought of as "spectacle without an audience" (Woodfill 2007:561). Both elaborate, small-scale rituals and the off-stage component of public performances can be considered semi-private because the action is hidden from the view of spectators of the main performance. What is unique about semi-private rituals is that although the action occurs in private, the spectators know what is being done behind the "closed-door". For example, in many modern Q'echi' villages the entire community participates in the majority of the songs, prayers, and dancing of a public performance (Woodfill 2007:562-563). However, at a designated time, a group of village elders conspicuously leaves the ceremony for a private place where they perform certain rites on behalf of the village. Though the village at large cannot see the men performing these rites, they know who has left and what they are doing (Woodfill 2007:562-563). A similar situation is found in ethnohistorical documents, where Landa (Tozzer 1941:119) describes sacrifices that occur at the top of temple pyramids, out of view of spectators. Although the spectators could not see the rite, they knew what was being done atop the temple and saw the bodies rolled down the pyramid into the plaza.

Public and semi-private rituals play an important role in the integration of community and creation-maintenance of power relations. The ambiguity of symbols used and experiential qualities of both made them ideal platforms from which Maya elite could gradually change ideology and increase their own power.

3.4 Exploring Ritual in the Archaeological Record

An important part of ancient rituals and performance were the sensory qualities associated with them- whether from visual props like costumes and masks, auditory signs such as music, or the olfactory effects of incense (Bell 1992, 1997; Grube 1992; Triadan 2006:167-168). Archaeologically, the sensory component of ritual is difficult, if not impossible, to encounter; because of this, archaeologists must use associated material remains to help reconstruct this element. Inomata and Coben (2006:29) identify three important components for studying performance archaeologically: theatrical space (the built environment), images or iconography, and objects used in performance. The ethnohistorical documents produced during the Colonial period contain many descriptions of Maya ritual and can be used to supplement and enrich archaeological data.

The remains of the built environment are the most common physical evidence of ancient rituals in the Maya area. As will be demonstrated in depth in the following chapter, built environment plays an important role in influencing the sensory and symbolic components of the rituals that occur within them (Fisher 2007; Giddens 1984; Inomata 2006; Rapoport 1988, 1990a; Triadan 2006:167-168). When considering how architecture shapes ritual, places must be studied at both a high-level plan view as well as from the point of view of the performers and audience (Bradley 1998:124). Including all perspectives helps capture subtle nuances of the built environment that affect the sensory qualities and experience of performances. For example, while the site plan of Teotihuacán lays out the spatial relationships of pyramids, apartment complexes, and streets within the city, it cannot convey the power of walking down the Avenue of the Dead. Simply reading the map does not indicate that as one progresses north toward the Pyramid of the Moon, the mountain behind the pyramid slowly grows larger and larger, eventually dwarfing its man-made imitation. In addition to shaping experiential qualities, the built environment also physically enables and constrains social interaction (Ferguson 1996:3; Giddens and Cassell 1993; Urry 1991).

The size and configuration of places within non-domestic architecture in the Maya region influences interactions and dictates the distance between the performers and audience. The former influences the number of participants a place could accommodate as well as providing clues to the visibility of the stage, both of which have political implications (Bradley 1998:101-115; Moore 1996:151-153). The latter dictates the types of communicative acts (verbal and musical, facial expressions, body movements, etc.) possible within the place (Inomata and Coben 2006:30). In order to systematically study how the layout of the built environment influences social production, spatial syntax analysis will be used. This approach uses several variables (discussed in Chapter 4) to produce a quantitative study of non-domestic architecture, which can then be compared with similar data from across the Maya lowlands.

The second source of information on ancient rituals comes from related images and iconography. Persons depicted in sculptures, figurines, murals, and on ceramics provide information on aspects of performance including the identity of performers, costume and posture of actors, spatial settings, and emic notions of sensory perceptions (e.g. Miller 1986; Houston and Taube 2000; Inomata and Coben 2006). It is important to consider the function of these images when using them to reconstruct ritual- art is created for many reasons including the representation of idealized notions of theatrical performance, to document specific historical events, and as guides for future performances (Inomata and Coben 2006:31). Therefore, the images may represent ideal, not actual, performances.

Whatever function the images served for the Maya, they provide valuable clues to experiential aspects of ritual that are not preserved in the archaeological record.

The last group of material remains to be discussed is the artifacts associated with the rituals themselves. Though these artifacts offer valuable insights into the nature of ritual, there are two problems associated with them. First, the artifacts used in rituals are rarely found *in-situ* and, second, they are seldom preserved in the Maya area. For example, though images of masked dances exist and they are described in ethnohistorical documents, masks themselves are rarely found archaeologically. In fact, only two masks made of perishable materials have been found in the Maya area: the skull mask fragment dating to the Middle Preclassic at Cuello (Hammond et al. 2002) and ceramic masks in a burial at Aguateca (Beubien 2000; Inomata et al. 2001).

Another category of ritual artifacts found more abundantly in the archaeological record are the objects used in burials, caches, and termination rituals used to sanctify and de-sanctify places. Architectural elements serve as visible messages and markers of sacred places but non-visible practices such as caching or burying important personages in structures also demarcate sacred space (e.g. Adams 1999:52; Bachand and Bachand 2005:57; Bradley 1990:10-14; DeMarrais et al. 1996; McAnany and Lopez Varela 1999; Monaghan 1998; Pendergast 1990). When a sacred place ceased being used, it was often ritually terminated and burials and caches were removed, thus extinguishing the power of the place (e.g. Ardren 1999; Freidel 1998; Freidel and Schele 1989; Freidel, Suhler, Cobos 1998; McGee 1998). Although these practices did not produce visible results, the Maya knew that offerings had been cached or an ancestor buried, marking the place as sacrosanct. These practices were just as important as erecting buildings or stelae in consecrating space.

A final component used to shed light on ancient Maya ritual is the ethnohistorical documents produced during the Colonial Period. Caution must be exercised when using ethnohistorical documents because they do not necessarily describe the nature and social contexts of theatrical events in **pre-Colonial** Maya society. They can, however, serve as stepping-stones to explore aspects of ritual not found archaeologically. For example, Colonial documents can shed light on the sounds, level of community involvement, costumes, and movements (such as dancing or processions) involved in Maya ritual.

The arrival of the Spanish led to significant changes in Maya society and these must be taken into consideration when using ethnohistorical documents, in conjunction with archaeological evidence to reconstruct ritual. The introduction of Christianity into the New World was perhaps the biggest influence on traditional Maya ritual. While it is evident that the Maya integrated aspects of their original belief system into this new religion, the forced acceptance of Christianity forever changed their culture. The Spanish policy of *congregación*, where indigenous populations were forced to aggregate in towns, was another change that influenced the nature of Maya rituals during the Colonial period (Inomata 2006:188). A third factor that would have influenced rituals was the changing spatial context of the built environment, especially the construction of churches that faced open plazas (Inomata 2006:188). Despite the differences in the culture and the built environment between the pre-Colonial and Colonial Maya, ethnohistorical documents offer a unique window through which archaeologists can tentatively recreate the ambience of past rituals.

3.4 Conclusions

There are many difficulties involved in studying sociopolitical relations using only the archaeological record. These problems arise because the behaviors, attitudes, and actions of agents cannot be directly observed from material remains. In order to address these problems, the link between the context of social interactions and the production/reproduction of society must be established. As has been demonstrated, a combination of structuration theory and performance theory, where ritual is considered a type of social interaction, do just this. Together they demonstrate how cues embedded in the built environment by agents influence behavior and social reproduction (Baines 2006; Bourdieu 1977; Ferguson 1996:3; Giddens 1979, 1984, 1989; Giddens and Cassell 1993; Inomata and Coben 2006:17; Mendelssohn 1974; Trigger 1990).

For the ancient Maya, public performance and rituals were crucial elements of social production and the maintenance of power relations (Ardren and Hutson 2001; Bachand and Bachand 2005; Bell 1992, 1997; Inomata 2006; Inomata and Coben 2006; Lucero 2003, 2006; Ringle 1999; Turner 1967, 1969). Because of the influence of the built environment on social production, the material remains of rituals, including non-domestic architecture, iconography, and ritual paraphernalia can be used to study performance archaeologically (Inomata and Coben 2006:29; Triadan 2006). While the current chapter establishes the theoretical links between the built environment and behavior, it does not explain how to use the actual material remains in order to infer behavior or ideology. In order to do this, we must move beyond the high-range theory and incorporate two methodologies that explicitly state how certain elements of architecture were manipulated to influence social interaction. The following chapter explores how spatial syntax analysis and nonverbal communication can be used to address the specific ways in which Maya elite manipulated the built environment to influence social interaction.

TABLES FOR CHAPTER THREE

Table 3.1: Key concepts of structuration theory (after Giddens 1984: 25 and Fisher 2007:table 1.1)

Structure(s)	System(s)	Structuration
• Rules and resources, or sets of transformation relations, organized as properties of social systems • "Structural properties" are institutionalized features giving "solidity" across time and space (Giddens 1984: 24)	• Reproduced relations between actors or collectivities, organized as regular social practices • Patterning of social interaction and social relations across time and space (Giddens 1989: 254)	• Conditions governing the continuity or transmutation of structures and, therefore, the reproduction of social systems • Generation of systems of interaction through the "duality of structure" (Bryant and Jary 1991: 9)

Table 3.2: Types of resources in structuration theory (after Giddens 1984: 258)

Allocative Resources	**Authoritative Resources**
1. Material features of the environment (raw materials, material power sources) 2. Means of material production/reproduction (instruments of production/technology) 3. Produced goods (artifacts created by the interaction of 1 and 2)	1. Organization of social time-space (temporal-spatial constitution of paths and regions) 2. Production/reproduction of the body (organization and relation of human beings in mutual association) 3. Organization of life chances (constitution of chances of self-development and self-expression)

CHAPTER IV

AN INTEGRATIVE APPROACH TO STUDYING THE BUILT ENVIRONMENT: SPATIAL SYNTAX ANALYSIS AND NONVERBAL COMMUNICATION

4.1 Introduction: the Integrated Approach

Reconstructing the influence of the built environment on social interaction in ancient societies is difficult, even when material remains are well preserved. Many sites in the area, including Kiuic, lack the rich array of hieroglyphic texts found elsewhere in the Maya area that can be used to shed light on the role of the built environment in structuring sociopolitical relations. Furthermore, in the Puuc region, the preservation of structures is often less than ideal- roofs or walls have collapsed, vegetation destroys stairways and walls, and architectural decoration that would have encoded meaning is often missing. Because of these limitations, archaeologists must use the available resources, especially the remains of the built environment, in order to explore the link between space and social interaction. Access analysis and nonverbal communication are important tools that help scholars identify how agents manipulated the built environment to influence social interaction and convey meaning.

As discussed in Chapter III, structuration and performance theory establish link between the spatial contexts of interaction and social reproduction. The problem is that, these theories do not explicitly discuss the built environment or how architecture shapes and influences interactions (Fisher 2007; Preziosi 1979; Urry 1991). In response to this limitation of structuration theory, a number of methods for analyzing how the physical and spatial characteristics of architecture shape interactions have developed (e.g., urban geography and planning, architecture and environment-behavior studies, and environmental psychology) over the last half-century. The present research uses a combination of spatial syntax analysis and nonverbal communication to address the relationship between the built environment and social interaction. Spatial syntax analysis provides a means for analyzing the spatial patterns of control and access in structures while nonverbal communication explores how cues embedded in architecture manipulate and guide the interactions occurring within a space.

4.2 Space Syntax Analysis: Understanding encounters in the Built Environment

In many theories, society is an abstract and aspatial concept. While the form and function of architecture is well documented, little importance is placed on the role the built environment plays structuring and influencing social production and social interactions (Hillier and Hanson 1984:x). Just as society in general is thought of, the daily interactions that compose it are also seen as aspatial. In response to this disembodiment of society, spatial syntax analysis was developed as a method of representing, quantifying, and interpreting the spatial arrangement of both buildings and settlements. Of particular importance is the emphasis spatial syntax analysis places on how social relations are structured in spatial configurations (Hillier and Leaman 1973; Hiller et al. 1976; Hillier and Hanson 1984). Though essentially structuralist in orientation, Hillier and Hanson's approach parallels Giddens' theory of structuration in that each believes society structures, and is structured by, the built environment.

Structural anthropologists traditionally treat space and spatial patterns as the physical embodiment of mental processes, presupposing that these mental processes can be described prior to, and independently of, their spatial dimension (Hillier and Hanson 1984:5). To address the shortcomings of these traditional approaches, Hillier and Hanson (1984:5) propose three criteria they believe are necessary for a "theory of space"; the first of these is that spatial patterns must be described and analyzed in their own terms before determining their relationship to other variables. The second criteria is that the theory encompasses the wide and fundamental variations found in architectural morphology, such as closed and open patterns, dispersed to compressed, hierarchical to non-hierarchical, and etc. Finally, because social systems incorporate space differently with regard to the degree of order and meaning invested in architecture, space syntax is able to accommodate this range of variations.

Though not unique to space syntax, the underlying theoretical premise of the approach is that the "social logic" of space is defined by two relationships: those between the occupants and, those between the occupants and other people (Ferguson 1996:11-12). The binary opposition of 'us versus them' is replicated in spatial configuration and can be explored through the physical remains of structures using the analytical methods developed by Hillier and Hanson (1984).

While all material objects can be both functional and meaningful, the importance of a building goes beyond the physical structure itself to how the structure controls and orders space. The built environment divides contiguous space into interconnected units, creating relationships of accessibility or visibility within these units. These spatial relationships influence the nature and types of social encounters that could occur within them constructing a relationship between architectural function and social meaning. As a result, certain spatial configurations and types of spaces are more likely to promote certain categories of social encounters (Bafna 2003:18; Ferguson 1996:11-12; Fisher 2007:70). Not only do structures influence the social interaction occurring within them, they participate in the wider sociospatial system in two additional ways: 1) they relate buildings to each other and, 2) they help define and control social categories by spatially separating them (Hillier and Hanson 1984:20).

Although access analysis is not commonly used in archaeology at present, it is becoming more popular and has been applied to both chronologically and geographically diverse civilizations (e.g. Zuni (Ferguson 1996), Andes (Moore 1996), Cyprus (Fisher 2007), and Pompeii (Grahame 2000)). These studies are important because they demonstrate the validity of access analysis in analyzing the temporal changes in access to and control of the built environment in a wide variety of cultures. After outlining the fundamental principles of spatial syntax analysis and discussing its limitations, the specific manner in which it will be employed at Kiuic is discussed.

How Access Analysis Works Although access analysis has been used in various forms for many years, the series of analytical techniques that explore the formal and relational properties of space developed by Hillier and Hanson (1984) are used in the present research (see also Hanson 1998; Hillier 1996). There are two levels of analysis in space syntax: alpha-analysis, which describes the spatial patterning of settlements, and gamma-analysis, which applies to individual buildings. The preservation and site plan of many Maya sites, including those in the Puuc, make the application of alpha-level analysis difficult. The present research employs gamma-level analysis to individual residential compounds, which are considered to function as a single 'building'. While Hillier and Hanson present several specific techniques that are applicable to both levels of analysis, convex spatial analysis, more commonly known as access analysis, is the primary analytical tool used here to explore the non-domestic architecture of Kiuic.

Before describing the formulae used in access analysis, the definition of a building must first be established. Hillier and Hanson (1984:19) describe a simple building as consisting of four main components: a boundary, the space contained within that boundary, an entrance, and the space outside the boundary (carrier). The space within the boundary is divided into cells, which can be enclosed rooms or open spaces. The occupants design the building and its interior spaces in order to manage relationships between occupants and between occupants and visitors. Boundaries and entrances allow occupants to monitor and control the permeability of the structure while the organization of interior space reflects sociopolitical notions of power (Hillier and Hanson 1984:1-2; Hillier 1985). A set of formulae (see Section 4.3 below) allows archaeologists to quantify the relationships between spaces within a building at both local (adjacent rooms) and global (spaces in relation to the building as a whole) scales.

While the same analytical tools can be used at both alpha- and gamma-level analyses, buildings do not simply replicate settlement patterns on a smaller scale but, embody space and social information in a different manner (Ferguson 1996:20; Hillier and Hanson 1984:143- 175). Buildings are analyzed in terms of their permeability, or how the arrangement of cells and entrances control access and movement (Hillier and Hanson 1984:14). The first step in employing access analysis is representing a structure in a graph-form, based on the idea that sociologically relevant aspects of built space, such as how it orders social categories or controls boundaries, can be isolated (Bafna 2003:19; Ferguson 1996:19-21; Hillier and Hanson 1984:143-155; Hanson 1998:22-38). Access analysis takes as its basic unit of analysis a *cell*, or *convex space*, which is defined as a space within which all parts are visible to all other parts. Each cell, or sub-division of a cell, is represented as a circle that is linked to other nodes by lines representing the relations of permeability (i.e. access)(Figure 4.1). A circle with a cross inside represents the carrier, or the space outside of the building; regardless of the number of entrances to a building, the carrier is always treated as a single space. In order to construct patterns of movement through and access to spaces within the building, the symmetry/asymmetry and distributed/nondistributedness of the structure can be determined by examining the access graphs. The relationship between two rooms is symmetric if the spaces have equivalent access and asymmetric if the access between the spaces is controlled by an intervening space (Hillier and Hanson 1984:148, fig. 88-92). Movement is seen in the distributed or nondistributed nature of a building. When there is more than one nonintersecting route between spaces, the relationship is distributed and results in a ring-like or circuitous pattern of access (Hillier and Hanson 1984:fig. 88, 91). If there is only one nonintersecting route, the relationship between cells is nondistributed and produces a tree-like graph (Hillier and Hanson 1984:fig. 90, 92). The access patterns of any building can be described in terms of both variables.

Spatial patterns become most evident when the access graph is justified, which is accomplished by placing the carrier space at the bottom and lining up all spaces of the same depth in horizontal rows above the carrier (see examples in see Figure 4.a). While the carrier is most often used as the starting point, access graphs can be justified from any point in the system. The depth of each cell is the minimum number of spaces (rooms) that must be traversed in order to arrive in that room, from the starting point. Justified access graphs illustrate how the spaces within a structure are related to each other, displaying the syntactic properties of the building (asymmetry, symmetry, distributedness, and nonditributedness) (Hillier and Hanson 1984:149). Access graphs represent the syntactic properties of a building visually and permit in-depth quantification of these properties, unlike other analytical methods (e.g. Blanton 1994; Dovey 1999; Faulkner 1963).

There are several different indices that can be used in access analysis but the three most relevant to present research are the *control value* (CV), the *real relative asymmetry* (RRA), and the step depth (Hillier and Hanson 1984:108-115, 152-154). The control value, which measures the degree of control a space exercises over its immediate neighbors, quantifies local relations. The second analytical tool used is the *real relative asymmetry* (RRA) of a space, which assesses the degree to which a particular space is separated from, or integrated into, the pattern of the entire complex. Related to the RRA is the relative asymmetry (RA), which reflects how accessible that space is, or the average number of boundaries from the carrier that must crossed to reach the space (Grahame 2000:34). In other words, the relative asymmetry determines how deep a space is from a particular point (usually the carrier) to how deep or shallow that space could be; the least depth existing when all spaces are directly connected to the original space (Hillier and Hanson 1984:108). While the RA is a true measure of the symmetry-asymmetry of a space within a building, in order to compare RA values from buildings of different sizes (with significantly different numbers of spaces), the RA values must be converted to real relative asymmetry values[1]. While the CV and RRA provide insight to an inhabitant's perspective of the space, the final measure, the step depth, indicates how accessible the space was to an outsider. Together, the control value, real relative asymmetry and step depth allow spaces to be analyzed in terms of their interaction potential (see Section 4.5), allowing archaeologists to determine the nature of social interactions that could have occurred within rooms and structures. While access analysis is a valuable tool with which to explore the built environment, it is not without its limitations.

[1] The RRA values are given here so that the results will be useful in future research and can be compared directly with the RRA values of other structures.

Limitations and Criticisms of Space Syntax As with all approaches to analyzing the built environment, there are criticisms of space syntax, especially with regard to its application to archaeological datasets. Critiques of the approach are aimed at both its methodology and the underlying theory. Major critiques include: 1) while it is a powerful means of identifying spatial similarities and differences among structures, it does not in itself explain those structures; 2) it ignores decorative and stylistic elements of architecture, as well as the various artifacts and features that are vital components of the overall context in which interaction occurs; and 3) there are several issues unique to archaeological datasets and methodological issues that must be addressed (Boast 1987:452-4; Ferguson 1996:22-23; Fisher 2007:81; Taylor 2002). Despite these problems, which highlight the difficulty in moving from formal spatial analysis to the social processes behind the formation of spaces, the approach does offer a means through which archaeologists can understand the patterns and locations of interactions within settlements and buildings. When used in conjunction with models that take into account the symbolic and/or functional aspects of space, access analysis contributes to a better understanding of how interactions occur within a particular setting.

Theoretical critiques of space syntax are primarily aimed at its explanatory power of the social processes behind the production of spatial configurations. One such problem is that, at the gamma-level of analysis, space syntax does not adequately address relationships other than that between visitors and inhabitants (Brown 1990:100-101; Fairclough 1992:350; Ledewitz 1991:265). While access analysis (as formulated by Hillier and Hanson (1984)) does focus on the specific relationship between visitors and inhabitants, there is nothing inherent in the theory that constrains analysis to this particular relationship (Ferguson 1996:22-23;

Fisher 2007:78). So while space syntax analysis can be used to explore relationships between inhabitants, other sources of data would be necessary to fully understand these interactions.

A second theoretical critique acknowledges that, while access analysis can be valuable in comparing and contrasting structures (and spaces), it does not address the meaning of, use of, or symbolic components of the built environment (Hodder 1991:39-41; Lawrence 1986:331, 1987:53, 1996; Parker et al. 1994:30). Access analysis focuses on the topological aspects of the built environment and ignores how social identity and place identity shape, and are shaped by, physical contexts. Batty (1989) and Hebbert (1990) point out that Hillier and Hanson's attempt to move from formal spatial analysis to the social processes underlying these syntactical relationships is weak and inconclusive.

As demonstrated by structuration and performance theory, the built environment is designed to encode nonverbal cues that influence the social interactions occurring within it (see Chapter 3). Access analysis strips rooms of their decorative and stylistic features as well as any artifacts or features that contribute to manufacturing the environment for interaction. Instead, it gives primacy to the topology (i.e., relationships of adjacency and access among rooms in a building) of structures without any consideration for the geometry (i.e., shape, size, and spatial configuration of particular rooms) (Boast and Steadman 1987:360; Ratti 2003, 2004).

Methodological critiques of the approach claim (rightly so) that access analysis ignores important elements of the built environment that influence human behavior and interaction (e.g. Ratti 2003, 2004). In ignoring geometric properties of spaces, the approach loses information that is crucial to the decision-making process concerning movement patterns both within and between spaces (Ratti 2003). Not only are distances and areal dimensions lost, the height of elements within the built environment is not considered a factor in pedestrian movement or social interaction. Although access analysis does not directly address geometric factors, the formula presented in Section 3.3 provide valuable numerical data that can be used in conjunction with other approaches to studying the built environment such as nonverbal communication, to create an explanatory model that explores the physical, function and symbolic components of architecture.

While the previous critiques are directed at spatial syntax analysis' treatment of the built environment, a second group of critics claim that access analysis is overly mechanistic (e.g. Knox 1984; Leach 1978; Taylor 2002). They claim the approach is a mathematical model that does not take into account the complexities of 'real' situations and that spatial syntax and real-life sociology are more distinct than Hillier and Hanson indicate (Leach 1978:400). Leach (1978) believes that space syntax cannot work fully unless something is already known of the social structure; he does not take into consideration archaeological applications of access analysis, where it can be used to develop an explicitly material approach to studying social organization (Ferguson 1996; Grahame 2000; Taylor 2002:441).

Access Analysis and Archaeological Datasets While the preceding critiques apply to the use of access analysis in general, there are special concerns when applying the technique to archaeological datasets. All archaeological sites have experienced abandonment and/or post-abandonment to some degree, which alters the physical remains. One problem with spatial syntax analysis (as formulated by Hillier and Hanson) is that the approach focuses on the growth of spatial patterns while neglecting the influence that decline and decay have on spatial configurations (Batty 1989:162; Cutting 2003). The significance of these processes cannot be overlooked and is an important issue to be addressed as access analysis becomes a more widely-used tool in archaeological analysis.

Space syntax analysis is dependent upon the correct identification of all boundaries and access points within the built environment and, because of this, a primary concern in using the technique in archaeological contexts is that these identifications are often difficult (e.g. Bustard 1997; Shapiro 1997; Düring 2001). During the abandonment of a site, cultural processes can result in new and different usage patterns of spaces. For example, several doorways of a building might be sealed or trash is allowed to accumulate in areas that had been kept meticulously clean. Post-abandonment processes also radically alter the built environment- vegetation causes vaults to collapse or tears up a stairway or, people remove stones from a building to be reutilized elsewhere. When applying access analysis to archaeological remains, these cultural and natural processes make it difficult to correctly identify boundaries and access points, creating problems of accuracy (Cutting 2003).

Another concern is the subjectivity involved when a research demarcates convex spaces (Hillier and Penn 2004; Ratti 2003, 2004; Turner et al. 2005). Two problems arise: 1) the researcher is dividing space according to his/her own cultural framework and, 2) no two researchers are likely to demarcate a space in the same manner. Although how a researcher creates the convex and axial maps used can produce statistically significant different results, inter-analyst variability is frequently encountered in archaeological methodologies (Ferguson 1993:62-63)[2]. A final methodological consideration is that spatial syntax analysis does not take into account topographic differences within a space (Ferguson 1996:23; Ratti 2003, 2004; Taylor 2002).

There are several steps that can be taken in order to minimize the discrepancies resulting from missing boundaries and access points, beginning with a careful reconstruction of missing architectural boundaries and/or doorways based on precedents from similar

[2] The present research addresses this critique by stating the confidence levels of boundaries and access points not preserved and using one set of maps for the generation of data.

architectural structures (e.g. Fisher 2007). Secondly, a clear statement detailing the level of confidence of reconstructed features (see below) can be used to address concerns about missing features. Despite its limitations, in situations where architectural information is missing, access analysis can be used because the organization of the spaces is independent of their size or shape (Cutting 2003; Grahame 2000:33). This dichotomy between the spatial organization and nonverbal cues of spaces is especially important in archaeological contexts where the latter are scant. Both of these highlight the need for more rigorous definitions of the criteria employed in determining spatial boundaries and what constitutes a convex space.

Cutting(2003) advocates that spatial syntax analysis should be used as a "tool to think with" rather than quantitative research method in archaeological contexts with missing data. I agree and believe that while access analysis does not provide a complete solution to analyzing the built environment, it can reveal "subtle differences among socially relevant spatial attributes" that might otherwise be overlooked (Fisher 2007:78). The application of space syntax can generate new ideas concerning room function or social organization without the bias of textual or ethnographic information.

4.3 Procedures and Formula for Access Analysis

One of the first steps in access analysis is the graphic representation of space in such a manner that syntactic relations are identifiable and countable (Hillier and Hanson 1984:89-108). Included in this illustration are both the area outside the building (known as the carrier) and the spaces within the structure. As mentioned previously, missing walls and/or doorways are common among the architectural remains in the Maya area. Although the location of these missing elements is clear in some cases, it is often necessary to estimate their approximate location in the built environment. In order to deal with situations where an access point or boundary[3] is conjectural, I have devised a system that measures my degree of confidence in the position of the missing element. The lines of evidence that contribute to the measure of confidence include[4]:

- the excavator infers the boundary or access point is present in the accompanying text;
- the boundary is confirmed in accompanying photos, figures, or by direct observation during a site visit;
- the access point seems likely based on precedents from elsewhere in the building or other buildings within the site or cultural region; and
- a process of elimination indicates no other likely alternative.

Conjectured boundaries and access points are labeled as such on figures and plans; those discussed in the text are assigned a number between 1 and 3 that indicate the level of confidence in the location of the element based on the factors previously outlined:

- 1= low, none or one of the above apply
- 2= medium, two of the above apply; or
- 3= high, three or more of the above apply.

Having established the parameters for identifying the boundaries related to a building, the process for identifying and delineating spaces within the building follows.

Although bounded spaces are the basic unit used in access analysis (Hillier and Hanson 1984), this definition does not always produce an accurate representation (Grahame 2000:30-32). For example, the open area of Plaza Icim Sur has a "low definition," and does not conform to the definition of a bounded space (Figures 4.2, 4.3). While the entire plaza is considered a single space, several of the boundaries are unclear and the way in which areas

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[3] Though the missing boundary is often a wall, it can also be a boundary of some other sort (such as a raised platform) that served to differentiate one space from another. An example of this would be a raised platform, where the edge of the platform served as a boundary.
[4] Adapted from Fisher (2007:96-97).

of the plaza were differentiated is ambiguous. In order do capture the reality of movement through low-definition spaces, the rule of convexity used in analyzing space at the settlement level is used to clearly define the way these spaces are conceptualized (Grahame 2000; Hillier and Hanson 1984:92, 97-99) [5]. The rule of convexity divides spaces into the fewest and most convex, or fattest, spaces possible; in other words, the spaces should be as close to square or rectangular in shape as possible. When divided in this manner, all points within the space are visible from one another. Another test for convexity is when a straight line can be drawn between any two points within the convex space without passing through a boundary (Figure 4.3, 4.4). By dividing the low definition spaces in this manner, the importance of vision in influencing or structuring interaction is highlighted.

Applying the rule of convexity to spaces within a building creates a less-ambiguous map than using the bounded spaces definition, but it does have several drawbacks. The first problem is that it can result in an overly specific division of space, creating sub-divisions of a space that do not really exist (such as in an L-shaped room). To avoid creating non-existent divisions, spaces can be checked to see if they are "real" by whether or not they are totally or partially defined by a boundary (interior or exterior)(Grahame 2000). Spaces are generally considered 'real' when they are defined by boundaries rather than the interiors of boundaries (Figure 4.4, 4.5). So that a space defined by the walls of a hall is more 'real' than one that has no physical boundaries. For rooms that are highly ambiguous, the concept of co-presence can also be used to determine the number of spaces. In these instances, if a person could be in a convex space and aware of the presence of others in an adjoining convex space, then the spaces should be considered one space; if the person would be unaware of

[5] Hillier and Hanson (1984) propose distinct methods of analyzing open space at both the settlement (alpha-) and building (gamma-) levels. Grahame (2000) disagrees with this distinction and does not distinguish between settlement and building space in his work.

the presence of another, then the spaces are distinct (Fisher 2007:98). While still imperfect, using the types of boundaries and degree of co-presence to define within an ambiguous space creates more realistic divisions.

After defining the convex spaces of a building, the access graph is created using any space as the starting point for the graph, though it is most often the outside or "carrier". As noted earlier, a circle represents each space and straight lines connecting the circles represent direct access between spaces (Figure 4.1). Each space is assigned a room number and for irregular spaces that are subdivided into smaller convex spaces, an alphabetical designation is added to the original room number (e.g. Room 3a, 3b, and 3c). In order to differentiate spaces easily, a dashed background indicates a plaza or open areas while the interiors of rooms and structures have a blank background. Solid lines represent standing boundaries while a dashed line signifies a conjectured boundary; the carrier is marked by a circle with a cross (Figures 4.1, 4.4). To create the justified access graph, the starting point is placed at the bottom and the number of steps necessary to reach each space is calculated, creating the depth value of that space[6]. Spaces with the same depth value are lined up in horizontal rows above the starting point.

Control Value Once the access graph has been completed, the formulas created by Hillier and Hanson can be applied to analyze the syntactic properties of each space. As previously mentioned, the two measurements used in the present research are the control value and the real relative asymmetry. The control value (CV) of a space measures the degree of control one spaces exerts over its immediate neighbors (Hillier and Hanson 1984:109-115; Turner 2004:Appendix A). Each space in the structure is originally assigned a value of 1, which it must share among its immediate neighbors (n), giving each neighboring space 1/n. The

[6] It is not necessary to manually create a justified access graph because the process is completely automated in the Depthmap™ software.

values for each receiving space are summed to give the control value of that space. Because the CV is a local measure, it only accounts for the spatial relationships between adjoining spaces; spaces with a high degree of control over their neighbors will have a high CV (over 1), while those with a CV lower than 1 control access to fewer spaces.

It is important to note that the control value of a space does not necessarily reflect the social importance of the space- for example, an entry way might have a low CV value because it only controls access to one or two rooms but it is also the only means through which one can access the interior spaces of the building. In this example, although the CV of the space is low, the social importance of the space is high.

Relative Asymmetry and Mean Depth The second syntactical measure used is the real relative asymmetry (RRA), which measures the degree to which a space is integrated into the overall spatial configuration of the building (Hillier and Hanson 1984:108-109, 152-154; Turner 2004:Appendix A). The real relative asymmetry measures the same thing as the relative asymmetry but allows for comparison between structures with different numbers of nodes. The relative asymmetry values must be calculated before the real relative asymmetry can determined. Because the RA is a measure of how deep the system is from a particular space compared to how deep or shallow it theoretically could be, the first step in calculating the RA is determining the *mean depth* (MD). To obtain the MD, the number of spaces at each depth from the space in question is totaled[7]; for example, the number of spaces immediately adjacent to the origin point, the number of spaces that require crossing two boundaries, etc. Then, the number of spaces at each depth is multiplied by that depth (d) and these totals are summed and then divided by the total number of spaces in the structure minus one (the original space) to give the mean depth. The formula for this equation is below:

[7] The carrier is included as a space in the calculations described above.

$$\mathbf{MD = \sum d_K/(k-1)} \text{ where } \sum d_K \text{ is the sum of the depth values } d \text{ for each of the } k \text{ spaces}$$

The mean depth can be calculated easily by entering the number of spaces at each depth level (from the space in question) into a computer-based spreadsheet program.

After the mean values have been calculated, they are used to find the relative asymmetry of the origin space. The formula for finding the RA is:

$$\mathbf{RA = 2\ (MD-1)/\ (k-2)} \text{ where } k \text{ is the number of spaces in the structure}$$

Relative asymmetry values range from 0 to 1, with a lower value indicating that the space is more integrated or easily accessible in terms of the syntactical relations of the building. Spaces with higher RA values are more segregated and less accessible.

Real Relative Asymmetry The RA values of structure with similar numbers of interior spaces can be compared but when there is a significant difference between the number of spaces in a building, the *real relative asymmetry* (RRA) measure must be used in order to account for the discrepancy (Hillier and Hanson 1984:109-113). The original RA value is compared to the RA value for the root space of a diamond-shaped configuration with the same number of spaces as the original structure, or D-value[8]. The original RA is divided by the corresponding D-value (for table of D-values see Hillier and Hanson 1984:112):

$$\mathbf{RRA = RA/D_K} \text{ where } D_K \text{ is the D-value for } k \text{ spaces}$$

As noted, the resulting RRA value allows the global relations of structures of varying sizes to be compared. As with the mean depth and relative asymmetry, the real relative asymmetry is easily calculated in a spreadsheet. The RA and RRA give insight into which spaces might have served as arenas for visitor-inhabitant interaction on the premise that shallower or better-integrated spaces would have been the focus of this type of social interaction, while deeper less-integrated spaces were likely used exclusively by inhabitants.

[8] The RA of a diamond configuration is intermediate between a path and bush-like arrangement of spaces.

Step Depth In order to calculate the step depth of a space, the carrier is used as the reference point and the number of spaces or levels that must be crossed in order to reach the space in question is counted.

When used together, the formula outlined above provide valuable measurements of the syntactical properties of a structure. The control value and real relative asymmetry quantify the local and global patterns of accessibility and integration of spaces within a building, which serve as a basis for understanding movement through, and interaction within, spaces. However, despite the usefulness of these measurements, they do not explain the meaning or function of spaces nor do they take into account elements of the built environment that play an important role in shaping social interaction, such as architectural decoration. It is therefore necessary to supplement access analysis with another approach that incorporates the elaborative and decorative elements of architecture that function as cues for social interaction. In the following section, I will demonstrate how elements of nonverbal communication can be used in order to explore the nonverbal cues encoded within the built environment, creating a holistic picture of the role of the built environment in shaping social interaction.

4.4 Nonverbal Communication Approach

Whereas space syntax analysis can be used to discover patterns of possible interaction, nonverbal communication enables archaeologists to discuss the mechanics of how meaning and social information are encoded and communicated through architecture (Hodder 1991; Knapp and Hall 2002; Minai 1984; Preziosi 1979; Rapoport 1980, 1988, 1990a). Simply stated, *nonverbal communication* is communication without the use of words and is produced both by human behavior (see Hall (1966) for proxemics, Birdwhistell (1970) for kinesics) and also by "material behavior", including the spatial arrangement of architecture (e.g. Fletcher 1989:33; Knapp and Hall 2002:5). While studies using nonverbal communication traditionally have focused on the actors themselves, recent works suggest that actors manipulate their environment to further their own communicative goals. Conversely, environments can affect actors' behavior (Knapp and Hall 2002:7).

The nonverbal communication approach emerged in the 1950s and focuses on the ways in which people "telegraphed" moods and how this affected interpersonal relationships (Knapp and Hall 2002:18-22). More recently, the approach been specifically applied to the built environment by Amos Rapoport (1980, 1988, 1990a, 1990b, etc.), whose material represents the most comprehensive body of work using this application. While there are other approaches to studying the built environment, including semiotics and the symbolic approach, both have their limitations. The semiotic approach, which is based on the work of Saussure, uses linguistics as an analogy for understanding the structures behind the production and interpretation of signs (e.g. Brusasco 2007; Eco 1976, 1980; Preucel 2002, 2006; Preziosi 1979a, 1979b, 1983). Syntactics, semantics, and pragmatics are the three main components of this approach. Syntactics is the relationship among signs and semantics are the relationship of the signs to the things they signify. The final category is pragmatics, which is the relation of the sign to the behavioral responses of people (Rapoport 1990a). One criticism of the approach is that it neglects the pragmatic component while emphasizing the relationships among signs themselves (syntactics)(Rapoport 1988, 1990a). The approach has also been criticized for its rigid theoretical framework and highly abstract, esoteric vocabulary (Rapoport 1990a:37). Part of this stems from the fact that semioticians are often members of the culture they are studying, which results in little systematic elaboration of the cognitive "rules" that underlie the architectural code (Lawrence and Low 1990:471).

In the symbolic approach, cultural schemata are physically embodied by the built environment (see Bourdieu (1973) and Hodder (1994) for archaeological applications). This approach attracts some of the same criticisms as semiotics in that it is overly abstract and difficult to understand (Rapoport 1988:324). Studies utilizing this method tend to focus on special buildings, such as religious structures, where the symbolism is most evident and excludes utilitarian and vernacular structures. The symbolic approach is best applied to traditional societies where the built environment tends to convey a strong ideology and symbols are fixed and shared (Rapoport 1990a:43-45). Demarest (personal communication) argues that the dichotomy between ritual and residential architecture does not exist among many traditional societies, for example among the modern Maya. Instead, a single structure is utilized for both purposes; while this does not necessarily contradict Rapoport's claim concerning the ideological and symbolic nature of the architecture, it adds a new dimension to consider. Rather than constituting an approach in itself, the "symbolic" might be better understood as a level of meaning of the built environment (Rapoport 1988:324).

Rapoport (1988:325) argues that the built environment contains multiple levels of meaning, beginning with "high-level" (symbolic) meanings that express ideologies, world views, ideas of the sacred, etc. A "middle-level" of meaning communicates things such as status, identity, wealth or behavior and, finally, a "low-level" of everyday or instrumental meanings that allows users to behave in an appropriate manner by creating mnemonic cues for users to follow. The three levels of meaning operate on a continuum and focus on who uses the built environment and for what purposes, while emphasizing the active role of users and participants. Together access analysis and the nonverbal communication approach serve as a method for examining these issues.

Making and Finding Meaning in the Built Environment It is safe to say, for both past and present societies, that the majority of meaning is communicated verbally. Unfortunately, that component of behavior is elusive (if not completely absent) in the material record; therefore, archaeologists must look for other avenues through which to infer behavior and meaning. The nonverbal communication approach (NCA) is one methodology available to archaeologists that bridges the gap between material remains and behaviors. It is based on the premise that cultural templates shape the built environment, which in turn reflects the needs and priorities of that culture (Minai 1984; Preziosi 1979; Rapoport 1980:7). The result of this relationship is that cues, designed to guide behavior and social interaction according to cultural norms, are encoded in the built environment. Members of a group share (to some degree) a conceptual model of the ideal environment and their cultural ideology, which allows users to recognize meaning and decode nonverbal cues (Minai 1984; Preziosi 1979; Rapoport 1980, 1988, 1990a:55-86). While many archaeologists focus exclusively on the function of architecture, the distinction between function and meaning is often blurry. Rapoport (1988:318) argues that, in fact, the most important function of a structure **is** its meaning. As established in structuration and performance theory, the built environment is inextricably linked to the social occasions that makeup daily life. Because of this association, the built environment incorporates a multitude of signs from various media sources, all of which have paradigmatic sociocultural associations (Preziosi 1979:3). Meaning cannot be approached as a thing in itself but rather that it "comprises specified sets of relationships among formations both within a system and external to that system" (Kant 2003; Preziosi 1979:3).

Although meaning is communicated through architectural cues that are chosen and incorporated into the built environment, this does not imply that every element of an architectural code conveys meaning. The culture-specific code indicates which elements convey important information or when differences in the elements communicate information (Preziosi 1979:2). In order to successfully "read" the cues, the user must know and understand the social or cultural code that created them (Preziosi 1979; Rapoport 1990a:59). Architectural cues provide the physical context of interaction and information such as "*who does what, where, when, how, and including or excluding whom*" (Rapoport 1990a:59; italics in original) (Tables 4.1). For example, cues incorporated into the built environment indicate whether the setting is public or private, high- or low-status, sacred or profane, etc.

While meaning might be consistent within a culture, cues can only suggest the appropriate behavior and do not guarantee a person will act according to 'socially acceptable guidelines. Rapoport (1990a:59-61) suggests that people act toward an object (or other people) based on the meanings that this object has for them. These meanings are not intrinsic properties of the object but arise from the processes of social interaction (after Blumer's (1969) symbolic interactionism approach). During social interactions, an actor draws upon their knowledge of fixed cultural norms to evaluate meaning; it is not re-constructed with each interaction. Actors learn values and beliefs through enculturation and they are reinforced by a set of cues (architectural and behavioral) that promote systematic and consistent choices of action within a given environment (Rapoport 1980:9)[9]. The built environment functions as a *mnemonic* device because of its ability to remind people of culturally expected emotions, behaviors, or actions. Because of this role, it is an important artifact archaeologists can use to reconstruct the role of architecture in social production and

[9] While members of a society have the sociocultural knowledge to interpret environmental cues, archaeologists must attempt to recreate this meaning through material remains.

reproduction (Bourdieu 1977; Giddens 1984; Rapoport 1990a:80). While change is possible because actors are able to interpret these cues, they suggest a restricted set of acceptable responses and lessen the possibility of "idiosyncratic interpretations" (Rapoport 1990a:81).

In reading the messages encoded in the built environment, both the recognition of contextual relationships between objects (sets of cues) and redundant messages are crucial (Sanders 1984:275). Although enculturation ensures that a regular, organized set of meaning exists among nonverbal elements, they lack a clearly articulated set of syntactic rules like those found in verbal communication. The repeated use of certain elements is one method of lessening the potential for misunderstanding or misinterpreting cues (Rapoport 1988:321). It is this ambiguity that allows for change because understanding these meanings requires a good deal of inference by the actor (Rapoport 1988:321). Flexibility and social change are also possible because while actors are encultured to understand the basic guidelines for behavior these cues provide, they do not necessarily **have** to obey the cues.

As has been demonstrated, one can read the build environment as a system for encoding information that users must then decode and interpret within their own cultural framework (or habitus). The application of the approach involves two basic steps: first the cues present in the built environment must be identified. After this initial step, one must explore how they are interpreted by users- e.g. the particular meanings these cues have for human behavior (Table 4.1) (Rapoport 1990a:87).

How Nonverbal Communication Works The methodology of the nonverbal communication approach was developed by Amos Rapoport (1990a) and is based on earlier work in nonverbal communication by Ekman (1977). It begins with elicitors, which are the schemata, ideals, status, or power that are to be encoded in built form (Table 4.1). Agents then chose a specific combination of physical elements (such as color, height, building material, and location) and social elements (such as people or their activities) to represent the elicitor (Rapoport 1990a:106-107). The repertoire of elements is filtered through culturally specific display rules which provide the parameters for "what is allowed when and where" (Rapoport 1990a:102). While agents within a culture learn the meaning of the display rules, archaeologists must attempt to discover them through the material record. Although the display rules that configure patterns in physical and social elements are culturally variable, there are some cross-cultural similarities in the use of elements. For example, the height of a structure is often used to both emphasize and represent its status and importance (Rapoport 1990a:106-121). Once the elicitors and repertoire of elements have been defined, a set of *cues* is established that makes these domains visible and meaningful (Rapoport 1990a:119).

The end result of the process is a certain configuration of the built environment, which has been specifically designed to contain cues that inform users of appropriate behavior and social interaction. The cues are primarily conveyed through and comprehended by visual, auditory, tactile, and olfactory channels. Upon "receiving" these nonverbal messages, users must decode them using their pre-existing cultural knowledge and act accordingly (Rapoport 1988:320). The degree to which meanings are understood, or the message is decoded, depends upon several factors: the enculturation of the user, their ability to comprehend the contextual cues of the built environment, and the clarity of the encoded message itself. If users both understand and then obey the architectural cues, then they will act appropriately for the given context (Table 4.1).

While meaning is encoded using a variety of combinations of elements and display rules, there are some general principles that appear to be relatively universal. Cross-cultural studies of architectural meaning conducted by Rapoport (1990a:115-118) found that there is a strong tendency to stress "noticeable differences" between elements such as height, materials, layout, etc. Each of combination of traits represents an elicitor and it is through **differences** between elements that meanings are encoded. For example, a temple and a house might have the same layout but the temple would be marked as different or special by its unusual height or the use of special building materials. Making a certain element unique is an important way of contrasting it with others; uniqueness makes the contrasts more noticeable and meaning clearer. Although the process of distinguishing elements is universal, the means through which it is expressed (the actual elements featured) are variable.

Another technique used to clarify the message being conveyed is redundancy, or when an entire suite of elements is used repeatedly and consistently to convey an elicitor (status, wealth, private, sacredness). The use of redundancy is a key component of the nonverbal communication approach because it suggests that these suites of elements are purposefully integrated into the built environment to convey specific messages (Rapoport 1990a:117). An example of this would be a culture's use of height, area/size, decoration, and materials to convey power and prestige. This particular suite of elements would be consistently associated with powerful structures, such as palaces, to reinforce the meaning of the combination of elements within the culture. While some examples such as the Acropolis in Athens or the Pyramid of the Moon at Teotihuacan immediately impart a sense of power and demand respect, the **specific** reading of the meanings encoded requires knowledge of that particular culture (Rapoport 1990a:117). Regardless of the society within which a user operates, Rapoport (1990a:87-101) proposes that there are three categories of elements used by actors to encode and communicate messages (originally developed by Hall 1966:95-122): *fixed-feature, semifixed-feature, and nonfixed-feature* elements.

<u>*Fixed -feature elements*</u> This category of elements refers to basic architectural elements that are fixed, including walls, ceilings, and floors (Rapoport 1990a:88). Fixed-feature elements are

integral parts of a structure and change rarely and slowly. In addition to the elements themselves, their spatial arrangement, or the ways in which they are organized (e.g. size, location, sequence), also communicates meaning. The ordering principles of fixed-feature elements have value but this value is not necessarily universal (Rapoport 1990a:89). For example, to an American, the non-grid based plan of many Moslem cities might seem quite disordered while to a Moslem it would appear logical and orderly (Rapoport 1977).

Semifixed-feature elements Unlike fixed-feature elements, semifixed-feature elements are more apt to change quickly and easily. Examples of this category include the arrangement and type of furniture and other portable artifacts. In many cases, these elements define and convey the meaning/function of a space more than their fixed counterparts (Preziosi 1979:9-11; Rapoport 1988:323, 1990a:89). For example, despite the fact that among the ancient Inca temples and dwellings were the same height and size, Pizarro was able to recognize the temples because they were covered in jewels and gold (Rapoport 1990a:90). If the decorations were removed, the temples would in effect, appear exactly the same as the dwellings.

Nonfixed-feature elements The last category of elements represents the physical and verbal expressions of the human occupants. It includes the shifting spatial relations of actors (proxemics), their body positions and postures (kinesics), and other types of nonverbal behaviors such as eye contact, clothing and accessories (Rapoport 1990a:96). Among nonfixed-feature elements, the majority of the cues come from facial and body expressions and clothing or accessories. Because these elements are rarely found in the archaeological record, they are not included in the elements used in the present research. However, some elements, such as dance postures, can be observed in related iconography and give a hint to the behavioral cues being communicated (Rapoport 1990a:97).

Actors combine nonfixed-feature, semifixed-feature and fixed-feature elements to convey a variety of messages, including those of power and authority. Maya elite chose a suite of elements to communicate their power and status that were incorporated in non-domestic architecture. The messages were encoded using a combination of fixed-feature elements such as location within a site, area, proximity to ground level, and the presence/absence and type of superstructure (Bachand and Bachand 2005; Rapoport 1990a:116). As previously mentioned, although semifixed-feature elements convey a significant amount of meaning, they are rarely found *in-situ* in archaeological contexts. Therefore when the nonverbal communication approach is applied to archaeological sites, they are often primarily analyzed using the fixed-feature elements preserved in the built environment. While not an ideal situation, it is possible to use the presence and/or absence of fixed-feature and semifixed-feature elements to make inferences about behavior (nonfixed elements)(Rapoport 1990a:91).

When studying meaning encoded in the built environment using fixed-feature elements, the use of redundancy allows for a better identification of the patterns of elements used and the behavior they were designed to elicit. Although possible, inferring behavior from an archaeological dataset is difficult (see Douglas 1972; Miner 1956) because of the lack of cultural knowledge and the fact that many of the elements (fixed-, semifixed- and nonfixed-) are missing or altered (Rapoport 1990a:91-96). Because of such difficulties, the nonverbal communication approach has rarely been employed to discuss meaning within the built environment by archaeologists (see Fisher 2007; Monks 1992 for examples).

At the site of Kiuic, both fixed-feature and semifixed-feature elements (where available) will be used to explore the messages of power encoded in non-domestic architecture, including the elements that contribute to the ambientality of the structures and their location within the site. Although a structure's ambientality, or the ability to be viewed on all sides by spectators, is not one of the three types of elements, it can be explored using a combination of fixed-feature elements. Four major elements affect this phenomenological aspect of non-domestic architecture and can be used to display elite power: location within a site, area, height and the presence/absence and type of superstructure (or temple). The following section details how each of these fixed-feature elements functions to convey a specific ideological message and behavioral cues.

4.5 Applying the Nonverbal Communication Approach

One advantage of using the nonverbal communication over other approaches, such as semiotics, is that methodologically, it is simple to use (Rapoport 1988:324, 1990a:87). As discussed above, the nonverbal communication approach is based on the observation of behavior and the recording of cues. However, since behavior cannot be observed in archaeological contexts, fixed- and semifixed-feature elements are documented and inferences regarding behavior are made based on environment-behavior research and ethnographic research[10].

Some of the elements that encode nonverbal messages can be quantified (such as area and height), while others can only be noted as present or absent. The first attribute to be noted is the location within the site of the non-domestic architecture in question (see Table 6.11). From the Preclassic to the Postclassic periods in the Maya area, the location of non-domestic architecture in relation to residential architecture undergoes subtle changes

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[10] For a detailed discussion about the relationship between environment-behavior research and nonverbal communication, see Fisher (2007:chap 3).

(e.g. Bachand and Bachand 2005; Hendon 2000; Ringle 1999). As a fixed-feature element, the location of a structure changes slowly and can be used as a clue to explore the sociopolitical ideologies surrounding its creation (Moore 1996a:143-144). The location of non-domestic architecture is noted as in the site center or periphery, as well as whether it is embedded within a larger architectural group or stands alone. The most important aspect of location is whether the non-domestic architecture is marked as separate from its surroundings or integrated with them. For example, although the raised platforms that served as the loci for community-oriented rituals during the Middle Preclassic are often found among household compounds, they are generally set-apart spatially or distinguished from the residential areas (Aimers et al. 2000; Hendon 2000; Ringle 1999). This separation indicates that the platforms were not necessarily considered part of the domestic group and had different access patterns.

While the location of non-domestic architecture within a site reveals who had access to structures, the area is important in determining how many persons the structures (or spaces) could have accommodated. In order to determine the area of the spaces in question, appropriate maps or direct observations are used to obtain measurements[11]. Spaces created by the thickness of walls or doorways are ignored and spaces that are nearly rectilinear are assumed to be rectilinear for these calculations. Calculating the area allows the *relative convexity*, which is the "squareness" of a room, to be determined by dividing the width by the length (Grahame 2000:56-57). A perfect square is the "fattest" space possible and has a value of 1; measurements moving toward zero indicate an increasingly long, narrow rectangular space. The area and relative convexity of a room have important implications regarding the social interactions that occur within a space, as will be discussed below.

[11] All maps used in this research are courtesy of Dr. William Ringle.

One important component of social interaction is the number of people/actors involved. The number of people a space can accommodate influences the type and nature of gatherings that can occur within that space and gives archaeologists an idea of the public/private nature. Although it is impossible to determine the exact number of people present for a particular social occasion or in a certain space, it is possible to estimate the maximum number of occupants. The capacity of a space is related to its area, whether people are seated or standing, and cultural notions regarding interpersonal spacing. Modern architectural calculations for maximum occupancy of people standing with "normal spacing" result in 3.4 persons/m^2 (Neufert and Neufert 2000:16-17)[12]. Although Moore (1996a:146-153) uses South American notions of interpersonal spacing for his study of ritual architecture, his approximation of 3.6 m^2 per person for ceremonial space is close to the modern architectural standard[13]. At best, any approximation of the occupancy of these spaces is crude but serves to convey a sense of how many persons could occupy the area.

It is also important to remember that at any time, and especially during a social occasion, it is highly unlikely that all space within a structure was utilized equally. For example, during the Andean celebration of Inti Raymi, a small number of participants perform on the large central plaza while the rest of the spectators are crowded onto walls (Moore 1996a:152). With all of this in mind, the size and shape of a space directly affect the kind of social interactions that occur within it in terms of proxemics (Hall 1966; Moore 1996a:146-153, 1996b; see Table 4.1). Rooms that are square facilitate social interaction more easily than rectangular rooms because of their high degree of presence availability. A

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[12] Neufert and Neufert (2000:16-17) estimate that an individual occupies a space approximately .625m in width. A standing individual in a normally spaced group requires .469m of space from front to back and occupies .29m^2 (.625 x .469), resulting in a maximum density of 3.4 persons/m^2. Seated individuals occupy .86m front to back (.54 m^2 per person) for a total of 1.9 persons/ m^2.
[13] These estimates were derived by Moore (1996a:147) and based on Cook's (1981) population estimate of Ollantaytambo and the area of the site's public spaces.

combination of spatial features affects the types of interactions possible but all interactions involve the co-presence of two or more individuals (or an individual and supernatural)(Hall 1966:107-122).

In addition to the area of a space and its relative convexity, two other fixed-feature elements contribute to the degree of ambientality of non-domestic architecture. The first of these is the height of the platforms from ground-level. Height also contributes to the display of power and authority by reinforcing the separation of groups of actors (such as elites and non-elites) by restricting visual and physical access to architecture itself and any rituals or ceremonies that are conducted on it. Over time in the Maya area, there is a trend of increasing the height of the basal platforms upon which non-domestic architecture was constructed. This trend results in the increasingly limited spectators' view of ritual activity over time (Bachand and Bachand 2005:44; Freidel 1979; Freidel and Schele 1988; Hendon 1999, 2000). Platforms with a height of 1.5 meters or more would have limited the view of any spectator at ground level[14] and given the performers control over the visual access to ritual activities. In archaeological contexts, the height of structures is determined by excavations or direct observation of standing remains. In instances where architecture has not been preserved to its full height, the height of the existing walls or platforms is used. Additionally, if structures have been reconstructed, both the height of the *in-situ* walls and the reconstructed height are noted, while the former is used for syntactical calculations.

The final fixed-feature element to be discussed that affects the ambientality of non-domestic architecture is the presence (or absence) and type of superstructure. Superstructures employ both fixed-feature and semifixed-feature elements to encode meaning including: the building materials used, door placement and width, architectural

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[14] This measurement is based on the calculated average height of a person being 1.5 meters (Moore 1996a).

decoration[15], and area of the structure itself. The very presence of a superstructure indicates implies that there are two groups- insiders with the power and authority to enter the structure and outsiders who do not have these privileges.

As with the other elements, the degree to which the built environment has been preserved plays a role in the recording of and exploration of the fixed-feature and semifixed-feature elements of superstructures. A combination of relevant textual information and direct observation is used to confirm the presence or absence of each element; because features are not always preserved, there are some instances in which features (e.g. the width of a doorway) must be estimated. In such cases, the process detailed above (Section 4.3) is used to estimate the degree of confidence

Each of these architectural elements contributes to creating the physical context of social interaction. Studying the arrangement of the fixed-feature elements allows archaeologists to make inferences about the associated interactions and to see temporal changes. As Rapoport (1990a:88) notes, the organization of fixed-feature elements communicates meaning but is almost always superseded by the meaning of semifixed-feature elements. Because it is difficult to infer meaning solely from fixed-feature elements, semifixed-feature elements are often used to clarify the meaning of a space (Rapoport 1990a:90-91).

In archaeological contexts, semifixed-feature elements are often missing and rarely found in their original contexts. So, although it would be ideal to incorporate these elements into the analysis of each space, such a task is not always possible. The semifixed-feature elements considered in the present research include small portable items of ceramic, stone,

[15] In cases where architectural decoration is not found *in-situ* but there is evidence that the façade had decoration at a previous point (i.e., inferred from the presence of espigas), the structure is marked as having had decoration.

and other materials, such as bone or shell. These artifacts are found in different contexts throughout sites including midden areas, burials, and caches. The context for these artifacts is described and, when present, they provide important clues that suggest the nature of interaction and behavior that might have occurred in the relevant rooms or spaces.

4.6 Integrating Access Analysis and Nonverbal Communication

In order to explore the physical context of social interaction and the ways in which Maya elite manipulated the built environment in order to control this interaction, the data from access analysis and nonverbal communication must be integrated. As described in Chapter 3, social occasions are wider social affairs that involve multiple individuals and specific activities that occur at specific times (Goffman 1963:18). While social occasions (in the form of rituals and public ceremonies) are the focus of the present research, gatherings also would have occurred within the non-domestic spaces at Kiuic. In contrast to social occasions, gatherings tend to be informal, transitory meetings where interaction can be either focused or unfocused. In both cases, interaction is facilitated by the fact that actors are mutually aware of each other (i.e., co-present) and their presence-availability determines the type of interaction possible (see Tables 4.1, 4.2).

Alone, access analysis determines the likelihood of social interaction occurring within a space while elements of nonverbal communication help archaeologists understand the potential nature of this interaction. When the two approaches are combined, they allow archaeologists to explore the types of social interaction that occurred within a space. In order to integrate these two analytical techniques, a combination of the approaches used by

Grahame (2000:ch 7) and Fisher (2007:ch 5.3) is used to study the interaction potential of spaces within non-domestic architecture at Kiuic.

The interaction potential of a space is measured using a combination of the control value (CV), real relative asymmetry (RRA) and step depth measures, which were introduced in this chapter. However, the relationship between accessibility and presence-availability is not straightforward because of the variability involved in the daily routines of inhabitants and visitors. Accessibility measures are used to identify spaces where interaction is likely to occur but it does not predict the location of a building's inhabitants at any given time. Therefore, the analyses used here measures the *interaction potential* of a space rather than the actual presence-availability.

Following Fisher (2007) and Grahame (2000), accessibility is the most important factor in determining the interaction potential of a space. Therefore, each space within the building is ranked according to its real relative asymmetry (RRA), control (CV) and depth values (see Tables 6.4, 6.6, 6.7). RRA measures accessibility at the global level and gives a sense of how a particular space fits into the overall pattern of interaction. RRA scores are classified as high, medium, or low by dividing the ranked set into thirds (spaces with equal RRA scores are placed in the same category). Control values measure accessibility between adjacent spaces and reveal which spaces are more likely to be loci of interaction. The first step in grouping the CVs into ranked thirds is to calculate the total amount of control in the system (Grahame 2000:59-60). The resulting sum is divided by three and the individual values of the spaces (listed in rank order) are added until the total equals or exceeds one third of the total control available. The values in each group are then labeled high, medium, and low. If a space has a low value, it suggests that it does not control access to many spaces while a space with a high CV does control access to a large number of spaces. Finally, depth values are used because they give an idea of how accessible a space is to a visitor entering the building from the outside. In addition to discovering which spaces are likely contexts for interaction, it is also important to ascertain what types of interactions could have occurred within these rooms.

Grahame (2000:ch 7) identifies two types of spaces that are relevant to this discussion, movement spaces and circulation spaces. Movement spaces serve as conduits for the movement of people through structures. Spaces that are ideal candidates for gatherings have a medium to high control value and are often rectangular, such as a hallway. Architecturally these spaces typically have wide doorways or entrances and because gatherings are unfocused and brief, room size is not an important factor. While there is nothing inherent in their configuration to prevent longer, more focused interaction, the likelihood of interruption inhibits social occasions from occurring within them (Grahame 2000:56). Gatherings, which are typically transitory, are most likely to occur in movement spaces because they are easily accessible and therefore promote chance encounters.

The spaces that serve as the setting for social occasions, or circulation spaces, tend to exhibit a different set of syntactic and architectural characteristics than movement spaces (Grahame 2000:56). Occasions are more formal social gatherings that involve a number of individuals and occur within a defined spatial and temporal context. Examples of social occasions include routine events such as food preparation and consumption but also encompass special events such as rituals. The co-presence, or visibility, of actors is an important component of social occasions and because of this, circulation spaces tend to be square (convex) in shape. This type of event often requires several interconnected spaces, which are often arranged around a central node with a medium to high control value[16] (Grahame 1997:155). Because occasions often involve a large number of people, nodes are generally easily accessible, which is reflected by their low RRA values. In many cases, plazas and patios are identified as nodes and the spaces controlled by them can serve as the focus for activities associated with social occasions or as storage areas for related semifixed-feature elements of the occasion (Grahame 2000:60).

While movement spaces are important contexts for social interaction, the present research focuses on the importance of circulation spaces because they facilitate two basic types of occasions: "public-inclusive" and "private-exclusive" (Table 4.2; Fisher 2007:108-109). In this case, *public* is used to signify that these occasions had a large and relatively inclusive group of participants (including both inhabitants and visitors), not necessarily that the occasions were open to the entire population. The two types of occasions are not mutually exclusive and could occur during an occasion; they should be considered as points along a continuum rather than discrete categories of interaction (Fisher 2007:108). The spaces associated with each type of occasion have different attributes that can be described using the control and real relative asymmetry values. Plazas, as the setting for public occasions and gatherings, have a medium to high control value and are accessible at the global level (low RRA). Public-inclusive occasions designed to include visitors would typically occur in relatively shallow spaces, though deeper spaces could also host such occasions. The number of participants in the occasion dictates the size of the plaza (so that larger occasions would require a larger space) but regardless of the area, the space would be more square.

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[16] Grahame (2000) calls nodes 'courtyards' but for the present research, the term 'plaza' or 'patio' is more appropriate and will be used throughout this work.

As noted above, the spaces that are directly connected to plazas or patios (or nodes) often play important roles in facilitating occasions. Such areas provide more privacy than the plaza itself and are ideal arenas for hosting private-exclusive occasions or storing ritual paraphernalia (Grahame 1997:155). Many social occasions, especially rituals, often combine both public and private components in a single occasion. These adjacent spaces serve as ideal settings for the private-exclusive portion of the ritual, as well as providing a backstage area for participants (Goffman 1963). Syntactically, these spaces have higher RRA measures and lower control values than a node, indicating they were not as easily accessible (Table 4.2). Private-exclusive occasions did not occur exclusively in spaces adjoining plazas and could be far-removed from the highly accessible nodes of a building. The size of these spaces is related to the number of participants but, in general, would have a smaller area than the spaces associated with public-inclusive gatherings. Similar to spaces within which public-inclusive occasions occur, these spaces also have high convexity scores (see Fisher (2007:109-111) for an archaeological example).

4.7 Conclusions

As Chapter 3 demonstrates, structuration theory establishes that spaces serve as the *locales* in which interaction occurred and as such contain elements that serve as cues to correct or expected behavior (Giddens 1984:118; Giddens and Cassell 1993:181). In order to understand how and why specific elements are integrated into the design of these locales, we must look at the patterns of movement and interaction within buildings and the cues communicated by architectural elements. Both access analysis and nonverbal communication contribute important information to the understanding of social interaction within the built environment but not the whole picture. In order to fully understand how the spatial properties of a structure (or space) influence social interaction and what types of interaction can occur within a space, the approaches must be integrated.

FIGURES FOR CHAPTER FOUR

Floor Plans **Justified Access Graphs**

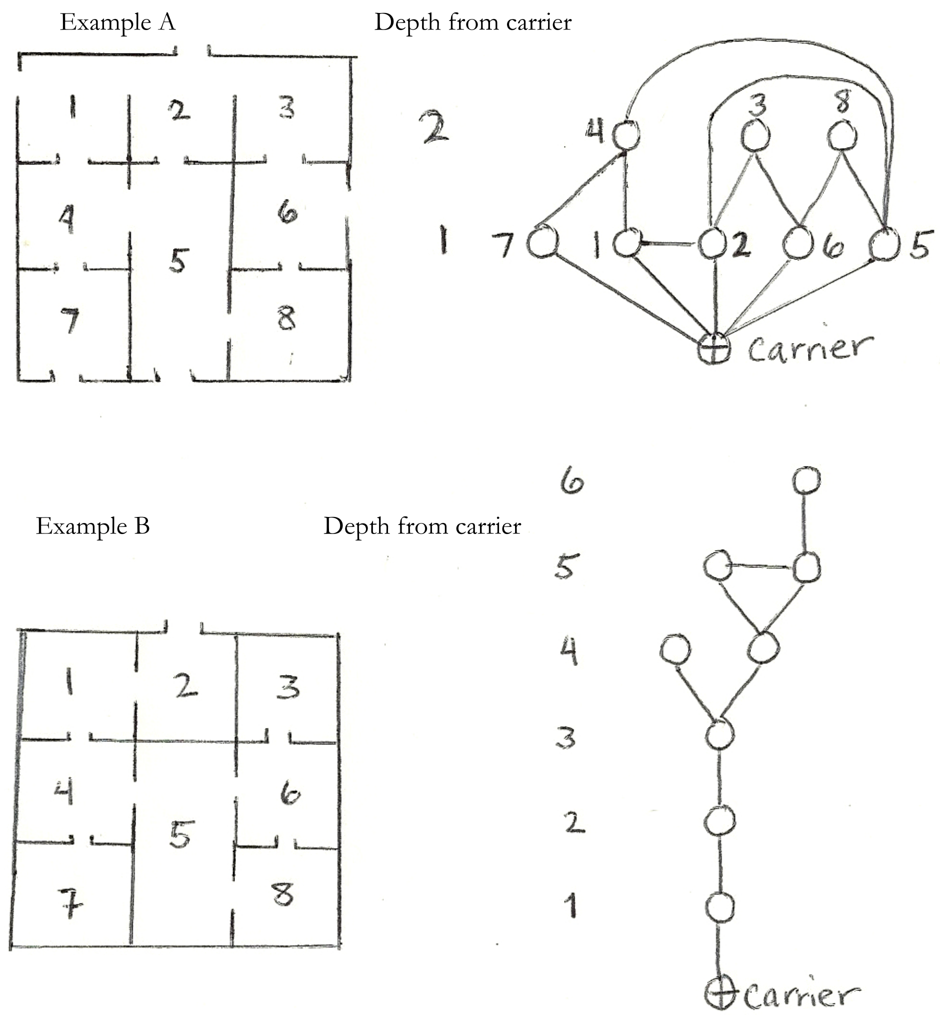

Figure 4.1: Examples of access analysis applied to two buildings with the same general form but different doorway placements. Access graphs are justified from the carrier (redrawn from Hillier and Hanson 1984:figs. 93 and 94).

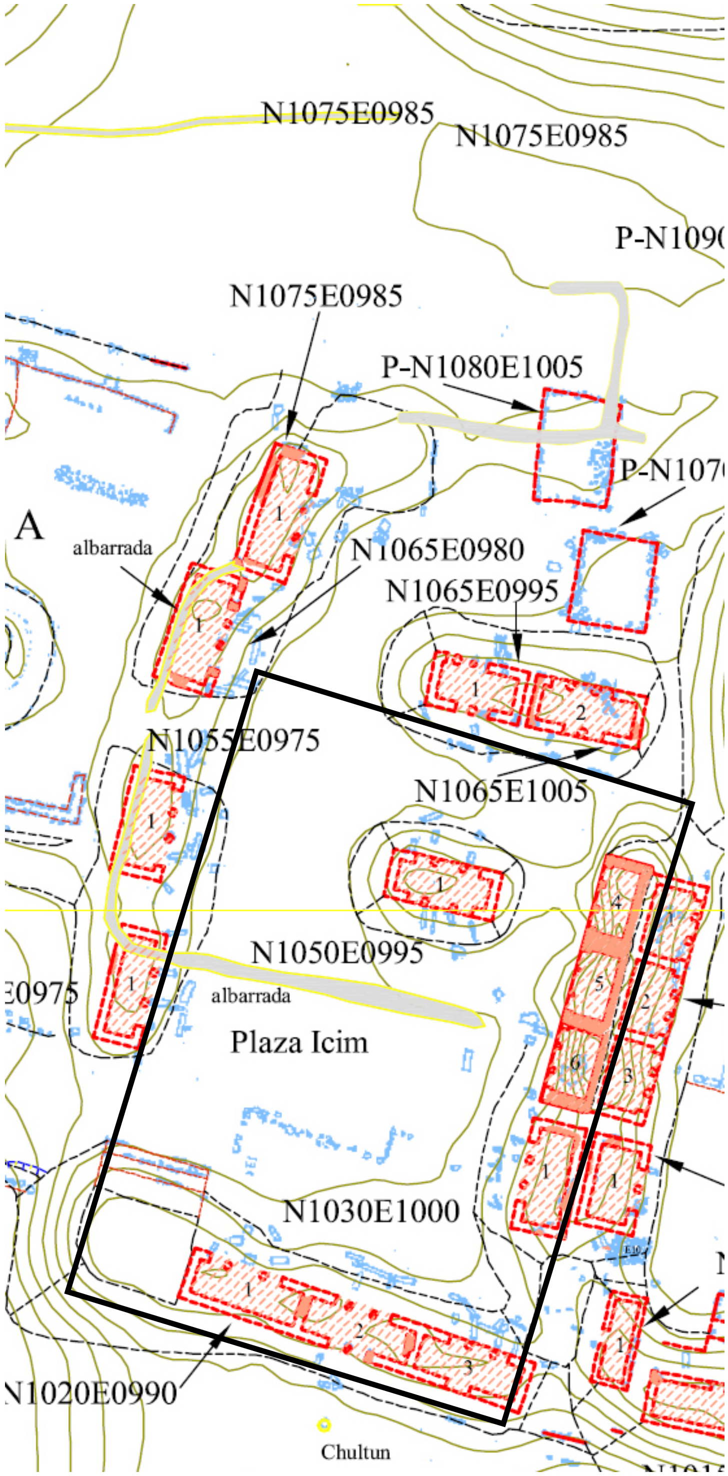

Figure 4.2: Map of Plaza Icim Sur, courtesy of Dr. William Ringle. Highlighted portion indicates area with low definition.

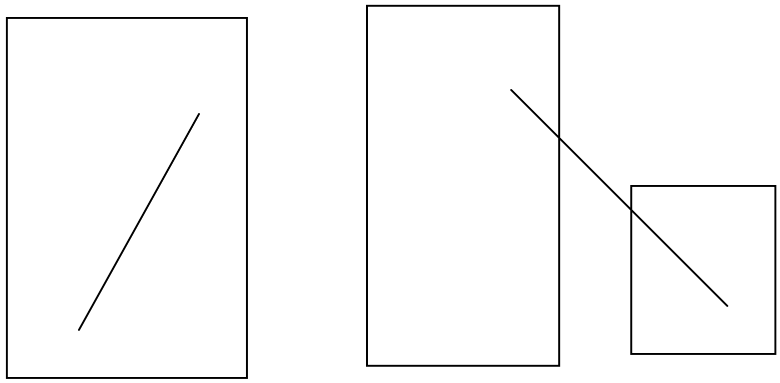

Figure 4.3: Determining the spatial configuration of a structure using convex spaces. Drawing a line through the space on the left indicates it is a single convex space, while the space on the right should be considered two convex spaces (modified from Grahame 2000:fig 4.4)

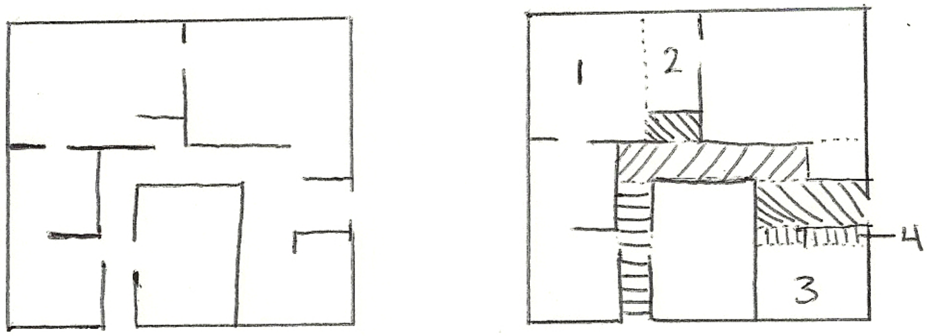

Figure 4.4: (left) Schematic illustrating the architectural arrangement of a building. (right) Schematic illustrating the same building with the rooms divided into convex spaces. Shaded spaces are part of a hallway with 'low definition'. This space is defined by the external boundaries of the surrounding spaces (redrawn from Grahame 2000:fig 4.5)

Figure 4.5: Map of Icim with convex spaces marked, courtesy of Dr. William Ringle.

TABLES FOR CHAPTER FOUR

Table 4.1: Schematic of the nonverbal communication approach to studying the built environment (adapted from Rapoport 1990a:fig 17). All elements are culturally variable, but the "palette of elements" may be the least variable.

Desired Meaning | Encoding | Transmission | Decoding/Perception | (Inter)action

Elicitors + Limited Palette Of elements + Display rules = Built Environment > Comprehension rules > Behavioral consequences

Elicitors	Limited Palette Of elements	Display rules	Built Environment	Comprehension rules	Behavioral consequences
Schemata Images Ideals Status Power Etc.	From these a particular repertoire is selected: Size Height Color Orientation Location Materials Decoration	Rules of combination and of appropriate use "filters"	Result: a setting (context) with a specific set of characteristics and cues	Filters which decide whether cues are noticed, understood, obeyed	Behaviors occurring within the setting

Table 4.2: Proxemic distances and corresponding effects on perception (based on Hall 1966:116-129).

Proxemic Threshold	**Intimate**	**Personal**	**Social (near)**	**Social (far)**	**Public (near)**	**Public (far)**
Distance	0 - .45m	>.45 - 1.2m	>1.2 – 2.15m	>2.15 – 3.65m	>3.65 – 7.6m	>7.6m
Touch	Actors can touch easily; unintentional contact possible	Actors can when closer than .75m	When up to 3m distant, 2 people can stretch to pass an object back and forth			
Oral/ Aural	Soft voice, intimate style		Conventional modified voice; casual or consultive style		For groups, loud voice necessary	Full public-speaking voice; frozen style
Detailed Vision (Foveal)	Details of eyes and fine details of face visible; vision can be distorted or blurred	Details of face clearly visible	Head and hair clearly visible; details of clothing easily seen	Fine facial details less distinct; movement of mouth seen clearly	Color of eyes not apparent; smile vs. scowl visible	Difficult to see eyes or subtle facial expressions
60° Scanning Vision	1/3 of face; some distortion	Upper body within view range	Upper body and gestures of arms	Whole seated body visible		Entire body has space around it; postures used to communicate information
200° Peripheral Vision	Head against background visible	Head and upper torso visible	Entire body visible	Other people seen if present		Other people become important in vision

Table 4.3: Syntactic and architectural properties of social interaction (adapted from Fisher 2007:table 5.1)

Gatherings - Medium-high control value (CV) - Low real relative asymmetry (RRA) measure (room is readily accessible) - Low convexity: space will tend toward long and narrow shape (i.e., they are "movement spaces"
Public-Inclusive Occasions - Medium-high CV; low RRA - High convexity (.6 or greater0 and area of 12m² or larger; the space will be large and tend toward square (i.e., they are "circulation spaces") - Generally low depth measure, but not always if on a major route through building - Room may be architecturally elaborate and contain features/furnishings appropriate to occasion
Private-Exclusive Occasions - Low CV; medium-high RRA (room is less accessible) - Generally high convexity, but size is not important - May have high depth measure

CHAPTER V

ARCHAEOLOGICAL EXCAVATIONS AT KIUIC

5.1 The Puuc Region

Kiuic is located in the Bolonchén District, a subregion of the Puuc, in the modern-day state of Yucatan, Mexico (Figures 5.1, 5.2). In addition to being a geographic region, the term 'Puuc' also refers to a distinctive architectural style characterized by veneer masonry and geometric decoration (Figure 5.3)(Andrews 1995; Pollock 1980). While the architectural style as been intensively documented (see Chapter 2), it is important to recognize the important influence the distinctive geological terrain of the area plays in shaping the settlement patterns.

As Dunning (1994:2) notes, "the primary geological fact about the peninsula is the deep and extensive cover of limestone and dolomite." The limestone shelf often extends several hundreds of feet thick and the processes of erosion have acted upon it, leaving behind hollows, depressions and caverns across the peninsula. The highly porous nature of the caprock means that no large surface rivers or lakes exist on the peninsula, making water a scarce commodity and one that greatly influenced ancient settlement patterns. In addition to being influenced by water, the settlement pattern in the Puuc is also influenced by its unique topography.

The present research focuses on the Puuc, a geographic region that is subdivided into four physiographic regions: the Sierrita de Ticul, the Valle de Santa Elena, the Bolonchén District, and the *akalches* (Duch Gary 1988; Isphording 1975; Kurjack et al.

1979:37; Wilson et al. 1980). The *akalches* are a zone of swampy savannahs that lie in the southern Puuc region, near the site of Xkichmook. The Sierrita de Ticul is a long narrow escarpment that runs southeast to northwest through the region, creating distinctive eastern and western geographic zones. West of the Sierrita is the Valle de Santa Elena, which is an elevated valley with deep soils and relatively level topography. Kiuic lies in the eastern portion of the Puuc in the Bolonchén District (Figure 5.2). The Bolonchén is a zone of low cone karst hills separated by 'flats' or restricted areas of level ground (Dunning 1992; Dunning and Prem 1994; Kurjack et al. 1979:39). The elevation of the hills averages between 40-60 meters above sea level but generally does not exceed 150 meters (Dunning 1994). The flats between the hills contain rich soil that is intensively farmed in modern times and was most likely also intensively farmed by the ancient Maya. Unlike the other two regions, the Sierrita de Ticul and the Valley of Santa Elena, the Bolonchén is known for its hills, wide valleys with rich soil, and finally, its scarcity of surface water (Duch Gary 1988; Dunning 1992:36-52; Dunning and Kowalski 1994).

The primary strata of the Bolonchén District are yellow, white and gray limestone, and sandy limestone, though some also contain chert and gypsum. The abundance of limestone meant that building material was plentiful in the district, making masonry structures relatively common, although the proper types of stone for creating tools (such as chert or obsidian) were less common (Dunning 1994:5). Under the layer of limestone caprock is a layer of soft marl, known as sascab, which was used by the Maya in mortars and stuccos (and is still used today). As mentioned previously, surface water is rare although the *cenotes,* or sinkholes that breach the water table, found in other areas of the peninsula do exist in the Puuc region. The depth to ground water in the Bolonchén District ranges from 45 meters to well over 100 meters, which makes digging wells impractical and although the

Bolonchén does contain *aguadas*, or clay-bottomed sink holes that collect water, they are inadequate to support a large population. Because of the scarcity of potable water in the area, the Maya used artificial cisterns (*chultuns)* to supplement natural sources. *Chultuns* were created by digging through the layer of caprock and excavating a cavern in the soft sascab beneath that would catch and store rainwater (Dunning 1994:7).

While climatological data such as temperature and rainfall are well documented for the Yucatan Peninsula, detailed information for the interior of the Peninsula, and the Bolonchén District in particular, is scarce (Dunning 1994:8). The Puuc is classified as a Tropical/Dry Winter type climate, with the average temperature not dropping below 18°C and a marked dry season that generally begins in November and lasts until April. The average amount of rainfall for the Puuc is approximately 1,100mm (Dunning 1994). The current climate of the Peninsula does not necessarily mirror conditions in the past, however, and recent research indicates the Maya lowlands experienced climatic shifts that could have altered the ancient way of life though there is also evidence the Maya were able to adapt successfully to this changing environment (e.g. Brenner et al. 2002; Dahling 2002; Gill 2000; Gunn and Adams 1981; Gunn, Matheny and Folan 2002; Hodell et al. 1995; Hodell et al. 2000).

Whatever influence the geography of the Puuc had on its inhabitants, it was a long held belief that the area was unpopulated until the end of the Maya florescence. Recent research, however, has shown that people lived in the Puuc area (and Northern Lowlands) as early as the Middle Formative (Andrews V 1990:14-15; Bey 2006; Bey and May Ciau C. 2005; Gallareta N. and Ringle 2004; Ringle 2005; Ringle et al. 1998; Smyth and Ortegón Zapata 2006). Regardless of the origins of these first inhabitants, they established the foundations of Maya society in the Northern lowlands- of 116 known Middle Formative sites, 68 were occupied through the Late Preclassic while 44 sites appear to have been continuously occupied from the Middle Formative through the Terminal Classic (Bey and May Ciau 2007; Ringle 2005; Robles and Andrews 2003:table 5). In the Puuc, evidence of Preclassic occupation has been found at Kiuic, Paso de Macho, Xocnaceh, Huntichmul and Xcoch (Bey 2006; Bey and May Ciau C. 2005; Gallareta N. and Ringle 2004; Ringle 2005; Ringle et al. 1998; Smyth and Ortegón Zapata 2006, 2008). Excavations from these sites, especially Xocnaceh, suggest that the social development of the Puuc and other areas of the Northern lowlands was a result of stimulus diffusion from other areas, rather than being introduced into the area fully-developed.

5.2 The Archaeological Site of Kiuic

Kiuic is located in the Bolonchén District of the Puuc region in the modern-day state of Yucatan, Mexico (Figures 5.1, 5.2). Excavations and an architectural survey indicate Kiuic flourished between 790 B.C. and A.D. 1000, reaching its apex during the Late Classic period[1]. While Paso de Macho, Xocnaceh, and other Preclassic sites in the northern lowlands were abandoned at the end of the period, Kiuic's Preclassic occupation became the foundation of the ceremonial center of the site (Bey et al. 2005, 2007; Gallareta N. et al. 2001-2008; Ringle 2005). The civic-ceremonial core of Kiuic is situated in a fertile valley that is ringed by several low cone karst hills, a distinctive geographical trait of the district (Figure 5.3a,b)(Kurjack et al. 1979: 39; Dunning 1992, 1994). The site core is surrounded by a sparsely inhabited zone, which was likely used for agricultural purposes; in turn, this zone is

[1]The earliest C14 date obtained at Kiuic is 780-810 BC with a mid point of 790 BC.

surrounded by a ring of heavily occupied hills (May Ciau and Bey 2002; Gallareta N. et al. 2001-2008). Together, the core, agricultural zone and hill settlements comprise the 5 kilometer^2 'site' of Kiuic.

The majority of civic architecture lies in the 500 meter^2 central quadrant of Kiuic, which was mapped in detail between 2000 and 2002 and found to have a high density of both masonry and perishable domestic structures (Figures 5.4, 5.5)(Gallareta N. et al. 2000, 2002; May Ciau and Bey 2002). The core of the site is composed of nine complete architectural groups and one group that was only partially completed before the abandonment of the site; the principle structures of each group are arranged around open plazas and patios (May Ciau and Bey 2002). Although the spatial organization of the site core is typical for the Puuc region, the center of Kiuic has a higher structural density than other sites. Outside of the site center, medium and smaller-sized architectural groups are found to the north, west and south. The proposed research will focus on the Grupo Yaxche, an elite house compound that is one of the nine main architectural groups in the heart of the site (Figures 5.4, 5.6). To address the final aspect of this research, Chapter 6 presents the spatial analysis of the group and Chapter 7 examines the Yaxche Group as an example of the *in-situ* development of ritual architecture in the Puuc region. Excavations at Kiuic support the idea that the social development of the Puuc region occurred without significant influences from other areas.

5.3 Field Methodology

The Excavations in Plaza Ulum and Grupo Yaxche are a part of the larger Bolonchén Regional Archaeological Project (BRAP), which began in the summer of 2000. Over the course of the past seven field seasons, the majority of fieldwork for this dissertation has been completed and will be outlined below.

An important part of BRAP objectives was the creation of a detailed map of the topography and visible architecture of Kiuic (Figure 5.4); Dr. William Ringle directed this phase of the project. The survey of Kiuic began during the 2000 field season using a combination of CAD software and total stations, which permitted highly accurate mapping. Provisional maps were generated on a daily basis and researcher to check for errors and create more detailed drawings of surface remains using measuring tapes. These drawings, which were done on a 1/200 scale, were then scanned into a computer and overlaid with CAD maps. The surveying team also recorded and photographed architectural features; the registry includes information about the structures that help identify their style, construction techniques and measurements of jambs, lintels and entrances.

In 2000 a cement monera was placed in Plaza Icim and served as the basis for the grid that was established and has been extended to cover the entire Yaxche Group. By using the same grid throughout the group, it is possible to compare excavated structures, features and artifacts from the different plazas and patios (Figure 5.7). The grid is composed of 2 x 2 meter units, which permit good control of artifact provenience, that are named with a unique letter-number combination (letters go east-west and numbers go north-south). A lot number is assigned for each unit and level excavated and registered in a master log sheet; these numbers then can be used to identify the cultural context of the associated artifacts. The lot numbers are registered on the excavation forms, which were developed by Bey, Ringle and Gallareta N. at Ek Balam and modified for use at Kiuic. In addition to the lot numbers, these forms contain other information such as measurements for the beginning and end of levels, photographs, drawings, and excavation notes. For all units, initial levels use arbitrary increments, unless a natural change appears; natural levels are used whenever possible because they allow for better definition of features and soil changes. After the grid was established in each plaza, the area was cleared and then surface collected, which returned few artifacts in Plazas Ulum and Dzunun.

In considering the excavation strategy for the Grupo Yaxche and Plaza Ulum in particular, architectural remains and artifacts were the two forms of data collected. The primary focus of excavations in Plaza Ulum was Structure N1050E1065, a small pyramidal temple on the eastern side of the plaza, which was excavated and consolidated during the 2005-2007 field seasons[2] (Figure 5.6). A second goal was to gain a better understanding of the occupational and construction history of Plaza Ulum, especially in comparison to the rest of the group. The final goal was to define the perimeter of the plaza so that we could determine the access pattern and how restricted this are was in comparison to the rest of the group. In order to test these goals, stratigraphic units were placed in strategic locations throughout the plaza and temple, as well as outside the plaza.

The temple was excavated over the course of three field seasons; during the first season (2005), the primary goal was to determine the relationship between the structure and the plaza; during the course of this season the bottom four steps of the central stairway were uncovered. Work during the second season (2006) focused on the excavation and consolidation of the front (western face) of the structure and a search for substructures. The front of the building was excavated in stages, with capas of rubble, soil, and small stones removed from each unit on the building[3]. After the first level of rubble was removed, each unit was photographed and drawn before repeating the process (Figure 5.8). This strategy

[2] All excavations and consolidation of structures undertaken by PRALK follow guidelines set out by the Instituto Nacional de Antropologia e Historia (INAH).
[3] All rubble stones from the building were numbered and cataloged on the excavation forms. They were then placed in grids and labeled with their provenience.

was chosen in order to expose the entire front of the building at the same moment in time, allowing for a better understanding of the collapse, post-abandonment activity and construction of the structure. The third season of excavations on N1050E1065 was dedicated to fully excavating the one-room superstructure and placing trenches on the northern, southern, and eastern faces of the pyramid to define their form. The excavation strategy for exploring the interior of Temple A consisted of first removing the cut stones of the friezes, then taking out the mortar of the vault to expose the boot stones. The same procedure of numbering, photographing, drawing, and removing the stones used in previous season was implemented during this phase of excavations.

The analysis of recovered materials takes place during the field season in the lab in Oxkutzcab. All ceramic material is processed by Chris Gunn (University of Kentucky) concurrently with excavations and completed by the end of the excavation season. Units are tabulated using software developed by Dr. William Ringle and allows for rapid, accurate data entry as well as post-entry generation of statistics and graphic summaries. Non-ceramic artifacts were processed by Rebecca Hill (Tulane University) during the field season and entered into separate databases with associated digital photographs are also maintained.

5.4 Loci within Kiuic: Plazas of the Grupo Yaxche

As mentioned, Grupo Yaxche is one of the main architectural groups in the site center and its plan resembles Dunning's civic/ceremonial complex (Figure 5.4) (Bey et al. 2005, 2007; Bey et al. 2009; Dunning 1994; Gallareta et al. 1997; Gallareta et al. 1998; Gallareta et al. 2009; Ringle 2005; Ringle and Bey 2001). The group is composed of three main plazas (Dzunun, Ulum and Icim) and two patios (A and B)(Figures 5.6, 5.9). Structures within this group have served as the focus on archaeological investigations at the site since the inception of the BRAP project in 2000.

Plaza Dzunun, the political center of the group, is primarily defined by two structures: a pyramid/palace (N1065E1025) in the north and a range structure (N1015E1015) in the south (Figure 5.6). To the west is Plaza Icim, which contains several one- and three-room structures in the Early Puuc style and appears to have been the residential area of the group. Located east of Plaza Dzunun is Plaza Ulum, the ritual area, which is dominated by two small pyramids, each of which supported a one-room vaulted structure (Figure 5.6)[4]. The floor sequence in Plaza Dzunun reveals that this area of the site was first occupied during the Middle Formative period (650-400 B.C.) and underwent several periods of modifications until it was abandoned (Gallareta N. et al. 2001-2008; Bey et al. 2005, 2007; Ringle 2005). Interestingly, Grupo Yaxche was never remodeled in the Colonette style, which is the dominant architectural style in the later parts of the site. Although the group may have ceased functioning as an elite residential group by the end of the Terminal Classic period, it remained an important part of the landscape, as indicated by the construction of a causeway between Grupo Yaxche and Grupo Kuche, the later civic center (Figure 5.4) (Bey et al. 2005; Gallareta N. et al. 2001-2008).

The following sections present a summary of the archaeological work to date in the three main plazas of Grupo Yaxche, focusing especially on Plaza Dzunun and Plaza Ulum. The following chapter (Chapter 6) demonstrates how access analysis and elements of nonverbal communication can be used to explore the relationship between the spatial changes in the group and the sociopolitical evolution of the community.

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[4] From this point forward, the main structures referenced in the research will be referred to by their common nicknames rather than their coordinates on the Kiuic map. So that N1015E1015 is the *Popol Na*, N1065E1025 is the Palace and N1050E1065 is the Temple. The other structures are called by their coordinate name.

5.4.1 Plazas of the Grupo Yaxche: Plaza Dzunun

Archaeological investigations support the idea that the Dzunun Plaza was the original core of the Yaxche Group and, perhaps, Kiuic itself. The first documented construction in Plaza Dzunun began during the Middle Formative period (around 650 B.C.). A series of six floors[5] indicates the area underwent several periods of modification during the Preclassic period, the last of which occurred in the Late/Terminal Classic (Figures 5.10a,b) (May Ciau et al. 2003; Bey et al. 2005, 2007; Gallareta N. et al. 2001-2008; Gallareta C. et al. 2009). Plaza Dzunun reached its apogee during the Late/Terminal Classic periods (700-850 A.D.); at this time, it contained a *popol na* in the south, a palace in the north, and vaulted range structures on the east and west sides (Figure 5.11). The quadrangle also featured a ramp entrance in the southwest corner (between Plazas Icim and Dzunun) and a possible tower in the northeast. The spatial configuration of Grupo Yaxche changed dramatically over the years, evolving from an open civic-ceremonial platform in the Preclassic period into an elite household complex during the Late Classic; the archaeological evidence indicating these changes is described in detail in the following sections.

Middle and Late Formative Periods: The Late/Terminal Classic structures that dominate the plaza today were built in an area with a long occupational history. Ceramic analysis and a calibrated C14 date of 810-760 B.C. indicate the first construction phase of Plaza Dzunun (Floor 6) occurred during the Middle Formative period (800-300 B.C.). During this period, a low platform was built and the area likely served as the civic/religious center of the community (Figure 5.12). The platform was 75 centimeters high and measured approximately 14.5 meters north-south by 14 meters east-west (Bey and May Ciau 2002; Bey

[5] The floors are numbered 1-6 with Floor 1 being the most recent floor and Floor 6 the earliest floor.

et al. 2007; Gallareta C. et al. 2009). No evidence of any superstructures was found, although the entire surface of the platform was not exposed.

After this initial construction phase, sometime during the Late Formative period (300 B.C.- 300 A.D), the plaza underwent a series of modifications. First, the platform was expanded to measure approximately 28 meters north-south by 28 meters east-west; then, the floor was renovated (Floor 5) and structures were added to the east and south sides (Figure 5.12)(Bey and May Ciau 2002; Bey et al. 2005, 2007; Gallareta N. et al. 2001-2004). The renovation of the floor raised the height of the platform to approximately 1-1.10 meters in height.

It was during this period that the southern structure was built (named the *Popol na*-sub) and while the platform likely had a superstructure, no evidence of one was uncovered because the majority of the structure was dismantled prior to the construction of the later building. The platform constructed during this period was approximately 13.3 meters long and with rounded corners (northwest corner of the platform was uncovered) (Figures 5.12,5.13)(see Gallareta N. et al. 2004:figura 3.38, 5.39). The surface of the platform was accessed by a central stairway; the two lowest steps of the stair were uncovered and are inclined in a talud-style. The preserved portion of the platform measures 30 centimeters high and was covered with a very thick (2-3 centimeters), hard layer of stucco[6].

The floor of the plaza was renovated (Floor 4) again during the Late Preclassic period using the same thick layer of stucco as Floor 5 (Figures 5.10a,b). The *Popol na*-sub remained in use although the stairway of the platform was dismantled and moved farther west; Floor 4 also partially covered the first step of the stairway, which measured at least 5.7

[6] The stucco associated with Floor 5 and *Popol na*-sub D was much thicker and stronger than the subsequent layers of stucco.

meters long by 1 meter wide (stairway)(see Gallareta N. et al. 2003:figures 3.28, 3.29)[7]. The platform of the southern structure, which retained the talud-style incline, was at least 2.25 meters high and built of better-cut stones than those used in previous constructions. Excavations on the southern face of the platform (facing outside the group) uncovered two walls in the fill of the basal platform, although their relationship to the *Popol na* and its substructures is unclear (Bey and May Ciau 2002; Gallareta N. et al. 2003).

Also built during the Late Formative was the eastern structure, N1025E1040-sub, which was built directly above the bedrock, with no evidence of Floor 6 in this part of the plaza (Gallareta N. et al. 2004). While the majority of the structure was dismantled, the two lowest steps of the substructure, still retaining some of their original stucco covering, were found *in-situ*. These steps were composed of large, roughly cut, rectangular stones and measure approximately 50 centimeters long and 22 centimeters high. The first step is vertical while the second step is inclined, in the talud style similar to the steps of the *Popol na*. Traces of stucco remaining on the first step indicate N1025E1040-sub is contemporary with Floor 5 of the plaza and that Floor 4 partially covered the lower step of the substructure. The remainder of the substructure was dismantled during the construction of the Early Puuc II style building visible today.

Early and Middle Classic Periods: Ceramic deposits indicate there is an Early Classic occupation at Kiuic, though from around 300 A.D. to 500 A.D. activity was focused around the Preclassic platform (Gallareta N. et al. 2000-2008). The next major architectural modifications in Plaza Dzunun occurred during the late Early Classic period (around 500-550 A.D.) when the plaza was expanded north and the floor (Floor 3) was renovated. In addition, on the southern end of the plaza the *Popol na*-sub was dismantled and directly over

[7] A C-14 date found in unit K6, Capa 5, Zone 1 dates this construction to approximately 271 B.C.

it, a long, single roomed slab vault structure (the *Popol na* or N1015E1015) was constructed (Figure 5.14). It was also during this period that the first (known) structure was built on the northern end of the plaza, utilizing megalithic stones (Bey et al. 2005, 2007; Gallareta N. et al. 2006-2008; Gallareta C. et al. 2009). The eastern structure, N1025-sub was dismantled and Floor 3 of the plaza completely covered the first step of this substructure (Bey and May Ciau 2002; Gallareta N. et al. 2004). Excavations in Plazas Icim and Ulum indicate that these areas were open, making Plaza Dzunun a free-standing civic-ceremonial platform rather than part of an elite residential complex. The small stone platforms associated with Formative houses found in excavations around the central platform were abandoned with little evidence of Early Classic residences taking their place.

At the *Popol na*, a new stairway (Stair C) was erected[8] that measured approximately 13.4 meters long (Figure 5.14a). Stair C remained in use throughout the construction of three floors in Plaza Dzunun: Floor 3, a renovation of Floor 3, and Floor 2. Excavations indicate that it had six steps that were less than 1 meter in width and inclined, although only the bottom two steps were found completely *in-situ*. Stair C was located slightly farther west than the stairs associated with the Late and Terminal Classic periods (Stairs B and A) but had the same orientation. Like the steps, the platform walls to the east and west of Stair C were also inclined in the talud style and were built of medium sized, roughly shaped rectangular stones (Figure 5.15). The final change to the southern structure was the conversion of the south wall of the platform of the *Popol na* into four terraces that rose approximately 3.5 meters from the ground level (Figure 5.16). The lower three platforms appear to continue

[8] No evidence of previous superstructures has been found, so it is possible that this is the first construction on the platform surface. However, the surface of the Preclassic platforms was destroyed by later constructions, which would have erased any evidence of earlier substructures.

west towards Plaza Icim while the *Popol na* itself rests on the fourth platform, which does not continue west.

The superstructure itself also underwent a significant change when the *Popol na*-sub was dismantled and the *Popol na* was built[9]. The new building was 16.32 meters long by 3.04 meters wide in the west and 2.77 meters wide in the east (Figure 5.14a, b). The principal façade looked north into Plaza Dzunun and had six entrances, while the back had two entrances (in the extreme eastern and western sides); the door jambs were composed of multiple stones of various sizes rather than one monolithic block (Figures 5.17a,b). The roof was a masonry slab vault and tenons in the rubble suggest the structure was covered in modeled stucco decoration. The *Popol na* is representative of the early Puuc architectural style, based on the previously described architectural elements as well as the small size of the worked stones, a zócalo composed of one rectangular element, and a simple medial molding (G. Andrews 1986; Gendrop 1983; Pollock 1980)[10]. The *Popol na* remained in use, with only minor architectural modifications, until the group was abandoned in the Terminal Classic.

Excavations to date at the Palace, which occupies the northern area of Plaza Ulum, have revealed a monumental substructure that is associated with Floor 3 of the plaza (Bey et al. 2007; Gallareta N. et al. 2006, 2007; Gallareta C. et al. 2009)[11]. The platform, which was expanded north during this period, contains a layer of stone pavement beneath Floor 3 (similar to the pavement found in Plaza Ulum), which was presumably added to support the weight of the plaza and structure. The pavement was only found in the northwestern corner of Plaza Dzunun, directly in front of the Palace[12]. The megalithic platform (N1065E1025-

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[9] A C-14 date from directly beneath Floor 2 of the building indicates the floor was laid down around 669 A.D.
[10] The building is similar to Str. 7 of Labná and GT-20 of Ek Balam in the Northern Lowlands and Str. 10L-22A at Copán (Fash et al. 1992).
[11] The Palace is the focus of current excavations in the Yaxche Group at Kiuic.
[12] The northeastern corner of Plaza Dzunun was excavated in 2004 and no evidence of the stone pavement was found in this area.

sub or the Palace-sub), preserved to approximately 1 meter high, was constructed of large carved stones and is contemporary with Floor 3 of the plaza. The exact dimensions and form of this platform are unknown at present.

Late Classic Period: During the Late Classic period (around 700 A.D.) the plaza underwent a dramatic spatial change when the group was transformed from an open, civic ceremonial area into what is visible today- an elite residential complex (Figures 5.6, 5.9). The addition of Early Puuc II style columned buildings (Strs. N1045E1005 and N1025E1040) in the east and west and a tower[13] (also on the east side) enclosed Plaza Dzunun (Bey et al. 2005, 2007; Gallareta N. et al. 2001-2008). While the addition of these structures created a physical boundary for the plaza, it became more restricted when the areas to the east, west and north of the group were converted into plazas and incorporated into an elite residential complex. These changes mark not only a functional shift for the area but also a significant change in the access pattern to Plaza Dzunun.

On the eastern side of Dzunun, Str. N1025E1040-sub was dismantled and replaced by the three-room Early Puuc II style building visible today; the structure is approximately 11.3 meters long and 3.4 meters wide. The central room measures 5.3 meters long and had a wide doorway with two columns; the two flanking rooms were smaller (2 meters long). Of the superstructure, only the lower courses of the masonry walls remain *in-situ* while the three lower steps of the stairway are also preserved. They indicate the stairway was low with several wide steps leading to the superstructure, much like the stair on the *Popol na* (Gallareta N. et al. 2001). Structure N1025 has not been extensively excavated, so further information is not available regarding its function or form.

[13] The tower is similar to the one found at the Mirador Group at Labna.

The second Early Puuc II style building in Plaza Dzunun was constructed on the plaza's western side (Str. N1045E1005) (Figure 5.11). This structure contains six rooms, three of which face into Plaza Dzunun while the other three face into Plaza Icim Sur. Each of the rooms is accessible only from the outside, with no interior access between rooms. Little of the portion of the structure facing Dzunun remains standing today and it appears the majority of the stones used to construct it were removed and reutilized in later time periods. The three rooms facing into Plaza Dzunun appear to be the original component of the building with the rooms facing west into Plaza Icim added later (Gallareta N. et al. 2000). The structure is 16.9 meters long and has a total width of 7.0 meters. Although excavations have not been conducted inside the structure itself, Floors 1-3 of the plaza were found in front of the building; no evidence of the earlier Preclassic floors was encountered, suggesting the area was incorporated into Plaza Dzunun during the Early/Middle Classic expansion of the original platform.

During this phase of construction, the *Popol na* remained relatively unchanged; the only known modification to the superstructure itself was the addition of three interior benches, one on each end and a central bench (Figures 5.17, 5.18a,b). These benches would have provided interior seating and a view of Plaza Dzunun for those seated inside the *Popol na*. Additionally, a straight wall replaced the inclined platform wall on the west side of the structure while the eastern wall was extended and a perishable structure was built on the extension (Bey et al. 2007). Stair C remained in use during this period although the orientation changed slightly because Floor 2 partially covered the first step (Figure 5.14a).

In the northern end of Dzunun, the relationship between Floor 2 of the plaza and the Palace-sub is not clear at this point in time. At least two plaster floors were constructed during the Late Classic periods, the first of which completely covered the megalithic structure. The second floor is associated with the construction of a platform or terrace that supported several vaulted buildings. During the Late Classic, evidence suggests that the Palace-sub was transformed from a megalithic platform into a set of vaulted Early Puuc IIa style buildings: one facing east and the other facing west (Figure 5.19). It is likely that there was a third building looking south, into Plaza Dzunun, though we do not currently have evidence of a structure in this location[14]. Linked to the transformation of the megalithic platform into a set of vaulted buildings was the burial of an adult, who had been placed in a deep pit and then burned. The pit was dug through several of the plaza floors and after the individual was burned, the pit was sealed. These architectural changes in the Palace indicate a change in form and possibly a change in function as well, from a ceremonial structure in the Early/Middle Classic periods to a residential structure. At this point in the construction history of the group, we believe the Palace acted as a sort of *axis-mundi* or *panopticon* that united the three main plazas and residents of Yaxche. With buildings facing into each plaza, the Palace would have had visual and physical control of each area, serving as a constant reminder of the power and status of its residents.

Terminal Classic Period: The spatial configuration of the Yaxche Group changed again at the beginning of the Terminal Classic (around 800 A.D.), marking the climax of the group as an elite residence. Early in the period, the plaza floor in Dzunun was renovated a final time (Floor 1) while the access points between Plaza Dzunun and Plazas Icim and Ulum were also modified.

The stairway to the *Popol na* underwent two changes during the Terminal Classic; the earlier stairway, Stair C, was partially dismantled and a new Stair B was constructed in its

[14] It is likely that any structure in this area was completely dismantled during the Terminal Classic transformation of the Palace into a pyramid. No excavations have been undertaken in the northern area of the Palace.

place with Floor 1 of the plaza (Figure 5.14a). Excavations revealed that Stair B was located slightly farther east of Stair C and was 14.10 meters long. It was composed of four vertical steps that were approximately 1.4 meters wide and made with roughly cut stones covered in stucco. Later during the period, Stair B was partially dismantled and Stair A was constructed; Floor 1 of the plaza remained in use throughout the Terminal Classic. Stair A has the same orientation as its predecessors but extended slightly further north, into the plaza. The first step is wider than the other three risers (which were 1.5 meters wide); all are made of well-cut stones and slightly inclined, in a talud style. The fourth step of Stair A completely covered the zócalo of the *Popol na* (Figures 5.18a,b, 5.20). No known changes were made to the superstructure itself at this time.

Final modifications of the Yaxche Group occurred later in the Terminal Classic period in association with the construction of a new palace in the Kuche and Chulul Groups. This transformation radically altered both the function and form of the group- it ceased being used as a place of residence and was converted into an ancestral shrine (Figure 5.21). Four of the six the doors in the *Popol na* were sealed shut, signifying the building was no longer used as a council house; it was transformed from an open, relatively spacious room looking out into Plaza Dzunun into a long, dark chamber (Figures 5.16, 5.18a,b, 5.20).

One of the biggest changes occurred with the conversion of the Palace from multiple free-standing buildings into a 17 meter high stepped pyramid with a two-room vaulted superstructure (Figure 5.22). Retaining walls covered the earlier vaulted structures and a large central stairway that faced south into Plaza Dzunun was constructed. Though excavations are presently being conducted on the structure, it appears that the construction of this pyramid symbolically transformed the original royal residence of Kiuic into a temple dedicated to the founding ancestors of the community.

5.4.2 Plazas of the Grupo Yaxche: Plaza Icim

Archaeological evidence indicates that Plaza Icim was the residential and general living/use area for the Yaxche Group[15] (Figures 5.9, 5.23). Given its spatial relationship to the two work areas (Patios A and B), it was probably a multi-functional space that included the residential, storage and activity areas necessary to support the elite residents of the group. The main entrances to the Yaxche Group were located in Plaza Icim (one in Norte and one in Sur) and the area functioned as a funnel through which all visitors and inhabitants had to pass in order to move throughout the group (Figure 5.23).

Plaza Icim is divided into northern and southern 'halves' by a set of vaulted masonry structures; Plaza Icim Sur takes the shape of a quadrangle, formed by several sets of vaulted, masonry structures that face an open plaza area. Plaza Icim Norte was more open than its southern counterpart, lacking structures on its east and western sides while the northern end of the plaza terminates in a small hill with a vaulted structure (Str. N1120E1005) on top that faces south into Plaza Icim. Icim Norte appears to have functioned more as a work area than a residential one, an inference based on its lack of masonry structures and its close association with Patio B, another work area of the group. Although the area occupied by Plaza Icim shows evidence of occupation dating back to the Middle Formative period, excavations have revealed a very different construction history from that of Plaza Dzunun.

Middle and Late Formative Periods: Deep stratigraphic excavations indicate that the first occupation of the Plaza Icim area dates to the Preclassic, although at present the extent and exact nature of this occupation is unknown. In Icim Sur, all of the units excavated have a

[15] Plaza Icim is not the primary focus of the present research and therefore a limited summary of excavations to-date is presented for this area. For more detailed information, see Gallareta N. et al. 2000-2008.

layer of hard, compact sascab near bedrock that is associated with Middle and Late Preclassic ceramic material (Gallareta N. et al. 2003, 2006)[16]. Another indication of a Formative period occupation is a floor of very compact sascab (Floor 4) found along the southern edge of Icim Sur[17]. Both of these soil/floor lenses resemble the lower levels of units excavated in Plaza Ulum, all of which contain a similar lens of compact, sascab-reddish soil containing Middle and Late Formative period ceramics.

The northern half of Plaza Icim contained the remains of two low stone platforms that were built directly on bedrock and are dated to the Middle Preclassic period (Bey et al. 2007; Gallareta N. et al. 2005, 2006). The platforms are believed to have been the foundations upon which perishable houses were built although no evidence of post-holes was visible (Figure 5.24). Two roughly circular features composed of burned clay were the only other features dating to the Middle Preclassic found in Icim Norte (Gallareta N. et al. 2006, 2007). A similar feature was found in Patio B, immediately east of Icim Norte (Gallareta N. et al. 2001). Though the function of these features is not well understood, they appear to be evidence of some sort of specialized activity area (Bey et al. 2007; Gallareta N. et al. 2006; Gallareta C. et al. 2009). Together, these features suggest that the area around Plaza Dzunun was occupied by the beginning of the Middle Preclassic period and contained a mixture of residential and special purpose activity areas.

Early and Middle Classic Periods: Although deposits of ceramic material have been found in both Icim Norte and Icim Sur dating to the Early/Middle Classic periods, the area surrounding Plaza Dzunun appears to have been abandoned as a residential area during this period. A platform wall found beneath the ramps that connected Plaza Icim and Plaza

[16] A similar layer of sascab has been found throughout the Yaxche Group. In each area, the lens is associated with Middle and Late Preclassic ceramic material (Chris Gun and George Bey, personal communication).
[17] A carbon sample found directly below the sascab floor returned a C-14 date of 701 B.C.

Dzunun during the Late Classic periods suggests that Plaza Icim existed in some form but, to date, there is no known construction activity in Plaza Icim during the Early or Middle Classic Periods. It is possible that as the importance of Plaza Dzunun was growing, the residences found during the earlier periods were moved farther away from this increasingly powerful space.

Late Classic Period: The main construction episode in Plaza Icim Sur occurred in conjunction with the Late Classic building boom in Plaza Dzunun (around 700 A.D), when the plaza was integrated in the Yaxche Group, an elite residential complex in the core of Kiuic.

Excavations in the southeastern corner of Plaza Icim indicate the first ramp linking Icim with Plaza Dzunun was built during the Late Classic; this ramp is also associated with the first well-documented Classic period floor (Icim Floor 2) (Figure 5.25)(Bey et al. 2007; Gallareta N. et al. 2006). A layer of paving stones, like those found in Plaza Ulum and at the southwest corner of the Palace, was also found under Floor 2 in Icim Sur. During this period, several one- and three-room Early Puuc II buildings were constructed in Icim Plaza, all associated with the completion of Floor 2. One set of this style of buildings, all of which appear to be residential, forms a courtyard (Plaza Icim Sur) that is enclosed on three sides, with three more Early Puuc II buildings in the center (Figure 5.23). Major excavations of the structures in Plaza Icim Sur have not been undertaken except in two of the southern structures, N1020E0990 and N1020E1005.

The area in front of Str. N1020E0990, a three-room vaulted, masonry structure that occupies the southern edge of the plaza, has been investigated. Each room has a doorway facing into Plaza Icim while the two eastern rooms also have doorways that face south, out of the plaza. The original platform of the structure was covered when Floor 1 of Plaza Icim was built, and a new platform was built that extended 9.3 meters north and 4.4 meters east.

Unlike its southern counterpart, the architecture of Plaza Icim Norte during the Late Classic is characterized by platforms composed of low, rough stones that likely supported perishable structures, though no evidence of postholes have been found on their surface. The remainder of the plaza consists of an open area that likely served as the loci for specialized activities related to daily life in the group, such as tool production and food preparation[18]. Excavations indicate a stucco floor covered the open area during the Late/Terminal Classic periods. Additionally, a stairway was constructed in the northern extreme of Icim Norte, leading to Structure N1120E1005, a two-room vaulted structure on a hill that faces south into Icim.

Terminal Classic Period: During the Terminal Classic period (800-900 A.D.) the floor of Plaza Icim Sur was renovated a final time (Floor 1), covering the basal platforms of the structures (including La Obra on N1020E0990), and the ramp that joined it to Plaza Dzunun was enlarged (Figure 5.25). Also during this period, Structure N1020E1005, a one-room masonry building, was added in the extreme southeast corner of Icim Sur. Structure N1020E0990 was connected to the *Popol na* in Plaza Dzunun by three low steps, creating another point of access between the two plazas (Gallareta N. et al. 2006). Low porches were constructed off of the masonry structures in Icim Sur though these do not appear to have been work area because no metates were found in association with them.

While food preparation might not have occurred on these porches, two patios (Patios A and B) are located to the south and west of Plaza Icim, which seem to be the loci for residential activities. The patios are open rather than completely enclosed like the plazas of the Yaxche Group and are also associated with chultuns, metates and with one exception,

[18] This assumption is supported by the high concentration of artifacts found in the area as compared to the rest of the group.

non-vaulted buildings. Patio A contains two different kinds of structures: annular and C-shaped. The former are believed to have functioned as an oven for ceramic firing or limestone production and are common in Puuc architecture, though none to date have been excavated. C-shaped structures are found at sites such as Uxmal and Ek Balam and generally date to the post-monumental Terminal Classic (Bey et al. 1997) but in this case it appears that the C-shaped structure functioned as a service building attached to a Late/Terminal Classic elite household (Bey et al. 2003; Hill and Bey 2002). Patio B contained the foundation of a three-room structure that supported a perishable wall and roof. The area also contained a large amount of refuse that indicated it was used as a service area.

Archaeological evidence suggests that the residential function of Icim changed toward the end of the Terminal Classic period, when it was no longer kept clean and large trash deposits accumulated in various areas of the plaza. The change corresponds with other significant changes in the Yaxche Group, including the closing of multiple entrances on the *Popol na*, the transformation of the Palace into a pyramid, and the creation of two new monumental groups at the site (Bey et al. 2007; Gallareta C. et al. 2009).

5.4.3 Plazas of the Grupo Yaxche: Plaza Ulum

The first major construction phase in Plaza Ulum occurred during the Late Classic period, when the area was formally incorporated in the Yaxche Group. Lying east of Plaza Dzunun, Plaza Ulum appears to have served as the ritual locus of Grupo Yaxche and contains two small pyramids, unlike any others at the site (Figures 5.6, 5.9, 5.26). The two pyramids occupy the east and north sides, while the southern edge of the plaza contains a raised platform that supported a perishable structure. On the western side is a low platform, which separates Plaza Ulum from Plaza Dzunun and contains the remains of a possible tower. In addition to the temples, other indicators that Ulum was a ritual area include a looted tomb, two plain stelae, three plain drum altars, and several offerings.

The excavation of Plaza Ulum, especially Temple A (N1050E1065), represents the primary focus of the present research and the bulk of the data analyzed (Figure 5.28). The construction history of Plaza Ulum resembles Plaza Icim more than Dzunun, in that it lacks a long, well-defined sequence of stucco floors. Instead, there appear to have been three major construction phases, the first of which occurred during the Preclassic period. The second episode occurred during the Late Classic period, when the 'plaza' was constructed in a single building event defined by the addition of a stucco floor in the plaza, the construction of Temple A-sub in the east and a structure in the south[19]. The final building phase began in the Terminal Classic and included the dismantling of the earlier temple and stairway to accommodate the construction of a new temple, modifications to the southern structure and the construction of a new stucco floor. After discussing the architectural evolution of Plaza Ulum, the access to the plaza, floor sequences, associated offerings, stelae, and altars will be discussed.

Middle and Late Formative Periods: Although no house platforms dating to the Preclassic period have been found in Plaza Ulum, there is evidence that the residents of Kiuic did use the area. Ceramic material dating to the Middle and Late Formative periods was found in many of the units excavated in the plaza in association with a layer of hard, compact sascab-red soil near bedrock[20]. The primary architectural feature lies directly under the western edge of the Temple (Str. N1050E1065) and has not been thoroughly explored because of its location. The feature appears to be a platform or substructure wall composed of several

[19] The northern structure, N1070E1045, has not been excavated and therefore is not included in the discussion of the Ulum material.
[20] This sascab layer has been consistently found throughout Ulum as well as in Plazas Icim and Dzunun.

stones that run roughly N-S, directly below the first step of Stair A. The stones are approximately 20 centimeters high and roughly rectangular (Figure 5.27)[21]. Excavations in 2008 on the northern side of the Temple uncovered two additional stones that are part of a Preclassic feature and although they appear to be at the same depth and in the same soil lens as the feature on the western side of the Temple, the assumption cannot be positively confirmed at this time[22]. The two stones on the north side are slightly inclined, like those used in the Preclassic feature found beneath the *Popol na* in Plaza Dzunun. Ceramic material from the level containing the wall and below consisted primarily of Late Formative types such as Dzudzuquil, Chunhinta and Sierra Red (see Gallareta N. et al. 2005:fig 3.115).

A second possible Preclassic feature was found beneath the visible architecture of Platform N1040E1040 on the southern edge of Plaza Ulum. An alignment of three worked stones dating to the Late Classic period rest on a foundation of roughly worked stones, running in an E-W alignment. The roughly worked stones are associated primarily with Late Preclassic ceramic material, especially Sierra Red and Flor Cream (see Gallareta N. et al. 2007:fig 4.76a). Beneath this alignment is a lens of red (rojiza) soil and then bedrock, which is characteristic of the Preclassic horizon throughout the group.

Early and Middle Classic Periods: Although ceramic material from this period has been found throughout the Plaza Ulum, there is no known building activity in the area that dates to the Early or Middle Classic periods.

Late Classic Period: As with Plazas Icim and Dzunun, the first major construction boom occurred in the Late Classic period produced several new structures that dramatically

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[21] There is a 40 centimeter gap in the wall that separates the three stones in the south and two stones in the north.

[22] These two stones (C'32) are found in the same soil lens as the feature found in A'29 and A'30 in 2006. Additionally, similar construction fill was found below each feature and the ceramic distribution is comparable.

changed the spatial footprint of Plaza Ulum. The area, which had been open until this point in time, was formally incorporated into the Yaxche Group and joined to Plaza Dzunun via a low, stepped platform that served as the only means of access to the ritual plaza. Additionally, a small one-room temple (Temple A-sub)[23] was constructed in the east as well as a structure (Platform N1040E1040) in the southern part of Ulum (Figure 5.9, 5.26, 5.28).

Though almost completely dismantled for the construction of the Terminal Classic temple (Temple A), the basal row of stones forming the walls of Temple A-sub was incorporated into the construction fill of the later building (Figure 5.29a,b). The walls were built in the typical Puuc style, by setting well-cut veneer stones in mortar. Because only one course of stones was left *in-situ*, it is not clear whether the structure had a zócalo and although the stones are relatively well cut, they are not as finely shaped and fitted together as found in walls of Mosaic style buildings. When Temple A-sub was torn down, some of the rubble, including boot-stones, stones from the springline of the vault, cantilevers and stones from the tympanum were used as fill and suggest that Temple A-sub had a stone vault. Based on the shape of the stones, the vault was composed of tacones, which are intermediate between slab vaults and the later boot-stone vaults (see Gallareta N. et al. 2006:fig 4-47).

The orientation of Temple A-sub was slightly different than Temple A and it was located further north and west than its later counterpart (Figure 5.29b)(Gallareta N. et al. 2006). The doorway of the temple was 1.07 meters wide and faced west into Plaza Ulum (like in Temple A). In total, the exterior front (west) wall of the substructure (including the doorway) was 6.08 meters long and the row of stones left *in-situ* was approximately 25

[23] The northern temple, Structure N1070E1045, has not been excavated and therefore the construction history of this building is unknown to date. For this reason, the building is not mentioned in this discussion of Plaza Ulum.

centimeters tall. Portions of the northern, eastern and southern walls were also uncovered and all were preserved one course of stones high except for the northern half of the back (east) wall, which had two rows of stones. Both the interior and exterior of the back wall were uncovered and measured approximately 60 centimeters thick.

Two floors are were constructed and used during the life-span of Temple A-sub; Floor 3 was the original floor associated with Temple A-sub while Floor 2 was a later renovation of the temple floor. Portions of Floor 3 and the stones along the northern, interior section of the back (east) wall of the substructure showed evidence of having been heavily burned (Figure 5.30). The southern portions of the back wall and Floor 3 showed no evidence of having been burned; Floor 2 was preserved along the entire back wall and although it had traces of red paint there was no indication it had been burned (see Gallareta N. et al. 2007:fig 4.57). Test pits were placed in each of the four corners and center of the substructure but no associated burials or offerings were found.

While Temple A-sub was in use, the pyramid had only two platforms- Platforms 1 and 2 (both were incorporated into Temple A)(Figure 5.31). The western (frontal) façades of both platforms show evidence of multiple construction phases although precisely which modifications are associated with Temple A or Temple A-sub is difficult to determine. It does appear that the stairway associated with Temple A-sub (Stair B) was wider than its later counterpart; excavations on the plaza floor and Platforms 1 and 2 support this assumption[24]. The only other difference between the platforms (of Temple A and Temple A-sub) was that the elevation of Platform 2 was slightly lower than what is visible today. When Temple A

[24] All platforms will be discussed in detail below with the construction of Temple A during the Terminal Classic period.

was constructed, the height of Platform 2 which was raised in order to accommodate the addition of the third platform across the eastern front of the structure.

The only means of access to Temple A-sub was Stair B, a centrally located stairway on the western (front) façade of the pyramid. The staircase was partially dismantled for the construction of Stair A, which was built when Temple A was constructed in the Terminal Classic (Figure 5.32). Stair B has roughly the same north-south orientation as Stair A and the stones used to construct it were short, roughly worked rectangular stones with rounded corners; there are also several instances where cuñas were used as space-fillers. The four uppermost steps of Stair B are visible behind Stair A and are well preserved while the lower steps were removed prior to the construction of Stair A[25].

Because so much of Stair B was dismantled when Stair A was constructed, the original dimensions of the stairway could not be determined. The length of the existing portion of Stair B is approximately 4.2 meters long (north-south) while the steps are approximately 19-22 centimeters high and 30 centimeters deep. A stone believed to mark the northern limit of the stairway was uncovered on the plaza floor (Floor 2) and gaps in the walls of Platforms 1 and 2 walls suggest the original stairway was wider than Stair A. Evidence also indicates Stair B projected farther west into Plaza Ulum than Stair A (see Gallareta N. et al. 2007:fig 4.15, 4.16). Ceramic evidence confirms Stair B was constructed in conjunction with Temple A-sub and Floor 2 of the plaza, all of which date to the Late Classic period. While the ceramic samples associated with Floor 1 of the plaza, which was poorly preserved, are mixed, the ceramics associated with Floor 2 are primarily early slate types, which represent a clear break with Terminal Classic slate wares (Chris Gunn, personal

[25] Step 1 contains 7 stones, step two 12 stones, and steps 3 and 4 both contain 11 stones; the northern end of step 1 had been destroyed and no stones of it were found.

communication). It appears that Floor 2 was built directly upon the ground; there is no evidence of an earlier stucco floor below.

In the southern end of Ulum, on Platform N1040E1040, excavations revealed that beneath the platform visible today is an east-west alignment of three worked stones. The worked faces of these stones face north, into Plaza Ulum, and it appears the rest of the wall was dismantled during later renovations of the platform. Associated ceramic materials place the construction of the wall in the Late Classic period (see Gallareta N. et al 2008). The exposed portion of the wall is approximately 63 centimeters long and 26 centimeters tall (Figure 5.34, 5.35). There was a stucco floor associated with this wall but it was only conserved in the area directly in front of the wall and it appears to correspond to Floor 1 of the plaza.

Although nothing can be said concerning the form or function of the platform at this time, it is evident there was some type of structure in the southern area of Ulum. The worked stone wall rests on a foundation of roughly worked stones with the same orientation. The ceramic material that corresponds to the rough wall, although mixed, dates primarily to the Late Preclassic Period and is characterized by Sierra Red and Flor Cream types (Chris Gunn, personal communication).

Terminal Classic Period: During the early part of the Terminal Classic, a construction boom occurred in Plaza Ulum, just as elsewhere in the Yaxche group. Temple A-sub and Stair B were torn down and a new temple and stairway (Temple A and Stair A) were constructed over them (Figure 5.32)(Gallareta N. et al. 2006, 2007, 2008). Other activity included a renovation of the plaza floor and modifications to the structure on platform N1040E1040.

Architectural features, construction techniques, and ceramic analysis indicate that Temple A was constructed in the Early Puuc IIa style (Gallareta N. et al. 2005:5-7; Gallareta

N. et al. 2008; Ringle personal communication) and/or the *Intermedio* style defined by G. Andrews (1995). Large sections of the eastern and northern walls of Temple A were found *in-situ* and indicate the walls were constructed in typical Puuc veneer style- a core of small-medium sized stones and mortar whose interior and exterior faces were covered with well-cut veneer stones (Figure 5.36; e.g. Gallareta N. et al 2007:fig. 4.5,4.6). Stones from the medial molding of Temple A were found *in-situ* along the northern wall and both straight and beveled molding stones, indicating the temple had a 3-part superior molding, were found in the rubble that covered all four sides of the pyramid. Also supporting the identification of Temple A as an Early Puuc IIa style structure are the presence of a simple basal (*zócalo*) molding found intact along the back (east) wall and the shape of the vault stones, which are intermediate between the slab vault and the later boot-shaped vault stones (*tacones*). Finally, rather than using the carved stone decoration common in the Mosaic Puuc style, Early Puuc IIa buildings made heavy use of stucco to cover their structures. The presence of one *espiga in-situ* in the eastern (back) wall of Temple A, as well as several found in the rubble, and pieces of modeled stucco found in units on the building, lead us to believe that the temple was once covered in stucco decoration (Figure 5.36). Related to this is a large deposit of modeled, painted stucco decoration that was found approximately 4m to the southwest of Temple A. Though it is not clear whether the deposit is associated with Temple A or Temple A-sub, its location supports the idea that at least one of these buildings in Plaza Ulum had extensive stucco decoration.

The pattern of the rubble from Temple A indicates that the western half of the vault collapsed first, falling forward down the eastern face of the structure. Afterwards, the sides (tympanum) collapsed and, finally, the eastern half of the vault fell forward into the interior of Temple A. Supporting this timeline is the fact that the stones from the front (west) portion of the vault were scattered across the structure while the back half (east) of the vault and frieze fell in large blocks inside the temple itself. After clearing all of the debris from the pyramid, it was possible to take the external measurements: 6 meters north-south (front-west wall), 5.5 meters (back-east facade), 4 meters east-west (south wall) and 3.96 meters (north wall). The internal measurements are: 4.95 meters north-south and 2.90 meters east-west, and the thickness of the north, east, and south walls averages 48 centimeters. The thickness of the western wall varies- close to the corners the wall is thicker (54 centimeters) while it tapers near the door jambs (50 centimeters); these variations are likely due to the weight-bearing capacity of the wall. After clearing the rubble from within the temple, intact sections of the vault were exposed and measured (Gallareta N. et al. 2007:figs 4-13, 4-14, 4-15). The springline of the vault was approximately 19/24 centimeters high and was followed by five rows of large boot stones, the cantilevers and, finally, the capstones.

The removal of the collapsed vault also permitted a detailed analysis of the walls' construction technique, type of stonework and height of the temple walls. The veneer stones on the interior face of the walls were more roughly worked than those on the exterior. Both the interior and exterior faces were composed of straight courses of stone and chinking stones were used to make minor adjustments where needed (Gallareta N. et al. 2007:fig 3.12). Many of the stones of the lower course of the west wall were found *in-situ* or had fallen directly on Platform 3 and they are much larger than the stones found in the other three walls of the building (Figure 5.29a, 5.38). The differences in size are likely due to an effort by the builders to distribute the weight of the building on the four walls (Ringle, personal communication). The superstructure had a simple entrance that faced west into Ulum Plaza and the jambs were not monolithic but composed of several stones that occupied the entire width of the wall. Based on the dimensions of the jambs, we estimate the entrance was approximately one meter wide.

The eastern section of the north wall was preserved to its original height and contained eight rows of cut stones rising to a height of 2.25 meters. The top course was composed of smaller stones than those used in the rest of the wall, most likely in order to adjust and help level the height of the medial molding (Gallareta N. et al. 2007:fig 4-8). The basal molding along the north wall was intact and *in-situ* fragments of the stucco floor cover Platform 3, indicating that the wall and floor were contemporary. The construction of the eastern (back) wall is similar to that of the north wall; it was originally composed of eight courses of stones, with the smallest stones found in the top course (see Gallareta N. et al. 2007:fig 4-31). The basal molding was found complete, with the exception of two stones that were missing. Seven courses of stones were preserved in the northern half of the wall but the southern end contained only the basal row and several stones from the second course. A tenon was found *in-situ* (approximately 1.61 meters from the *zócalo* on the east wall), confirming that modeled stucco was used to decorate the exterior of Temple A (Figure 5.36). Only the stones composing the *zócalo* were found intact in the southern wall. As mentioned earlier, stones found in the rubble of Temple A indicate that the frieze of the building was slightly inclined and that it had a three-part superior molding, like those found in Plaza Icim[26].

After clearing the vault, the stucco floor of Temple A, which was well preserved on the eastern side of the room, was exposed. One area of the floor was discolored and

[26] Evidence to support these conclusions are: a) the presence of slightly sloping cornerstones (in the NW, SW, and NE extremes) whose upper portion is narrower than the inferior part, b) cut stones whose bases are wider than the cut stones of the walls, and c) both beveled and rectangular molding stones.

showed signs of having been intensively burned, or having something burned on it (Figure 5.37). The pattern and coloring of the burned area suggests the heat was the most intense in the northeast corner of the room near the east wall; reinforcing this conclusion is the fact that several of the stones on the east wall were burned and even show evidence of spalling. The burning does not appear to be caused by a fire actually sitting on the floor but rather by some type of burning object that had been placed on the floor in this area and then removed. The burning event that produced these distinctive patterns was likely part of the ritual treatment of this building, perhaps symbolically killing the structure[27].

Though no offerings or burials were found associated with Temple A-sub, a test-pit placed in the center of Temple A uncovered a cranium in the construction fill of Floor 1, without any kind of cist or container (see Gallareta N. et al. 2007:figs 4.54, 4.55). The cranium contained several teeth, two of which had been filed so that the dentine was visible. No other artifacts or additional skeletal remains were found in association with this cranium. It is possible that during the late Terminal Classic period, when the Palace was converted into the 17 meter high pyramid and several of the doors of the *Popol Na* were sealed, many of the important offerings and burials were removed from Plaza Ulum and re-interred either in the Palace or in the Kuche and Chulul Groups, the new locus of power at Kiuic[28].

A tree growing in the stairway leading to Temple A (Stair A) destroyed the upper portion of Stair A and, as a result, only the lowest three steps of Stair A were found completely intact (Figures 5.32, 5.35, 5.39a,b). The fourth and fifth steps were found more or less *in-situ,* the stones having been pushed slightly forward by the tree. The orientation of

[27] Evidence of burning was also found on the wall/floor in the interior of the sub-structure and is discussed in the previous section.
[28] Several offerings were found throughout Plaza Dzunun and the Palace is currently being excavated so no data is currently available for this structure. Also, excavations have not been conducted in the Kuche or Chulul groups at the time of this writing.

Stair A is northwest to southeast, rather than true north-south; the stones used to build the stairs are well-cut and both square and rectangular in shape (Figure 5.40). The first step of Stair A contains traces of the original stucco covering, which indicate that the stairway was contemporary with Floor 1 of the plaza and also used with a renovation of Floor 1 that was built directly on the original floor. The sides of Stair A on the first and second platforms were also well preserved and indicate that, like the walls of Temple A and risers of Stair A, the stones are well-cut veneer stones but not the fine quality of stones associated with the later Mosaic styles. The corners of the stairway are made of worked stones that are faced on three sides (west/north/top and west/south/top) and it appears that these corner stones were also part of the stairway, indicating Stair A had no balustrade (see Gallareta N. et al. 2006:fig 4.30). Only the corner of the first step however, was well preserved. The entire stairway was approximately 4.8 meters long (at the base) and the five preserved steps have a height of 1 meter. Ceramic analysis corroborates the idea that Stair A and Temple A were constructed during the Terminal Classic period.

The base of Temple A is a stepped pyramid composed of three platforms: 1, 2 and 3 (Figures 5.31, 5.35, 5.40). Platform 1 is the basal platform and therefore the largest in size, while Platform 2 is immediately above and slightly smaller. Temple A, the superstructure, was constructed on the uppermost platform, Platform 3. The access stairway is located on the western (front) face of the structure and divides each platform into a northern and southern half. The three platforms are oriented roughly on a north-south axis, similar to the stairs. Excavations indicate the western face of the platforms had at least two construction phases, each of which utilized stones of different quality.

The height of Platform 1 (approximately 1.15 meters) remained unchanged from its original construction with Temple A-sub to the renovations associated with Temple A. The northern half of the west side of Platform 1 is approximately 5.70 meters long and the southern portion is 3.30 meters long (the platform is divided by the stairway). At least two construction phases are evident in the northern half of the west side of Platform 1. The first phase (4.8 meters long) is composed of short, square stones in two rows of stones while the second phase (1.2 meters long) consists of stones that are roughly rectangular in shape and tall (Figure 5.40, 5.41)(Gallareta N. et al. 2006:fig 4.15). Phase 2 was added during the construction of Temple A, when the width of the stairway was reduced, creating a gap between the platform wall and the stair. Fragments of Floor 1 of the plaza were found along the base of Platform 1 and a line of stucco left on the stones in the wall indicates this floor would have hit close to the base of the uppermost course of stones in the platform wall (making wall about 62 centimeters high).

Below Floor 1, a second course of stones in the platform wall was uncovered, as well as a low rectangular stone that lies perpendicular to the east wall of platform 1 (Figure 5.41)(see Gallareta N. et al. 2006:figs 4.16, 4.18). The stone is approximately 70 centimeters long, 20 centimeters wide, and 26 centimeters high, and lies directly in front of the junction of the original wall and extension. Fragments of Floor 2 of plaza were uncovered and indicate that the earlier floor and the lower course of stones (including the perpendicular stone) were contemporary, which would have made the platform wall about 90 centimeters tall. The perpendicular stone was part of Stair B and suggests that the earlier stair was wider than Stair A and extended farther (west) into Plaza Ulum. Supporting this idea is the fact that the area south of the perpendicular stone, which would have been under/in Stair B, contained no remains of Floor 2. In addition, when Stair B was dismantled a 1.2 meter gap was created in the platform wall that was filled with stones of a different quality and shape. A third course of roughly shaped stones in the Platform 1 wall extended below the level of

Floor 2 and appears to be level with the stones of the Preclassic feature found under the Temple (see Gallareta N. et al. 2006:fig 4.15)[29]. The total height of the Platform 1 wall is approximately 1.35 meters and the width from the front of the wall to the wall of Platform 2 is 1.25 meters. The total length of the wall is approximately 6.16 meters (Figure 5.40). Additionally, there is a low platform (north adosada) composed of rough stones that extends off the northwest corner of Platform 1(Figure 5.42)(see Gallareta N. et al. 2005:figs 3.120, 3.121)[30]. Fragments of stucco indicate Floor 1 of the plaza covered the platform although no fragments were found that actually touched the platform. The rubble from the collapsed temple made it difficult to determine the extent of the platform though it seems to be solidly associated with the Terminal Classic modifications in Plaza Ulum. A plain drum altar, similar to the other altars found in Plaza Ulum, was found on the platform.

The southern half of the western face of the Platform 1 wall also shows evidence of three construction phases, as well as a low stairway off the southern corner (Figure 5.40). The stones in the original portion of the wall, which was approximately 2.4 meters long, are roughly worked and irregularly shaped, but most are short and oblong. The first extension added approximately 1 meter in length and was composed of relatively well-cut stones that are tall and square in shape (Figure 5.43)(see Gallareta N. et al. 2006:figs 4.19-4.25). Both the extension and the original wall are approximately 1.06 meters high, though the original wall has five courses of stones and extension consists of two courses. It is unclear whether the dismantling of Stair B left a gap in the southern portion of the platform wall that was filled, as it did in the northern half. The final addition to the Platform 1 wall consisted of a

[29] This row of stones sits directly on the lens of dark red soil above bedrock and is similar to the base of the Platform 1 wall in C'35, which was excavated during the 2005 field season.
[30] No units were excavated through the platform so it is unclear whether there are substructures beneath it.

row of un-worked stones and reutilized worked stones that runs southwest for approximately 3.4 meters (see Gallareta N. et al. 2006:fig 4-24).

Although not part of the original pyramid, a platform was built off of the southern face of the Platform 1 wall during the Terminal Classic, as evidenced by its association with Cehpech sphere ceramics. The entire basal row of stones was found *in-situ* and in the central portion of the platform wall, parts of the second and third courses were also uncovered. Only the southeast corner of the platform, which is rounded, was preserved. The quality of the stones varies from well-cut stones to roughly shaped ones and stucco fragments indicate it was originally plastered (see Gallareta N. et al. 2008:figs 4-9, 4-10). Further excavations revealed that the platform was built over two steps composed of low, roughly worked stones (Figures 5.40, 5.43)(see Gallareta N. et al. 2008:figs 4.41,-4.47). Fragments of stucco in front of the lowest step indicate both were covered in stucco flooring, which likely corresponds to Floor 1 of the plaza. The first step is at least 80 centimeters in length while the second step runs southwest for approximately 1.3 meters; the end of the stairway was not encountered[31].

As in the southern wall, the central portion of the east wall was also the best preserved, containing three courses of stones *in-situ*. Both the northeast and southeast corners were composed of multiple stones, the lower of which stones were found intact. Before excavating the northern wall of Platform 1, an *albarrada* that had been built during Colonial times first had to be documented and removed (see Gallareta N. et al. 2008:fig 4-14). The western end of the retention wall was preserved to its original height of 1.15 meters and traces of the stucco covering were also found. Near the northeastern corner of Platform 1, on the platform itself, a large quantity of ceramic material was encountered (KIU 80110)

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[31] Attached to the stairway were the remains of a wall foundation made of rough stones. This foundation, much like the one found in the north of Plaza Ulum, is discussed below.

as well as *mano* fragments (Units D'32, E'32) and a barkbeater (Unit G'31)[32]. The northern wall of Platform 1 was 14.05 meters long, the eastern face was 16.8 meters long and the southern face was 11.95 meters long.

Platform 2 is also associated with both Temple A and Temple A-sub. While the substructure was in use, it functioned as the top platform upon which the temple was built. The original height of Platform 2 was lower than what is presently visible (approximately 1.5 meters); prior to the construction of Temple A, a rough retaining wall was built between Platforms 1 and 2 to support the additional weight of the modifications. The dimensions of Platform 2 are: the northern half of the west face is 4.10 meters long while its southern side is 3.40 meters; the south face is 9.10 meters, the north face is 9.35 meters and the east face is 12.10 meters (Figure 5.40). The platform ranges in height from 80 centimeters on the western face to 1.5 meters on the other three sides.

As with Platform 1, the stairway bisects the western face of platform two, dividing it into a northern half, which was not as well preserved as its southern counterpart. The average height of the wall is 80 centimeters and the size and the shape of the stones used indicate two possible construction phases for the northern side, but they are not clear. The original wall extends 1.6 meters from the stairway and is composed of four roughly cut, rectangular stones, which join with the corner of Stair A (see Gallareta N. et al. 2006:figs 4.26-4.30). The corner formed between the platform wall and stairway had been protected by rubble and was well-preserved; the original stucco was uncovered and indicates that the corner had been rounded out with plaster (Figure 5.44). The extension of the wall contains three stones that continue north with the same orientation for 2.5 meters and uses large, very roughly shaped stones (see Gallareta N. et al. 2006:figs 4.27, 4.29). A large area of

[32] This material was located on Platform 1 but in areas that would have been considered outside of Plaza Ulum proper. They will be discussed in further detail below.

fragmented stucco floor covered the eastern portion of the top of Platform 1, which indicates the top of the platforms had been plastered.

The southern half of Platform 2 also averages .8 meters in height and appears to have several possible construction phases; the original wall is approximately 2.35 meters long and the possible extension runs south for 1.15 meters and is formed by two courses of stones. The southwestern corner of Platform 2 is aligned with the southwestern corner of Platform 1. While the corners themselves are monolithic, the wall is composed of three rows of small, roughly worked stones. A second extension of Platform 2 continues south for 2.62 meters, though it does not actually touch the end of the original platform wall (Figure 5.40, 5.45, 5.46). This extension mirrors the one constructed directly below with Platform 1 and uses a combination of re-utilized worked stones and rough stones. Extension 2 has one course of stones that averages 30 centimeters in height, though there are several larger stones present. Joining the southwest corner of this extension is the second of two short steps (approximately 18 centimeters high), with the first step coming off the Platform 1 wall.

All of the stones of the basal row of the southern face of Platform 2 were found *in-situ*, including the inferior stones of both the southwest and southeast corners. Three courses of stones were preserved in the southern half of the eastern face of the Platform 2 wall, while only the basal row of stones remained in the northern half of the wall. The northeast corner had collapsed and was found in the rubble of the building. The basal course of stones is preserved across the entire northern face of the wall, while a second course of stones only appeared in the central portion. The lowest stone of the northwest corner of Platform 2 was found intact. The stones used to construct the northern, eastern and southern walls of Platform 2 vary in size and shape from large, roughly shaped stones to smaller, worked stones. There does not appear to be any patterning among the use of the various sizes and shapes of stones, although larger stones are found more frequently in the basal row.

Platform 3 was added to the western side of the temple, facing into Ulum, along with the construction of Temple A and Stair A. The remaining sides of the pyramidal base (N, S and E) only had two platforms while both Temple A-sub and Temple A were in use. While the northern portion of Platform 3 was not well preserved, the southern end of the wall and the portion running across the access stairway were intact (Figures 5.46, 5.47). A retention wall was built approximately 20 centimeters behind the face of the Platform 3 wall. This retention wall consisted of five large, roughly dressed stones with smaller stones (cuñas) between them. The stones that comprise the platform wall are well cut and rectangular in shape. At some point in time, a row of low, roughly worked stones was placed in front of the original wall of Platform 3; these stones sat on Platform 2 and were placed approximately 10 centimeters in front of the original wall. This late wall is located at the level of the Platform 3 section that runs across the stairs.

Changes were also being made on the southern edge of Ulum, to Platform N1040E1040. During the Terminal Classic period, a rough retention wall was built and on top of the platform itself, low foundation walls of worked stones were constructed along the east and west sides[33] (see Gallareta N. et al. 2008:figs 4.49-4.54). It is believed that this foundation supported a structure with perishable walls and a roof. Only the first course of the walls was preserved and it appears the structure was open on the north side and would

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[33] No evidence of the foundation walls were found in the north or south, though it is possible these walls were dismantled and the stones reutilized at a later point in time.

have faced into Plaza Ulum. Fragments of a very poorly preserved stucco floor were found in association with this construction phase.

Access to the Plaza Preliminary investigations show that access to Plaza Ulum was highly restricted- a person had to first enter the Yaxche Group itself through Plaza Icim, descend the ramp into Plaza Dzunun and then cross a low stepped platform into Plaza Ulum (see Chapter 6 for detailed discussion of access patterns). The floor sequence in this area of Plaza Ulum differs significantly from that found throughout the remainder of the plaza; while only two stucco floors characterize the majority of the Ulum, at least 4 stucco floors were found in this area. Although the plaza appears open and easily accessible today, excavations revealed that walls made of perishable materials had been constructed across the northern and southern edges of Plaza Ulum, blocking access to the sacred area (Figure5.42). Both wall foundations are associated with Cehpech sphere ceramics, indicating they were constructed during the early Terminal Classic period. It is not clear whether they replaced earlier walls or represent a modification to the plaza; regardless, their erection radically altered the access patterns to Plaza Ulum. Low stone platforms were constructed off both the north and south walls of Platform 1 and the foundations for the perishable walls extend from these platforms.

While walls blocked access to Ulum from areas outside of the Yaxche Group, within the group one had to cross Plaza Dzunun and mount a low, stepped platform to enter Plaza Ulum (Figure 5.48). The platform was composed of at least two steps made of well-cut veneer stones and was covered in stucco[34](see Gallareta N. et al. 2004:figs 3.99-3.102). The first two steps had a height of approximately 40 centimeters, which would not have restricted visual access between the two plazas. A wall made of reutilized veneer stones and

[34] A third course of veneer stones appears above the two lower ones found *in-situ* but was dismantled at some point in time and it is not clear how it articulated with the platform.

rough stones was constructed on the surface of the worked-stone platform and is associated with Floor 1 of Plaza Ulum. A second floor, or possibly a renovation of the first floor, was found that would have covered the second step of the worked-stone platform and a third floor covered the first step. Ceramic evidence indicates that all three of these floors were constructed during the Terminal Classic period and are associated primarily with Cehpech sphere ceramics (see Gallareta N. et al. 2004:fig 3.103). The fourth floor found is contemporary with the construction of the worked-stone platform and dates to the end of the Late Classic period[35], based on its association with early slates rather than examples of the Cehpech sphere. As mentioned, the floor sequence in this area of Plaza Ulum differs greatly from that found in the rest of the plaza, with at least four stuccoed floors and no evidence of any stone pavement. I argue that the basic construction history of the plaza is similar but in this high-traffic area the floor was renovated in order to repair it and also to change the appearance of the access feature, while the rest of Plaza Ulum remained unchanged.

As mentioned, the low stepped platform described above was the only means of access to Plaza Ulum, at least during the Terminal Classic period. Both the north and south edges of Ulum contained perishable walls that blocked access, both visual and physical, from outside the group. The northern wall runs northwest-southeast between Temple A and Structure N1070E1045; these stones likely served as the base of a wall, which supported a wooden palisade (Figure 5.42). The wall foundation is approximately 60 centimeters wide and contains two parallel rows of rough, irregularly shaped stones. The pattern of refuse associated with the wall is consistent with that found throughout Ulum- the area inside the plaza proper was clean of debris and other refuse while the area located on the other side of

[35] There is a great deal of ceramic mixing in the lots associated with these units so an exact date is difficult to pinpoint. Currently it appears the floor was constructed in the late Late Classic period (personal communication, George Bey, Chris Gunn).

the wall, outside of the plaza, contained a large amount of ceramic material and other artifacts, including a mano fragment and stucco fragments.

Plaza Ulum was also blocked off in the south by a low wall one stone high that runs southwest off Platform 1 of the Temple. Though the exact form of the wall is unknown, we believe it supported a wall made of perishable material, such as a palisade or a wattle-and-daub "fence", like the one found in the northern area of Plaza Ulum (see Gallareta N. et al. 2008:figs 4.10, 4.11). The wall was attached to a low stone platform attached to Platform 1; two low, stucco-covered steps led to the summit of the low platform (see Gallareta N. et al. 2008:figs 4.42-4.47). The platform is associated with Cehpech sphere ceramic material, indicating it was constructed during the Terminal Classic remodeling of the plaza, much like its counterpart to the north.

Floor Sequence of Plaza Ulum The floor sequence found directly adjacent to the stepped platform separating Ulum and Dzunun (in the western area of Ulum) is more complex than the simple two-floor sequence found throughout the remainder of Ulum. Though not clearly defined, the western area contains a set of stucco floors dating to the Late and Terminal Classic periods and a sascab floor surface associated with Middle Formative period ceramics (see Gallareta N. et al. 2004:figs 3.87, 3.91, 3.95, 3.103). The Late Classic floor (Floor 4) is associated with the construction of the Palace and the stepped platform, while floors (1-3) appear to be modifications made to the original floor-platform during the early Terminal Classic period (Figure 5.48b). It is unclear which of the floors in this area correspond to Floors 1 and 2 found throughout the rest of the plaza; additionally, the stone pavement found near Temple A and in the center of the plaza was not encountered in the far western portion of Ulum near the stepped platform. I believe that the floor sequence in this area represents residents' attempts to modify the entryway into Plaza Ulum. After the initial construction of the platform in the Late Classic period, the addition of the later floors gradually changed the low, stepped platform into a low ramp. The platform fill beneath the Late Classic floor resembles the stratigraphy found throughout Ulum and suggests the entire area had a similar construction sequence, beginning during the Middle Preclassic period.

The floor sequence in the eastern part of the plaza revealed the existence of only two well-defined stucco floors: one dating to the Late Classic (Floor 2) and one to the Terminal Classic (Floor 1), with a possible renovation of the Terminal Classic floor. These two floors are contemporary with the construction of Temple A-sub and Temple A, respectively. The eastern half of the plaza also contained a level of stone pavement beneath Floor 2. The stones used to construct this pavement were roughly shaped and flat; similar stone pavements were found in areas of Plaza Dzunun as well as at the sites of Xcanacruz, Labna (at the Mirador), and at Chacmultun (Figure 5.49). The pavement stops approximately 80 centimeters before the base of the first step of Temple A. Below the pavement is the construction for the platform, which consists of large, rough stones; under these was a lens of reddish soil-sascab and then bedrock. The compact texture of the red soil-sascab lens indicates it could represent a Late Formative living surface.

Offerings, Altars and Stela In addition to the temples, other indicators that Ulum was a ritual area include a looted tomb, two plain stelae, three plain drum altars, and several offerings. In the center of the plaza is what appears to have been a looted tomb, which produced no artifacts or human remains except for a single human tooth and a partial undecorated jar at the edge of the looter's pit. The ceramics from the saqueo represent a mixed deposit of Formative through Late Classic materials, suggesting the area was greatly disturbed at some point after the Late Classic. One possible explanation for the lack of important offerings and remains in Plaza Ulum is that the residents of Kiuic removed them when it was decided to cease using the plaza as an important ritual area. To the east of this area are two plain stelae that fell or were knocked over and could have been part of a stelae platform located in the center of the plaza, over the looted tomb.

Plaza Ulum contained several offerings, the most interesting of which was located northwest of the looter's pit (Figure 5.50)(Gallareta N. et al. 2004). Embedded in the plaza floor below the layer of stone pavement was a capped, circular stucco element approximately 1.04 meters in diameter. The cap of the element had been broken in antiquity with a *mano*, which was found lying on top of the main offering, a Yokat striated olla. The only clue to the original contents of the jar was a jade earspool, found near the stucco cap. Another offering vessel was found outside of the main stucco element and consisted of two juxtaposed vessels: a Sacalum black-on-slate olla lying face-down on a larger fragment of another vessel.

The other offerings found in Plaza Ulum are associated with the stairway of Temple A. All of the vessels recovered in Ulum were empty of artifacts and we believe they contained food offerings[36]. At the south corner of Stair A, located beneath the pavement, was a Chumayel Red-on-Slate olla (see Gallareta N. et al. 2005:fig 3.107). The vessel was found face down and was empty. A second offering, consisting of a smashed dish, was located roughly in the center of the stairway on the plaza floor. No offering was found in association with the north corner of the stairway.

Excavations indicate the floors and rear (eastern) walls of both Temple A-sub and Temple A show evidence of having been heavily burned, indicating a termination or burning ritual took place within each (Figures 5.30, 5.37). The type of burn patterns on the floor and

[36] Current phytolyth analyses from soil samples of other offering vessels corroborate the idea that food had been placed in the vessels prior to their interment (Simms 2009).

spalling on the walls are consistent with something having been placed directly on the floor near the walls of each temple and then burned. Exploratory pits placed in each of the four corners of Temple A revealed no offerings although in the center of the temple, a human cranium with several teeth still intact was found (see Gallareta N. et al. 2007:figs 4.54-4.55). The cranium represents the only human remains associated with either temple and was found in the construction fill of Temple A, above the floor of the substructure. It had been interred directly in the fill without any special treatment or associated artifacts.

Plaza Ulum also contains three plain drum altars; two of which were associated with the Temple- one in the center of the staircase and one located on a low platform connected to the northwest corner of Platform 1. The third altar is associated with the other small pyramidal temple in Plaza Ulum, Structure N1070E1045. None of the altars were found *in-situ* so their original location within the plaza is unknown.

5.5 Conclusions

Current archaeological evidence suggests that the area occupied by Grupo Yaxche in heart of Kiuic was part of the original settlement in the area. All three main plazas (Dzunun, Icim and Ulum) contain ceramic material dating to the Middle Formative period, suggesting some type of activity was occurring in each of these areas during this time period. The only evidence of residential structures dating to this early phase has been uncovered in Plaza Icim, though it is possible others remain undiscovered. These residential structures were located around a low, open platform in Plaza Dzunun that likely served as a stage for communal rituals and ceremonies designed to reinforce the group identity.

Between 300 and 500-550 A.D., the occupation at Kiuic remained focused around the Preclassic platform and it is not until late in the Early Classic period that the next major changes in the area occur. During this period of construction, evidence indicates the residential structures are relocated and Formative period platform is enlarged. The southern structure is dismantled and a slab-vaulted *Popol na* is built in its place while a megalithic platform and structure (which later becomes the Palace) are built in the north. While the Dzunun platform is still low and relatively open, the access patterns become more restricted. These architectural changes suggest that the emphasis on community begins to decline as certain lineages or persons gain power.

For the next one to two hundred years, the residents of Kiuic appear to be content with the form of the Yaxche Group, until around 650-700 A.D., when a major construction boom transforms the open platform into an elite residential group. During this period, not only is the Dzunun plaza enclosed, but it is also surrounded on three sides by new patios and plazas as it becomes incorporated into a residential group (Figures 5.6, 5.9). Discussed in more detail in Chapter 6, an analysis of the Late Classic plan of the group indicates a radical shift in the spatial organization of the area that created a highly restricted environment in which the inhabitants of the group controlled movement through and access to the space.

The plan of the Plaza Dzunun in the early Late Classic period resembles an Early Puuc Civic Complex (EPCC)[37], which probably functioned as the foci of politico-religious activity during the early Late Classic period (Dunning 1994; Gallareta N. et al. 2004). The EPCC, found throughout the Bolonchén District, is believed to have provided a measure of a common administrative organization (Bey et al. 2005, 2007; Dunning 1994; Gallareta N. et

[37] Examples of this layout can be found at Kiuic, Huntichmul (with two), Labna, Chac II, Xcanacruz, and Sayil.

al. 2004, 2009; Ringle 2005). Architecturally, these complexes are characterized by a modest pyramid, a long one-roomed hall structure opposite or adjacent to the pyramid, ramps, a sub-rectangular plaza layout, and slab vaults (Dunning 1994).

While excavations indicate that Plazas Ulum and Icim were occupied in some form prior to the Late Classic, they do not appear to have been formally integrated or associated with Plaza Dzunun until around 650 A.D. At this point in time, the form of both plazas took shape and remained basically unchanged until the group was abandoned.

The final changes to Grupo Yaxche occurred in the early Terminal Classic period, around 800-850 A.D. A new palace group was constructed west of Yaxche and, with the new center of power, the function of the Yaxche Group appears to have changed. The Palace is buried under a 17-meter high pyramid and all but two of the doorways in the *Popol Na* are blocked. It is also possible that the important offerings and burials that had been located in Plaza Ulum were removed and relocated. All of these changes, along with those in Plaza Icim, suggest the group did not function as the residence for the royal family in the later decades of the site's history (Bey et al. 2005, 2007; Gallareta N. et al. 2001-2008; Gallareta C. et al. 2009). Whatever factors prompted the elite of Kiuic to build a new palace in the Kuche/Chulul Groups, the construction of a sacbe connecting the Yaxche Group to the new center of power indicates that while the function of the group changed, its importance in the landscape of power and memory at Kiuic had not.

FIGURES FOR CHAPTER FIVE

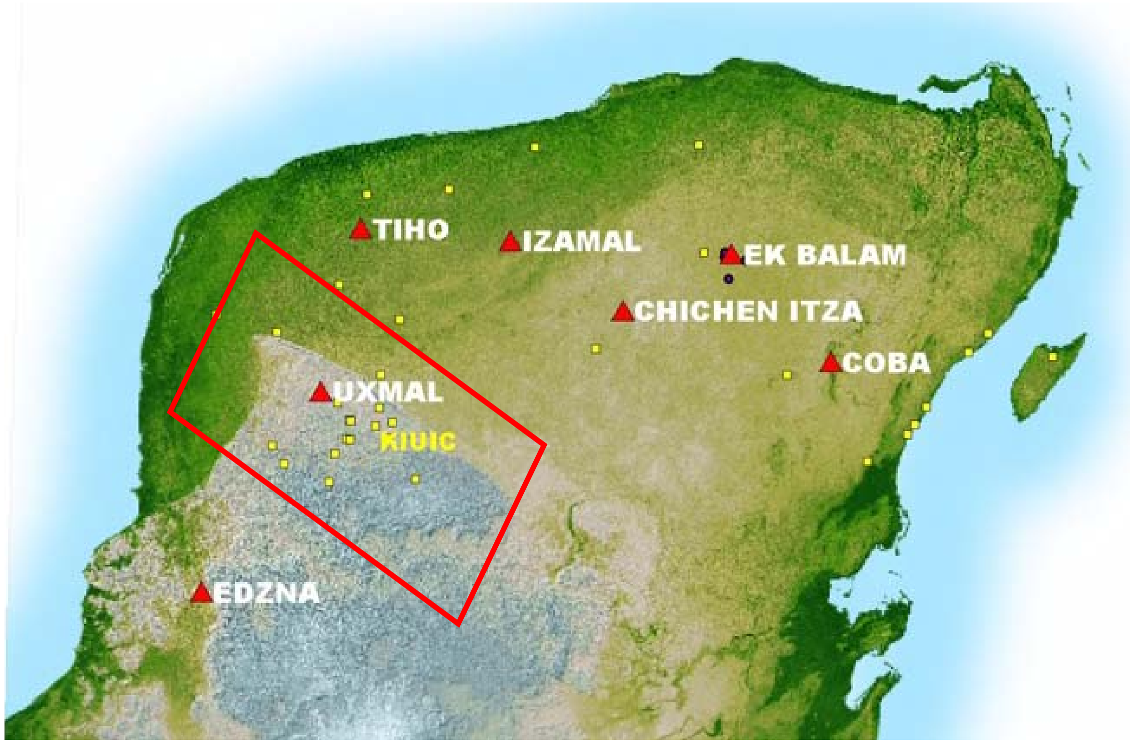


Figure 5.1: Image of Yucatan Peninsula with Puuc region highlighted (courtesy of Dr. William Ringle)

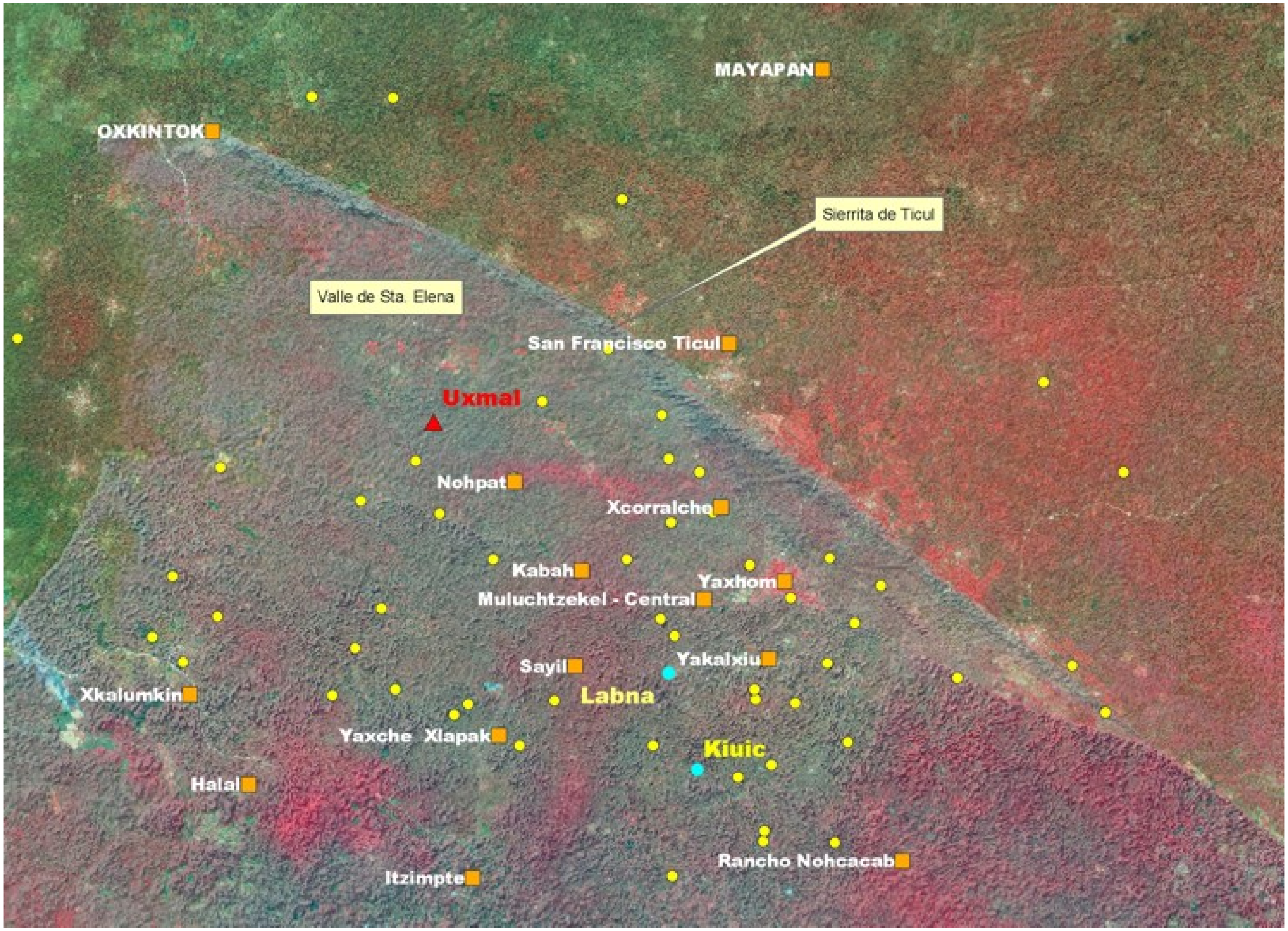


Figure 5.2: False-color satellite image of the Puuc region with major archeological sites highlighted (courtesy of Dr. William Ringle)

Figure 5.3: An example of Early Puuc IIa architecture from Plaza Icim Sur (Str. N1045E1005)

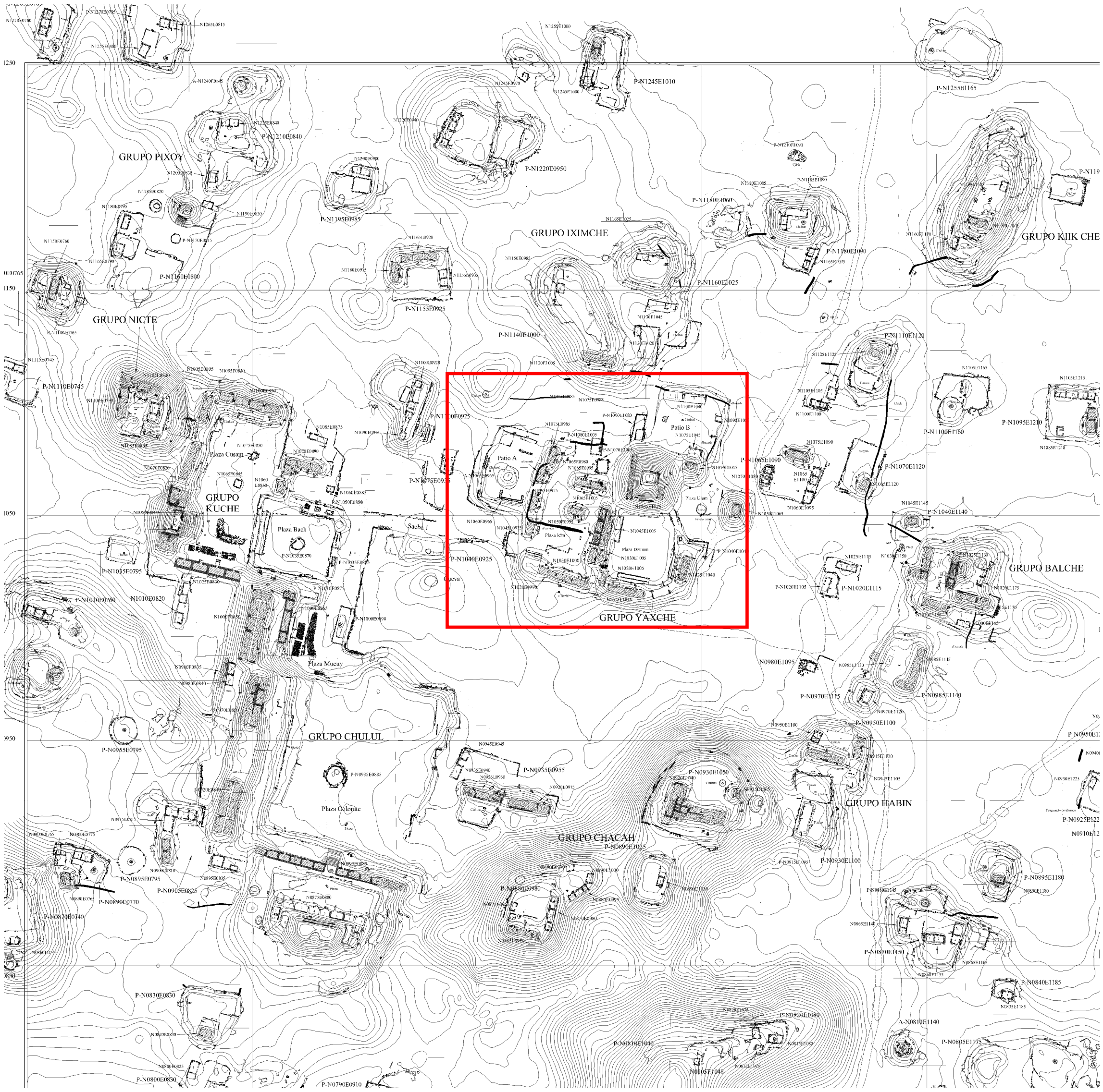


Figure 5.4: Topographic map of Kiuic, Yaxche Group highlighted (courtesy of Dr. William Ringle)

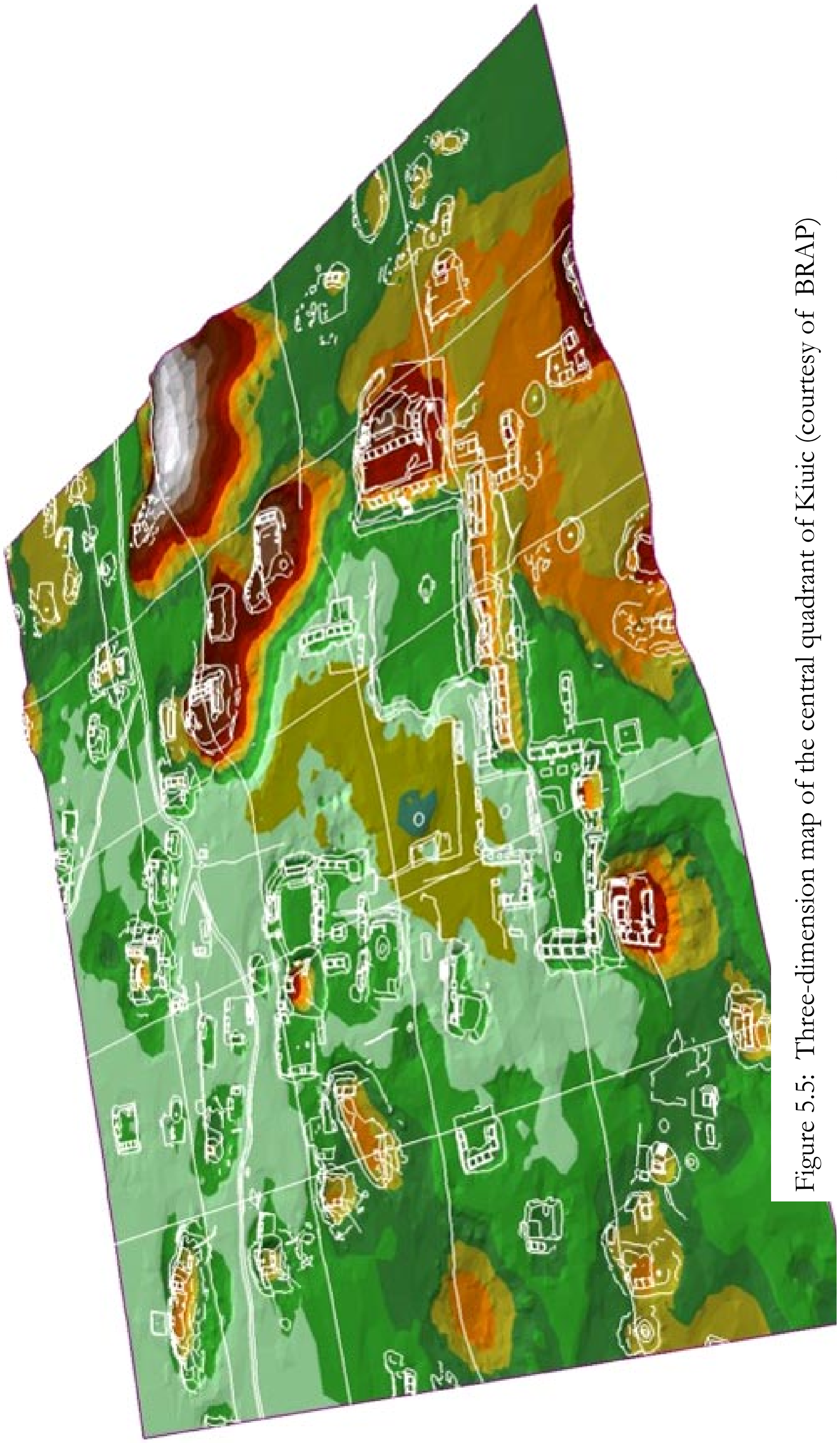


Figure 5.5: Three-dimension map of the central quadrant of Kiuic (courtesy of BRAP)

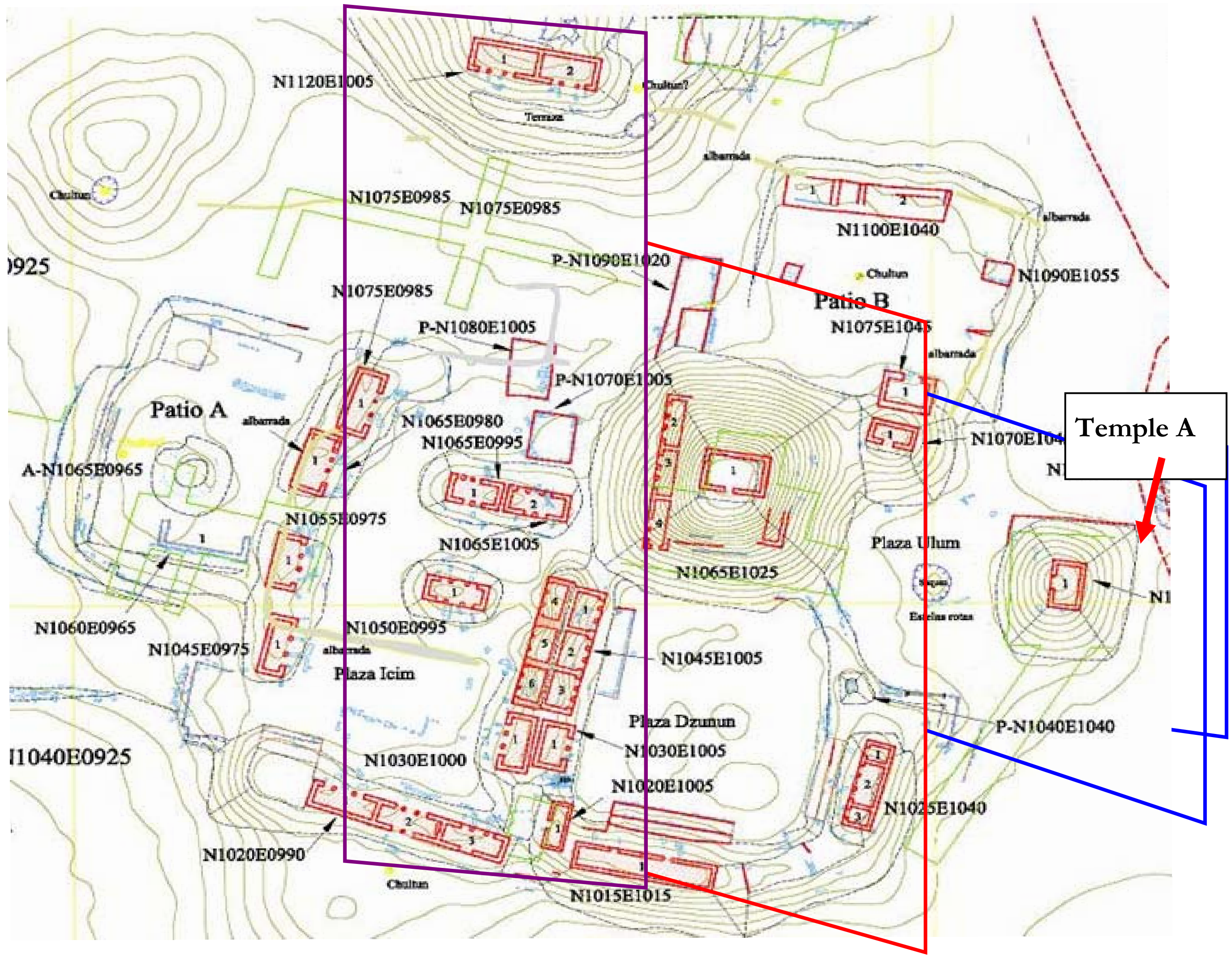


Figure 5.6: Map of Grupo Yaxche with three main plazas highlighted (courtesy of BRAP)

Figure 5.7: Map of Grupo Yaxche with units excavated (courtesy of Rosanna May Ciau)

Figure 5.8: Illustration of process of excavation. Stones are painted with numbers, photographed, drawn, and then removed.

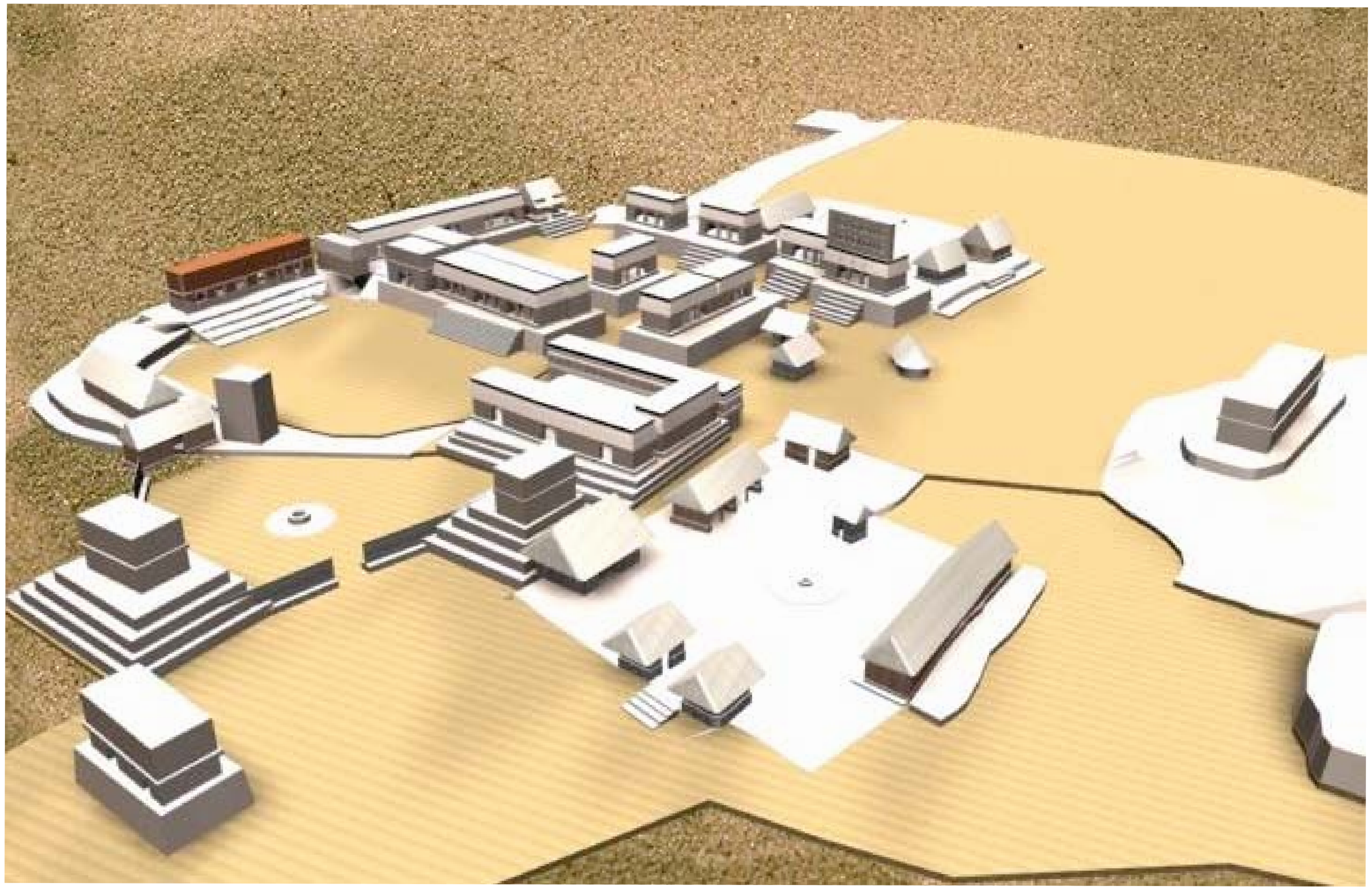


Figure 5.9: 3-dimensional reconstruction of the Yaxche Group (courtesy of M. Arqto. David Antonio Rivera Arjona)

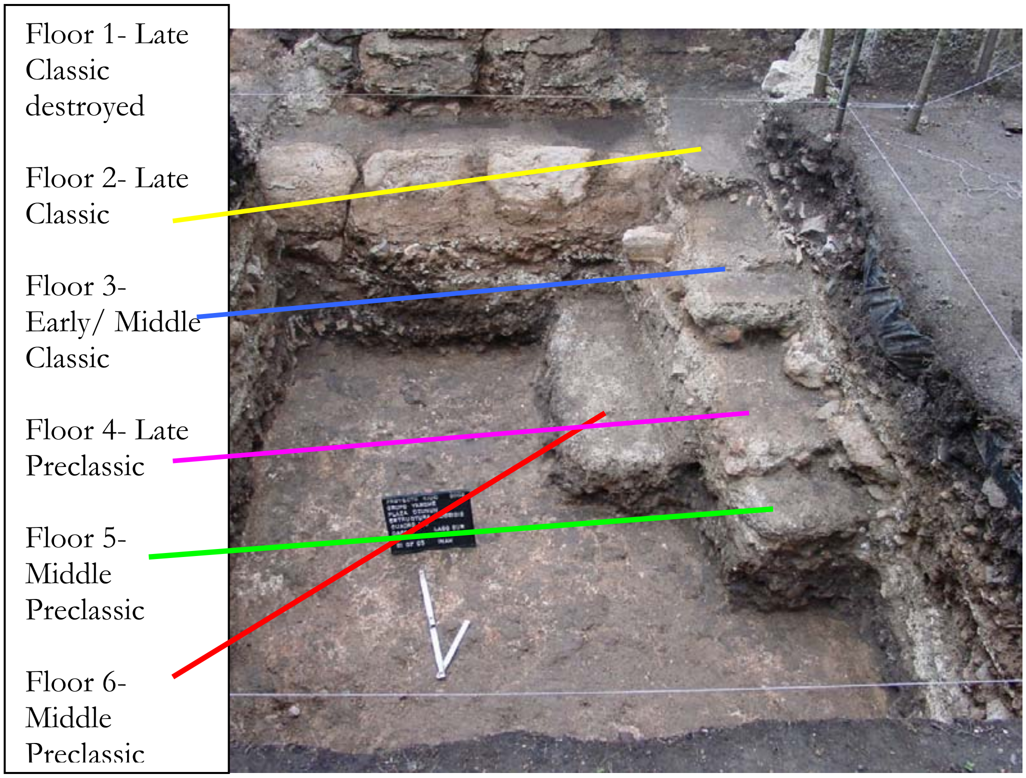


Figure 5.10a: Floor sequence in Plaza Dzunun, Unit M10

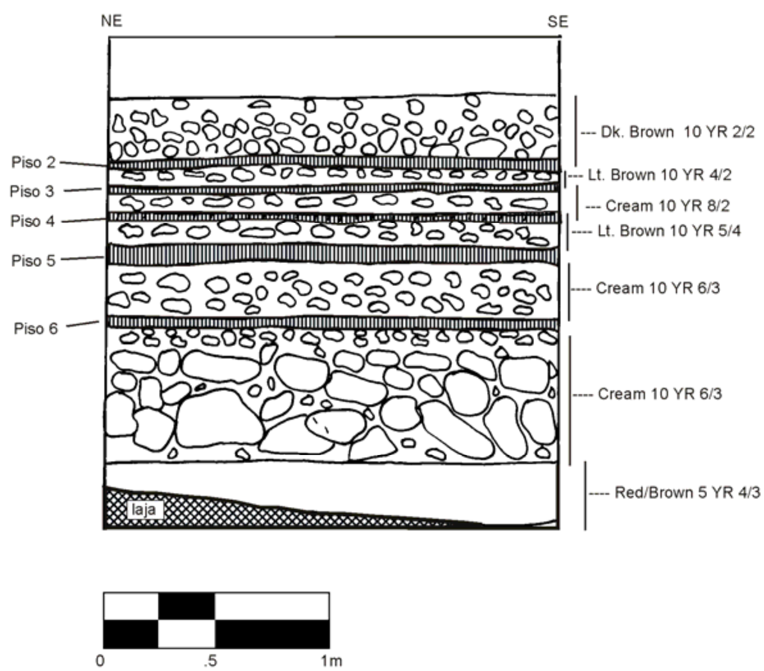


Figure 5.10b: Drawing of floor sequence in Plaza Dzunun, Unit M10 profile east (courtesy of BRAP)

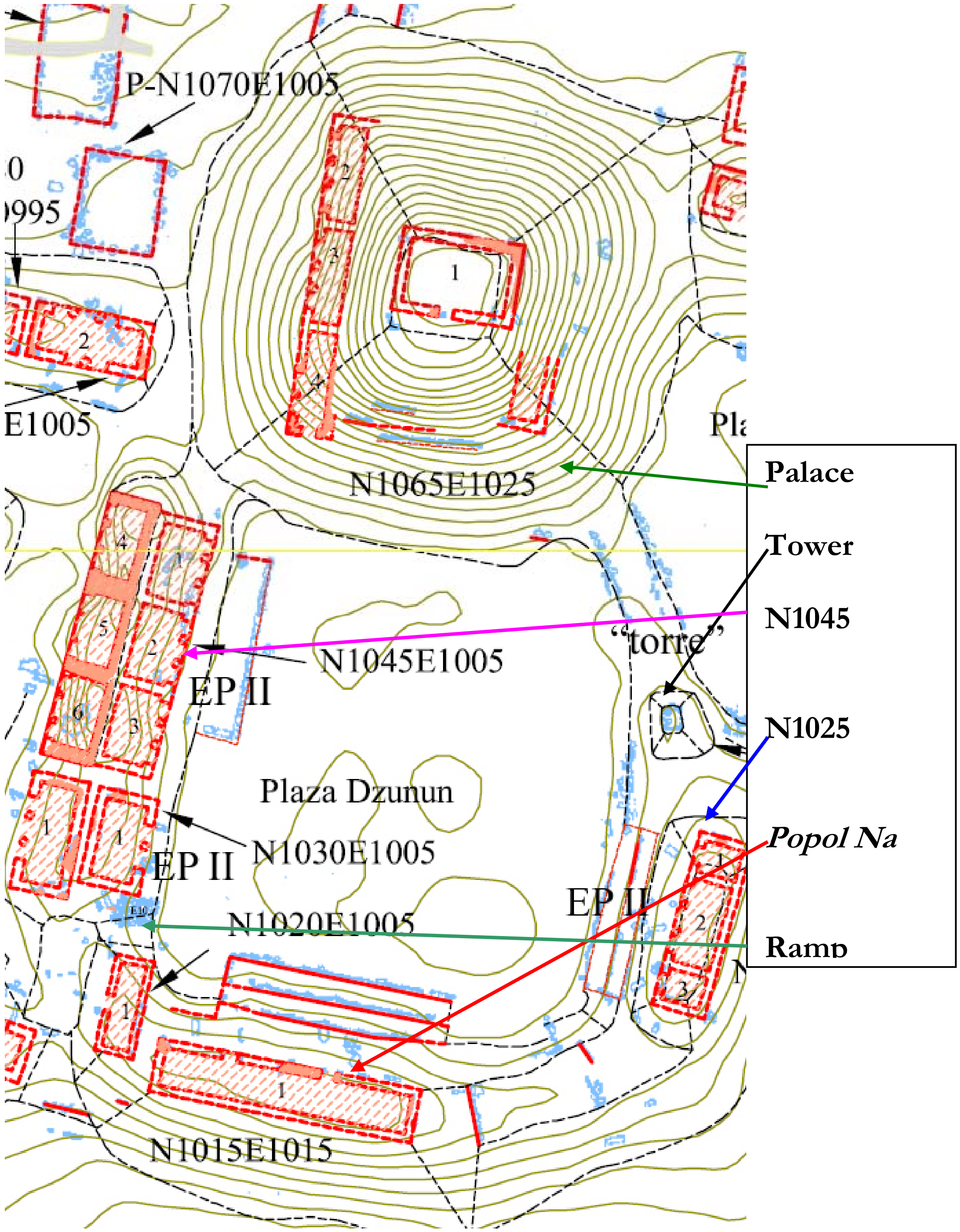


Figure 5.11: Detail of Plaza Dzunun with structures mentioned in text labeled.

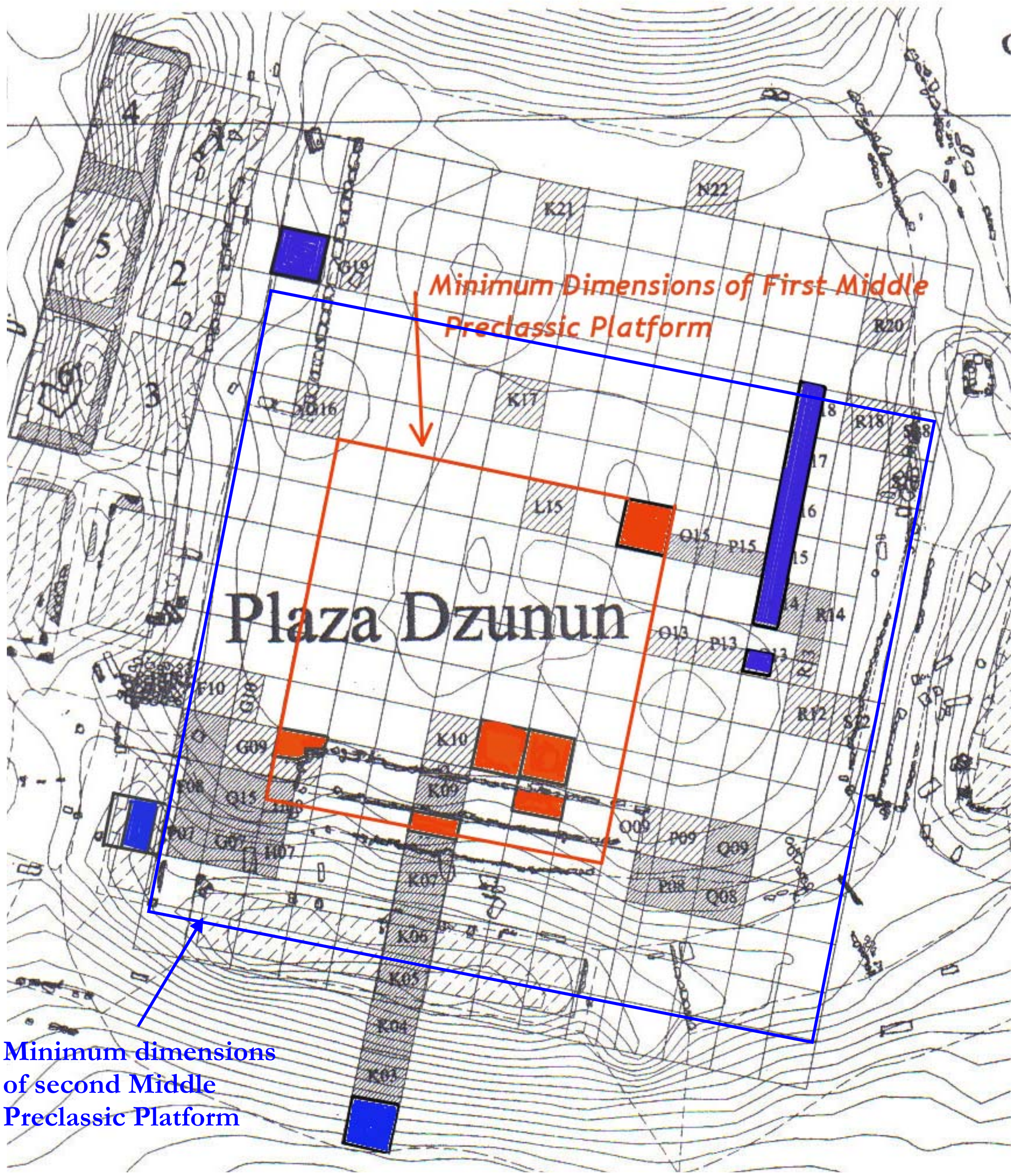


Figure 5.12: Dimensions of first and second Middle Preclassic platforms in Plaza Dzunun (courtesy of BRAP)

Figure 5.13: Western wall of the Preclassic substructure associated with Floor 5 of Plaza Dzunun (courtesy of BRAP)

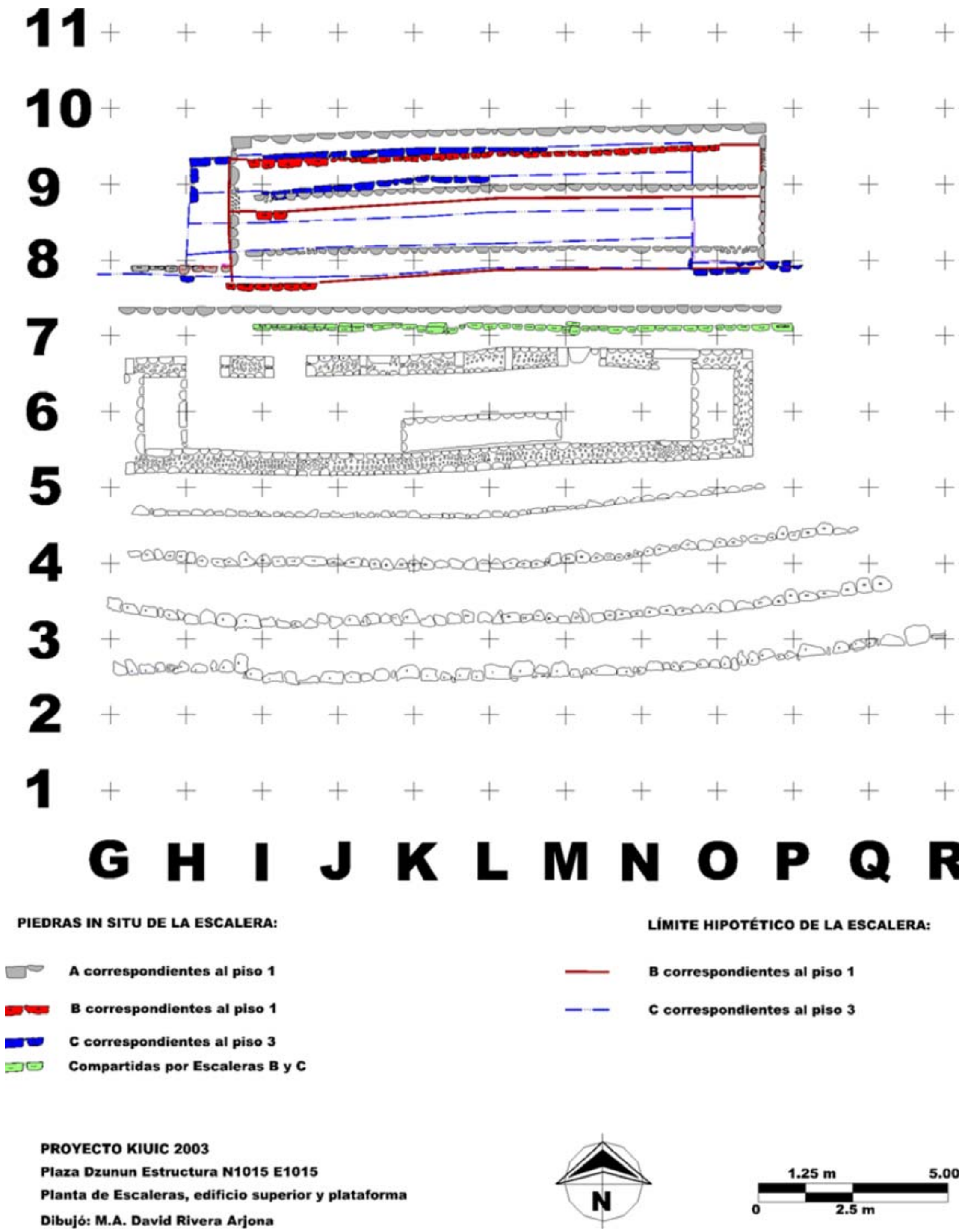


Figure 5.14a: Planta of *Popol Na* with stairs associated with floors 1-3 of Plaza Dzunun (courtesy of BRAP)

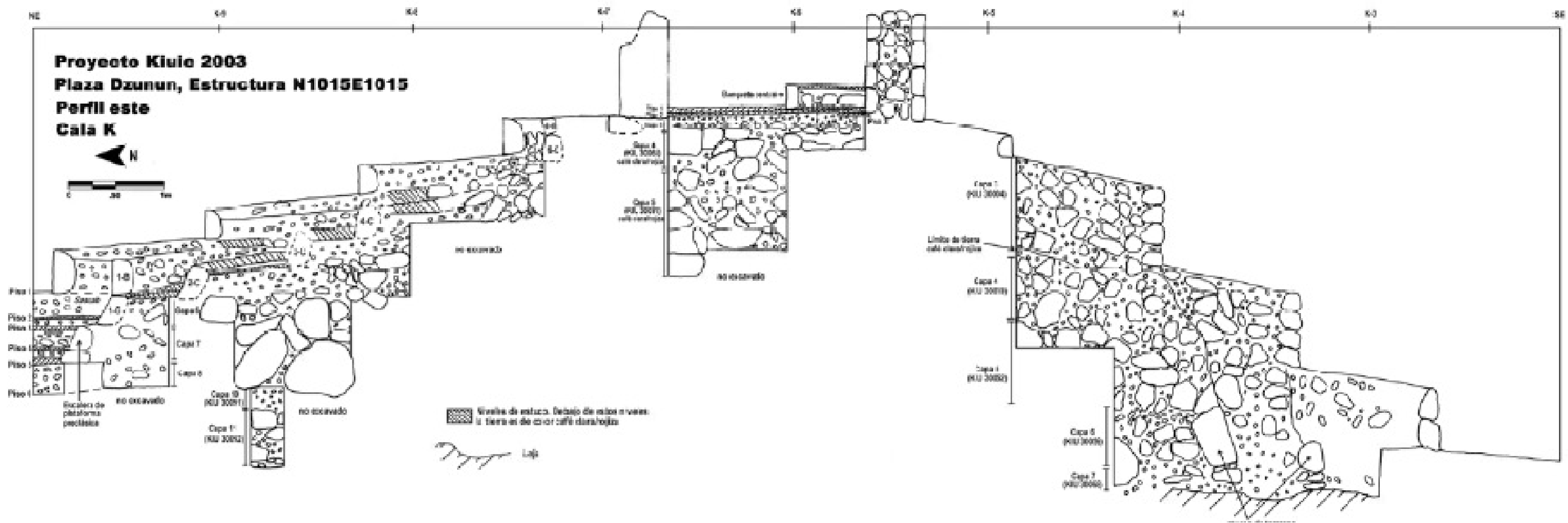


Figure 5.14b: Profile of the *Popol Na* (courtesy of BRAP)

Figure 5.15: Eastern limit of Stair C and eastern wall of basal platform. Note incline of wall.

Figure 5.16: Southern side (rear) of the *Popol Na* showing four terraces (courtesy of BRAP)

Figure 5.17: Interior benches of the *Popol na* (western, central benches and eastern bench)

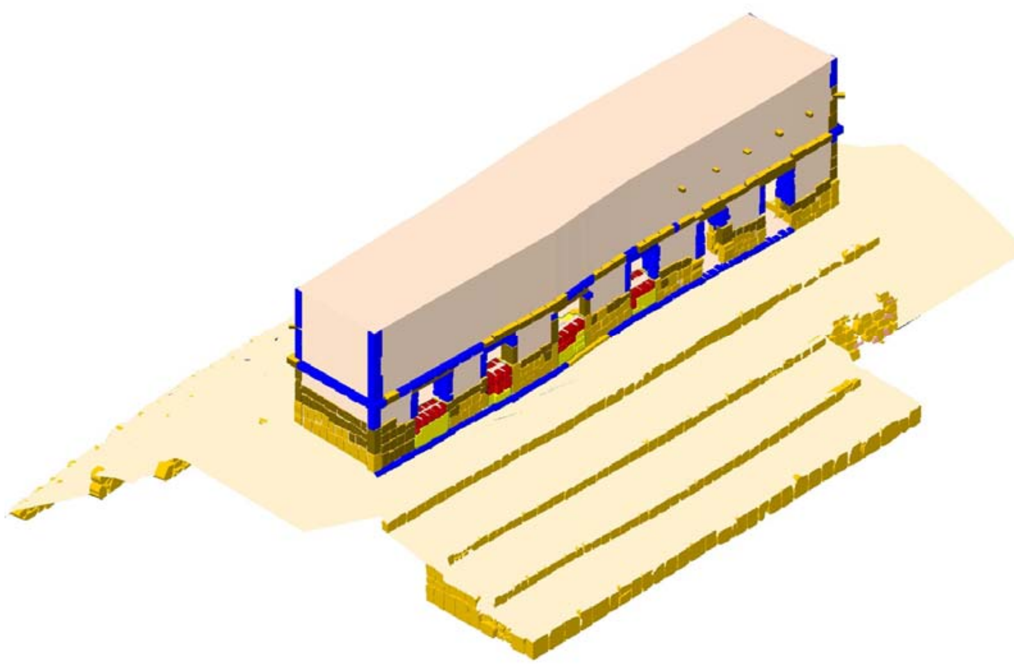


Figure 5.18a: 3D reconstruction of north façade (front) of *Popol Na.* During the Terminal Classic period the four eastern doors were blocked (courtesy of M. Arqto. David Antonio Rivera Arjona)

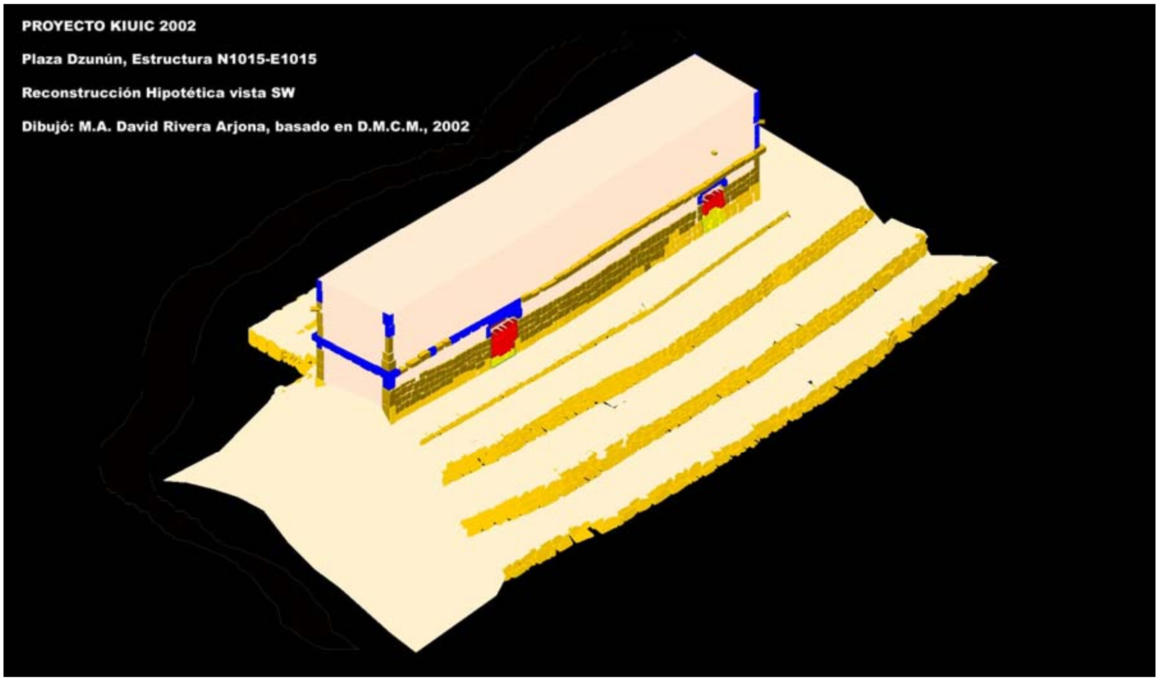


Figure 5.18b: 3D reconstruction of south façade (rear) of *Popol Na*. During the Terminal Classic period the two rear doors were sealed (courtesy of M. Arqto. David Antonio Rivera Arjona)

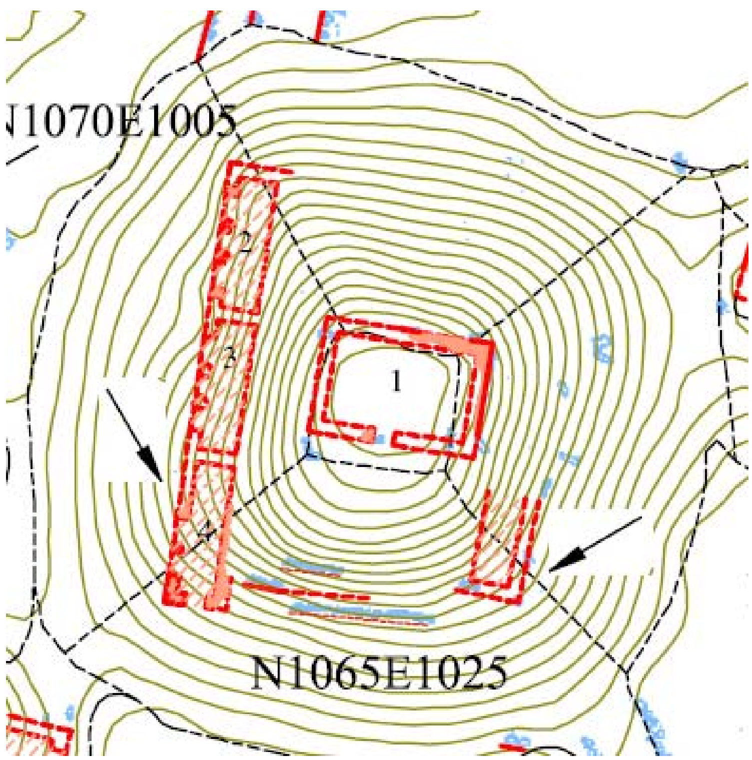


Figure 5.19: Map of the Palace showing the rooms of the Early Puuc IIa buildings visible (courtesy of BRAP)

Figure 5.20: Front of Stair A and the *Popol Na* (reconsolidated) as it would have appeared during the Terminal Classic period

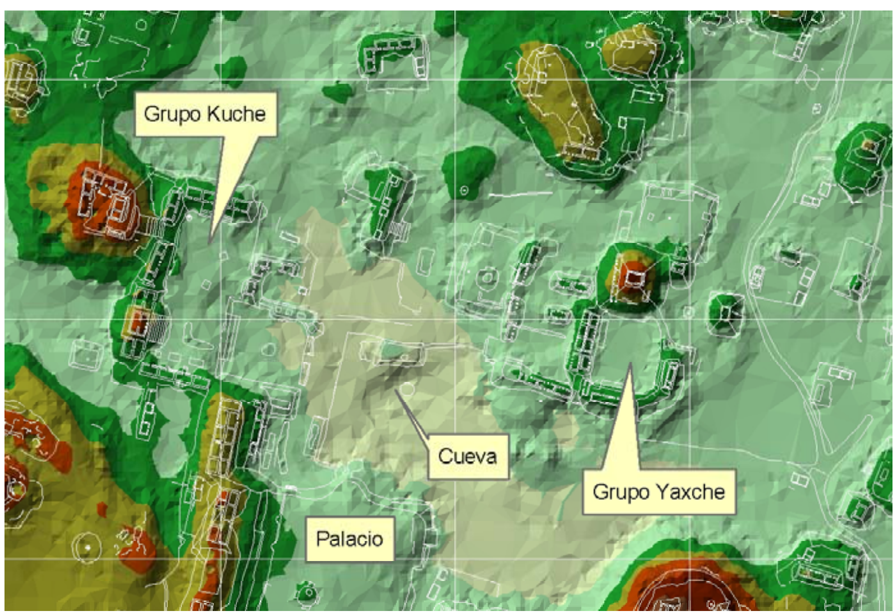


Figure 5.21: Tophographic map of Kiuic showing relationship between Yaxche Group and Kuche Group (courtesy of BRAP)

Figure 5.22: Front (south) façade of Palace after conversion to a pyramid during the Terminal Classic period (courtesy of BRAP)

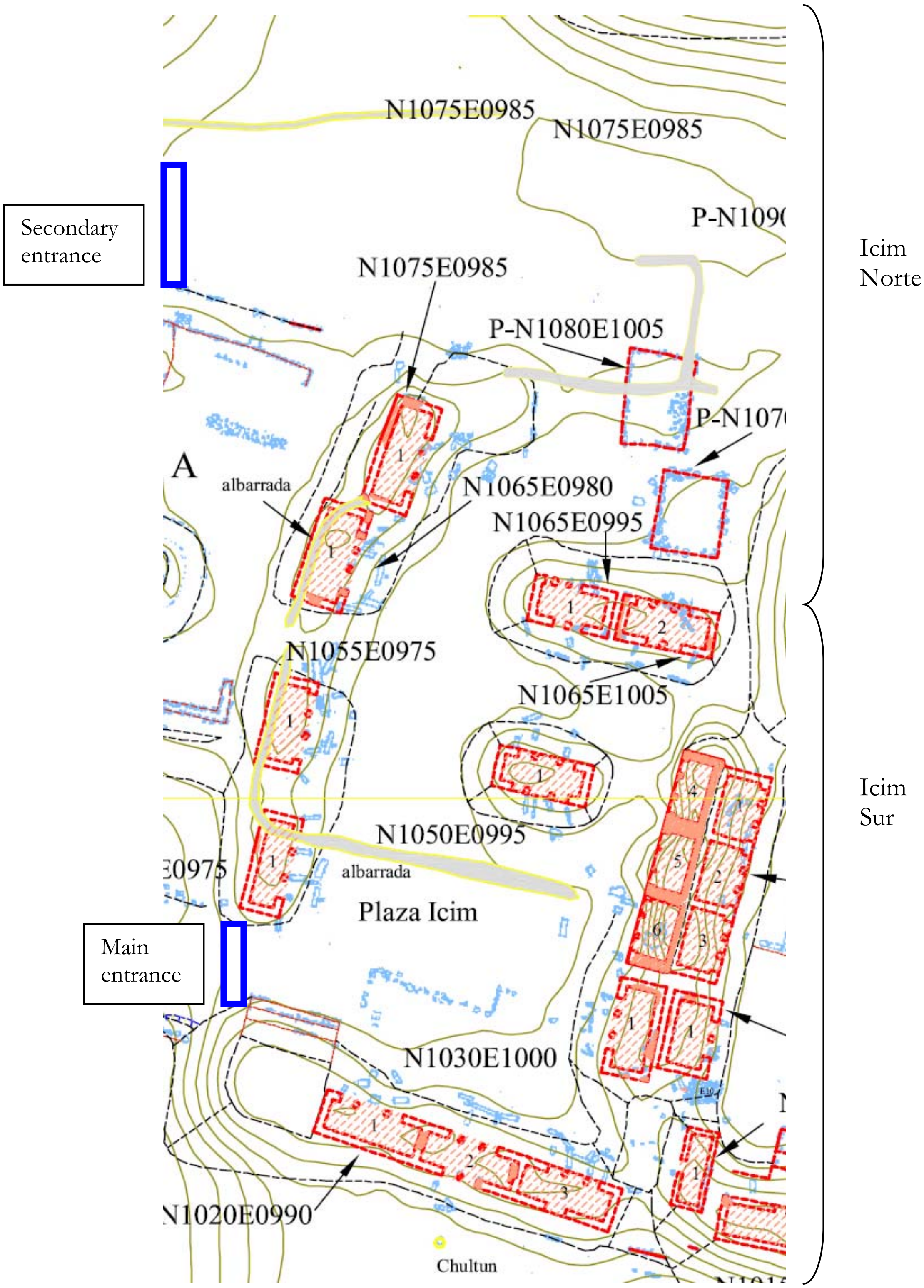


Figure 5.23: Map of Plaza Icim Sur and Norte (courtesy of BRAP)

Figure 5.24: Circular Preclassic feature of burned clay in Plaza Icim Norte

Figure 5.25: Ramp constructed during the Terminal Classic period to connect Plaza Icim Sur to Plaza Dzunun (courtesy of BRAP)

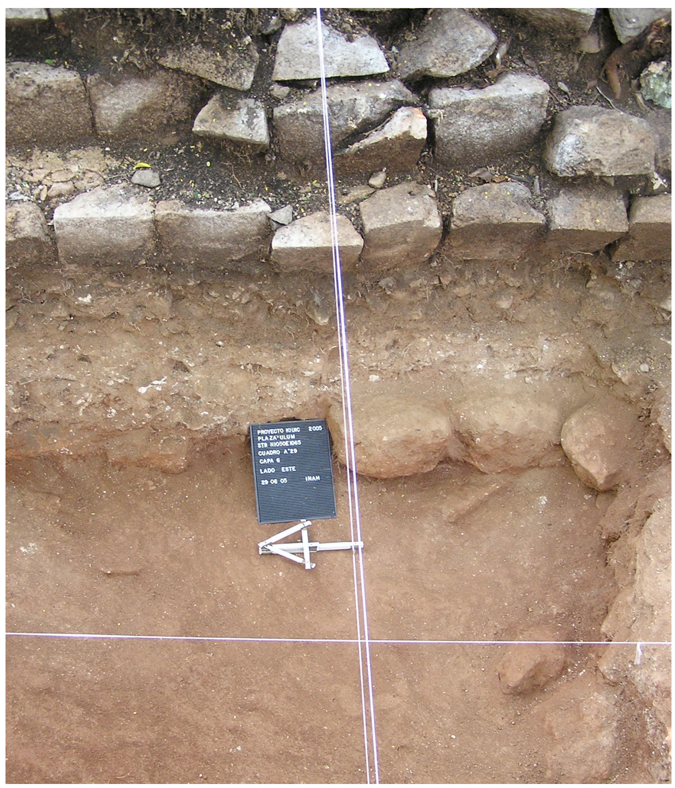
Pyramid N1070E1045

Palace

Temple A

Platform N1040E1040

Figure 5.26: Detail map of Plaza Ulum with structures listed (courtesy of BRAP)



Stair A

Preclassic Feature

Laja

Figure 5.27: Preclassic feature under Stair A of Temple A

Figure 5.28: View from southwest corner of Temple in Ulum after preliminary exacavtions.
Figure 5.29a: Temple A-sub and Temple A during excavations.

Figure 5.29a: Temple A-sub and Temple A during process of excavation. Temple A has been partially reconsolidated (courtesy of BRAP)

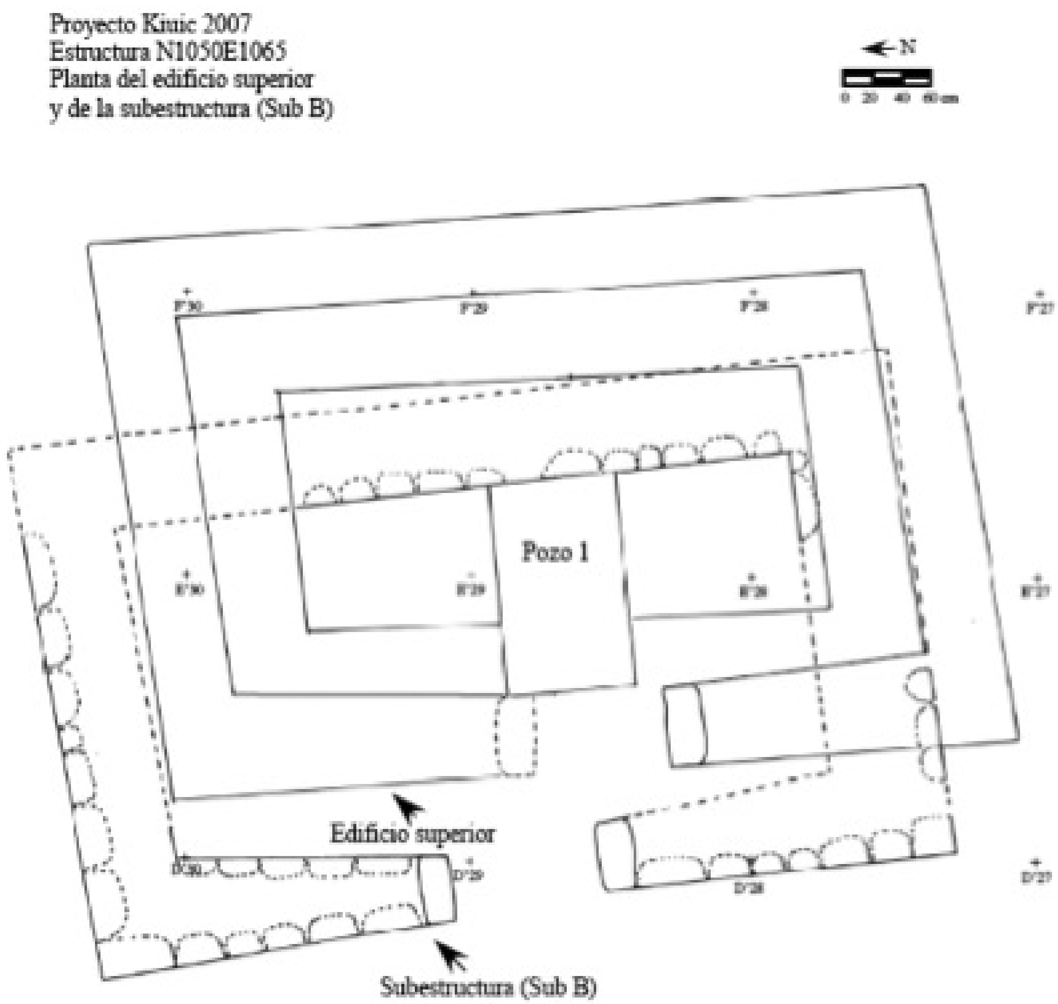


Figure 5.29b: Planta of Temple A-sub and Temple A (courtesy of BRAP)

Figure 5.30: Detail of burned area of the eastern wall of Temple A-sub in relation to Floors 2 and 3 (courtesy of BRAP)

Figure 5.31: Photograph showing the relationship between Platforms 1, 2, and 3 of Temple A (courtesy of BRAP)

Figure 5.32: Stair B (associated with Temple A-sub) and Stair A (associated with Temple a) before consolidation

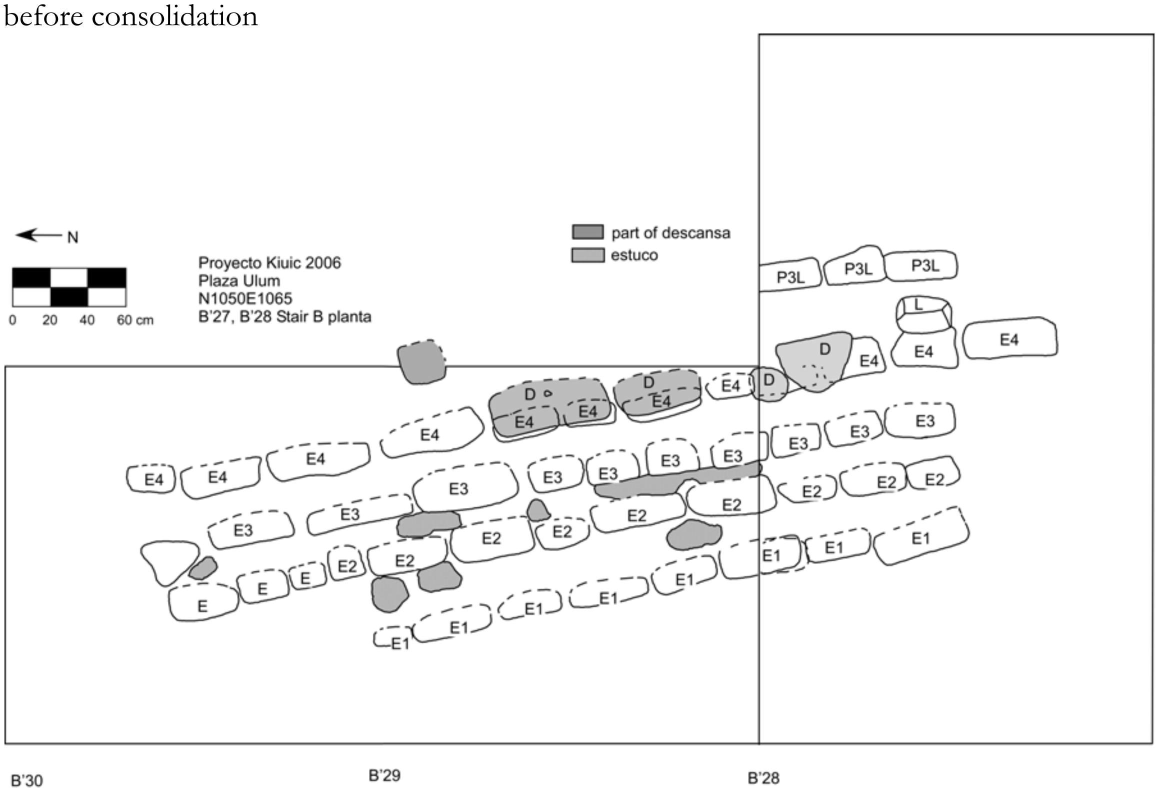


Figure 5.33: Planta of Stair B. Stucco represented by hatch marks and the stones in gray are part of the descansa associated with Stair A.

Figure 5.34: Photograph of Platform N1040E1040 showing the carved stone wall and rough terrace wall (courtesy of BRAP)

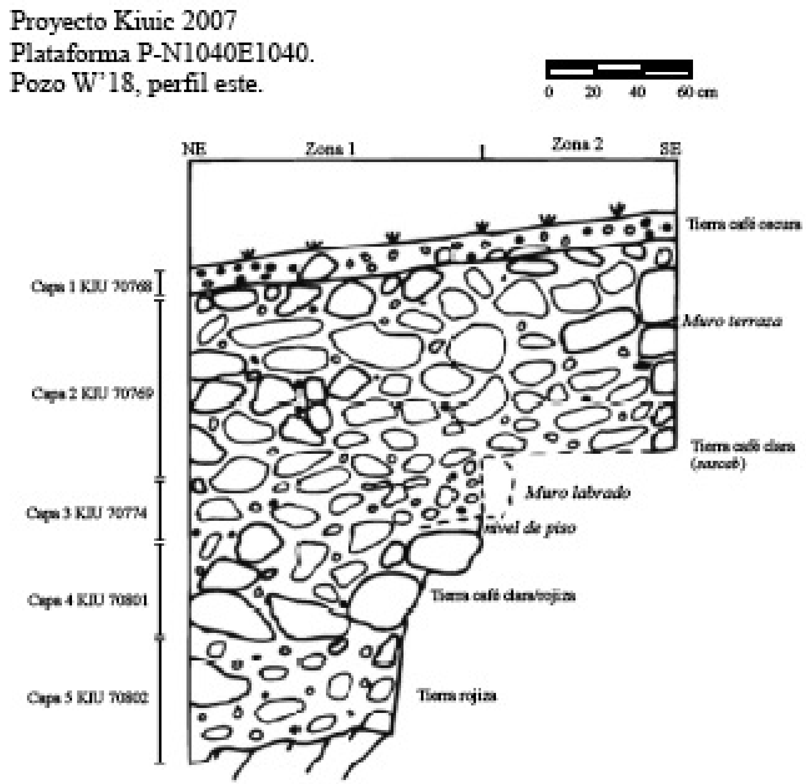


Figure 5.35: Profile of Platform N1040E1040 showing relationship of carved stone and rough terrace wall (courtesy of BRAP)

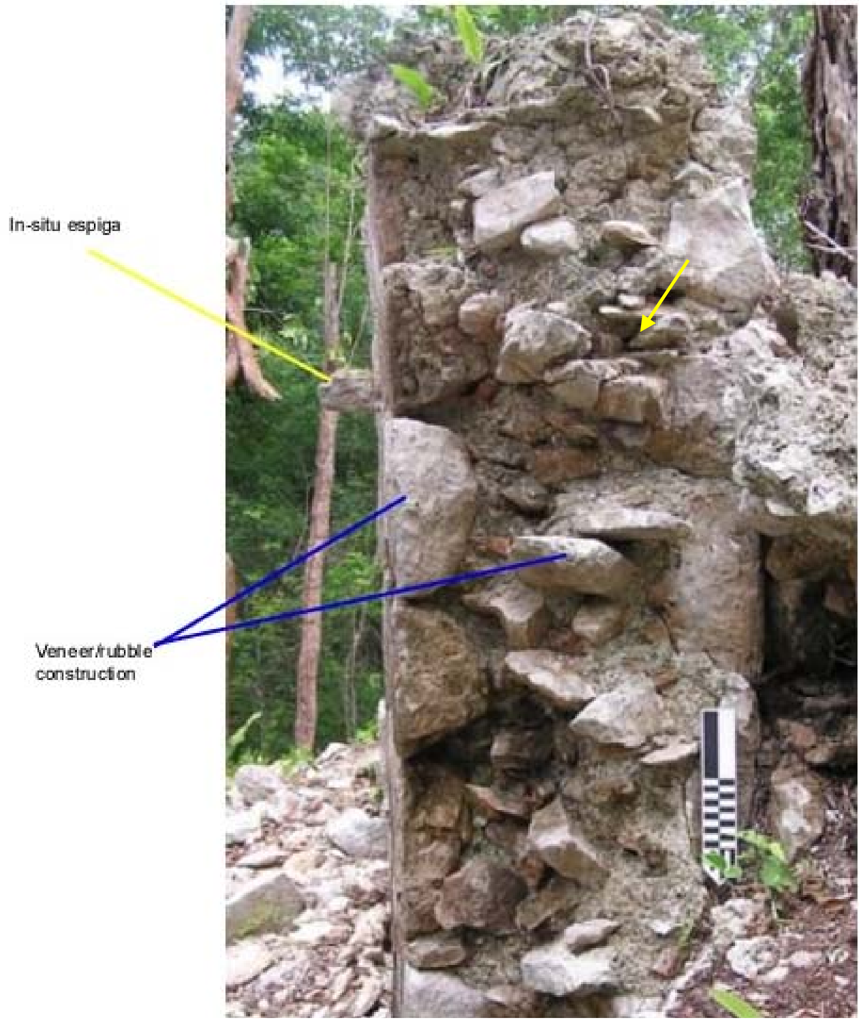


Figure 5.36: Detail of back (east) wall of Temple A showing construction style of walls and the *in-situ* tenon (courtesy of BRAP)

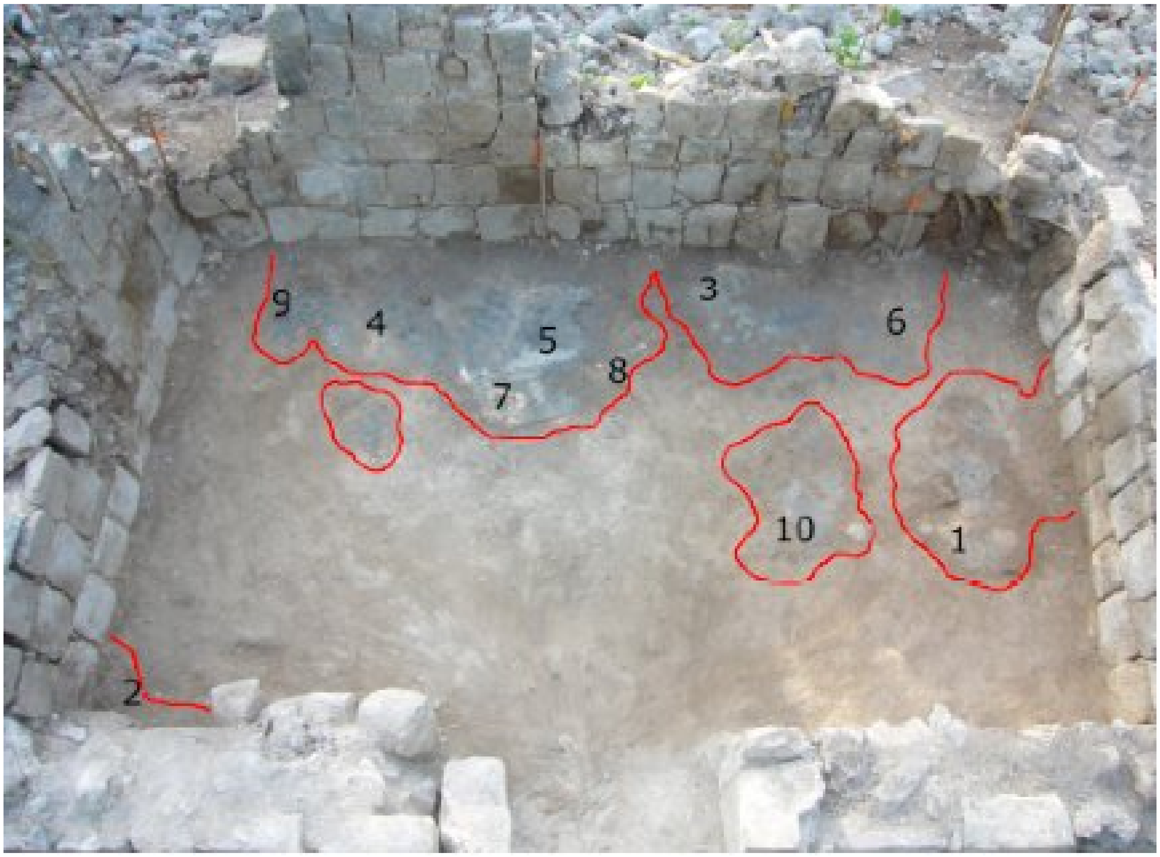


Figure 5.37: Floor 1 of Temple A showing burned areas (courtesy of BRAP)

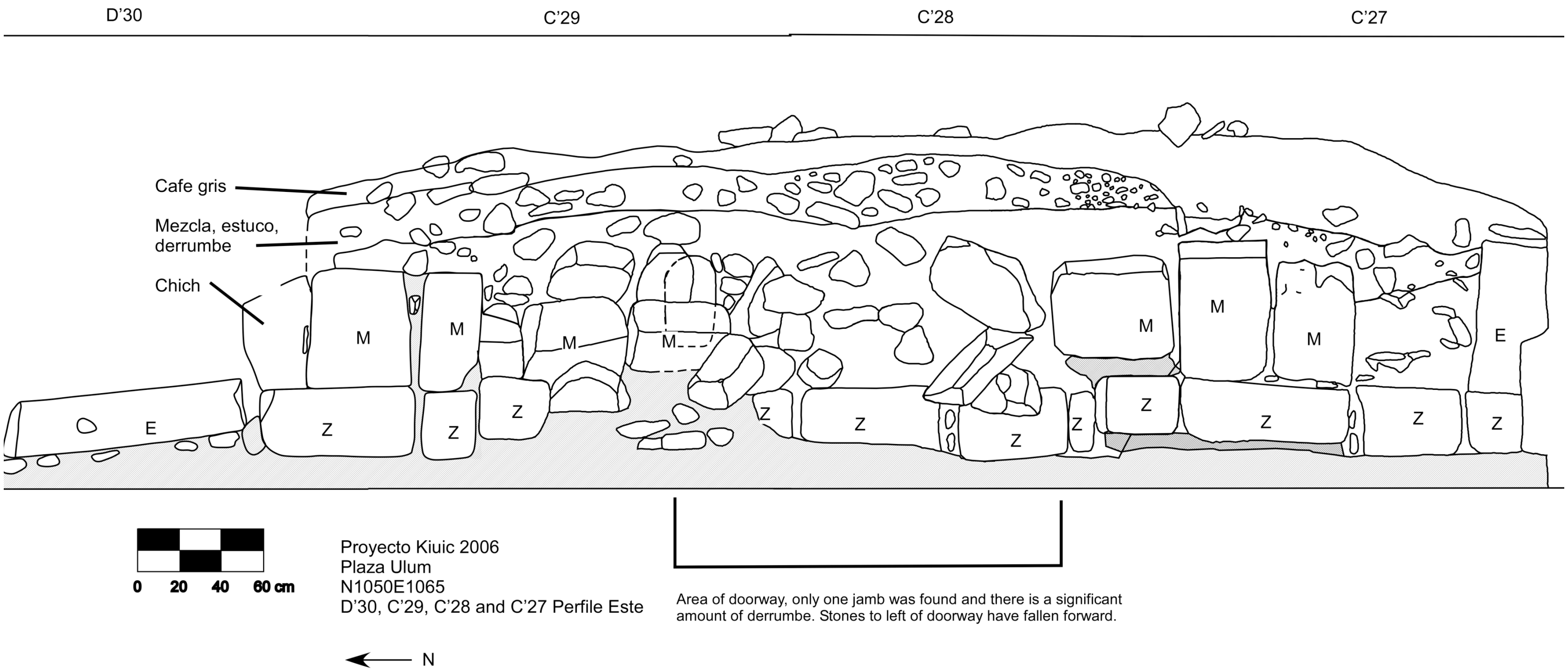


Figure 5.38: Profile of the western (front) wall of Temple A showing size of basal row of stones (courtesy of BRAP)

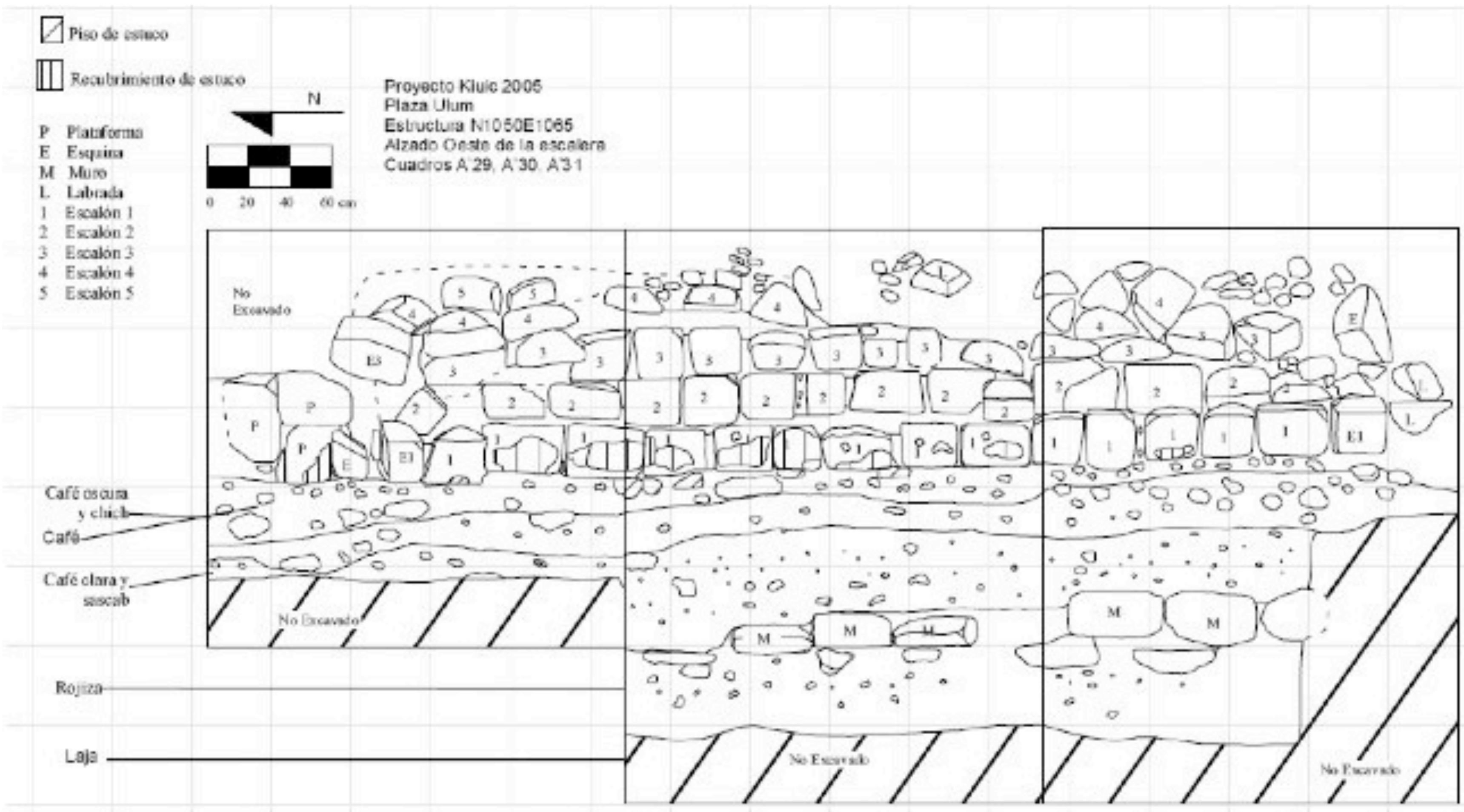


Figure 5.39a: Profile (south) of Stair A of Temple A, showing steps 1 through 4 and Floor 1 of the Plaza

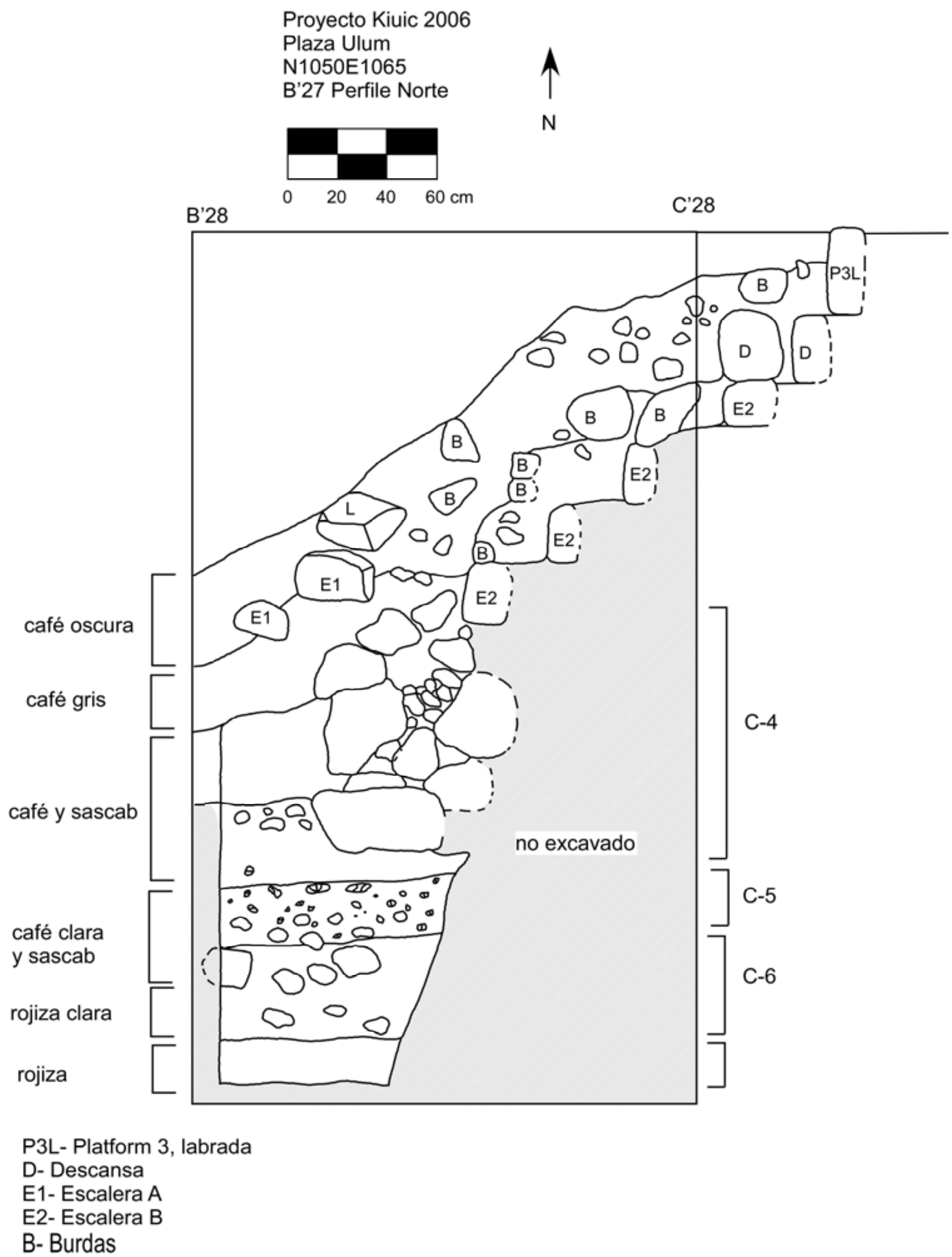


Figure 5.39b: Profile (east) of Stair A of Temple A (courtesy of BRAP)

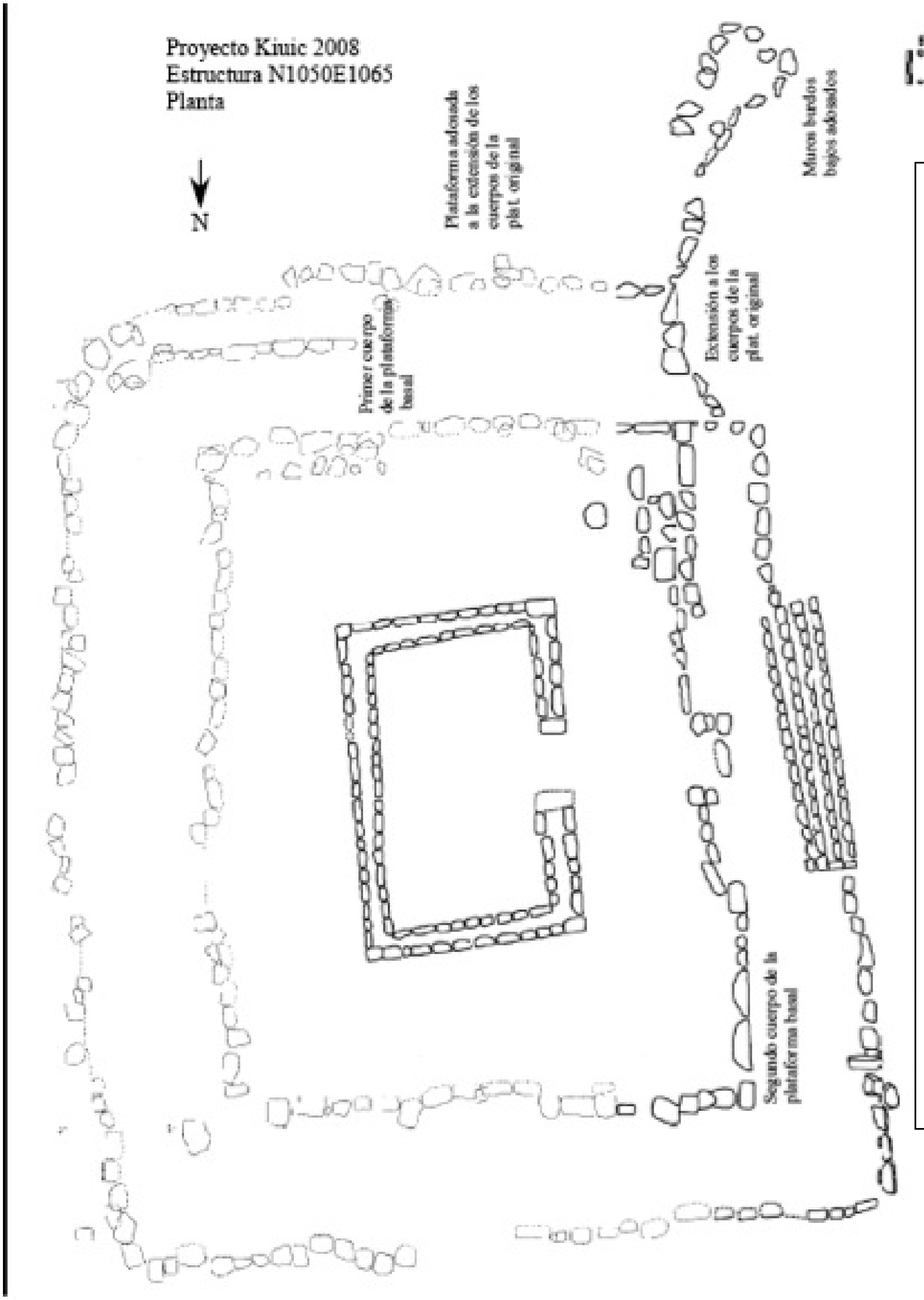


Figure 5.40: Planta of Temple A with Platforms 1, 2, and 3 (courtesy of BRAP)

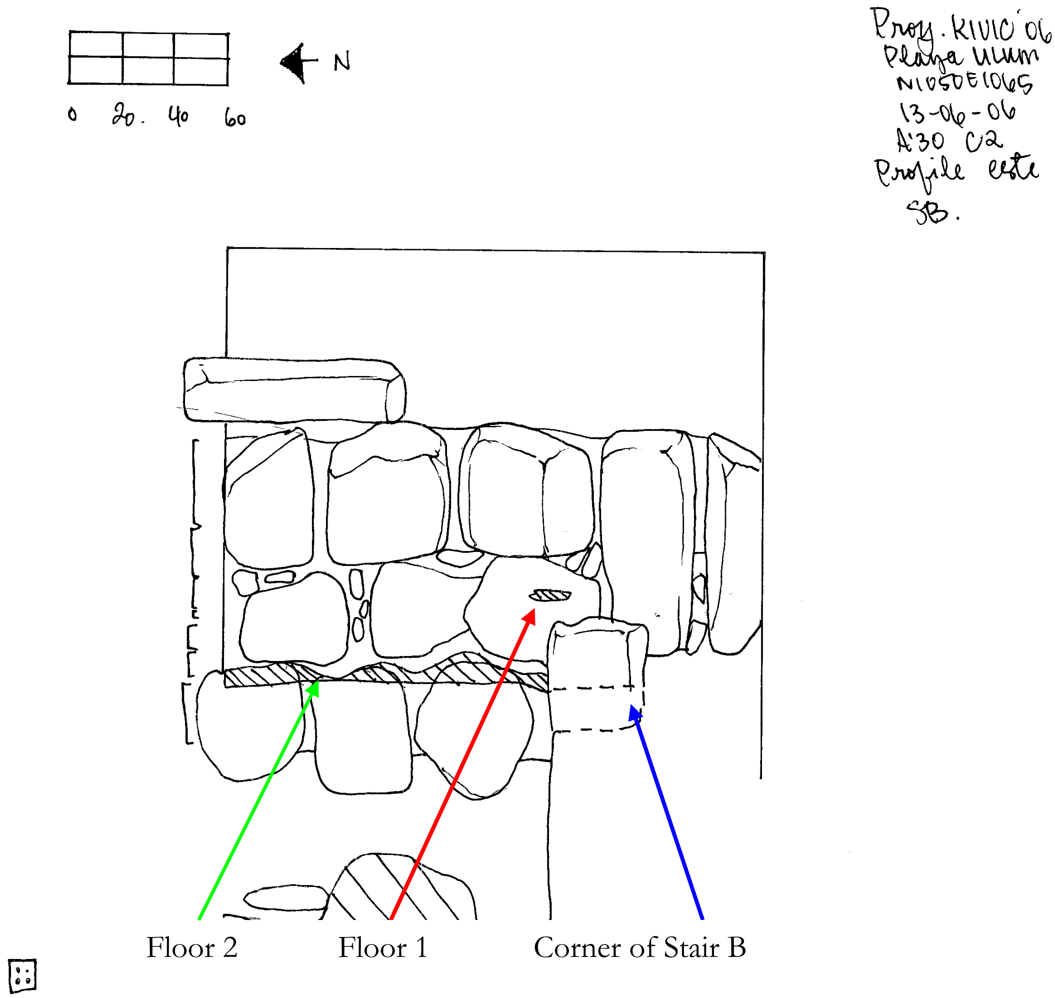


Figure 5.41: Drawing of part of the north section of Platform 1 wall showing Floors 1 and 2 of the plaza and the northern cornerstone of Stair B (courtesy of BRAP)

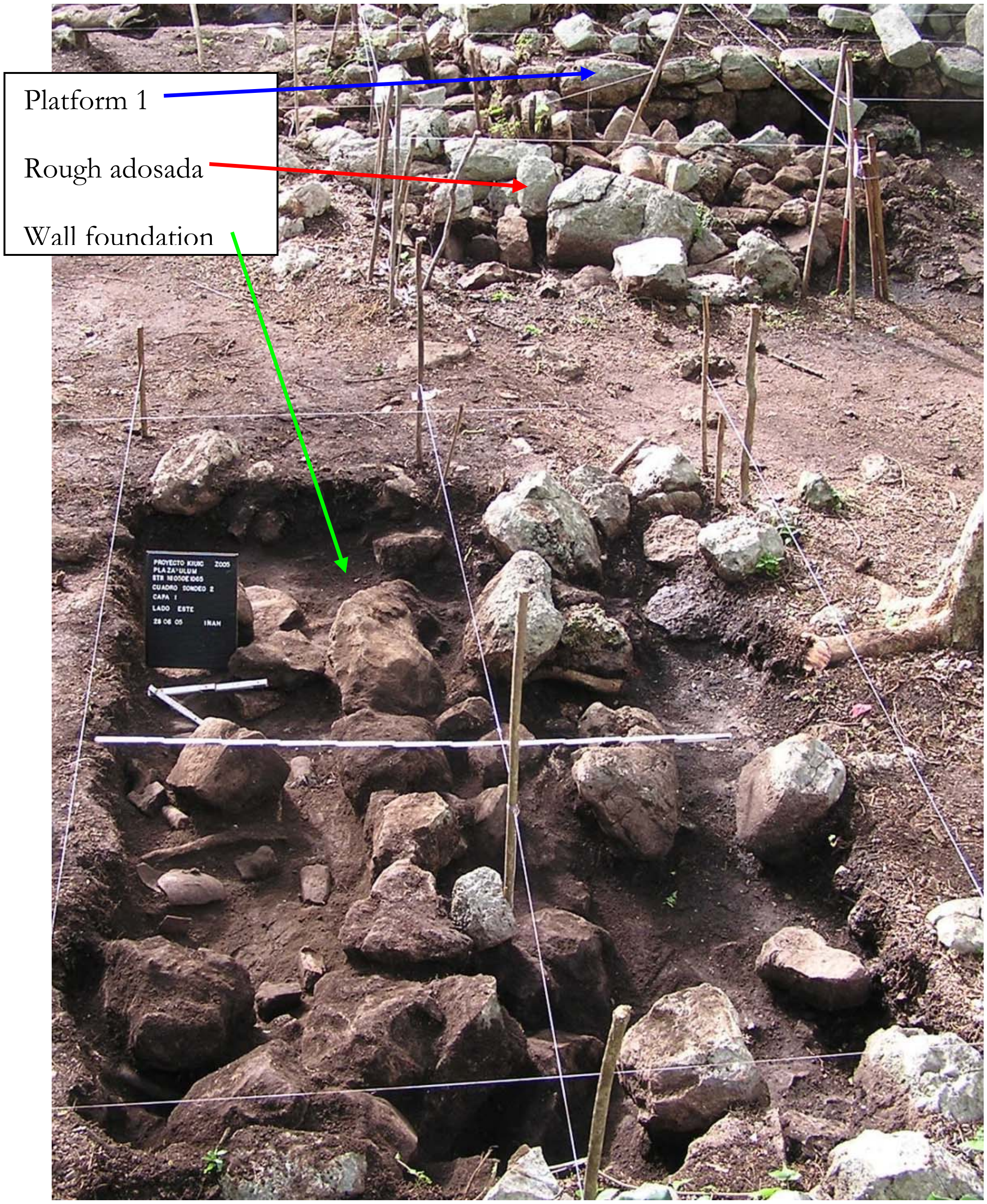


Figure 5.42: Photograph showing relationship of Platform 1 of Temple A, the rough adosada and the north wall foundation

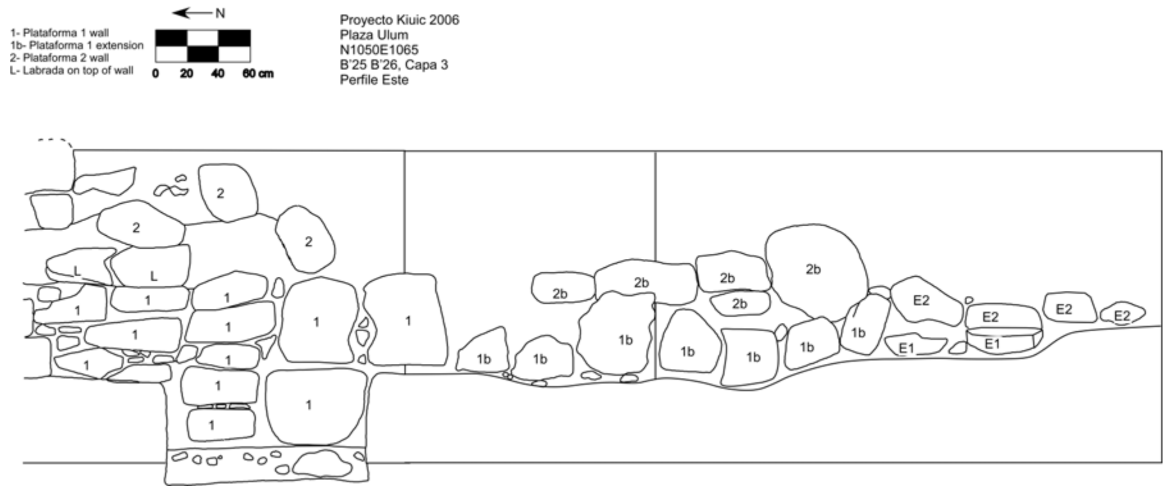


Figure 5.43: Profile of the southern portion of Platform 1

Figure 5.44: Detail of corner between Platform 2 and Stair A with original stucco floor and wall covering

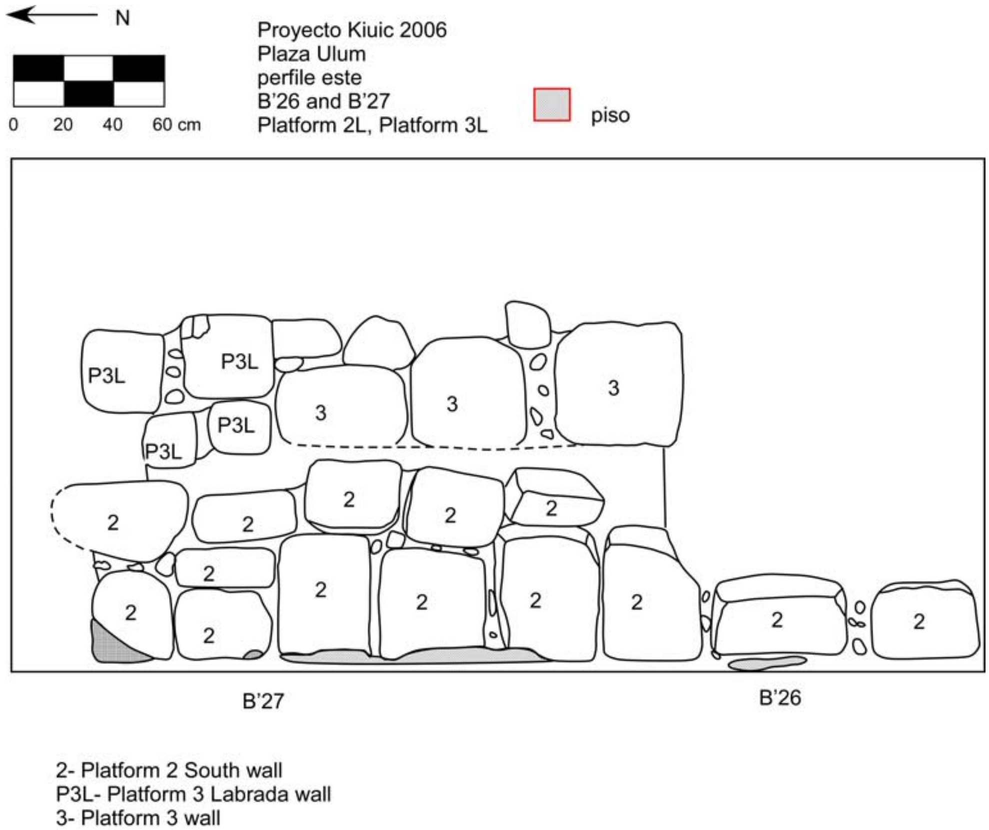


Figure 5.45: Profile of southern portion of Platforms 2 and 3 (courtesy of BRAP)

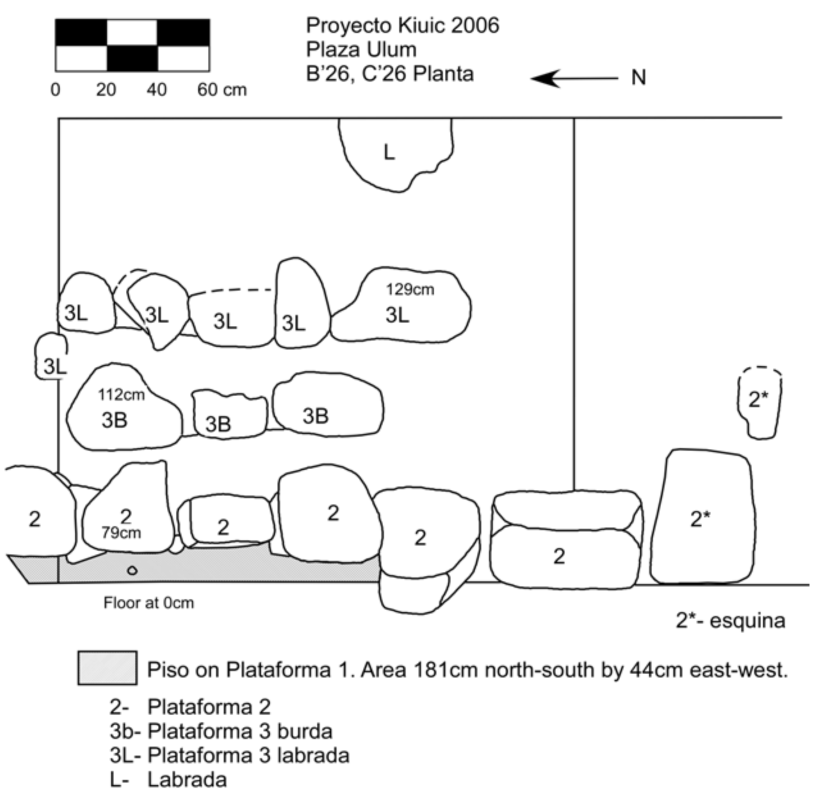


Figure 5.46: Planta of the southern portion of Platforms 2 and 3 (courtesy of BRAP)

Figure 5.47: Photograph of the Stair A and the southern half of Platforms 1, 2, and 3

Figure 4.48a: Photograph showing remains of the stepped platform separating Plazas Dzunun and Icim (courtesy of BRAP)

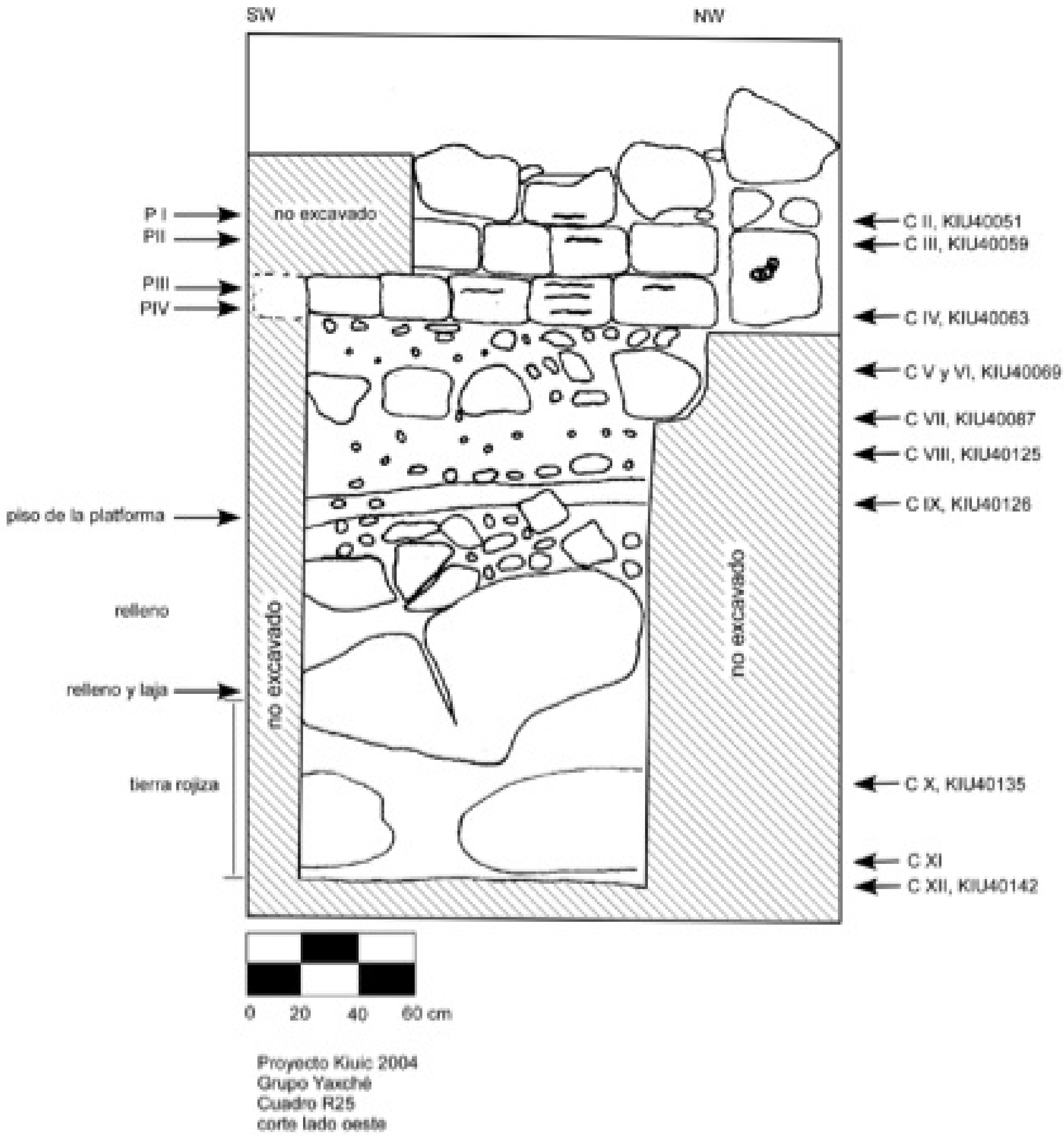


Figure 5.48b: Profile of western face of stepped platform separating Plazas Dzunun and Ulum (courtesy of BRAP)

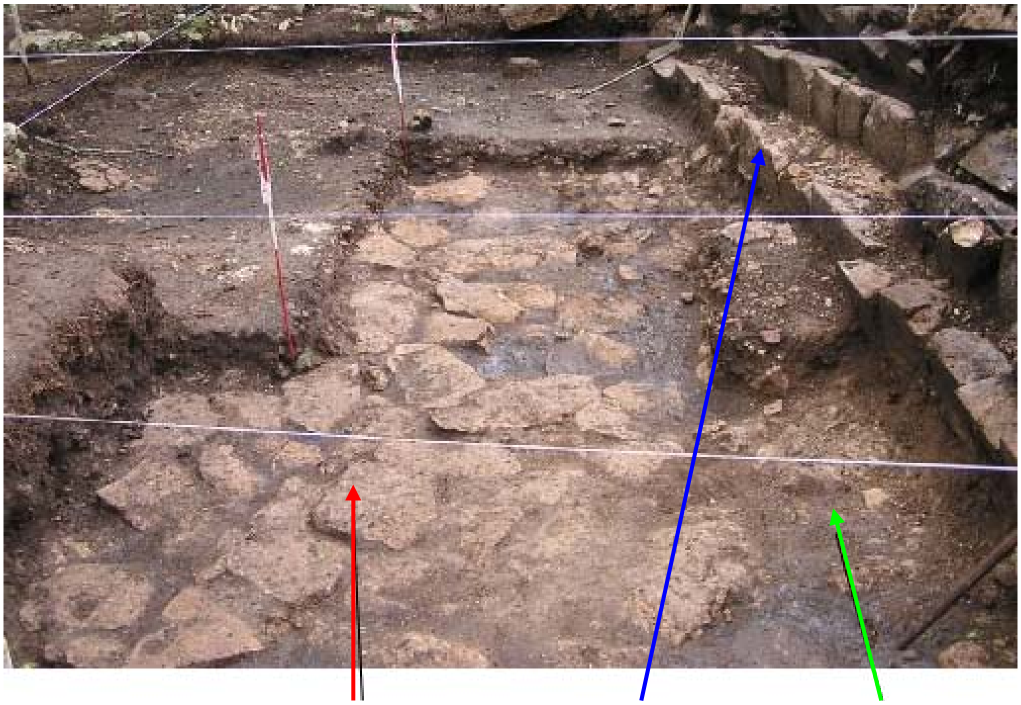


Figure 5.49: Detail of the stone paving found in front of Temple A

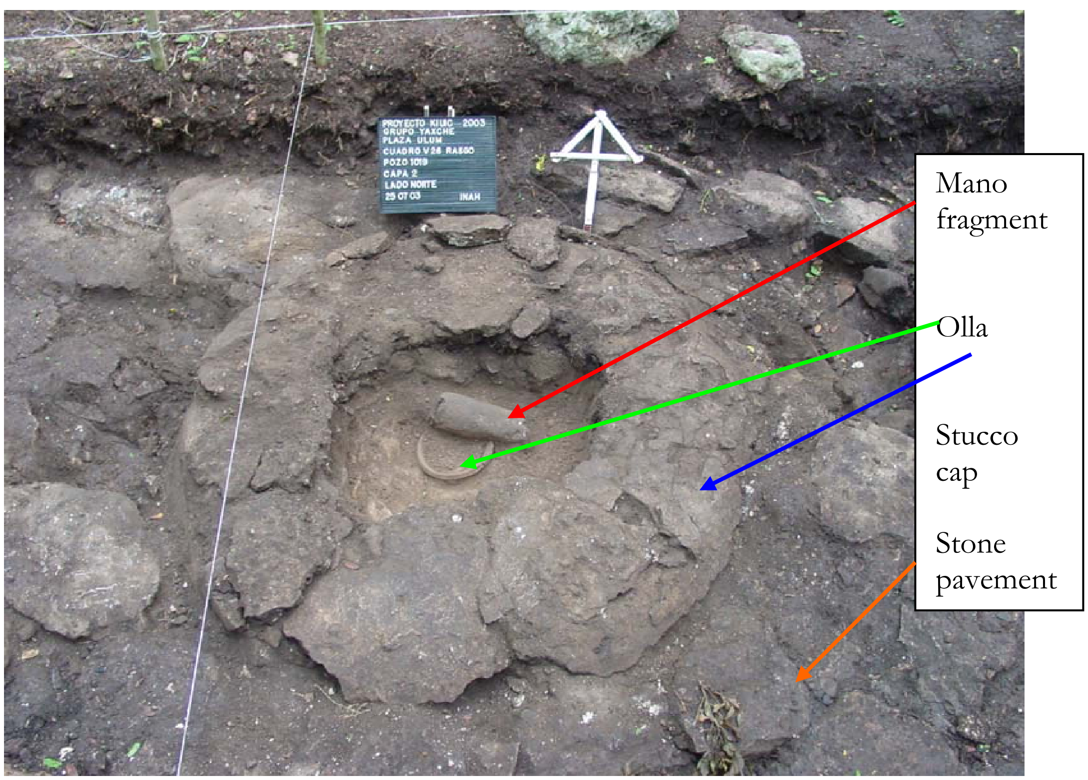


Figure 5.50: Offering found in Plaza Ulum. Note the mano fragment that was likely used to break the stucco cap.

CHAPTER VI

APPLICATION OF THE INTEGRATED APPROACH TO THE KIUIC DATA SET

The Yaxche Group at Kiuic provides a unique opportunity for exploring how architecture can be manipulated to facilitate certain types of social interactions. The current chapter focuses on the application of access analysis and the elements of nonverbal communication (discussed in Chapter 4) to the structures in the Yaxche Group. It then uses these variables to discuss how the built environment was designed to manipulate social interaction and encode sociopolitical power. Archaeological excavations of the group (see Chapter 5) reveal four major periods of construction activity that represent a break from the previous pattern of spatial organization. Because only limited architectural and spatial information exist for the Formative and Early Classic periods, the analysis focuses on the periods for which we have the most information- the Late and Terminal Classic. Following a brief review of the measures used in spatial syntax and nonverbal communication, their application to the Kiuic dataset is discussed.

6.1 Review of Space Syntax and Nonverbal Communication

When used alone, neither access analysis nor nonverbal communication are able to adequately describe the role of space in the display, maintenance, and manipulation of power. Together, however, they provide an integrated approach that can be used to explore the dynamic role the built environment plays in social production. Both approaches are based on the premise that the binary opposition of 'us versus them', found in social interactions, is replicated in spatial configuration and can be explored through the physical remains of structures. One example of how the binary opposition can be rephrased in architectural terms becomes 'inhabitants versus visitors'[1].

In order to explore how spatial configurations influence social interactions between different groups, we must include both quantitative and qualitative data. Space syntax, the quantitative component, examines how topological aspects of the built environment are manipulated to control relationships between occupants and visitors (Ferguson 1996: 11-12; Grahame 2000; Hillier and Hanson 1984). Nonverbal communication is used to interpret the access data from a phenomenological perspective and to investigate how broader social issues, such as class or power, are expressed in elements of the built environment (e.g. Fisher 2007). Both approaches are based on the idea that the relationship between architecture and social meaning is based on how actors manipulate the built environment in order to control space and the interactions that occur within that space. I.e., inhabitants design the built environment to promote certain types of social encounters and then use it to exert control over, or influence, these interactions.

Access analysis has been used in various forms for many years; the present research employs the series of analytical techniques developed by Hillier and Hanson (1984; Hanson 1998; Hillier 1996). The approach is based on the idea that a building consists of four main components: a boundary, the space contained within that boundary, an entrance, and the space outside the boundary (carrier) (Hillier and Hanson 1984: 19). Within the boundary, space is divided into enclosed rooms or open spaces (cells). The syntactic and topological characteristics of these spaces are important because they dictate how an actor experiences

[1] Hillier and Hanson (1984) focus on the relationship between inhabitants and visitors but there is nothing inherent in their work that limits analyses to this particular relationship.

the space. Occupants design the built environment so that they can control movement and the types of interaction that occur locally (between adjacent spaces) and globally (within the structure as a whole). Additionally, boundaries and entrances are designed so that occupants can monitor and control the permeability of the structure (Hillier and Hanson 1984: 1-2; Hillier 1985). A series of formulae developed by Hillier and Hanson (1984; see Chapter 4 of the present work) allow archaeologists to quantify the relationships between spaces within a building at both the local and global scales. The results of the application of these formulae to the Kiuic dataset are discussed below in Section 6.3.

While access analysis provides valuable insight into movement patterns within the built environment, it does not take into account important elements such as area or architectural decoration. In order to incorporate the qualitative components of the built environment, the nonverbal communication approach is also employed. The approach is based on the idea that nonverbal cues are encoded in the built environment in order to help guide human behavior and social interaction according to cultural norms (Bourdieu 1977; Giddens 1984; Minai 1984; Preziosi 1979; Rapoport 1980: 7). These cues are embedded in fixed-feature and semi-fixed feature elements of the built environment and operate on different levels (see chapter 4 for more detailed discussion). Because all members of a group share (to some degree) conceptual models of ideal environments and their culture, they are able to recognize meaning and decode these signs (Minai 1984; Preziosi 1979; Rapoport 1980, 1988, 1990a: 55-86). It is important to remember that not every architectural element was meant to communicate meaning; the code itself specifies which elements convey important information or when differences in the elements communicate information (Preziosi 1979: 2).

The present research focuses on the combination of fixed-feature elements used by the residents of the Yaxche Group to encode status and power: group/structure location within a site, area, proximity to ground level, and the presence/absence and type of superstructure (Bachand and Bachand 2005; Rapoport 1990a: 116). While semifixed-feature elements (e.g. offerings or architectural decoration) also convey meaning, they are found less frequently *in-situ* archaeologically. Because of this, they are included where applicable but are not considered a core element. As demonstrated in Chapter 4, archaeologists are able to make meaningful inferences regarding behavior using the presence and/or absence of fixed-feature and semifixed-feature elements in the built environment (Rapoport 1990a: 91).

6.2 Proxemic Interactions within the Yaxche Group

Access analysis and nonverbal communication provide very different data on the types of interactions that can take place in a space or room. The measurements obtained using access analysis predict the likelihood of social interaction occurring within a space, while nonverbal communication provides clues to the social meaning of the space. When combined, these factors describe the interaction potential of a space (see chapter 4), which is related to the types of proxemic interactions possible within that space (Hall 1966).

Proxemics uses the physiological attributes of communication, in conjunction with the configuration of the built environment, to explore the types of social interaction possible within a space (Hall 1966, 1968). Although Hall's work highlights the cultural variability in personal space, he uses the human body as the basis for these communicative distances. Because the physiology of the human body has changed very little over the past hundred thousand years, his work can be applied cross-culturally and to archaeological contexts (e.g. Moore 1996a, b).

Four distance thresholds that affect modes of communication: intimate distance, personal distance, social distance, and public distance (Hall 1966:116-129)(Table 6.1). Each threshold has both a close and far component, creating eight categories of communicative space. For the present research, the oral and detailed vision properties of the distance categories are the most useful properties for describing the interaction potential of a space. For example, at certain distances it is impossible for humans to distinguish fine facial expressions or hear words spoken in a soft voice. Before spaces within the Yaxche Group can be analyzed in terms of their proxemic potential, the linear measurements originally calculated by Hall must be translated into a form that can be used in archaeological contexts-metrics[2] (Table 6.2)(Smith 2009: 196). Within the Yaxche Group at Kiuic, the dimensions of the structures suggests that most were designed to accommodate social interactions at the personal-far distance while the majority of open spaces fall into the public-far proxemic class (Table 6.3)(Hall 1966: 107- 122).

Proxemics uses area to determine the oral and visual parameters of communication possible within a space but does not consider the role of movement in influencing social interaction. The syntactical values used to describe the interaction potential of a space can also be used to determine whether it is a *movement* or *circulation* space (Figure 6.2)(Grahame 2000). The former function as conduits for the movement of people through the built environment while the latter are more often the context of more prolonged social interaction (Grahame 2000: 56).

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[2] This is accomplished by taking Hall's linear distance and using it as the radius to calculate the area of a circle surrounding a hypothetical subject located in the center. The area measurements that correspond to each of Hall's eight linear distance categories can then be calculated.

While movement spaces are not an important part of the architectural plan of the Yaxche Group, circulation spaces do play a prominent role in facilitating social interactions. Circulation spaces have different syntactical properties than movement spaces (high CV, square shape, and low RRA) and are most often identified as plazas and patios (Appendix A, Table 6.4). A high control value means that each plaza controls access to a number of adjacent spaces (in this case rooms), which can be used in conjunction with social occasions on the plaza or as storage areas. While being easily accessible (low RRA) is an important criterion for some circulation spaces (e.g. Icim Sur), it is not a defining characteristic of circulation spaces. The accessibility of a space is an indicator of whether the space hosted public or private social occasions. For example, Plaza Ulum has a high control value and convex shape, but is less accessible than other plazas (Table 6.4). Instead of disqualifying the space as a circulation space, the high RRA value suggests the ceremonies that took place in this plaza were more private than those occurring in Icim Sur, which was easily accessible. Convex (square) spaces have a high degree of internal visibility, making communication within such areas easier (Grahame 1997: 155; 2000: 60).

6.3 Syntactical Analysis of the Yaxche Group

The spatial syntax analysis was conducted using a computer program called UCL Depthmap™ created by Alasdair Turner at the Bartlett School of Architecture at the University College of London (Turner 2000). In order to analyze the Yaxche Group using the software, an image of the group first needed to be exported from the GIS program as drawing interchange format (.dxf) files (provided by Dr. William Ringle). UCL Depthmap™ allowed me to create convex maps of the group and evaluate the statistical measures described in Chapter 4. The manual creation of a justified graph is not necessary because this process, in addition to the calculation of the various syntactic measurements, is entirely automated by Depthmap™. The measurements discussed below are first calculated for each individual space relative to its neighbors or the whole spatial system. After performing this step, the values of individual spaces may be compared or between a given space and the mean or median for the system as a whole. Some of the measures (control) are sensitive to the number of spaces (nodes) in the system while others (real relative asymmetry and step depth) are not. The dependence of the former group on the number of nodes in a system can be problematic when the spatial systems used contain different numbers of nodes[3].

A decade of archaeological excavations has provided a wealth of data on the Yaxche Group. Despite this, our knowledge of the spatial layout of the area during the early periods is incomplete. Because space syntax requires a detailed plan of the built environment, only the data for the Late and Terminal Classic periods will be analyzed. While the placement of architectural features such as entrances and wall is crucial to access analysis, nonverbal communication is not dependent on this information and, with certain considerations, can be applied to the Preclassic and Early Classic periods as well.

6.3.1 Access Patterns

General Access Patterns from the Exterior During the Late Classic period, a construction boom transformed the Yaxche Group into an elite residential group, radically altering the architectural footprint of the area. Today, the surrounding forest and structural preservation make it difficult to determine some components of the built environment, such as the

[3] For the present study this is not a factor. However, it will require adaptations in order to compare the Yaxche Group data to groups of significantly larger or smaller sizes.

original number of entrances to the group[4]. We believe that during the Preclassic and Early Classic periods, the area contained a freestanding platform that was easily accessible to community residents (e.g. Bey and May Ciau 2002; Bey et al. 2007; Gallareta C. et al. 2009). The enclosure of the platform during the Late Classic drastically restricted access to Plaza Dzunun and marks an important shift in the use and control of the area. The following paragraphs provide a discussion of the primary entrances to the group from the exterior and then the access patterns within the group itself, based on the Terminal Classic architectural plan[5].

Current data suggests that there were two main entrances to the Yaxche Group from the exterior (or the carrier)(Figure 6.2). During the Terminal Classic Period, a sacbe terminating in the southwest corner of Icim Sur (space 4a) linked the Yaxche Group to the Grupo Kuche (the new center of power) (Figure 6.4). The presence of the sacbe suggests the formal entrance was located in this corner of the group (confidence level 3) during both the Late and Terminal Classic periods. From the formal entrance in Icim Sur, the civic and ceremonial areas of the group have low depth values (Dzunun- 2, Ulum- 3), meaning that they are easily accessible from this point in the built environment (Figure 6.5, Appendix A). Interestingly, from this entrance, the deepest part of the group is Patio B, the non-elite activity area. This pattern suggests that the formal entrance may have been reserved for special events and important persons- occasions when easy access was needed to the most important plazas in the group.

The second entrance is located in the northwest corner of the group, between the northern end of Patio A and a low hill that marks the boundary of Icim Norte (confidence

[4] See Chapter 4 for process used to estimate confidence levels for missing features.

[5] Because the Maya built over earlier structures, it is often difficult to determine the exact layout of the earlier constructions. I believe that the access patterns to the group were the same for both the Late and early Terminal Classic periods, based on personal observations and excavation data.

level 2)(Figure 6.6). Although no excavations have been carried out in this area to date, the location and topography of the area suggest it was an ideal location for a secondary entrance. The area between the hill and Patio A is a narrow, corridor-like space that creates a 'natural door' and would have been easy for inhabitants of the group to monitor. From the 'backdoor entrance', the primary non-elite activity areas (Patio B and Icim Norte), were easily accessible both physically and visually (1 and 2 steps, respectively)(Figure 6.7). Plaza Dzunun is also located two steps away while Plaza Ulum is located deeper within the group, with a depth level of 3.[6]

It is important to point out a shortcoming of the step depth variable- it can create an overly simplistic or misleading picture of the access routes and movement within a structure. As noted, both Plaza Dzunun and Patio B are both technically located only two steps away from the secondary entrance in Icim Norte (Figure 6.7). These values indicate that each area was equally accessible from the informal entrance, although a closer examination reveals that the shortest route between two spaces might not have been the preferred one. For example, to reach Patio B one must traverse the open space of Icim Norte and then cross a low platform (Figures 6.3, 6.6). Excavations have revealed no evidence of structures in Icim Norte o or the central portion of Patio B, creating a high degree of visibility between the two areas. In other words, Patio B was easy to access (both physically and visually) from the secondary entrance to the group.

In contrast, there are several possible routes to reach Plaza Dzunun from Icim Norte and the types of spaces that must be crossed are quite different (Figure 6.2, 6.7). The shortest route crosses Icim Norte, then space 11b (a narrow, hall-like space) ending at the

[6] Depthmap automatically calculates the shortest route possible. The present discussion uses these values but also notes the secondary routes possible. This is important because the shortest route may not have been the preferred route through the group.

back entrance to Plaza Dzunun, located between the Palace and Structure N1045E1005. Space 11b would have been under the constant supervision of the western building of the Palace, which had three rooms that opened onto it (Figure 6.3). The more likely route through the group involves crossing Icim Norte (space 18) and space 12a to enter Icim Sur. From here, one would have used the formal entrance (space 5a) to enter Plaza Dzunun (space 38). Taking the alternate route through the group gives Plaza Dzunun a step depth of four and Plaza Ulum a depth of five, indicating they were more difficult to reach from the non-formal entrance than Patio B. This example illustrates how using only access analysis can be misleading and why incorporating nonverbal elements of communication or other qualitative data is important.

Current data suggests that there were no other entrances to the group, although it is possible that a second, non-formal entrance existed in Patio B. The following section describes the internal access patterns of the Yaxche Group and the nature of the spaces one must move through to access each of the patios and plazas.

General Access Patterns inside the Group After entering Grupo Yaxche through the formal entrance, one would be standing in Icim Sur surrounded on four sides by single- and multi-room masonry structures (Figure 6.4, 6.8)[7]. A single-room structure with multiple entrances that opens onto both Icim Norte and Icim Sur marks the northern end of Icim Sur (Str N1050E0995). While this structure is not a wall in the traditional sense of the word, it creates a boundary between the northern and southern halves of the Icim plaza[8]. As described in chapter 5, Icim Sur was a residential area; porches attached to several structures

[7] The majority of spatial boundaries in Plaza Icim are not concrete ones, i.e., there are no walls delimiting the spaces. Because of this, most of the spaces are defined using the rule of convexity and therefore, subject to the interpretation.

[8] This boundary between Icim Sur and Norte is arbitrary and was decided upon by the project directors, there is no indication whether or how the Maya distinguished between these two areas.

and the presence of metates suggest it also served as a locus for various activities associated food production and daily life (e.g. Gallareta C. et al. 2009). From Icim Sur, inhabitants and/or visitors could travel in two directions: north into Icim Norte (the activity area of the group) or east into Plaza Dzunun, the civic heart of the group (Figure 6.3). Visually, one was drawn to Icim Norte, which is the only area of the group visible from Icim Sur (Figure 6.9). Although Plaza Dzunun is adjacent, no part of it is visible from Icim Sur. The visual availability of Icim Norte would have made it a more likely destination for movement with in the group.

In choosing to move north from Icim Sur, one simply walks through one of the 'halls' (12a and 11b) and into Icim Norte (Figures 6.3, 6.8). Though not a hall in the traditional sense, the syntactic properties of these spaces mirror those of halls- they are long and rectangular and function as movement spaces (Appendix A). While neither space is delimited by walls, structures lining the sides of each space create physical boundaries and give their occupants the ability to monitor activity. Icim Norte contains four, one-room Early Puuc style buildings, two low stone platforms (most likely topped with perishable superstructures), and a stairway on the northern edge that leads to a two-room structure atop a large hill. The majority of these structures are located in the southern portion of Icim Norte (spaces 11a-b, 12a-c), creating a large open area in the northern end (Figure 6.8). The placement of the structures (all opening onto the plaza) suggests that the plaza (e.g. the activities occurring on the plaza floor) were the focus of the area, not the structures themselves. Occupants of each room were able to observe the plaza directly, while it would have been more difficult to see the interior of the rooms from the plaza floor. As described in the previous section, the backdoor entrance to the group is located in the northwestern end of Icim Norte and provides easy access to the activity areas of the group. From Icim

Norte, one can climb the stairway at the northern edge of the plaza to a two-room structure on the top of the hill or enter Patios A or B.

To date, no structures have been found between Patio B and Icim Norte, creating an unrestricted view between the two areas. Not only was visual access unobstructed, but physical access was also easy- in order to reach Patio B, one simply had to cross a low platform (P-N1090E1020). Patio B is a raised platform (approximately 1.4 meters high) that contains several masonry structures with perishable roofs (Figure 6.6, 6.8). The area functioned as a non-elite activity area and is differentiated from the area outside the group (the carrier) by the height of the platform (Gallareta N. et al. 2002: 4-3). Excavations and subsequent artifact analysis indicate that the area was dedicated to activities such as food and tool production that would have supported elite activities in the rest of the group (Gallareta N. et al. 2001, 2002; Hill and Bey 2003). As far as movement within the group was concerned, Patio B represents a dead-end. From there, the only way to reach other areas of the Yaxche Group is to backtrack through Plaza Icim. As noted earlier, it is unclear whether Patio B was directly accessible from the carrier. The only possible access point is at the northwest corner of the patio, where a narrow corridor is formed between the platform and the nearby hill (confidence level 1)(Figure 6.3).

Back in Plaza Icim Sur, if one chooses to go east (rather than north) into Plaza Dzunun, there are two possible routes (Figures 6.3, 6.4). With either route, the view of Dzunun is manipulated by the placement of structures so that the interior of the plaza remains hidden until one is at the entrance (Figure 6.9). Even at these thresholds, the visual access to Dzunun is controlled so that the plaza and surrounding structures are revealed in stages. The main entrance, located in the southwest corner between Dzunun and Icim Sur, is the most dramatic example of this type of visual control. It is composed of two ramps (one in each plaza) joined by a small platform (Figures 6.10, 6.12). When standing at the foot of the ramp in Icim Sur, no part of Dzunun is visible. As one ascends the ramp, the view of Dzunun slowly begins to materialize until, upon reaching the platform, the entire plaza is revealed. The second entrance to Plaza Dzunun is located in the northwestern corner, where a series of small steps near the Palace links Dzunun to Icim Sur. Although not as well understood as the primary one, this entrance appears to have been narrow and somewhat 'hidden' between two structures. From the vantage point of this entrance, only a glimpse of the northern part of Dzunun was possible. As with the formal entrance, the residents of the Palace and Icim Sur were easily able to monitor the secondary entrance.

After entering Dzunun, one is surrounded by on all sides by Early Puuc II buildings (Figures 6.8, 6.11). When standing on the plaza floor, the facades of the surrounding structures, especially the Popol Na in the south, dominate the view. Despite these imposing structures, the northeast corner contains a low platform that serves to demarcate the boundary between Dzunun and Ulum. From the northern end of Plaza Dzunun, parts of Ulum are visible while a tower and Str. N1025 obstruct the view from the rest of the plaza floor. The only entrance to Plaza Ulum lies in the northwest corner of Dzunun, where excavations uncovered a low, stepped platform (two steps were found) that is approximately 40cm high. Visual access between the two plazas is not restricted by this low platform.

Like Patio B, Ulum is a dead-end as far as movement within the group is concerned (Figure 6.12). A perishable wall constructed in the north and an unidentified structure on the southern edge of the plaza blocked both physical and visual access to Ulum from areas outside of the group[9]. Only by backtracking through Dzunun could one have accessed other areas of Yaxche.

[9] As noted in Chapter 5, the features excavated date to the Terminal Classic period.

Conclusions for Access Patterns The data analyzed above reveals interesting access and movement patterns within the Grupo Yaxche that are dependent upon which entrance was used. The formal entrance was analogous to a 'front door' in a present-day house, while the entrance in Icim Norte functioned as a 'back door'. From the formal entrance, the civic and ceremonial areas of the group have the low depth values while the activity areas are less accessible (Figure 6.5). This entrance was most likely reserved for special occasions and/or special persons, when access to the important political and ritual areas of the group was needed. Although Plazas Dzunun and Ulum are shallow with respect to the front door, inhabitants of the group would have been able to constantly monitor movement to and from these areas. In addition to this control of physical access, visual access was also restricted so that one had to enter Dzunun in order to participant in any activities occurring within.

The spaces adjacent to the secondary, or back door entrance to the group, present a very different experience. This entrance, through the corridor north of Patio A and into Icim Norte, has the reverse of pattern of depth values. From the back door, the activity areas of the group (Patios A and B) have the lowest depth values (Figure 6.7). The low density and type of structures in Icim Norte and Patio B have a very different 'feel' than the stone structures of Icim Sur or Plaza Dzunun. Icim Norte and patio B have an open feel with easy physical and visual access between the perishable structures and plaza floor.

6.3.2 Interaction Potential

While the access patterns offer general insight into the accessibility of the plazas and patios of the Yaxche Group, the real relative asymmetry, control and step depth values provide additional dimension to the data. When combined, these variables measure the interaction potential (IP), or the likelihood of interaction to occur, of a space (Grahame 2000). A space's IP is determined by its accessibility at both the global (by the RRA, step depth) and local (by the CV) levels. Before exploring the interaction potential of the Yaxche Group, the measurements must first be ranked.

RRA values, which give a sense of the overall pattern of interaction, are classified as high, medium or low by dividing the ranked set into thirds (after Grahame 2000: chap 7). Control values reveal which spaces are more likely to be centers of interaction; if a space has a low value, it suggests that it gives up more control than it has and is not likely to host social occasions. After the total amount of control available is determined and divided by three, the set is ranked and the groups formed by adding values until one-third of the total value is reached. Finally, depth values present an idea of how accessible a space is to a visitor entering the building from the outside. As with control values, the ranked set of depth values is divided by three in order to organize the values into high, medium or low categories.

Interaction potential does not predict the type or likelihood of social interaction but simply identifies the spaces in the built environment that are more likely to host social interactions. In order to help identify the **types** of social interaction, additional data (the present research uses the elements of nonverbal communication) must be incorporated (see the section 6.3.3). After discussing each variable individually, they are combined to discuss the interaction potential of spaces within the Yaxche Group.

Yaxche Group during the Late Classic

Real Relative Asymmetry Values The first measure that contributes to the interaction potential of an area is its real relative asymmetry value, which measures accessibility at the global level.

The average RRA of the plazas[10] in the Yaxche Group is .603, while the rooms have an average value of .789 (Table 6.5). These values suggest that, in general, the plazas are both more integrated into the architectural plan and are more easily accessible than the rooms. The plazas with the highest interaction potential based on RRA scores include: Dzunun, Icim Sur and Norte, and the ramp. Of all spaces in Grupo Yaxche, Plaza Dzunun has the second lowest RRA value (RRA .403), indicating it was the most globally integrated area (Figure 6.14, Table 6.4, Appendix A). Icim Sur, the residential area adjacent to the formal entrance, has the second lowest value of the plazas (RRA .480) followed by the access ramp (RRA .496)(Table 6.4, Appendix A).

Because Icim Norte is divided into multiple convex spaces without clearly defined boundaries, it is treated differently for the purposes of the present analysis. The average value of the spaces that comprise Icim Norte is .605, which would give it a medium RRA value, indicating it was easily accessible movement-wise in the group (Figure 6.14, Table 6.5). When the individual spaces of Icim Norte are analyzed, the 'exterior' spaces (11c, 18, 11b and 12a) are more integrated while the 'interior spaces' (12c, 11a, 12b) are less integrated (Figure 6.14, Tables 6.6, 6.7). This pattern is consistent with the idea that the exterior spaces function as movement corridors through the group and therefore are more integrated into the system as a whole. The primary function of the interior spaces is to give access to adjacent structures; they are not as important in the movement patterns through the Yaxche group, which is reflected in their lower RRA values (though their individual values all rank as either high or medium interaction potential).

The last of the highly ranked values to be discussed is the area containing the access ramp between Icim Sur and Dzunun. With an RRA value of .496, the ramp has a high

[10] Not all open spaces are classified as plazas but when speaking in general terms, plaza is used to collectively refer to the open spaces.

interaction potential, which is consistent with its identification as the primary means of access to Plaza Dzunun (Figure 6.14, Tables 6.4, 6.5). Interestingly, it is more segregated than the movement spaces of Icim. This indicates that, while it was important the ramp was integrated, the residents of the group were concerned with being able to control access to and movement through the area. The spaces within Icim Norte were designed so that visitors and inhabitants were able to move through more freely.

The remaining open spaces of the group have medium or low interaction potential based on their RRA values (Figure 6.14, Table 6.4). Plaza Ulum, with an RRA value of .651, falls into the medium range of interaction potential values (Tables 6.4, 6.6). The median RRA for the patios is .614, so Plaza Ulum is more segregated than half of the open spaces in the group. Given its function as the religious area for the inhabitants, I would expect Ulum to be one of the more isolated spaces. Other spaces with high RRA values include the two work areas, Patios A (.754) and B (.795), indicating they were not well integrated at a global level (Table 6.6). As with the spaces in Icim Norte, these RRA values make sense in terms of the movement patterns through the group. Although Patios A and B were easily accessible to inhabitants and visitors to the Yaxche Group, they were work area and not important spaces in terms of movement through the group.

The rooms of the Yaxche Group are much less integrated into the overall architectural plan than the open areas, with an average RRA value of .789 (versus .603 for the open spaces) (Tables 6.7, 6.8). Of the twenty-one spaces with a high RRA rank, only five of these are rooms (45, 39, 20-22). Room 45, the structure dividing Icim Sur and Norte (Figure 6.14), has the highest RRA value (.651) while the Popol Nah has the second highest value of .661 (Table 6.7). When considering only the data for the rooms, the previously named rooms plus those of the western structure of the palace (rooms 20-22, RRA .687) and the rooms around Dzunun (40-43, 35-37, 51, RRA .692) comprise the 'high' RRA value group.

The RRA values for individual rooms range from .651 (room 45) to 1.084 (room 30) but without knowing how the rooms functioned within the group, it is difficult to make any inferences regarding these values (Tables 6.7). When analyzing the room data, it was noted that the rooms associated with a certain plaza tend to have similar RRA values (Figure 6.14). Given this trend and the idea that the rooms functioned in conjunction with the adjacent open spaces, rather than alone, the average RRA room value for each patio proves to be a more insightful measure (Table 6.8). The average of the RRA values indicates how accessible, in general, the rooms associated with certain patios were and allows for comparison within the group as a whole.

Dzunun has the lowest average RRA value (.688), indicating that the rooms surrounding this plaza were the most integrated at a global level and easily accessible from the plaza. This suggests that the rooms were likely used in conjunction with any activity occurring on the plaza floor, rather than functioning independently. For example, a sleeping room likely function independently from the adjoining plaza. Activities that occurred within it would not necessarily be linked to activity occurring on the plaza. In this case, the rooms were most likely used in conjunction with activities that occurred on the plaza floor. They would have functioned as 'backstage' areas in which semi-private portions of the rituals were conducted (see Chapter 4).

Icim Norte and Icim Sur (.744 and .754 respectively) have the second lowest averages, indicating that the rooms surrounding them were moderately well integrated into the architectural plan of the group. Again, these values reflect our current understanding of the function of these plazas (and associated structures). Both Icim Norte and Sur were high-traffic areas and easily accessible to both visitors and inhabitants. The rooms appear to have functioned somewhat independently as living quarters. Therefore, it was not necessary that the rooms themselves had a high degree of accessibility in relation to the global patterns of movement.

Like the plazas themselves, the rooms associated with Plaza Ulum and Patio B have the highest average RRA values .940 and 1.084, respectively (Table 6.7). In both cases, the higher RRA value of the rooms reflects the fact that the areas were not easily accessible in terms of global movement patterns. Such segregation from the rest of the group supports the idea that the rooms in Plaza Ulum were used by the inhabitants for special ceremonial purposes and designed to be inaccessible. The rooms associated with Patio B were also relatively segregated, but for different reasons. These rooms likely functioned as storage and workspaces for the activities carried out in the patio. Because of their function, only the necessary personnel had access to them. In this case, it was not a matter of attempting to keep visitors out of Patio B but rather it was an area that they did not need to enter.

Control Values The control values for the plazas/patios account for approximately 88% of the total amount of control available in the system (Appendix A). The remaining 22% is divided among the rooms and platforms, with the platforms ranking higher than the room values. These values imply that the open spaces of the Yaxche Group were more important in controlling access to rooms than vice versa.

When only the data for the plazas is considered (Figure 6.15, Table 6.4), the Plaza Dzunun and Icim Sur account for 34.6% of the total control available (versus 30% when all spaces considered, Appendix A). This suggests that these two plazas were extremely important in controlling access at a local level; in other words, they controlled access to the most number of spaces in the built environment. They are also the only spaces that have a 'high' rating in terms of interaction potential when only the plaza values are considered. A high interaction potential suggests that these two plazas were the most likely areas to have hosted social occasions. While access analysis does not provide any clues as to the type of interactions, the incorporation of nonverbal elements (discussed in Section 6.3.3) provides data that addresses this question. Spaces with medium interaction potential include Patio B and Plaza Ulum, as well as two areas of Icim Norte (discussed below).

As with the RRA values, Icim Norte presents a slightly more complex area to analyze because of its division into several convex spaces. However, the same general pattern appears in that the exterior spaces (11b, 12a and 18) and interior spaces (12b, 12c and 11a) group together (Table 6.4). In this case, the exterior spaces have slightly higher control values than the interior spaces[11] because they control access to the structures surrounding the perimeter of Icim Norte (Figure 6.15). The average control value for Icim Norte is 2.629, which falls into the low interaction potential category (Table 6.5). These values suggest that Icim Norte was not likely to be a locus of sustained social occasions.

All of the remaining open spaces have low control values, indicating they were not important in controlling access to neighboring spaces. Interestingly, the ramp, perhaps one of the most important access points in the group, has a low control value (1.488, Table 6.4). This example illustrates an important criticism of spatial syntax analysis: it does not take into account the qualitative factors that influence the importance or function of a space. While the ramp may not have controlled direct access to many spaces, it controlled access to two of the most important areas of the group in terms of social interaction (Dzunun and Ulum).

Before proceeding, it is important to mention one characteristic shared by all rooms in the Yaxche Group- there is no access between any two rooms in the group. Each room

[11] The only space that does not follow this general trend is 11c, which follows the exterior spaces in having a low RRA value and interior spaces in having a low control value.

can only be accessed from an adjacent patio/plaza (Figure 6.1). While some rooms do open onto multiple patios (e.g. room 45), most have only one entrance[12] and open onto a single patio or plaza. An architectural plan of this nature produces rooms with lower control values and, because of this, only rooms with control values that present a break in this pattern will be discussed.

When using the data for both open spaces and the rooms, all of the rooms have low control values, indicating they exert little control over neighboring spaces (Appendix A, Table 6.6). The primary exception this pattern is the Popol Nah, which has a low RRA value and one of the higher control values. When the room data is analyzed separately (Table 6.7), the remaining rooms surrounding the Dzunun plaza (35, 36, 37, 40-43, 53) have the lowest control values in the group. This further supports the idea that the rooms in Dzunun were designed to function in conjunction with activities on the plaza, not independently of them.

The rooms in Icim Sur and Norte exhibit a range of control values. Rooms with higher control values (1, 10, 46, 47, 2) all have access to multiple spaces while the remaining rooms have low values and are only accessible from the plaza floor. In Icim Norte, rooms 46 and 47 have the highest values because they control access to multiple spaces; they also would have had visual access to both the northern and southern halves of Icim. In Icim Sur, rooms 1 and 2 give access to both Patio C (space 49) and the plaza floor, giving them higher control values. The rooms of both Plaza Ulum and Patio B have medium control values because each is only accessible from the patio floor.

Step Depth See section 6.3.1 for a discussion of the step depth values for the Yaxche Group.

Conclusions: Late Classic Interaction potential (IP) is a composite of the RRA, CV, and step depth and, describes the likelihood of interaction to occur in a particular space. While the IP

[12] Wide entrances with columns generally characterize early Puuc II architecture. For the purpose of this discussion, these are treated as a single entrance (e.g. Figure 6.12).

rank of a space predicts the likelihood of social interaction occurring within that space, it does not provide any information about the **type** of interaction. In order to explore this dimension of interaction, additional data must be incorporated into the discussion. In Chapter 4, the criteria for two types of social occasions were introduced: public-inclusive and private-exclusive. Spaces characterized by medium-high CV, low RRA, shallow depth, and square shapes are more likely to accommodate public-inclusive occasions (Fisher 2007: 108-109). It is important to note that the term 'public' can be misleading. It does not mean that the entire population was invited to participate but rather, it implies the event was open to a larger number of people than a private occasion. Public-inclusive occasions could also be considered 'semi-public'. Combing the interaction potential with the public-private inclusive data provides more insight to the nature of social occasions that could have been possible within a space.

Based on the data for the Late Classic period, the plazas of the Yaxche Group are the primary loci for social interactions because of their low RRA values, high control values and generally shallow depth (Table 6.4, 6.6). The average real relative asymmetry for the patios is .603 (versus .789 for rooms) while their average control value is 2.808 (versus .167 for rooms). These values indicate the patios/plazas are better integrated into the architectural plan as a whole and control access to more spaces than the rooms.

The arrangement of the structures around the patios and plazas emphasizes that the latter were more likely to host social occasions. The syntactical analysis indicates the two most important plazas from an interaction standpoint were Dzunun (RRA .403, CV 9.883) and Icim Sur (RRA .480, CV 7.611)(Table 6.4). Based on these values, Plaza Dzunun and Icim Sur are also ideal candidates for hosting public-inclusive occasions. Each plaza has a shallow depth and is large enough to accommodate a relatively high number of participants

(Table 6.3). They also control direct access to numerous adjacent spaces (rooms) that could have been used to facilitate the public-inclusive occasions. Because Plaza Icim Sur was adjacent to the formal entrance of the group, it likely hosted preliminary activities associated with formal social occasions that occurred within Dzunun or Ulum. While informal social occasions were more likely to occur in Icim Sur, Plaza Dzunun was the main locus for formal social interactions within the group.

As with the other measurements discussed, Icim Norte is different because of the low definition of the spaces that compose the plaza. Most of the spaces in Icim Norte conform to Grahame's (2000: 56) definition of *movement* spaces (see Chapter 4 for more discussion). The rectangular shape of the exterior spaces (11b and 12a especially) allow them to function like a hall in traditional Western architectural plans, suggesting they were designed to move people through the space rather than facilitate social interactions. While they do not all exhibit the same syntactical characteristics (medium-high CV, low RRA), these spaces would have facilitated brief, informal social gatherings rather than formal social occasions. Space 11b is a movement space but also has the second highest interaction potential of the group (RRA .398, CV 4.524). The high degree of integration within global movement patterns through the group and its control over access to multiple spaces, including several rooms of the Palace and two platforms, indicates it was a likely locus of social interactions. As a movement space, the interactions that occurred within 11b were more likely brief, unfocused social interactions rather than the sustained social occasions that would have been typical of Icim Sur or Dzunun.

While Plaza Ulum was not as easily accessible as Dzunun or Icim Sur, it was an important location within the group in terms of hosting social occasions and this is reflected by its medium-high IP rank (RRA .651, CV 4.071). The primary reason Ulum has a lower interaction potential is because of its relative isolation from the rest of the group. In contrast to Dzunun or Icim Sur, the values of Ulum suggest it was more likely to host private-exclusive occasions. In addition to having lower control values and higher RRA values than public-inclusive spaces, this type of space is usually located deeper within the architectural plan, making it less accessible. The smaller area of Ulum and its isolation create an ideal space in which to host private-exclusive occasions. Patio B is the final open area to be discussed and, like Ulum, the primary factor that influences its interaction potential is its segregation in terms of movement through the group. Patio B has a low IP rank (RRA .795, CV 4.333), suggesting it was not an important area in terms of social interaction and the interactions it did host here private-exclusive.

In comparison with the plazas, the rooms present a very different set of syntactical values. All of the rooms have low control values and most have medium-high RRA values, indicating they are less accessible than the plazas and exert little control over neighboring spaces. Based on the trends in their control values, real relative asymmetry values, and areas, the rooms would be more likely to host intimate, private-exclusive social occasions (Appendix A). The primary exception this pattern is the Popol Nah, which has a low RRA value, one of the higher control values, and a large area. The Popol Nah was one of the most accessible rooms in the group and exerted a high degree of control over neighboring spaces. I believe this is interesting because it supports the idea the Popol Nah was an important structure in the sociopolitical life of the Yaxche group. When the room data is analyzed separately (Table 6.7), the remaining rooms in Plaza Dzunun (35, 36, 37, 40-43, 53) also have lower RRA values, suggesting they were more integrated into global patterns of movement. Their low control values could indicate they functioned as support areas (or back regions) for the ceremonies/rituals performed in Dzunun, rather than being the focus of social interactions (Grahame 2000: 56).

The majority of rooms in Icim Sur and Norte have medium RRA values (exceptions are 45, 20-22, 10) and a range of control values. It is interesting to note that the rooms of the western structure of the Palace (20-22) all have low RRA values (Table 6.7). These rooms were among the most easily accessible in Grupo Yaxche, which suggests their primary function may not have been residential. The medium rank values of the remaining rooms would support the idea they functioned as residences; they were not as integrated as the rooms in Dzunun but more accessible than the rooms in Plaza Ulum or Patio B.

The rooms of both Plaza Ulum and Patio B have high RRA values, reflecting the fact that they were the least accessible areas of the group. While these values are expected for Plaza Ulum, which represents the religious center of the group, the results were surprising for Patio B, the service area. The scores can be attributed in part to the fact that each plaza/patio is a dead-end in terms of movement within the group. This does not wholly explain the values however. Plaza Ulum was a highly restricted area and the rooms within it would have been the loci of the most exclusive ceremonies that occurred within the group. Therefore, while their control values are consistent with other rooms, they were less accessible than the rooms of other plazas. Access to the rooms associated with Patio B was also limited, but for different reasons.

The syntactical values of Patio B versus Icim Norte (especially space 18) suggest there were two service areas for the group[13], which is supported by archaeological excavations (see Chapter 5; Bey et al. 2007; Gallareta N. et al. 2006; Gallareta C. et al. 2009). Icim Norte seems to have functioned as a shallow, easily accessible area for visitors and

[13] Patio A was also a service area but has not been excavated to date and is not included in the present discussion.

residents while Patio B was exclusively dedicated to the support of inhabitants of the Yaxche Group. The rooms associated with Patio B reflect the patio's function and were not integrated into the global movement patterns of the group.

Yaxche Group during the late Terminal Classic

During the latter part of the Terminal Classic, when the Palace is transformed into a pyramid and several entrances of the Popol Na are sealed, very little changes syntactically for the Yaxche Group (Table 6.9). In fact, so little changes syntactically that no new conclusions concerning the interaction potential of spaces within the group can be drawn (Appendix B). The primary spaces affected by the change are space 11b (part of Icim Norte) and Plaza Ulum. When the Palace was converted into a pyramid, the rooms of its eastern and western structures were sealed, decreasing the control value of each space and slightly increasing the RRA value[14] (Appendixes A and B). This situation illustrates one shortfall of access analysis in that it privileges syntactical information while ignoring the qualitative component of these changes. In order to fully understand the meaning of these changes, we must examine them using the elements of nonverbal communication.

6.3.3 Elements of Nonverbal Communication and Proxemic Interactions

As previously mentioned, spatial syntax analysis is useful in identifying centers of social interaction but does not shed light on the nature of this interaction nor the function of spaces themselves. In order to address the qualitative dimension of space, elements of

[14] The present research is based on our current understanding and map of the Palace; it assumes there was one room on both the southern and eastern flanks of the structure. The values of Ulum would change only slightly if the eastern Palace building contained 3-rooms.

nonverbal communication (introduced in chapter 4) are incorporated with the syntactical measurements described in the previous section. Unlike access analysis, a successful application of nonverbal communication does not require a detailed site map, although more information results in better analyses. Because of this, the development of the elements in question can be traced throughout the evolution of the Yaxche Group, beginning in the Middle Preclassic[15].

Middle and Late Formative Periods Excavations indicate that the area now occupied by Plaza Dzunun was surrounded by residential structures throughout the Formative period. The first monumental construction occurred during the Middle Formative period (800-300 B.C.), when a freestanding platform measuring approximately 14.5 meters north-south by 14 meters east-west and .75 meters high was built (Table 6.11)(Bey and Ciau 2002; Bey et al. 2007; Gallareta N. et al. 2009). While the full extent of the Middle and Late Formative settlement at Kiuic is unknown, it is likely that this low platform served as the civic/religious center of the community (Figure 6.16). Current archaeological evidence suggests the platform did not contain any superstructures, although the entire surface was not exposed[16]. The dimensions and central location of the platform indicate it was a public space and would have been easily accessible to residents of Kiuic. The low height and absence of superstructures would have given spectators on the ground an unrestricted view of any activities occurring on the surface. While the area of the platform itself was small compared to later versions, it could have accommodated as many as 60 people (Table 6.11). With an area of 203 square meters, the Middle Preclassic platform falls into the lower end of the public-far proxemic class (Tables 6.1, 6.2). This classification indicates that any ceremonies

[15] The data available for the early periods of the group is based on archaeological investigations but the entire area was not exposed horizontally.

[16] Based on similar platforms found throughout the Maya area during the Preclassic (e.g. Aimers et al. 2000; Hendon 1999, 2000).

that occurred on the platform would have involved using a loud or full public-speaking voice in order to address a large group of people. Subtle facial expressions would not have been easily visible, making gestures and large costume elements important components of any ceremony.

During the Late Formative period (300 B.C.- 300 A.D), the platform was expanded to 28 meters north-south by 28 meters east-west. The height increased to between 1 and 1.10 meters and structures were added to the east and south sides (Figure 6.12)(Bey and Ciau 2002; Bey et al. 2005, 2007; Gallareta N. et al. 2001-2004). The southern structure (the *Popol na-* sub) was a platform approximately 13.3 meters long and at least .30 meters high[17]. A central stairway gave access to the *Popol na*-sub and no evidence of a superstructure has been uncovered[18]. At a later point during the Preclassic period, excavations indicate the *Popol Na-*sub was renovated, raising the height of the platform to at least 2.25 meters and expanding the stairway to approximately 5.7 meters long. The preserved portion of the eastern structure (N1025E1040-sub) indicates its basal platform was at least 8 meters long and .5 meters high.

While the platform was still accessible and public, the addition of superstructures begins the trend of restricting access to the area. House mounds continue to surround the platform during the Late Formative, indicating it was integrated into a residential area. While part of the community, the height and size of the platform served to distinguish it from the surrounding residences. The basal platform was approximately 1 meter high, low enough that spectators on the ground had an unrestricted view of the platform surface. However, for these spectators, visual access to activities occurring on the summit of the platform

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[17] This is the height of the preserved portion of the platform.
[18] The surface of the platform was completely destroyed by later constructions so the presence/absence of a superstructure cannot be determined with any degree of certainty.

would have been restricted by the structures in the south and east. The potential occupancy load of the platform triples, from 60 to 213, as a result of the increase in area to 725 square meters (Table 6.11)[19]. While the dimensions of the earlier platform barely classify it as a public-far space, the Late Preclassic platform lands well within the range of this proxemic class. For ceremonies that occurred within Dzunun, a full public-speaking voice was necessary when addressing a crowd and subtle facial expressions were not visible. Gestures, architectural decoration, and other semi-/non-fixed feature elements would have been crucial in communicating meaning through rituals.

Early and Middle Classic Little is currently known about the Early Classic occupation at Kiuic, though it appears that between 300 and 500 A.D., sociopolitical activity was centered around the Preclassic platform in Dzunun (Gallareta N. et al. 2000-2008). The next major architectural modifications in Plaza Dzunun occurred during the late Early Classic period (around 500-550 A.D.), when the platform was expanded north approximately 10 meters. The small, stone residential platforms surrounding the platform during the Preclassic period were abandoned and there is little evidence of Early Classic residences taking their place. Excavations in Plazas Icim and Ulum indicate that these areas were open and that Plaza Dzunun was a free-standing civic-ceremonial platform that was no longer incorporated into a residential area.

Several architectural modifications changed the visibility and accessibility of the platform during the Early Classic. On the southern end of the platform, the *Popol na*-sub was dismantled and directly over it, a long, single roomed slab-vault structure (the *Popol na* or N1015E1015) was built. The principal façade, which was likely covered in stucco

[19] The platform area for the Middle and Late Preclassic periods is estimated based on the known dimensions of the basal platform without subtracting the structure dimensions. This produces a slightly inflated areal measurement.

decoration[20], faced north into Plaza Dzunun. The building had six entrances: four in the front and two on the back, facing south onto Patio C. The final modification to the *Popol Na* was the conversion of the south wall of the platform into four terraces rising approximately 3.5 meters from the ground level.

It was also during this period that the first (known) structure was built on the northern end of the plaza (Palace-sub). This megalithic platform was preserved to a height of approximately 1 meter, although the exact dimensions and form of this phase are unknown at present (Bey et al. 2005, 2007; Gallareta N. et al. 2006-2008; Gallareta N. et al. 2009). The placement and size of the superstructures further restricted both physical and visual access to Plaza Dzunun, making it virtually impossible to see the interior of the platform from the outside.

While the location of the plaza in the core of the settlement does not change, the residential platforms that surrounded the area during the Formative period are abandoned and never rebuilt. A spatial change of this nature suggests that way in which the residents of Kiuic perceived Plaza Dzunun was changing. While the nonverbal elements that characterize previous periods emphasize accessibility and communal participation, these changes indicate the area was being appropriated by a select group of Kiuic residents. Part of their power or prestige likely derived from controlling access to this sacred space. Supporting this conclusion is the construction of a ramp entrance in the southwest corner of the plaza (Gallareta N. et al. 2006) and the conversion of the southern wall into a terraced platform. Both of these changes allowed inhabitants to monitor physical access to the space while cutting off visual access from outside the plaza proper.

[20] As noted in Chapter 5, while no decoration was found *in-situ*, tenons in the rubble support the hypothesis that the structure was covered in stucco. In further support of this were fragments of modeled stucco found in the rubble of the structure. Additionally, there was a large deposit of painted modeled stucco found

The area of the platform during this period is approximately 796 square meters, giving it an occupancy load of 234 people[21]. Although access to the platform is becoming more restricted and the space is no longer public, the potential occupancy of the platform is increasing. From this period forward, we must examine activity occurring on the platform from the perspective of participants on the plaza floor rather than off-platform. Ceremonies and other important social occasions likely occurred on both the plaza floor and in the surrounding structures, preserving the dichotomy between spectators and participants (Figure 6.16). One of the most important structures in this new configuration is the *Popol Na*, which is the largest single room structure in the Yaxche Group and has the highest interaction potential of any room (Table 6.7, Appendix A). The number and size of entrances on the *Popol Na* made the interior of the structure highly visible from the plaza floor, suggesting that the activities occurring within were meant for 'public' consumption. Tenons and pieces of modeled stucco found in the rubble suggest that, for the first time, there is evidence of stucco decoration, a semifixed-feature element. While we know the building had stucco decorative, none was found *in-situ* so we can say nothing about the style or theme. Although we cannot specifically discuss the messages conveyed by the architectural decoration within the Yaxche group, structures from other sites within the Maya region support the idea that Maya elite used building facades as billboards to promote their sociopolitical ideology (e.g. Cerros, Copan, Tikal, Palenque).

<u>*Late Classic and Early Terminal Classic Periods*</u> The biggest spatial change in Plaza Dzunun occurred around 700 A.C., when it was transformed from an open, civic ceremonial area into an elite residential complex (Figure 6.8)(see Chapter 5; Bey et al. 2005, 2007; Gallareta N. et

[21] For previous periods, the area of the platform was calculated without subtracting the area of the superstructures, because their dimensions are unknown. For the Early Classic through Terminal Classic periods, the area includes only the open plaza floor and with structure dimensions based on Late Classic measurements.

al. 2001-2008; Gallareta C. et al. 2009). Structures were built (or existing ones remodeled) on all four sides of the plaza itself, giving residents of the group complete control over access to the area. Patios and plazas were constructed east, west and north of Dzunun, enclosing the space within an elite residential group. The functional and spatial changes that occurred during this period suggest the elite residents of the area had accumulated sufficient power to appropriate this once communal, sacred space. While each plaza and patio was an important component of the built environment, the present research focuses on Plazas Dzunun and Ulum.

The sacbe connecting the Yaxche and Kuche Groups marks the formal entrance to the Yaxche Group[22]. The entrance led into Plaza Icim Sur, the residential heart of the group. Icim Sur has an area of approximately 768 square meters with an estimated occupancy load of 222 people (Table 6.3)[23]. These dimensions place the plaza in the public-far proxemic classification, where loud voices are needed when speaking to large groups and detailed facial expressions are not easily discernable. The spatial analysis of the plaza indicates it could host public-inclusive social occasions, although I do not believe the area was used for formal social occasions. Artifacts found in the plaza, including manos and metates, as well the presence of the low porches attached to several of the structures, suggest Icim Sur was designed to host smaller, more informal social gatherings associated with daily routines. Five structures containing a total of ten rooms are arranged around the outside of the plaza and face inward, creating an open plaza floor, which was easily monitored by occupants of the rooms.

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[22] The sacbe has not been dated, although it appears to have been constructed in the late Terminal Classic period when the Kuche Group was begun. I believe it was built over the pre-existing formal entrance to the Yaxche Group.
[23] All areas for the Late and Terminal Classic periods were calculated by Dr. William Ringle, personal communication.

On occasions when the Yaxche Group was hosting important public ceremonies, Icim Sur would have functioned as a foyer which visitors moved through on their way to Plaza Dzunun or Ulum. After entering the plaza, these visitors would have been monitored as they approached the entry ramp leading into Plaza Dzunun. Although the control value of the ramp was low in comparison to other open spaces, it controlled access to the most important plazas in the Yaxche Group (Table 6.4). The ramp functioned as a threshold between the residential and civic-ceremonial plazas and was designed to mark the transition from a profane to sacred space. The ramp accomplishes this is by manipulating the visual access to Plaza Dzunun and how a person experiences entering the plaza. The ramp (including Str. N1020E1005) is a liminal space, included in neither Plaza Icim Sur nor Plaza Dzunun. It is raised in comparison to the floors of Icim Sur and Dzunun, so that an occupant of Icim cannot see into Dzunun. As a person ascends the ramp, they would have slowly seen the interior of Dzunun come into view, until the whole area was visible from the top platform. Structure N1020E1005, a one-room masonry structure that faced west into Icim Sur, easily monitored the ramp; the structure sat on the ramp platform and could have been used to control traffic on the ramp.

While the ramp has an area of 46.7 square meters and could have accommodated around 14 people (Table 6.3), these numbers are misleading because the area is not flat but composed of two ramps joined by a small platform. The ramp is a public-close space, although it is on the small end of the scale and closer to a social-far space (Table 6.2). It has a medium interaction potential (Table 6.4) and was more likely to facilitate transitory social gatherings rather than prolonged social occasions. The spatial characteristics of this space are aligned with those of a movement space, which conforms to its role within the group as a place where inhabitants and visitors passed through on their way into Dzunun or Ulum.

After descending the ramp, a person would have entered the civic heart of the group, Plaza Dzunun. As noted previously, depending upon the entrance used and path taken through the group, the step depth of Plaza Dzunun varies (Appendix A, Figures 6.5, 6.7). The inhabitants of the Yaxche Group controlled access to Dzunun by monitoring all routes that lead to the plaza and creating two small and easily controlled entrances. With a floor area of approximately 772 square meters, the occupancy load of Plaza Dzunun is 227 people (Tables 6.3, 6.11). The actual occupancy during ceremonies was likely higher because people would have occupied the stairways of the structures surrounding plaza[24].

Plaza Dzunun falls solidly within the range of a public-far space, which means that subtle facial expressions were not discernable and that a full public-speaking voice was necessary when speaking to a crowd. When Dzunun was a freestanding platform, the height of the platform was an important element of nonverbal communication because it was used to create the physical division between groups of ritual participants and spectators, reinforcing the status distinctions between them. After the platform was incorporated into the elite residential group, the stage upon which ceremonies were enacted changed, although the dichotomy between performers and spectators was maintained. While the platform itself was the stage during the Preclassic periods, iconographic and ethnohistoric evidence suggests that events occurred on both the plaza floor and the surrounding structures during the Late and Terminal Classic periods (see Chapter 7). The new setup continued to reinforce the distinction between participants and spectators and created a third group, one that had **no** access to any part of the ceremonies.

Although Dzunun was once again incorporated into a residential group, several architectural elements served to distinguish it from the surrounding residences. The first of

[24] For example, the Bonampak murals indicate that during some Mayan ceremonies, spectators and/or performers occupied the stairway of associated structures.

these is the seclusion of the plaza, which is created by the surrounding masonry structures. In conjunction with the terraced wall of the basal platform in the south, the structures helped create the sense that the plaza was distinct from the surrounding residential area by ensuring it was not visible from Icim Sur or any area outside the group[25]. The second element was the actual function of the structures, which we believe were non-residential (see Chapter 5). Finally, the strict control of access to the plaza, in addition to the ways in which the plaza could be accessed, indicates it was a sacred space. As discussed above, the access ramp was designed to manipulate the way in which a person experienced entering Dzunun, drawing attention to the fact that he/she was leaving the secular area of the group and entering a special, powerful place.

Once inside Dzunun, the wide access stairways of Structures N1025 and the *Popol Na* would have made the plaza feel larger and provided more seating room for spectators or performers during social occasions. With an area of approximately 37 square meters, the *Popol Na* is the largest room in the group (Appendix A, Table 6.7). Based on these measurements, it could have accommodated 11 people and is in the social-far proxemic class. A casual speaking voice would have been audible and facial features were easily discernable within the structure. It had six entrances facing into Plaza Dzunun, which would have given occupants of the building a clear view of activities occurring on the plaza floor. Conversely, spectators in the plaza would have been able to see much of the activity that occurred within the *Popol Na*. During the Late Classic, three interior benches were added to the eastern, western, and central portions of the building. The syntactical analysis of the *Popol Na* indicates it was most likely to host private-exclusive social occasions, which could have been portions of larger ceremonies enacted in the plaza or separate events.

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[25] A small part of the northern end of Dzunun was most likely visible from a small entrance in the northwest corner from Icim Norte.

The eastern and western structures of Plaza Dzunun were multi-room structures with wide doorways that faced onto the plaza[26]. The eastern structure, N1025E1040, is composed of two smaller rooms (area 4 m^2, occupancy 1 person) flanking a larger room (area 12 m^2, occupancy 4) with a wide central doorway (Tables 6.3, 6.10). These features suggest the central room could have been used for intimate social occasions while the flanking rooms, which have small doorways, may have functioned as storage areas for associated rituals. The building sits atop a raised basal platform with a wide access stairway, but the interior of the structure would have been visible from the plaza floor. The western structures, N1030E1005 (1 room) and N1045E1005(3 rooms), have a different layout and elevation. Each of the rooms on the western side has an average area of 11.9 m^2 and could have accommodated between 3 and 4 people. They all have a single, wide doorway with two columns, which made the interior visible from the plaza floor. Like the central room of the eastern building, it is possible they were used in conjunction with activities that occurred on the plaza floor.

The final plaza to be analyzed in detail is Plaza Ulum, the sacred/religious core of the group. Excavations in the area have uncovered an early floor and ceramic material dating to the Middle Preclassic period, although the function of the area during this period is unknown. The main construction boom occurred in the Late Classic when, like Plaza Icim, it was formally incorporated into the Yaxche Group. In terms of movement through the group, Ulum is one of the most difficult areas to reach and is a dead-end. A perishable wall in the northern end of the plaza (constructed between Temple A and Structure N1070E1045) and platforms in the south restrict physical and visual access from outside of

[26] Although the exact form of the Palace is not known, it is likely that a multi-room structure faced south into Dzunun. This assumption is based on the presence of a 3-room structure on the western side of the Palace and a multi-room structure on the east.

the Yaxche Group (Figures 6.2, 6.8)[27]. The only means of access to Plaza Ulum lies in Plaza Dzunun, where a low platform (approximately .4 meters high) composed of two steps marks the boundary between the plazas. Unlike the ramp, this platform does not create a dramatic break between the physical spaces of the two plazas; it was low enough so that visual access between the two areas was not relatively unrestricted (Figure 6.12). The design of these two plazas and their points of access suggests that once a person had gained entrance to Plaza Dzunun, they were also allowed access to Plaza Ulum. Only the activities occurring within the structures in Ulum would have been hidden from view in Dzunun.

Plaza Ulum has an area of approximately 611.2 square meters and an occupancy load of 180 people (versus 227 for Dzunun and 222 for Icim Sur), making it one of the smaller plazas in the group. The southern end of the plaza contains a low platform with a perishable superstructure while the western side of the plaza contains the remains of the Palace. Although this area of the Palace has not been excavated, we believe it was a three-room structure that mirrored the western building (Figure 611). The primary distinguishing features of Plaza Ulum are the two one-room temple-pyramids, which are the only examples of this type of structure at the site.

Temple A, the focus of excavations in the plaza, appears to have had two construction phases; the first occurred in the Late Classic period (see Chapter 5)[28]. The earliest structure, Temple A-sub, was dismantled for the construction of Temple A and as a result, only the lowest course of stones of the superstructure was found *in-situ*. These remains indicate that the temple was approximately 6 meters long (north-south) with a single, 1-meter wide entrance that faced (west) into the plaza (Figure 5.29a). Stones found in

[27] Although the walls uncovered date to the Terminal Classic, it is likely that they replaced walls constructed during the Late Classic period.
[28] The northern temple (Str. N1070E1045) has not been excavated but appears to have a similar architectural design to the Temple.

the rubble of Temple A-sub indicate it was vaulted and had stucco decoration. With an internal area of 10.5 square meters, Temple A-sub could have accommodated approximately three people. It falls into the social-close proxemic class would have facilitated private-exclusive social occasions (Table 6.10). A casual voice was easily heard and facial features, such as a wink, would have been visible. The temple sat atop two stepped platforms that rose approximately 2 meters off the plaza floor and any activities within would not have been visible from the plaza floor. While the majority of the access stair was dismantled, evidence suggests it was at least 6 meters wide at the base. The stairways in Dzunun, which have broad, low risers would have easily accommodated spectators. The steps of both Temple A and Temple A-sub were narrow and step, suggesting they were not designed to provide additional seating or a stage for performances. The height of the stepped platforms and single doorway of the superstructure would have restricted the view of any spectators not inside the temple itself.

During the early part of the Terminal Classic, Temple A-sub was partially dismantled and remodeled as part of the construction boom seen throughout the group. The new temple (Temple A) was slightly larger than its predecessor, with an area of 14.4 square meters (versus 10.5) and could have accommodated up to four people (Table 6.11). Reconstructions indicate that, from the base of the zocalo to the highest row of the vault stones, Temple A was at least 3.68 meters tall. It had a single entrance that was 1-meter wide and faced west into Plaza Ulum. Temple A, like Temple A-sub, was designed to facilitate private-exclusive occasions and falls into the social-close proxemic class.

The platforms underwent several modifications, including the addition of a third platform on the western side that increased the total height of the platforms to approximately 2.6 meters. As with the original construction, the height of the basal platforms was such that spectators on the plaza floor would not have been able to see any of activity that occurred within the temple. Additionally, their view of activity on the third platform would have been severely restricted. The lower platforms could have been used as stages for portions of ritual ceremonies but the participants would have been able to withdraw into the superstructure to perform private or semi-private portions of the performance. Finally, while the entrance to Ulum was low, the placement of structures (N1025E1040 and the tower) meant that the ritual plaza was only visible from the northern end of Plaza Dzunun.

During this period the southern area of Ulum also underwent a modification when a masonry structure with a perishable roof was constructed on Platform N1040E1040. Archaeological evidence suggests that this structure had an open front that faced north into Plaza Ulum. The wide, open front indicates that the structure was not meant to host private components of ritual ceremonies. The area of the superstructure is approximately 8.08 meters, which would hold two people. It is possible that this structure functioned primarily as a storage area for ritual paraphernalia, although no evidence was been found to support this hypothesis.

Late Terminal Classic During the latter part of the Terminal Classic period, architectural changes indicate the function and perception of the Yaxche Group were radically altered. The construction of a new palace west of the Yaxche Group (Grupo Kuche) suggests a change in sociopolitical power at the site, although the exact nature of this change is unclear. A sacbe linking the two groups, however, implies that maintaining ties to the original civic-ceremonial heart of the site was important.

Within the group itself, the most dramatic changes occurred in Plaza Dzunun. The Palace was converted into a 17-meter high stepped pyramid and four of the six doorways of the *Popol Na* were sealed. It does not appear that any significant architectural modifications occurred in Plazas Ulum or Icim during this period, although it appears Icim ceased being used as a residential area. In theory, access to the group was further restricted - only persons connected with the palace in the Kuche Group could enter via the sacbe. When the group ceased functioning as the sociopolitical center of Kiuic, it was no longer necessary to monitor movement within the group. Visitors would have entered the Yaxche Group via the sacbe, crossed Plaza Icim Sur, and entered Plaza Dzunun. Because the group was no longer functioning as a residence, visitors were likely there for the ritual purposes.

Although the syntactical characteristics of Dzunun did not change, changes in the elements of nonverbal communication suggest drastic shifts in the way in which Kiuic residents utilized the plaza. The *Popol Na*, which had previously been the sociopolitical heart of the group, was now a long, dark structure with virtually no view of the plaza. The new focal point became the 17-meter high pyramid, where both visual and physical access to the superstructure was highly restricted. While spectators in the plaza would not have been able to see any portion of activity that occurred on the summit of the temple, it is likely that there were no spectators. The only persons involved would have been participating in any ceremonies being performed. In Plaza Ulum, there are no architectural or spatial modifications that can be specifically dated to this period. As will be discussed below, burn patterns found in Temple A suggest termination rituals were performed in the structure, although the exact timing of these events is uncertain.

The modifications made during the late Terminal Classic period mark the conversion of the original royal residence of Kiuic into a shrine dedicated to the founding ancestors of the community. The elements described above are fixed-features of the built environment and change relatively slowly over the course of the group's history. The final component of the analysis is the semi-fixed feature elements, such as burials and offerings, which change more quickly in response to sociopolitical shifts.

Semi-fixed Feature Elements The final component of the analysis is the semi-fixed feature elements found within Plaza Ulum[29]. This category of elements includes the portable and easily modified components of the landscape, such as architectural decoration, offerings, and other artifacts. While semi-fixed feature elements encode important information about sociopolitical messages, they are found less frequently archaeologically than fixed-feature elements. An additional problem is that these portable elements are rarely found in their original context, making it difficult to fully interpret their role in conveying nonverbal messages.

The first semi-fixed feature element to be discussed is a large deposit of modeled stucco and serves as an example of importance of context. As described in Chapter 5, the stucco deposit was uncovered approximately three meters south of Temple A (Figure 6.16). Fragments of modeled stucco and stone espigas were found in the rubble of both Temple A-sub and Temple A. It is not clear which structure the stucco originally adorned although a preliminary analysis of the stucco itself and associated ceramics indicate the stucco adorned the façade of Temple A-sub (Galvan, personal communication). The stucco was deposited in a single dumping event, it did not accumulate over time as part of a midden. A detailed analysis of the recovered material is ongoing and, when completed, will provide a better idea of the style and content of the decoration. A preliminary study by Melissa Galvan suggests the façade contained a narrative-descriptive scene that contained at least two human individuals as well as a feline. The body parts of the individuals are adorned with jewelry and elements of clothing (similar to the elements of royal costumes found in Southern

[29] The present analysis focuses on Plaza Ulum; detailed analyses of other areas of the Yaxche Group are presented by project members in other publications and papers.

iconography, personal identification). There are wide varieties of geometric shapes present that represent feathers, blood, and knots, as well as other pieces that cannot be identified (Galvan, personal communication). Overall, the pieces of the mural that can be identified support the identification of Plaza Ulum as the ritual center of the group and that the temple façade was used by the Yaxche residents to promote and legitimize their sociopolitical power.

The second category of semi-fixed feature elements to be examined is the offerings found throughout the plaza. Although Plaza Ulum is the sacred center of the group, excavations to date have revealed a limited number of offerings and caches. One possible explanation of this pattern is that, when the function of the group changed during the latter part of the Terminal Classic, the important caches were removed and relocated. While no large or exotic offerings have been found to date, vessels were interred throughout the plaza (see Chapter 5:44-46). Additionally, there is evidence of possible termination rituals in the interior of the Temple A-sub and Temple A.

During the termination events associated with both temples, an area of the floor along the eastern wall and parts of the eastern wall itself (especially in the north), were burned. The burn pattern suggests that a burning object was placed on the floor and then removed (see Chapter 5:Fig. 5.30, 5.37). For Temple A-sub, only the later floor shows evidence of heavy burning, suggesting the ritual was associated with the dismantling of the temple prior to the construction of Temple A, not simply a remodel (otherwise both floors would have been burned). Temple A had only one floor, which had been burned presumably in conjunction with the abandonment of the temple in the Terminal Classic. No ceramic material was found directly associated with these burned areas from either construction phase. Finally, test pits placed in the four corners of the superstructure revealed no interred offerings in association with either temple.

Although no caches or vessels were found in the corners of Temple A, a human cranium was uncovered in the center of the structure (Figure 6.16). The cranium was located directly in the construction fill and there were no associated artifacts or other skeletal remains, suggesting the skull was not part of burial. Two additional offerings associated with Temple consisted of empty ceramic vessels found at the base of the stairway, on the plaza floor. A Chumayel Red-on-Slate olla was found at the southern corner of the stairway and pieces of a smashed cajete (incomplete) were located at the center of the stair. Neither vessel contained additional artifacts but residue testing conducted on other offerings found in the Yaxche Group indicates they most likely contained foodstuff (Simms 2008, 2009). No additional offerings were associated with Temple A or Temple A-sub.

The final offering buried in Plaza Ulum was located northwest of the looters pit, in a stucco element embedded in the plaza floor (Figures 6.16, 5.50)(Gallareta N. et al. 2004). The cap of the stucco element had been broken, indicating the offering was robbed in antiquity. Inside the element was a Yokat striated olla and the only clue to its original contents was a jade earspool that had been left behind. A second vessel, a Sacalum black-on-slate olla, was uncovered facedown on a larger piece of a third vessel immediately east of the stucco element. Additional offerings were made during the Post Classic period after the buildings had begun to collapse. During this period, Chen Mul Modeled incensarios were placed on the temple and platforms, indicating the area remained an important part of the sacred landscape long after the group had been abandoned.

The low number of offerings and lack of burials associated with Plaza Ulum is puzzling, based on its functional role in the group and the traditional importance of offerings in ceremonial/ritual spaces among the Maya. One possible explanation is that during the conversion of the Palace into a pyramid, the important offerings and burials were removed and re-interred elsewhere. This scenario is plausible, especially if Plaza Ulum was the focus of ancestor worship for the residents of the Yaxche Group. When the loci of power moved during the latter part of the Terminal Classic period, the relics were also moved. It is also possible that the temples in Ulum (or at least Temple A) were not meant to be funerary monuments and served a similar purpose as the Cross Group at Palenque (Bey, personal communication).

The ceramic analysis used to establish the chronology of the structures and floors in Plaza Ulum was performed by the project ceramicist Chris Gunn and additional in-depth analyses of the material is planned as part of the future research (see Chapter 8). Preliminary analysis of the material supports the idea that the plaza of Ulum was considered separate from areas 'outside' the group proper. The excavation of the perishable wall in the northern area of Ulum uncovered a difference in the way the spaces inside and outside of the wall were treated. The area south of the wall inside Plaza Ulum contained little to no ceramic material or other artifacts while the area immediately north of the wall contained a significant quantity of material (Figure 5.42). A similar pattern of refuse dispersal was found in units excavated on the north side of Temple A, where the areas located outside of the plaza contained large quantities of ceramic material (Gallareta N. et al. 2006, 2008). Additionally, approximately 42% of the total ceramic material recovered from Plaza Ulum originated in these midden contexts (see Appendix C)[30]. This is significant because other areas of the Yaxche Group witnessed an accumulation of ceramics and other artifacts after the group ceased functioning as a residence. Trash literally piled up throughout the group, except in

[30] These numbers do not take into account chronological variation but represent the percentages in relation to all material recovered from the plaza.

Plaza Ulum (Bey, personal communication; Bey et al. 2007; Gallareta C. et al. 2009). I would argue that the relative lack of trash indicates Plaza Ulum remained a 'sacred' place in the social memory of the Kiuic residents long after it ceased functioning as a formal ritual area.

The majority of artifacts recovered from within Plaza Ulum come from the platforms of the Temple and the plaza floor (together they account for 25% of the total ceramic material recovered). Regardless of context, the most prominent ceramic forms found in Ulum are ollas, cajetes, cazuelas, and bowls (see Appendix C), which is consistent with the most common forms found throughout the Yaxche Group. Plaza Ulum does contain a higher number of incensarios and less olla chultuneras than in other areas of the group (Bey and Ciau 2002). The final distinguishing feature of the Plaza Ulum ceramic material is that the vessels appear to have been larger (on average) than those recovered in Patio B (Bey and Ciau 2002). While the size of the vessels could indicate that Ulum was a locus of ritual feasting, further analysis is required to confirm this assumption. Further analysis is needed to examine what the ceramic types found with Ulum suggest about the nature of social interactions but when found within a ritual context, even plain serving vessels can be ritually changed (Brown and Awe 2007). The use of utilitarian wares in several of the offerings found in Ulum support this idea that through the ritual use of containers, the vessels became sanctified. A preliminary analysis of the non-lithic materials recovered in Plaza Ulum found that 46% of the lithic material was recovered from midden contexts that are located outside of the plaza proper (Table 6.11)[31]. Additionally, 67% of this material was flake debris, which suggests that the material was not made or used within the

[31] The lithic analysis was performed by Rebecca Hill. All artifacts are assigned to an artifact type corresponding to Rovner and Lewenstein's (1997). This allows for both the identification of the tool types found at Kiuic and their comparison to other artifact assemblages (Hill, personal communication).

plaza but was refuse used in fill contexts and found in the midden areas outside of the plaza (Table 6.12)[32].

The only additional semi-fixed feature elements found in Plaza Ulum are three drum altars and two plain stelae, none of which were found *in-situ* (Figure 6.17). Two of the altars were found near Temple A, one at the center of the stairway on the plaza floor and the other lay on a small rough stone platform that extended from the northwest corner of the basal platform. The third altar was found at the base of the northern temple. All of the altars and stelae had been overturned but we believe they were originally located in the center of the plaza on a small stelae platform (where the large saqueo is today). Although we cannot be certain about when the saqueo was created, it appears that in antiquity the stela/altar platform was either robbed or the objects were ceremonially removed. The only artifact uncovered during our excavation of the saqueo was a human canine tooth (see Gallareta N. et al. 2002).

While there are few semi-fixed feature elements associated with Plaza Ulum, they provide support for conclusions regarding the function of the area drawn from excavations and access analysis. The location and syntactical features of the temples indicate that private-exclusive rituals occurred within these structures and that the inhabitants of the Yaxche Group strictly controlled access to the area. The offerings support the idea that plaza was considered sacred or consecrated ground, as do the presence of the only altars and stelae found within the group. Few utilitarian artifacts were found in Ulum and artifacts recovered from the offerings include both jade jewelry and foodstuff.

[32] An in-depth analysis of the artifact assemblage is part of the future directions of the research and discussed in Chapter 8.

6.4 Conclusions

When used together, access analysis and nonverbal communication provide important insights about the role of the built environment in influencing social interaction. In the preceding analysis, the interaction potential of each space within the Yaxche Group is used to predict which spaces were more likely to host social occasions. Nonverbal elements of communication provide additional data concerning the types of interaction most likely to occur within each space. Grupo Yaxche underwent a number of significant changes throughout its history that altered the contexts and nature of the social interactions that occurred within it. I will summarize and briefly discuss these developments in the following paragraphs.

The first platform in Plaza Dzunun was built during the Middle Preclassic period and remodeled during the Late Preclassic, marking the beginning of monumental construction in what would later become the Yaxche Group. Social interaction during these early periods was overwhelmingly focused on communal rituals (public-inclusive) and the relationships created by stressing the common bonds among residents of the area (e.g. Hendon 1999; Ringle 1999). The use of the raised platform also hints at the beginnings of two distinct social groups- the first of which was actively participating in ceremonies on the platform. This group of persons possessed specialized ritual knowledge and the sociopolitical power associated with this knowledge. The second group of persons was the spectators, with no special ritual knowledge, who watched the ceremonies from the surrounding area (or ground level). The built environment during this period was designed to minimize social distinctions while, at the same time, reinforcing the emerging power of the ritual leaders (e.g. Bachand and Bachand 2005; Ringle 1999, 2005). The sociopolitical distinctions become more pronounced during the Late Preclassic period, when superstructures were added to the platform. Prior to this, every component of the ritual was visible to all spectators; the addition of these structures made it possible to perform parts of the ceremonies in private (private-exclusive) and restricted the view of spectators.

Through time, the segregation of ritual and the distinction between the social groups became more pronounced. During the Middle and Late Preclassic periods, the platform was integrated into a residential area but does not appear to have been the exclusive domain of a particular lineage. During the Early Classic period, however, these house mounds are abandoned and the platform is converted into a freestanding civic-ceremonial area. The Dzunun platform remained a relatively public place and would have hosted public-inclusive rituals, but the trend of increasing privatization and segregation is reflected in the architectural plan. The construction of more buildings creates additional spaces for private-exclusive rituals as well as restricting the view of spectators located off the platform proper. These spatial changes indicate the use of rituals to forge and maintain communal bonds is decreasing. Being able to hide portions of the ceremonies from a certain segment of the population suggests that the power dynamic has shifted toward emphasizing individual or lineage-based power. Although the public may have known what was occurring behind the 'closed doors', they were not able to participate (or watch).

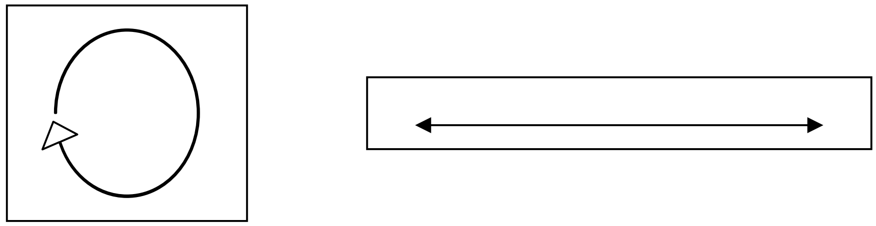
Finally, in the Late Classic period, the once communal ritual platform is incorporated into an elite residential complex. Plaza Dzunun continues to host public-inclusive ceremonies but rather than being truly public and open to the entire community, they are only open to select visitors to, and inhabitants of, the Yaxche Group. It is during this period that we see not only a radical change in the layout of the built environment but also in the concept of 'public' and 'private' rituals.

The data for the rooms versus patios is particularly interesting because it indicates that the two groups of spaces were constructed to emphasize fundamentally different types of interactions. The syntactical analysis indicates the plazas (or open spaces) were the primary loci for social interactions. Movement-wise, they are better integrated into the system as a whole and exert more control over neighboring spaces than the rooms. These findings are consistent with cross cultural data that show plazas are culturally defined spaces for a range of activities, including both profane and sacred ones such as processions, rituals, and commercial exchanges (e.g. Moore 1996b). The rooms would have facilitated the private-exclusive components of ceremonies in addition to functioning as storage spaces for the associated ritual paraphernalia.

The integrated approach suggests that Plaza Dzunun served as the locus for formal social occasions and interactions involving higher status guests. While Dzunun facilitated politically oriented social interactions, Plaza Ulum hosted the religious ceremonies that occurred within the group. These social occasions would have involved a smaller number of persons and been private or semi-private in nature, as opposed to the more public ones in Dzunun. The relative segregation of Plaza Ulum and the unique architecture of the two temples indicate the residents of the Yaxche Group considered it a special area. The sacred nature of Ulum is further supported by evidence from semi-fixed feature elements such as offerings and the altars and stelae found throughout the plaza.

The use of interaction potential to explore social activity in the built environment shifts the focus away from the symbolic meaning of the activity to *how* the activity communicated meaning (e.g. Blanton 1989; Moore 1996b). This approach is especially important in regions such as the Puuc, where there is often an absence of iconographic and/or epigraphic evidence to shed light on the content of the ritual. So while archaeologists in these reasons can only guess at the sociopolitical meaning of rituals, they can use clues encoded in the built environment to determine the types of interaction possible within a space.

FIGURES FOR CHAPTER SIX



a) high CV, low RRA, square b) low CV, low RRA, rectangular

Figure 6.1: Diagram of a) circulation space and b) movement space

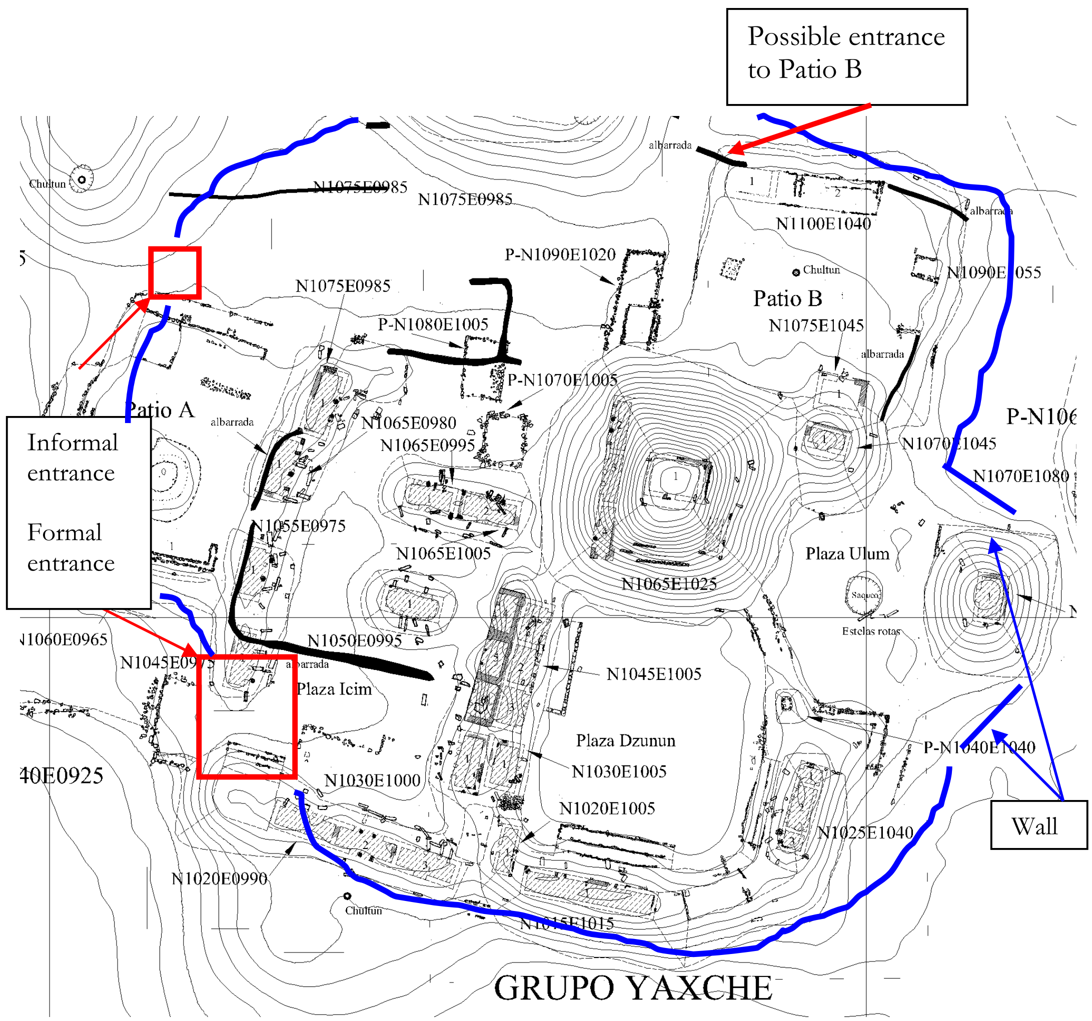


Figure 6.2: Map of the Yaxche Group with entrances (red) and boundaries (blue) highlighted

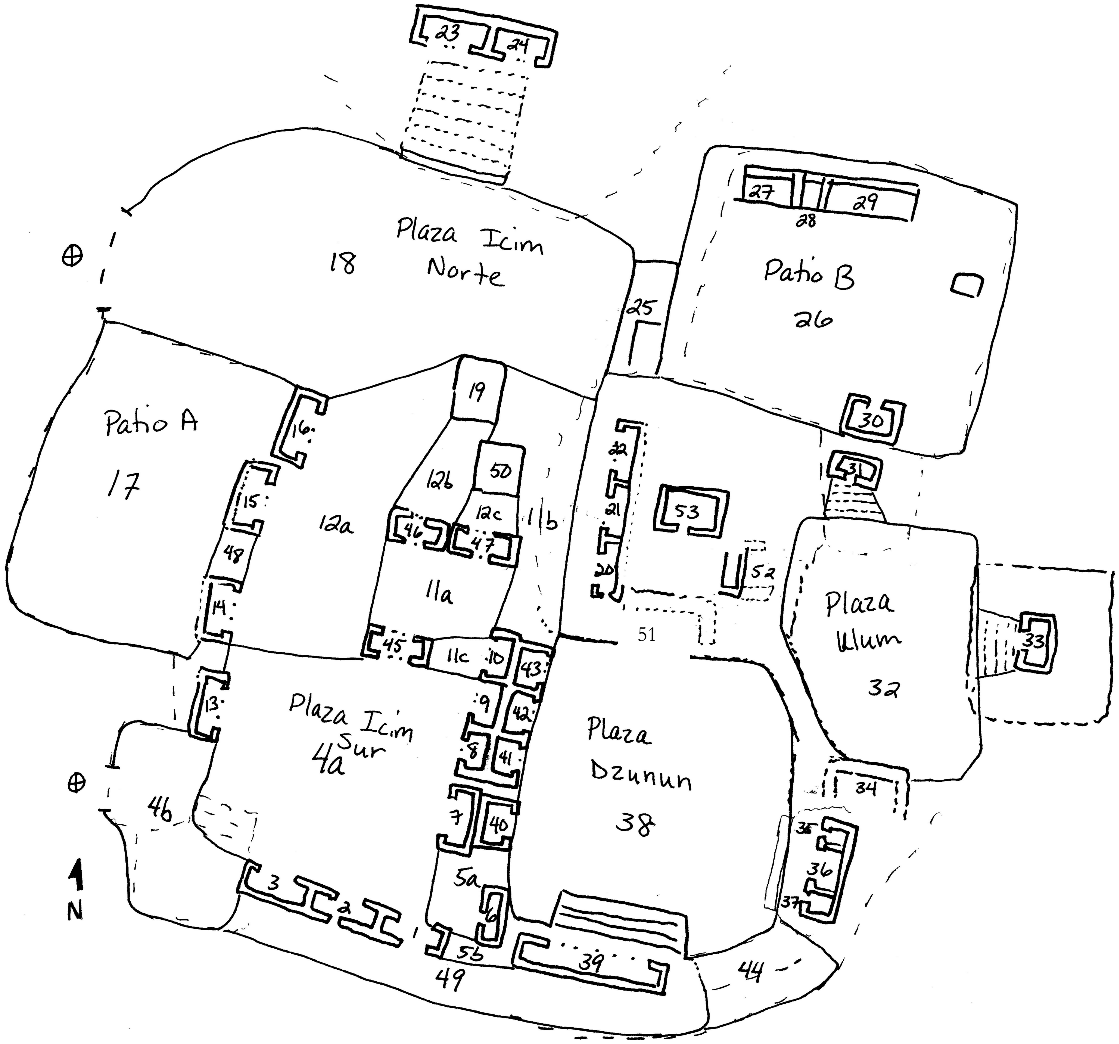


Figure 6.3: Map of Yaxche Group with spaces labeled for access analysis. The two entrances are denoted with a cross inside a circle. Room 51 is the hypothesized room of the Palace during the Late Classic and room 53 is the superstructure of the temple-pyramid constructed during the late Terminal Classic period.

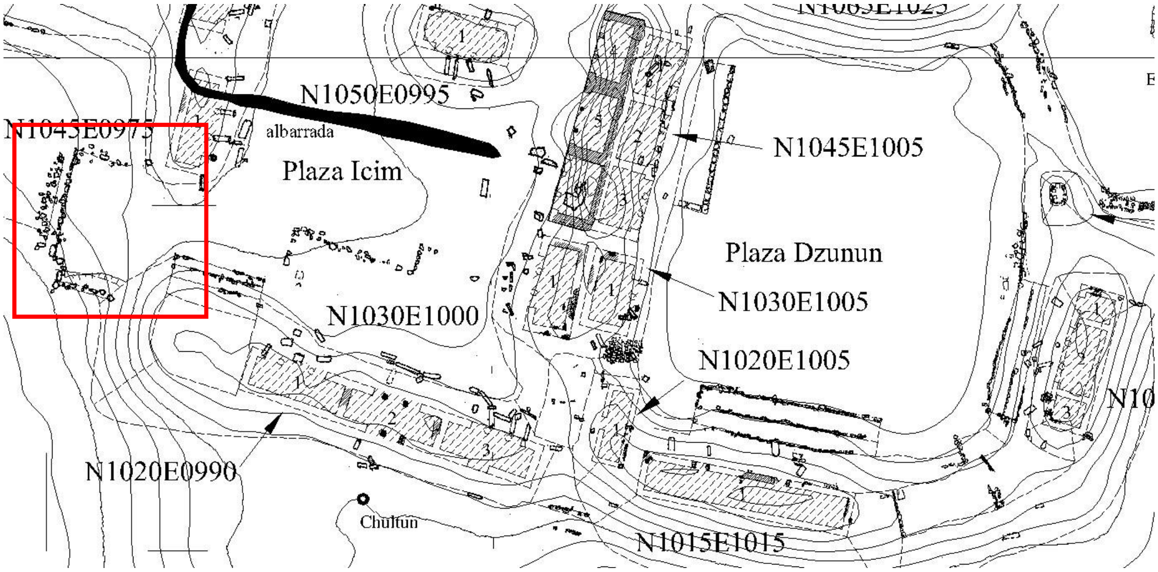


Figure 6.4: Detail of Plazas Icim Sur and Dzunun. Sacbe and formal entrance to the group are highlighted

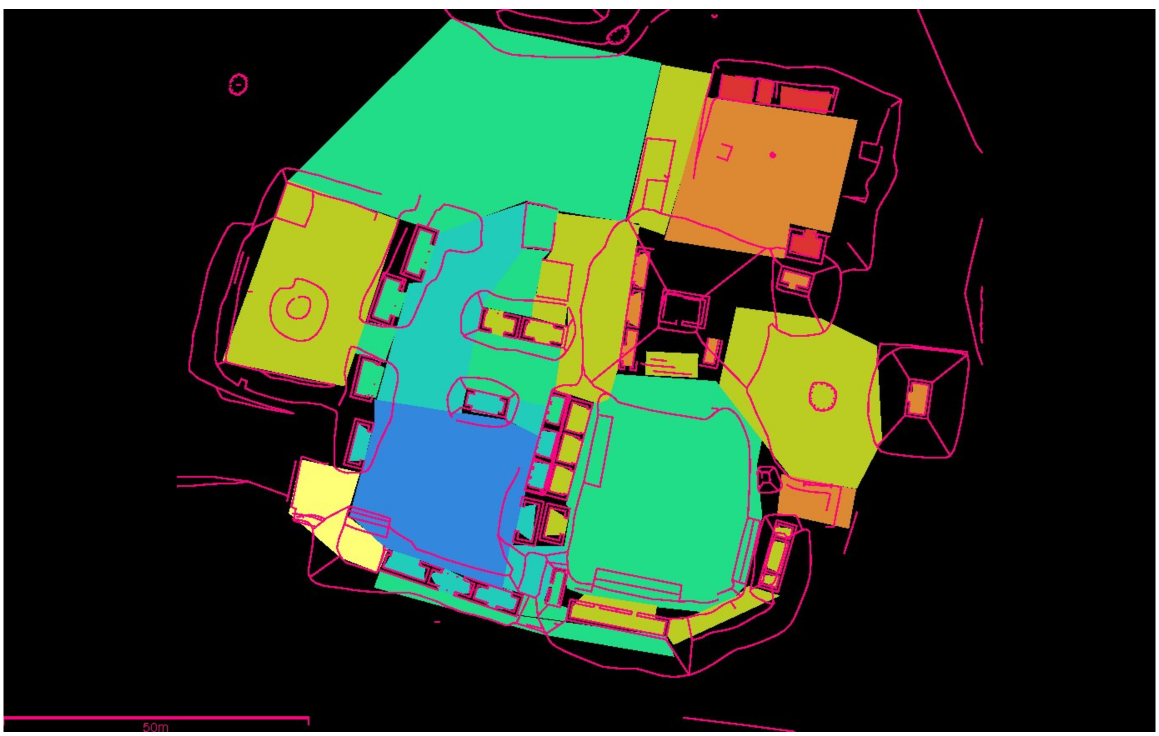


Figure 6.5: Map of Yaxche Group with step depths from formal entrance (4a) labeled. Blue = least depth to red= highest depth (created in Depthmap)

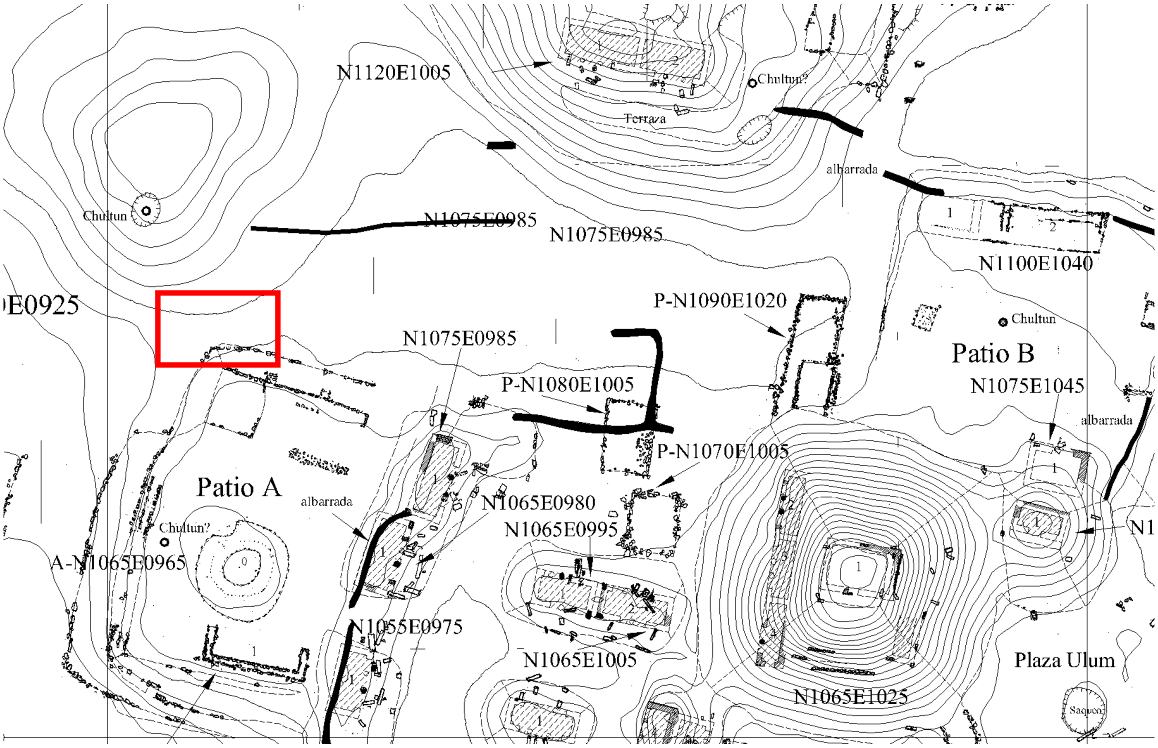


Figure 6.6: Detail of Plaza Icim Norte and Patio B. Informal entrance (18) to group highlighted

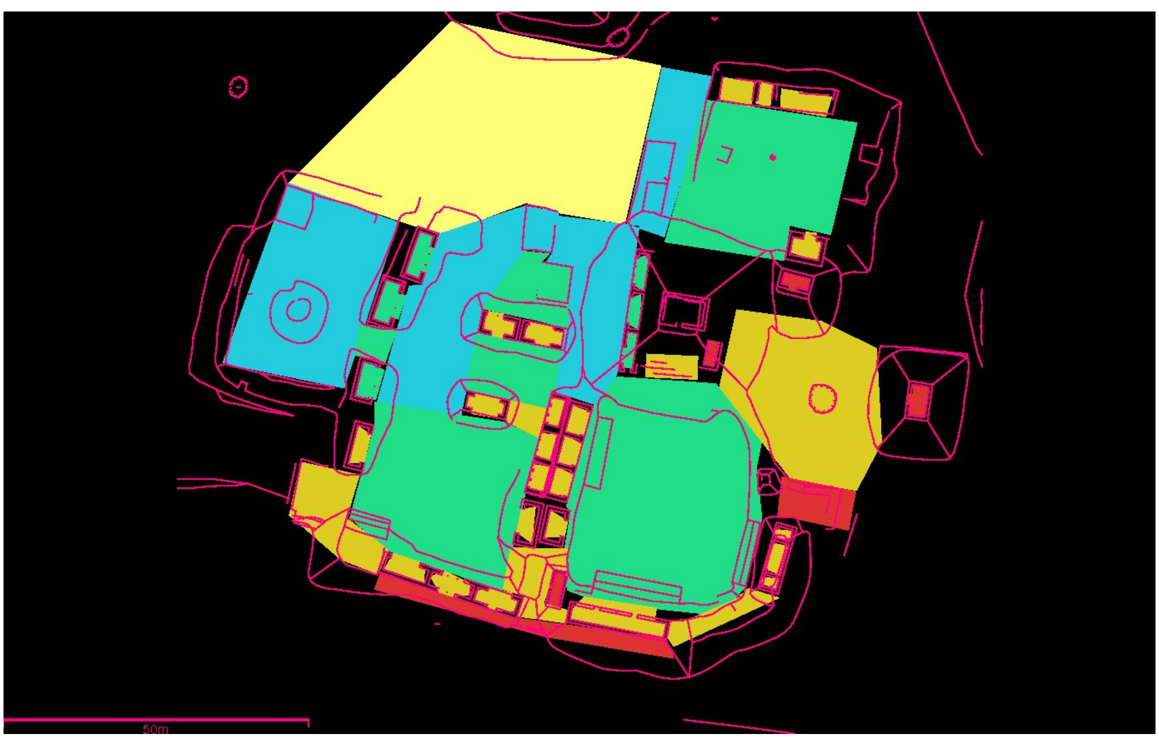


Figure 6.7: Map of Yaxche Group with step depths from non-formal entrance (18) labeled. Blue = least depth to red= highest depth (created in Depthmap)

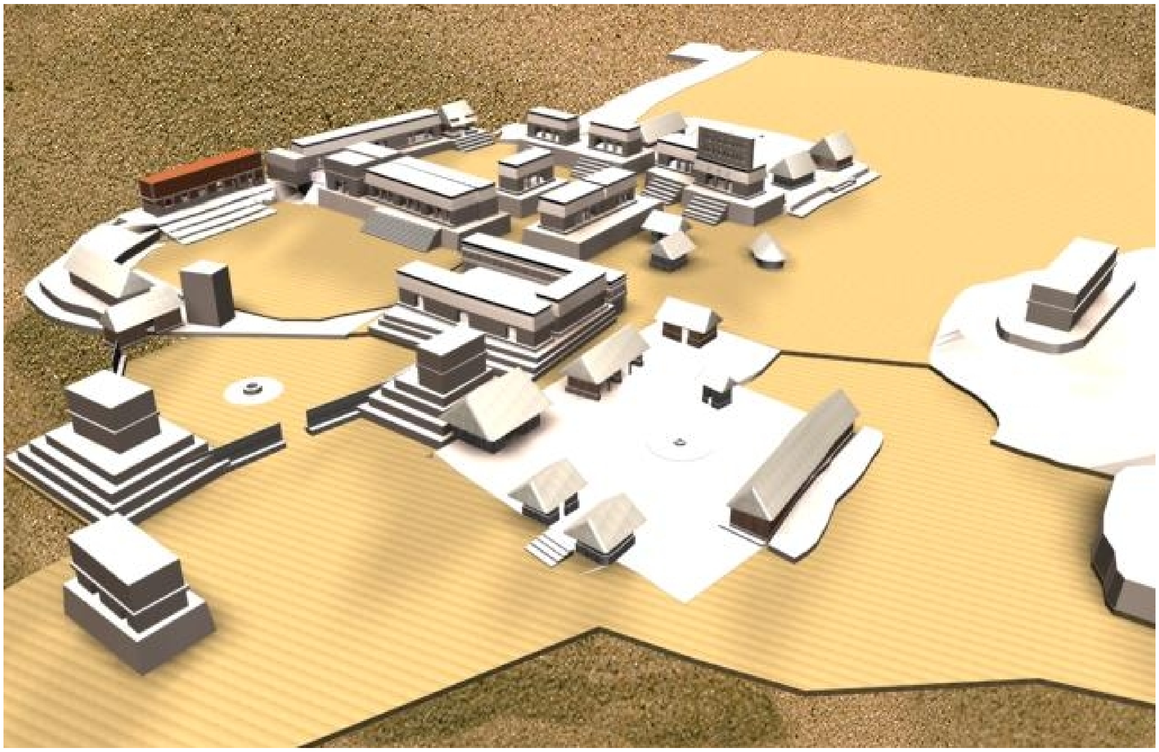


Figure 6.8: 3-dimensional reconstruction of Yaxche Group during the Late Classic period courtesy of M. Arqto. David Antonio Rivera Arjona)

Figure 6.9: 3D reconstruction of Yaxche Group during the Late Classic period, from the southwest corner of Icim Sur looking into Plaza Dzunun (courtesy of M. Arqto. David Antonio Rivera Arjona)

Figure 6.10: Image of formal entrance between Icim Sur and Dzunun (courtesy of BRAP)

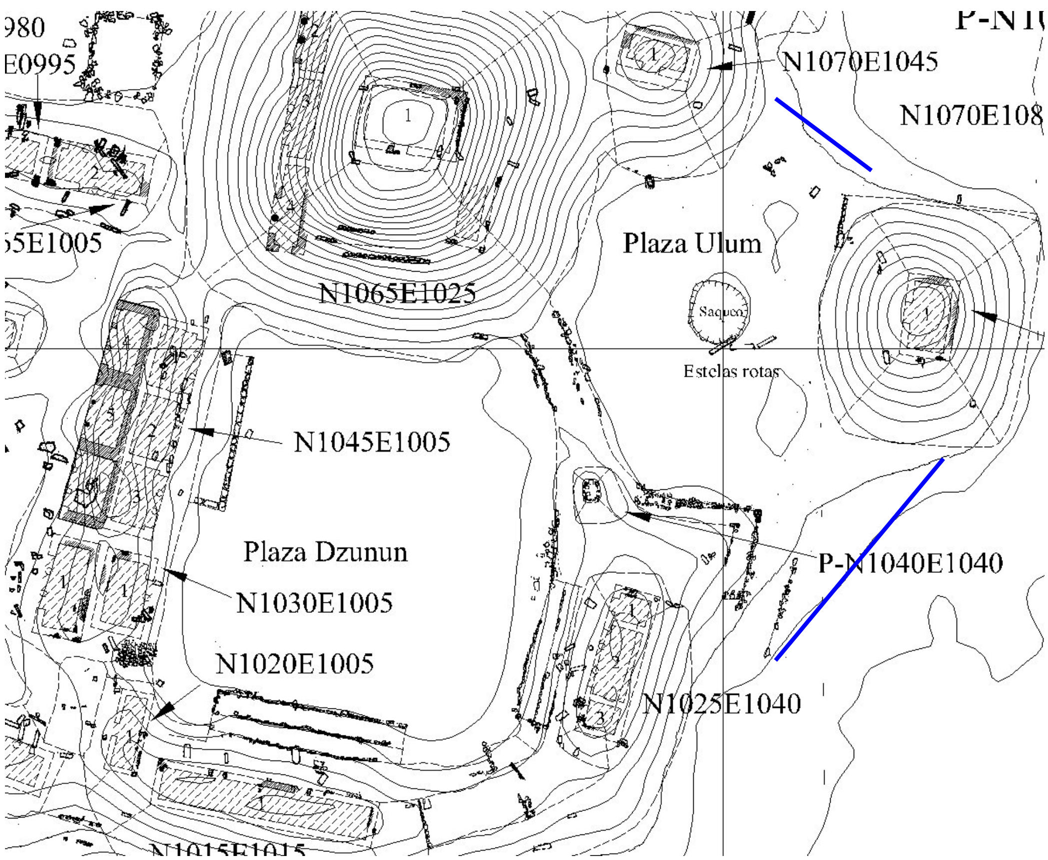


Figure 6.11: Detail of Plazas Dzunun and Ulum with boundaries of Ulum represented (courtesy of BRAP)

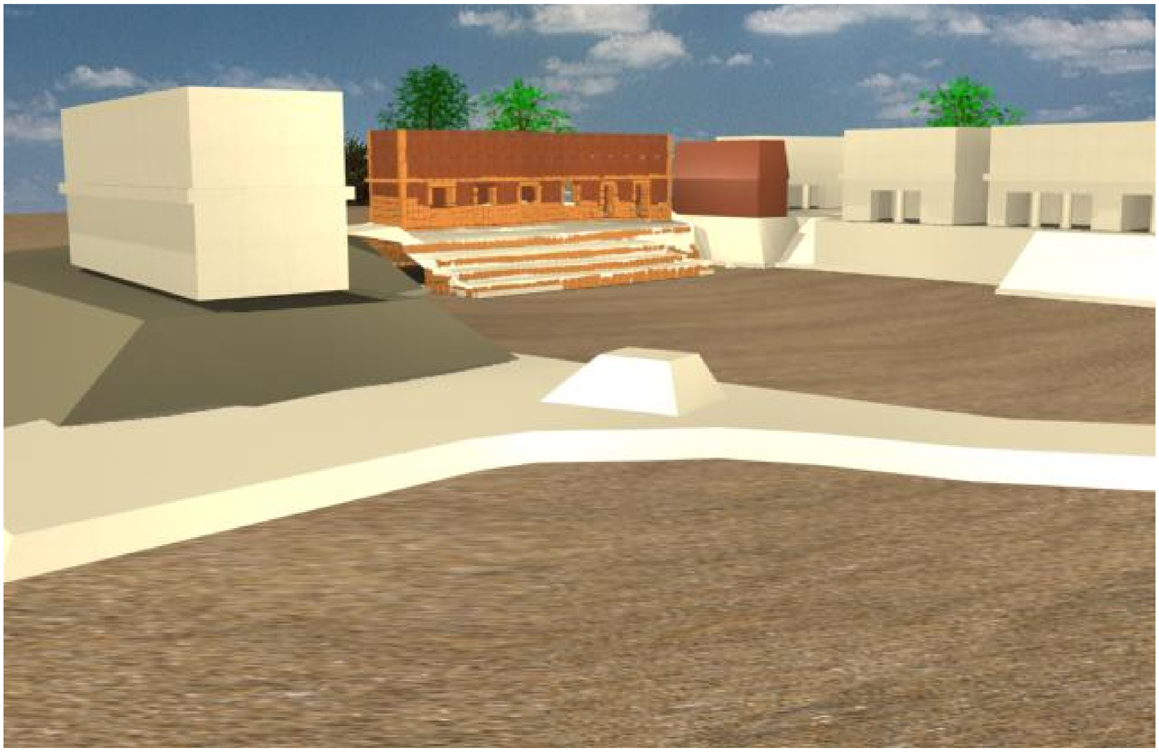
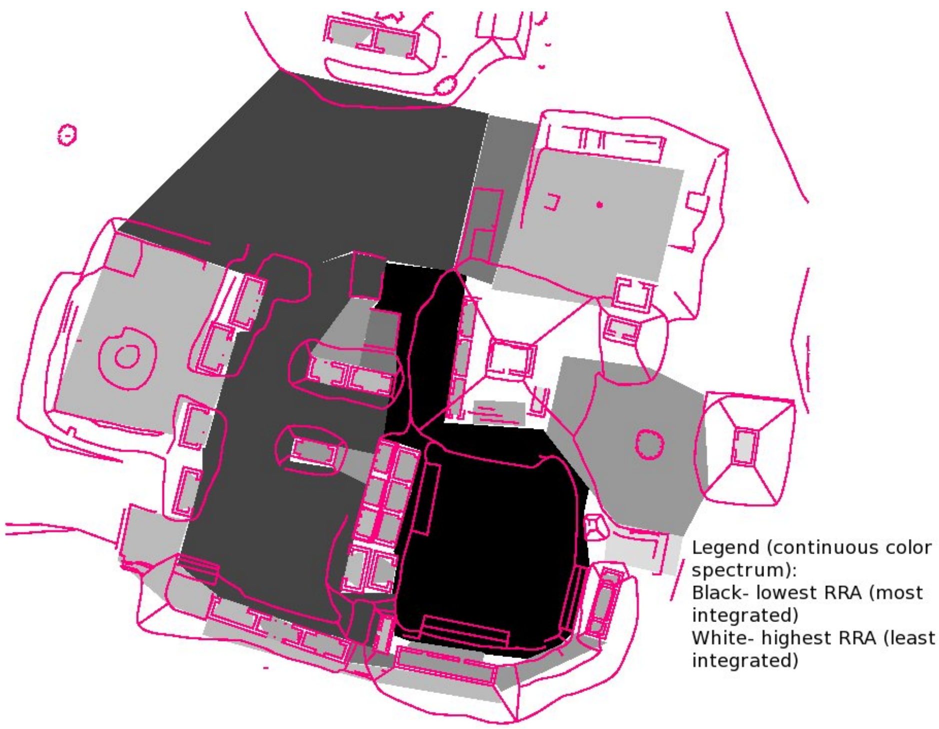


Figure 6.12: View looking southwest from Plaza Ulum into Plaza Dzunun at the *Popol na* (courtesy of M. Arqto. David Antonio Rivera Arjona)



6.13: Map of the Yaxche Group highlighting Late Classic RRA values (produced in Depthmap).

6.14: Map of the Yaxche Group highlighting Late Classic control values (produced in Depthmap)

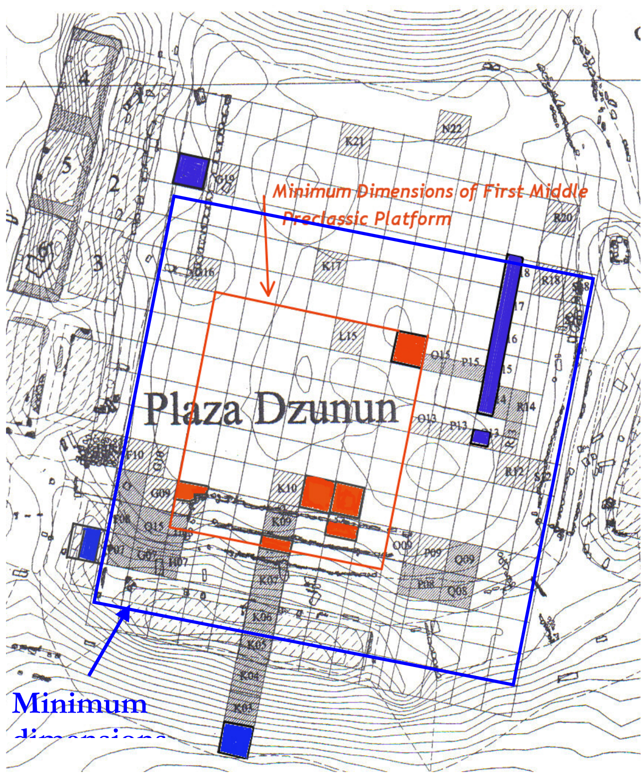
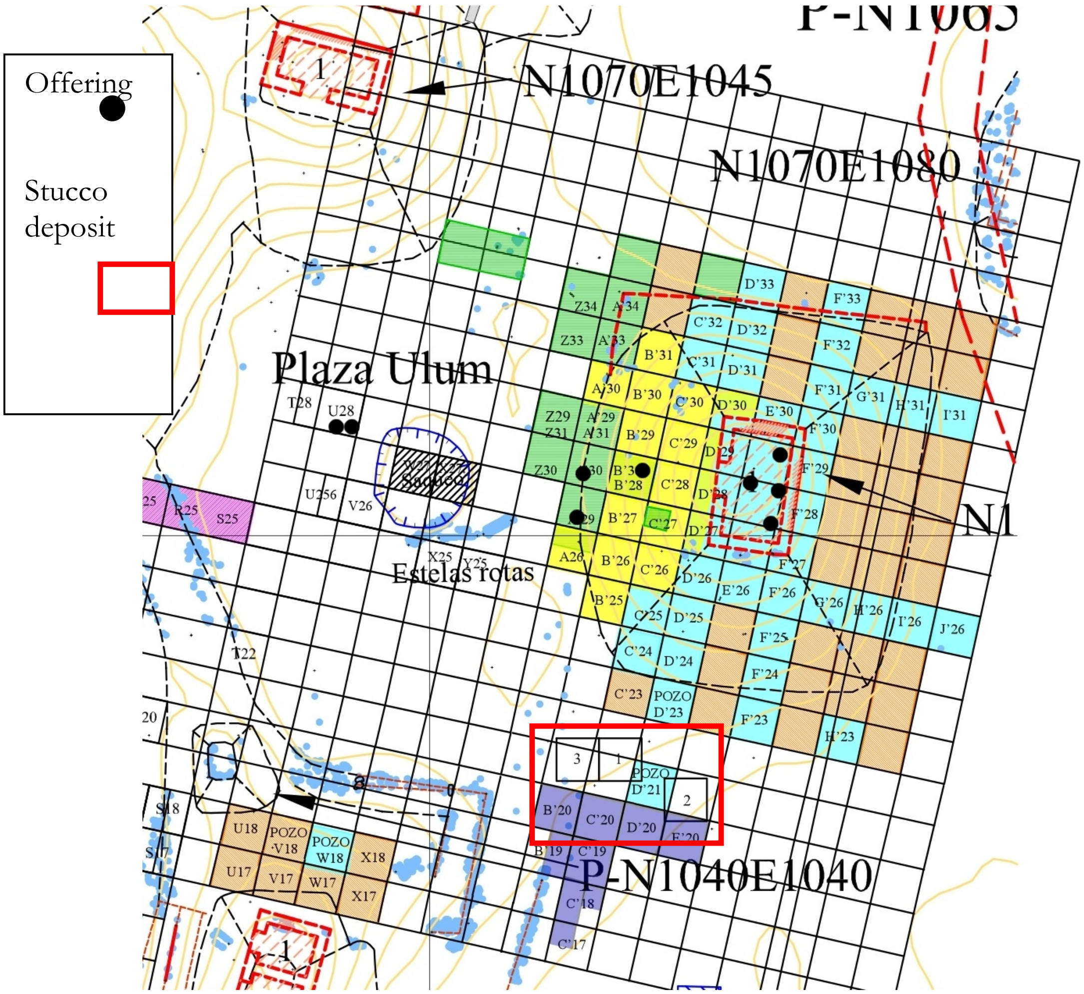
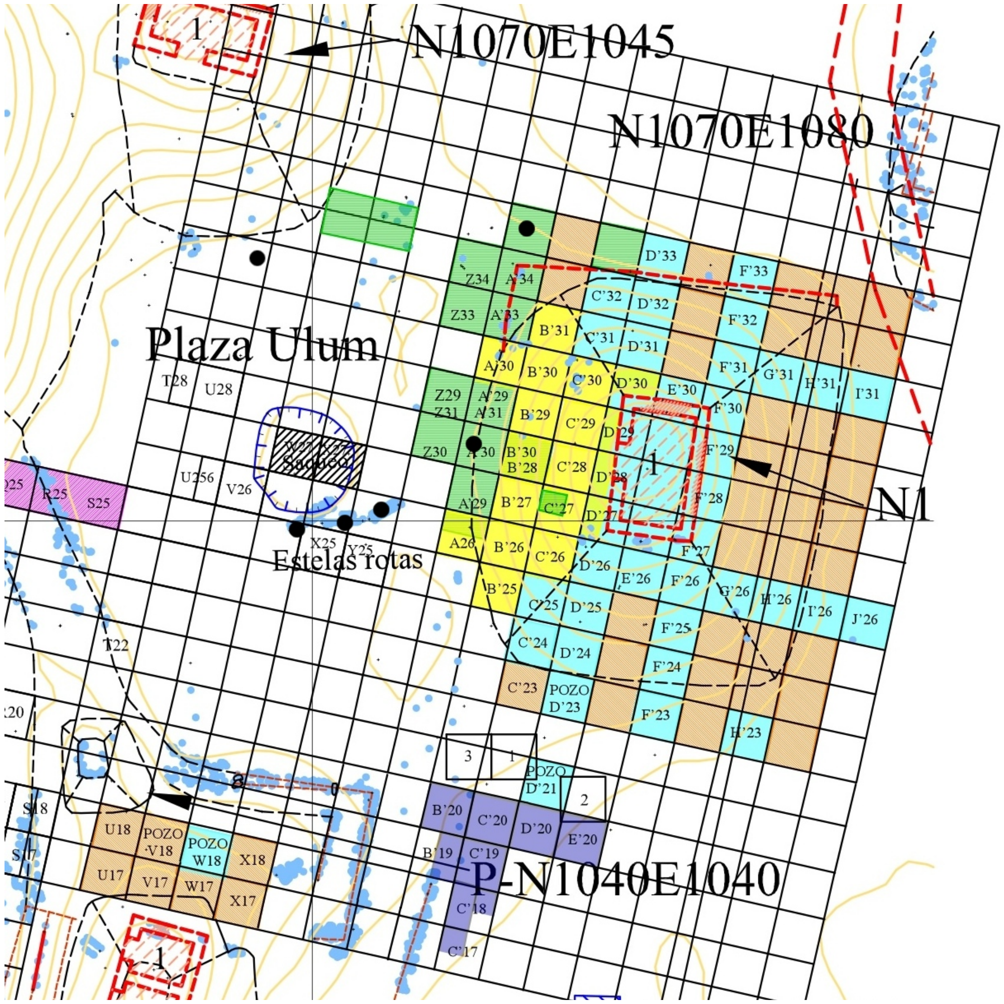


Figure 6.15: Dimensions of the Middle and Late Preclassic platforms in Dzunun Plaza



6.16: Map of Ulum showing excavated units and location of offerings and stucco deposit



6.17: Map of Ulum showing excavated units and location of altars and stelae

TABLES FOR CHAPTER SIX

Table 6.1: Proxemic Distances and Thresholds of Communication (adapted from Hall 1966 and Moore 1996a)

CLASS	Oral/Aural	Detail Vision (15°)	60° Scanning Vision	Peripheral Vision (30°-180°)
Intimate-Close	Whisper; Involuntary Sounds	Extraordinary Detail; Facial Features are Focus	1/3 of Face; Facial Features Distorted	Head Against Background
Intimate-Far	Soft Voice; Whisper	High Detail; Blood Vessels in Eyes Visible; Upper or Lower Face is Focus	Whole Face Seen Undistorted	Head and Shoulders
Personal-Close	Soft Voice	Upper or Lower Face; Facial Features Distorted	Upper Body; Can't Count Fingers	Head and Shoulders
Personal-Far	Casual or Consultative Voice	Upper or Lower Face	Upper Body; Can't Count Fingers	Whole Body Movement
Social-Close	Casual or Consultative Voice	Upper or Lower Face or Shoulders; Wink Visible	Upper Body and Gestures	Whole Body
Social-Far	Casual or Consultative Voice	One or Two Faces; Finest Facial Features Not Visible	Whole Seated Body	Other People Seen if Present
Public-Close	Loud Voice When Talking to a Group	Two Faces; Two Torsos; Eye Color Not Visible; Smile vs. Scowl Visible	Whole Body has Space Around It	Other People Seen if Present; Other People Become Important in Peripheral Vision
Public-Far	Full Public-speaking Voice	Torsos of Four or Five People; Difficult to See Eyes; Subtle Expressions Not Visible	Whole Body has Space Around It; Postures Begin to Assume Importance	Other People Important in Peripheral Vision

Table 6.2: Equivalencies between linear distance, areal distance and proxemic class (after Smith 2009:table 3.3)

Distance (m)	Area (m^2)	CLASS
0 - 0.15	0 - 0.07	Intimate-Close
0.15 - 0.46	0.07 - 0.66	Intimate-Far
0.46 - 0.76	0.66 - 1.82	Personal-Close
0.76 - 1.22	1.82 - 4.67	Personal-Far
1.22 - 2.13	4.67 - 14.30	Social-Close
2.13 - 3.66	14.30 - 42.03	Social-Far
3.66 - 7.62	42.03 - 182.41	Public-Close
> 7.62	> 182.41	Public-Far

Table 6.3: Area, proxemic class and occupancy of spaces in Yaxche Group (Late/Terminal Classic)

Space number	Area (m2)	Proxemic interaction	Occupancy (3.4 persons/meter²)
Patios			
Icim Sur	768	public far	222
Icim Norte A	1460.99	public far	430
Icim Norte B	840.38	public far	239
Patio A	589.8	public far	173
Patio B	480.88	public far	141
Plaza Dzunun	772.1	public far	227
Plaza Ulum	611.19	public far	180
Ramp	46.7	public close	14
Rooms			
1	15.70	social far	5
2	16.43	social far	5
3	16.22	social far	5
6	8.64	social close	3
7	15.15	social far	4
8	10.56	social close	3
9	9.70	social close	3
10	9.09	social close	3
13	12.53	social close	4
14	13.16	social close	4
15	18.48	social far	5
16	18.20	social close	5
20	10.31	social close	3
21	10.15	social close	3
22	10.22	social close	3
23	21.47	social far	6
24	18.37	social far	5
27	15.91	social far	5
28	5.18	social close	2
29	24.62	social far	7
30	14.42	social far	4
31	8.08	social close	2
33	14.36	social close	4
35	4.70	social close	1
36	12.79	social close	4
37	4.73	social close	1
39	37.62	social far	11
40	12.62	social close	4
41	11.49	social close	3

Table 6.3 continued			
42	11.72	social close	3
43	11.88	social close	3
45	12.40	social close	4
46	12.22	social close	4
47	14.61	social far	4
52	7.05	social close	2
Platforms			
19	37.5	social far	11
25	62.5	public close	18
50	30	social far	9

Table 6.4: Late Classic Interaction potential data for Plazas and Patios in the Yaxche Group

Space number	Plaza	RRA	IP	Space Number	Plaza	Control	Cum total	Cum %	IP
11b	Icim N	0.398	high	38	Dzunun	9.883	9.883	19.6%	high
38	Dzunun	0.403	high	4a	Icim S	7.611	17.494	34.6%	high
18	Icim N	0.475	high	11b	Icim N	4.524	22.018	43.6%	med
4a	Icim S	0.480	high	26	Patio B	4.333	26.352	52.1%	med
11c	Icim N	0.485	high	12a	Icim N	4.319	30.671	60.7%	med
5a	Ramp	0.496	high	32	Ulum	4.071	34.742	68.7%	med
12a	Icim N	0.506	high	18	Icim N	3.294	38.037	75.2%	low
5b	misc	0.578	high	11a	Icim N	2.461	40.498	80.1%	low
12c	Icim N	0.589	med	49	Patio C	2.333	42.831	84.7%	low
11a	Icim N	0.640	med	5a	Ramp	1.488	44.319	87.7%	low
12b	Icim N	0.651	med	12b	Icim N	1.444	45.763	90.5%	low
32	Ulum	0.651	med	11c	Icim N	1.226	46.990	93.0%	low
44	misc	0.661	med	12c	Icim N	1.133	48.123	95.2%	low
49	Patio C	0.744	med	17	Patio A	0.643	48.766	96.5%	low
17	Patio A	0.754	low	48	misc	0.611	49.377	97.7%	low
4b	entrance	0.769	low	44	misc	0.571	49.948	98.8%	low
48	misc	0.785	low	5b	misc	0.521	50.469	99.8%	low
26	Patio B	0.795	low	4b	entrance	0.083	50.553	100.0%	low

Table 6.5: Average RRA and Control values for the open spaces within the Yaxche Group

	Avg RRA	RRA	Avg CV	CV	Avg Area
All patios	0.617		2.808		696.26
Dzunun		0.403		9.883	**Avg Occupancy**
Icim N	0.535		2.629		203
Icim Sur		0.480		7.611	
Ulum		0.651		4.071	
Patio B		0.795		4.333	
Ramp		0.496		1.488	

Table 6.6: Spatial syntax measurements for Late Classic period

Space Number	**Control**		**RA**	**RRA**	
Patios					
17	0.643	AVG CV	0.091	0.754	AVG RRA
18	3.294	2.808	0.058	0.475	0.603
26	4.333		0.096	0.795	
32	4.071		0.079	0.651	
38	9.883	Median CV	0.049	0.403	Median RRA
44	0.571	1.911	0.080	0.661	0.614
48	0.611		0.095	0.785	
49	2.333		0.090	0.744	
11a	2.461		0.059	0.485	
11b	4.524		0.048	0.398	
11c	1.226		0.078	0.640	
12a	4.319		0.061	0.506	
12b	1.444		0.079	0.651	
12c	1.133		0.071	0.589	
4a	7.611		0.058	0.480	
4b	0.083		0.093	0.769	
5a	1.488		0.060	0.496	
5b	0.521		0.070	0.578	
Rooms					
1	0.533	AVG CV	0.089	0.733	AVG RRA
2	0.283	0.167	0.089	0.733	0.789
3	0.083		0.093	0.769	
6	0.250		0.095	0.785	
7	0.083	Median CV	0.093	0.769	Median RRA
8	0.083	0.111	0.093	0.769	0.754

Table 6.6 continued					
9	0.083		0.088	0.723	
10	0.393		0.086	0.707	
13	0.083		0.093	0.769	
14	0.111		0.096	0.795	
15	0.111		0.096	0.795	
16	0.111		0.096	0.795	
20	0.100		0.083	0.687	
21	0.100		0.083	0.687	
22	0.100		0.083	0.687	
23	0.143		0.093	0.764	
24	0.143		0.093	0.764	
27	0.200		0.132	1.084	
28	0.200		0.132	1.084	
29	0.200		0.132	1.084	
30	0.200		0.132	1.084	
31	0.200		0.114	0.940	
33	0.200		0.114	0.940	
34	0.200		0.114	0.940	
35	0.071		0.084	0.692	
36	0.071		0.084	0.692	
37	0.071		0.084	0.692	
39	0.271		0.080	0.661	
40	0.071		0.084	0.692	
41	0.071		0.084	0.692	
42	0.071		0.084	0.692	
43	0.071		0.084	0.692	
45	0.226		0.079	0.651	
46	0.343		0.091	0.749	

Table 6.6 continued					
47	0.393		0.091	0.754	
51	0.071		0.084	0.692	
52	0.200		0.114	0.940	
Platforms					
19	0.554	AVG CV	0.062	0.511	AVG RRA
25	0.443	0.516	0.066	0.547	0.551
50	0.550		0.072	0.594	

Table 6.7: Late Classic Interaction potential data for Rooms in Yaxche Group

Room Number	RRA		IP	Room Number	Control	Cum total	Cum %	IP
45	0.651		high	1	0.533	0.533	8.6%	high
Popol Na 39	0.661		high	10	0.393	0.926	14.9%	high
20	0.687		high	47	0.393	1.319	21.3%	high
21	0.687		high	46	0.343	1.662	26.8%	high
22	0.687	Avg	high	2	0.283	1.945	31.4%	high
35	0.692	0.789	high	Popol Na 39	0.271	2.216	35.8%	high
36	0.692		high	6	0.250	2.466	39.8%	med
37	0.692	Median	high	45	0.226	2.693	43.5%	med
40	0.692	0.754	high	27	0.200	2.893	46.7%	med
41	0.692		high	28	0.200	3.093	49.9%	med
42	0.692		high	29	0.200	3.293	53.1%	med
43	0.692		high	30	0.200	3.493	56.4%	med
51	0.692		high	31	0.200	3.693	59.6%	med
10	0.707		high	Temple A 33	0.200	3.893	62.8%	med
9	0.723		med	34	0.200	4.093	66.1%	med
1	0.733		med	52	0.200	4.293	69.3%	med
2	0.733		med	23	0.143	4.435	71.6%	low
46	0.749		med	24	0.143	4.578	73.9%	low
47	0.754		med	14	0.111	4.689	75.7%	low
23	0.764		med	15	0.111	4.800	77.5%	low
24	0.764		med	16	0.111	4.911	79.3%	low
3	0.769		med	20	0.100	5.011	80.9%	low
7	0.769		med	21	0.100	5.111	82.5%	low
8	0.769		med	22	0.100	5.211	84.1%	low
13	0.769		med	3	0.083	5.294	85.5%	low
6	0.785		med	7	0.083	5.378	86.8%	low
14	0.795		med	8	0.083	5.461	88.1%	low
15	0.795		med	13	0.083	5.544	89.5%	low
16	0.795		med	9	0.083	5.627	90.8%	low
31	0.940		low	35	0.071	5.698	92.0%	low
Temple A 33	0.940		low	36	0.071	5.769	93.1%	low
34	0.940		low	37	0.071	5.840	94.3%	low
52	0.940		low	40	0.071	5.911	95.4%	low
27	1.084		low	41	0.071	5.982	96.6%	low
28	1.084		low	42	0.071	6.053	97.7%	low
29	1.084		low	43	0.071	6.124	98.9%	low

Table 6.7 continued								
30	1.084		low	51	0.071	6.195	100.0%	low
Dzunun								
Icim Norte								
Icim Sur								
Patio B								
Ulum								

Table 6.8: Average RRA and control values for Rooms of the Yaxche Group during the Late Classic (by patio/plaza)

Rooms	Average RRA	Average CV	Average Area
Dzunun	0.688	0.093	13.30
Icim Norte	0.744	0.286	
Icim Sur	0.754	0.190	**Average Occupancy**
Ulum	0.940	0.200	4
Patio B	1.084	0.200	
All Rooms	0.789	0.177	

Table 6.9: Spatial syntax measurements for Terminal Classic period

Space Number	Control		RA	RRA	
4a	7.611		0.059	0.463	
4b	0.083	AVG CV	0.097	0.760	AVG RRA
5a	1.488	2.582	0.064	0.503	0.617
5b	0.521		0.075	0.594	
11a	2.504	MEDIAN	0.064	0.503	MEDIAN
11b	1.524	1.506	0.054	0.429	0.634
11c	1.226		0.083	0.651	
12a	4.319		0.064	0.503	
12b	1.444		0.084	0.663	
12c	1.176		0.078	0.617	
17	0.643		0.099	0.777	
18	3.337		0.062	0.491	
26	4.333		0.104	0.823	
32	3.071		0.087	0.686	
38	9.976		0.054	0.423	
44	0.271		0.087	0.686	
48	0.611		0.100	0.789	
49	2.333		0.096	0.754	
Rooms					
1	0.283	AVG CV	0.091	0.720	AVG RRA
2	0.283	0.177	0.091	0.720	0.812
3	0.083		0.097	0.760	
6	0.250	MEDIAN	0.102	0.800	MEDIAN
7	0.083	0.143	0.097	0.760	0.760
8	0.083		0.097	0.760	
9	0.333		0.092	0.726	
10	0.393		0.092	0.726	
13	0.083		0.097	0.760	
14	0.111		0.102	0.800	
15	0.111		0.102	0.800	
16	0.111		0.102	0.800	
23	0.143		0.100	0.789	
24	0.143		0.100	0.789	
27	0.200		0.142	1.120	
28	0.200		0.142	1.120	
29	0.200		0.142	1.120	
30	0.200		0.142	1.120	
31	0.250		0.125	0.983	
33	0.250		0.125	0.983	

34	0.250		0.125	0.983	
35	0.071		0.091	0.720	
Table 6.9 continued 36	0.071		0.091	0.720	
37	0.071		0.091	0.720	
39	0.271		0.087	0.686	
40	0.071		0.091	0.720	
41	0.071		0.091	0.720	
42	0.071		0.091	0.720	
43	0.071		0.091	0.720	
45	0.226		0.084	0.663	
46	0.343		0.098	0.771	
47	0.393		0.099	0.777	
53	0.071		0.091	0.720	
Platforms					
19	0.597	AVG CV	0.067	0.531	AVG RRA
25	0.486	0.558	0.073	0.571	0.575
50	0.593		0.079	0.623	
		MEDIAN			MEDIAN
		0.593			0.571

Table 6.10: Nonverbal elements from Middle Preclassic through Terminal Classic periods

Period	Patio	Location	Integration	Area (m2)	Proxemic interaction	Occupancy (person/m^2)	Platform Height (m)	Structure	Material
Middle Preclassic	Dzunun	Core	Integrated	203.00	public far	60	0.75		
Late Preclassic	Dzunun	Core	Integrated	725.00	public far	213	1-1.10		
				~13.3 long			0.30	Popol Na sub	stone
				~8 long			0.50	N1025E1040	stone
Early Classic	Dzunun	Core	Non-integrated	772.00	public far	227	rear-3.5		
				~16				Popol Na	stone
				unknown			1.00	Palace	stone
				unknown				N1025E1040	stone
Late Classic	Dzunun	Core	integrated	772.00	public far	227			
				37.62		11		Popol Na	stone
				unknown				Palace	stone
				22.22		6		N1025E1040	stone
				35.09		10		N1045E1005	stone
				12.62		3		N1030E1005	stone
	Ulum	Core	integrated	611.19	public far	180			
				10.50		3		Temple A-sub	stone
				8.08				PN1040	stone
				unknown				Palace	stone
Terminal Classic	Dzunun	Core	integrated	772.00	public far	227			

Period	Patio	Location	Integration	Area (m2)	Proxemic interaction	Occupancy (person/m²)	Platform Height (m)	Structure	Material
				37.62		11		Popol Na	stone
				unknown				Palace	stone
				22.22		6		N1025E1040	stone
				35.09		10		N1045E1005	stone
				12.62		3		N1030E1005	stone
	Ulum	Core	integrated	611.19	public far	180			
				14.36		4		Temple A	stone
				8.08		2		PN1040	stone
				unknown				Palace	stone

Table 6.11: Percentage of lithic material found in general contexts throughout Ulum Plaza

Context	Total lithic count	Percentage of total assemblage
Midden	78	45%
Post-occupational rubble	11	6%
Preclassic platform fill	12	7%
Fill above floor 1 of the plaza	17	10%
Fill of floor 1 of the plaza	15	9%
Fill of floor 2	2	1%
Fill of floor 3	4	2%
Fill of floor 4	2	1%
Temple A, floor 1	4	2%
Southern adosada surface and fill	11	6%
Platform 1 fill	16	9%

Table 6.12: Typological chart of lithic material found in Plaza Ulum

Typology	Count	Percentage of total assemblage
Chert core	1	1%
Obsidian prismatic blade	15	9%
Undiagnostic bifacially worked tool fragment	6	3%
Blade debris	1	1%
Bifacial celt	4	2%
Unificial celt	1	1%
Core, flake	10	6%
Denticulate on flake, nifacially worked tool	2	1%
Domed smoother	1	1%
Flake debris	115	67%
Retouched flake	9	5%
Graver on flake, unifacially worked tool	1	1%
Bifacial point	6	3%

CHAPTER VII

RITUAL, NON-DOMESTIC ARCHITECTURE, AND THE EVOLUTION OF POWER AMONG THE MAYA

The goal of the present research is not to define ritual or the symbolic meaning of Maya rituals[1]. Rather, it goes beyond this more traditional approach to explore the ways in which ritual and other types of performance communicate information and meaning (e.g. Fischer-Lichte 1992; Parmentier 1994:129-134, 1997; Rappaport 1999; Triadan 2006). The preceding chapters illustrate how the interaction potential of a space sheds light on the types of social interaction possible and establish the link between the manipulation of the built environment and social production. While these provide important data, the present chapter goes beyond the spatial component of public performance and incorporates qualitative data such as iconographic and material remains. Many dimensions of ritual are not preserved in the archeological record, such as the auditory and visual components. In order to understand how these aspects contributed to the atmosphere of public performance, ethnohistoric documents from Colonial period Yucatan are used to describe public performances.

After exploring the experiential dimension of Colonial period rituals, architecture, iconography, and material remains will be used to explore the evolution of political ritual among the Maya (Inomata and Coben 2006; Triandan 2006). Together, the information obtained from these varied sources demonstrates how Maya elite were attempting to organize and control both space and behavior.

[1] Though the Maya performed many different types of ritual, the present research focuses on political rituals that were specifically designed to "construct, display and promote the power of political institutions… or the political interests of distinct constituencies or subgroups" (Bell 1997:128).

7.1 Maya Ritual as Described in Ethnohistorical Documents

While it is relatively easy to discuss changes in elements of nonverbal communication and explore the associated implications for ritual, the corresponding changes in the meaning and nature of the ritual itself are not as concrete. By its very nature, ritual and performance are experiential and not something that can be well understood through archaeological investigation. However, ethnohistorical documents created during the Colonial period give archaeologists a unique insight into the rituals enacted by the Maya. They describe the aspects of performance that cannot be uncovered in material remains- the beating of drums, the blowing of conch shell horns, the movement of the dancers (Barrera Vásquez 1965; Relaciones de Yucatan, 1900:2:185; Tozzer 1941)[2]. Together with modern ethnographic research, Colonial documents can be used in conjunction with archaeological data to reconstruct a more complete model of past ritual behavior (e.g. Brady 1989; Demarest 1992; Freidel et al. 1994; Gann and J.E.S. Thompson 1931; Hammond 1972a, 1991; J.E.S. Thompson 1970, 1975; Vogt and Stuart 2005).

However, we must exercise caution when using these models to explore ritual archaeologically because the sociocultural changes that occurred in the centuries after the Maya collapse make it difficult to create direct parallels. For example, Spanish influence on the built environment can be seen in two important ways: the construction of churches facing plazas and the policy of congregación, which forced indigenous populations to settle in Spanish towns (Inomata 2006). Despite the precautions that must exercised when using such sources, the comparison of Colonial and Classic period material offers insight into the

[2] Pre-Conquest iconographic evidence supports the idea that musical instruments and dancing were critical components of ancient ritual as well.

social context and nature of rituals performed by the Maya (Bachand and Bachand 2005; Inomata 2006; Ringle 2005; Reents-Budet 2001; Stuart 1998).

The Why and the Where of Colonial Period Ritual Performances A study of Colonial period documents reveals the importance of public dances and rituals in Maya society (Ciudad Real 1976:2:314-371; Relación de Campocolche in the Relaciones de Yucatán 1900:2:185; Songs of Dzitbalché (Barrera Vásquez 1965); Tozzer 1956:147). Bishop Landa's Relación de las Cosas de Yucatan, which describes Maya practices during the early 16th century, suggests festivals and ceremonies were important events that involved all members of a community at some level (Tozzer 1941:147). These social occasions functioned as both entertainments and arenas in which community members could release social tension (Barrera Vásquez 1965; Inomata 2006; Tozzer 1941:322-333).

While these performances often had religious overtones, they were associated with a wide variety of social contexts, from rites of passage (such as birth, passage out of childhood) to occupational rituals. Rituals focused on important aspects of daily life and special mythological events such as the dance of Xibalba (Tozzer 1941:147) or the Hero Twins in myth of Popol Vuh (Estrada Monroy 1979:168-174). Landa (Tozzer 1941:151, 289) also notes that many rituals were performed at certain times of the year, including seasonal agricultural ceremonies and the renewal rituals associated with the Maya calendar. Not all performances were religious in nature; Ciudad Real (1976:2:314-371), who accompanied commissary Alonso Ponce throughout Mexico and Central America in the late 16th century, describes festive receptions with music and dancing held in their honor in various towns throughout the region.

Whether secular or sacred, there are no detailed descriptions of the spaces in which the rituals were performed. Colonial documents suggest that many performances took place in the plaza of the town or in front of the council house (Barrera Vásquez 1965; Estrada Monroy 1970:168-174; Inomata 2006; Relaciones de Yucatán, 1900:2:185; Tozzer 1941:152, 171). Both of these venues would have hosted public-inclusive rituals, such as the Fire ceremony (Tozzer 1941:152; see also Ringle and Bey 2001:275; Restall 2001:344-345). While these rituals were public and would have included a large portion of the community, other rituals were of a more private nature.

Private-exclusive rituals were performed in the *oratorios* of elite households, which would have accommodated a much smaller audience than the town square[3] (Inomata 2006:196). The Songs of Dzitbalché describes the plaza area in front of a *popol na* as the stage for more exclusive dances and festivals (Grube 1992; Inomata 2006:197; Looper 2001; Reents-Budet 2001:199-204; Ringle 2010)[4]. Rituals that occurred in these plazas could be classified as private-exclusive or semi-private. They included 'public' portions that were performed before a select audience and 'semi-private' portions that were enacted inside the temples[5] (Tozzer 1941:108-109 n. 496, 171 n. 895).

Like the stages upon which the rituals were performed, the locations of spectators and performers are rarely mentioned in the Colonial documents. However, descriptions by Landa and the Songs of Dzitbalché indicate performers most often occupied the floor of the plaza while the location of the audience was more opportunistic and dependent on the

[3] Landa does not give a precise description of an *oratorio* or how they are distinguished from other spaces within the elite household. Based on the information given, the most likely candidates are the open areas in front of a *popol na* or the household temple.
[4] Additional support for this hypothesis can be found at the Late Classic sites of Chichén Itzá and Uxmal in northern Yucatan, each of which has thrones associated with low, stone platforms in the center of a large plaza. These thrones would have provided an excellent vantage point from which rulers could observe and participate in public performances (Bey and Ringle 2001:277; Kowalski 1987).
[5] See Chapter 4 for more detailed discussion of semi-private ritual.

surrounding architecture[6]. For example, seats in the plaza were sometimes constructed for elite spectators while there is also evidence that temporary wooden platforms were built around plaza for spectators (Figure 6.16)(Inomata 2006:194; Schele and Freidel 1990:chap 3)[7]. Sometimes, temporary structures were specially constructed for the occasion, such as in the fire-walking ceremony (Tozzer 1941:143-149) or the reception of dignitaries (Ciudad Real 1976:2:314-371). On other occasions, the temple itself served as 'stage'; Landa describes a human sacrifice in where the victim was killed on the temple summit and rolled down the stair, with the audience in the plaza below (Tozzer 1941:119).

Though the ancient Maya did not have town plazas like those of Spanish Colonial settlements, open plazas and courtyards are common features in ancient Maya settlement patterns and can be considered analogous in function to plazas in the Colonial period. Pre-Conquest Maya most likely utilized similar spatial configurations, with spectators and performers occupying various combinations of terraces and steps surrounding the plaza, specially constructed temporary structures, or the plaza itself.

The Participants and the Politics of Colonial Period Ritual Performances The amount of time and effort involved in the preparation of Colonial period ritual events indicates how important they were socially, politically, and economically to communities. These social occasions, which could involve entire communities or neighboring communities, often included large feasts (Cogolludo 1971:1:243; Gage 1958:243; Tozzer 1941:92, 223) and took months of preparations (Estrada Monroy 1970:168-174:Relaciones de Yucatán, 1900:2:185).

[6] See Section 7.2.3 for iconographic support of this information from the Late Classic period.
[7] In some cases the Maya erected temporary stages in the plazas to solve some visibility problems, a hypothesis that is supported in iconography from Preclassic period (see Taube 1988:for wooden scaffolds associated with sacrificial victims; Saturno and Taube 2004 and National Geographic 2005 for San Bartolo murals) and ethnohistorically in the Colonial period (Tozzer 1941).

Depending on the nature of the ritual, both large and small numbers of participants could be involved[8]. In the Songs of Dzitbalché from Colonial Campeche, we see that many such events involved numerous performers and spectators, including both elites and non-elites, at different levels (Barrera Vásquez 1965). Elites fulfilled central roles on such occasions, especially an officer called the *holpop*[9], while the majority of spectators were non-elite and worked off-stage (Roys 1939; 1943:63). During Colonial times, the *holpop* facilitated interaction between other political officers and serves as an example of how administrative and ceremonial functions were intertwined within Maya society (Inomata 2006).

Many rituals promoted certain political ideologies, there were certainly individuals who disagreed with these collective affirmations of the status quo. Although the rules of conduct were often suspended during this type of social occasions (Relación de Campocolche in Relación de Yucatán 1900:2:195; Gage 1958:243; Cogolludo 1971:1:243; Tozzer 1941:91), these ceremonies involved a certain level of social control that demanded the compliance of most community members (Inomata 2006:196; Lucero 2003, 2006). Priests often punished overt nonconformity during ritual events (Bernardo de Lizana 1988:59).

Sights and Sounds of Colonial Period Ritual Performances Some of the most important aspects of ritual described in ethnohistoric documents are those not preserved in the archaeological record, including the sounds, costumes, and ritual objects. These sources indicate dancing and music were central elements of most Maya rituals and that performers often wore elaborate costumes.

The *Relación* of Campocolche (Tozzer 1941:93, n. 409) states over 1,000 kinds of

[8] For example, in one account Landa notes that 800 dancers were involved in one performance (Tozzer 1941:152).
[9] The *holpop* was also the master of the *popol nah*, or mat house, where many ritual events took place (Motul dictionary Martínez Hernández 1929).

dances existed and some were considered so important that "more than fifteen thousand Indians would gather and they came from more than thirty leagues". Landa describes one dance in which approximately eight hundred 'Indians' dance with streamers to the beat of musicians for an entire day, with food and water being brought to them (Tozzer 1941:94, 218). In another example, Father Alonso Ponce describes an occurrence of the *zonó* dance, which included a tall, narrow tower covered with painted cotton and topped with two flags (Ciudad Real 1932:327). The tower was carried on a litter and occupied by a richly dressed Mayan who carried a rattle and feather and sang, accompanied by many others who made "much noise and (gave) shrill whistles". Six bearers who also participated in the singing and dancing carried the litter, which was visible from a great distance[10].

Musicians provided the basic rhythms for the dances using rattles and several varieties of drums made from hollow wood or tortoise shells. Landa (Tozzer 1941:93 nn. 402-408) describes other musical instruments[11] used by the Maya, including thin trumpets made of hollow wood with twisted gourds at the end, deer leg bone whistles, conch shells, and reed flutes (Figure 7.1). While there are few detailed descriptions of the costumes worn by ritual participants during the Colonial period, Landa indicates they could range from simple, everyday clothing to elaborate costumes (Gage 1958:243-245; Inomata 2006:193; Tozzer 1941:93-94, n. 409). These examples show how important the visual and auditory components of ritual were for the Maya and we can only assume these traditions were carried over from pre-Hispanic times.

[10] For additional information on this ritual see Blom and la Farge (1926-27:72-74), Starr (1902:18-19), Termer (1930), Tozzer (1907:77-78).
[11] Seler (1899, 2:695-703) provides an excellent discussion of musical instruments depicted in Maya manuscripts.

7.2 Architecture, Iconography and Material Remains of Ritual

Chapter 4 established that, although hard to define, ritual can loosely be considered as a set of behaviors, relationships, and symbols. When conceptualized in this way, the study of ritual is difficult using only the archaeological record. Although we find material correlates of ritual such as dedicatory caches, burials, or burnt potsherds, it is difficult to reconstruct the associated belief using only these remains. Despite these difficulties, there are three important components for studying performance archaeologically (e.g. Inomata and Coben 2006; Triandan 2006): theatrical space[12], images and iconography, and objects used in performance.

7.2.1 The Middle and Late Preclassic Periods

It is during the Middle and Late Preclassic periods that many of the characteristics of Late Classic ritual and kingship first begin to take shape. While specific architectural forms such as the round dance platforms common during this period fade over time, they are replaced by functionally similar structures. Additionally, iconographic studies demonstrate that many of the elements associated with divine rulership such as the Jester God headdress or double-headed serpent bar appear during this time (e.g. Freidel and Schele 1988; Ringle 1999).

Non-domestic Architecture Archaeological investigations throughout the Southern and Northern Maya lowlands have revealed that, rather than temples or pyramids, the dominant form of civic-ceremonial architecture in the Middle Preclassic period was raised platforms (Figure 7.2)(Aimers et al. 2000; Bachand and Bachand 2005; Hendon 1999, 2000; Ringle

[12] Because the syntactical and nonverbal qualities of such spaces are discussed in detail in Chapters four and six, the present discussion is limited to a general overview of the form of non-domestic architecture in the Maya region.

1999, 2005; Suhler, Freidel and Ardren 1998). Because of the Maya predilection to build over earlier structures, archaeologists are only just beginning to create a picture of Formative period Maya society; but it appears that low, round platforms were universal features of Middle Preclassic architecture. These early platforms were either round (e.g. Str 324 at Cuello, see Hammond et al. 1991; Gerhardt and Hammond 1991) or keyhole-shaped (e.g. Strs E, F at Uaxactun) (Table 7.1). To date, the only Middle Preclassic round structures found in the Northern Lowlands are at Komchen (Ringle and Andrews 1988:187), Dzibilchaltún (Andrews and Andrews 1980:58, 63-64), Xculul (Str. 226), Oxkintok (Str. DZ 12), and Yaxuna (Str. 6E-53, 6E-120, see Suhler et al. 1998a,b)[13].

At Kiuic during this period, there is a low platform in Plaza Dzunun but it was buried by buildings constructed during the Late Classic period. Because of this, the shape of the Middle and Late Preclassic platforms is undetermined. It does not appear similar to enormous structures found at the neighboring site of Xocnaceh and could indicate that at this time, Kiuic was a minor center. Regardless of the shape of the platform, it was low and likely functioned as a dance or ceremonial platform.

The characteristics of these early platforms are such that it is not possible to perform access analysis on them. However, the elements of nonverbal communication (location, ambientality, proximity to ground) can be used to provide insight into how the platforms facilitated and structured social interaction. Excavations at Uaxactun (Strs E, F, and G, see Hendon 1999:103-106) and Rio Azul (Str 2, see Hendon 1989) demonstrate that although many of these structures were located in the plazas of household compounds, they were

[13] There is increasing evidence that triadic groups, most commonly associated with the Late Preclassic period, are found throughout the Northern Lowlands beginning in the Middle Preclassic at sites such as Xtobo (Anderson 2004; 2005a,b; 2009), Paso de Macho (Gallareta and Ringle 2004), Benatunas (Robles and Andrews 2003), Xocnaceh (Gallareta and Ringle 2004; Gallareta and May 2007), and Poxila (Robles 2003). The implications of these findings are not yet fully understood but could suggest that social complexity in the North arose earlier than previously thought.

generally set-apart spatially or marked as separate from the residential areas. Their overall form suggests that the main concern was providing ample space for public gatherings and a good view of the rituals enacted upon the platforms (Aimers et al. 2000; Bachand and Bachand 2005; Hendon 1999, 2000; Ringle 1999, 2005).

Despite their association with house compounds, early platforms support the idea that communal or group identity was being emphasized over individual identity (Aimers et al. 2000; Bachand and Bachand 2005; Hendon 1999, 2000; Ringle 1999). Most platforms were less than one meter high and show no evidence of having had superstructures; therefore any rituals enacted upon them would have taken place in full view of any spectators (Aimers et al. 2000). Few platforms had carved stone or stucco architectural decoration, although structures at El Mirador and Nakbe, Guatemala, and Blackman Eddy, Belize, are precocious in this regard (Bachand and Bachand 2005:43)[14]. The features of Middle Preclassic platforms suggest that, at this time, Maya society was less stratified than in later periods and rituals were meant to foster a sense of community rather than promote individual agendas.

During the late Middle Preclassic/early Late Preclassic (500 B.C.), changes in the design of non-domestic structures suggest that power relationships were beginning to change and that Maya society was becoming more stratified. Some sites, such as Yaxuna in the Northern Lowlands, continued to construct and use round dance platforms (e.g. Strs 6E-53 and 6E-120). In general, however, truncated pyramids replaced the low platforms of the earlier period with grotesque masks at many sites (e.g., Str C 13-2nd at Altun Ha, Belize). Although the pyramids were taller than the platforms, spectators still would have had an unobstructed view of any rituals performed on the summit and they seem to emphasize

[14] The lack of architectural decoration could be a result of preservation conditions and not an indication that structures were not adorned.

communal identity over the individual (Figure 7.3)(Bachand and Bachand 2005:43-44; Freidel 1979; Freidel and Schele 1988; Hendon 1999, 2000; Schele and Freidel 1990:117).

The form of civic-ceremonial architecture changed more dramatically during the Late Preclassic (around 400 B.C.), reflecting a break with earlier forms of social organization. While the majority of non-domestic architecture in the Middle Preclassic consisted of low, flat-topped platforms, the height of platforms increased and masonry superstructures become more common in the Late Preclassic (Figures 7.4). The height of these platforms, in conjunction with the use of superstructures, would have restricted the view of any ritual activity for spectators on the ground. The appearance of superstructures also indicates the rituals themselves were changing. All portions of a performance would have been visible in previous periods but the use of superstructures suggests some component of the ritual itself was being performed in a private area. While spectators likely knew what actions were being performed, they could not see (hence the semi-private nature of this type of ritual). Major Preclassic centers in the south, such as Uaxactun, Nakbe, Tikal, and El Mirador, contain non-domestic architecture constructed on basal platforms 2-3 meter high with multiple superstructures. Similar complexes are found at Northern Lowland sites such as Xocnaceh, Paso de Macho, and Huntichmul (Ringle, personal communication).

By the end of the Late Preclassic (100 A.D.), there was a pronounced separation of residential and civic-ceremonial architecture at major centers such as Tikal, Nakbe, El Mirador, Uaxactun, and Cerros. Instead of single masonry superstructures, pairs of in-ward facing temples and triadic arrangements (E-groups) become common in both the Northern and Southern Lowlands (Figure 7.5)(Aimers and Rice 2006; Bachand and Bachand 2005; Chase 1983; Chase and Chase 1995; Guderjan 2006; Hansen 1998:77; Hendon 2000; Laporte and Fialko 1990; Matthews 1998; Ricketson and Ricketson 1937; Stanton 2000)[15]. Excavations at sites such as Tikal and Calakmul indicate E-groups represent the earliest stage of both the Mundo Perdido complex (LaPorte and Fialko 1995) and main plaza at Calakmul (Chase and Chase 1995; Folan et al. 2001; Guderjan 2006).

At Kiuic during this time period, the presence of the original ceremonial platform conforms to the use of special indicators to mark non-domestic architecture. Although little is known of the original platform, it was raised above the house platforms that surrounded it and during the Late Preclassic period, contained two platforms that likely had superstructures of some sort. The architecture of this period conforms to the general trends found in the Maya area.

Architectural changes in the degree of ambientality and height introduced a new element of exclusivity to the rituals performed (Bachand and Bachand 2005:46; Hendon 2000; Schele and Freidel 1990:117-119). In addition, much of the architectural decoration (i.e. the grotesque masks) was removed from the lower portions of buildings and placed on the upper levels, indicating it was now meant to be viewed by a select group of people (Bachand and Bachand 2005; Coe 1990:904; Hansen 1998).

Iconography During the Middle Preclassic period, iconographic and ethnographic evidence suggests public masked dance was an important form of ritual and parallels can be drawn to the Old World, where masked dance played a critical role in the transition from tribal to chiefly societies (Figure 7.6)(Garfinkel 2003). The use of masks during public performances serves a twofold purpose: 1) masks conceal the identity of a particular person and, 2) masks allow the wearer to recreate (or assume a new) their identity. By blurring the identities of

[15] Although not addressed in the scope of this thesis, there is debate over the function of E-groups in the Maya area. The present discussion is concerned with the way in which E-groups would have facilitated social interaction and does not enter the debate on their function (see Aveni and Hartung 1989; Clark and Hansen 2001; Fialko 1988:18; Guderjan 2006).

Preclassic leaders, early rituals could emphasize the formation of communal identity over that of individual identity (Bachand and Bachand 2005; Bourdieu 1994; Garfinkel 2003; Klein 1995; Ringle 2005). While the identity of the masked performer is hidden, they are associating themselves with a deity or supernatural, although in a less internalized and more oblique manner than Classic period rulers. Over time, this identification with the divine would allow incipient elites to incorporate divine symbols directly into their costumes and emphasize their own special link to the divine, without the mediation of the mask.

Because they were most often constructed of perishable materials[16], masks are rarely found archaeologically, although examples have been recovered at Cuello (Hammond et al. 2002) and Aguateca (Beubien 2000; Inomata et al. 2001). Further evidence supporting the use of masks by Preclassic leaders comes from iconography- the earliest depictions of people, which come from the Late Preclassic, show masked individuals (Figure 7.6, 7.7)(Bachand and Bachand 2005; Hansen 1991a:fig 4; 1991b:fig 14; Schele 1985)[17]. The use of masks is important because they emphasize the symbols and rituals being performed, while de-emphasizing the individuality of the actor.

Early leaders appear to have acquired more solid sociopolitical power by the Protoclassic period (100 B.C. to A.D. 100), associated with an elaboration of public centers. Also at this time, images of unmasked individuals become commonplace and the symbols of Classic Maya rulers are established (Freidel 1979, 1981; Freidel and Schele 1988)[18]. As noted earlier, masks allow people to assume a new identity and associate themselves directly with

[16] Ethnographically, we see ritual masks are often made of perishable materials. These differ from Classic period masks found in mortuary contexts, which are made from greenstone or shell and were likely not used in ritual performance (Bachand and Bachand 2005:50).
[17] The murals of San Bartolo, dating to 400-200 B.C. are an exception and depict un-masked individuals.
[18] There is little to no iconographic evidence found in the Puuc region that dates to this time period, therefore the present discussion is based on evidence from sites in the Southern Lowlands.

the supernatural. Over time, it is possible for the association between the human and divine to become more direct, so that the mediation of the relationship through the mask is no longer necessary. Although the individuals depicted during this time period do not wear masks, their countenances and costumes are generic, suggesting they are not meant to be portraits of specific persons (Figures 7.7a, 7.7c)(Bachand and Bachand 2005:52). Conforming to this usage of generic countenances is the only complete, *in-situ* image of a ruler dating to the Protoclassic period from Loltun Cave, Yucatan (Freidel and Andrews 1985; Grube 1994). The ruler wears the Jester God headdress (discussed below) as well as the characteristic ear-flare assemblage of Late Preclassic deities and rulers (Freidel and Andrews 1985:6). The early date of this image suggests that the Northern lowlands played an active role in the creation of the 'divine ahaw' complex that later came to characterize Maya rulers.

One of the most famous objects stylistically dated to this period is a flanged pectoral, the Dumbarton Oaks pectoral (Schele and Miller 1986:119-120, pl 32; Taube 1998). The front of the pectoral is carved to represent an Olmec deity with jaguar characteristics, who is typically associated with rulers. The rear of the pectoral was inscribed sometime during the Late Preclassic period with an image of a Maya ruler and an accompanying text (Figure 7.8). The ruler is seated cross-legged and wears an ornate belt over a knee length cloth skirt. He wears jade ornaments on his wrists and arms, as well as a heavy jade necklace[19] (Schele and Miller 1986:119-120). While the jade displays his wealth, it is the incorporation of the Jester God into his headdress that signifies his status as a divine ruler (Figure 7.8a). The Jester

[19] A similarly outfitted ruler is depicted on the Dumbarton Oaks celt (M. Coe 1966; Schele and Miller 1986:82-83, pl. 22). Stylistically dated to the Protoclassic period, this ruler wears beaded wrist cuffs, a heavy jade necklace, and mat and disk signs on his belt. The back of the pectoral bears an inscription that describes what appears to be a period-ending rite. The text contains an early version of the *ahau* glyph and a royal title.

God appears in the headdresses of god masks on Late Preclassic architectural sculpture and by integrating this symbol into his own costume, the man is signifying his own divinity. The accompanying text contains many signs that appear to be precursors to Classic period glyphs; however, one portion of the text can be deciphered. Glyph A5, the lower half of a seated body, is similar to the Classic period glyph translated as 'was seated' and describes the accession to the throne (Figure 7.8b, highlighted text)(Schele and Miller 1986:120). The glyph in position B5 appears to be an early variant of the *ahau* glyph while the glyphs A6 and B6 represent his name, Lord Muan. The text on this pectoral represents one of the earliest historical events and first royal accession to be deciphered in the corpus of Maya inscriptions (Schele and Miller 1986:120).

The Jester God, a crucial element of Classic period kingship, appears during this period in both architectural decoration (e.g. mask elements at Cerros) and on artifacts found with grave goods and in caches. The Jester God is part of the glyph for *ahau*, or "lord", and is often incorporated into the headbands of both gods and humans (Schele and Freidel 1990:114-115, fig. 3:14). At Cerros, the Jester God headband is worn by both upper masks on Str. 5C-2nd, suggesting these masks represent the first king of the site (Figure 7.4b). In burial 85 at Tikal, the Jester God appears carved as the crown of a fuschite head (Clancy et al. 1985:pl 16; W. Coe 1965:43). The head had holes drilled and was likely part of the costume of the individual with whom it was interred, literally labeling him as an *ahau*. Another representation of the Jester God on an artifact comes from a greenstone pendant found in Cache 1 of Str. 6B at Cerros (Freidel 1979; Freidel and Schele 1988:fig 6, 7; Garber 1983, 1986; Schele and Freidel 1990:chap 3). Three additional heads flanked the greenstone pendant (or diadem), another common element of Preclassic depictions of the Jester God headband (Schele and Freidel 1988). It is important to note in each instance that the Jester

God is represented on a costume element meant to be worn by the ruler, indicating there is already a firm association between the royal personage and divinity. Additionally, there are sufficient similarities between caches and the iconography of monumental panels to indicate users created intentional connections between these objects and ritual spaces (Freidel and Schele 1988:557; Schele and Freidel 1990:chap 3).

Other iconographic studies have demonstrated that many of aspects of Classic period rituals, such as human sacrifice (Hammond, Clarke and Estrada Belli 1992:42; Hammond 1999; Laporte and Fialko 1990, 1995), deities like the "Jester God" (Fields 1991; Freidel 1990), and office (Freidel and Schele 1988), have their roots in the Preclassic period, allowing some reconstruction of the Preclassic belief system (Freidel and Schele 1990:chap 3; Ringle 1999:185).

Material Remains As an important component of ritual activity, mortuary practices and ritual deposits during the Middle Preclassic lend credence to the idea that there was little individual authority. While some of the round dance platforms contain caches and burials (e.g. Cahal Pech Strs 14, 15 (Powis and Hohmann 1995), Colha Str 1 (Anthony and Black 1994), or K'axob Str 1D (McAnany and Lopez Varela 1999)), the majority of burials are located in house floors (Aimers et al. 2000; Hammond 1995, 1999).

Regardless of the location of the burial, all sexes and ages are represented in the material record. General patterns do indicate that male burials are more frequent than female burials (2:1 ratio) and that adults outnumber adolescents (Krejci and Culbert 1999:104)[20]. Some skeletons exhibit cranial deformation and dental inlays, however these practices seem to represent beautification practices rather than status differences (Krejci and Culbert 1995). The lack of differentiation represented in the mortuary data indicates that

[20] To date, no burials or offerings dating to the Preclassic period have been found in the Yaxche Group.

social differentiation during this period was minimal (Bachand and Bachand 2005:58; Krejci and Culbert 1995; Lucero 2003). Excavations at El Mirador and other sites in the Southern Lowlands show little differentiation in material remains, suggesting that all residents had access to the same ceramics, tools, and figurines (Hansen 1990; Hendon 1991; Krejci and Culbert 1995; Lucero 2003, 2006).

The primary change in mortuary patterns during the Late Preclassic is the advent of elite or royal burials (Krejci and Culbert 1995; Lucero 2003:531-535). Krejci and Culbert (1995:108) suggest carefully crafted tomb chambers, the use of red pigment, significant offerings of jade, and at least 13 vessels can be used to identify elite burials. While not common during this period, they establish a pattern that continues into the late Early Classic period. Additional support for the emergence of incipient leaders comes from the interment of select community members (usually elite males) in the ceremonial plazas and platforms (e.g. burial 166 at Tikal, see Coe 1965). Communal burials also become less common.

Though few burials are found in the early pyramids themselves[21], the placement of offerings near the basal portion of temples and in superstructures becomes a common practice toward the end of this period (Bachand and Bachand 2005:59). According to Krejci and Culbert (1995:111), "the primary characteristic of Preclassic caches is that they contain few objects and exhibit little variety". A typical Preclassic cache consisted of a couple of vessels, one or two jade beads or shell fragments, and/or a few flint or obsidian blades (Krejci and Culbert 1995:112-113). All of this evidence supports the idea that during the Middle and most of the Late Preclassic period, Maya ritual activity emphasized communal identity rather than legitimizing the power and authority of individual rulers.

[21] Str 32 at Nakbe is an exception; a double burial dating to the end of the Middle Preclassic (450 B.C.) was found at its base. This could represent a sacrifice rather than burial, which would explain this anomalous location (Lopez 1993:99-110).

7.2.2 The Early Classic Period

The non-domestic architecture, iconography, and material remains of this period show both consistency and change, with many symbols of kingship established in the Preclassic continuing into the Early Classic[22]. The last significant changes in the repertoire of elements that characterized Maya rulers occurred during the 4th century, when the influence of Teotihuacán first appeared in the Southern Lowlands (e.g. Krejci and Culbert 1995). In the Puuc, little material exploring the architecture of the Early Classic period has been published and because of this, the treatment of the Early Classic in this region is necessarily brief.

Non-domestic Architecture In the Southern Lowlands, important Preclassic sites such as El Mirador and Nakbe decline while a building boom occurred at others (e.g. Caracol, Calakmul, Rio Azul and Holmul) when emerging elites began to build more monumental structures (Lucero 2003, 2006; Ringle 1999; Valdés 2001).

In terms of the built environment, palaces that combined both residential and administrative functions become more common (e.g. Group B at Uaxactun). In addition to this new architectural form, the mastery of vaulting changed the spatial characteristics of Maya buildings (Valdés 2001:144). The room count for structures increased while the rooms themselves became larger and had wider doorways. These rooms would have been able to accommodate larger numbers of people and as well as creating better visual access between the plazas and the rooms.

The general architectural trends of the Late Preclassic period continue into the Early Classic, including the increasing height of pyramidal platforms and the privatization of ritual areas. The location within a site of non-domestic architecture, an element of nonverbal

[22] As with the Preclassic period, the nature of the Early Classic occupation in the Yaxche Group is not well understood at present.

communication, begins to change slightly during this period. For example, while these types of structures were often located within or near residential areas during the Preclassic, the site plans of Early Classic Tikal, Uaxactun, and Cerros show a pronounced separation between residential and civic-ceremonial architecture. Pairs of in-ward facing temples and triadic arrangements (E-groups)[23] replace single superstructures, which had been common in the Preclassic (Figure 7.5)(Bachand and Bachand 2005:47; Hansen 1998:77; Hendon 2000; Ringle 1999).

Uaxactun, Yaxuna, and Chac II all have well-documented architectural sequences and provide examples of general trends during the Early Classic period. At Uaxactun, Group B has been identified as a royal compound and exhibits an interesting mixture of public and private space. One of the oldest multi-chambered palaces in the central lowlands, Sub-2C of Group B dates to around 350 A.D. (Figure 7.9)(Laporte 1989; Valdéz 2001). It is composed of three previously independent structures that were combined to form one large palace. The two exterior wings are similar in design, consisting of five parallel chambers with staggered entrances, which would have restricted the view from room to room. The rectangular rooms were not designed to host sustained formal occasions and more likely functioned as movement corridors (see Chapter 6). Any activity that did occur within these areas would have only been visible to participants within the room.

The center of the palace, Sub-2C combines residential and administrative functions in a space designed to host public-inclusive occasions. The antechamber of the palace is a long, rectangular room that can be directly accessed from the plaza below (Figure 7.9). Postholes along the front of this room indicate that a perishable covering existed, which would have allowed spectators in the palace to view activities occurring on the plaza and,

[23] Although there is evidence of E-groups in the Late Preclassic period, they are not the dominant form of non-domestic architecture.

vice versa. From this antechamber, a narrow doorway gave access to the palace proper, indicating occasions of a more private, restricted nature occurred within (Valdés 2001:143-146)[24].

The Early Classic is not as well documented in the Northern Lowlands, especially in the Puuc region. Two architectural examples come from Yaxuna, located on the Northern plains, and Chac II in the Puuc. The development of Yaxuna during this period, as seen through architecture and ceramics, is similar to that of many Southern Lowland centers. While early, Early Classic architecture is more similar to Late Formative pan-Maya traditions, around 400 A.D., a trend of increasing regionalization and foreign influence begins (Ardren 1997, 1999; Smyth 1998; Suhler 1996; Suhler et al. 1995, 1998a:173, Suhler et al. 1998b)[25].

The traditions associated with the dance platforms of the Preclassic carry over into the Early Classic period as evidenced by Structure 6F-3 at Yaxuna (Figure 7.10)(Suhler et al. 1998b:259-260). This structure was designed to facilitate the same types of social interaction as the dance platforms, except that it is a monumental pyramid. Structure 6F-3 is composed of four stepped platforms surmounted by a dance platform approximately five meters above the ground. The summit was accessed by a wide stairway although any activity that occurred on the dance platform would not have been visible to spectators on the ground. Much like Structure 5C-2nd at Cerros, the rulers of Yaxuna likely used the stairway and flanking platform facades as part of the ritual stage. Similar structures have been identified at Oxkintok (Satsunet, Rivera 1987, 1989) and Ake (Str 2, Roys and Shook 1966). While Str 6F-3 represents a continuation of both local architectural trends from the Preclassic, the palace (Structure 5E-50) combines local and regional traditions. The construction

[24] Palace A-18 at Tikal shows a similar architectural plan (Valdés 2001:147).
[25] For an additional example of regionalization at Yaxuna, see Ardren (1997) and Suhler et al. (1998a) for a discussion of the patio-quad apartment compounds found in the Xkanha Group.

techniques and materials used to build the palace are local while the iconography is representative themes more commonly found in the Southern Lowlands.

In the Puuc at Chac II, excavations, artifact analysis, and dating suggest many of the monumental structures at the site were built during the Early Classic period (Smyth 1998). Both Yaxuna and Chac II follow the trend of separating ordinary residential and non-domestic architecture, which was popular in the Southern Lowlands during this period. Two examples of non-domestic architecture at the site include the Great Pyramid and Structure E-VIIa, both located in the core of the site (Figure 7.11).

The Great Pyramid is approximately 20 meters tall, with a wide stairway and five terraced platforms supporting a superstructure (Smyth 1998:239-241). The structure is rectilinear in shape but has rounded corners; architecturally it is similar to the Early Classic pyramids found at Acanceh and Oxkintik (Smyth 1998). The Great Pyramid, along with seven other structures, comprise the pentagonal shaped Great Pyramid Plaza (Figure 7.11).

One of these structure, E-VIIa, also exhibits architectural elements characteristic of the Early Classic (Andrews 1985a; Pollock 1980; Taube 1995). E-VIIa is a 15 meter long range structure that sits atop a megalithic stone platform (Smyth 1998:240)[26]. The room has no internal divisions (Figure 7.12) and is accessed by a broad, low stairway. Five doorways (approximately 1.2 meters wide each) pierce the eastern façade of the superstructure, creating an open interior (Smyth 1998:241). The façade of the building is a *talud-tablero* variation found at other sites in the region such as the Ah-Canul and May groups at Oxkintok (Dunning and Andrews 1994:fig 11; Rivera A. 1990)[27].

Similar to Sub-2C at Uaxactun, the built environment at Chac II contains a mixture

[26] This structure is similar to the *popol nah* found in the Yaxche Group at Kiuic.
[27] A *talud-tablero* variation, reflecting the influence of Teotihuacán, is also seen at Str 612 and Substructure 44 at Dzibilchaltun (Andrews I and Andrews V 1980:73-74); Andrews V 1979, Coggins 1983) and the Early Classic pyramid at Acanceh (Andrews IV 1942; Fernandez 1939; Miller 1991).

of public and private venues. While the plaza of the Great Pyramid Plaza was large and would have accommodated a large number of people, they would have had visual access to a portion of any activity occurring on the structures surrounding them. The summit of the Great Pyramid itself was well out of visual range of a spectator on the plaza, although the activities occurring within E-VIIa would have been accessible to them. The stairways of the Great Pyramid and E-VIIa were likely incorporated into ritual occasions, either as seating or parts of the stage (see Section 7.2 for more detail). The plaza was a venue for public-inclusive events while the private or semi-private portions of the occasions would have taken place within the temple atop the Great Pyramid or E-VIIa.

Within the Yaxche Group during this period, the architecture resembles that of Chac more than Yaxuna. The *Popol Na*, which sat on a low basal platform, was erected over the pre-existing substructure. The wide stairway that ascended to long, single room structure with multiple entrances is reminiscent of E-VIIa at Chac (see Chapter 5 for more details on the architecture at Kiuic during this period). It was also during this period that the first structure was built on the northern edge of the Dzunun Plaza, which we believe was residential in nature. So while the residential and administrative functions are conflated within one area, it is possible each was carried out within separate buildings rather than within a single palace-structure. The spatial characteristics of the antechamber of palace Sub-2C at Uaxactun are similar to those of the range structures (the *Popol Na* and E-VIIa) in the Puuc region, suggesting they were used for similar purposes.

Continuities in the architectural characteristics of both elite domestic and non-domestic architecture suggest that the rituals introduced in the Preclassic period continued to be important to Early Classic period Maya (e.g. Sub-2C and palace H-Sub 2 at Uaxactun)(Valdés 2001:146). Discontinuities in the built environment during this period reflect the intrusion into, and influence of, Teotihuacán in Maya culture. Although there are similarities between the two periods, the decreasing ambientality and increasingly restricted location of non-domestic architecture during the Early Classic suggest the disparity between social groups continued to grow.

Iconography During the first part of the Early Classic, Maya elite continued to consolidate and legitimize their growing power. Iconographically this is seen as the symbolic elements of Preclassic masks are incorporated directly into the costumes of the elite (Figure 7.13) (Bachand and Bachand 2005:46; Freidel 1979; Freidel and Schele 1988; Lucero 2003, 2006; Stuart 1996). The appropriation of these religious symbols supports the shift in perception of communal leaders from human to divine (Freidel and Schele 1988; Gillespie 2000; Houston and Stuart 1996; Lucero 2003; Marcus 1978; McAnany 1995:227; Rappaport 1971, 1999:281; Webster 1976). This scenario also lends credence to the idea that the use of masks not only blurred the identity of individuals but also allowed them to assume a new identity; over time, the identity of the mask becomes conflated with the actual identity of the wearer.

Evidence that the emphasis of rituals was shifting away from promoting communal identity and toward the legitimization of individual authority is found in the earliest known representation of a crowning event in the Maya area at San Bartolo (Houston 2006; Saturno 2002; Saturno and Taube 2005). Other areas of the mural, which is dated between 100 B.C. and A.D. 100, show the Maize god performing a bloodletting and further illustrate the growing power of elite individuals (see Saturno 2006). Finally, the location of these murals supports the hypothesis that the attitude toward individual power was changing. Rather than being located on the lower portion of a temple or rendered in a large, highly visible form (like the grotesque masks), this mural was painted in a room at the base of the *Las Pinturas* building (Freidel and Schele 1988; Houston 2006; Saturno 2002). The location and spatial configuration of the room make it a liminal space; the room has three wide doorways across the front, which make the inside of the room highly visible. Though the mural was visible from ground level and an estimated 11m in length, viewers had to ascend a low step and enter the room before it was visible (Hurst n.d.; Saturno 2002).

A wealth of Early Classic imagery comes from the dominant site in the Southern Lowlands during this time, Tikal. The Leiden Plaque (Figure 7.13) is an inscribed jadeite celt that most likely originated from Tikal but was found in the delta of the Río Motagua. The back of the celt is inscribed with the Long Count date of 8.12.3.1.12 (A.D. 320) and describes the 'seating' of Moon Zero Bird as ruler (Quirarte 1977:273; Schele and Freidel 1990:143-144; Schele and Miller 1986:63-73). On the front of the celt, Moon Zero Bird is displayed in the full regalia of a Classic period Maya king, wearing an elaborate royal belt and holding the double-headed serpent bar with God K (the deity of lineages). The ruler's headdress combines the imagery of the Jester God and the jaguar, implying his divine status and his rank of *ahau*. A final important component of royal iconography on the plaque is the captive at Moon Zero Bird's feet (Quirarte 1977:273; Schele and Freidel 1990:143-144)[28]. In the Late Classic, captives were considered to be symbols of the power and prowess of a ruler; the depiction of captives by early Maya kings was a means through which they could reinforce their prestige.

In general, images from lowland Maya sites during the first part of the Early Classic display a relatively limited set of images- namely that of an elaborately dressed ruler with a captive (Schele and Miller 1986:63-73). The catalogue of images changes around A.D. 378, when the first visual representation of the Tlaloc-Venus costume appears on Stela 5 at Uaxactun. Around this time, there is a Teotihuacán presence at Tikal (with ruler Smoking

[28] A captive depicted in the same pose appears on the Early Classic Tikal Stela 28. The captive is lying face-down with bound wrists and his head and arms extended in front of the ruler.

Frog) and Stela 5 was created to commemorate the Tikal's conquest of Uaxactun (Figure 7.14a)(Schele and Freidel 1990:ch 4). The costume can be recognized by its balloon-shaped headdress and spear thrower, which are absent in the iconography of the preceding periods. After this debut, variations of the Tlaloc-Venus costume become a standard component of royal Maya imagery (Figure 7.14).

At Yaxuna in the Northern Lowlands, the Early Classic is marked by local imitations of Southern Lowland iconography and ceramic traditions (Suhler et al. 1998a:176). The exterior walls of Structure 5E-50, a palace dating to the Early Classic period, bear Teotihuacán-like images, which are rare in northern iconography but common in the south. One image depicts rulers with speech scrolls emanating from their mouths while a second image appears on a plate discovered in burial 24, which contains a significant amount of grave goods with a Teotihuacán hallmark (Figure 7.15). The place portrays a male wearing a macaw headdress with triple coyote tails, both hallmarks of the Tlaloc-Venus warrior costume (Schele and Freidel 1990; Suhler et al.1998a:fig 9, 175). It is interesting to note that although ceramic forms during this period imitate popular lowland and Teotihuacán-influenced forms, they are local copies rather than true imports (Suhler et al. 1998a:176). There is little material currently available on the iconography of the Puuc region during the Early Classic period.

Material Remains As with the architectural elements and iconography, there are both continuities and discontinuities between the material remains of the Preclassic and those of the Early Classic. The latter saw the introduction of new ceramic types such as Usulutan wares and polychromes, as well as new stone tools such as barkbeaters. There is also an increase in the prestige of foreign-influenced goods as the presence of Teotihuacán in the lowlands became more pronounced in the 4th century (e.g. Burial 10 at Tikal, see Coggins

1975 and Culbert 1973). Mortuary and caching practices change during this period, reflecting the growing and more widely accepted power of the elite class. One trend that reflects this is the increasing frequency of ritual deposits and burials in the pyramid-temples themselves (Krejci and Culbert 1999).

Ritual deposits occur in the Preclassic period but they contain few items and very little variety. While the same materials are found in Early and Late Preclassic ritual deposits, the amount of material increases, as does the variety of objects (Krejci and Culbert 1999:111-114; Lucero 2003:535-538)[29]. For example, lidded vessels that are often incised or painted with hieroglyphs replace the plain, lip-to-lip ceramic vessels. Differences also appear between deposits found in ordinary residences and those from elite and non-domestic contexts. Ritual deposits in both contexts include shell, chert cores, mano and metate fragments, ceramics, and faunal remains (Lucero 2003:table 2, 535-538). Deposits in non-domestic contexts are more likely to yield luxury goods such as earflares, non-utilitarian ceramics, and eccentrics, in addition to having higher quantities of objects (Krejci and Culbert 1999:111-114). The number of ritual deposits, which were often associated with important events such as the dedication or termination of structures[30], increased during the Early Classic period (Krejci and Culbert 1995). As with ritual deposits, there are notable differences between the artifacts found in elite and non-elite mortuary contexts during the Early Classic.

Royal burials dating to the Late Preclassic with associated grave goods have been found in residential contexts at sites such as Barton Ramie (BR-123; Willey et al. 1965:531)

[29] Krejci and Culbert (1999:111) note that there is little consistency in Early Classic ritual deposits except at Tikal. During the Manik 3a phase, a richness and variety of materials appears that is not found at other lowland sites.

[30] For examples of termination and dedication deposits see SC-3 at Saturday Creek (Lucero 2003:535) and 5D-46 at Tikal (Harrison 1999:77-78).

and Tikal (5D-Sub.10, burial 166; Coe 1965a; burial 85; Coe 1990:217-219). However, during the Early Classic period, more elite burials are located in the pyramids themselves (e.g. Str 5D-86 Mundo Perido (Laporte and Fialko 1995)[31]. Elaborate tombs, such as burial 48 in the North Acropolis at Tikal, were constructed with domed ceilings and walls adorned with hieroglyphs (Coe 1990:118-119; Harrison 1999:89-90). While the percentage of burials containing jade, shell, and obsidian does increase in the Early Classic, their presence is not necessarily an indicator of individual status. Krejci and Culbert (1999) found that the amount of the material present (i.e. number of pieces of jade or shell), rather than the types of objects, that indicates wealth or status. For example, only 9% of Preclassic burials have substantial amounts of jade while 24% of Early Classic burials do (Krejci and Culbert 1999:106). Despite the increase in the wealth of some individual burials, the types of grave goods found with Preclassic and Early Classic rulers (with the exception of earflares, which are introduced in the Early Classic) are very similar.

In the Puuc region, there is little burial data available for the Early Classic and none from Kiuic. However, several burials found at the Northern Lowland site of Yaxuna provide examples of burial practices and associated elite material remains (Suhler et al. 1998a; Suhler et al. 1998b). The general ceramic assemblage at Yaxuna during the Early Classic period represents the typical Chicanel-dominated Late Formative tradition (Ball 1979). In addition to these more utilitarian wares, royal burials (Burials 23 and 24) also contain imported or foreign-influenced vessels. The pottery found in Burial 23 (dated to approximately A.D. 378) is stylistically related to the Tikal Manik II (Coe 1990; Culbert 1993; Laporte and Fialko 1990, 1995) phase and Uaxactun Tzakol II (Smith 1950; Smth and

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[31]For other examples see Strs A6-1st and B-34 at Caracol (Chase and Chase 1996), Strs B-II and B-III at Altar de Sacrificios (Smith 1972), Str 3 at Wakna (Hansen 1998), Str F-8 at Altun Ha (Pendergast 1971), Str B at Holmul (Merwin and Vaillant 1932), Str 277 at Nohmul (Hammond 1985; Anderson and Cook 1944), and Str 4B at Cerros (Schele and Freidel 1990).

Gifford 1966) phase ceramics (Suhler et al. 1998a). Like the assemblages at these sites, the pottery at Yaxuna was made using local materials and Maya-only traditions (Suhler et al. 1998a). Between 400-550 A.D., Teotihuacán influenced materials are introduced at sites in both the Southern and Northern Lowlands. At Yaxuna, this influence if found in burial 24, a multiple interment in Structure 6F-4 and in Caches 2 and 3, located in Str 6E-3 which was part of the same succession-termination event as burial 24 (Suhler et al. 1998:176).

7.2.3 The Late and Terminal Classic Periods

The Late Classic period represents the apex of Maya civilization at sites throughout the Northern and Southern lowlands. Trends that coalesced around the *k'ul ahau* in the Preclassic find their full expression in the architecture, iconography, and material remains of these periods. While the Terminal Classic marks the decline of Maya society at many sites in the south, the Northern Lowlands continued to flourish.

Non-domestic Architecture The movement toward increasing exclusivity that began in the Late Preclassic, culminates in the monumental, non-domestic architecture of the Late and Terminal Classic periods. As the ambientality of structures decreased and platforms became higher, the dichotomy between public and 'private' ritual grew.

While the plazas used in large-scale public performances were often centrally located (e.g. the Great Plazas at Tikal or Copan, the Castillo at Chichen Itza), non-domestic architecture was also constructed in more restricted, private areas. Many elite and royal compounds also contained both public-inclusive and private-excusive ritual areas (e.g. 9N-8 in the Sepulturas Group at Copan, the North Acropolis at Tikal). Though the focus of the present research is on the elite settings, domestic ritual architecture (and ritual) has been found at every level of Maya society. As discussed in Chapter 4, the private nature of these rituals does not necessarily mean that the actions performed were secret (e.g. McAnany 1995, 1998; Woodfil 2004). Ethnographic evidence suggests that the spectators knew what was happening during the 'secret' component of a ritual. Despite the semi-private nature of such rituals, Maya elite designed the built environment in order to control physical and visual access to non-domestic architecture and associated performances. The degree of privatization of ritual architecture throughout the Northern and Southern Lowlands is not homogeneous, as can be seen from examples at Copan, Tikal, and the Puuc.

At the site of Copán, access to ritual areas located within elite residential groups a was less restricted than at the other sites, such as Tikal. The East and West courts, located on the southern end of the Acropolis near the royal palace, are two examples of private non-domestic architecture (Figure 7.16). In comparison to the Great Plaza and its adjacent open spaces, which were designed for large-scale public performance, these two patios were smaller with restricted access (Inomata 2006:201; Sharer et al. 1999). The courts actually bear resemblance to Plaza Dzunun in the Yaxche Group at Kiuic, including the identification of a structure in the West court as a *popol nah* (Str 10L-22A). This identification is based on the presence of mat motifs and stone carvings of possible toponyms referring to places in the Copan polity (Fash et al. 1992; Inomata 2006; Stomper 1996). Next to the *popol nah* is a low stone platform (Str 10L-25), which is thought to have been a dance platform[32] (Inomata 2006:201). Each court was surrounded on four sides by raised platforms that supported superstructures, creating an intimate atmosphere for rituals. Although the courts were large in size compared to those of Aguateca or Tikal, access was restricted- only by passing through the royal residence in the southern end of the Acropolis could one have entered these areas.

[32] There is also a platform associated with the *Popol Nah* in Dzunun.

The Central Acropolis of Tikal is an example of a highly restricted ritual environment; the inner core of this royal residential palace is nested within a complex arrangement of patio groups (Figure 7.17). The courtyards are enclosed by masonry structures on all sides and the path of movement through the palace created series of courtyard groups that were increasingly difficult to access. None of the open areas in the palace are accessible from the exterior without maneuvering through the labyrinth of buildings that composed the Central Acropolis. Any activities that occurred in the inner sanctum of the Acropolis would have been completely shielded from outside view and likely involved only the highest-ranking elite (Harrison 1970, 1999, 2003; Liendo S. 2003).

The architecture of the Puuc region during this time differs from that of the Southern Lowlands described above[33]. Rather than the extreme dichotomy between public and private spaces seen at sites such as Tikal, non-domestic architecture in the Puuc is often incorporated into or associated with elite residential architecture. Rather than discussing specific sites within the Puuc, I will focus on a common plan for civic-ceremonial architecture found in the region, of which the Yaxche Group is an example. The Early Puuc Civic Complex (EPCC) (similar to Dunning's (1992) civic/ceremonial complex) is characterized by a modest pyramid, a long one-roomed hall structure opposite or adjacent to the pyramid, ramps, a sub-rectangular plaza layout, and slab vaults (Figure 7.18)(Bey et al. 2009; Bey and Ringle, personal communication; Gallareta et al. 2004, 2007:7-22; Ringle et al. 2005)[34]. These complexes served as the primary locus for political and religious activity at many sites within the Puuc and seem to indicate a common form of administrative

[33] Although the architectural style of the Puuc region is well-documented (e.g. Andrews et al. 1979; Gendrop 1998; Pollock 1980), few sites have been extensively excavated. Therefore, the chronology of the Puuc architectural styles is not well-understood.
[34] Examples of EPCC are found at Kiuic (1), Huntichmul (2), Labna, Chac (2, Smyth et al. 1998), Xcanacruz and Sayil (Ringle, personal communication 2010).

organization for the region (Gallareta et al. 2007; Ringle 2010). The EPCC complex is often attached to or associated with elite residential areas, similar to the East and West Courts at Copan. Despite the residential function of these complexes, their relative openness and number of rooms (in addition to the syntactical qualities described in Chapter 5) indicate they were designed to host public-inclusive social occasions. The structures around the EPCC, including the temple and *popol na* would have facilitated the private-exclusive portion of any associated rituals.

In the Terminal Classic, the Southern Lowlands witnessed a wave of warfare and the cessation of monumental construction at many important centers such as Tikal, Yaxchilán, Piedras Negras, and Bonampak (Lucero 2006:42). Architectural changes, such as easier access to palaces and a lack of new funerary monuments suggest a reorganization of Maya society (Lucero 2003, 2006; Rice 1986). Supporting this idea are introduction of new architectural forms in the Petén, including circular pyramids, radial temples, causeways, and remote stelae platforms, that suggest the presence of a non-Petén Maya in the area (Lucero 2006:42; Tourtellot and González 2004:61).

In contrast, the Northern Lowlands and Belize experienced a surge in building activity and cultural florescence (e.g. Bey 2006; Carmean and Sabloff 1996; Demarest et al. 2004a; Marcus 1998:62; Ringle and Bey 2001; Ringle 1998). The material culture of Puuc sites during this time shows strong regional affinities and appears to have been largely independent of cultural influence from the Southern Lowlands (e.g. Carmean et al. 2004). At Kiuic, the structures in Plazas Dzunun and Ulum were renovated and while no major additions were constructed, the site was prospering. At the same time, other sites in the region including Uxmal, Labna, Sayil, and Kabah, were expanding rapidly (e.g. Carmean et al. 2004; Cobos 2004; Demarest 2002; Ringle et al. 1998; Ringle 2010; Sabloff and Andrews

1986). There is a proliferation of monumental architecture, both domestic and non-domestic, at sites throughout the Puuc[35] region and Northern Lowlands.

Outside of the Puuc region, there were two distinct cultural spheres in the Northern Lowlands, one at Coba and the other at Chichen Itza. While architecture and material remains at Coba and its satellite sites exhibit strong ties to the Southern lowlands, Chichen Itza does not (Demarest 2002: 139). Recent evidence suggests the site rose to power during the Terminal Classic period, reaching its apogee between 1000 and 1050 A.D. (Cobos 2004). The material remains of Chichen Itza are an amalgam of Maya and Mexican ideologies (e.g. Ringle et al. 1998) and traces of Itza influence are found at distant sites such as Seibal in Guatemala (Tourtellot and Gonzalez 2004) and Nohmul in Belize (Chase and Chase 1982; A. Chase 1985). While outside the scope of the present research, the architectural characteristics of the Puuc centers, Chichen Itza, and the Late Classic traditions of the Southern Lowlands suggest radically different systems of sociopolitical organization.

Images and Iconography By the Late Classic period, the imagery associated with the Maya ruler is firmly established. Schele and Miller (1986:67) have identified three costumes that are often associated with rulers: everyday costume (usually plain white cotton), ritual, and war. It is the latter two that incorporate the capes, masks, headdresses, large belts, and other elements generally used to identify Maya rulers (Figures 7.14, 7.19)[36]. It is interesting to note that most of these elements of rulership have only been identified iconographically. Because so few actual royal tombs have been excavated (or published), it is difficult to corroborate the iconography with material remains (A. Chase 1992:34).

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[35] Current evidence suggests that Uxmal arose as the dominant site in the Puuc during the late ninth century but was in decline by 950 A.D. (Dunning 1992). Similar developmental trajectories are found at Sayil (Tourtellot et al. 1990; Tourtellot and Sabloff 1994).

[36] Because these elements have been discussed extensively in previous sections and outside sources (e.g. Freidel and Schele 1988; Schele and Miller 1986), they will not be dealt with in detail here.

In the Southern Lowlands, the Late Classic witnessed the florescence of political power and public-inclusive/private-exclusive rituals. Textual analysis indicates that Classic Maya rulers were considered closer to important Maya deities (e.g. maize god, ancestral spirits) and to the otherworld than the rest of Maya society (Lucero 2003, 2006; Marcus 1978, Peniche Rivero 1990; Schele and Freidel 1990). Inscriptions taut the elevated status the k'ul ahaw (divine or holy lord) and indicate rulers were divine beings and considered the personification of the gods during ritual performances (Houston 2006:142; Houston and Stuart 1996). Inscriptions list the name of the elites involved and illustrate variety of standardized pan-Maya ritual, including ball games, royal marriages, period-ending rites, royal anniversaries, royal visitations, succession, sacrifice of royal captives, and bloodletting (e.g. Gossen and Leventhal 1993; Lucero 2003, 2006; Schele and Freidel 1990; Schele and Miller 1986; Stuart 1998). While the iconography of the Southern lowlands exhibits 'Classic' Maya traits (such as those listed above), the Northern lowlands contain both standard and many non-standard elements (Proskouriakoff 1950:155-157).

The iconography of the Northern lowlands is less well-understood than that of the Southern lowlands, due in part to the emphasis of abstract, geometric designs over narrative imagery and the character of the hieroglyphic texts (e.g. Grube 1994; Proskouriakoff and Thompson 1947; Proskouriakoff 1950; Ringle et al. 2008; Thompson 1937). Proskouriakoff's (1950) study of ancient Maya sculpture notes that the iconography of the Northern lowlands contains both 'Classic' Maya elements[37] as well as non-standard elements. Non-standard elements include scenic arrangements of small figures with no dominant figure (e.g. Oxkintok Stelae 2, 3, and 9 Proskouriakoff 1950:fig. 87, 88), the abstraction of individuals in order to convey movement, and unique costume elements often associated

[37] See Etzna Stela 5, Santa Rosa Xtampak Stela 5, Sayil Stela 6, Uxmal Stela 3, Jaina Stelae 2 and 3, and Coba Stela 1 (Proskouriakoff 1950).

with warriors[38] (Proskouriakoff 1950:154-169). Panel arrangements are commonly found on stelae in Yucatan and often contain scenes with multiple figures. These scenes often emphasize the actions being done rather than an individual, which is another departure from traditional iconography (e.g. Oxkintok Stelea 2, 3, 26; Kabah Altar 8, Str. 2C6; Morales Stela 1, Oxpemul Stela 9, Etzna Stela 6; Proskouriakoff 1950:161). Another difference is a distinctive manner of representing of individuals where the human form is abstracted in order to show motion. This characteristic is important because while many of the stelae and carved monuments do not explicitly depict rituals, the use of this technique often suggests the figures are dancing (e.g. Stela 1 Santa Rosa Xtampak Proskouriakoff 1950:fig. 86,b). In addition to distinct iconographic elements, the texts found in the North are often terse and their content is not focused on dynastic histories, as are many texts found in the Southern lowlands. Despite these differences, many images contain the traditional elements of kingship (Serpent bar, jewelry, Jester god headdress, etc…) found throughout the Southern lowlands (although their execution may differ).

The majority of sites from the Northern lowlands contain few or no inscribed monuments[39], although there are inscriptions on less traditional media such as wall paintings (Mayer 1990) and painted or carved capstones (Grube 2004:341; Pollock 1980; Proskouriakoff 1950). Textual and iconographic evidence from the Northern lowlands suggests that the concerns of elites in this region differed significantly from those of Southern elites. Texts in the North are terse and not "about conquests and the life histories

[38] The costume elements are generally associated with images of warriors and the relationship of these images to rulers is unclear. Elements include sandals with no ankleguard, rectangular shields, tubular noseplugs and high laced or would gaiters (e.g. Oxkintok Stela 1, Northeast colonnade Chichen Itza; Proskouriakoff 1950:157-159, figs. 87a, 107a).

[39] The following list of sites contain 10 or more inscribed monuments: Dzibilnocac, Edzna, Santa Rosa Xtampak, Itzimte, Xcalumkin, Uxmal, Oxkintok, Dzibilchaltun, Chichen Itza and Ek Balam (Grube 2004: 341).

of grand men" (Grube 2004:342). In fact, the most common glyphs referring to war, birth, accession, or records of death are rarely found in the North. While we must consider the idea that although they were not inscribed in stone, rituals commemorating such events did occur (or that they were recorded on more perishable media), the striking differences between the texts of the Northern and Southern lowlands raise questions about the nature and purpose of rituals in each. In fact, when dates are recorded in the eastern Puuc and Northern plains, they are associated with the dedication or termination of architectural elements (Grube 2004:347).

One recently discovered monument from the site of Huntichmul in the Puuc region (Ringle et al. 2009) sheds new light on the nature of kingship in the region during the Terminal Classic period. The stela (Stela 1) contains both hieroglyphic texts and a central register depicting a Maya ruler in ritual regalia (Ringle et al. 2009:fig. 2). The ruler's costume incorporates many of the traditional elements of kingship, including the Jester God headdress, fringed skirt and loincloth, jade jewelry, and the serpent bar (Ringle et al. 2009). One interesting feature of Stela 1, which is a common theme of Northern iconography (see also Itzimte Stela 12, Uxmal Stelae 11 and 14, Mulchic murals, Labna Altar 1, Stela 1-9 at Sayil), is the association of the ruler with Chak rather than the more traditional Maize God imagery (Freidel et al. 1990; Kowalski 2003:236-240; Ringle et al. 2009; Taube 1985)[40].

At Kiuic, a large stucco deposit was uncovered south of Plaza Ulum. Recent analysis suggests the deposit represents a single event, where the stucco façade of Temple A-sub was removed and buried prior to the construction of Temple A (Melissa Galvan, personal communication). While the entire panel has not been reconstructed, preliminary analysis

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[40] The reason for this association is unclear and could be an effort to associate the ruler with agricultural processes rather than maize itself or, alternatively, Chak may be of political signifiance and represent a local lineage (Dunning and Kowalski 1994; Ringle et al 2009).

suggests it was narrative-descriptive in nature. At least two human figures were depicted as well as some sort of feline. Other elements include feathers, blood, and knots, all of which are found frequently in the iconography of the Southern Lowlands. Despite differences in the material culture and architecture of the two regions, it appears that the residents of the Yaxche Group were utilizing common iconographic elements to represent rulers or ancestors in some sort of ritual capacity. In addition to utilizing the well-established visual repertoire of rulership, the iconography of the Late Classic period also depicts the spaces in which ritual events occurred.

In her study of architectural representations in Maya ceramics, Reents-Budet (2001:199-204) identifies and discusses the conventions used to represent performative spaces (throne rooms, public plazas, stairways and upper terraces)[41]. Two primary loci for ritual events are depicted ceramically: multi-building palace compounds and the superstructures atop terraced platforms (Figure 7.20). While Reents-Budet (2001:202) stresses the unsuitability of tall, narrow temples (e.g., Temple I at Tikal) for their lack of "gathering space or viewing opportunity", I would argue they are the perfect venue for the semi-private portion of Maya ritual.

With regard to visibility, it is interesting to note a small number of polychrome vessels that depict a building being used as a viewing stand (Figure 7.21)(Reents-Budet 2001:196). In each scene, an individual is seated on the building observing processions or ritual activities taking place below in a public plaza or courtyard (see Kerr 4577, 4628, 4629, 4968 for examples). The use of structures in this manner is corroborated in ethnohistorical documents (see Section 7.2) and supports the ideas discussed in Chapter 6, that structures served as both the setting of ritual activity and a vantage point for observing such activities.

[41] For example she notes the use of vertical bands to show doorways and/or masonry piers and the depiction of portable benches and pillows (Reents-Budet (2001:199-204).

The Terminal Classic marks the end of inscribed monuments at many Petén centers such as Tikal, Palenque, Yaxchilán, Piedras Negras, etc. The last of these monuments often describe warfare, suggesting a time of widespread conflict in the lowlands. In addition to these internal battles, ceramic and iconographic evidence (in conjunction with architectural data) suggest the appearance of a non-Petén Maya group. At sites under the Chichen Itza sphere of influence, 'Atlantean' dwarfs, Toltec prowling jaguars and non-Classic Maya figures appear in Maya art with long hair and strange costumes (e.g. Temple of Warriors at Chichen)(Ringle et al. 1998; Tourtellot and González 2004:61). The iconography of the Puuc region (especially at Uxmal), like its architectural traditions, appears to combine both generic 'Maya' and 'Mexican-Toltec' elements in a unique regional presentation (Ringle 2010).

Ritual Objects The objects used in ritual activity during the Late and Terminal Classic periods do not differ significantly from those found in Early Classic ritual deposits. The same materials and artifact classes are present, the objects simply increase in quality, quantity, and diversity as the rulers became more powerful (Hendon 1999; Lucero 2003, 2006:64; Ringle 1999).

Patterns in the placement and types of objects included in ritual deposits can be generalized; for example dedication caches and termination deposits are often found in the centers of rooms (e.g. Garber 1986, 1989). Dedication caches are located under floors and consist of burned or unburned whole objects including ceramic vessels and jade, obsidian, or groundstone fragments (Becker 1992; Coe 1959:77-78; 1965a; e.g. Chase and Chase 1998; Garber 1989:98; Mock 1998). Termination deposits were placed above floors and are more likely to include broken and burned ceramic vessels and other items (Coe 1965a; Garber 1986, 1989; Rice 1999). Burials are less consistent but tend to be located in the southeast corner of small residences and, in the Petén or Belize Valley, in eastern structures of elite plazuelas or compounds (Garber et al. 1998). In palaces and temples, ritual deposits and burials are most often found on the primary axis above or beneath floors and stairs (Ashmore 1991; Loten and Pendergast 1984; Pendergast 1998).

With regard to ritual deposits and burial data, the Puuc region presents a break with data from the rest of the Maya region. To date, while offerings have been recovered throughout the Yaxche Group and Plaza Ulum, they do not appear to conform to any of the patterns described above (see Chapter 5 and Gallareta et al. 2000-2008 for more specific information). The mortuary data from Kiuic (and the Puuc region in general) also poses interesting questions regarding the treatment of the dead. To date, no royal or elite burials have been uncovered at Kiuic and very few non-elite burials have been encountered.

7.3 Conclusions

As has been established in preceding chapters, ritual played a central role in the establishment and negotiation of communal and individual identity and, because of this, public performances were a crucial component of Maya society from the Preclassic to Colonial periods (e.g. Freidel and Schele 1988; Inomata 2006; Lucero 2003, 2006; McAnany 1995; Ringle 1999). While ritual social occasions originally incorporated a significant portion of the community, over time Maya elite co-opted the existing ritual and symbolic system in order to legitimize their own power.

The gradual appropriation of these systems is reflected in the architecture, iconography, and material remains of the Preclassic through Terminal Classic periods. Access to non-domestic architecture becomes increasingly restricted, costumes worn by the elites contain symbols used earlier in masks and deity impersonations, and the disparities between elite and non-elite ritual deposits and mortuary goods grows throughout time. All of these trends indicate a successful appropriation of important symbols and ritual that reinforced and legitimized elite power and status (e.g. Hendon 1999; Inomata 2006; Lucero 2003; Ringle 1999).

FIGURES FOR CHAPTER SEVEN

a)

b)

c)

Figure 7.1: a) Maya polychrome vessel showing drum and flute (K206© Justin Kerr); b) drum from costumed dance scene (K1208© Justin Kerr); c) conch trumpet and flute from polychrome vessel (K791© Justin Kerr)

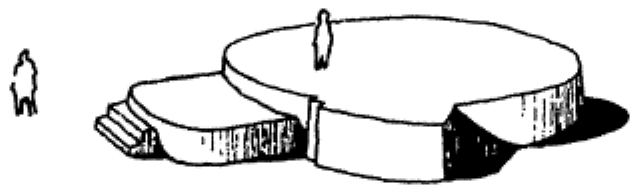


Figure 7.2: Structure C-13, 3rd, a round Preclassic platform from Altun Ha. (after Bachand and Bachand 2005:fig 2)

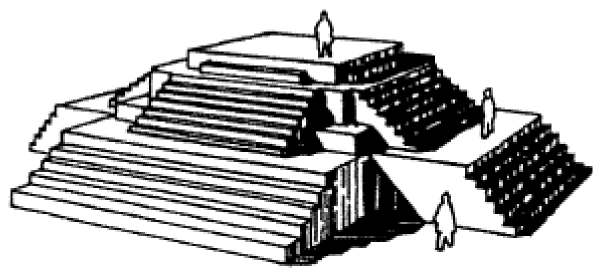


Figure 7.3: Structure C-13, 2nd. Late Preclassic truncated pyramid superimposed on Structure C-13 3rd, a round platform, at the site of Altun Ha. (after Bachand and Bachand 2005:fig 3)

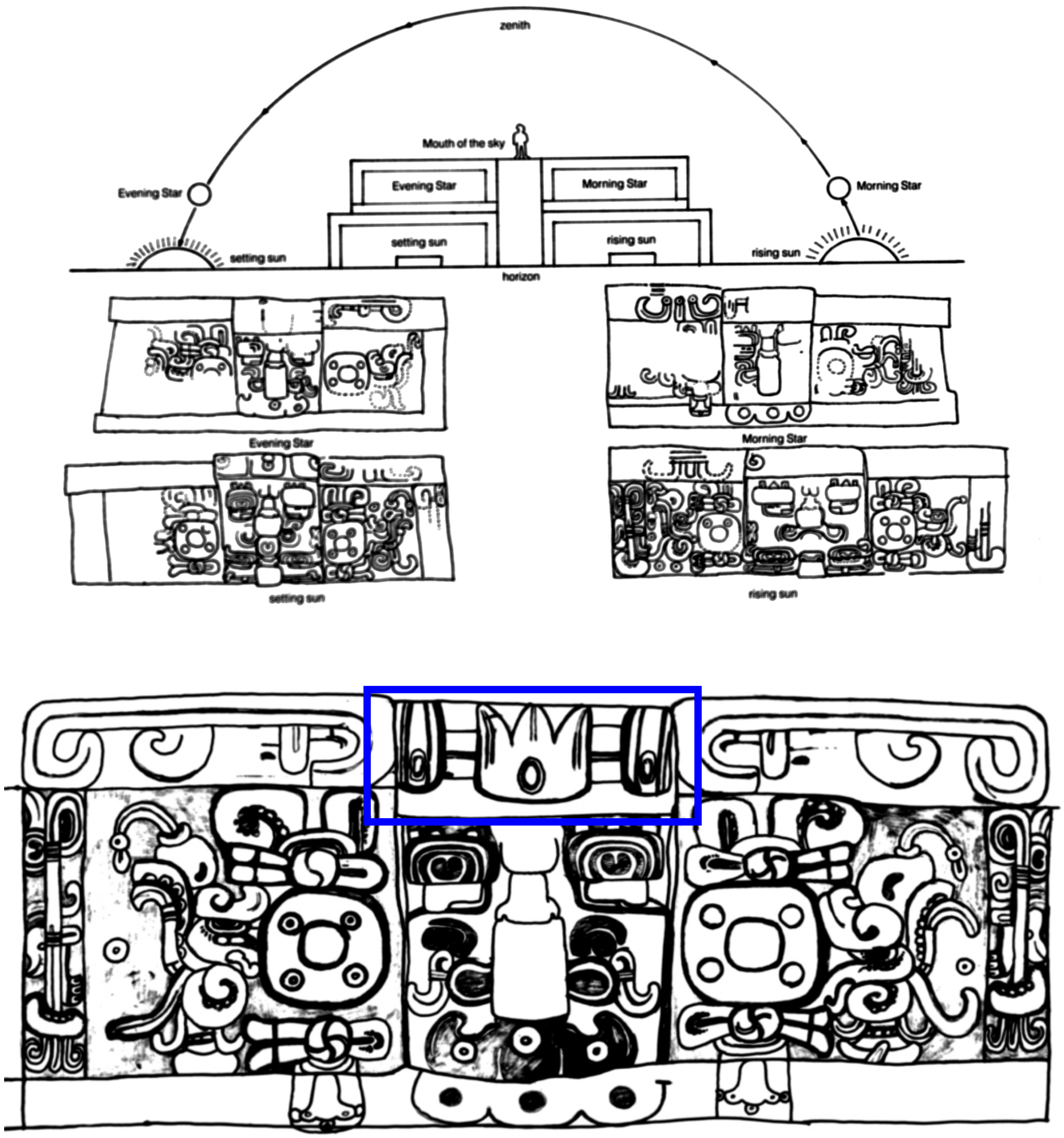


Figure 7.4: a) First temple at Cerros (5C-2nd), projected reconstruction (Schele7508© FAMSI); b) detail of the Eveningstar mask from str. 5C-2nd at Cerros with Jester God headdress highlighted (Schele7502© FAMSI)

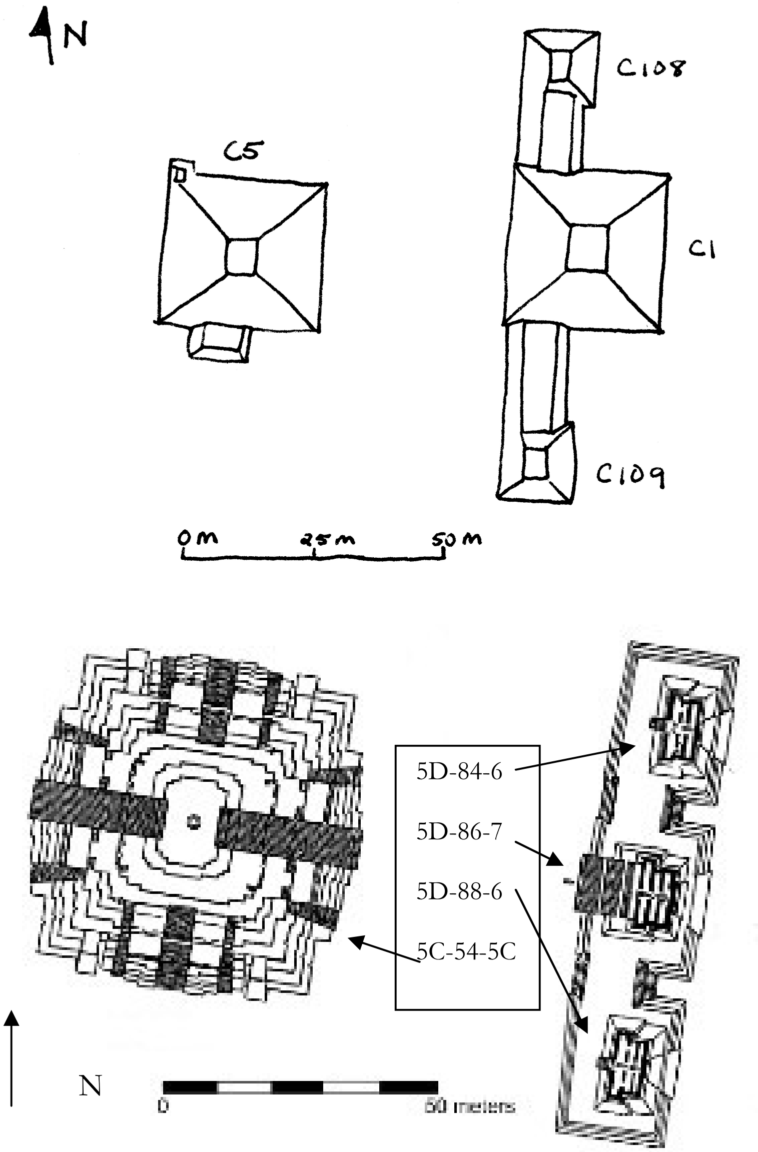


Figure 7.5: Two examples of E-groups from the Maya area. a) E-group from Cenote, Guatemala (redrawn from Chase and Chase 1999:fig 56); b) E-group from Mundo Perdido at Tikal (after Rice 2004:fig. 4.4)

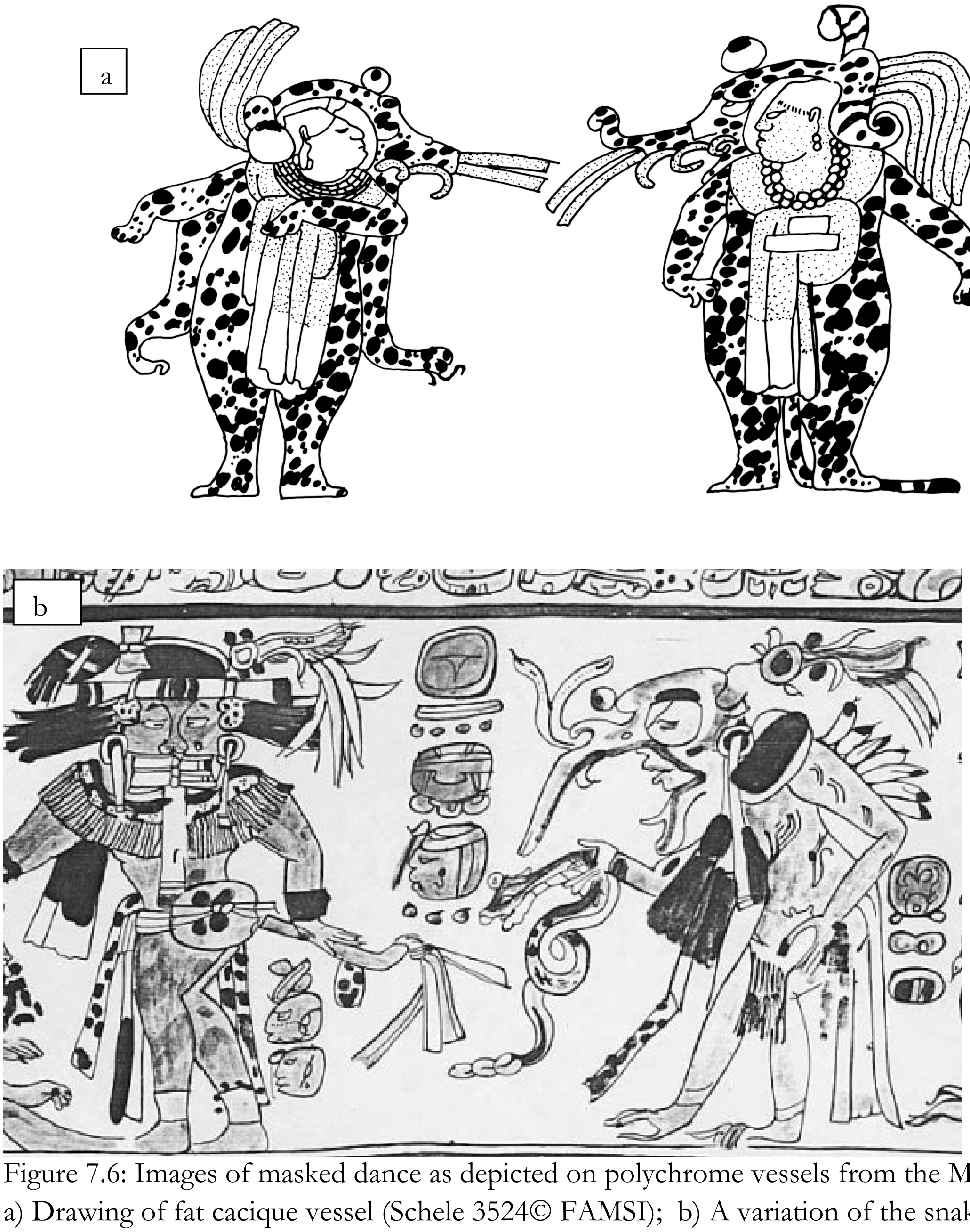


Figure 7.6: Images of masked dance as depicted on polychrome vessels from the Maya area. a) Drawing of fat cacique vessel (Schele 3524© FAMSI); b) A variation of the snake dance with masked dancers (K3059© Justin Kerr)

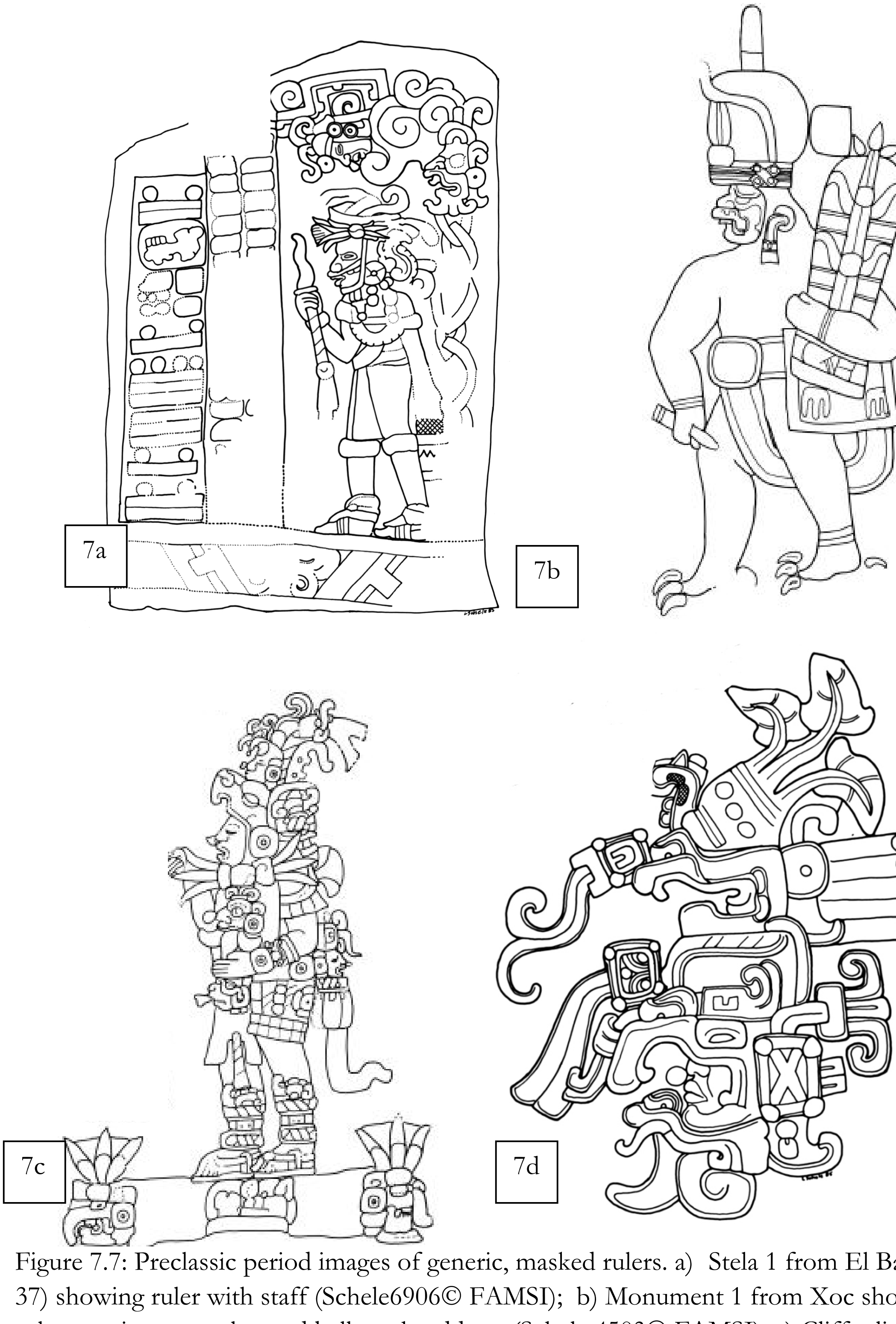


Figure 7.7: Preclassic period images of generic, masked rulers. a) Stela 1 from El Baul (AD 37) showing ruler with staff (Schele6906© FAMSI); b) Monument 1 from Xoc showing ruler wearing nose plug and balloon headdress (Schele 4503© FAMSI); c) Cliff relief showing ruler standing on double-headed serpent from San Diego (Schele7319© FAMSI); d) Stela 11 from Kaminaljuyu, detail showing ruler wearing elaborate celestial bird headdress (Schel7322© FAMSI)

Figure 7.8: Flanged pectoral from Dumbarton Oaks collection. Carved on the rear: a) Preclassic ruler with Jester God headdress (after Schele and Miller 1986:119, pl 32a); b) accompanying text with glyphs describing 'his seating as lord' and 'lord' glyph highlighted (Schele6910© FAMSI;)

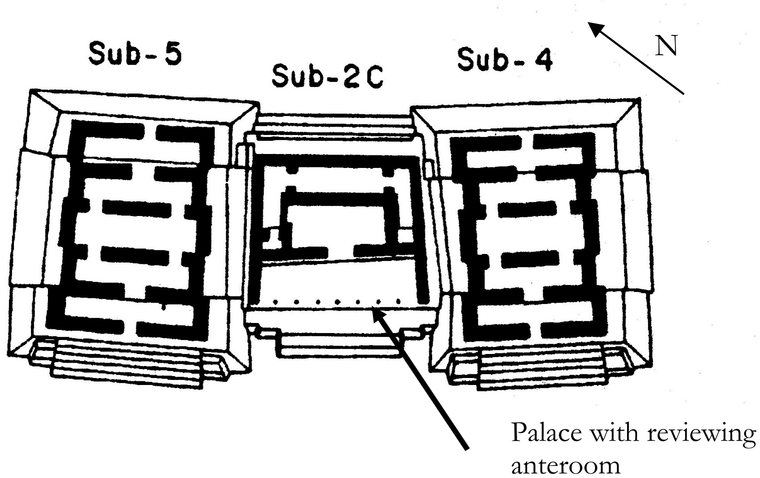


Figure 7.9: Early Classic palace (Sub-2C of Group B) at Uaxactun, dating to around 350 A.D (adapted from Valdéz 2001:fig. 5.3)

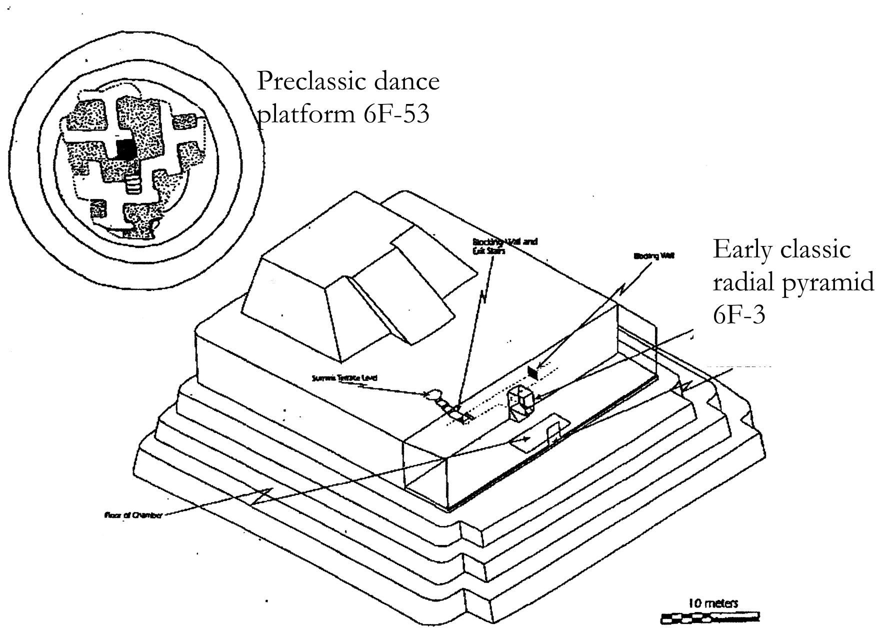


Figure 7.10: Reconstruction of Str. 6F-3 at Yaxuna with an inset of a Preclassic dance platform from the site to show continuities in design of non-domestic architecture (after Suhler et al. 1998b:fig. 5)

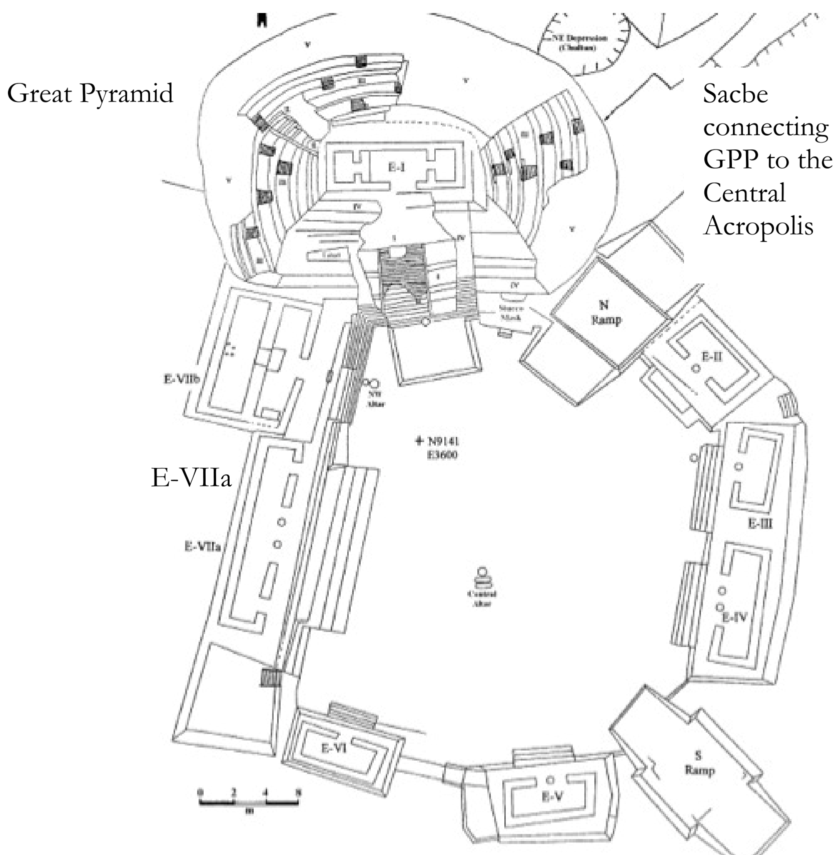


Figure 7.11: Great Pyramid Plaza from Chac II (after Smyth 2006:fig 2)

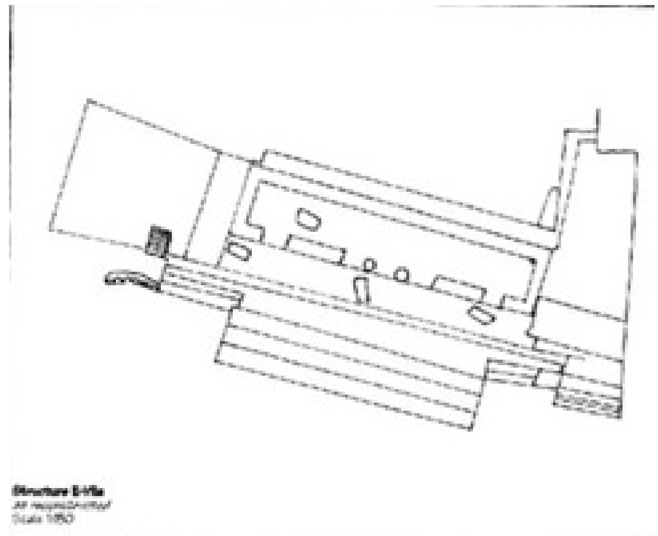


Figure 7.12: Plan of E-VIIa of the Great Pyramid Plaza at Chac II (after Smyth 1998:fig. 12)

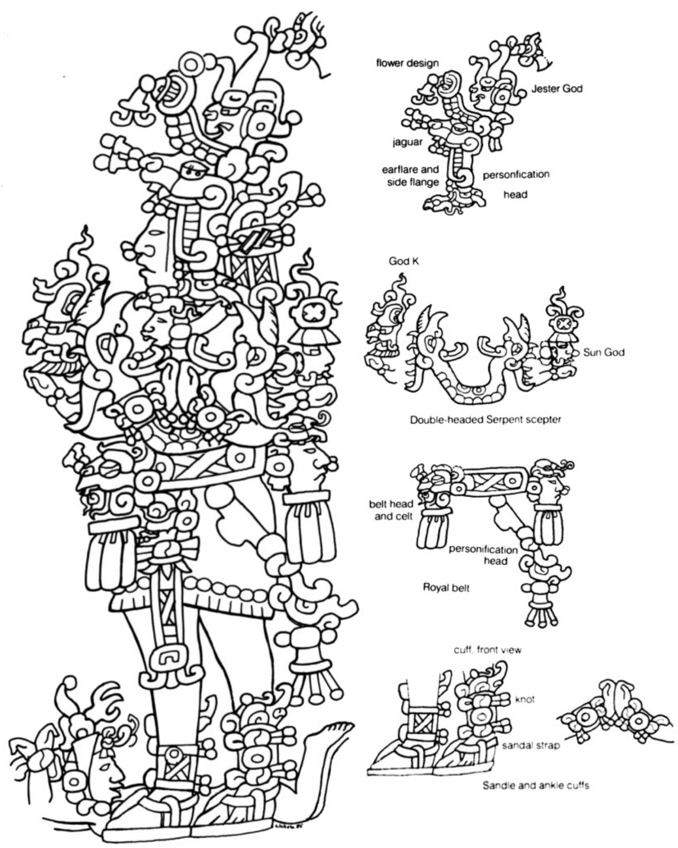


Figure 7.13: Drawing of the Leiden Plaque. The front is incised with a portrait of Moon Zero Bird in full costume of Maya king with elements of the royal costume broken out (Schele2006, 2007©FAMSI)

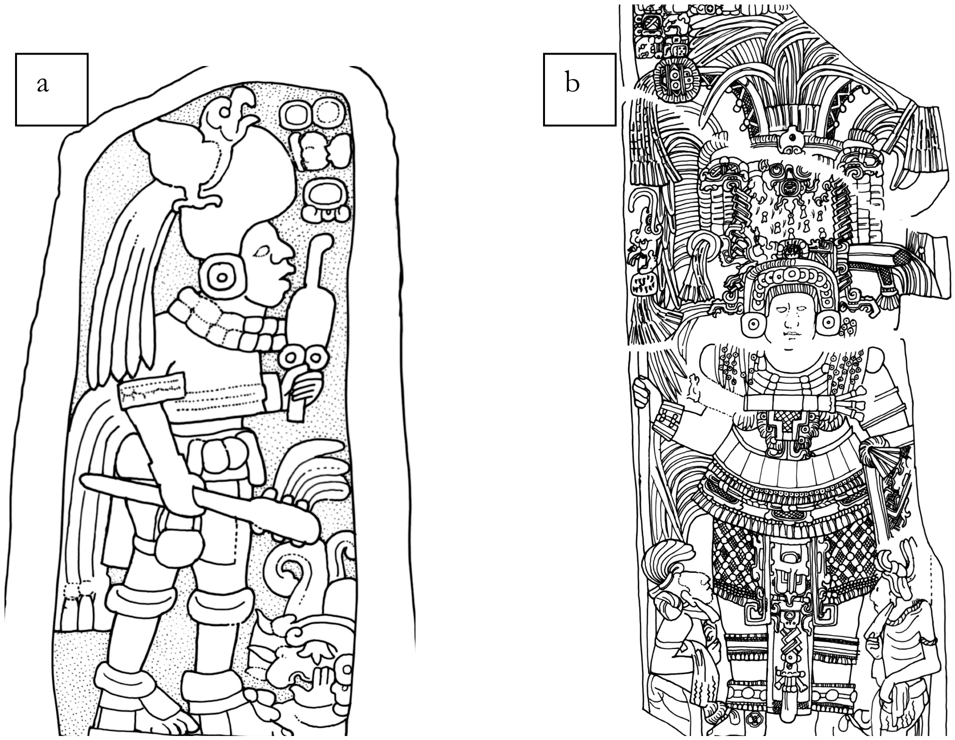


Figure 7.14: a) Stela 5 at Uaxactun depicting Smoking Frog in the first visual representation of the Tlaloc-Venus warrior costume (Schele6604©FAMSI); 4:15); b) Stela 8 at Piedras Negras with a Late Classic versions of the Tlaloc war costume (Schele6108©FAMSI)

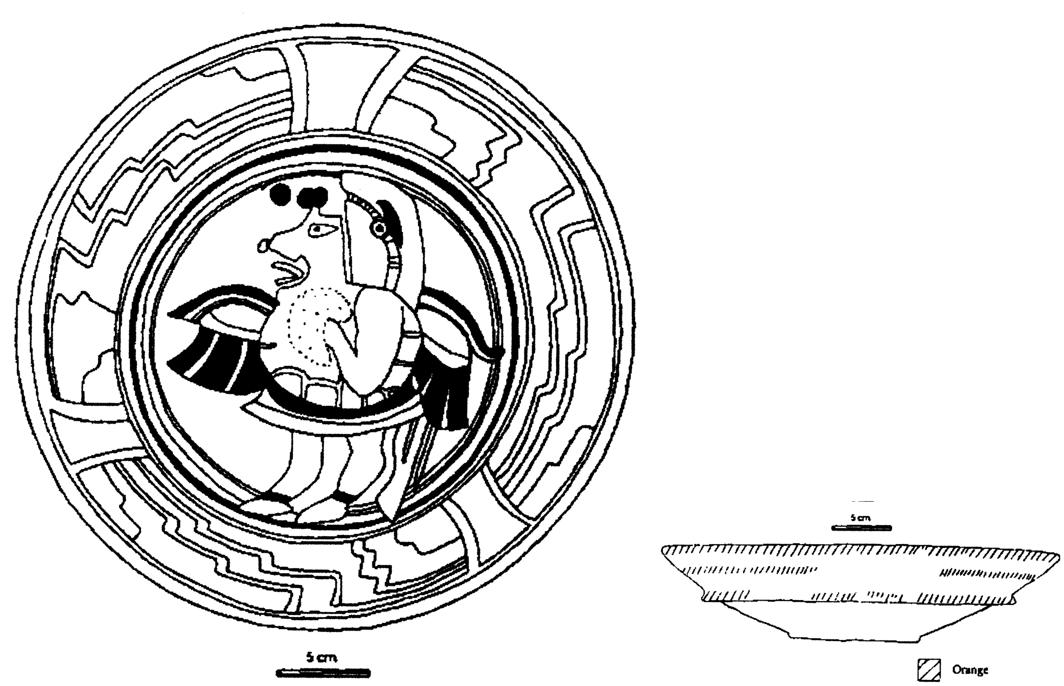


Figure 7.15: Tituc polychrome from Burial 24, Str. 6F-4 at Yaxuna. The male figure wears a Teotihuacán-influenced macaw headdress and coyote tails, elements of Tlaloc-venus warrior costume (after Suhler et al 1998a:fig. 9)

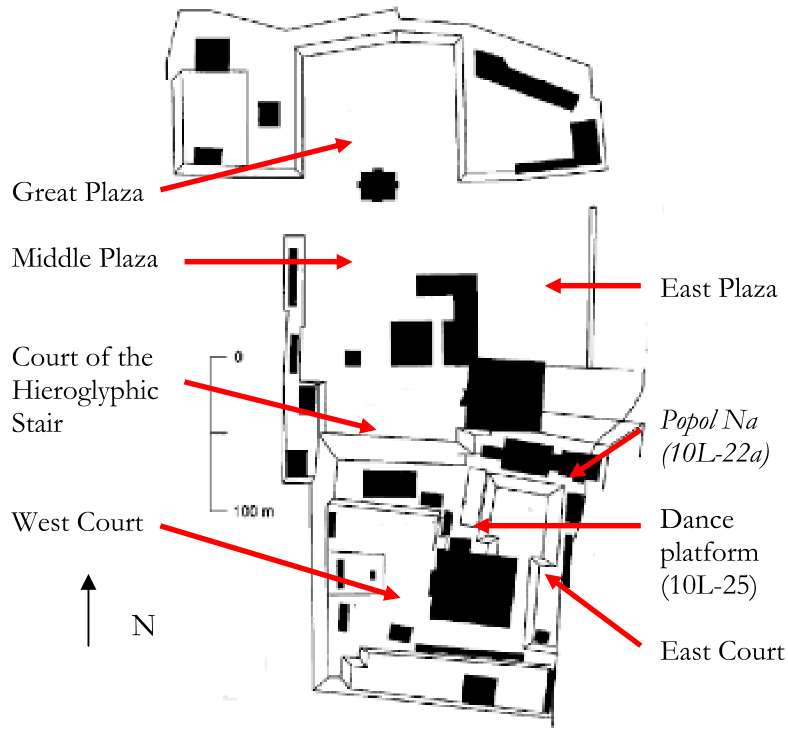


Figure 7.16: Map of Copan (after Inomata 2006:fig. 5)

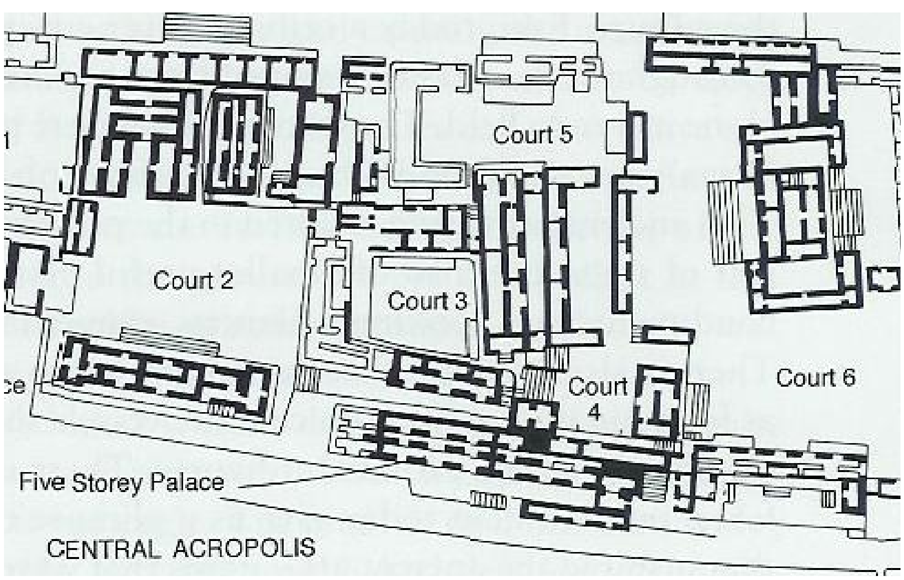


Figure 7.17: Portion of the Central Acropolis at Tikal. Note highly restricted access pattern (adapted from Harrison 1999:fig. 6)

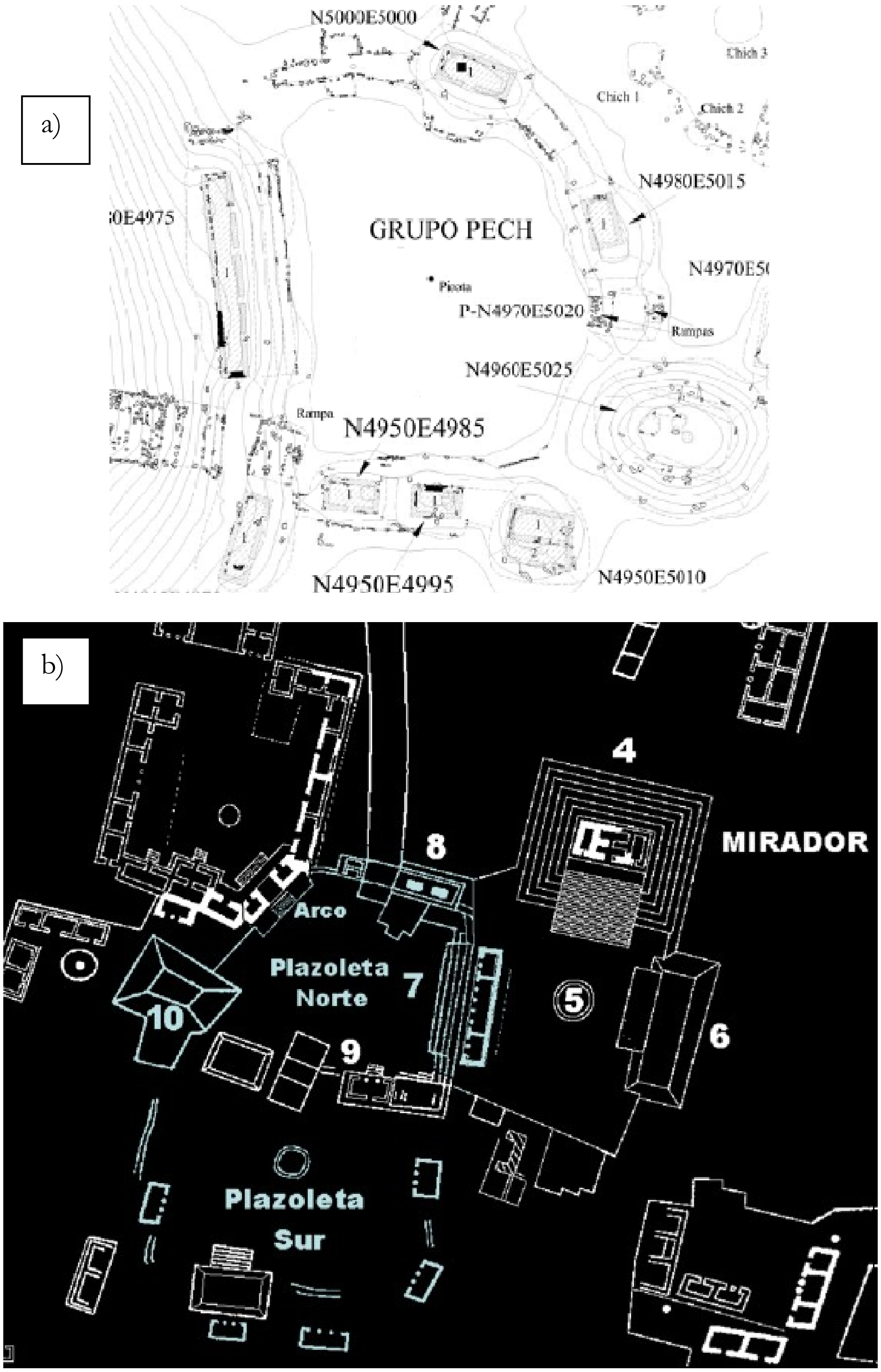
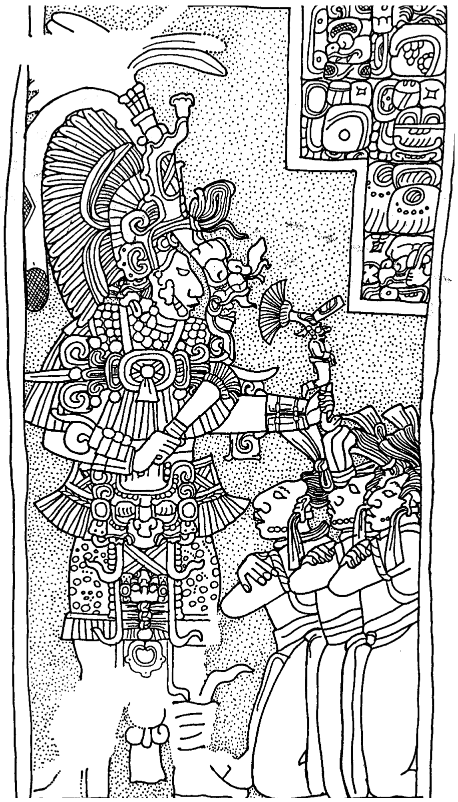


Figure 7.18: An example of the Early Puuc Civic Ceremonial complex (EPCC) at Huntichmul (a) and Labna (b) (maps courtesy of Dr. William Ringle)

a



b

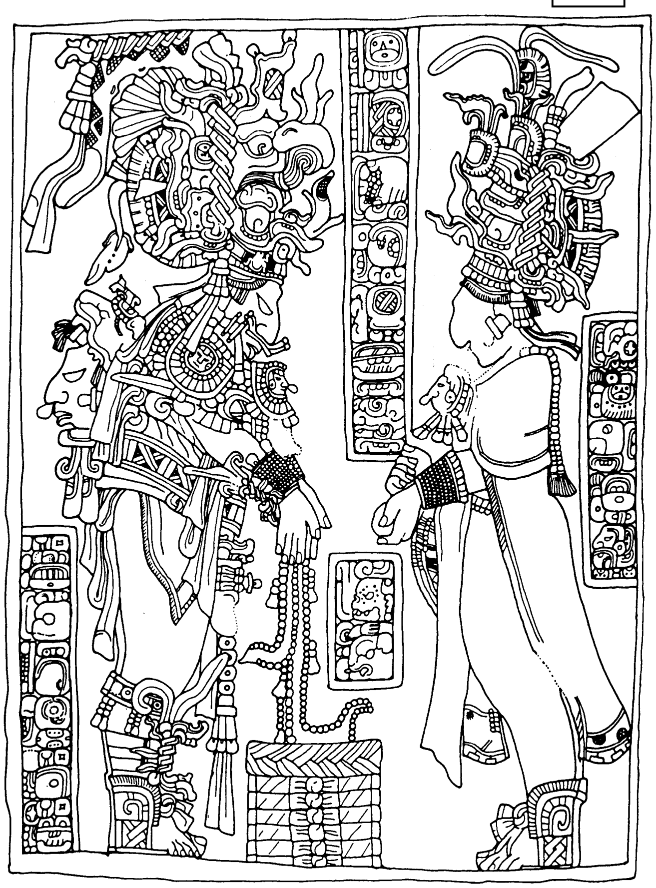


Figure 7.19:

a) Stela 11 from Yaxchilan showing Bird Jaguar wearing ritual costume of Maya ruler (after Schele and Miller 1986:214, fig. V.5a);

b) Lintel 2 from La Pasadita showing Bird Jaguar and his *cahal*. Bird Jaguar wears an elaborate costume while the *cahal* wears a long cape and loincloth (Schele6221 ©FAMSI)

Figure 7.20: Architectural representations on ceramics. a) Dance ritual taking place in a multi-room palace (K4120© Justin Kerr); b) Rulers sitting on thrones in temples (in profile)(K4577© Justin Kerr)

Figure 7.21: Polychrome vessels depicting structures being used as seating for ritual events (a) K1229© Justin Kerr; (b) K511© Justin Kerr)

TABLE FOR CHAPTER SEVEN

Table 7.1: Middle and Late Preclassic Round Structures (adapted from Aimers et al 2000:table 1)

Site	Structure	Diameter (m)	Height (m)	Comments
Altar de Sacrificios	Str. 20	2.6	---	Partially exposed
Altun Ha	Str. C-12/3rd A	10	1.3	Two-step stair, 3 burials, caches
Altun Ha	C-12/4th	8-8.5	46 cm	14 burials, 2 caches, postholes
Barton Ramie	BR-44 Cut 4	---	---	on top of midden
Becan	Small platform	---	---	Fully exposed platform
Becan	Str. 7E-346	3	80 cm	Crude foundation wall
Becan	Round Str. #1	4.5	15 cm	Capped with thick coast of plaster
Becan	Round Str. #2	---	1.5	Polychrome painted walls
Cahal Pech	Str. B-4/7th	---	2-3	Stairway on N side
Cahal Pech	Zotz Str. 2-2nd	3.6	1.2	18 burials, stairway, open platform
Cahal Pech	Tolok Str. 14	9.5	60+ cm	Subsidiary platform, special deposits
Cahal Pech	Tolok Str. 15	5+	50 cm	With courtyard, 2 burials
Chakantun	Circular structures	---	---	Well-preserved building platforms
Chan Chen	Str. F	10.2-10.9	1.8	Circular masonry wall, postholes
Colha	Op. 2011	---	---	Perishable superstructure
Colha	Op. 2012	---	---	Partially exposed
Colha	Op. 2031 Str. I	5	30 cm	Perishable superstructure, 4 burials
Colha	Op. 2031 Str. J	---	---	Step, 2 burials
Colha	Op. 2031 Str. II	3	---	Perishable superstructure
Colha	Op. 2031 Str. III	6	---	Perishable superstructure, fire pits
Colha	Op. 2031 Str. A	---	---	Perishable superstructure, 1 burial
Cuello	Str. 301	5.3	---	Step, 1 burial

Cuello	Str. 304	5 x 6	---	Open platform, special deposits

Table 7.1 continued

Cuello	Str. 305	5.5	50 cm	Open platform, special deposits
Cuello	Str. 306	5	50 cm	Perishable superstructure, 4 burials
Cuello	Str. 309	8.2 x 7.2	---	Domestic
Cuello	Str. 311	6 x 5.4	---	Domestic
Cuello	Str. 322	6.2	15 cm	Small plastered niche, fire pits
Cuello	Str. 327	5.9 x 5.3	20-30 cm	Perishable superstructure, fire pits
Does Hombres	Round Str.	8	60+ cm	Partially exposed, assoc. courtyard, midden
Dzibilchaltún	Str. 605	---	---	Domestic
Dzibilchaltún	2A Platform	4	40+ cm	No doorway
El Mirador	Op. 21H Unit 2	---	---	Partially exposed
Ixac	Round str.	7.7	50 cm	Step
K'axob	Str. 1	---	---	Perishable superstructure, fire pits
K'axob	Str. 1-D	---	---	2 burials
Komchen	Str. 18J-3	---	25 cm	Located beneath rectangular platform
Komchen	Str. 22N-1	---	35 cm	Round masonry superstructure (tower)
Luisville	Round Str.	---	1	Inset stairway, tapered upper diameter
Nakbe	Str. 70	---	---	Painted walls, circa 300 B.C.
Nakbe	Round Str.	---	---	Circa 200 B.C.
Nakbe	Round Str.	---	---	Circa 100 B.C.
Oxkintok	Str. DZ 12	---	---	Subsidiary platform
Río Azul	BA-20 Str. 2	5-6	20cm	Possible perishable superstructure
Uaxactún	Str. E	5.9	30 cm	Keyhole-shaped, subsidiary platform
Uaxactún	Str. F	5.79	30 – 45 cm	Keyhole-shaped, subsidiary platform
Uaxactún	Str. G	5.5	---	Dumb-bell-shaped
Xculul	Str. 226 (wall 9)	4.5	---	Child urn burial
Yaxuna	Str. 6E-53	15-17	3	Subterranean passages

CHAPTER VIII

DISCUSSION AND CONCLUSIONS

8.1 Summary and General Conclusions

The previous seven chapters are aimed at answering the three questions below:

1) How can the relationship between the built environment and human behavior be analyzed in ancient societies?

2) What strategies did Maya elites employ in manipulating the built environment, especially non-domestic architecture, to legitimize and expand their power and authority? In other words, what suite of architectural elements was used to encode ideology and do the elements of this suite change over time?

3) Finally, what do these spatial patterns suggest about the nature of the associated performances and the interrelationship of these rituals and power in Maya society?

In order to address these questions, architecture must be approached as more than a tool through which elites expressed their control of material and human resources. Instead, we must approach the built environment as a symbol that communicates meaning and is a physical manifestation of social relationships and boundaries. Although the built environment plays an important role in shaping our daily lives and social interactions, this has only recently been acknowledged by archaeology as a discipline, and Mayanists in particular (e.g. Inomata and Houston (eds) 2006; Knapp and Ashmore 1999). This is due in part to the problems associated with trying to study human behavior through material remains, particularly the experiential components of moving through, and interacting within, a place. In contrast, other disciplines have been exploring the role of architecture in structuring social relationships and the production of meaning for decades. One influential approach is the work of Michel Foucault (1977), which addresses how the control and monitoring of movement of bodies through space by architecture structures power relations. While his work establishes that buildings are important in structuring movement and interaction, structuration theory, developed by Anthony Giddens (1984) links this control to the production and reproduction of social structures. The combination of the two approaches by Foucault and Giddens establishes the built environment as more than just the physical backdrop or context of social interactions. Rather, it is an integral component of social interaction and plays a role in the development of social positions and identities. In other words, users create the built environment as a material expression of their own ideology and power, allowing archaeologists to use these cues in order to make inferences about behavior in ancient societies.

For the ancient Maya, non-domestic architecture and the rituals and public performances associated with this architecture were an important means through which elites displayed and reinforced their power (e.g. Childe 1951; Freidel and Schele 1988; Inomata 2006; Lucero 2003, 2006; Ringle 1999; Schele and Freidel 1990). As described in Chapter 4, two aspects of ritual were crucial in the propagation and naturalization of elite authority: their ability to foster a sense of community and the legitimization of ideology by establishing it in relation to the perceived values and order of the cosmos (Bell 1997:129). They help promote a sense of integration because both participants and spectators can recognize and interpret the messages conveyed through their shared cultural framework, or habitus (Bell 1992, 1997:129; Bourdieu 1977; Triadan 2006:160).

Within a performance, there are levels of knowledge- e.g. specialists with the expertise and authority to conduct the ritual ceremonies or spectators with no special knowledge. The stratification of involvement lends itself to the assumption of positions of power by certain groups or individuals, constructing 'relationships of authority and submission' (Bell 1992:130-140; 1997:82; DeMarrais et al 1996; Fisher 2007; Giddens 1984; Inomata and Coben 2006; Plog 1995; Plog and Solometo 1996; Triadan 2006:160-161). The emergence of deified rulers over time is an example of how early elites or specialists modified traditional social structures through practice and agency.

An important part of the ancient rituals and performance were the sensory qualities associated with them- whether from visual props like costumes or masks, auditory signs such as music, or the olfactory effects of incense (Grube 1992; Triadan 2006:167-168). Archaeologically, it is impossible to directly study the sensory component of rituals, so associated material remains are used to help reconstruct these aspects. The remains of structures are the most common physical evidence of ancient rituals in the Maya area and, as has been demonstrated previously, elements of the built environment were critical to the effects or outcome of the overall performance (Fisher 2007; Giddens 1984; Inomata 2006; Rapoport 1988, 1990a; Triadan 2006:167-168). The dynamic relationship between ritual, power, and the built environment is a cloudy one at best but can be explored through certain architectural elements including: ambientality, proximity to the ground, and location within a site (Bachand and Bachand 2005; Dovey 1999:15-16; Rapoport 1980, 1988, 1990a).

8.2 Space Syntax Analysis and the Nonverbal Communication Approach: General Comments

Because hieroglyphic and iconographic evidence from the Puuc is rare, the integrated approach provides a valuable tool to analyze the ways in which the built environment influenced social production. The built environment divides contiguous space into interconnected units, creating relationships of accessibility and visibility within these units. These spatial relationships influence the nature and types of social encounters that occur within them, constructing a link between architectural function and social meaning. As a result, certain spatial configurations and types of spaces are more likely to promote certain categories of social encounters (Bafna 2003:18; Ferguson 1996:11-12; Fisher 2007:70). The application of these approaches to the Kiuic dataset draws out information about the spaces of the Yaxche Group that would have otherwise gone unnoticed. The analysis of the spaces using this method has also reinforced our conclusions about the function of certain spaces within the group, created from excavation data. Using the combination of access analysis and nonverbal communication, the integrated approach provides a unique approach to the study of behavior in ancient societies.

8.3 Application of the Integrated Approach to the Yaxche Group: Conclusions

The application of the integrated approach to the Yaxche Group presents interesting insights into which spaces within the group were more likely to host social occasions. As described in Chapter five, the Yaxche Group underwent four construction episodes that significantly altered the spatial properties of the group and would have impacted the social interactions that occurred within it. The following presents a chronological summary of the data and general conclusions formed from the application of both access analysis and nonverbal communication, focusing on Plazas Dzunun and Ulum. It will be followed by a brief discussion of the value of, and problems associated with, using this approach in the Puuc region.

Middle and Late Preclassic The heart of the Yaxche Group, Plaza Dzunun, appears to have been an important 'place' from the very beginnings of the Kiuic community. During the Middle Preclassic, it was occupied by low, free-standing platform and surrounded by residential platforms. The surface of the platform appears to have been free of superstructures and would be have easily accessible, both visually and physically, to all community members. The dimensions of the platform indicate that it could have accommodated as many as 60 people, which is on the smaller end of the public-far proxemic class (Table 6.3). At this 'intimate' distance, it would have been possible for spectators to see the eyes and subtle facial expressions (or mask expressions) of actors and a regular speaking voice would have been audible. While iconographic and comparative research suggests that the primary focus of rituals during this period was communal integration, the dichotomy found in later periods is already in evidence. While all participants in a ritual have the cultural knowledge needed to interpret the event, only the actors have the specialized ritual knowledge needed to actually perform the rites. As described in Chapter four, this division lends itself to social stratification and allows actors to assume positions of power and control (Inomata 2006:210-212; Plog 1995; Plog and Solometo 1996; Triadan 2006:160-161). All of the spatial characteristics suggest that rituals or public performances involved a large part of the community as both spectators and actors and that the platform itself was an accessible, public place.

During the Late Preclassic period, emerging elite took advantage of the dichotomy inherent in rituals and began to use their specialized ritual knowledge to increase their sociopolitical 'power'. The growing distinction between actors and spectators is supported by the architecture, iconography and material remains found throughout the Maya lowlands. At Kiuic during this period, structures were added to the eastern and southern sides of the platform, giving a new dimension to the rituals or performances enacted on the Dzunun platform. The occupancy of the platform more than triples (to 203) perhaps compensating for the fact that spectators were now occupying the plaza itself rather than the ground surrounding the plaza (Table 6.3).

Additionally, performers are now able to withdraw and perform portions of the ritual in private, marking the introduction of a 'private' component within 'public' rituals. I would argue that there is yet another level of performance involved, which is actually semi-private. Ethnographic evidence supports this assumption by demonstrating that in some modern-day rituals, when elders withdraw to perform 'private' rituals as part of a larger public ceremony, those left behind are fully aware of the actions these elders are performing (i.e. 'semi-private'). The advent of semi-private ritual is exemplary of how the inherent dichotomy within ritual can be used to promote individual power or prestige. The evidence at Kiuic suggests that the semi-private component of ceremonies first appears during this period and continues to evolve throughout the remainder of site's history.

Early and Middle Classic The modifications to the Dzunun platform made during the Early Classic indicate that access to this sacred area continues to be more restricted, both physically and visually. The construction of a structure in the north, whose function is not clearly understood, and the creation of a 3.5 meter high terraced platform in the south radically change the spatial characteristics of the platform. The *Popol Na* in the south is a long, one room structure that sits on a low platform with a stairway composed of four low, wide risers. These features indicate the interior of the building would have been highly visible from the platform floor and the stairway could have been used to provide extra seating or a 'stage' during ritual events. Although the exact form of the *Popol Na*-sub is unknown, the Early Classic form remains in use throughout the remainder of the history of the group, which is important because it suggests a functional continuity of the area. Beginning in the Middle Preclassic, the area served as a locus for ritual activity and gradually incorporated political functions as well. Ethnohistorical documents support the idea that ritual and politics were functionally intertwined among the Maya through the office of the *holpop*, the master of the *popol na*. The *popol na*, or mat house, was where political matters were discussed and dances performed and that it was the master of the mat house (*holpop)* who was in charge of these ceremonies (Motul dictionary Martínez Hernández 1929; Roys 1939; 1943:63).

I would suggest it is during this period that Maya elite had accumulated enough power to replace traditional, community-oriented rituals with both public-inclusive and private-exclusive rites (Lucero 2006:23). Iconographic and material remains support the existence of at least two distinct social groups during this period and the use of plazas in front of the *popol na* (or similar-function structures) would have facilitated semi-private rituals. Ethnohistorical evidence again corroborates this by describing the areas in front of the *popol na* as stages for certain dances and festivals that were more exclusive than those occurring in the large town plazas (e.g. Barrera V. 1965). While the pre-Colonial Maya did not have town plazas per se, they did have analogous spaces, such as the Great Plazas at Tikal or Copan. Rituals performed in these spaces would have incorporated a much larger segment of the community or 'public' than those in the East and West Courts at Copan, for example (Inomata 2006).

Late and Terminal Classic The third transformation of the Dzunun platform is perhaps the most drastic from an architectural or spatial point of view. It is during this period that the platform is incorporated into an elite residential group. The inhabitants of this group now have complete control over access to this once public civic-ceremonial platform.

Because we have a complete architectural plan of the group during this period, it is now possible to perform access analysis in order to supplement the nonverbal communication data. The application of this approach generated both unique information for the spaces within the group and reinforced our conclusions regarding the functions of other spaces. Access analysis generates information regarding access patterns between spaces within the group, relationships which are not readily apparent from excavations or observation. One of the first things that becomes apparent when looking at the depth of spaces within the group is that distinct patterns of accessibility emerge depending on which 'entrance' a person used. Excavations indicate that access to the Yaxche Group was relatively restricted and that there was one formal and one informal entrance (although it is possible there were two informal entrances) to the group during the Late and Terminal Classic periods (Figures 6.4, 6.6). In Chapter six, I compared them to a front door (formal entry) and back door (informal entry) in modern architectural plans.

Depending on which entrance a person used, the step depths of areas within the group changes; for example, if one used the front door-entrance, it was much easier to reach Plaza Dzunun or Ulum in comparison to Patio B. Conversely, if one entered through the back door-entrance, the activity areas of the group such as Plaza Icim Norte or Patio B are shallower than the civic-ceremonial areas. This suggests that the locations of these two entrances were chosen specifically to provide easier access to 'relevant' areas of the group. The formal entrance would have been reserved for special occasions or important visitors when a short, direct path to the civic-ceremonial plazas was desired.

In addition to the depth of spaces, two other syntactic variable (control and real relative asymmetry values) were used gain insight into how spaces were integrated into the built environment. Again, these two variables allow us to make inferences about the use and function of spaces that are not readily apparent using other means of analysis. It is the combination of all three indices, also known as the interaction potential (IP), which predicts the likelihood of social interaction to occur. One of the most recognizable trends in the data is the distinction between the interaction potential rooms and open areas (patios and plazas).

The general pattern that emerges for the rooms is that they are less integrated into the global pattern of movement (they have high RRA values) and exert little control over neighboring spaces (low CV values)(Tables 6.4, 6.8). Together, these values mean that the rooms have a lower IP than the open spaces and were less likely to be loci of social interaction. The values of individual rooms tend to cluster by patio and when the averages of each group were compared, the rooms around Plaza Dzunun had the highest interaction potential. This suggests that, when all rooms were compared, these rooms were the most likely to host social interaction. These values make sense in light of ethnohistoric and iconographic evidence that indicates rooms around a ceremonial plaza were often used in conjunction with ceremonies performed on the plaza. The IP of the rooms surrounding Plaza Dzunun support its identification (using the nonverbal elements of communication) as an important public-inclusive ceremonial area within the group. In contrast, the rooms in Plaza Ulum all have very low IP values and suggest that they were designed to be inaccessible. The elements of nonverbal communication combine with these values to suggest that Plaza Ulum was most likely to have hosted small, private social gatherings. The rooms around Ulum were not meant to be used in conjunction with events on the plaza floor.

When the data for the open spaces is considered, it becomes evident that the group was designed around these patios and plazas as the centers of social interaction. Their IP consistently ranks higher than those of the rooms (Appendix A) and indicates that they are much better integrated into global patterns of movement. Additionally, they exert significantly more control over neighboring spaces than any of the individual rooms. In other words, the open spaces of the Yaxche Group were the center of social activity in the group. The high IP of Dzunun indicates it was the most important space in terms of social interaction lends further support to its identification as the civic-ceremonial center of the group. Plaza Ulum presents a very different set of values, but they are consistent with its identification as the private, ritual area of Yaxche inhabitants. Elements of nonverbal communication such as the altars and stelae located in Plaza Ulum provide additional clues suggesting the types of social occasions that occurred within Ulum were religious in nature rather than civic, as would have been the case in Dzunun. Nonverbal communication also indicates that the social occasions that occurred in these open spaces were significantly larger than those of the rooms (with an average occupancy of 203 persons for the open spaces versus 4 for the rooms; Tables 6.5, 6.8). While the identification of the plazas and patios as loci for social interaction is neither a surprising nor original conclusion, it demonstrates access analysis is a valid method that produces reliable results in analyzing behavior in the built environment.

8.4 Problems Associated with the Integrated Approach

The application of the integrated approach to the data from the Yaxche Group highlights several methodological and theoretical problems associated it. Perhaps the two of the most important limitations of access analysis are: while it is a powerful means of identifying spatial similarities and differences among structures, it does not in itself explain those structures; and it ignores decorative and stylistic elements of architecture, as well as the various artifacts and features that are vital components of the overall context in which interaction occurs (Boast 1987:452-4; Ferguson 1996:22-23; Fisher 2007:81; Taylor 2002).

A final area where access analysis comes up short with respect to archaeological data is taking into consideration the processes of decay or abandonment that alter the built environment. For example, in the late Terminal Classic when several entrances of the *Popol Na* are sealed and the Palace is converted into a large pyramid, very little changes syntactically (Table 6.9). The architectural modifications of the group during this period are primarily directed at modifying existing structures in ways that do not change the number of individual spaces within the group and, as a result, the interaction potential of each space changes very little if at all. In contrast, the elements of nonverbal communication indicate the group underwent a radical transformation that most likely included its cessation as a residence. The sealing of several doorways in the *Popol Na*, the conversion of the Palace into a 17 meter high pyramid and the accumulation of trash in many areas of the group all suggest the function of the group was altered. Additionally, the use of the Depthmap program has its own limitations.

Overall, it is an excellent program in that it fully automates the complex calculations in access analysis but there are several limitations of the software. The most important constraint in relation to the present research is that it does not take into account differences in elevation within the built environment. While this can be 'made up for' using other analytical methods such as isovists or viewsheds (discussed in Section 8.4), to date there is no means for evaluating the effect of topographic differences in the program itself. My second major critique is that Depthmap uses the shortest route to calculate the step depth and paths of movement through a group. As demonstrated in Chapter six, this method does not always provide accurate results because paths of movement are often influenced by elements of the built environment not addressed by access analysis (such as the social meaning or function of spaces). In order to obtain a better idea of the actual path, it is important to look at the relationship of the individual spaces, including relationships of visibility. For example, when the latter are taken into consideration, the step depth values of Plazas Ulum (3) and Dzunun (2) from the informal entrance increase to six and five, respectively. Because it is unlikely that changes to the software itself will be implemented, it is important to address these issues in other ways (such as the use of GIS or isovists).

The use of nonverbal communication helps address several criticism of access analysis, but this approach has its own set of limitations. As in semiotics, nonverbal communication believes that architecture is a product of human action and because of this, it must document this action in some way. In both approaches, architecture is analogous to a text that provides a material record of human actions that can then be 'read' by archaeologists (Grahame 2000:3). The problem for archaeologists is that we are not privy to the rules of the social 'language' that created the nonverbal codes.

The combination of access analysis and nonverbal communication offer one way to explore the behavioral and social cues embedded in the built environment because movement through space is one way in which we can 'read' architecture. Despite the drawbacks of the two approaches, they provide insights into how spaces functioned within the overall architectural plan that might be overlooked using traditional analytical methods. For example, while the open or restricted nature of some spaces (the North Acropolis at Tikal, for example) is evident by examining a map, for most spaces it is not so easy to see. Access analysis not only provides a means by which archaeologists can divide large, open spaces into smaller, functional units but also allows us to quantify and compare the nature of access between spaces.

Perhaps the most valuable contribution of the integrated approach is its ability to predict which spaces within an architectural plan are more likely to host social interaction (based on the interaction potential). The variables used to calculate the interaction potential measure qualities of a space that are not readily apparent otherwise and when combined with elements of nonverbal communication, allow us to predict the types of interaction possible. While certain types of interactions likely to occur in some spaces, such as a popol na or small shrine, can be guessed at without using the integrated approach, for other types of spaces the potential for interaction is less obvious. Therefore the approach generates new data about the latter and can be used to reinforce the interpretation of the former. Overall, while not perfect, the integrated approach provides a novel means through which to explore how agents manipulate the built environment to control social interaction.

8.5 Future Directions

The general conclusions and results highlight several directions that this research could take in order to enhance its effectiveness and provide a better understanding of the complex interrelationship between the built environment, social interaction, and the production of social structures. These improvements are discussed below and can be conceived of as a two-pronged strategy that includes methodological improvements to the integrated approach and an expansion the dataset to be studied.

One important methodological improvement will be to incorporate elements of visual perception into the approach. In its present form, access analysis does not take elevation into account and its treatment of visibility is shallow, despite their importance in structuring the experience between actor and place. Following the approach developed by

Fisher (2007), I feel that the incorporation of isovists and viewsheds into the analyses is the best means of addressing this problem[1]. Isovists indicate how much of the surrounding space is visible from a particular vantage point (Benedikt 1979). It is possible to center an isovist on a feature or part of a space that was likely an important focus of interaction; this would allow me to reconstruct the 'view' of the spectator or the 'view' an actor would have had. It is also possible to create isovist fields, which show the complete range of visibility from all points within a particular space (Tandy 1967). The isovist fields can be coded with concentric circles corresponding to Hall's (1966) proxemic thresholds so that from a particular vantage point within a space, it is possible to see what types of communication were possible (after Fisher 2007:91-94).

The second component is the creation of a viewshed for important places, which is the area that a viewer can see from a specific vantage point (Benedikt 1979). Viewsheds are a subset of an isovist but differ in that they contain a directional component and speak to the experiential aspect of visibility. While visual fields are often included in the syntactical analysis contemporary architecture and behavior (e.g. Bafna 2003; Hanson 1994, 1998), they have been used more sparingly in archeological studies (e.g. Dohm 1996; Moore 1996; Sanders 1984, 1990). Additionally when used in archaeological contexts, it is usually at the regional or inter-site scale and not at the building-group level (Crumley and Marquardt 1990; Wheatley 2004; Wiseman et al. 2007; Zubrow 1990).

The second major methodological improvement will be the use of geographic information systems (GIS) to collect, manipulate, and present data. GIS provides a dynamic, flexible platform that allows archaeologists to integrate, express, analyze, and explore a large

[1] Depthmap does have a program that calculates axial lines (Hillier and Hanson 1984), or lines of sight, within the built environment but after speaking with the creators of the software program, it was decided that it was not possible to apply this analytical method to the architectural plan of the Yaxche Group.

range of spatial and temporal data (Green 1990:5; Lock 2003; Wheatley and Gillings 2000, 2002:18; Wheatley 2004). Currently, archaeologists use GIS most frequently as a tool to study landscape-related questions at the regional level (e.g. Lock and Stancic (eds) 1995; Moore 1996a; Ringle et al. 2003; Ringle et al. 2006; Wheatley and Gillings 2002; Wiseman et al. 2007). I would like to use GIS to analyze data at the intra-site level, including the creation of a database that incorporates the spatial data for all buildings (e.g. Nigro et al. 2003; Moyes 2001; Katsianas et al. 2008). While the BRAP project has an extensive GIS database of the basic architecture plans of structures found at each site mapped by the project, it does not contain any of the information accumulated during excavations. By incorporating architectural plans and the locations of features, artifacts, and ecofactual material into one central database, I would be able to create detailed three-dimensional maps of the various occupational layers of excavated structures. These maps would include the distribution of associated archaeological remains and provide a valuable tool for contextual and diachronic analysis of Maya culture (e.g. Green 1990; Katsianas 2008; Moyes 2005; Nigro et al. 2003).

The second 'prong' addresses expanding the data analyzed in order to create a more holistic study of the relationship between the built environment and behavior in the Maya region. At a very basic level, this project will continue to produce valuable information concerning the occupational history of the Puuc region, which archaeologists are only just beginning to understand. I would like to begin at Kiuic, by conducting a thorough artifact analysis for the material recovered from Plaza Ulum in order to understand how the material remains corroborate (or do not) my conclusions about behavior obtained using access analysis. I would also like to expand the analysis to include how the Yaxche Group is part of the wider site of Kiuic.

In order to arrive at the group, visitors would have had to navigate through the 'urban context' of the site. From a landscape perspective, the role of Maya 'cities' in structuring social interaction needs to be further investigated and analyzed in greater detail. At present, research is focused on regional interaction and inter-site analysis (e.g. Ringle et al. 2005; Ringle et al. 2006; Ringle et al. 2007), while less attention has been paid to how these residential groups function within the general landscape of the site. Finally, I would like to expand my research beyond the site of Kiuic to incorporate the analysis similar groups at other sites in the Puuc in order to better understand the regional patterns in sociopolitical organization as seen through architecture.

In conclusion, the research presented in the preceding chapters is part of a work in progress. As the future directions suggest, it is by no means perfect and contains room for improvement. The incorporation of the visual properties of space and an expansion of the dataset to be analyzed would contribute in rounding out the integrated approach and compose part of the long-term goals of the project. I feel that work presented here establishes that the integrated approach is a valid analytical method that can be used to study the relationship between the built environment, behavior, and social production among ancient societies.

APPENDIX A

Late Classic Interaction Potential of Spaces within Yaxche Group. Patios highlighted in green, platforms in blue.

Space number	RRA	IP	Space Number	Control	Cum total	Cum %	IP	Patios	Step Depth 18	Step Rank	Patios	Step Depth 4b	Step Rank
11b	0.398	high	Dzunun 38	9.883	9.883	17.0%	high	18	0	low	4b	0	low
Dzunun 38	0.403	high	Icim Sur 4a	7.611	17.494	30.0%	high	19	1	low	Icim Sur 4a	1	low
18	0.475	high	11b	4.524	22.018	37.8%	high	24	1	low	9	2	low
Icim Sur 4a	0.480	high	Patio B 26	4.333	26.352	45.2%	med	11b	1	low	8	2	low
11a	0.485	high	12a	4.319	30.671	52.6%	med	12a	1	low	Ramp 5a	2	low
Ramp 5a	0.496	high	Ulum 32	4.071	34.742	59.6%	med	25	1	low	13	2	low
12a	0.506	high	18	3.294	38.037	65.2%	med	23	1	low	1	2	low
19	0.511	high	11a	2.461	40.498	69.5%	med	Patio A 17	1	low	3	2	low
25	0.547	high	49	2.333	42.831	73.5%	med	Dzunun 38	2	low	7	2	low
5b	0.578	high	Ramp 5a	1.488	44.319	76.0%	med	48	2	low	2	2	low
12c	0.589	high	12b	1.444	45.763	78.5%	med	22	2	low	45	2	low
50	0.594	high	11c	1.226	46.990	80.6%	low	14	2	low	11c	2	low
11c	0.640	high	12c	1.133	48.123	82.6%	low	15	2	low	12a	2	low
45	0.651	high	Patio A 17	0.643	48.766	83.7%	low	16	2	low	6	3	med
12b	0.651	high	48	0.611	49.377	84.7%	low	Patio B 26	2	low	10	3	med
Ulum 32	0.651	high	44	0.571	49.948	85.7%	low	20	2	low	Dzunu	3	med

Space number	RRA	IP	Space Number	Control	Cum total	Cum %	IP	Patios	Step Depth 18	Step Rank	Patios	Step Depth 4b	Step Rank
											n 38		
39	0.661	high	19	0.554	50.502	86.6%	low	21	2	low	14	3	med
44	0.661	high	50	0.550	51.052	87.6%	low	Icim Sur 4a	2	low	15	3	med
20	0.687	high	1	0.533	51.585	88.5%	low	11a	2	low	16	3	med
21	0.687	high	5b	0.521	52.106	89.4%	low	12b	2	low	18	3	med
22	0.687	high	25	0.443	52.549	90.1%	low	12c	2	low	19	3	med
40	0.692	med	10	0.393	52.942	90.8%	low	45	2	low	48	3	med
41	0.692	med	47	0.393	53.335	91.5%	low	Ulum 32	3	med	11a	3	med
42	0.692	med	46	0.343	53.678	92.1%	low	51	3	med	12b	3	med
43	0.692	med	2	0.283	53.961	92.6%	low	42	3	med	5b	3	med
35	0.692	med	39	0.271	54.233	93.0%	low	47	3	med	39	4	med
36	0.692	med	6	0.250	54.483	93.5%	low	36	3	med	12c	4	med
37	0.692	med	45	0.226	54.709	93.8%	low	3	3	med	47	4	med
51	0.692	med	27	0.200	54.909	94.2%	low	10	3	med	24	4	med
10	0.707	med	28	0.200	55.109	94.5%	low	35	3	med	40	4	med
9	0.723	med	29	0.200	55.309	94.9%	low	27	3	med	46	4	med
2	0.733	med	30	0.200	55.509	95.2%	low	28	3	med	41	4	med
1	0.733	med	31	0.200	55.709	95.6%	low	29	3	med	42	4	med
49	0.744	med	33	0.200	55.909	95.9%	low	30	3	med	43	4	med
46	0.749	med	34	0.200	56.109	96.2%	low	9	3	med	44	4	med
47	0.754	med	52	0.200	56.309	96.6%	low	13	3	med	35	4	med
Patio A 17	0.754	med	23	0.143	56.452	96.8%	low	50	3	med	36	4	med
23	0.764	med	24	0.143	56.594	97.1%	low	43	3	med	37	4	med
24	0.764	med	14	0.111	56.705	97.3%	low	41	3	med	11b	4	med
13	0.769	med	15	0.111	56.816	97.5%	low	37	3	med	49	4	med

Space number	RRA	IP	Space Number	Control	Cum total	Cum %	IP	Patios	Step Depth 18	Step Rank	Patios	Step Depth 4b	Step Rank
3	0.769	med	16	0.111	56.927	97.7%	low	39	3	med	50	4	med
7	0.769	med	20	0.100	57.027	97.8%	low	40	3	med	51	4	med
8	0.769	med	21	0.100	57.127	98.0%	low	2	3	med	23	4	med
4b	0.769	med	22	0.100	57.227	98.2%	low	7	3	med	25	4	med
6	0.785	low	4b	0.083	57.311	98.3%	low	8	3	med	Ulum 32	4	med
48	0.785	low	3	0.083	57.394	98.5%	low	46	3	med	Patio A 17	4	med
14	0.795	low	7	0.083	57.477	98.6%	low	4b	3	med	31	5	high
15	0.795	low	8	0.083	57.561	98.7%	low	Ramp 5a	3	med	Patio B 26	5	high
16	0.795	low	13	0.083	57.644	98.9%	low	11.c	3	med	33	5	high
Patio B 26	0.795	low	9	0.083	57.727	99.0%	low	1	3	med	52	5	high
31	0.940	low	35	0.071	57.798	99.1%	low	5b	4	high	22	5	high
33	0.940	low	36	0.071	57.869	99.3%	low	31	4	high	34	5	high
34	0.940	low	37	0.071	57.940	99.4%	low	34	4	high	20	5	high
52	0.940	low	40	0.071	58.011	99.5%	low	44	4	high	21	5	high
27	1.084	low	41	0.071	58.082	99.6%	low	52	4	high	27	6	high
28	1.084	low	42	0.071	58.153	99.8%	low	6	4	high	29	6	high
29	1.084	low	43	0.071	58.224	99.9%	low	49	4	high	30	6	high
30	1.084	low	51	0.071	58.295	100.0%	low	33	4	high	28	6	high

APPENDIX B

Terminal Classic Interaction Potential of Spaces within Yaxche Group. Plazas in green, platforms in blue.

Space Number	RRA	IP	Space Number	Control	Cum total	Cum %	IP	Patios	Steph Depth 18	Step Rank	Patios	Steph Depth 4b	IP
Dzunun 38	0.423	high	Dzunun 38	9.976	9.976	18.5%	high	18	0	low	4b	0	low
11b	0.429	high	Icim Sur 4a	7.611	17.587	32.6%	high	17	1	low	4a	1	low
Icim Sur 4a	0.463	high	Patio B 26	4.333	21.921	40.6%	high	19	1	low	9	2	low
18	0.491	high	12a	4.319	26.240	48.6%	med	23	1	low	8	2	low
Ramp 5a	0.503	high	18	3.337	29.577	54.8%	med	24	1	low	5a	2	low
11a	0.503	high	Ulum 32	3.071	32.648	60.5%	med	25	1	low	13	2	low
12a	0.503	high	11a	2.504	35.152	65.1%	med	11b	1	low	1	2	low
19	0.531	high	49	2.333	37.486	69.4%	med	12a	1	low	3	2	low
25	0.571	high	11b	1.524	39.010	72.2%	med	14	2	low	7	2	low
5b	0.594	high	Ramp 5a	1.488	40.498	75.0%	med	15	2	low	2	2	low
12c	0.617	high	12b	1.444	41.942	77.7%	med	16	2	low	45	2	low
50	0.623	high	11c	1.226	43.168	79.9%	med	26	2	low	11.c	2	low
11c	0.651	high	12c	1.176	44.344	82.1%	med	38	2	low	12a	2	low
12b	0.663	high	Patio A 17	0.643	44.987	83.3%	low	45	2	low	6	3	med
45	0.663	high	48	0.611	45.598	84.4%	low	48	2	low	10	3	med
Ulum 32	0.686	high	19	0.597	46.195	85.5%	low	11a	2	low	38	3	med
44	0.686	high	50	0.593	46.788	86.6%	low	12b	2	low	14	3	med
39	0.686	high	5b	0.521	47.310	87.6%	low	12c	2	low	15	3	med

Space Number	RRA	IP	Space Number	Control	Cum total	Cum %	IP	Patios	Steph Depth 18	Step Rank	Patios	Steph Depth 4b	IP
1	0.720	med	25	0.486	47.795	88.5%	low	4a	2	low	16	3	med
2	0.720	med	10	0.393	48.188	89.2%	low	1	3	med	18	3	med
35	0.720	med	47	0.393	48.581	90.0%	low	2	3	med	19	3	med
36	0.720	med	46	0.343	48.924	90.6%	low	3	3	med	48	3	med
37	0.720	med	9	0.333	49.257	91.2%	low	7	3	med	11a	3	med
40	0.720	med	1	0.283	49.540	91.7%	low	8	3	med	12b	3	med
41	0.720	med	2	0.283	49.824	92.3%	low	9	3	med	5b	3	med
42	0.720	med	44	0.271	50.095	92.8%	low	10	3	med	39	4	med
43	0.720	med	39	0.271	50.367	93.3%	low	13	3	med	12c	4	med
53	0.720	med	6	0.250	50.617	93.7%	low	27	3	med	47	4	med
9	0.726	med	31	0.250	50.867	94.2%	low	28	3	med	24	4	med
10	0.726	med	33	0.250	51.117	94.7%	low	29	3	med	40	4	med
49	0.754	med	34	0.250	51.367	95.1%	low	30	3	med	46	4	med
4b	0.760	med	45	0.226	51.593	95.5%	low	32	3	med	41	4	med
3	0.760	med	27	0.200	51.793	95.9%	low	35	3	med	42	4	med
7	0.760	med	28	0.200	51.993	96.3%	low	36	3	med	43	4	med
8	0.760	med	29	0.200	52.193	96.7%	low	37	3	med	44	4	med
13	0.760	med	30	0.200	52.393	97.0%	low	39	3	med	35	4	med
46	0.771	med	23	0.143	52.536	97.3%	low	40	3	med	36	4	med
Patio A 17	0.777	low	24	0.143	52.678	97.6%	low	41	3	med	37	4	med
47	0.777	low	14	0.111	52.789	97.8%	low	42	3	med	11b	4	med
48	0.789	low	15	0.111	52.900	98.0%	low	43	3	med	49	4	med
23	0.789	low	16	0.111	53.011	98.2%	low	46	3	med	50	4	med
24	0.789	low	4b	0.083	53.095	98.3%	low	47	3	med	53	4	med
6	0.800	low	3	0.083	53.178	98.5%	low	50	3	med	23	4	med
14	0.800	low	7	0.083	53.261	98.6%	low	51	3	med	25	4	med
15	0.800	low	8	0.083	53.345	98.8%	low	11c	3	med	32	4	med

Space Number	RRA	IP	Space Number	Control	Cum total	Cum %	IP	Patios	Steph Depth 18	Step Rank	Patios	Steph Depth 4b	IP
16	0.800	low	13	0.083	53.428	98.9%	low	4b	3	med	17	4	med
Patio B 26	0.823	low	35	0.071	53.499	99.1%	low	5a	3	med	31	5	high
31	0.983	low	36	0.071	53.571	99.2%	low	6	4	high	26	5	high
33	0.983	low	37	0.071	53.642	99.3%	low	31	4	high	33	5	high
34	0.983	low	40	0.071	53.714	99.5%	low	33	4	high	34	5	high
27	1.120	low	41	0.071	53.785	99.6%	low	34	4	high	27	6	high
28	1.120	low	42	0.071	53.856	99.7%	low	44	4	high	29	6	high
29	1.120	low	43	0.071	53.928	99.9%	low	49	4	high	30	6	high
30	1.120	low	53	0.071	53.999	100.0%	low	5b	4	high	28	6	high

APPENDIX C

The table below provides a summary of the ceramics found in Ulum organized by group and context. The groups (midden, P1040, platforms, plaza floor, temple, walls-adosada) were created based on the unit and level information for each lot number and represent general areas within Plaza Ulum. In order to explore each group in more detail, the context was created. The forms found within each group and context are listed as well as the number of samples for each form. Each context and form is presented as a percentage of the total ceramic assemblage of Ulum and percentage of each group in relation to the total assemblage is presented.

Group/Context	Form	Number of Sherds	Context as a % of Total	Context as a % of the Group	Group as a % of the Total
Midden - east str	Olla/jar	27	0.90%		
Midden - east str	Cajete/dish	9	0.30%		
Midden - east str	Cazuela/basin	1	0.03%		
Midden - east str	Cuenco/bowl	14	0.47%		
Midden - east str	Other	1	0.03%		
Midden - east str Total		52		4%	
Midden - north str	Olla/jar	79	2.64%		
Midden - north str	Cajete/dish	26	0.87%		
Midden - north str	Cazuela/basin	22	0.73%		
Midden - north str	Cuenco/bowl	58	1.94%		
Midden - north str	Vase	2	0.07%		
Midden - north str	Tecomate	1	0.03%		
Midden - north str	Other	2	0.07%		
Midden - north str Total		190		15%	
Midden - south str	Olla/jar	464	15.49%		
Midden - south str	Cajete/dish	182	6.07%		
Midden - south str	Cazuela/basin	62	2.07%		
Midden - south str	Cuenco/bowl	286	9.55%		
Midden - south str	Vase	10	0.33%		
Midden - south str	Ollita	1	0.03%		
Midden - south str	Incensario	1	0.03%		
Midden - south str	Olla/jarOlla/jar	3	0.10%		
Midden - south str	Other	4	0.13%		

Midden - south str	Olla/jar6	1	0.03%		
Midden - south str	Ollita	2	0.07%		
Midden - south str Total		1016		80%	
Midden - southeast str	Olla/jar	4	0.13%		
Midden - southeast str	Cajete/dish	1	0.03%		
Midden - southeast str	Olla/jar	1	0.03%		
Midden - southeast str	Cazuela/basin	1	0.03%		
Midden - southeast str	Cuenco/bowl	3	0.10%		
Midden - southeast str Total		10		1%	
		1268		100%	42%
P1040 - fill floor 1 plaza	Olla/jar	11	0.37%		
P1040 - fill floor 1 plaza	Cajete/dish	7	0.23%		
P1040 - fill floor 1 plaza	Cazuela/basin	1	0.03%		
P1040 - fill floor 1 plaza	Cuenco/bowl	1	0.03%		
P1040 - fill floor 1 plaza Total		20		38%	
P1040 - fill to bedrock	Olla/jar	2	0.07%		
P1040 - fill to bedrock Total		2		4%	
P1040 - floor 1, plat fill	Olla/jar	5	0.17%		
P1040 - floor 1, plat fill	Cajete/dish	2	0.07%		
P1040 - floor 1, plat fill	Cazuela/basin	1	0.03%		
P1040 - floor 1, plat fill	Cuenco/bowl	2	0.07%		
P1040 - floor 1, plat fill Total		10		19%	
P1040 - plat fill	Olla/jar	13	0.43%		
P1040 - plat fill	Cajete/dish	6	0.20%		
P1040 - plat fill	Cazuela/basin	1	0.03%		
P1040 - plat fill	Cuenco/bowl	1	0.03%		
P1040 - plat fill Total		21		40%	
		53		100%	2%
Platforms - P1 adosada fill	Olla/jar	7	0.23%		
Platforms - P1 adosada fill	Cazuela/basin	2	0.07%		
Platforms - P1 adosada fill	Cuenco/bowl	3	0.10%		
Platforms - P1 adosada fill Total		12		2%	
Platforms - P1 adosada surface and fill	Olla/jar	34	1.13%		
Platforms - P1 adosada surface and fill	Cajete/dish	12	0.40%		

Platforms - P1 adosada surface and fill	Cazuela/basin	6	0.20%		
Platforms - P1 adosada surface and fill	Cuenco/bowl	2	0.07%		
Platforms - P1 adosada surface and fill	Ollita	1	0.03%		
Platforms - P1 adosada surface and fill Total		55		8%	
Platforms - P1 derrumbe	Olla/jar	26	0.87%		
Platforms - P1 derrumbe	Cajete/dish	8	0.27%		
Platforms - P1 derrumbe	Cazuela/basin	6	0.20%		
Platforms - P1 derrumbe	Cuenco/bowl	13	0.43%		
Platforms - P1 derrumbe	Vase	1	0.03%		
Platforms - P1 derrumbe	Incensario	3	0.10%		
Platforms - P1 derrumbe	Olla/jarOlla/jar	1	0.03%		
Platforms - P1 derrumbe	Other	2	0.07%		
Platforms - P1 derrumbe Total		60		9%	
Platforms - P1 extension fill	Olla/jar	9	0.30%		
Platforms - P1 extension fill	Cajete/dish	6	0.20%		
Platforms - P1 extension fill	Cazuela/basin	3	0.10%		
Platforms - P1 extension fill	Cuenco/bowl	7	0.23%		
Platforms - P1 extension fill	Other	1	0.03%		
Platforms - P1 extension fill Total		26		4%	
Platforms - P1 fill	Olla/jar	26	0.87%		
Platforms - P1 fill	Cajete/dish	8	0.27%		
Platforms - P1 fill	Cazuela/basin	5	0.17%		
Platforms - P1 fill	Cuenco/bowl	8	0.27%		
Platforms - P1 fill	Incensario	1	0.03%		
Platforms - P1 fill Total		48		7%	
Platforms - P1 fill below sub	Olla/jar	7	0.23%		
Platforms - P1 fill below sub	Cajete/dish	3	0.10%		
Platforms - P1 fill below sub	Cazuela/basin	2	0.07%		
Platforms - P1 fill below sub	Cuenco/bowl	1	0.03%		
Platforms - P1 fill below sub Total		13		2%	
Platforms - P1 surface	Olla/jar	4	0.13%		
Platforms - P1 surface	Cazuela/basin	1	0.03%		
Platforms - P1 surface	Cuenco/bowl	2	0.07%		
Platforms - P1 surface	Incensario	2	0.07%		

Platforms - P1 surface Total		9		1%	
Platforms - P1, postaband	Olla/jar	7	0.23%		
Platforms - P1, postaband	Cazuela/basin	2	0.07%		
Platforms - P1, postaband	Cuenco/bowl	2	0.07%		
Platforms - P1, postaband Total		11		2%	
Platforms - P1, surface and fill	Olla/jar	20	0.67%		
Platforms - P1, surface and fill	Cajete/dish	3	0.10%		
Platforms - P1, surface and fill	Cazuela/basin	1	0.03%		
Platforms - P1, surface and fill	Cuenco/bowl	8	0.27%		
Platforms - P1, surface and fill	Incensario	1	0.03%		
Platforms - P1, surface and fill	Other	1	0.03%		
Platforms - P1, surface and fill Total		34		5%	
Platforms - P2 derrumbe	Olla/jar	23	0.77%		
Platforms - P2 derrumbe	Cajete/dish	5	0.17%		
Platforms - P2 derrumbe	Cazuela/basin	6	0.20%		
Platforms - P2 derrumbe	Cuenco/bowl	8	0.27%		
Platforms - P2 derrumbe	Vase	1	0.03%		
Platforms - P2 derrumbe	Incensario	5	0.17%		
Platforms - P2 derrumbe	Other	3	0.10%		
Platforms - P2 derrumbe	Olla/jarTecomate	1	0.03%		
Platforms - P2 derrumbe Total		52		8%	
Platforms - P2 fill	Olla/jar	14	0.47%		
Platforms - P2 fill	Cajete/dish	5	0.17%		
Platforms - P2 fill	Cazuela/basin	3	0.10%		
Platforms - P2 fill	Cuenco/bowl	6	0.20%		
Platforms - P2 fill	Tecomate	1	0.03%		
Platforms - P2 fill	Incensario	2	0.07%		
Platforms - P2 fill Total		31		5%	
Platforms - P2 surface	Olla/jar	27	0.90%		
Platforms - P2 surface	Cajete/dish	14	0.47%		
Platforms - P2 surface	Cazuela/basin	11	0.37%		
Platforms - P2 surface	Cuenco/bowl	15	0.50%		
Platforms - P2 surface	Tecomate	1	0.03%		
Platforms - P2 surface	Ollita	1	0.03%		

Platforms - P2 surface	Incensario	1	0.03%		
Platforms - P2 surface	Other	3	0.10%		
Platforms - P2 surface	Ollita	1	0.03%		
Platforms - P2 surface Total		74		11%	
Platforms - P2, on surface	Olla/jar	7	0.23%		
Platforms - P2, on surface	Cajete/dish	1	0.03%		
Platforms - P2, on surface	Cazuela/basin	1	0.03%		
Platforms - P2, on surface Total		9		1%	
Platforms - P2, postaband	Olla/jar	8	0.27%		
Platforms - P2, postaband	Cajete/dish	1	0.03%		
Platforms - P2, postaband	Cazuela/basin	2	0.07%		
Platforms - P2, postaband	Cuenco/bowl	1	0.03%		
Platforms - P2, postaband	Incensario	1	0.03%		
Platforms - P2, postaband	Other	1	0.03%		
Platforms - P2, postaband Total		14		2%	
Platforms - P2, surface and fill	Olla/jar	3	0.10%		
Platforms - P2, surface and fill	Cajete/dish	1	0.03%		
Platforms - P2, surface and fill	Cazuela/basin	1	0.03%		
Platforms - P2, surface and fill	Cuenco/bowl	1	0.03%		
Platforms - P2, surface and fill Total		6		1%	
Platforms - P3 derrumbe	Olla/jar	47	1.57%		
Platforms - P3 derrumbe	Cajete/dish	7	0.23%		
Platforms - P3 derrumbe	Cazuela/basin	8	0.27%		
Platforms - P3 derrumbe	Cuenco/bowl	13	0.43%		
Platforms - P3 derrumbe	Incensario	11	0.37%		
Platforms - P3 derrumbe Total		86		13%	
Platforms - P3 fill	Olla/jar	8	0.27%		
Platforms - P3 fill	Cajete/dish	1	0.03%		
Platforms - P3 fill	Cazuela/basin	1	0.03%		
Platforms - P3 fill	Cuenco/bowl	2	0.07%		
Platforms - P3 fill	Incensario	4	0.13%		
Platforms - P3 fill Total		16		2%	
Platforms - P3 fill, floor 1	Olla/jar	4	0.13%		
Platforms - P3 fill, floor 1	Cajete/dish	1	0.03%		

Platforms - P3 fill, floor 1	Cuenco/bowl	2	0.07%		
Platforms - P3 fill, floor 1 Total		7		1%	
Platforms - P3 surface	Olla/jar	5	0.17%		
Platforms - P3 surface	Cajete/dish	1	0.03%		
Platforms - P3 surface	Cazuela/basin	1	0.03%		
Platforms - P3 surface Total		7		1%	
Platforms - P3, fill floor 1	Olla/jar	16	0.53%		
Platforms - P3, fill floor 1	Cajete/dish	4	0.13%		
Platforms - P3, fill floor 1	Cazuela/basin	2	0.07%		
Platforms - P3, fill floor 1	Cuenco/bowl	4	0.13%		
Platforms - P3, fill floor 1	Ollita	1	0.03%		
Platforms - P3, fill floor 1 Total		27		4%	
Platforms - P3, postaband	Olla/jar	1	0.03%		
Platforms - P3, postaband	Cajete/dish	1	0.03%		
Platforms - P3, postaband	Cazuela/basin	1	0.03%		
Platforms - P3, postaband Total		3		0%	
Platforms - fill Temple A-sub	Olla/jar	2	0.07%		
Platforms - fill Temple A-sub	Cajete/dish	3	0.10%		
Platforms - fill Temple A-sub Total		5		1%	
Platforms - fill above floor 1	Olla/jar	27	0.90%		
Platforms - fill above floor 1	Cajete/dish	5	0.17%		
Platforms - fill above floor 1	Cazuela/basin	8	0.27%		
Platforms - fill above floor 1	Cuenco/bowl	7	0.23%		
Platforms - fill above floor 1	Ollita	1	0.03%		
Platforms - fill above floor 1	Incensario	1	0.03%		
Platforms - fill above floor 1	Other	1	0.03%		
Platforms - fill above floor 1 Total		50		8%	
Platforms - fill of floor 1	Olla/jar	2	0.07%		
Platforms - fill of floor 1	Cajete/dish	1	0.03%		
Platforms - fill of floor 1	Other	1	0.03%		
Platforms - fill of floor 1 Total		4		1%	
Platforms - south wall	Olla/jar	1	0.03%		
Platforms - south wall Total		1		0%	
		660		100%	22%

Plaza Floor – surface collection	Olla/jar	10	0.33%		
Plaza Floor – surface collection	Cazuela/basin	2	0.07%		
Plaza Floor – surface collection	Cuenco/bowl	3	0.10%		
Plaza Floor - surface collection Total		15		2%	
Plaza Floor - derrumbe dividing platform	Olla/jar	10	0.33%		
Plaza Floor - derrumbe dividing platform	Cazuela/basin	4	0.13%		
Plaza Floor - derrumbe dividing platform	Cuenco/bowl	4	0.13%		
Plaza Floor - derrumbe dividing platform	Incensario	1	0.03%		
Plaza Floor - derrumbe dividing platform	Olla/jarOlla/jar	1	0.03%		
Plaza Floor - derrumbe dividing platform Total		20		3%	
Plaza Floor - derrumbe stair-floor 1	Olla/jar	14	0.47%		
Plaza Floor - derrumbe stair-floor 1	Cajete/dish	2	0.07%		
Plaza Floor - derrumbe stair-floor 1	Cazuela/basin	5	0.17%		
Plaza Floor - derrumbe stair-floor 1	Cuenco/bowl	4	0.13%		
Plaza Floor - derrumbe stair-floor 1	Other	1	0.03%		
Plaza Floor - derrumbe stair-floor 1 Total		26		4%	
Plaza Floor - early platform?	Olla/jar	21	0.70%		
Plaza Floor - early platform?	Cajete/dish	5	0.17%		
Plaza Floor - early platform?	Cazuela/basin	1	0.03%		
Plaza Floor - early platform?	Cuenco/bowl	3	0.10%		
Plaza Floor - early platform?	Tecomate	1	0.03%		
Plaza Floor - early platform?	Olla/jarOlla/jar	9	0.30%		
Plaza Floor - early platform? Total		40		6%	
Plaza Floor - fil below pavement	Olla/jar	6	0.20%		
Plaza Floor - fil below pavement	Cajete/dish	1	0.03%		
Plaza Floor - fil below pavement	Cuenco/bowl	1	0.03%		
Plaza Floor - fil below pavement	Ollita	1	0.03%		
Plaza Floor - fil below pavement Total		9		1%	
Plaza Floor - fill above floor 1 of dividing platform	Olla/jar	2	0.07%		
Plaza Floor - fill above floor 1 of dividing platform	Cazuela/basin	1	0.03%		
Plaza Floor - fill above floor 1 of dividing platform Total		3		0%	
Plaza Floor - fill above floor 1 of plaza	Olla/jar	109	3.64%		
Plaza Floor - fill above floor 1 of plaza	Cajete/dish	21	0.70%		

Plaza Floor - fill above floor 1 of plaza	Cazuela/basin	22	0.73%		
Plaza Floor - fill above floor 1 of plaza	Cuenco/bowl	37	1.23%		
Plaza Floor - fill above floor 1 of plaza	Tecomate	1	0.03%		
Plaza Floor - fill above floor 1 of plaza	Incensario	2	0.07%		
Plaza Floor - fill above floor 1 of plaza	Olla/jarOlla/jar	5	0.17%		
Plaza Floor - fill above floor 1 of plaza	Other	3	0.10%		
Plaza Floor - fill above floor 1 of plaza Total		200		29%	
Plaza Floor - fill above pavement	Olla/jar	20	0.67%		
Plaza Floor - fill above pavement	Cajete/dish	5	0.17%		
Plaza Floor - fill above pavement	Cazuela/basin	3	0.10%		
Plaza Floor - fill above pavement	Cuenco/bowl	7	0.23%		
Plaza Floor - fill above pavement	Tecomate	1	0.03%		
Plaza Floor - fill above pavement	Olla/jarVase	1	0.03%		
Plaza Floor - fill above pavement Total		37		5%	
Plaza Floor - fill floor 4	Olla/jar	6	0.20%		
Plaza Floor - fill floor 4	Cuenco/bowl	1	0.03%		
Plaza Floor - fill floor 4	Olla/jarOlla/jar	4	0.13%		
Plaza Floor - fill floor 4 Total		11		2%	
Plaza Floor - fill of early platform	Olla/jar	19	0.63%		
Plaza Floor - fill of early platform	Cajete/dish	9	0.30%		
Plaza Floor - fill of early platform	Cuenco/bowl	4	0.13%		
Plaza Floor - fill of early platform Total		32		5%	
Plaza Floor - fill of floor 1	Olla/jar	62	2.07%		
Plaza Floor - fill of floor 1	Cajete/dish	19	0.63%		
Plaza Floor - fill of floor 1	Cazuela/basin	1	0.03%		
Plaza Floor - fill of floor 1	Cuenco/bowl	15	0.50%		
Plaza Floor - fill of floor 1	Tecomate	1	0.03%		
Plaza Floor - fill of floor 1	Olla/jarOlla/jar	5	0.17%		
Plaza Floor - fill of floor 1	Other	1	0.03%		
Plaza Floor - fill of floor 1 Total		104		15%	
Plaza Floor - fill of floor 1-2	Olla/jar	4	0.13%		
Plaza Floor - fill of floor 1-2	Cazuela/basin	1	0.03%		
Plaza Floor - fill of floor 1-2	Cuenco/bowl	3	0.10%		
Plaza Floor - fill of floor 1-2 Total		8		1%	

Plaza Floor - fill of floor 2	Olla/jar	11	0.37%		
Plaza Floor - fill of floor 2	Cajete/dish	1	0.03%		
Plaza Floor - fill of floor 2	Cazuela/basin	2	0.07%		
Plaza Floor - fill of floor 2	Cuenco/bowl	2	0.07%		
Plaza Floor - fill of floor 2	Olla/jarOlla/jar	1	0.03%		
Plaza Floor - fill of floor 2 Total		17		2%	
Plaza Floor - fill of floor 3	Olla/jar	28	0.93%		
Plaza Floor - fill of floor 3	Cazuela/basin	3	0.10%		
Plaza Floor - fill of floor 3	Cuenco/bowl	3	0.10%		
Plaza Floor - fill of floor 3	Olla/jarOlla/jar	8	0.27%		
Plaza Floor - fill of floor 3 Total		42		6%	
Plaza Floor - fill of floor 4	Olla/jar	10	0.33%		
Plaza Floor - fill of floor 4	Cazuela/basin	2	0.07%		
Plaza Floor - fill of floor 4	Olla/jarOlla/jar	9	0.30%		
Plaza Floor - fill of floor 4 Total		21		3%	
Plaza Floor - fill of pavement	Olla/jar	36	1.20%		
Plaza Floor - fill of pavement	Cajete/dish	6	0.20%		
Plaza Floor - fill of pavement	Cazuela/basin	1	0.03%		
Plaza Floor - fill of pavement	Cuenco/bowl	4	0.13%		
Plaza Floor - fill of pavement	Other	1	0.03%		
Plaza Floor - fill of pavement Total		48		7%	
Plaza Floor - fill reutilized dividing platform	Olla/jar	8	0.27%		
Plaza Floor - fill reutilized dividing platform	Cazuela/basin	2	0.07%		
Plaza Floor - fill reutilized dividing platform	Cuenco/bowl	2	0.07%		
Plaza Floor - fill reutilized dividing platform Total		12		2%	
Plaza Floor - fill to substructure	Olla/jar	4	0.13%		
Plaza Floor - fill to substructure	Cajete/dish	1	0.03%		
Plaza Floor - fill to substructure	Cuenco/bowl	1	0.03%		
Plaza Floor - fill to substructure Total		6		1%	
Plaza Floor - inside stucco element	Olla/jar	6	0.20%		
Plaza Floor - inside stucco element	Cajete/dish	3	0.10%		
Plaza Floor - inside stucco element Total		9		1%	
Plaza Floor - platform fill	Olla/jar	18	0.60%		
Plaza Floor - platform fill	Cajete/dish	4	0.13%		

Plaza Floor - platform fill	Olla/jarOlla/jar	3	0.10%		
Plaza Floor - platform fill Total		25		4%	
Plaza Floor - suface collection	Olla/jar	1	0.03%		
Plaza Floor - suface collection Total		1		0%	
Plaza Floor - surface collection dividing platform	Olla/jar	3	0.10%		
Plaza Floor - surface collection dividing platform	Olla/jarOlla/jar	1	0.03%		
Plaza Floor - surface collection dividing platform Total		4		1%	
		690		100%	23%
Temple - Temple A-sub, floor 2	Olla/jar	5	0.17%		
Temple - Temple A-sub, floor 2	Cajete/dish	1	0.03%		
Temple - Temple A-sub, floor 2 Total		6		4%	
Temple - Temple A-sub, floor 3	Olla/jar	8	0.27%		
Temple - Temple A-sub, floor 3 Total		8		5%	
Temple - derrumbe of stair 1	Olla/jar	5	0.17%		
Temple - derrumbe of stair 1	Cazuela/basin	1	0.03%		
Temple - derrumbe of stair 1	Cuenco/bowl	2	0.07%		
Temple - derrumbe of stair 1	Incensario	1	0.03%		
Temple - derrumbe of stair 1 Total		9		6%	
Temple - fill Stair A	Olla/jar	12	0.40%		
Temple - fill Stair A	Cajete/dish	1	0.03%		
Temple - fill Stair A	Cazuela/basin	4	0.13%		
Temple - fill Stair A	Cuenco/bowl	3	0.10%		
Temple - fill Stair A	Incensario	2	0.07%		
Temple - fill Stair A	Olla/jarTecomate	1	0.03%		
Temple - fill Stair A Total		23		15%	
Temple - fill Stair A-B	Olla/jar	9	0.30%		
Temple - fill Stair A-B	Cajete/dish	1	0.03%		
Temple - fill Stair A-B	Cazuela/basin	2	0.07%		
Temple - fill Stair A-B	Cuenco/bowl	1	0.03%		
Temple - fill Stair A-B Total		13		8%	
Temple - fill Stair B	Olla/jar	12	0.40%		
Temple - fill Stair B	Cajete/dish	3	0.10%		
Temple - fill Stair B Total		15		10%	
Temple - fill Temple A, floor 1	Olla/jar	37	1.23%		

Temple - fill Temple A, floor 1	Cajete/dish	11	0.37%		
Temple - fill Temple A, floor 1	Cazuela/basin	3	0.10%		
Temple - fill Temple A, floor 1	Cuenco/bowl	10	0.33%		
Temple - fill Temple A, floor 1	Other	2	0.07%		
Temple - fill Temple A, floor 1 Total		63		41%	
Temple - fill Temple A-sub	Olla/jar	3	0.10%		
Temple - fill Temple A-sub	Cajete/dish	1	0.03%		
Temple - fill Temple A-sub	Cazuela/basin	1	0.03%		
Temple - fill Temple A-sub Total		5		3%	
Temple - fill from W wall of Temple A	Olla/jar	6	0.20%		
Temple - fill from W wall of Temple A	Cuenco/bowl	1	0.03%		
Temple - fill from W wall of Temple A	Other	1	0.03%		
Temple - fill from W wall of Temple A Total		8		5%	
Temple - platform fill	Olla/jar	4	0.13%		
Temple - platform fill	Cajete/dish	1	0.03%		
Temple - platform fill Total		5		3%	
		155		100%	5%
Walls-Adosada -	Olla/jar	3	0.10%		
Walls-Adosada -	Cajete/dish	1	0.03%		
Walls-Adosada -	Cuenco/bowl	5	0.17%		
Walls-Adosada - Total		9		5%	
Walls-Adosada - N adosada	Olla/jar	32	1.07%		
Walls-Adosada - N adosada	Cajete/dish	12	0.40%		
Walls-Adosada - N adosada	Cazuela/basin	10	0.33%		
Walls-Adosada - N adosada	Cuenco/bowl	8	0.27%		
Walls-Adosada - N adosada	Other	1	0.03%		
Walls-Adosada - N adosada	Ollita	1	0.03%		
Walls-Adosada - N adosada Total		64		38%	
Walls-Adosada - N perishable wall	Olla/jar	6	0.20%		
Walls-Adosada - N perishable wall	Cajete/dish	1	0.03%		
Walls-Adosada - N perishable wall	Cazuela/basin	1	0.03%		
Walls-Adosada - N perishable wall	Cuenco/bowl	4	0.13%		
Walls-Adosada - N perishable wall	Other	2	0.07%		
Walls-Adosada - N perishable wall Total		14		8%	

Walls-Adosada - P1 adosada derrumbe	Olla/jar	6	0.20%		
Walls-Adosada - P1 adosada derrumbe	Cajete/dish	1	0.03%		
Walls-Adosada - P1 adosada derrumbe	Cazuela/basin	2	0.07%		
Walls-Adosada - P1 adosada derrumbe	Cuenco/bowl	2	0.07%		
Walls-Adosada - P1 adosada derrumbe Total		11		6%	
Walls-Adosada - adosada fill	Olla/jar	7	0.23%		
Walls-Adosada - adosada fill	Cazuela/basin	2	0.07%		
Walls-Adosada - adosada fill	Cuenco/bowl	3	0.10%		
Walls-Adosada - adosada fill Total		12		7%	
Walls-Adosada - adosada surface and fill	Olla/jar	14	0.47%		
Walls-Adosada - adosada surface and fill	Cajete/dish	4	0.13%		
Walls-Adosada - adosada surface and fill	Cazuela/basin	1	0.03%		
Walls-Adosada - adosada surface and fill	Cuenco/bowl	1	0.03%		
Walls-Adosada - adosada surface and fill Total		20		12%	
Walls-Adosada - fill above floor 1 of plaza	Olla/jar	13	0.43%		
Walls-Adosada - fill above floor 1 of plaza	Cajete/dish	8	0.27%		
Walls-Adosada - fill above floor 1 of plaza	Cazuela/basin	5	0.17%		
Walls-Adosada - fill above floor 1 of plaza	Cuenco/bowl	10	0.33%		
Walls-Adosada - fill above floor 1 of plaza	Vase	1	0.03%		
Walls-Adosada - fill above floor 1 of plaza	Incensario	1	0.03%		
Walls-Adosada - fill above floor 1 of plaza	Other	1	0.03%		
Walls-Adosada - fill above floor 1 of plaza	Ollita	1	0.03%		
Walls-Adosada - fill above floor 1 of plaza Total		40		24%	
		170		100%	6%
		2996			100%

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