ON THE PERIPHERY OF THE PERIPHERY: HOUSEHOLD ARCHAEOLOGY AT HACIENDA TABI, YUCATAN, MEXICO

A Dissertation

by

SAMUEL RANDLES SWEITZ

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2005

Major Subject: Anthropology

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Approved by:

Chair of Committee,	David Carlson
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	Harry Shafer
	Henry Schmidt
Head of Department,	David Carlson

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ABSTRACT

On the Periphery of the Periphery: Household Archaeology

at Hacienda Tabi, Yucatan, Mexico. (August 2005)

Samuel Randles Sweitz, B.A., Boston University

Chair of Advisory Committee: Dr. David Carlson

The archaeological remains at Hacienda Tabi provide an opportunity to study the effects of large-scale societal changes on the lives of the Maya who worked on the hacienda. The households, represented by the ruins of the worker's village surrounding the main hacienda grounds, were at the core of late colonial/independence era Maya life. These households were subject to the forces of acculturation that accompanied the rise and supremacy of the hacienda system during the late eighteenth century.

Archaeological excavations at Hacienda Tabi have revealed a re-orientation of social organization during this period. Prior to the formation of the hacienda system, domestic and social organization focused on kinship and extended family subsistence organization. Social status, wealth, and power in pre-hacienda communities were predicated on issues of age, sex, and familial rank within both the extended family and community. The hacienda system brought about fundamental changes in the organization and relations of production. These changes, e.g. the separation of producer from the means of production and commodity based production versus subsistence based production, changed the basis and therefore the form of Yucatecan social organization.

Under the new system, the nuclear family rather than the extended family or community became the prime unit of social organization. In the hacienda community status was based on occupation and one's place within the newly established labor hierarchy.

The changing realities of social organization found under the hacienda system are reflected in the settlement patterns and material remains of the workers' village at Hacienda Tabi. The material culture and types of housing excavated and recorded at Tabi underscore the inequalities engendered within the hacienda system of production. The research conducted at Hacienda Tabi has illuminated the changes associated with Yucatan's articulation into the greater world system.

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As is the case with many long projects, numerous people and institutions have played a part in the completion of this work and therefore have contributed to its completion. I want to thank the members of my committee, Dr. David Carlson, Dr. Lori Wright, Dr. Harry Shafer, and Dr. Henry Schmidt. I thank them first for the many hours of instruction they have given me, which have shaped and enriched my academic career. I also thank them for the considerable guidance and patience they have shown throughout this dissertation process. This work would not have been completed without their valuable insight and support.

I thank the Fundacíon Cultural Yucatan, and especially Director Leticia Roche, for allowing archaeological investigations to be undertaken at Hacienda Tabi and for acting as an invaluable source of information and advocacy. Thanks are also in order to the Instituto Nacional de Antropología y Historia (INAH) for sanctioning archaeological work at Hacienda Tabi. I am also grateful to anthropologist Lourdes Rejón Patrón of Centro INAH Yucatan for the invaluable archival research she undertook for this project and for her prior ethnographic work focusing on Hacienda Tabi.

I would like to thank Texas A&M University College of Liberal Arts and the International Education Fee Scholarship Program, both of which supported the 1999 field research that is the basis of this work. The 1996 field season was made possible by funds from the Scholarly and Creative Activities Program and the International Education Fee Scholarship Program at Texas A&M University. Dr. Allan Meyers 1997-1998 field work was funded by the following programs at Texas A&M University: The

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Jason Barrett, Allan Meyers, and Ben Woltz, all of Texas A&M University, conducted the initial survey and mapping program carried out in 1996. Dr. Allan Meyers conducted the 1997-1998 field season excavations that play a vital part in this work. The 1999 field crew included Fredy Espejo Chi, Edgar Ismael Hau Poox, Jorge Antonio Ek Tuz, Carlos Manuel Cetina Espejo, Juan Gonzalez Canche, Henri Michael Marin Brito, and Pascual Ek.

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CHAPTER I

INTRODUCTION: DOCUMENTING SOCIAL CHANGE IN YUCATAN

Over the last two decades archaeologists have increasingly turned to the remains of households to answer complex social questions. Embodied in architecture, artifacts, and activity areas, households are a ubiquitous element of the archaeological record and typically demonstrate the range of social variation found within a particular society. As the basic unit of production, consumption, transmission, and reproduction, the household is on the front line of adapting to changes in both the natural and social environments. Realizing this, archaeologists interested in complex societies have increasingly utilized household data to address questions of social organization and adaptation (Wilk and Rathje 1982; Ashmore and Wilk 1988; Hirth 1993). The research outlined in this work focuses on the articulation between household, community, and greater Maya culture as observed in the archaeological record at Hacienda Tabi in Yucatan, Mexico (Figure 1).

The archaeological remains at Hacienda Tabi provide an opportunity to study the effects of large-scale societal change on the lives of the Maya who worked on the hacienda. The households, represented by the ruins of the worker's village surrounding the main hacienda grounds, were at the core of late colonial/independence era Maya life. These households were subject to the forces of acculturation that accompanied the rise

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This dissertation follows the style of *Latin American Antiquity*.

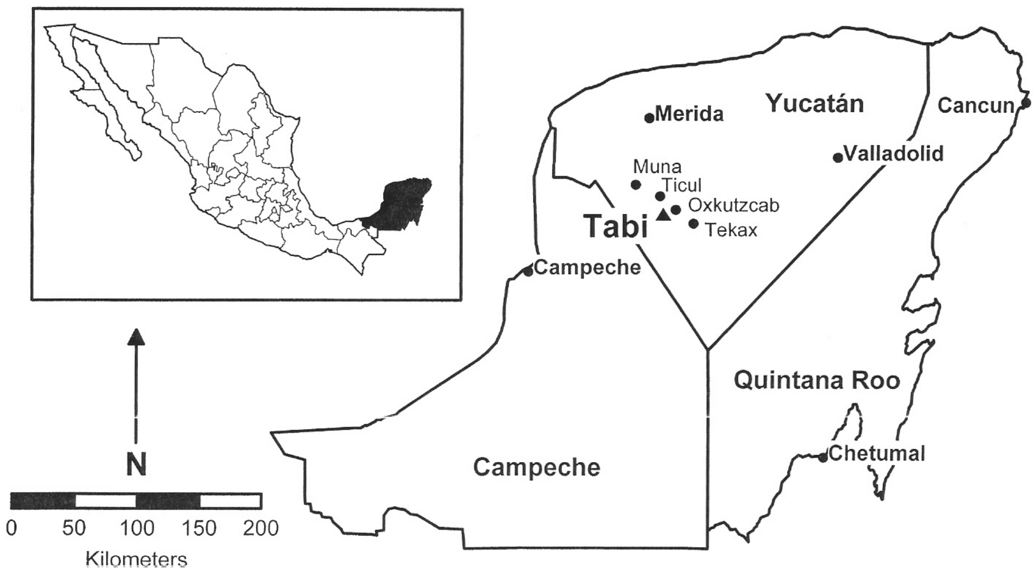

Figure 1. Location of Hacienda Tabi on the Northern Yucatan Peninsula, Mexico.

and supremacy of the hacienda system during this period. I will demonstrate through the use of the archaeological, historical, and ethnohistorical records that the relations of production instituted under the hacienda system caused fundamental changes in the social organization and material culture of the Yucatec Maya.

The significance of this research lies in examining the critical social changes brought about by the implementation of the hacienda system in Yucatan. These changes included a reorganization of cultural traditions that had endured from prehispanic times. Elements of social organization that had survived the first conquest of the peninsula could not withstand the dramatic changes affected by the new economic realities of the hacienda system. This crucial period of cultural change has generated a limited amount of archaeological research and relatively little is known about the everyday organization of Maya households during this period. This research undertaken at Hacienda Tabi illuminates the changes and continuities associated with Yucatan's articulation into the greater world system of the colonial era.

The Study of Culture in Yucatan

The first real record of historic period social change on the Yucatan is contained within Bishop Diego de Landa's *Relación de las Cosas de Yucatan*, which was probably written around 1566, less then twenty years after the conquest of the peninsula (Tozzer 1941). Landa's work provides us with extensive information on Maya culture and social organization as it existed in the first half century after contact with the Spanish, as well as insight into prehispanic Maya cultural traditions. Information regarding social change during the colonial period is also contained within the extensive records, documents, and accounts compiled by the Spanish colonial government, a number of which have been analyzed by contemporary scholars (see below). Travelers to the region also documented social change, often unconsciously, in the travelogues they produced. Perhaps the most famous of these sojourners are John Lloyd Stephens and Frederick Catherwood who explored the Yucatan in 1839-1842. The results of these expeditions were the volumes *Incidents of Travel in Central America, Chiapas, and Yucatan* (1841) and *Incidents of Travel in Yucatan* (1843). While focusing primarily on the recording of

Prehispanic ruins, these books abound with details of life in mid 19th century Yucatan, including a description of the grounds at Hacienda Tabi. Stephen's postulated that the inhabitants of the peninsula were related to those who had built the ruins he explored. He also drew attention to the potential value of Spanish colonial archives, a proposition later acted upon by members of the Carnegie Institute of Washington expeditions to the Yucatan.

In a similar vein to the work Stephens and Catherwood is the work of Thomas Gann. Gann traveled the peninsula during the first three decades of the 20th century, conducting a series of questionable archaeological studies using dynamite to "excavate" ancient ruins. However, he also wrote travel books describing the Maya culture of the period, including one on the descendents of the Caste War fugitives of Chan Santa Cruz in modern day Quintana Roo (Gann 1918). Like Stephens, Gann (1924) gave us a tantalizing description of Hacienda Tabi and the workers' village less than a decade after its abandonment in 1914.

In the 1920s, the Carnegie Institution of Washington began sponsoring scholarly work in Yucatan. Early research in the region centered primarily on archaeological excavations, most notably those at the site of Chichen Itza. As an adjunct to its archaeological investigations, the Institution began to sponsor ethnohistoric and ethnographic research in the region in the 1930s and would continue to do so into the 1950s. In 1931, seven years after archaeological work at Chichen Itza had began, Robert Redfield and Alfonso Villa Rojas initiated ethnographic study at the village of Chan Kom, some 20 km northwest of the site. The research done at Chan Kom was conceived of as part of a larger interdisciplinary project that would link the modern inhabitants of Yucatan with the archaeological heritage of the region. Unfortunately, the synchronic bias of Redfield's ahistorical, structuralist work did not incorporate the diverse and uneven effect of the historical processes that helped shape the cultural landscape of the peninsula. Surprisingly, Redfield's "folk-urban continuum" did not include the important ethnohistoric work being done during the period by his Carnegie Institution colleagues (Redfield and Villa Rojas 1934).

To help bridge the gap between the precolumbian past and the ethnographic present, a series of ethnohistoric studies were undertaken under the aegis of the Carnegie Institution. Out of this research came seminal works on the history of the region by the ethnohistorians Roys, Scholes, Adams, Chamberlain, and Tozzer. These scholars mined the Spanish colonial archives of both the Yucatan and Iberian peninsulas to produce works that focused on and elucidated the nature of the early contact/conquest period and the subsequent early years of colonialism. This research helped outline the political geography and customs of the contact period Maya (Roys 1943, 1957; Tozzer 1941), the conquest of the region (Chamberlain 1948), and the social, political, religious, and economic realities of early colonial life and institutions (Roys 1933, 1939, 1940, 1965; Roys et al. 1940; Scholes and Roys 1948; Scholes et al. 1936-1938; Chamberlain 1939. The ethnohistoric works compiled during the Carnegie era focused on the nature of Yucatec Maya culture at the time of the Conquest and the impact the Spanish colonial regime had on that culture. The practical outcome of these studies has been the establishment of a baseline on which cultural studies of the Prehispanic and modern Maya may be compared.

Contemporaneous with the Carnegie studies were the works of Howard Cline. Cline published several articles concerned with 19th century economic, political, and social subjects including the cloth industry (1947a), the sugar industry (1948a), the henequen industry (1948b), and the Caste War (1947b; 1950). Cline was one of the first scholars to study the 19th century history of the peninsula, including the important changes that agricultural production had in the economic arena, as well as political and social institutions.

In the 1960s, Arnold Strickon and Nelson Reed produced influential works concerning the historiography of 19th century Yucatan. Strickon's *Hacienda and Plantation in Yucatan: An Historical-Ecological Consideration of the Folk-Urban Continuum in Yucatan* (1965) critically re-evaluated Redfield's folk-urban continuum through the use of history. Strickon cited the importance of recognizing historical events like the rise of commercial agriculture and the Caste War, in conjunction with the ecological constraints imposed by the peninsula in evaluating the social history of region. Importantly, he was the first to argue that the development of the large estates had shaped social and cultural change in Yucatan.

Reed's *The Caste War of Yucatan* (1964) approached the history of the period through documentary and secondary sources from Yucatan and Belize, as well as interviews with informants. This work proved the worth of narrative history regarding the region and was the precursor to a revival of ethnohistoric work on the peninsula.

Since the1970s, numerous scholars have addressed the history of the region. Notable colonial period works include Hunt (1974), Clendinen (1997), Patch (1993), Restall (1997,1998), and Thompson (1999). Post-colonial period contributions include Joseph (1982; 1991), Wells (1984; 1985), Brannon and Joseph (1991), Patron (1981a, 1981b), Wells and Joseph (1996), and Rugeley (1996; 2001). The efforts of Farriss (1984) and Bracamonte y Sosa (1993; 1996; 2003 span both periods.

Most notable from this list in terms of this study are the offerings from Robert Patch (1993) and Nancy Farriss (1984). Robert Patch's *Maya and Spaniard in Yucatan, 1648-1812* (1993) is the authority when it comes to portraying the economic realities of Yucatan during the second half of the colonial period. The book is a regional study in that while it acknowledges Yucatan's place on the periphery of the world system during this period, it does not view development as having come from the outside or the local economy as having been a passive recipient or pawn of external influence. That is to say, the study reveals the variety and complexity of the systems of production and labor that developed internally, as Yucatan attempted to integrate into the world system. Patch views the survival of the Maya culture "not as the result of preservation from exploitation," but as a result of the nature of that exploitation (Patch 1993:4).

Patch's volume nicely complements Nancy Farriss' *Maya Society Under Colonial Rule* (1984). Whereas Patch looked in depth at the economic organization of Yucatan, Farriss oriented her study around the social organization of Yucatan after the conquest. She concludes that in many ways life after the conquest was similar to life before the conquest. The Maya were able to adapt alien modes of political and religious behavior to their own worldview. She credited this adaptability to Spanish disinterest in the Maya, both economically and socially.

In recent decades, a number of ethnographic studies have been published that illuminate aspects of life in modern day Yucatan. These include Nash (1970), Thompson (1974), Press (1975), Kintz (1990), Re Cruz (1996), Patron (1993), and Faust (1998). Of these Lourdes Rejon Patron's volume *Hacienda Tabi: un capítulo en la historia de Yucatán* (1993) is of special interest because it deals with Hacienda Tabi. The work is a hybrid that combines an ethnohistoric examination of the hacienda with ethnographic information collected from an informant who grew-up on the hacienda. Another hybrid work is *Anthropology and History in Yucatan* (1977), edited by Grant Jones. This volume integrates papers that examine various ethnohistoric and ethnographic subjects, including the cultural legacy of the Caste War.

Finally, there are three regional journals that publish articles on anthropological and historical subjects of interest. These include *Revista de la Universidad de Yucatán*, *Boletín de las Escuela de Ciencias Antropológicas de la Universidad de Yucatán*, and *Yucatán: Historia y Economía*. These journals have published a wide-ranging body of literature by local anthropologists and historians, which serve as a valuable resource for anyone doing research on Yucatan.

Historical Archaeology in Mexico and Yucatan

The strength of historical archaeological work is in defining aspects of history that are not contained in the historical document record. These documents are often biased and/or fragmentary and often do not include the type of socioeconomic information about daily life that many researchers are interested in today. The literature from the hacienda period is tainted with the arguments of apologists and critics, who sought either to promote the symbiotic relationship between *amo* and *sirviente* or to condemn the system as out-right slavery (Wells 1984). More archaeological studies are needed that are concerned with reconciling the viewpoints of recorded history with hard data from excavations.

Latin American countries have been slow in exploiting their historical resources, due to a combination of limited funds and limited interest in historical sites. Even in countries where large-scale government funded institutions exist, like INAH in Mexico, nearly all funds are channeled into prehispanic archaeological projects that bring in tourist money. The situation in Mexico is summarized in an article by Patricia Fournier-Garcia and Fernando Miranda-Flores (1992), in which they note that archaeology in Mexico has been linked to the interests of the state since to beginning. They write, "The government manipulates knowledge produced by historians and archaeology to reaffirm the national ideology. Indian heritage is seen as the proper subject matter of archaeology, which is limited as a discipline to the prehispanic period (Fournier-Garcia and Miranda-Flores 1992:75).

Archaeological studies of hacienda sites in Mexico are few and far between. There does exist a small body of literature beginning in the 1970s concerning socioeconomic processes, but much of this literature deals with colonial and/or urban sites (see Fournier-Garcia and Miranda-Flores 1992). In Yucatan, much of the work on historic sites has focused on the conservation and consolidation of colonial buildings in the main cities of Merida, Campeche, Izamal, and Valladolid, with little to no archaeological excavation involved (Andrews 1981:2).

In the last two decades, however, a small body of archaeological literature concerning hacienda sites in Yucatan has begun to develop. This literature includes Benavides (1985), Alexander (1993, 1997a, 1997b, 1999a, 1999b), Meyers (1998), and Meyers and Carlson (2002). Benavides' report on the archaeological possibilities at Hacienda Tabi led to the initial survey at the site by the Texas A&M University research team in 1996, and the subsequent field season excavations of 1997 and 1999. Alexander's work is important in providing information on the archaeological correlates of changes taking place in the late colonial period, as communities became integrated with the larger colonial economy. The 1999 excavations at Hacienda Tabi were planned to dovetail with Meyers' excavations in order to form a more complete picture of life in the workers' village during the 19th century. Despite this burgeoning interest in historical archaeology in Yucatan, the situation remains much the same as it was twenty some years ago. At this time, Andrews wrote that that "Next to nothing is known about historic artifacts in Yucatan" and that "while extensive use has been made of historical materials [archival], the physical remains of post-conquest Yucatan have been largely ignored" (Andrews 1981:13).

The Importance of Archaeological Research at Hacienda Tabi

Identifying the social disjuncture created by the rise of the hacienda system is the most significant aspect of excavations at Hacienda Tabi in terms of archaeologists studying the colonial and pre-Columbian Maya. As stated previously, archaeological work at Hacienda Tabi can be viewed as bridge connecting the modern Maya of Yucatan with those of the colonial and pre-Columbian past. There are two somewhat paradoxical corollaries here: 1) the utility of using the modern Maya of Yucatan, who have undergone significant socioeconomic change, as an analogy for pre-Columbian and even colonial Maya society; and 2) the resiliency of Maya culture in being able to adapt without significantly altering their own particular worldview, that is, not altering what makes them Maya.

As is the case with any use of analogy in context there is the possibility that the known analogs may not cover the full range of past behavioral variation and idiosyncrasy. This situation is compounded by the fact that the modern Maya have been influenced by an increasing articulation with the outside world. As I have stated previously, I believe the late colonial and Independence era Maya were subjected to profound social and economic changes that resulted from the rise of the hacienda system and changes in both production and labor systems. This makes the use of analogy in relating the modern Maya of Yucatan with the pre-Columbian Maya dangerous, albeit tempting. In a recent study, Diane Chase found major discrepancies between the ethnohistoric record and the archaeological record, between the Postclassic and Conquest period Maya (Chase 1992). The fact that so much discrepancy exists over this relatively short span of history should serve as a warning to archaeologists. It seems likely that the disruptive nature of the hacienda system brought about changes equal in magnitude to those of the Conquest.

However, it is difficult to resist analogy when so many aspects of modern Maya culture seem so tantalizingly similar to patterns found in the archaeological record. For instance, we know that the house types found at Hacienda Tabi are still being built locally, and from archaeology we know they were being built in the Prehispanic past. Herein lies the paradox. We know that significant changes took place beginning in the late 18th century and continuing into the 19th century. Yet at the same time in rural Yucatan, one sometimes gets the feeling that he is experiencing the reality of daily life in the Prehispanic period.

I think this paradox can be explained in terms of the different realities associated with the everyday life of the Maya. On the one hand, important changes took place in the social and economic circumstance of the hacienda era. On the other hand, for most Maya this new social and economic reality did not translate into major change in terms of material realities. These people found themselves living in the same houses, using the same earthenware vessels, and surrounded by the same meager possessions (as measured by our modern western standards) as had their ancestors.

This conclusion has important ramifications for the archaeologist. It means that we must pursue as many lines of evidence as possible to mediate the effects of social and economic changes that might be masked by material culture. We are fortunate in the case of Hacienda Tabi that we do have ethnohistoric and ethnographic material that inform us on the changes occurring in this period. We are also fortunate to have a material marker of this change, represented by the refined earthenwares that were being imported from abroad into Yucatan. The job ahead is to determine the ultimate effect of these changes on the day-to-day life of the workers at Hacienda Tabi.

Research Goals

There are three primary goals associated with the analysis of the 1999 excavations at Tabi: 1) to document the rise of the hacienda system in Yucatan; 2) to investigate aspects of change and continuity in social organization recovered at Hacienda Tabi in comparison with the organizational structure of modern day, colonial, and Prehispanic Yucatan; and 3) to explore any correlations that may exist between occupational status and architecture/material culture at the hacienda.

Exploring the changes brought on by inclusion into a capitalist mode of production is my primary motive for archaeological work at Hacienda Tabi, and ties into my interest in the prehispanic social organization of the Maya. The production and labor systems introduced by the hacienda system were profoundly different from the preceding systems of production and labor. The question then becomes what if any such differences can we detect in social organization in the archaeological record. Nancy Farris (1984) has termed this period that witnessed the rise of the hacienda system as the "second conquest" in reference to the rapid changes Maya culture was undergoing due to articulation with the modern world.

Towards this end, I explore changes in the organization of labor in terms of occupational status of households. Evaluation of this status can be pursued in the archaeological record by testing relationships between archaeological elaboration and higher status ceramic forms. The evaluation of these relationships will be based on the existing body of ethnohistoric, ethnographic, and archaeological literature, on the identification of the four different dwelling types at Hacienda Tabi, and on the results of the 1997 and 1999 excavations.

The final objective of my archaeological study at Hacienda Tabi involves evaluating of the ethnoarchaeological models of refuse disposal proffered for the Maya area. These studies have provided models that outline the material patterns associated with specific behaviors of refuse disposal. This type of middle-range theory is important for not only the Maya area, but potentially for any site associated with complex agrarian societies. Most of these seminal studies (Hayden and Cannon 1983; Deal 1983, 1985; Killion 1987, 1992; Smyth 1991) were carried out more than a decade ago and yet very little has been done archaeologically to test the validity of their conclusions. It is hoped that the intensive subsurface sampling of Block 4 undertaken at Hacienda Tabi will provide some feedback on these models.

Organization of Chapters

This dissertation can essentially be divided into two parts. The first part, comprised of Chapters I-V consists of an overview of the theoretical concepts, framework, and historical background that inform the examination of archaeological information recovered from excavations at Hacienda Tabi. These chapters outline the context from which the archaeological, historical, ethnohistorical, and ethnographic documentation relating to the social and economic organization of Yucatan during the period under study are made intelligible. The second part, represented in Chapters VI-XI, places the particular history of Hacienda Tabi within the changing organizational context of colonial era (1519-1821) and post-colonial era Yucatan.

Chapter I provides an introduction to the problem (the rise of the hacienda system) and specifies the research goals associated with this analysis. Furthermore, this chapter documents the status of historical archaeology in Yucatan and Mexico, introduces the source materials that form the background for this study, and provides a statement on the importance of archaeological work at Hacienda Tabi.

Chapter II provides an introduction to the major theoretical concepts that guide this study, primarily world system theory, the mode of production concept, and the Annales methodology. In this chapter the nature of the world system and the historical spread of capitalism are described. Key to this discussion is the mode of production concept and the process in which capitalist modes of production articulate with non-capitalist modes of production. The process of articulation and the subsequent economic and social changes that accompany it are functions within the larger processes of historical time.

In this study, history is understood through the Annales model of time. The Annales framework is divided into three periods of time that function at different wavelengths, but are ultimately interwoven. It is argued that by examining the structures and events that comprise these periods of time we can construct a more complete understanding of past cultures and cultural change. In this manner the problem set associated with the rise of the hacienda system in Yucatan is addressed.

Chapter III summarizes the supporting theories I use to examine the archaeological and historical context of materials recovered at Hacienda Tabi. I discuss theories of culture change, social status and power, household archaeology, and ethnoarchaeology. I also include a historical outline of the beginnings, growth, and ultimate demise of Hacienda Tabi in this chapter.

Chapters IV and V examine the long term structures that have helped shape the culture of Yucatan. These structures include the geohistory and cultural history of the region. Geohistory includes the physical environment of the peninsula, including geology, geomorphology, vegetation and soils, and climate. The cultural history of Yucatan is comprised of the material traditions and worldview that characterize Maya culture.

Chapter VI provides a brief summary of the history of Hacienda Tabi.

Chapter VII explores the structures and events of the medium term. These are the centuries immediately associated with the historic problem addressed in the study.

In this chapter, I detail the economic and social structures that distinguished colonial and post-colonial Yucatan. The chapter outlines the initial articulation of capitalist and non-capitalist modes of production. This articulation is revealed in the nature of the changes associated with the structure of economic and social organization, prior to and after the rise of the hacienda. The events that led to the rise of the hacienda system are detailed in this chapter.

In Chapter VIII the research design and methodology employed in conducting archaeological research at Hacienda Tabi is described. A summary of the findings based on these excavations can be found in this chapter. Also, I summarize previous archaeological work done on Yucatecan haciendas and at Hacienda Tabi.

Chapter IX is a summary of the artifact assemblages recovered from my excavations at Hacienda Tabi. This chapter also examines the implications of the materials recovered, specifically, in terms of how the artifact assemblages represent differences in household wealth.

In Chapter X, the short term history of the hacienda is analyzed in terms of the archaeological work done at Hacienda Tabi. Included in this analysis is the impact of the hacienda system on the economic and social organization of the Maya who worked on the hacienda and inhabited the workers' village. Finally, this chapter presents a summation of the findings of the archaeological work done at Hacienda Tabi and puts those findings into larger regional and world contexts.

Chapter XI summarizes the results of archaeological investigations at Hacienda Tabi and relates these findings to my stated research goals.

CHAPTER II

FRAMEWORK FOR THE STUDY

The Cultural Context and Historical Particularity of the System

In this dissertation I describe the social and material changes associated with the individual households during the generations associated with the rise and ascendancy of the hacienda system in Yucatan. I base this diachronic view on snapshots of particular hacienda households as revealed in the archaeological remains of excavated dwellings. The cumulative household series – "a series of residential occupations spanning several generations of household use" - inevitably smoothes over some of the individual personality of the household, but it does not obfuscate the dynamic changes that have taken place in altering the system (Hirth 1993). Those changes are apparent when comparing the household structures, as evidenced by archaeological signatures, accumulated prior to and after the altering event or events.

Thus, even though I cannot place a *terminus a quo* or *terminus ad quem* to a particular household and a particular set of actors, I can delineate the changes in organization that were embodied within all households that existed after the modifying event. These changes are registered in the accumulated signature of the household series associated with a particular site. To show that change did occur, I must demonstrate that the social organization associated with the hacienda did not exist prior to the rise of the hacienda system, and that these changes were not simply the result of political, spiritual, and ideological attitudes native to the region long before the rise of the system. The relationship between the long term and the event itself must be established. If this break cannot be established, then the argument becomes a circular one in which the event is not a catalyst, but is just the result of long established, social and mental structures; and therefore, has no real explanatory value for describing the origins of the present day attitudes and conditions found in Yucatan (Le Roy Ladurie, 1979: 119-120).

Entry of the Maya into the World System

The Spanish conquest of Yucatan involved not only the introduction of Spanish culture into the peninsula, but also the introduction of Maya culture into the larger world system. This articulation meant that the Maya were now subject to economic forces that extended well beyond the boundaries of Mesoamerica. As a result of this interaction, new forms of production and exchange came to dominate the region and this in turn brought about social change for the Maya.

The Unifying Value of the World System Theory

The world system perspective guards against the tendency of Anthropology and the other social sciences to divide the world into bits and pieces under categories such as “nation,” “society,” and “culture” and then, in failing to reassemble them, treating them as unique and isolated (Wolf 1982:3). As Eric Wolf has convincingly pointed out in his work *Europe and the People Without History* (1982), the fact that human populations have always constructed their cultures in interaction with one another necessitates a global cultural history. It is doubly important to acknowledge the interrelationships of culture systems during the historic period when world connections were being formed.

In recent years there has been a movement in the study of History towards regional historiography. By doing this, historians have sought to test existing generalizations at the local level. This has created a shift "from the institutional superstructure to the level of local regions, communities, and interest groups; a move away from political and institutional history in and from the perspective of the metropolis to social and economic history in and from the perspective of the periphery" (Joseph 1986:9).

Yucatan, on the periphery of Mexico and Mexican history, has enjoyed a degree of autonomy and a sense of uniqueness founded on a tradition of regionalism and separatism. It is this autonomy and uniqueness that makes Yucatan and other regions "the kind of exceptions that bring common historical experiences into focus and enable us better to appreciate the dynamics of ... Mexican history as a whole" (Joseph 1986:11). This perspective allows social scientists to place the local region into the larger context of national and world dynamics. As Joseph states in his historiography of the region, "the Yucatecan case facilitates regional analysis under two major categories: 1) the region as a variant case of a larger historical problem; and 2) the region as a dynamic component of a larger whole" (Joseph 1986:11). By following this approach and properly placing Yucatan within its larger context, I begin to understand how the pieces that make up global cultural history interact.

Culture and the World System – Features and Definitions

The world system concept was developed to explain global relationships over the last 650 years. During this historical period of European expansion, significant linkages have been forged between disparate cultures. This is not to say that linkages and connections did not exist prior to the rise of the world system. Before the European diaspora, during the "Age of Discovery", the world was already composed of regional networks of economic and cultural exchange. Cultural contact, with its attendant properties of diffusion and acculturation, has been a force in cultural change throughout human history. However, it was not until the European sphere of influence began to be exported far beyond its physical boundaries by means of conquest and trade that worldwide networks of peoples with diverse origins and social systems began to form. As Europeans developed a trans-oceanic economy, people throughout the world entered Europe's ascendancy. In the fifteenth century, Europe established regular contact with Asia, Africa, and the Americas. These ties opened the way for the large-scale exchange of people, resources, diseases, and ideas. While the world system is based on a set of economic and political relationships, it has important cultural implications that extend beyond the world economy. These economic and political networks serve as conduits for broader cultural exchange. The world system then is both a catalyst for and a result of the increasing interdependence of cultures and ecosystems that were once relatively isolated by distance.

World system theory describes a structure in which nations and regions are economically and politically interdependent. At its most basic, the world system is a social system that exists beyond the boundaries of individual societies and nations. A worldwide division of labor unifies the world's cultural systems into a single, integrated economic whole (Wallerstein 1979:5; Shannon 1989:21). This integration is based on an exchange between trading partners of what have come to be viewed as "essential" goods. Each member of the system has a specialized role in producing goods that can be traded for needed items (Wallerstein 1979:5, 14-15). The outcome "is an economic system that includes a number of cultural areas, states, or societies but constitutes a single economy based on a complex division of labor" (Shannon 1989:21).

In world system theory, the rise of the world system is explicitly linked with the rise of capitalism and the eventual dominance of a capitalist world economy that is "committed to production for sale or exchange, with the object of maximizing profits rather than supplying domestic needs" (Kottak 1997:395). However, in the early stages of development during the15th –18th centuries, the world system was characterized by a mercantilist economy in which the European nations appropriated surplus wealth from subject countries through trade and by controlling the labor of subjugated peoples.

According to Immanuel Wallerstein, the world system arose in response to the "crisis of feudalism" which affected Western Europe between 1300 and 1450. The "crisis" was a combination of economic turmoil involving greater demand for a reduced agricultural surplus, political instability including wars and peasant revolts, and cultural change stemming from the innumerable attacks upon the prevailing medieval Christian synthesis by the beginnings of "modern" Western thought (Wallerstein 1974:37). Wallerstein identified three main trends to explain the decline of the feudal system and the rise of the world system.

The first trend involves the economic contraction that occurred as the European economy reached its optimal level of expansion for the level of technology associated with feudalism. The second trend involves the increasing burden placed on the feudal producers whose surplus was being appropriated at ever-greater levels by a ruling class that was growing in size and expenditure. The third trend revolves around shifting meteorological conditions that led to lowered agricultural productivity and subsequent associated epidemics (Wallerstein 1974:37).

These pressures led to the formation of the capitalist world-economy, a new, more efficient form of surplus appropriation with expanded productivity, which was not based on the direct appropriation associated with feudalism (Wallerstein 1974:37-38). Three developments were essential to the establishment of the world-economy: 1) the geographic expansion of the European market; 2) an integrated division of labor within this expanded market that created the economic zones of core, periphery, and semi-periphery; and 3) the formation of state machineries that competed with each for supremacy within the system (the interstate system of competition) (Wallerstein 1974:38). This was the beginning of a world economic system in which the European states competed for raw materials, labor, and markets around the world.

Still, it was not until the English Industrial Revolution in the mid eighteenth century that a true capitalist mode of production emerged, marked by a substantial investment in manufacturing production and a free wage labor market. It was also during this period that the initially important trade in luxury goods and bullion declined, while the importation of raw materials and agricultural products from the non-European periphery grew in importance. Accompanying this rise in imports from the periphery was an increased emphasis within the core on the manufacturing of goods for domestic consumption and for export to the periphery (Shannon 1989:54, 56). It was at this point in history that peripheral regions like the Yucatan began to play a more active role in the world-economy.

It is important to note that the basic structures of the world system are not necessarily unique in history. Geographically extensive economies comprised of interdependent divisions of labor occurred prior to the world system. Prehispanic Mesoamerica stands as an example of a geographically diverse region composed of multiple cultural areas that were interconnected economically, politically, and culturally. In fact, Chase-Dunn and Hall (1997) have gone so far as to call Prehispanic Mesoamerica a world system, that was comprised of four spatially distinct interaction networks (bulk goods, political-military, prestige-goods, and information). However, there has been considerable debate (see Abu-Lughod 1989; Blanton and Feinman 1984; Chase-Dunn and Hall 1991; Frank and Gills 1990; Peregrine and Feinman 1996; Rowlands and Kristiansen 1987; Schneider 1977; Schortman and Urban 1987) as to the validity or extent to which world system theory should be used in describing and discussing prehistoric systems.

Regardless of whether prehistoric systems are categorized as world system there are fundamental disparities in terms of organizing principles and scale, which differentiate the modern world system from its historical predecessors. There have been empires like Rome and China, and regions like Mesoamerica and Andean South America that were composed of geographically extensive regional networks of exchange based on integrated divisions of labor. Yet these empires and regions did not exist on the scale of the modern world system, and the economic and political organizations that characterized them were fundamentally different than those of the modern world system (Wallerstein 1979:5). The modern world system is a true world-economy, based on capitalism and an interstate system of competition.

Features and Components of the World System

Capitalism is an economic system in which the holders of wealth (capitalists) control access to the means of production and own the commodities produced. The constant expansion of surplus value is fundamental to this system, and therefore, capital accumulation through the exploitation of labor is critical. The laborer who works for a wage and produces the commodities can only obtain them by buying them from the capitalist. The key here is ownership of the means of production, and in particular, the process by which individual producers are separated from the means of production, which makes them dependent upon the minority ownership class for their living.

In this system, the state enforces the social relations of production between the capitalists and workers, as well as creating conditions favorable to enterprise. The state maintains a favorable environment by enforcing exchange terms, protecting property rights, and by enacting laws that promote and protect enterprise. Within the world economy, no individual state is ascendant. The political organization of the world system consists of states of variable relative power competing against one another in an interstate system of competition. The presence of multiple strong states has kept any one state from destroying the others or from seizing all the weak states.

The capitalist organization and state formations characterizing the world system differ in several key ways from earlier economic and political systems. The exploitation of labor that capitalism relies upon is not unique to the world system. What is unique is how the exploitation occurs and who benefits from it. Past systems (like feudalism, chiefdoms, segmentary states, etc.) relied on the direct expropriation of wealth from producers using some form of political coercion, i.e., taxes, tribute, or slavery (Shannon 1989:22). Within these systems, the reigning political unit was a tool of coercion rather than of promotion. In this scenario, those in control of the political arena -most often a hereditary aristocracy- accumulated wealth. Under these systems, there was often minimal interest in increasing wealth through the intensification of productivity. Instead greater wealth was amassed by amplifying power and social control over an increasing number of producers within the system and/or by adding more producers to the system by means of territorial expansion.

Prior to the world system, geographically extensive economic and political systems merely disintegrated as their constituent parts collapsed or came under the control of a single preeminent state and became part of an empire. Under the world system, states rise and fall from power, and on occasion, a state may come to dominate the rest, but no one state ever eliminates the others. The ascent and decline of states, as well as "cycles of hegemony" (the cyclical assumption of economic and military predominance by a single state) that interstate competition ensures, serves as a mechanism for perpetuating the system. The sustained competition for capital accumulation promotes the continued diffusion and strengthening of the system and forestalls the formation of a permanent economic advantage for any one state (Shannon 1989:23; Wallerstein 1979:5).

As states ascend and decline, they assume positions within the three basic hierarchical economic zones that segregate the world system. The three interrelated zones are the core, semi-periphery, and periphery. Of the four nested components that comprise the world system (economic zones, states, social classes, and status groups), the economic zones are the broadest. Each succeeding component is composed of successively smaller units of identification. Within the economic zones, the core consists of the strongest, most powerful states. These states have the most advanced systems of production, commerce, and finance. Core countries use sophisticated technologies and means of production to produce goods for internal consumption and for export to the semi-periphery and periphery. The semi-periphery and periphery have considerably less power, wealth, and influence than the core countries. The periphery produces raw and agricultural materials that are exported to the core and semi-periphery. Economic activities in the periphery rely more heavily on human labor than on mechanization. The semi-periphery is intermediate between the core and periphery and is characterized by a mixture of both manufacturing and the export of raw and agricultural materials. The relationship between the core and periphery is an exploitative one. The trade and economic relationships between the two zones typically benefit the capitalists in the core at the expense of the producers in periphery. States in the semi-periphery serve as intermediaries between core and periphery and have greater autonomy from the influence of the core than peripheral states.

The states that occupy the core, semi-periphery, and periphery represent the second component of the world system. States are defined as population groups that share a common identity and are bound by political and economic ties. Common identity is based on commonalities like language, institutions, cultural practices, common interests, and shared historical experiences relative to other states. States are large, centralized organizations whose legitimacy is derived from the recognition of its citizens. In return for their recognition, citizens are offered political rights in terms of participation and expected benefits from state operations. State political organization emerged among the core states, while independent state organizations within the periphery have evolved more slowly and unevenly (Shannon 1989:25-27).

World system theory describes the historical development of a worldwide system of exchange dominated by a capitalist mode of production, beginning with the Industrial Revolution. Although the system is dominated and directed by capitalism, it is composed of both capitalist and non-capitalist modes of production. This mixture of modes is the result of the asymmetric broadening (the spread of capitalism into new areas) and deepening (the insinuation of economic relations within all aspects of life) of capitalism and the disparate power, aptitude, and interests of the states that dominate the system at any particular junction in time.

The Concept of Production

Production is a basic and defining social activity. While predicated in economic terms, the concept of production is not merely an economic construction. Production informs the major functions of human groups, including consumption, transmission, and reproduction, and is the primary way in which human beings interact with nature. The concept of production underscores the fundamental relationship between humankind and nature, joining human/nature relations and human/human relations (Wolf 1982:73-74; Roseberry 1989:156). The relationship between humanity and nature encapsulates two axiomatic understandings of Marxian economic theory and indeed of anthropological theory. First, that humans are part of nature; and second, that humans are social beings linked through social relationships (Wolf 1982:21). Humans, as part of nature, are subject to the forces of nature, but also have the ability, acting "as one of her own forces," to transform nature (Wolf 1982:73).

The production concept represents ever shifting relationships. These relationships include not only the way humans transform nature, but also the social relationships formed by humans in order to transform nature. It is because of these evolving relationships that production is not only an economic concept, but also an ecological, social, political, and social-psychological concept (Wolf 1982:21). In recognition of these connections, Marx adopted the concept of production to denote the dependent relationship between nature, work, social labor, and social organization (Wolf 1982:74). The concept of labor is key to this dependent relationship. Humans adapt to nature and transform it for their own use through labor. To organize labor a system of production is necessary. Thus, labor is the link between nature and human systems of production. Humans transform nature through labor, and labor is social because it is mobilized and deployed by an organized social plurality. Therefore, labor is a social phenomenon deployed to coordinate work, where work is the expenditure of energy to produce energy.

The relation of human beings to nature is put into effect by means of technology, organization, and ideas; in other words, through culture. At the same time, humans are social beings and as such exist in organized pluralities. "[T]he way they are organized socially governs the way they confront and transform nature" and nature transformed in return affects the "architecture of human social bonds" (Wolf 1982:74). While elements of culture- like new technologies -bring social and political change, they themselves are the products of specific social contexts that influence what innovations are likely or unlikely to occur. The systemic interdependence of all aspects of social life inherently leads to internal contradictions and conflicts. These contradictions and conflicts and their resolution are the most important source of social change within human societies.

In Marx's parlance, "The restricted relation of men to nature determines their restricted relation to one another, and their restricted relation to one another determines men's restricted relation to nature" (Wolf 1982:74, quoted from Colletti 1973:228). This quote is especially poignant in its use of the term "restricted." This term belies the inherent duality found within the natural world and the social world, both of which are comprised of intrinsic possibility and intrinsic constraint. Just as the natural world is constrictive in its particularities (e.g. mean rainfall, depth of soil, water forms, etc.) it also offers the possibility for human groups to adapt and transform nature toward their own needs. In a similar manner, the social world that human groups construct (i.e., bands, tribes, chiefdoms, states) restrict and inform the way in which members of those groups interact. Change is introduced into the system by the human actors who navigate the social realm, each one making choices that when taken as a whole can ultimately lead to new social forms.

The relationship between humankind and nature constitutes a positive feedback loop in which the manner and methods by which human groups articulate with the environment are constantly evolving. The importance of the articulation between nature/human relations, and the subsequent human/human relations they foster, cannot be understated.

The Mode of Production Concept

Existing levels of social organization regulate the manner in which humans confront and transform nature; this transformation contributes to the structure of human social bonds. Therefore, the way in which humans confront and transform nature for their use is directly reflected in their social organization. Production represents the activity of socially organized humankind; active production changes nature and actively creates/re-creates the social ties that affect the transformation of the environment.

The organization of these productive activities is described as a mode of production. Modes of production are comprised of two articulating elements: the forces of production and the relations of production. The forces of production include elements of technology, work organization, and so on, that constitute the methods and means by which nature is appropriated and transformed. The relations of production involve the methods and means by which labor is appropriated and transformed. Different modes of production are characterized by identifiable combinations of the forces of production and the relations of production.

The productive forces and relations are closely linked to determinate types of ownership of the means of production (the resources, including land, labor, and technology used in production). Within the relations of production is a primary element in determining the distribution of economic surplus, as well as the prevailing nature of the division of labor. These factors in turn circumscribe the capacity of the productive forces for expansion. Therefore, a mode of production is an entity composed of the articulation and interconnection of: 1) a determinate type of ownership of the means of production; 2) a determinate form of appropriation of economic surplus; 3) a determinate degree of development of the division of labor; and 4) a determinate level of development of the productive forces (Laclau 1971:33).

The utility of the mode of production concept is in providing a framework for approaching the ways in which people organize themselves, how different groups within society interact, and how change takes place. Importantly, the concept allows us to examine what happens when different systems with different modes of production come into prolonged contact and change occurs. Numerous modes have been formulated in the mode of production literature. For the purposes of this work, I will follow the three basic types of mode of production outlined by Wolf (1982:77-99) in *Europe and the People Without History*. These types include kin-ordered production, tributary production, and the capitalist mode of production.

The Kin-Ordered Mode of Production

The kin-ordered mode of production orders social relations along lines of filiation, marriage, consanguinity, and affinity. Groups differ in the extent to which patterns of kinship inform other aspects of society. For this reason, kinship can operate on two levels: at the family/domestic level or on the political level. In some groups, kinship may not govern beyond parentage and spousal obligation, while other groups may also base jural and political obligations on patterns of lineage and social linkages.

Therefore, kinship is a means of ordering social labor through appeals to filiation and marriage, as well as by descent and affinity. According to Wolf (1982:91):

> Kinship thus involves (a) symbolic constructs ('filiation/marriage; consanguinity/affinity') that (b) continually place actors, born and recruited, (c) into social relations with one another. These social relations (d) permit people in variable ways to call on the share of social labor carried by each, in order to (e) affect the necessary transformations of nature.

The variation found in kin-ordered relations of production is related to the particular conditions of the political economy in which a given group operates. In small scale societies, such as hunting and collecting societies, resources are widely available and open to all. In this situation, ties of kinship are formed through habitual interaction. These populations do not transform nature, but take from what is available naturally. In these societies the limits of group size, and therefore, the size of the labor pool is a function of carrying capacity, the number of people who can be supported by the available resources at a given level of technology. Group size is further limited through social mechanisms that regulate social density. People may be encouraged to leave, or conversely, may be recruited, to assure that the size and composition of groups are suited to local variations in environment or as a means of managing and resolving conflict within the group. Through marriage and filiation, kinship loosely forms labor partnerships among members of the group.

In situations where resources are produced through the transformation of nature, stringent kinship definitions define access to the resource base. In these societies, nature is transformed through organized clusters of social labor that expend labor cumulatively and transgenerationally upon the environment. This situation leads to a transgenerational body of claims outlining labor obligations. Under these conditions real or fictive kinship ties may be used to construct pedigrees or lineages that define rights to land and labor.

Lineage membership transfers a number of rights and responsibilities to the social group and individual. These rights and responsibilities include: 1) the right to claim privileges based on kinship affiliation; 2) access to resources is permitted or denied on the basis of membership; 3) the exchange of group members through marriage creates ties of affinity that entail political and economic, as well as social ramifications; and 4) managerial functions are distributed unevenly according to principles of classification, (e.g. age, gender, rank, etc.).

The Tributary Mode of Production

The tributary mode of production describes a situation in which surplus is expropriated through extra-economic means from the direct producer, who controls the means of production. A tributary mode implies that "labor is mobilized and committed to the transformation of nature primarily through the exercise of power and domination – through political process" (Wolf 1982:80). The presence of political process suggests the existence of a state mechanism, whether that state is strong or weak, run by political or military rulers.

The ruling elite is strongest when a strategic element in the production process is controlled, e.g. direct dominion over territory and a strategic element of coercion, such as military capability. Under these conditions, rulers can deploy their own tribute gatherers. This lessens the control of local elites over resources and primary producers, effectively rendering them dependent on revenues granted by the ruling elite. The power of local traders and entrepreneurs is also curtailed by preventing them from having direct access to the producers. Often a link is formed between rulers and peasants, who share a common antagonism against powerful, surplus taking intermediaries.

Distribution is an important and necessary aspect of any tributary mode of production. Frequently, these systems have been characterized by mercantile activity, including long distance networks dedicated to the movement of elite and luxury goods, as well as staple and utilitarian goods. This is especially true in areas where competition or symbiosis between contending polities has developed. In this way mercantile activity and tributary systems have often coexisted to their mutual benefit. Conflict can arise in these relationships when merchants, who attempt to increase profits, draw goods produced under kin-ordered or tributary modes of production into commodity exchange. Tributary powers can be weakened when the goods their power rests on are transformed from use values to commodities. Under these conditions, the tributary power can become dependent upon revenues from trade.

In medieval Europe, a dependant relationship formed between merchants and the polities they functioned within (the Spanish monarchy was a notable exception to this trend). Merchants were granted greater freedom of movement and privileges in exchange for revenues that helped fund the expenditures of the state. Additionally, the European monarchies used the merchant class to undercut and weaken the feudal lords who were vying against the state for power. Gradually, mercantile wealth expanded the networks of commodity exchange, increasingly incorporating producers from different parts of the world and slowly modifying the relations of production to support commodity exchange.

"Commodity peonage" and "putting-out" systems were two of the methods employed by mercantilists to draw producers into the commodities market (Wolf 1982:86-86). (In New Spain these methods fell under the rubric of the *repartimiento*.) In commodity peonage merchants exchanged cheap but desirable goods to indigenous populations in exchange for locally produced goods. These goods held relatively little value for their producers, but demanded high prices in extra-local markets. Resistant populations might be forcibly sold goods, for which they were obligated to pay.

In time, production in these areas became increasingly specialized towards commodity production and the native populations became increasingly dependent upon goods provided by merchants. Through a system of advances, producers could be placed in a kind of debt peonage, under which individuals were obligated to produce commodities for the market. Using these methods, mercantilism increasingly drew producers in kin-ordered and tributary modes of production into larger market systems.

The mercantilist system changed the ways in which pre-existing modes of production functioned, but it did not make them capitalist because the system continued to rely on relations of production defined by non-capitalist modes of production. Mercantilism was capitalist in terms of circulation, but not in terms of production.

The Capitalist Mode of Production

The capitalist mode of production came into being when monetary wealth was able to buy labor power. In order for this to occur, the tie between primary producers and the means of production had to be severed. The holders of wealth, the capitalists, acquired and controlled access to the means of production on their own terms. Those who are denied access must bargain for permission to operate them. In this way the capitalist mode of production determines distribution of resources. The capitalist who controls the means of production also controls the commodities produced. The laborer, who works for a wage and produces the commodities, can only obtain them by buying them from the capitalist.

The capitalist mode is necessarily based on class division, between those who own the means of production and those who produce surpluses. Moreover, each class is also differentiated internally. The owners of the means are divided into winners and losers in the race for higher productivity and greater profits. The labor force is divided into the employed, underemployed, and unemployed. These relationships and the contradictions and conflicts they stimulate create the laws of motion for that particular society. As it developed in Europe, the capitalist mode exhibited the dual characteristics of being able to reproduce itself internally on an ever widening scale, as well as the ability to enter into relationships with other modes.

In sum, the essence of the mode of production concept is as follows: man confronts nature though work and nature guides the types of work necessary. In turn, work is organized by social labor, which informs the overall structure of social organization. In the same way, subsequent changes in social organization can change the way in which social labor is organized, thereby changing the pattern of work and the manner in which nature is confronted and transformed. Because this is an actively evolving process, the manner of production operating in a given society at a given moment in time is historically particular. For this reason, the term production relates to "a specific, historically occurring set of social relations by which labor is deployed to wrest energy from nature" (Wolf 1982:75).

The Changing Laws of Motion

Two central tenets of the Marxist tradition should now be clear: 1) production informs social activity; and 2) production systems have historical specificity (Roseberry 1989:156). The relationships that characterize particular historical epochs are known as the "laws of motion". Marx conceived of the laws of motion to describe the formation and relationship between classes within a particular society. The laws describe the basic relationships characterizing specific periods and regions functioning under historically specific modes of production. These are not natural laws, but laws specific to historical epochs.

The historical actions of people and groups only make sense when the nature of the relationships that tie them together are made implicit. Mode of production is a theoretical tool delineating class relationships, focusing on class formation, relations in space and time, forms of organization, and class struggle. The substance of these relationships is contained within the laws of motion that outline “the formation of classes in space and time, their forms of organization, and their struggles” (Roseberry 1989:174). This study is concerned with the articulation of the capitalist mode of production with local modes of production in Yucatan and the subsequent changes in social organization engendered by this articulation.

The capitalist world system must be viewed in terms of both exchange and production. The system arises with the development of the world market and long-distance exchange. Of course, long-distance exchange networks and “world markets” were present prior to the development of capitalism and were associated with other mode of production forms. Therefore, a “circulationist” definition of capitalism that rests on the creation of a world market and exchange is inadequate (see Hilton 1976; Roseberry 1983:60).

It is necessary to also view the rise of capitalism in terms of production, and specifically, as a mode of production defined by the existence of free wage labor. A prerequisite for capitalism is the existence of free labor and the ability to exchange that labor for money. The “productionist” aspect of capitalism defines the system in terms of mode of production. Specifically in terms of production based on the emergence of an unpropertied class that must sell their labor to maintain their livelihood.

How do we rectify the colonial and independence era history of regions like Latin America in light of a capitalist world system that has both circulationist and productionist requirements? These regions were characterized by their involvement with the development of world markets and a world capitalist mode of production, but at the same time the production modes of these regions were not based on free wage labor. The development of production systems during this time should be understood in terms of the emerging capitalism.

The fundamental relationships that characterize the framework of the world system (capitalist exchange, an interstate system of competition, hierarchical economic zones, etc.) characterized the development of Latin American political economy and its attendant social forms. Latin American history from the Conquest period forward must be explained in light of these connections. Wallerstein dates the rise of the world system with the development of the world market and the colonialism of the 16th century; he argues that the development of the capitalist world economy "involved a division of productive labor that can only be properly appreciated by taking into account the world-economy as a whole (Wallerstein 1974:126). Wallerstein maintains that it is the worldwide division of labor that distinguishes the capitalist world market, not merely the presence of free wage labor (Roseberry 1983:60). In order to resolve the apparent disjunction between a capitalist system of exchange that relies on non-capitalist modes of production, a distinction must be made between economic systems and mode of production.

The Co-existence of Modes of Production

In order to understand the seeming contradiction of productive modes that are by definition not capitalist, but that are functioning in the world historical processes of capitalism, it is necessary to distinguish between larger economic systems and the modes that function within these systems. An economic system "designates the mutual relations between the different sectors of the economy, or between different productive units, whether on a regional, national, or world scale (Laclau 1971:33). Importantly, economic systems can be composed of multiple modes of production. The recognition of economic systems allows for the conception of a worldwide system of exchange dominated by the capitalist mode of production, which incorporates a series of articulating capitalist and non-capitalist modes of production (Roseberry 1983:61). These systems must be defined as a whole and understood in terms of the laws of motion that describe the articulation of the various modes (Laclau 1971:33).

In defining the nature of economic systems and modes of production we can conceive of a world economic system dominated by the capitalist mode of production that incorporates the articulation of capitalist and non-capitalist modes of production (Roseberry 1983:61). It is important to note that the articulation of modes of production is not confined to situations where capitalism is interfacing with local non-capitalist modes. The articulation of modes of production is a historic phenomenon that has involved various modes, in various places, through time.

This logically leads us back to the conclusion that the history of particular regions, at least from the 16^{th} century onward, must be understood in terms of world historic processes. At the same time it should be clear that the relationship between world-historic processes and local regions is not deterministic. The history of particular regions cannot be separated from world-historic processes, but their history is not mechanically determined by the world system. It is necessary to understand the structures that shape and limit human action as well as appreciate the action of humans in creating the structures that limit them. Local cultural structures and populations are active in articulating with extra-local processes and pressures (Wolf 1982; Roseberry 1983).

The 16^{th} century expansion of the world-market contributed to original or primitive capital accumulation. Therefore, we can view the process of primitive accumulation in terms of capitalist development even though it occurred prior to capitalism, and created conditions for a capitalist mode. During the Mercantilist Phase of capitalism (16^{th} –18^{th} centuries), the primary mechanism for expansion and consolidation was not through capitalist relations of production, but through capitalist relations of exchange. The system as a whole was capitalist in circulation, but within production it encompassed a variety of formations. For this reason, Post-conquest Latin America should be explained in terms of a burgeoning capitalism. From this point of view, "we may examine the interaction of local areas and the developing capitalist system through successive periods of capitalist evolution" (Roseberry 1983:65).

The Process of Articulation

Pierre-Philippe Rey has addressed the historic processes involved with the articulation of multiple modes of production (Rey 1976; Roseberry 1989). Rey formulated his stages to address West African history, but as a general framework, the stages are analogous to the regional development experienced in Yucatan. The stages outline the historical processes involved with the articulation of capitalist and non-capitalist modes of production that lead to the formation of new economic and social relationships. In this way the stages might also be considered in terms of formations comprised of particular articulations of production and laws of motion, that then function within larger economic systems. Viewing these structures as formations has the added utility of not confining the process to an evolutionary set of stages.

The first stage or formation involves articulation solely in the sphere of circulation. Commodities produced under non-capitalist relations of production enter into capitalist exchange networks. The colonial economy existed outside of capitalist production, where the Spanish in Yucatan co-opted the existing tributary mode of production and combined it with aspects of capitalist circulation. The Spanish placed themselves at the top of the pre-existing tributary system and the laws of motion that defined pre-conquest Yucatan remained relatively intact. Some changes came about under organizational policies like *congregación* (forced resettlement) and *encomienda* (tribute and/or labor service), were meant to consolidate Spanish control and to facilitate the collection of native produced goods. The relations of this period must be couched in non-capitalist terms, although the exigencies of capitalist circulation were beginning to be revealed.

The *repartimiento* represents of the initial forms capitalist production that arose during this period. The *repartimiento* will be dealt with in greater detail in subsequent chapters, but here a brief description of the system is useful. In Yucatan, the *repartimiento* was a system in which money or credit was advanced, often forcibly, to Indians with the expectation of repayment in kind at a later date. Repayment was often in the form of cotton *mantas*, large mantles of cloth, that could then be sold in the cities and mining camps of central and northern Mexico. The system represented a capitalist form of exchange that incorporated native Maya forms of production, albeit involuntarily, into the world economy (Patch 1993:30).

Prior to the arrival of the Spanish in the Americas, similar systems of production and exchange had existed. The dominant classes in some regions of the Pre-Hispanic Americas had expropriated economic surplus from the labor of direct producers. However, the *repartimiento* system in Yucatan involved fundamentally different forms of economic and social relations. In Yucatan merchant capital invested through the *repartimiento* forced ties of dependence with the Indian population for the purpose of producing commodities for the marketplace. This system, tied to the imposition of capital into the region, modified both social and productive relationships between would be Spanish capitalists and Maya producers.

The second stage, or formation, represents conflict between modes of production, where the requirements of capitalist accumulation and reproduction have outgrown the capacity of the preceding system. The developing capitalist system may require additional labor power or new means of production to increase surplus value. Political intervention is important in this formation, and serves to prop-up the system through favorable property and labor laws. In Yucatan, this meant laws for seizing vacant and village lands, as well as labor laws amenable to the formation of a debt peonage system.

During this formation, the connection between labor and the means of production was severed, but capitalist free-wage labor did not exist. This transitional period must be understood in terms of both the pre-existing modes of production and the expanding capitalist mode of production. The overlap of the two modes creates a "double history," a transitional phase that can only be understood in terms of the mode of production that existed prior to the introduction of capital. As Rey states,

> The social formation should take its own form of transition to capitalism. The social formation of transition therefore finds itself submitted to a double history, where the contradiction between two orders of necessity is made manifest; on the one side the history of capital itself, which is essentially written outside of these social formations; on the other side, the history of the specific transition of the modes of production articulated with it (1976:82-83 as translated in Roseberry 1989:166).

The contradictions and conflicts that arise in this transitory period create changes in class relations and therefore shifts in the laws of motion that define the social formation. The most significant development to come out of this period was the hacienda system and its attendant economic and social relations.

Rey's third stage or formation involves the ascendancy of capitalism. At this point capitalism does not need non-capitalist relations of production to function. This formation was not experienced in Yucatan within the scope of this study and it is debatable as to whether it applies to the region today (Rey views this formation as only applying to the United States). Under these conditions, non-capitalist social groups may continue to exist in the form of peasants, artisans, etc., but this does not necessarily indicate the existence of additional modes of production (see Roseberry 1989:165). These groups may exist as part of the reproductive process of capitalism and not as truly separate relations of production.

As a means of social control and power, violence is an important element of the articulation process. The violence of the initial conquest of the peninsula was key in establishing the dominance of the Spanish and in initiating economic and social articulation between the Spaniards and Maya. Rey sees violence as a necessary part of stage two, in which the separation of the producer from the means of production can only be accomplished if accompanied by violence. Again, the political process plays an important role in this separation, which takes place on both the economic and social level.

This process is evident in the regional history of Yucatan. Early on in this stage when articulation within the developing hacienda system was voluntary, violence and political coercion were not necessary. As time progressed and the demands of the system increased, the levels of violence and coercion also increased. The Caste War, A.D. 1847-1855, which shook the economic and social foundations of the region, serves as evidence of the increased demands of the system. When joined with three centuries of oppression, these demands led to the violent conflict and left the region’s economic structure in ruins.

Following the Caste War, the system became even more restrictive. Violence in the form of corporal punishment, legalized capture and imprisonment, etc., as well as political coercion in the form of legally sanctioned debt peonage had become the norm on Yucatecan haciendas. Roseberry (1989:168) summarizes this period of Latin American history in general in the following passage:

> We must understand the interaction between noncapitalist and capitalist modes in Latin American history across five centuries in terms of what existed before contact, the nature of the contact and the transformation of social relations that resulted, the new relations and dynamics that were instituted, the contradictions engendered by those relations, and the manner in which those contradictions were resolved and, in turn, set in motion new contradictory relations and dynamics.

Geographic, Social, and Individual Time

The Confluence of Archaeology and History: Annales Methodology and Archaeology

The *Annaliste* or Structural History approach to archaeology provides a powerful model for discussing the processes that shape human societies. This approach is especially fruitful for historical archaeology where documents can bolster information recovered from the archaeological record. The Annales paradigm began in France at the end of the 19th century in response to dissatisfaction with traditional French history, geography, and social science. The paradigm grew out of a rejection of the 19th century German tradition of scholarship, which emphasized great men and the development of nationalism or the deterministic effect of the physical environment on humanity.

This new perspective was formulated in journals founded in geography by Vidal de la Blache (*Annales de Géographie*, 1891), in sociology by Emile Durkheim (*L'Année Sociologique*, 1896/8), and in history by Henri Berr (*Revue de Synthése Historique*, 1900). Maurice Bloch and Lucien Febvre, historians associated with Berr's journal, were especially ardent supporters of a new generalizing history. They were interested in replacing the dominance of political history with social and economic history, along with opening the discipline to the ideas of other disciplines. At this time Bloch introduced the term 'nouvelle histoire' (new history), the precursor to the post-war American 'New History' movement and subsequent 'New Archaeology' of the 1960s. The Annales paradigm came together in 1929 with the founding of the *Annales d'histoire économique et sociale* by Bloch and Febvre. As cultural history became more important in the Annales perspective the journal was renamed *Annales, Economies, Sociétés, Civilisations*. Bloch went on to concentrate on social and economic history, while Febvre examined cultural history through the role of ideology and perceptions (*mentalités*).

Fernand Braudel's *The Mediterranean and the Mediterranean World in the Age of Phillip II* (1949) is the most famous Annales work and was widely seen at the time as the final triumph of the school. This was a landmark work that laid out in detail the Annales model of time, one of the key concepts developed by the school. In this model of time (*dureé*), there are three interwoven periods of time: the long term, the medium term, and the short term. Within the Annales framework, each of these periods represent structures, processes, and events that, when taken together, represent the cultural and social history of a particular place or region. This framework allows archaeologists to compile more comprehensive histories of the areas they study and to deal with inadequacies associated with previous approaches.

Annales methodology allows archaeologists to address some of the criticisms and limitations of Processual Archaeology while still incorporating the Processualist approach. One of the criticisms of Processual Archaeology is that the models and processes developed within the approach function well at the society and regional level, but are not adequate in addressing the individual. In addition, the approach is successful in analyzing trends and developments over long periods, but is less assiduous in pursuit of the short term event. The Annales paradigm is complementary to Processualism in that it combines the best of the traditional descriptive and narrative approaches with the theory driven processual dynamics of the New Archaeology. Also of importance is an interdisciplinary approach that draws from expertise across the human and natural sciences.

The Annales paradigm in archaeology succeeds in combining experienced life (the participant/observer perspective), with the externally analyzed life (processual dynamics) (Bintliff 1991:3-4). Within a single methodology, we can reconcile the general and the particular, the event and millennial trend, the individual and the community or society (Bintliff 1991:8). The Annales paradigm along with structural history allows the historical archaeologist to weave together information from the archaeological record and historical record, and to relate this information to the overarching patterns that both limit, encourage, and define human action in a particular place and time.

Framework of the Study

As previously mentioned, Annales methodology defines three interweaving periods of historical time: the long term, medium term, and short term. These processes are divided into two groups: structural history, which includes the long term (*long dureé*) and the medium term (*conjunctures*); and the history of events, which encompasses the short term (*événements*). Both the long term and medium term operate at levels nearly imperceptible to individual human actors. These dynamics act as structures that both constrain and enable human existence. The short term encompasses the participant/observer experience of events. All three processes (long, medium, and short terms) operate contemporaneously, but at differing wavelengths in time. The history of a particular era or region is the result of the dialectic between these temporalities (Bintliff 1991:6-7). These periods serve a framework for the analyses of this study.

The Long Term deals with forces that act at the longest wavelength of time, including geohistory, the history of civilizations, and the cumulative worldviews that comprise culture. The dynamic of the long duration includes dominant and slowly changing forces including stable technologies, ideologies, and worldviews. The analysis of long term structures includes the geohistory and prehispanic patterns characteristic of the northern Yucatan, including the geology, environment, and climate of the peninsula and the material traditions and the worldview associated with Maya culture.

The Medium Term encompasses forces that shape human lives, such as social, economic, agrarian, and demographic cycles, as well as the history of eras, regions, and societies. "These are impersonal, collective forces" that can be dated to particular generations or centuries (Febvre 1973:37; Bintliff 1991:7). In this study, the analysis of the medium term includes colonial and post-colonial history of Yucatan, including the social and economic processes, trends, and events unique to these periods, such as the rise of the hacienda system.

The Short Term deals with the record of everyday human action, political and social events, and the individual. In this study, analysis of the short term is concerned with the daily life of the Mayan workers at Hacienda Tabi. In particular, how had the economic and social lives of these people changed as a result of being incorporated into the hacienda system? I address this question and others through the lens of archaeological, ethnohistorical, and ethnographic investigations.

Problem History: Uniting Geological, Social, and Individual Time

Problem history is an important element in the Annales approach. Problem history focuses study on a specific historical question, what led to the formation of the hacienda system in Yucatan and what types of economic and social change were associated with the system? The formulation of specific historical questions allows the researcher to bring together event, conjuncture, and structure in a meaningful way. Annales-informed archaeology is most productive when particular problems or movements are placed within the larger context of cultural and social history. In short, the goal of these studies is to make a specific "portion of the past intelligible by organizing the sources around the questions the contemporary mind asks of any society" (Bailyn 1995:353).

Central to formulating pertinent questions is the placement of the event within the perspective of the larger time scales, making explicit the links between events and structures. In Annales methodology, this process is represented in the relationship of structure – event – structure. In this relationship, structure is defined as "a coherent and fairly fixed series of relationships between realities and social masses" (? :122). Events are symptomatic of structures undergoing change, but also serve as the catalysts for creating more lasting modification of those structures. Change can occur due to historical "accident", (weather, demographic change, etc.) or through aspects of culture reaching critical mass, such as those brought on by economic change. Through the process of structure – event – structure we understand that events precipitated by pre-existing structures can serve as catalysts of change in creating new structural formations.

I argue that this process took place in Yucatan in the late 18th century with the rise of the hacienda system. During the 1770-1780s crucial historical events conspired to bring about change in the structure of life on the peninsula. These events included historical "accidents," including natural disasters and demographic change, as well as political and economic change that resulted from pressures set into motion with the conquest of the peninsula. The cumulative effect of these events changed the economic and social relationships, and therefore, the organization of the Yucatecan Maya. These changes can be understood as part of the process of the articulation of Yucatan with the larger capitalist world system.

The Nature of the System in Yucatan

The Maya of Yucatan were brought into the modern world system with the conquest of the peninsula beginning in 1519. The conquest was an uneven process, with some areas remaining outside Spanish control well into the 17th century. Marx outlined three possible outcomes involving conquest: 1) the conquerors subjugate the conquered under their mode of production; 2) they leave the older mode intact and are content with tribute; or 3) a reciprocal interaction takes place and a new synthesis arises (Marx 1973:97). As we have seen, this synthesis forms new sets of class relations and therefore new laws of motion. In post-conquest Yucatan the Spanish were content to follow the second outcome, which may be described as the path of least resistance.

The Spanish conquerors and settlers viewed the Yucatan peninsula as a marginal, resource-poor environment. The soils are thin, water is scarce, and there are no mineral riches found. In short, the Spanish viewed the indigenous population as the only resource worthy of exploitation on the peninsula. Certainly, the exploitation of native populations was not unique to Yucatan; it occurred wherever the Spanish came into extended contact with local populations. However, unlike other regions of New Spain, the exploitation of the native inhabitants as a source of labor and tribute was an industry in and of itself in Yucatan. In the other provinces of New Spain, the Spanish used native people's labor and tribute to drive mercantilist agricultural and industrial enterprises. The *estancia*s (livestock ranches), haciendas (agricultural estates), mines, and merchant ventures of central, northern, and the Gulf Coast were powered by these tributary obligations and the products from these ventures were destined for the larger regional and world markets. In Yucatan, agricultural and industrial ventures would not appear until relatively late in the colonial period. Instead, the tribute system was both a means and an end within itself.

CHAPTER III

THE THEORETICAL ORIENTATION OF ARCHAEOLOGY AT HACIENDA TABI

Cultural Change and Resistance

The over riding focus of this study is the cultural change experienced by the Maya of Yucatan, in conjunction with the rise of the hacienda system, and the introduction of new forms of production. The changes experienced within their economic realm had repercussions on the social organization of the Maya. I will explore the dimensions of this change along a number of lines, including social status, household wealth, power relationships, and the use of social space. Exploration of these themes requires a theoretical framework informing the analysis of the Hacienda Tabi data. It will be useful to say a few words on culture and culture change before discussing the dimensions on which this change will be evaluated.

Culture is often defined as a complex of traits that are learned, shared, and transmitted. This description underscores the dynamic nature of culture. Individuals and groups functioning within a cultural system constantly negotiate the content and boundaries of culture. In this way, culture is an adaptive, evolving system. However, within culture there are structures that have great longevity. These structures have rigidity and serve as the foundation on which the character of a particular culture rests.

More lasting structures include language, belief systems, values, ethics, symbols, etc. Therefore, we are left with a situation in which

> [c]ultural elements can be and are self-consciously deployed and manipulated by individual actors in the course of events both grand and small; but culture itself (conceived of more as gestalt than trait list) acts on these individuals and delimits their options in very subtle – often subconscious – ways. This leads us to the irony that culture is dynamic while remaining continuous (Fischer 2001:13).

The totality of elements in a cultural system is embodied in a worldview that defines the ways that individuals and societies interpret their world.

Culture change can be initiated through internal or external forces. Internal forces of change include invention and innovation. External forces of change include diffusion, acculturation, and globalization. In this study, the forces of change are external elements introduced by the Conquest or that evolved out of the connections forged by Spanish intervention. Acculturation took place in this environment of sustained contact. Acculturation is a process involving the widespread reorganization of one or both cultures. In such cases, there is always a dominant and a subordinate society, and the subordinate culture experiences the most dramatic change.

Whatever the particulars of the initial contact, acculturation involves the forced borrowing of traits under conditions of external pressure. Thus cultural logics - the logic of internal organization - are the cumulative result of the dynamic interaction of individual intention, cultural norms, and material contingencies (material contingencies include local bionomics, as well as position within global political economic relationships) (Fischer 2001:16).

In Yucatan, acculturation was a slow uneven process. The Spanish were not interested in assimilation. They were content to maintain a caste system based on tribute and tributary labor. The Crown and religious orders had the greatest interest in the welfare and cultural practice of the Indian population. The Crown established the Council of the Indies to regulate the treatment and behavior of indigenous peoples. The religious orders were the most persistent and effective forces of change, actively working to convert the Maya to Catholicism and to Spanish norms of behavior.

Beyond the above two groups, *encomenderos*, private landowners, and individuals involved in various economic activities also had regular contact with native populations. These three groups were mostly interested in the economic and political aspects of relationships with the Maya and were not particularly interested in acculturation beyond those changes that served their own purposes. As part of their royal *encomienda*, encomenderos were required to protect and Christianize their charges. The fervor with which these obligations were carried out varied, but to a large degree, these duties were not fulfilled.

In the end, the individuals involved in regular economic negotiations with the Maya probably had the greatest impact in terms of cultural change on the individual, day-to-day organization of the Maya. It was through economic change that basic cultural structures like household organization began to change. As long as economic opportunities were limited, the process of change was slow. It was not until the events of the late 18th century that culture change, in response to economic change, began to reorganize Maya society.

Cultural Resistance to Change

Reactions to forcible change can include the adaptive response of syncretism. Syncretism is a blending of indigenous and foreign traits that form a hybrid cultural system. Religious changes during the colonial period serve as a prime example of syncretic change. For example, the Maya of Yucatan merged their Prehispanic gods with Catholic saints, creating "syncretic mutations" with dual identities (Farriss 1984:313). While not an open form of resistance, syncretism is resistance in that the foreign cultural traditions are not being passively accepted. Instead, the Maya were actively re-interpreting the cultural changes forced upon them in such a way as to meet their own needs.

Reactions to forcible change can take several forms, including flight, open resistance, and passive resistance. The Maya of Yucatan employed all these tactics in reaction to the pressures of acculturation. Nancy Farriss (1984) has extensively discussed the use of flight by the colonial Maya in escaping colonial rule, religious conversion, or tributary demands. Flight might mean movement into the *despoblado* or uninhabited territories beyond the frontier, or simply moving to the anonymity of another community.

Open resistance to culture change can involve a number of permutations, most notably revitalization movements. In these social movements, members of society attempt to construct a more satisfactory society through innovation. There are two types of movements within this category, both of which occurred in Yucatan: nativistic movements and revolutionary movements. Excepting the resistance of the period immediately following the Conquest (ca. 1547), two legitimate revitalization movements occurred in Yucatan (Farriss 1984:68).

Nativistic movements are focused on religion as the singular means of change in a system in which persons are dominated politically, socially, and economically. These movements are an attempt to resurrect a destroyed, but not forgotten, way of life. In 1761, Jacinto Uc proclaimed himself *Canek*, the ancient Itza Maya king. Uc claimed that he was the reincarnation of the Itza king, returned to lead the Maya against their Spanish masters. Uc even went so far as to adopt the regalia, the crown, and blue mantel of the local Virgin Mary. This mixture of indigenous and foreign cultural traditions is representative of the syncretic mix often associated with nativistic movements. This movement was short-lived and did not spread much beyond the town of Cisteil.

The second type of revitalization movement involves revolutionary movements in which change is directed towards the ideological system and the attendant social structure of the dominant cultural system. The most salient example of a revolutionary movement in Yucatan was the Caste War (1848-1855). The Caste War was a reaction to the political, economic, and social dominance forced upon the Maya under Spanish and then Republican era rule.

Passive resistance has become an important topic of study in the last twenty years (Scott 1985; 1990). Included within this category are the everyday forms of resistance that pass almost imperceptibly through history. Sometimes described as “weapons of the weak”, these acts represent a wide variety of undeclared, low profile, disguised resistance. These include behavior ranging from poaching, squatting, evasion, and foot dragging, to more overt actions like thievery, threats, and litigation (Scott 1990:198). These are clandestine activities that fall under a category Scott (1990) has termed "hidden transcripts." These include discourse that occurs beyond the direct observation of powerholders, including "those offstage speeches, gestures, and practices that confirm, contradict, or inflect what appears in the public transcript" (Scott 1990:4-5). By "public transcript" Scott is referring to open public discourse that takes place between dominants and subordinates. The dichotomy between what transpires in the public context and what takes place in the privacy of hidden transcripts reveals relationships of power, wealth, and status. The importance of public and hidden transcripts will be discussed in greater detail later in the section on power relationships.

Ultimately, culture change in Yucatan has been the result of a combination of political and economic forces, as well as personal decisions. The Maya were active participants in this process of change, acting and reacting within the large-scale political and economic forces that were brought to bear on them by external powers. On an individual, every-day scale, the Maya were active participants in the renegotiation of cultural organization. The Maya chose at what levels they would function within the system, whether it be acceptance, resistance, or by simply removing themselves from the system altogether. Some chose to work as servants in Merida, some chose to evade tax obligations by moving, and others chose to associate themselves with the nascent hacienda system.

In discussing the large scale processes, like the world system, that affected change colonial and post-colonial Yucatan, it is important to not take agency away from the Maya themselves. The cultural adaptability of the Maya is demonstrated by their ability to survive and adapt within the forces of world capitalism. The core cultural principles that defined the Maya were still present. Some may have been modified and others lost, but their worldview remained.

The Character of Social Stratification

Culture change often manifests itself in the structure of social stratification. This is especially true when cultural change involves a reordering of productive and distributive systems. Change in these areas may reshuffle the way that class and status are determined, as well as the nature of power and social control in a society. Changes along these lines can have far reaching effects, ultimately transforming elements of social organization. Transformations along these lines include modifications in wealth, consumption patterns, and settlement patterns. Changes that occur within these dimensions are amenable to archaeological investigation.

In order to understand changing models of stratification, it is necessary to define the economic and social factors that create inequalities within a society. The economic and social inequalities present in society are fixed within the phenomena of class and status. In turn, class and status are understood within the overall context of power and social control as distinct bases for claiming material and symbolic rewards (Parkin

1982:90; Weber 1968:927). Through the course of this study, I will evaluate the factors involved in determining the individual's place within the economic and social hierarchy of colonial and post-colonial Yucatan. I will examine these issues along dimensions of wealth, power, and prestige in light of the changing nature of stratification that typified the region during this period.

Social Stratification

Social stratification describes a social system in which all individuals do not have equal access to wealth, power, and prestige. To one degree or another, all people are socially differentiated on the basis of criteria such as physical appearance, ethnicity, profession, family background, sex, ideology, age, or skill in performing certain kinds of economic or political roles. Systems of stratification are strongly linked to the ways in which economic and social resources are allocated, distributed, and converted through labor into goods and services. Stratified societies are characterized by considerable inequality in all forms of social rewards. These forms of political, economic, and social inequality are both endemic and formally recognized parts of society. As a result, individuals and groups are noticeably dissimilar in terms of social position, wealth, lifestyle, access to power, and in the standard of living they possess. In the context of this study, stratification denotes the systematic ordering of individuals and social factions within classes and status groups, as well as relationships of power.

Following Weber (1968:927), stratification is represented within society along two key structural dimensions, social classes and status groups. (Weber also outlined a third dimension, “party”, which is not germane to this discussion.) Social classes are related to the disposition of labor and production and correspond to the economic sphere of social life under market conditions. Classes are composed of groups of people who are subject to similar economic circumstances, which in turn influence material standards of existence and types of personal life experiences (Giddens 1971:164).

Central to the composition of classes is the ownership of property within a productive and distributive system based on market forces. In these circumstances, social classes are characterized by disparity in benefits and prerogatives between those who possess property or productive wealth and those who do not. Under these conditions, those who do not own property are forced to offer their services on the market and are subsequently divided according to the types of services that they offer. At the same time, those owning property are divided along the types and economic uses of the property they own (Giddens 1971:164).

The ownership of property is representative of larger issues of inequality and stratification found in the productive and distributive systems of a society. The ownership of property or productive wealth, in the form of land, technology, and labor, is representative of control of the means of production. In turn, control over the means of production entails power in ordering the nature of production and distribution. The patterns of inequality expressed within these social formations are particular to the historical circumstances surrounding the productive system. At the same time, modes of production can be accommodating in adapting and incorporating existing social arrangements and forms of social inequality within the overall logic of the system. For instance, existing hierarchies based on ethnicity, sex, age, or religious inequalities can be incorporated within the economic realities of the new mode of production.

As a whole, classes constitute heterogeneous and internally divided categories in which no real unified class interests exist. According to Weber, class action occurs only when the causes and consequences of class structure become transparent. In Marx's terminology, class action -- in the form of class-consciousness -- occurs when a class becomes aware of its relationship in regard to other classes. In general, class interest is ambiguous and classes do not constitute concerted groups.

The formation of class structures from economic structures occurs through the processes of mediate and proximate structuration. The mediate processes act as the connective link between the market and structured systems of class relationships. Mediate structuration includes factors that "intervene between the existence of given market capacities and the formation of identifiable social classes" (Giddens 1973:158). In a capitalist or developing capitalist system, there are three general types of market capacities: the ownership of property or means of production; holding educational or technical qualifications; and the individual possession of labor. These capacities correspond to the upper, middle, and lower classes in a generalized three-class system.

The factors of mediate structuration refer "to all forms of relevant attributes which individuals may bring to the bargaining encounter" (Giddens 1973:155). Attributes or factors relevant to this process include aspects of education, skills, position within production processes, etc. In this way, individuals are either advantaged or disadvantaged in the marketplace. The different aptitudes individuals bring to the marketplace help to determine their potential mobility within the class system. These factors are evaluated within the market and determine the particular market capacity an individual will inhabit.

The nature of this system is affected by the distribution of mobility chances within society. The greater freedom of movement individuals have in transcending ascribed social classes, the greater the mobility within the system. Increased mobility translates into a less rigid class system. In contrast, a system approaches closure as the chances of personal mobility lessen, either individually or generationally. Greater closure produces more clearly identifiable classes and facilitates the reproduction of the system. Differential mobility and market capacities define the power distributions individuals have within the market, as well as their class location.

Ultimately, the market capacities present in a particular society are shaped and conditioned by the localized factors as represented by proximate structuration. Three sources inform proximate structuration: the division of labor associated with a particular mode of production; the authority or power relationships present within the system; and the influence of “distributive groupings” (Giddens 1973:158). Distributive groupings include “those relationships involving common patterns of the consumption of economic goods” (Giddens 1973:159). The combination of mediate and proximate structuration helps form, and ultimately, reifies class structure within society. The processes of structuration and the formation of classes relate directly to the ordering of production in the marketplace. As a result, "'class' refers to the objective attributes of the market situation of numbers of individuals, and as such the influence of class upon social action operates independently of any valuations these individuals might make of themselves or others" (Giddens 1971:166).

Classes are impersonal economic formations geared towards the pursuit of material gains. By contrast, human agency in the stratification system is reflected within the status groups found in society. Status groups are structural categories in which persons are classified according to prestige and honor. Unlike classes, "status groups are normally communities, which are held together by notions of proper life-styles and by the social esteem and honor accorded to them by others" (Coser 1977:228-320). The distribution of honor among status groups forms a status order that characterizes a society. Status groups are more likely to share a sense of common identity and an awareness of the boundaries that separate them from other groups. This self-awareness is especially prominent within groups characterized by racial, ethnic, or religious elements (Parkin 1982:97-98).

Due to their self-awareness and self-interest, status groups tend to work against class unification through the division of classes internally, or through the formation of groups that cut across social classes. Internal divisions within social classes typically involve status groups ordered around the division of labor or the distribution of property. Status groups that cut across social classes are not based on labor or property distributions, but rather on communal groups, e.g. groups affiliated with race, ethnicity, or religion. While elements of status connected to labor and property are subject to frequent change associated with fluctuations of the market, status groups that rely on a sense of shared identity or tradition are more enduring (Parkin 1982:98-99).

Associated with status groups are restrictions that define the nature of intra-group relationships as well as an assumed social distance between group members and their assumed inferiors. Importantly, status groups only exist in reference to the prestige or lack of prestige accorded them by others. Therefore, corresponding levels of prestige establish a hierarchy of status groups based on social distance (Coser 1977: 228-230). Among the prehispanic Maya, social distances were based upon a loosely defined hierarchy of nobles, merchants, commoners, and slaves. In the historic period, status groups continued to be defined along these social parameters, albeit further complicated by new ethnic and economic factors.

The ordering of status groups is the result of traditions and values that become prevalent through socialization and repetition in discourse and practice. In this way, groups are often conditioned to define themselves within the logic of the prevailing status hierarchy. It is for this reason that "[t]he lowly are thus often inclined to accept the claims for deference made upon them by others of higher standing" (Parkin 1982:99).

Groups that derive social honor on the bases of ethnicity, rather than from the formal structures of esteem and deference, are an exception to this pattern. Due to their unique sense of honor, ethnic groups are often unaffected by the denigration of outsiders and do not define themselves in accordance with the opinions of the wider society. For this reason, there is no ranked hierarchy system of ethnic groups that is recognized by all. Instead, society is composed of groups characterized by unique formulations of 'ethnic honor' in which "each group jealously preserves and cultivates a sense of its own moral worth and dignity, and of the inferiority of all other groups" (Parkin 1982:99). In this way, ethnic groups like the Maya who find themselves subordinates within the formal political, economic, and social orders of society will not accept the dominant evaluation of themselves as ethnically inferior. Ethnicity then can serve as a basis of group solidarity and as a source of resistance to domination.

Occupation and Status

One of the most prominent and important dimensions of status is occupation. Mills offers an excellent definition of occupation in the following:

> By an occupation we understand a set of activities pursued more or less regularly as a major source of income. From the individual's standpoint, occupational activities refer to types of skills that are marketable. As specific activities, occupations thus (1) entail various types and levels of skill, and (2) their exercise fulfills certain functions within an industrial division of labor… As sources of income, occupations are thus connected with *class* position. They also involve certain degrees of *power* over other people directly in terms of the job, and indirectly in other social areas (Mills 1964:306).

Occupation plays a prominent role in defining the life styles that are the basis for the development of the distinct social strata found in any society (Weber 1947:429). From an economic standpoint occupation is a sensitive reflector of both economic and social ranking and change. Occupation orders the labor hierarchy of the productive system and informs the reward levels associated with the distributive system. From a social standpoint, occupation provides a basis on which individuals may garner honor, prestige, and power. Socially sanctioned levels of honor, prestige, and power can then be parlayed into economic and social wealth that ultimately becomes embodied in the consumptive patterns associated with individuals and households.

The nature of the occupational structure found in a particular society is the cumulative result of several variables including: the degree to which “well-marked” and stable occupations have developed within society; the particular mode and degree of occupational specification or specialization within a society (where specification refers to the production of a specialized product in which all productive steps are carried out by an individual, as opposed to specialization where an individual is only involved in one step in a cumulative process); and the extent and types of continuity and change that characterize occupational status within society (where continuity and change are affected by changes in technology and the amount of training required for specialization, as well as the relative stability or instability of income opportunities associated with various occupations) (Weber 1947:251).

In general, societies characterized by increased occupational specialization have more complex systems of stratification. Ultimately, “[t]he structure of occupational differentiation and that of opportunities for income and profit are closely related” (Weber 1947:250). There is a strong link between occupation, economics, and access to resources and advantages. However, as the preceding discussion of social status demonstrates, stratification cannot be solely understood in economic terms. Social stratification can also be measured in relation to the unequal distribution of wealth, prestige, and power among status groups as determined by social factors.

Wealth is defined as accumulated economic resources, the form of which may vary from one society to another. Power is defined as the ability to achieve a desired objective, where the outcome depends on the agency of others. Power is often associated with wealth, particularly in Western societies. Nevertheless, power and wealth do not always overlap. Power can be based on factors other than wealth, such as occupation, possession of specialized knowledge, or eloquence as a speaker. Prestige is defined as the social esteem, respect, or admiration that a society confers on people. Favorable social evaluation is based on the norms and values of a particular group, and therefore, sources of prestige vary from group to group. Prestige may be associated with things such as age, warrior status, or again, occupation.

Although power, wealth, and prestige are often interrelated, they can also operate independently. For example, it is possible to have power and wealth, but little prestige, as is the case of the *mayocoles* or work gang supervisors on haciendas. As salaried workers, these men had more power and wealth in comparison to the men they oversaw, but because of their hated position, they had little prestige among their fellow workers. Similarly, a modest laborer may be highly esteemed among his peers for his abilities as a worker, but at the same time he may have only modest wealth and very little power to influence people. As these examples show, stratification and status are not mutually constraining. An individual's status can vary when viewed from a different perspective, even though their relative rank or class within society is fixed. It is for this reason that social stratification and status must be evaluated in terms of both external factors, e.g. occupation, rank, ethnicity, etc., and in terms of internally class derived social schema.

Blassingame (1976) has addressed this situation in connection with social status in the slave communities of the antebellum American South. Blassingame argues that, even within a system predicated on an occupational hierarchy,

> occupations translated into high social standing in the slave community only if they combined some of the following features: (1) mobility, which allowed the slave to leave the plantation frequently, (2) freedom from constant supervision by whites, (3) opportunity to earn money and (4) provision of a direct service to other blacks. Blacks who worked as drovers, teamsters, river-boatmen, carpenters, jockeys, blacksmiths, millwrights, shoemakers, seamstresses, distillers, and any slave who hired his own time gained status among other blacks because their jobs had one or more of these features. Occupation alone earned no one the top rung of the slave social ladder (Blassingame 1976:141-142).

In the same way, the social hierarchy on the hacienda was not simply a matter of the fixed occupational hierarchy. Occupation, as determined by the *hacendado*, represented the external, top down ordering of the hacienda worker class structure. In terms of internal class structure, the workers themselves ultimately selected the variables with which they ranked each other.

Thus, social stratification is comprised of both economic and social elements, as well as external and internal ordering. The elements that constitute these inequalities are the summative result of particular historical circumstances, both local and extra-local. Cumulatively, the primary structures of stratification (class and status), along with the various dimensions that comprise these categories (e.g. wealth, prestige, ethnicity, sex, age, etc.), form the basis for individual and group claims to material and symbolic rewards. These structures and dimensions comprise the framework that defines the parameters in which social action and human agency exist. The dialectic negotiation of this framework occurring between individuals and groups is expressed through dynamic relationships of power.

Power Relationships

Weber (1947:152) defined power as "the probability that one actor within a social relationship will be in a position to carry out his own will despite resistance, regardless of the basis on which this probability rests." Within the Weberian tradition, power is often studied in terms of the power struggles that surround formal political institutions. In such instances power is seen as a negative action based in the ability of one social actor or social group to thwart another from realizing their own objectives (Paynter and McGuire 1991:6; Giddens 1971:156). This theoretical conceptualization suggests that power is "something set apart from society as a whole, something found in some institutions and not others, hence something possessed by some but not by others" (Paynter and McGuire 1991:6).

Giddens (1982,1984) has addressed the inadequacies surrounding traditional conceptualizations of power relationships by introducing a less restrictive understanding of the nature of power in society. Giddens views power as transformative capacity, "the capability to intervene in a given set of events so as in some way to alter them" (Giddens 1984:14). This transformative capacity places power within the agency of the individual, giving him or her the power to either intervene in social processes or to refrain from intervening in those processes. Therefore, agency is the capability to act, where action represents the exertion of power. At a fundamental level, all individuals possess the power to intervene through constructive, as well as negative, social action, and power permeates all social life (Paynter and McGuire 1991:6). Within this understanding, nearly every social interaction is to some degree a relationship of power (Giddens 1971:156).

Constructive power refers to the transformative capacity of social relations or the “power to” effect change. The negative aspect of power refers to relationships of domination, or situations in which the “power to” is characterized by “power over” (Miller and Tilley 1984:5-8). In this way, the Weberian concept of power, as represented by “power over”, is only one of many strategies concerning relationships of power (Paynter and McGuire 1991:6). The variable nature of power relationships is distinguished by the innumerable types of social action possible and by the multitude of social arenas in which these actions can play out.

The adaptable character of power is described as the heterogeneity of power, a theoretical understanding in which “power is multifaceted and not reducible to a single source or structure” (Bowles and Gintis 1986:23). Because power is heterogeneous it is not limited to any particular domain within society and therefore is not reducible to simplistic formulations in which power is a commodity that elites grant to, or exercise over subordinates (Paynter and McGuire 1991:6). The different domains in which power is held create potential sources of conflict within society.

The possible clash of power domains are most evident in situations of colonialism, as exemplified by the interaction of European forms of symbolic and material domination with indigenous power structures in the Americas (Paynter and McGuire 1991:7). As a result of these meetings, complex systems of power relationships were created, characterized by “highly contested redefinitions of race and gender, as well as new forms of production” (Paynter and McGuire 1991:7). This certainly was the situation in Yucatan, where native power relationships were subsumed, transformed, or altogether eliminated under the domination of the Spanish system.

Politically, the native elites were cast into a new relationship where they found themselves subordinate to the Spanish monarchy and bureaucracy, while retaining some of their traditional power among their fellow Maya. Economically, the bulk of Maya society continued laboring under a tributary system in which the Maya elites had been replaced by their Spanish subjugators. Socially, new power relationships were created along ethnic lines, as well as in terms of the aforementioned re-ordering of the traditional social hierarchy.

These relationships were continually being renegotiated as circumstances evolved and changed. Over time, the Maya elites lost the privileges that had previously been associated with their status. Economic relationships of power changed as production and distribution systems evolved toward a more market based capitalist mode of production. And, social relationships originally founded on kinship, extended family, and community based relationships yielded to new conceptions of social power, based on the realities of life in the new hacienda communities.

As evidenced in the preceding, the extension of power to a multiplicity of domains expands power-laden social relationships into structures like the family, workplace, interest groups, etc., in addition to the traditionally studied political institutions like the state. As Paynter and McGuire (1991:7) suggest:

> Accepting the heterogeneity of power requires us to investigate the relations structuring a wide range of activity: for instance, we need to study the organization of work on rural farms as well as in palace work houses, to look for similarities in power exercise between kings and queens as well as peasant husbands and wives, and to consider how people in villages, nomadic camps, and isolated farms have, at times, consolidated their power to unseat the residents of urban palaces and temples. In short, the heterogeneity of power raises the issue of how A intersects with B throughout the regional settlement system, and not simply in the temples, palaces and sumptuous graves of the elite.

More specifically, the heterogeneity of power expressed through transformative capacity gives agency to individuals and sets the stage for examining issues of domination and resistance within society.

Domination and Resistance

Inequality in social power is an important aspect of past societies, that affected both the social and material landscapes. The study of power provides insight into the organization of social control, as well as the organization and perception of social hierarchies. The recognition of power relationships allows examination of "the interplay between those who use structural asymmetries of resources in exercising power, known as domination, and those who develop social and cultural opposition to this exercise, known as resistance" (Paynter and McGuire 1991:1). Ultimately, the study of how people exercise power reveals the social logic behind expressions of inequality within society.

Domination is the central concept in evaluating power relationships. Domination refers to the exercise of power based on asymmetries in the control of resources (Giddens 1981:50). Individuals who control more strategic resources or have increased access to these resources typically wield greater power. These individuals will be referred to as elites in this discussion in reference to their advantaged social position and influence. The interplay of individuals with varying degrees of power, and therefore, varying degrees of domination creates a complex, stratified system.

Similar to the heterogeneity of power, we can discuss domination as being heterogeneous (Paynter and McGuire 1991:10). From this viewpoint, power is not only defined by competition between elite blocks of power, but is modified through resistance on the part of non-elite groups and individuals. Non-elites place limits on domination by exercising their "power to" not act or to limit action. Through the recognition of individual agency,

> a much broader range of actions can be seen as responses to and attempts to circumvent the multifaceted bases by which elites exert domination. Malingering, sabotage, and strikes are resistances to domination that controls the means of livelihood; desertion, "draft dodging," banditry, and guerilla wars are forms of resisting force; ridicule, deceit, linguistic codes, and fully developed cultures of resistance suggest and validate resistance by beclouding and sometimes contradicting hegemonic power (Paynter and McGuire 1991:11).

In domination, as in the larger issue of power, the ability of the individual to act creates a diverse social landscape. The interplay between dominant ideologies and ideologies of resistance are reproduced in the words, deeds, and material objects of social life.

The acceptance of domination may rest in different motives ranging from habit, duty, and fear, to self-advantage. Regardless of individual motivations, acceptance of domination ultimately rests in the subordinate's belief in the legitimacy of the authority (Giddens 1971:156). Weber classified claims to legitimacy along three types of domination, including traditional, legal-rational, and charismatic. There are instances where authority and power are not based in legitimacy, but rather in domination, solely through illegitimate means, such as physical coercion.

Traditional claims to authority are based on the sanctity and validity of tradition, including gerontocracy (authority held by elders), patriarchalism (authority held by the master of a household), and patrimonalism (an extension of patriarchy beyond the household). Under these types, obedience is not a matter of compliance based on stated norms or codified procedures, but on personal loyalty, exemplified by the notion of filial piety (Parkin 1982:80-83; Giddens 1971:157). In the case of patrimonalism, the notions of loyalty and fidelity are extended to political subjects who have no actual filial link.

Legal-rational domination draws authority from the impersonal norms of formally enacted rules and statutes. Legal-rational authority is not based on tradition, but is a function of purposive or value-informed considerations (Parkin 1982:87-89; Giddens 1971:157). Legal-rational domination is typically represented by a bureaucratic form of political rulership. In charismatic domination, authority is placed in an individual who is thought to possess extraordinary characteristics. In contrast to traditional and legal-rational forms of domination, charismatic domination is not a formal or lasting structure, and therefore, does not contain established forms of organization. The charismatic leader depends solely on voluntary compliance, whereas the other two forms of domination may evoke sanctions and coercion to maintain authority (Parkin 1982:84-87; Giddens 1971:160).

Weber conceptualized the three types of domination as large-scale, systemic forms of authority, but they are amenable to the small-scale, group or individual level of society. At various points in the history of Yucatan, traditional domination and legal-rational domination characterized hacienda relationships of domination and authority. The trajectory of this change will be elaborated upon in Chapter V, but I will briefly describe the progression here. The traditional type of domination characterized the early history of the hacienda authority. More specifically, the *hacendado* ruled his estate through patrimonial domination. His legitimacy was tied to the loyalty and fidelity accorded him by the *luneros* who inhabited the hacienda and his power was defined by the limits of custom and convention that had grown out of Spanish institution of *encomienda*. In short, authority and legitimacy on the early hacienda relied on personal loyalty to the *hacendado* as patriarch, rather than on any type of codified procedures.

As the hacienda system matured, the authority of the *hacendado* became increasingly vested in a legal-rational type of domination. This change echoed the increasing economic importance of the hacienda. Legitimacy became progressively more codified in rules and laws that delineated labor conditions and property rights in the region. More systematic and well-defined relations of production distinguished domination during this period. The pretense of tradition in terms of the patriarchal role of the *hacendado* was largely gone by this period.

Claims to authority made by persons in positions of power may be only partially accepted or may be completely rejected. Legitimations or claims made by dominant groups regarding themselves emanate from the top down, while legitimacy is bestowed from the bottom up (Parkin 1982:77-78). Those who would exercise authority necessarily rely on a number of means beyond simple "moral respect for the people in control or from a sense of loyalty to the system" in order to stay in power (Parkin 1982:76). Typically, this includes some combination of physical coercion, moral persuasion, and material inducements (Parkin 1982:75). It is here that issues of compliance become important, including the means by which elites attempt to structure society in order to garner dominance. At issue here is the difference between the perceptions of elites, versus those of the masses. This requires us to shift our focus from issues of command to issues of compliance and then to ask how elites shape the social landscape in order to maintain authority.

The structuring of the social landscape, including the ideological and physical environments that individuals inhabit, is an attempt to codify and legitimize the structures of domination, and to reify hierarchies of power. The use of discipline is important in shaping this landscape. Discipline is a physical manifestation of elite ideals of social behavior aimed at achieving compliance, either consciously or unconsciously (Paynter and McGuire 1991:8; Foucault 1979; 1980). Conscious manipulation may include representation of the dominant ideology through manifestations of monumental architecture, sumptuary goods, language, ritual, etc. or may take place through physical coercion such as corporal punishment.

Similarly, discipline may be used to reinforce the dominant ideology by structuring domination into the everyday activities of individuals through subconscious habituation. In essence, a common sense relationship between the elite ideal and individual social behavior is forged by way of controlling aspects of the built environment, relations of production, distributive systems, and so on. Whether discipline is administered through conscious or subconscious means, it is ultimately an attempt to use the "power over" to control the way individuals experience and use their "power to" (Paynter and McGuire 1991:8-9; Rabinow 1984:17). The effectiveness and extent to which strategies of domination permeate society varies within and across time and place. Ideologies of resistance are often complicit with the organization and expression of dominant ideologies. As seen in these competing ideologies, the discord between domination and resistance is emblematic of the dichotomy between public and hidden transcripts.

In the same way that power and domination were discussed as being heterogeneous, we can talk about the heterogeneity of resistance. The heterogeneity of resistance describes the different ways in which groups or individuals resist domination, including the various strategies employed in resistance, the scale of the resistance, and the social spaces in which the resistance takes place. The range and diversity of elements employed exemplifies "the heterogeneity of resistance implicit in the notion of power as a transformative capacity" (Paynter and McGuire 1991:12).

Resistance is very much a product of the agency of individuals. Embodied in any number of practices, dialogues, and/or gestures, individual acts of resistance consciously dispute the state of powerlessness and dependency felt by subordinate groups. These individual acts characterize the overall nature of status groups, which may at times coalesce into outright social disobedience and rebellion. Thus the basic division within the heterogeneity of resistance is between everyday forms of resistance and collective defiance.

Everyday forms of resistance are the disguised, low-profile, undeclared acts that surround the "constant struggle between the peasantry and those who seek to extract labor, food, taxes, rents, and interest from them" (Scott 1985:29). These are the ordinary "weapons of the weak" that include acts such as "foot dragging, dissimulation, false compliance, pilfering, feigned ignorance, slander, arson, sabotage, and so forth" (Scott 1985:29). Everyday forms of resistance are characterized by a lack of coordination or planning, and do not directly confront authority or elite ideologies. Undisclosed resistance is often cloaked in the anonymity of folk culture, relying on networks of kin, friends, neighbors, and community, rather than formal organization with leaders, manifestos, names, etc. (Scott 1990:200; 1985:35).

Informal everyday resistance is often concerned with small-scale, immediate gains, and therefore, only marginally affects the exploitative structures of domination and power. However, the cumulative effect of these acts is not trivial, and in the end, may accomplish more than openly declared acts of defiance, which often provoke immediate and forceful responses that suppress any meaningful change. Even if these acts are not conscious acts of resistance, they are still reactions to the structures of domination endemic to a particular society, and therefore, can be viewed as symptomatic and symbolic of resistance to the domination characterizing the overall system.

Conversely, declared forms of resistance represent large-scale withdrawals of compliance. Highly visible events, like rebellions, strikes, land invasions, litigation, etc., signify the failure of more covert forms of everyday class struggle, and/or that social conditions have reached a critical point. These types of events entail considerable risk and "normally come only after a protracted struggle on different terrain" (Scott 1985:37). Forms of public declared resistance are often short-lived and unsuccessful, but still may achieve concessions from powerholders, or may serve as a respite from new and distasteful relations of production. Importantly, these events create collective memories of resistance that shape the future attitudes and actions of both dominant and subordinate social groups. The ideologies that characterize viewpoints of dominance and resistance are embedded in the dichotomy between public and hidden transcripts.

Public Versus Hidden Transcripts

The nature of power relations, and indeed, the issues of social inequality that differentiate society as a whole, are revealed in the interaction between ideologies of domination and ideologies of resistance. The ideologies of domination that instruct these interactions are expressed and reenacted in the rituals of public discourse that take place between social strata. These rituals are informed by the assumptions of inferiority and superiority associated with the ordering of status groups. Away from the public arena, ideologies of resistance create a rich dialogue of dissent aimed at the dominant public transcripts that characterize power relations.

Power relations represent the observed relationships between the public transcripts espoused by dominates and subordinates (Scott 1990:13). As previously defined, public transcripts include the open discourse that occurs between dominants and subordinates. Due to the more powerful position of elites, these interactions are skewed towards the ideals of the elite ideology. Public performances by subordinates are tailored to the expectations of dominants “out of prudence, fear, and the desire to curry favor” (Scott 1990:2). For this reason, public transcripts are often accomodationist in tone, reflecting the way in which elites would have themselves seen.

Most observed interactions between dominants and subordinates represent public transcripts in which the participants are obliged to wear masks appropriate to their position. In the case of a subordinate, it is in his best interest to give “a more or less credible performance, speaking the lines and making the gestures he knows are expected of him,” in order to maintain relations with those powerholders in a position to help or harm (Scott 1990:4). On the other hand, those in dominant positions must conform to the expectations of their position, in order to substantiate their claims to legitimacy and power.

The management of power relations between subordinates and powerholders is captured within a dialectic of disguise and surveillance. Within this dialectic, “subordinates offer a performance of deference and consent while attempting to discern, to read, the real intentions and mood of the potentially threatening powerholder.” And in turn the powerholder “produces a performance of mastery and command while attempting to peer behind the mask of subordinates to read their real intentions" (Scott 1990:3-4). The synthetic outcomes of this process are the public transcripts that nominally endorse the hegemony of the dominant powerholders.

The masks are removed “offstage” with the derivative “gestures and words that inflect, contradict, or confirm what appears in the public transcript” (Scott 1990:10). This offstage discourse constitutes the hidden transcripts that occur within social groups. Hidden transcripts are elaborated among a restricted public, i.e., among a particular group of actors within a specific social site, and consist of a wide range of discourse. These transcripts are produced for a different audience, under different constraints than those enacted within the power-laden context of public discourse and therefore offer insight into a group’s ideology. Consequently, “[b]y assessing the discrepancy between the hidden transcript and the public transcript we may begin to judge the impact of domination on public discourse”(Scott 1990:5).

Domination restricts the nature of public discourse, and therefore, creates the hidden transcript. The disposition of public performances of deference and command as well as the extent and richness of hidden transcripts, reflect the amount of suppression present in a particular society. The dialectic between public and hidden transcripts represents a continuum of behavior, where increasing levels of coercion typically produce increasingly elaborate forms of hidden transcripts.

As previously discussed, the inner gradations of power that order social groups are a function of the heterogeneity of power that is signified by a multiplicity of domains (e.g. the family, the workplace, the state, etc.) through which power relationships are expressed. In general, discourse becomes less constrained as audiences become increasingly restrictive and secluded. For example, the discourse that takes place among friends and immediate family members is often less restrained and restricted than the type of discourse that take place in public. Ultimately, no social discourse is truly free of exigent considerations, and even within the most restrictive and private levels of society, the production of hidden transcripts are subject to power relations. It is important to recognize that members of society are often as likely to be subject to sanctions fostered within groups as they are to the sanctions inherent between dominant and subordinate groups (Scott 1990:25-27).

Public Versus Hidden Transcripts on the Hacienda

The boundary between public and hidden transcripts is a zone of contention where class struggles are expressed in conflicts that take place between dominance and resistance. On an everyday basis, the impact of power is most readily observed in the acts of deference, subordination, ingratiation, and resistance associated with this conflict. Public and hidden transcripts are enacted at both physical and symbolic locations embedded within the social landscape. The social landscape at Hacienda Tabi was divided into public and private areas, where domination was reinforced and resistance was nurtured.

Public and hidden transcripts were expressed in the composition of the physical and ideological landscape of the hacienda. The settlement plan of the site can be divided into a series of public versus hidden social sites, with some areas serving both functions. At a basic level, there is a dichotomy between the public spaces of the *casco* (fields) and the hidden spaces of the worker's village. These spaces range from areas defined by domination in the forms of control, deference, and surveillance, to areas of greater seclusion and concealment.

Public spaces included the principal house, great yard, mill, fields, and tienda, all of which are areas where customary forms of domination functioned at high levels. These sites provide the stage where the public displays and theatre necessary for creating and maintaining elite legitimacy and power were enacted. The display of power was embedded in physical locations like the great yard, where activities like roll call or the spectacle of corporal punishment that took place, the confinement cells of the principal house, or the mill and fields, where overseers guided the behavior of their subordinates. These physical spaces were also symbolically charged. A good example of the symbolic importance of physical space is the high wall that surrounds and separates the palacio, great yard, and mill from the worker's village. This wall served no real defensive function or even practical purpose, as the space it defines was open to the workers of the hacienda and traversed daily by many of them. However, these walls served to symbolically separate the elite dominated, economic precinct from the non-elite, worker dominated village space. Other spaces, like the tienda and millworks, symbolized and embodied elite power by demonstrating elite ownership and control over access to resources.

Hidden transcripts took place in the private spaces of the worker's village, including the dwellings and *solares* of workers, or in the outlying *milpas* farmed by individuals. Additionally, restricted portions of the *casco* and the principal house served as areas where the hidden transcripts of the hacienda elite were enacted. Transitional spaces included the streets and plazas of the community where surveillance and deference might be expected, but which were removed enough to allow free discourse. These sequestered social sites fostered elite and non-elite hidden transcripts and were the spaces where non-elite resistance was cultivated and given substance.

The examination of transcripts and their attendant issues of domination and resistance adds an additional layer to inquiries concerning power, wealth, and status. The physical manifestations of the social landscape reveal the ideological aspects of domination and power within a society. The identification and evaluation of the transcripts that characterize a society at any particular point help to augment and reinforce information recovered from archaeological contexts.

Household Archaeology

Household archaeology has emerged as an important area of research in the last 20-25 years. However, the early development of what would become household archaeology began in the 1960s with settlement archaeology and an interest in mapping the distribution of human activities on the landscape (Ashmore and Wilk 1988:7). The Processual movement of the 1960s moved archaeologists to study activity areas and how they were distributed within sites. Furthermore, Maya archaeologists came to acknowledge the importance of knowing the functional aspects and the systemic relationship between three aspects of settlement patterning: single structures, sites, and intersite distributions. Household archaeology emerged in response to a growing understanding of the importance of the household in terms of adaptation and in recognition of the long neglect of this unit in archaeological research.

Over the course of the last two decades archaeologists have increasingly turned to the remains of households to answer complex social questions. Embodied in architecture, artifacts, and activity areas, households are a ubiquitous element of the archaeological record and typically demonstrate the range of social variation found within a particular society. The household is the basic unit of production, consumption, transmission, and reproduction, and is on the front line in terms of adapting to change in both the natural and social environments. Realizing this, archaeologists interested in complex societies have increasingly utilized household data to address questions of social organization and adaptation (Wilk and Rathje 1982; Ashmore and Wilk 1988; Hirth 1993a, 1993b).

Richard Wilk’s (1991, 1988) studies of the Kekchi Maya have outlined the importance of the household as an adaptive unit. In this approach, the household is considered to reflect society at large, as it responds to changes in political, economic, and social arenas. Changes in these areas are manifest in adaptations of household behaviors and material culture, a correlation of particular importance to archaeologists. According to Wilk, we can explore adaptive strategies by disarticulating the household into its different dimensions. These dimensions can include categories such as household size, architecture, spatial use, household activities, status markers and wealth (Bermann 1994). In examining these dimensions, the archaeologist should seek to identify change or continuity in the normative tradition, which is then used to examine links to external influences. Using these dimensions, I will identify change or continuity in the normative tradition, which I will then use to create a linkage to external spheres of influence.

Household archaeology is based on the premise that the household is the fundamental element of human society. It is at this fundamental level that social groups articulate with economic and ecological processes. Due to this direct articulation, households are sensitive indicators of change in social organization. The household is viewed as an adaptive unit, and as it responds to changes in political, economic, and social arenas, it reflects society at large (Wilk 1988, 1991). Changes in these areas are manifest in household behaviors and associated material culture.

According to Wilk and Rathje (1982) the household is composed of three elements: 1) social; i.e., the demographic unit; 2) material; i.e., dwellings, artifacts, and activity areas; and 3) behavioral; i.e., activities performed within the household. Archaeologists can only excavate the second category, the physical remains of past households. This is an important point to make. Archaeologists necessarily have to infer dwellings from the archaeological record and, in turn, must infer households from the dwelling units (Wilk and Rathje 1982:618). The challenge for the archaeologist is to reconcile archaeological remains recovered through excavation with the functions (production, distribution, transmission, and reproduction) of past households.

There are methodological difficulties associated with household archaeology that must be acknowledged. Mitigating factors associated with household studies include the proper identification of domestic structures from other structures, the possible invisibility of household structures, issues concerning the contemporaneity and serial nature of households, and development cycles associated with households. Additional problems may be related to the material assemblages linked to households, including complications associated with variation in consumer behavior over time, curation or recycling, differential patterns of refuse disposal, or sampling bias.

Identifying dwellings and the households associated with them means that the types and number of architectural units that compose household groups must be classified. This process is aided by ethnographic and ethnohistoric information, as well as by the distribution and patterning of artifact assemblages (as discussed in the following section on ethnoarchaeology). The composition and size of households can be defined on the basis of elements of residential proximity, the spatial patterning of exterior/interior spaces, and architectural types (Hirth 1993; Kent 1984, 1987; Winter 1976; South 1977). Of additional concern is the possibility that some dwellings might go undetected due to the ephemeral or imperceptible nature of these remains.

There are a couple of temporal concerns involved with household archaeology. The first is the contemporaneity of households, that is, the necessity to link households in time in order to justify comparisons. This is accomplished through an understanding of the site timeline, by documenting individual dwellings using architecture, artifacts, and/or using historical information when applicable.

A related issue is the possible diachronic nature of accumulated household archaeological deposits (Hirth 1993). It can be difficult to isolate the composition of individual households at a particular point in time. The longer the occupation and/or the greater number of times a household site is reoccupied the more complex the problem of identification becomes. Accumulations of multiple households at a single site are referred to as the household series (Hirth 1993a:25; Smith 1992:30).

From an archaeological viewpoint a "household series will comprise the sequential expansion, modification, and demolition of a homestead's architectural features. The series also includes the artifact assemblages reflecting the functions and activities associated with residential structures" (Hirth 1993:25). As Hirth (1993) points out, the social correlates that distinguish particular points in household series data have not yet been developed. For this reason, archaeological analysis must be confined to diachronic questions of household composition. This level of analysis is sufficient for the Hacienda Tabi data, as I am interested in the cumulative affect that the hacienda system had on Maya social organization over the 135-year period in question (ca. 1780s – 1914).

A diachronic approach may be beneficial in that it helps to smooth over any idiosyncratic behavior that might distort socioeconomic status (Hayden and Cannon 1984). It is unlikely that any reoccupation of a house site by another household would substantially distort the nature of the socioeconomic information contained in the archaeological record. Under the working hypothesis of this dissertation, any household occupying a particular type of dwelling would necessarily be of the same socioeconomic status.

In addition to instances of reoccupation of a site, the household series can also embody the development cycle of the family (Goody 1958). Development cycles refer to the successive stages of growth and decline that a family will undergo through successive generations. Among the Maya, this cycle is historically seen in the sequential growth of the household as embodied in the patio compound. The patio compound comprises a normative tradition in which any household that has existed for more than a generation is composed of multiple dwellings centered on a central plaza, each of which houses one generation within the extended family. The presence or absence of features associated with the development cycles of households provides valuable information on the nature of household form, function, and composition.

Ethnoarchaeology

The ethnoarchaeological studies undertaken in the Maya area are important to household archaeology. These studies have dealt with the material assemblages of households (Hayden and Cannon 1984), with household organization and decision-making processes (Wilk 1983, 1989, 1991), with refuse disposal among households (Hayden and Cannon 1983; Deal 1983, 1985; Killion 1987, 1990, 1992), with storage behaviors of households (Smyth 1991), and with the abandonment of dwelling sites (Deal 1983, 1985). These studies are used to construct middle-range theory by providing analogies between present-day societies and the archaeological record. The ethnoarchaeological framework provides the hypotheses, models and/or theories with which archaeological research interests are tested.

Of particular interest are the models outlined by Hayden and Cannon (1983), Deal (1983, 1985), Killion (1987, 1992), and Smyth (1991), which deal with household refuse disposal. These articles demonstrate how differential practices of maintenance behavior, such as sweeping, dumping, burning, and storage, create patterns across the landscape. These models outline the spatial patterns attributed to specific behavior, such as the creation of toft zones and the placement of items in provisional discard (Deal 1983:193-196, 1985:253-259; Hayden and Cannon 1983:131-138; Smyth 1991:77).

The abandonment processes described by Deal are also important; these result in distinct patterning according to particular behavioral factors, associated with different stages of abandonment (Deal 1985:250-273). As middle range theory, these models have applications outside the Maya area and could be applied to the disposal behaviors of other cultural groups. As the archaeological record is predominantly composed of the refuse of past civilizations, models dealing with this behavior are of great importance.

These ethnoarchaeological studies have provided important data regarding the cultural formation processes responsible for the formation of material assemblages. These processes include the context of assemblages, e.g. the location and types of deposits, including primary, secondary, and *de facto* refuse, as well as items placed in provisional discard (Killion 1987, 1990, 1992; Smyth 1991; Deal 1983, 1985; Hayden and Cannon 1983, 1984; Schiffer 1976, 1983, 1987). Primary refuse deposits include artifacts that enter the archaeological record at the location of use, while secondary refuse deposits include materials deposited away from the location of use. De facto refuse describes left behind when an activity area or settlement is abandoned.

Disposal behavior is structured according to concerns regarding the economy of effort, the potential reuse value of items, and by the potential hindrance or danger that items of refuse may pose (Hayden and Canon 1983:131). Refuse that has little value or hindrance potential is removed to intermediate areas or "toft zones" outside away from dwellings and ancillary structures, where these materials may be concentrated in middens or in dispersed sheet scatters. Specific strategies of disposal are formulated to deal with refuse that has hindrance potential or value. Material with hindrance potential may be accumulated in specific out of the way areas or disposed of in features such as pits. Materials with value may be placed in areas of provisional discard where they can be accessed at a later date.

Similarly, refuse may be placed in areas of provisional discard until a sufficient amount has accumulated so as to make a special trip to discard this material worthwhile. During provisional discard refuse deposits are subject to a variety attritional processes, including breakage, weathering, recycling, as well as scattering by children and animals (Hayden and Cannon 1983:131-132). The final disposal of these materials occurs when their accumulation becomes a nuisance, hindrance, eyesore, or is no longer considered of value. At this time these deposits are either taken to a dumping location outside the houselot or are disposed of or buried within the houselot.

Further considerations include behavioral issues involving the curation, reuse and scavenging of materials, as well as issues related to processes of abandonment (Inomata and Webb 2003; Cameron and Tomka 1993; Schiffer 1976, 1983, 1987; Deal 1985; Hayden and Cannon 1983, 1984; Schiffer et al. 1981). Curation, reuse and scavenging affect the final composition of the archeological record and have the potential to distort interpretations regarding past behaviors. Curation refers to the specialized treatment of particular artifact classes and types within those classes. Expensive ceramics are more likely to be used less intensively and treated with greater care, eventually being passed on as heirlooms (Spencer-Wood and Haberling1987:60-61). Items treated in this manner are less likely to enter the archaeological record. Reuse identifies an item that experienced a change in use, user, or form following its original function (Schiffer 1987:28). This reuse keeps an item in the systemic context, potentially masking prior activities and behaviors.

Scavenging and abandonment are related behavioral issues that highly affect the archaeological record. Scavenging involves the removal of materials left at a site after abandonment, the intensity of which reflects the types and quantities of items left at the site. This behavior clearly affects the types of materials and the visibility of activities recorded in the archaeological context. Abandonment of a site is a function of the rate at which a site is vacated (rapidly or gradually) and whether a return to the site is anticipated. The types of materials left behind at abandonment are influenced by issues of portability, available transportation, the distance to the new site, the season of movement, and the relative utility of an item. After a site has been abandoned, behaviors associated with scavenging, collecting (removal of ancient artifacts), shortcutting (modification through subsequent traffic), child's play, and disposal further alter the archaeological context of households (Deal 1985: 270-273).

Archaeological Markers of Stratification

Household Wealth

Wealth is a variable that lends itself well to archaeological research because it is often expressed as material goods. Represented by material remains, wealth is a sensitive indicator of variation within and across regions and political/economic systems, as well as between and within communities and households. At the level of the household, wealth is closely related to social and demographic factors such as family size and structure, occupations of household members, and stages in development cycles (Smith 1987:298). Therefore, the study of wealth as it pertains to dwellings and artifact assemblages can offer insight into the household variation that existed within communities. Moreover, reconstructions of wealth variation within communities can aid archaeologists in developing more robust models of local and regional social organization, including the local effects of high-level agents like governments and market systems (Smith 1987:298)

Wealth has previously been defined in this chapter as an accumulation of economic resources, which varies in form from one society to another. At a basic level, wealth includes all property that has market or exchange value. The value of an item is a complex mix of economic factors, including the logistics of production (e.g. the means and relations of production, the availability of resources, transportation modes and infrastructure, exchange/market structures, etc.) and cultural factors that assign value to an item based on social perceptions and symbolic associations. With these issues in mind, a more complete definition of wealth will include "the total of desirable (i.e. valuable) goods, both social and material, possessed by someone or existing in a community" (Schneider 1974:256).

Value can be measured in terms of the labor, scarcity, and/or periodicity associated with an item (Smith 1987:321). Under the first two perspectives, value either corresponds to the amount of labor involved in production, or is measured as a function of supply and demand (Marxist and neoclassical perspectives, respectively). Labor input is measured by energetic measures of value, including the time involved in production and any associated transport costs. The scarcity of an item is a function of the abundance and location of the material(s) necessary to produce an item and is directly linked to the aforementioned issues of labor.

A third perspective offered by Douglas and Isherwood (1979:114-127) relates the value of an item to the periodicity of the item's consumption. Periodicity is related to the quantity and frequency with which items are consumed, as well as the social significance associated with this consumption. Items with lower value are associated with low-esteem, high frequency events, while items with higher value are associated with high-esteem, low frequency events. This perspective is especially appropriate to archaeology where periodicity is reflected in the quantity and frequency with which goods appear in the archaeological record.

Jones (1980) has presented a useful classificatory system for discussing types of wealth. Under this system, wealth is divided into financial wealth and physical wealth (Jones 1980:14-27). Financial wealth represents the balance between financial assets and liabilities. This type of wealth is rarely documented archaeologically except in cases where written records or notational devices can be recovered. Historical archaeology is fortunate in that some written financial records are often available. Information pertaining directly to particular households may not exist, but information relating to wage rates, tax rates, average amount of debt, etc. provide insight into the financial wealth of status, ethnic, and occupational groups.

Physical wealth includes lands, goods, and human capital, categories that can further be subdivided into non-portable and portable physical wealth. Non-portable physical wealth consists of land and the built environment. Information on land wealth may be recovered through the interpretation of specific landscape forms, features, and modifications that reflect agriculture, homesteads, defensive fortifications, etc. More commonly, archaeologists recover aspects of the built environment and the material assemblages associated with these structures. These material assemblages, along with human forms of wealth constitute portable wealth. Portable non-human physical wealth is the most prevalent archaeological material, and therefore, the most useful category for studying wealth. Human portable physical wealth includes slaves, servants, and dependent/indebted labor.

Non-human portable physical wealth can further be subdivided into perishable and durable goods associated with producers and consumers. Durable goods associated with production include objects like equipment and tools, while perishable production goods consist of crops and materials like lumber and other consumable resources used in the production process. Consumers' durable goods include furniture and other equipment, tools, cooking and serving vessels, glassware, clothing, etc. associated with the functioning of the household. Perishable consumer goods include foodstuffs and other consumable supplies like firewood and candles. Archaeologists are most likely to recover the durable goods associated with production and household consumption. In particular, correlates of household wealth will be found in household contexts, including the areas in and around dwellings, in deposits of household refuse, as well as within structures.

Archaeological investigations at Hacienda Tabi focused on the forms of physical wealth related with the principal house and physical plant and with the workers' village and households. Specifically investigations focused on the remains of the built environment (including dwellings, stonewalls, ancillary structures, streets, blocks, plazas, palacio, mill works, etc.) and on the material assemblages related to individual households in the worker's village. Financial wealth is linked to the archaeological remains through the correlation of wages, occupation, and indebtedness with material assemblages.

While wealth is typically quantified in terms of physical or tangible objects, there is also a symbolic aspect to wealth. The "symbolic value" of an object, piece of property, human chattel, etc. is based on an association with the wealth, prestige, or status of a particular group, event, or place. The symbolic value of an item is often derived from its symbolic representation or association with these facets of stratification and goes beyond the simple energetic value of an item.

Similar to the concomitant nature of wealth and the other facets of social stratification, value and symbolic value are often interrelated. Therefore, items that have symbolic value usually also have economic value. Conversely, items that have economic value may or may not have symbolic value. For example, teaware used in 19th century expressions of the Victorian tea ceremony have economic value in being costly in terms of both production and procurement. The economic value of these items is comparable to similarly produced decorative bowls and plates of the period and all would carry at least some symbolic value as higher quality consumer goods. However, unlike the primarily utilitarian bowls and plates, teaware during this period was imbued with symbolic value associated with the high socioeconomic status of those who could maintain this ritual (Shepard 1987; Spencer-Wood 1987; Spencer-Wood and Heberling 1987; Miller 1984, 1980; Lewis 1978; Miller and Stone 1970).

Working Assumptions

A number of working assumptions are necessary in order to archaeologically evaluate intracommunity wealth and status. We must minimally agree that the archaeological record is a static and incomplete representation of the dynamic activities of the human past, however, because it does record human behavior, it is amenable to the formation of inferences concerning past human phenomena (Binford 1983, 1987). Simply stated, we must agree that issues of social stratification can be explored through identifiable patterns revealed in the distribution and variety of assemblages documented in the archaeological record.

How dynamic processes of the past are recorded in the archaeological record is of great importance. Patrik (1985) identifies two viewpoints currently used in interpreting the static patterns of past behavior, the Physical Model and the Textual Model (Wason 1994:30-33). The Physical model views past activities as being regular and predictable, law-like processes. The Textual Model does not exclude the possibility of causal laws that will elucidate the material record, but presumes the influence of additional factors including; 1) a symbolic function attributive to archaeological assemblages beyond the casual connection between the assemblage and what it is evidence of; 2) the existence of culture-specific behavioral rules, as well as flexible individual behavioral strategies responsible for the creation, ordering, use, and deposition of archaeological assemblages; and 3) a "non-passive" power to material assemblages emphasizing the creativity of the individuals that produced or used these materials in the course of social action, as well as and in the transformation of social structures (Wason 1994:31; Patrik 1985:37).

In essence, the Textual Model incorporates the idea of the role of the transformative capacity of the individual in the interpretation of the archaeological record. As previously discussed, transformative capacity places power within the agency of the individual, who can choose to intervene or not intervene in social processes (see pp. 18 this chapter). This model recognizes the "creative, willed, and symbolic" nature of individual agency and suggests that there are limits to the assumed physical connection between past behaviors and the archaeological record as presented in the Physical Model.

Under the Textual Model it is still possible to develop correlates within specific domains that will approximate the recording connections of the Physical Model, while not assuming the existence or universal applicability of causal laws (Wason 1994:31). Instead we can form conditional statements based on archaeological correlates which will serve the same purpose as recording connections, but that do not assume the predictability of behavior. While we postulate that "[h]uman activity may not be fully predictable," we must recognize that "neither is it always or even commonly capricious" (Wason 1994:34). Thus, the identification of patterns in the archaeological record "can aid the inferential process by suggesting that there is some reason for our finds other than independent, potentially whimful actions" (Wason 1994:34).

Conditional statements based on archaeological correlates do not imply that social status will always lead to specific patterns of inequality in the archaeological record, but rather that when archeological patterns of inequality are found in the record they are evidence of status differences (after Wason 1994:31-32). When these inequalities can be connected with critical resources or wealth items (i.e., items that are available to all who can afford them) rather than sumptuary goods, archaeologists can begin to discuss aspects of economic social stratification and wealth.

In making inferences regarding a particular household, community, or region it is necessary to evaluate patterns against as many lines of inference as possible in order to minimize the probability that alternate cultural formation processes are responsible for the formation of material assemblages. These processes include the context of assemblages, e.g. the location and types of deposits, including primary, secondary, and *de facto* refuse, as well as items in provisional discard (Killion 1992, 1987; Deal 1985, 1983; Hayden and Cannon 1984, 1983; Schiffer 1976, 1983, 1987). Further considerations include behavioral issues such as curation, scavenging, reuse, and abandonment processes (Inomata and Webb 2003; Cameron and Tomka 1993; Schiffer 1976, 1983, 1987; Deal 1985; Hayden and Cannon 1984, 1983; Schiffer et al. 1981). The specific issues associated with these contextual and behavioral problems have been discussed in the preceding section on ethnoarchaeology. Finally, inferences regarding household patterns must also take into account any post-depositional processes that may have altered the context of the archaeological record.

Based on this theoretical background several suppositions regarding the nature of social differentiation can be postulated (following Wason 1994:114-116). First, the type and amount of variation contained in the archaeological record reveals the complexity of the status system, where; 1) greater variation and complexity in a status system is expressed by a greater variety of artifacts (mitigated by the development of technology, specialization, and/or the development of special interest groups, all of which can lead to greater variation); 2) higher status individuals will have a greater variety of artifacts than those of lower status individuals; and 3) artifact variety can be studied in terms of the entire inventory or within each specific artifact category.

Markers of Stratification

Stratification can be recognized in the qualitative differences between those individuals with the greatest, or most direct access, to critical resources and those individuals with the least or most indirect access to critical resources (Wason 1994:119-120). To do this, the basic resources in a society including items necessary for survival and reproduction must be identified. It is necessary to recognize differential access to these resources by determining who has control of these resources and how they are distributed (Wason 1994:120; Haas 1982, 1981).

The types of basic resources vary between societies, but minimally include food, the tools necessary to produce and process food, and shelter from the physical and social environments (Haas 1981:84). Under a capitalist mode of production, individuals often do not have direct access to these resources and are dependent upon others higher-up in the status hierarchy who regulate the conditions of access (i.e., the capitalist owners, merchants, etc.). Therefore control over essential resources, in this case control over the means of production and/or distribution, reifies stratification and provides a means for controlling people.

The distribution of consumer goods within a society is an important means of indirectly determining access to basic capital resources, where capital resources represent resources of economic value. This is crucial as archaeological recognition of differential "[a]ccess to capital resources can only be determined…indirectly through the distribution of the consumer goods derived from the capital goods" (Haas 1982:93). Past stratification is established and measured through the identification of unequal distribution of basic resources. The differential distribution of any of these basic resources suggests stratification and typically indicates larger patterns of differential access (Wason 1994:121; Haas 1982:93). Furthermore, "the distribution of prestige items might be expected to parallel inequities in the distribution of basic resources" (Haas 1981:85). Therefore, the extent to which differential access to basic resources can be correlated archaeologically with status markers serves to further strengthen and clarify our understanding of the stratification system characterizing a particular society or community.

The archaeological measurement of wealth is complicated by a number of factors that affect the quantity and types of items associated with past households. Some of these issues were previously touched upon in the section on household archaeology. These issues include the development cycle of households, household size and composition, and issues pertaining to the household series, such as residential stability and spans of occupation. It is worthwhile to briefly discuss how these issues, as well as issues of occupation and ethnicity, relate to measurements of wealth.

Through the course of a development cycle, the wealth of a household tends to increase through time as physical wealth is accumulated. The archaeological record associated with a household typically contains the discard from one or more complete domestic cycles. The chronological duration and sequence of individual and sequential households can be accounted for through the controlled sampling of material from all stages at each site. At Hacienda Tabi, even in cases where individual household cycles may not be clear, it is expected that the multiple households that occupied a particular type of house site should be of similar socioeconomic status. As previously stated, because we are interested in long-term cumulative change at Hacienda Tabi the material from one or more cycles can be averaged over time to give a diachronic signature for a particular dwelling type.

Issues of household size and composition are associated with the movement of development cycles. Household size, or the number of individuals associated with a household, may affect the quantity and diversity of goods affiliated with a particular residence. While larger households might create larger, more diverse refuse deposits, the overall socioeconomic signature will not necessarily change. In fact, ethnographic evidence suggests a positive correlation between wealth and household size in pre-industrial settings where wealth is the primary motivator, i.e., the wealthier a household, the larger the household (Netting 1982; Yanagisako 1979).

Household composition is related to household size and the larger issue of development cycles. At any particular point in its development, the household may be composed of nuclear or extended families composed of consanguineal and affinal kin, unrelated laborers and servants, and any combination of adult males, females, and children. The size, diversity, and types of material culture in the archaeological record reflect the various combinations of household members. For example, men, women, and children can be recognized by the presence or absence of certain types of artifacts. Additionally, extended families will typically contribute greater quantities of architecture and refuse to the record.

Household composition can directly affect the socioeconomic status of a household. As Wilk (1983, 1991) has demonstrated with the modern day Kekchi Maya of Belize, the increased labor pool of extended family units can mean greater production, and by extension wealth, especially in situations where goods are being produced for market. In contrast, at Hacienda Tabi, where the workers had no vested interest in the products they produced, households were not organized around the extended family. Instead, ethnohistoric and archaeological information indicates that the nuclear family was the predominant household form on Yucatecan haciendas (Meyers 1998; Rejon 1992; Wobeser 1988; Farriss 1984; Turner 1969).

Issues related to the household series for a particular residence can also affect the measurement of wealth. Of concern are the number and form of households associated with a particular site, as well as the occupational span of a household or households at a particular site. The number and type of households that have occupied a site can potentially obfuscate the evaluation of individual households. If the chronology of the household series of sites is not clear, inter-household comparisons for specific periods may be compromised. Furthermore, the measurement of individual household wealth is made difficult by repeated occupation of a site by households of differing socioeconomic status. This problem can be minimized if the various assemblages associated with these households can be differentiated within the archaeological record.

The span of occupation linked with the household series of a dwelling site also impacts wealth measurements. The longer a site is occupied by an individual household or a series of households, the greater the quantity and variety of items that will be deposited into the archaeological record. Rare categories of material culture that might not find their way into the record during a short span of occupation are more likely to be discarded or lost over long spans (Schiffer 1983).

Rathje (1983) has suggested that the use of total frequencies of common artifacts to standardize measurements can control for variation in occupational spans. Artifacts like sherds that strongly reflect occupation span and that are relatively independent of household wealth can be used to formulate standardized measures of wealth. As with development cycles, issues related to the nature of the household series of a dwelling site will not significantly affect the evaluation of household wealth at Hacienda Tabi.

Occupation and ethnicity are variables that strongly affect the wealth of households. Occupation influences the quantity, quality, and variety of items associated with households through statuses or incomes. To some degree, the types of goods and consumption patterns of households are the product of particular occupations. The status or amount of income associated with a particular occupation is directly related to the types of materials available and affordable to an individual. Some individuals may not have access to certain goods, let alone the means to acquire them due to the restrictions associated with their occupational status. Moreover, ethnographic studies suggest that the consumption patterns associated with expenditures of wealth differ according to occupation. For example, farmers are more likely to invest their wealth into agricultural capital such as land or livestock, while merchants are more likely to invest wealth in household luxury goods (Smith 1987:307; Hayden and Canon 1984:190; Douglas and Isherwood 1979:50).

As outlined earlier, occupational status at Hacienda Tabi was linked to differential levels of remuneration (in wages and perquisites) related to specific positions in the occupational hierarchy of the hacienda. The higher wages and greater freedom of movement afforded to some hacienda occupations reinforced status differences and fostered dissimilar patterns of consumption among the households of the hacienda. Members of the higher status occupations could spend their wages on the diverse range of goods offered in the stores of the nearby towns or in large commercial centers like Merida, Valladolid, and Campeche. This was certainly not the case for the indebted hacienda laborers, whose restricted movement only allowed them access to the limited goods they could afford at the *tienda de raya*.

Ethnicity often indirectly influences wealth by defining and limiting individuals to particular statuses, and therefore, intracommunity issues of ethnicity are frequently correlated with wealth and power (Smith 1987:323; McGuire 1982; Cohen 1978).

Ethnicity is transposed into historically rooted social conceptions of race. Certain ethnic groups may be assigned particular place in the social hierarchy, which then determines the amount of mobility and types of occupations available to individuals. Additionally, particular patterns of artifact use and discard may be associated with the activities and proclivities of specific groups.

The basic ethnic division on Yucatecan haciendas was between *Indios* (native Maya laborers) and *mestizos* (individuals of mixed Spanish and Mayan ancestry). In later years, Sonoran Yaquis, central Mexican deportees, Cubans, Chinese, and Koreans would also inhabit the haciendas of the peninsula. Each of these ethnic groups was accorded a certain level of status and a place in the occupational and social hierarchy of the hacienda, and in turn, had specific opportunities for wealth and access to goods.

Household Behavior and Material Culture

The interpretation of dynamic past behaviors from static remains is an inherent difficulty of archaeological studies. The recovery of past behavior patterns is necessary if the field of archaeology is to be a relevant discipline, moving beyond mere trait lists and artifact typologies to culturally meaningful associations and relationships (Taylor 1948). Through the application of scientific methodology and theory, archeology can draw correlates between archeological patterns and behavioral phenomenon (Binford 1962, 1965, 1968). Archaeologists should take full advantage of the unique opportunities the discipline provides for recovering aspects of past human lifeways that are otherwise unknowable.

The strength of archaeological work is its ability to recover aspects of the past that are unknown or, in the case of historical archeology, aspects of the past that are not contained in the historical record. In historical contexts, documents can be biased and/or fragmentary, and often do not include the type of socioeconomic information about daily life that many researchers are interested in today. While providing intriguing insights into past lifeways, the historical accounts of most observers for these periods tend to focus on the more obvious, gross divisions within society.

In the case of Yucatan, many of these narratives are replete with descriptions and commentary concerning the dissimilitude between the wealthy *hacendado* class and the impoverished or indebted *peones* that inhabited the haciendas. These accounts tend to view laborers on the haciendas as one unified class in opposition to the oligarchic control of the elite hacienda owners. While this distinction is accurate, the finer gradations within the laboring class that affected and directed the daily existence of the majority of the historical population of Yucatan have gone unrecorded.

Archaeological excavation of past households can begin to recover this lost information. The elements that make households a prime unit for study, i.e., ubiquity and sensitivity to change, are embodied in the architecture and material culture that represents past human activities. In particular, archaeological investigations can uncover variation within past societies by examining aspects of inequality within the built environment and within artifact assemblages. Through the use of quantitative and qualitative analyses, the archaeologist can identify assemblages or artifacts that indicate status and wealth. This information can then be used to reconstruct the socioeconomic character of individual households, and to subsequently define differences between households, as well as patterns within and between communities. Architectural and artifactual variation along the lines of quantity, quality, and diversity reflect the socioeconomic status of the household that occupied the dwelling.

The Built Environment

Architecture is the artifact type likely to retain its original context. Relative to other artifact categories, it is the least affected by disturbances associated with site formation processes. Domestic structures represent the largest subset within the built environment and are the most prevalent form of architecture preserved in the archaeological record (Sanders 1990:43). Dwellings and the areas associated with them are physical expressions of past households that lived and functioned in these spaces.

As the basic unit of production, consumption, and transmission, households are a prime source of data concerning questions of social organization and adaptation (q.v. Household Archeology this chapter). Guided by extant socioeconomic conditions and larger cultural values, individual behavioral decisions are embodied in the architecture and social spaces that compose the built environment (Sanders 1990:43). Variation associated with the location, form, quality, size, and permanency of the built environment reflects the types and levels of household stratification and status present within a community. Aspects of household status and wealth are expressed in architecture through material displays, complexity of structure, cost of building materials, and labor (both quantitatively and qualitatively).

The form, organization, and use of space in the built environment is influenced by the specific climate, topography, raw materials, level of technology, available economic resources, intended function, and cultural conventions that characterize a particular society (Sanders 1990:44). These natural or cultural influences are fixed or flexible forces that affect the character of the built environment. From the outset of construction, form, location, and the use of space are influenced by the fixed natural conditions of climate and topography. These elements of the environment exert considerable influence on the form of the built environment, although individuals and groups may choose to ignore these influences.

Behavioral conventions and conceptions of function associated with the built environment are fixed and culturally informed influences. Like climate and topography, cultural conventions and normative functions can change over time. All four of these factors represent long-term, established structures that appear fixed when viewed at the synchronic level. Contemporaneous elements of the built environment will all be influenced by the historically particular combination of these factors.

Variation in the built environment that results from stratification and status is a function of determining factors that include the types of available materials, economic resources, and the level of available technology within a society. Economic resources include elements of time, funding, and human and mechanical energy. These economic resources help determine the types and quantities of materials available to households, as well as the level of technology employed in using these materials within the given climate and topography (Sanders 1990:44). The specific manifestation of these factors (materials, economic resources, and technology) within the built environment depends on the agency of individuals working within the prevailing social conditions and cultural conventions of a particular society.

The long-term cultural conventions and normative functions that inform the built environment operate at a timespan much longer than the use life of individual structures and often communities. Therefore, these conventions and functions are continuously being incorporated into the evolving physical manifestations of the built environment. At the same time, the built environment functions to reinforce and perpetuate these conventions and functions by directing and ordering the daily movements and interactions of individuals.

In this way, the built environment serves an important role in providing cues for the performance of acceptable social behavior through the purveyance of cultural values and elements of worldview encoded within its structures and spaces. In contrast to the primary, utilitarian function, this secondary or conceptual function of the built of environment is crucial to the maintenance of social conventions. It is because of this that "the final arrangement of the built environment is never random" (Sanders 1990:45).

Interpretation of the Built Environment

Three basic interpretive approaches have emerged with which archaeologists can interpret the built environment. Johnston and Gonlin (1998) have described these as a cultural approach, a functional approach, and a social approach (1998:142). These approaches are not mutually exclusive, as the social perspective is an outgrowth of the functional approach. I view all three perspectives as part of a single integrative approach.

The cultural approach regards the built environment and the pieces that compose it as "expressive media that communicate messages about power, gender relations, status, and humankind's relationship to the cosmos" (Johnston and Gonlin 1998:142). This perspective is part of the larger structuralist paradigm and attempts to identify the cultural or ideational "structures" represented by architectural structures and social spaces. Under the structuralist paradigm "culture is defined as a complex system of descriptive, interpretive, and generative signs that inform behavior by being enacted" (Johnston and Gonlin 1998:144; Sahlins 1976:32). The daily expression and reproduction of cultural structures informs the way in which individuals conceptualize themselves, those around them, and the larger world (Bourdieu 1985; Giddens 1979, 1982).

As discussed earlier, the daily enactment of culture is ordered and informed through cultural meanings encoded within the built environment. The structures and spaces of the built environment are 'structuring structures,' that are "culturally loaded spaces that socialize by encouraging practices consistent with the meanings they encode" (Johnston and Gonlin 1998:145). Therefore, there is a reflexive relationship between society and the built environment in which "production of space is linked to reproduction of social relations" (Johnston and Gonlin 1998:145; Saunders 1990). For example, houses encoded with cultural meanings are both vehicles for the communication of those meanings, as well as stages for the reproduction of those meanings through daily household practice. The objectification of these meanings in architecture and daily practice serves to naturalize social relations.

In contrast to the structuralist perspective defined above, the functional and social approaches are grounded in a materialist perspective concerned with socioeconomic issues (Johnston and Gonlin 1998:150). The functional approach is primarily a classificatory and descriptive method that attempts to establish function through the investigation of formal properties of architecture, features, and artifact assemblages. As exemplified by methodologies such as settlement pattern analysis, the functionalist perspective grew within the processual movement of the 1950s. In defining function and creating typologies, new methodologies like settlement pattern analysis allowed archaeologists to address more complex issues such as population trends, agricultural systems, and regional settlement and interaction.

The social approach is a logical outgrowth of the functionalist perspective. While the social approach continues to evaluate socioeconomic organization, it moves beyond merely asking *what* type questions of the archaeological record, to questions regarding *how* and *why* archaeological assemblages are formed and patterned. For example, the functional perspective examines the house and the patterns that signify it, while the social perspective examines the household and the behaviors that characterize it. The functional perspective serves as a sort of baseline, on which more intricate behavioral questions can be pursued within the social approach. Logically, one needs to answer questions of form before determining function and explanation, with the understanding that these answers will potentially modify the initial interpretation of form.

Often archaeologists treat these approaches singularly or, if they do combine approaches, they understandably combine functional and social approaches. Rarely are all three of these perspectives integrated into a comprehensive conception of the archaeological record. I feel these three approaches necessarily must be combined if archaeologists are to reconstruct a holistic view of past societies. Researchers need to be exhaustive in pursuing as many lines of inquiry as possible when examining the socioeconomic and symbolic manifestations of culture. Issues of stratification, status, wealth, power, social control, occupation, and ethnicity are embodied in the architecture and social spaces of the built environment. In focusing solely on the material aspects of archaeological assemblages to the exclusion of the cognitive aspects of social organization, or vice versa, archaeologists unnecessarily limit the interpretive value of the archaeological record.

The Built Environment at Hacienda Tabi

In a developing capitalist system where workers are dependent upon capitalists for access to resources (either through purchase or benefaction), differential distribution and access to resources exists. Depending upon the particular character of the socioeconomic system, access is a function of greater or lesser economic mobility on the part of the individual or individual household. At Hacienda Tabi, differences in access to a basic resource, such as housing, were a function of the restricted economic mobility of the occupational hierarchy, as documented in the ethnohistoric and ethnographic information from this period.

Differences in the size and construction quality of housing in the worker's village indicate the social stratification that characterized the community. The architectural differentiation found at Hacienda Tabi is more a function of quality and permanency, and therefore cost, than a function of size and/or special features. The higher quality, more permanent dwellings on the hacienda represent the differential access certain households had to materials, labor, and construction specialists. This increased access was either the product of a household's greater purchasing power or a result of the greater beneficence of the *hacendado* based on the higher social status of the household in question. The presence of social stratification on the hacienda is confirmed in the correlation of dwellings with other archaeologically recorded status markers like refined earthenware ceramics.

Household Artifact Assemblages

An understanding of past social organization requires making connections between the patterning of materials in archaeological contexts and the past behaviors of individuals and households. As outlined above, aspects of stratification, status, power, wealth, etc. can be recovered through the examination of artifact categories that are sensitive to socioeconomic behavior and organization. Material culture associated with households is especially amenable to the recovery of this type information.

In fact, the material culture found in household contexts is more sensitive to variation and change within social organization than the built environment itself, as these inventories change more rapidly than architecture in response to new household circumstances (Smith 1987:302; Lewis 1973:259). The distinctive behaviors associated with households of differential classes and status may be reflected in the composition of these material assemblages. The potential for household assemblages to reveal patterns of past organization is especially high in societies characterized by capitalist market economies, where household consumption is distinguished by access to an ever-broadening variety of consumer goods.

The Interpretation of Artifact Assemblages

The correlation of archaeological data and past consumer behavior can explain why goods of various qualities and prices were consumed and deposited by households in the archaeological record. This interpretation is framed within a model of consumer-choice in which the factors that affect the individual selection of goods are related to socioeconomic status, which in turn is influenced by issues of market access, ethnicity, household size and composition, and political status (Spencer-Woods 1987:10-11). Central to this approach is the postulate that, within market economies different artifact categories are characterized by goods of various qualities and costs, and that the distinctive patterning of these goods within households reflects different behaviors related to socioeconomic status. The consumer-choice model recognizes that

> [w]hile types of goods, such as food types, ceramic, glass, or house forms, and site location may have primarily *technomic*, utilitarian functions in subsistence and foodways, variations within these utilitarian categories in *sociotechnic* attributes of quality and price of goods can be explained primarily by their functions in social group behaviors (emphasis added) (Spencer-Woods 1987:9).

The majority of items recovered in household archaeological contexts are associated with technomic or utilitarian functions related to the completion of daily household activities. Therefore, any additional sociotechnic attributes these artifacts carry are key to evaluating socioeconomic status, e.g. the differential levels of quality, decoration, function, and price associated with various types of ceramics.

Differences in the sociotechnic attributes of artifacts, expressed in the patterning of the archaeological record, can be discerned and measured on variables of quantity, quality, variety, and place of origin (Shephard 1987:165-168; Smith 1987:319-320). Measurement of these variables applies to both the functional categories of artifacts within assemblages, as well as to the overall dimensions of artifact assemblages. The examination of assemblages should include the analysis of as many artifact categories as possible, using a battery of statistical measurement techniques. Artifact variability reflects household socioeconomic status.

"Variable quantity" refers to the total number of items within a particular artifact category or within the overall assemblage. Households with smaller incomes spend a greater portion of their earnings on necessities like food than on non-food items, and therefore, spend a greater percentage of income on consumer goods than wealthier households (Shephard 1987:166; Smith 1987:306-307; Douglas and Isherwood 1979:97). As a result of this socioeconomic behavior, wealthier households are characterized by greater consumption of more goods and as a result produce more refuse than lower status households. Recent ethnoarchaeological work suggests that the size of household assemblages is most strongly determined by income level (Schiffer et al. 1981).

Household size and stability and discard behavior also affect the quantity of material in artifact assemblages. As a rule, larger households with more residents should introduce larger quantities of material into the archaeological assemblage. Similarly, greater accumulations of material will be associated with household sites that were occupied for longer periods of time. Household size and residential stability are factors that potentially crosscut class and status lines, and therefore, must be considered and controlled for through the use of complimentary lines of inquiry.

Discard behavior associated with class and status specific socioeconomic behaviors must also be considered when evaluating material assemblages on the basis of quantity. Behavior associated with curation, reuse, and scavenging affect the amount of material that enters the archaeological record. For example, increased frequency of curation of valuable or luxury items will mean that these items will enter the archaeological record at lower rates than items of little value. For example, due to the less frequent use and greater care afforded expensive whiteware ceramics like porcelain, fewer examples of this type of ceramic should enter the archaeological record (Spencer-Woods and Heberling 1987:61).

Quality is a variable related to the value of specific items within an artifact category, as well as the cumulative value of all artifact classes within a household assemblage. Due to their greater purchasing power and increased access, wealthier households are associated with higher quality goods. The purchase or attainment of higher quality goods is not exclusive to high status groups, but in general is associated with them (Shepherd 1987:167).

Variety reflects the diversity of items in an assemblage that have differing and/or specialized functions (Shepherd 1987:167; Smith 1987:319). Higher status households by virtue of greater means and access should have assemblages composed of not only utilitarian goods, but also luxury or non-essential items. In general, there is a relationship between variety and quality in household assemblages, where variety reflects the presence of these higher quality items in addition to utilitarian items. Furthermore, higher status households are more likely to have a wider range of forms within a particular artifact class, e.g. a wider range of ceramic vessel forms associated with more elaborate foodways, and therefore, wealth displays.

The origin of goods present in an assemblage also indicates of the socioeconomic status of a household (Smith 1987:320). Extra-local goods often have a relatively higher value than locally produced items due to the energy involved in their importation. Additionally, extra-local goods may be more highly valued if their availability is limited, i.e., as a function of scarcity. Access to these goods represents a link to wider networks of geographic and social exchange (Smith 1987:320; Douglas and Isherwood 1979:160).

Following Shephard (1987:168), three hypotheses can be put forth regarding the correlation between socioeconomic status and the relative quantity, quality, and variety of artifact assemblages (emphasis in original):

1. The higher the socioeconomic status of a household is, the greater the *quantity* of possessions composing its material assemblage will be.
2. The higher the socioeconomic status of a household is, the greater the *quality* of its material assemblage will be.
3. The higher the socioeconomic status of a household is, the greater the *variety*, or diversity, of items composing its material assemblage will be.

To this list I would add the proposition that the material assemblage of higher socioeconomic status households should also be associated with more extra-local goods. I offer this hypothesis with the qualification that, as local economies become increasingly integrated within the larger world market, the interpretive utility of imported goods will be lessened as scarcity and price decrease.

The Artifact Assemblages at Hacienda Tabi

The complete artifactual assemblage associated with a household, including artifacts related with middens, floors, fills, and features constitute the “systemic inventory” or cumulative detritus of all detritus producing socioeconomic behavior that took place within the household (Johnston and Gonlin 1998:162; Lightfoot 1993:170). In terms of the above-described variables of quantity, quality, variety, and origin, the aggregate of these materials provides a mean or average of the socioeconomic behavior associated with a particular household (Johnston and Gonlin 1998:163).

The artifact assemblages that record household socioeconomic behavior at Hacienda Tabi are found in primary and secondary contexts associated with dwellings and larger houselots. Archaeological and ethnoarchaeological investigations have demonstrated the necessity of large scale horizontal excavations of houselots that take into account the dispersed nature of refuse disposal (Meyers 1998; Gonlin 1993, 1994; Johnston 1994; Santley and Hirth 1993; Ball and Kelsey 1992; Killion 1987,1990, 1992; Killion et al. 1989; Tourtellot and Sabloff 1989; Tourtellot et al. 1989; Webster and Gonlin 1988; Deal 1983, 1985; Hayden and Canon 1983). Therefore, it was important that archaeological excavations test not only the interiors of houses, but also the houselots associated with these dwellings. At Hacienda Tabi, block wide shovel testing in conjunction with the testing of dwellings through interior excavations and adjacent test units, provided comprehensive sampling of the various zones throughout the houselots where household refuse entered the archaeological record.

CHAPTER IV

THE LONG DURATION: GEOHISTORY

As outlined previously, certain long-term forces provide the baseline or framework within which cultures and people function. These long-term forces include permanent or persistent environmental and cultural features that define the constraints and possibilities confronting human actors in a particular region (Bentliff 1991). These forces act at the longest wavelength of time, and therefore they change at a nearly imperceptible rate. Processes such as geohistory, technology, subsistence mode, and worldview are long-term forces that inform and direct the actions of individuals at any particular point in history. These forces define the baseline on which a culture is grounded, and therefore, it is imperative that the processes comprising such forces be defined if the motivations behind a given culture are to be understood. Furthermore, any cultural change that takes place over the short or medium term will be registered against this long-term baseline.

The long-term forces that constrain and enable human actors are of two types, those composed of natural processes and those composed of human processes). Natural processes are defined by the physical reality of the environment that a group inhabits (Bentliff 1991). In the case of the Yucatan Peninsula, this is a tropical or sub-tropical environment imbued with the advantages and disadvantages inherent within such an environmental system. Alternately, human processes include the ‘man-made' cultural features that become emblematic of society. These features are the checklist of key points that a cultural anthropologist or archaeologist would point to as characterizing a particular culture. In essence, these features are the core values and principles that organize and define a people, the elements of which may not be readily apparent to those functioning within the cultural system. This suite of features are grouped under the overarching concept of worldview, or the way in which the world is perceived, interpreted, and ultimately ordered by a group of people. Thus, we can speak of a Maya tradition that encompasses elements of language, subsistence mode, religious ideology, technology, etc., which serve as a thematic baseline, coursing through history.

Geohistory

Geohistory is a long-term structure composed of the environmental conditions and constraints that characterize the Yucatan peninsula. These geologic and climatic processes have directly influenced the demographic and subsistence patterns of the region and have indirectly shaped the ideology and worldview of the inhabitants of the peninsula. The geohistory of Yucatan includes the geology, geomorphology, and climatic attributes that characterize and have characterized the region through time.

The region commonly referred to as the Yucatan Peninsula extends northward out of Central America, separating the Gulf of Mexico from the Caribbean Sea. The southern boundary of the peninsula extends north from the Gulf of Honduras, along the Río Sarstún, west and northwest to the Río Salinas, northwest along the

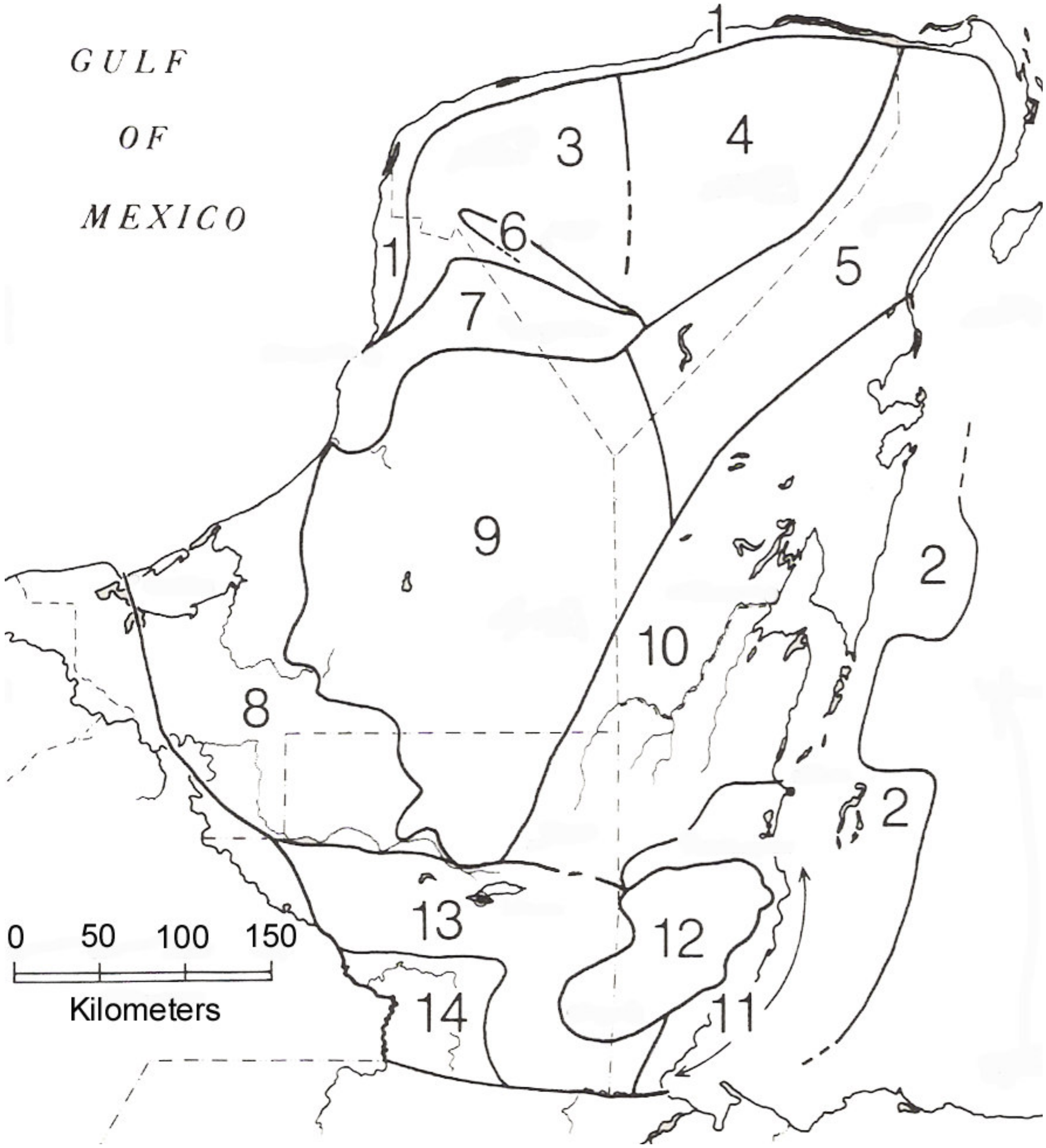

Figure 2. Map of the Yucatan Peninsula Showing Physiographic Regions (after Wilson 1980).

Salinas-Usumacinta Valley, along the eastern side of the Sierra del Lacandón to the Río San Pedro Mártir, then northwest to the western terminus of Laguna de Términos and the Gulf of Mexico (Wilson 1980:6). The approximately 222,000 square kilometers of the peninsula represent an exposed portion of the Atlantic-Gulf Coastal Plain that was formerly submerged beneath a shallow sea.

There is a basic north to south gradation that applies to nearly all aspects of the peninsular environment. Age of geology, elevation, soil depth, vegetation density and height, and rainfall totals all trend from minimums in the northern portion of the peninsula to maximums in the southern portion of the peninsula. This environmental reality of the region has helped shape the distribution of populations and settlements throughout time.

The geologic deposits of the peninsula range in age from the Eocene period materials of the northern karst plain at the northward margin of the peninsula (ca. 50 million years ago), to the early Paleozoic period materials comprising the Maya Mountains of southeastern Belize (ca. 570 million years ago) (Wilson 1981:7). Wilson (1981:7-9) has divided the peninsula into fourteen physiographic districts based on the geologic and geographic variation found in these areas (Figure 2). Because this study focuses on settlement and activity centered in the far northern portion of the peninsula, only the geohistory of the region north of a line drawn west from the city of Campeche east to the Bahia de la Ascension will be described in depth.

Landforms

The northern portion of the peninsula is characterized by all or part of seven of Wilson's physiographic districts, including: the coastal zone (1), consisting of beaches, beach ridges, lagoons, low cliffs, and swamps; the Merida district (3), consisting of the low relief, small hills, and small depressions of the northwestern portion of the northern karst plain; (4) the Chichen Itza district, comprising the central portion of the northern karst plain, with large *cenotes* (water filled sinkholes) and *aguadas* (water filled sinks), *hoya* (dry sinks), and relief approaching 25 meters; the Coba district (5), forming the northeastern portion of the northern karst plain, consisting of numerous depressions, hills, and linear depressions, as well as several large lakes; The Puuc or Sierrita de Ticul district (6), a long linear ridge trending northwest to southeast with relief reaching 100 meters; The Bolonchen district (7), an area consisting of cone-shaped hills and high relief ridges; and The Rio Bec district (9), a large central area comprising conical hills, linear ridges, and numerous intermittent lakes (Wilson 1981: 7-9).

Of particular importance to this discussion is the region known as the Puuc or "hill country," in which Hacienda Tabi is located (Figure 3). The Puuc region also was home to a distinctive archaeological tradition that takes its name from the hills that form the regions northern border. The archaeological region stretches south from the Puuc hills into the northern reaches of the Rio Bec district, an area also defined by a distinct archaeological tradition. On an east/west axis, the region encompasses the majority of the Bolonchen district running, from a point roughly 20 kilometers east of Campeche, west to near the base of the Puuc ridge (Dunning 1992: 15, Figure 2-2).

The area between the Puuc hills and the Bolonchen district is also known as the Santa Elena District after the town located near its center (Dunning 1992: 15; Kurjack, Garza, and Lucas 1979). The Santa Elena district is composed of two primary geographic features, a wedge-shaped zone composed of gently folded, rolling hills with slopes typically under 10°, and the Puuc ridge system (Dunning 1992: 15-16). The strata of the district are composed of massive beds of sparingly fossiliferous, pale-reddish Eocene limestones (Dunning 1992:16; Isphording 1975).

The Puuc ridge system is composed of two primary escarpments. The main escarpment begins a few kilometers south of the town of Maxcanu and runs southeast 160 kilometers to the vicinity of Lago Chichancanab. This main escarpment ranges from 60-90 meters in relief and separates the flat northern karst plain from the hills and valleys of the Puuc and Bolonchen districts. The second escarpment ranges from 70-80 meters in relief and runs roughly 25 kilometers southwest from the main escarpment near the Ticul-Muna area to a point nearly due south of the town of Oxkutzcab, forming a wedge shaped valley approximately 5 kilometers wide at the opening (Isphording 1975: 253; Dunning 1992:15). Hacienda Tabi is located on the southwest side of the second escarpment, approximately 5 kilometers from the southern terminus of this ridge (see Figure 3).

Immediately south of Hacienda Tabi are a series of fault escarpments that separate the Santa Elena District from the Bolonchen District. Sapper (1946) was the

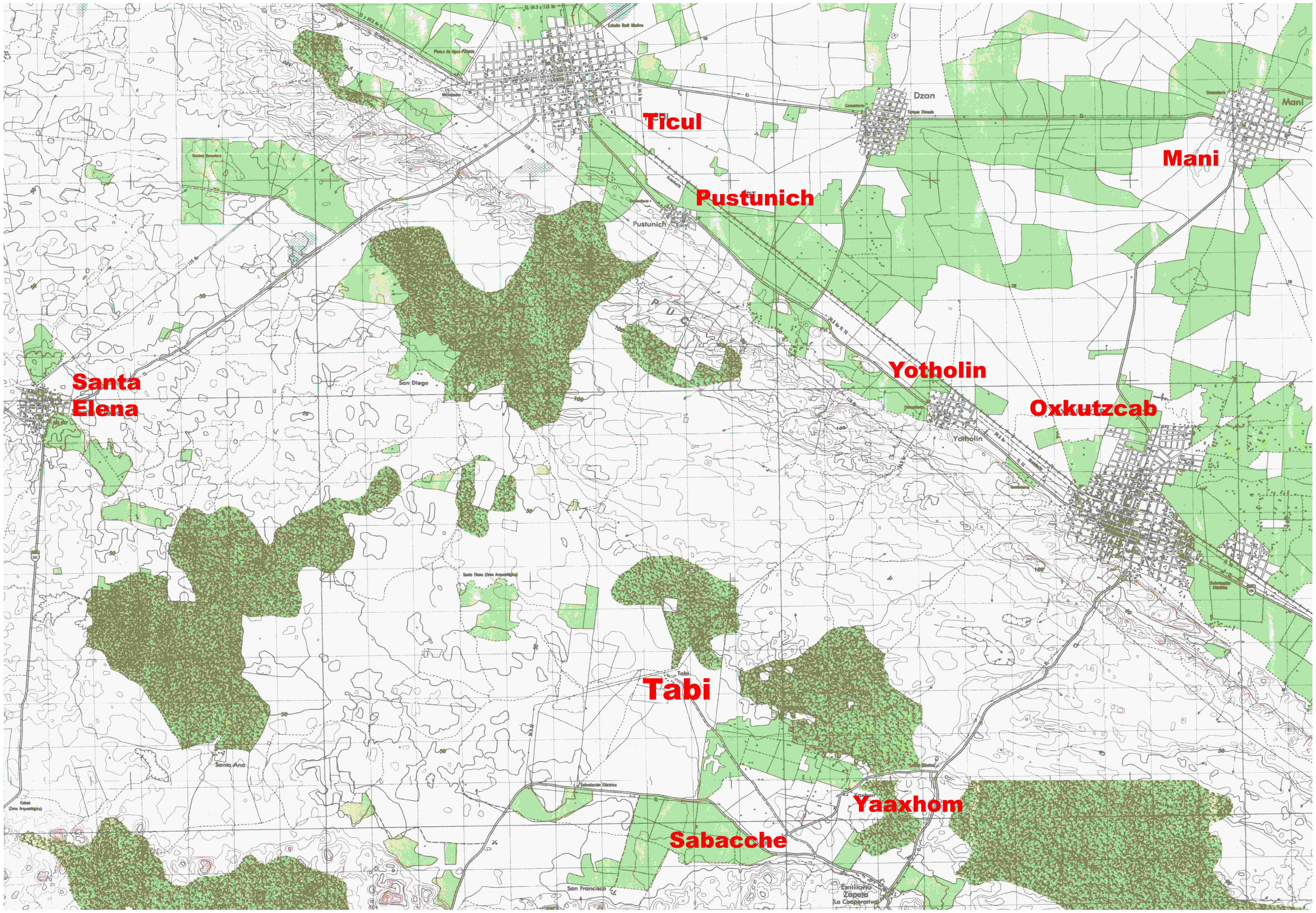

Figure 3. Topographic Map Showing Important Locations Mentioned in Text.

first to refer to these escarpments and to the cone karst landscape they bound on the north as the "Sierra de Bolonchen," after the town of Bolonchen de Rejón. The district is composed of thin to medium-bedded, white, yellow, or gray limestones and sandy limestones. Many of these strata contain conglomerates and breccia (angular sediments solidified into rock). Some of the strata also contain chert and gypsum (Dunning 1992:18; Isphording 1975).

The strata of the Bolonchen District are folded into synclines, which form the characteristic knobby cone karst hills of the region. Intermixed with the cone karst hills are large, flat-bottomed valleys formed through various combinations of block faulting, declination of the underlying bedrock, or solution of the bedrock. The valley slopes range from 10º to 90º and are classified as staircase (exposed uplifted bedding planes), steep-even (even upper slopes created by the exfoliation and slippage of the residual caprock), and scree type slopes (lower slope areas where debris has accumulated). Local relief in the district typically ranges between 40 and 60 meters and occasionally exceeds 100 meters. Absolute elevation above sea level typically does not exceed 150 meters for the district (Dunning 1992: 18).

The geology of the northern region of the peninsula is composed of layers of limestone and dolomite hundreds of feet thick. These layers are largely composed of calcareous deposits formed from the remains of marine organisms like algae, mollusks, and coral. These limestone and dolomite layers are relatively pure deposits of calcium carbonate and calcium-magnesium carbonate, respectively. When these materials are exposed to water, a chemical reaction occurs in which elements of the limestone are dissolved, and are then removed in solution. Solution erosion creates a distinctive geologic profile found throughout northern Yucatan (Dunning 1992). This profile is composed of a soil mantle, a hardened caprock layer of reprecipitated magnesium, and an active solution zone of marl known locally as *sascab*. These strata overlay the limestone bedrock. During the rainy season acidic rainwater percolates down through the carbonate rock creating a solution composed of highly soluble high-magnesium and aragonite and less soluble low-magnesium calcite. The highly soluble minerals are removed in solution, leaving behind the less soluble low-magnesium calcite. In the dry season, the upward capillary movement of water during evaporation causes the

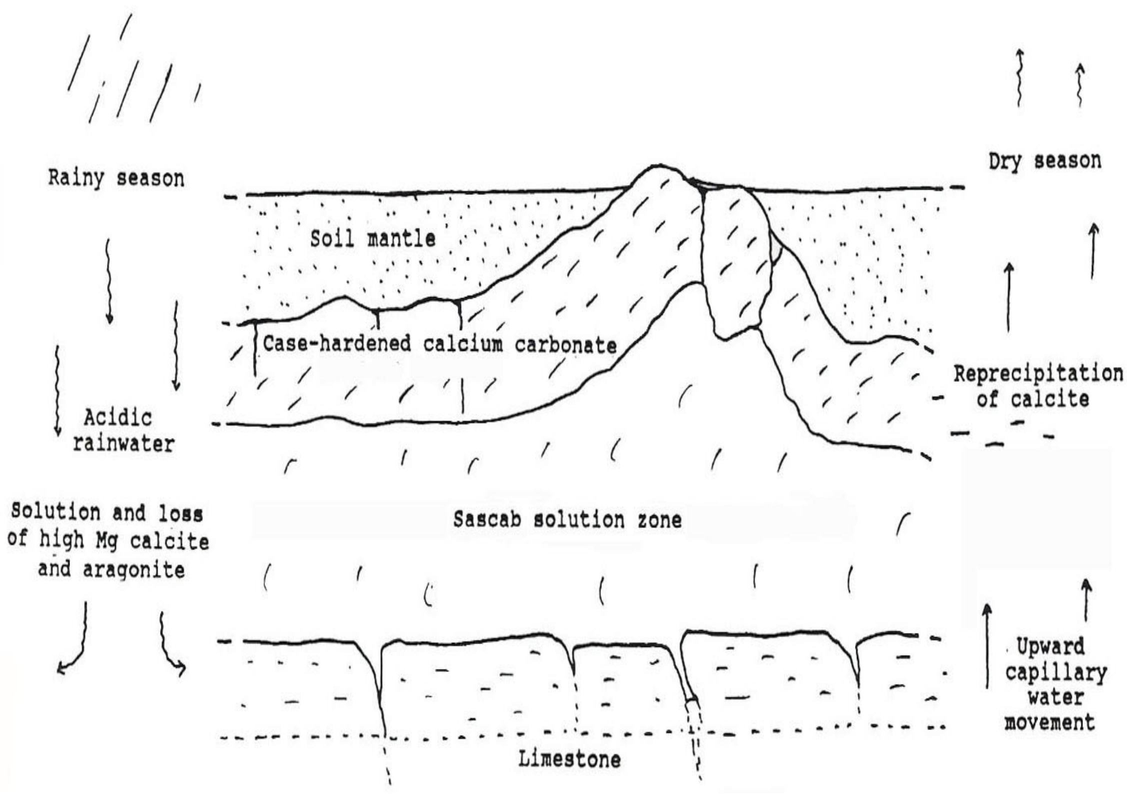

Figure 4. The Process of Caprock Formation (after Dunning 1992).

reprecipitation of calcite upward towards the surface. As the recrystalization of calcium carbonate occurs near the surface, a case-hardened, low-magnesium limestone caprock forms (Figure 4). Due to erosion, the caprock layer is unevenly exposed in places from beneath the overlying soil mantle.

Underlying the caprock is a layer of soft marl or *sascab*, that represents the active solution front. This *sascab* is composed of the soft dolomite, talc, and chlorite minerals left behind when the calcite and aragonite are removed in solution. The caprock and marl strata vary in thickness from area to area across the peninsula. Dunning (1992: 20) that caprock layers range from approximately 10 cm to well over a meter reports for the Puuc. While marl strata can range in thickness from virtually nonexistent in places to a meter and a half in other locations. Continued exposure to rainwater and groundwater creates a scared landscape of depressions, hollows, sinkholes, and caverns, the result of this solution-type erosion. Millennia of warping due to solution erosion and crustal movement have created the different landforms that characterize the peninsula today.

The variability of the caprock and *sascab* layers affected settlement patterns on the peninsula. *Sascab* has always been an important construction material, variously used as mortar, plaster, and as a flooring material, and the cavities or quarries where material has been mined, known as *sascaberas*, are common features within houselots and along road cuts in northern Yucatan. In the Puuc region, where depth to the water table was prohibitive, *sascab* served as a crucial medium into which Prehispanic *chultunes* or cisterns could be carved, therefore providing a crucial source of life sustaining water.

Water Resources

The northern portion of the Yucatan Peninsula is characterized by a notable absence of surface water. The porous nature of the limestone geology of the region traps precious little water at the surface. In fact, there are no rivers in the region and only a handful of lakes. Rainwater quickly percolates down through the permeable limestone to the water table, which consists of a layer of freshwater overlying a saline water table. The generally heavier rainfall in the interior of the peninsula creates hydrostatic pressure causing the freshwater to flow as underground rivers towards the Gulf of Mexico or Caribbean (Dunning 1992:21; Doehring and Butler 1974). This system reflects regional variation in geomorphology, with elements like tidal pressure, sea level, and rainfall affecting the local availability of freshwater.

The depth of ground water varies as one moves from north to south. The water table ranges from less than one meter deep in places along the northern coast, to a depth of not more than 27 meters along the northern karst plain. Further south, line measurements taken in wells of the Santa Elena District show the water table to be between 38-65 meters deep. In the Bolonchen District, groundwater depth ranges from 45 meters to well over 100 meters below the surface (Dunning 1992:21-22; Wilson 1980:16-17). Traditionally the location of settlements on the peninsula has been determined by the presence of natural water sources or the existence of conditions suitable for man made methods of extracting water. Water can be attained from naturally occurring *cenotes*, *aguadas*, caves, and *sartenejas* (solution hollows that collect rainwater), or through the use of man-made *chultunes*, wells and reservoirs.

The round, steep-walled sinkholes or *cenotes* found across the northern plain, as exemplified by the "sacred *cenote*" at the site of Chichen Itza, are some of the most emblematic and revered landforms of the peninsula. The numerous *cenotes* of this region served not only as domestic water sources, but also as sacred sites for worshiping and communicating with the gods. The groundwater exposed in these sinkholes ranges anywhere from at or near the surface to nearly 30 meters below ground level. Sinkholes that do not reach the water table are referred to as *hoyas*.

Aguadas are sinks that reach shallow aquifers and act as seasonal springs. They are commonly found within the northern *cenote* zone mostly near faults, but do occur throughout the peninsula. Caves are often associated with the Puuc region and typically are formed by uneven solution that has diagonally undermined superadjacent layers. These caves usually were sources for drip water collection by the ancient Maya. In the Santa Elena District only three deep cave systems, Gruta Xkoch, Gruta de Chac, and Gruta Xtacumbilxunam, are known to reach the water table. *Sartenejas* are solution hollows that collect rainwater and can be up to several meters in width and depth (Dunning 1992:20-24).

The region north of the Puuc is dominated by settlements located next to the abundant *cenotes* that dot this region and which are not found south of the Puuc escarpment. This distribution is reflected in the number of northern settlements that include *cenote* or "dz'onot", the Mayan word for *cenote* in their name, e.g. Chancenote, Chiquidznot, Kancabdzonot, Yodznot, etc. Conversely, settlements that rely on *aguadas* and man made wells and *chultunes*, which are found both north and south of the Puuc escarpment, are denoted by the incorporation of the Mayan word “chen” in the name, e.g. Bolonchen, Becanchen, Dzibalchen, Kancabchen, Chichen Itza, etc. (Isphording 1975:251). This practice of incorporating a reference to water in place names reflects the great importance that the inhabitants of the region place on this scarce commodity.

The construction of artificial water features has been a crucial feature of human adaptation on the peninsula. Prior to the introduction of steel tools which allowed deep wells to be dug, man made reservoirs and *chultunes* were essential elements of many Prehispanic communities. These features allowed for the retention of the plentiful wet season rains for use during the long dry season. It has been estimated that the site of Labna has some 60 *chultunes*, most with capacities of some 7,500 gallons (more than 28,000 liters) (Thompson 1897). As late as the 1970s, caretakers at the sites of Sayil and Xlapak relied on cleaned and repaired Prehispanic *chultunes* as their sole source of water (Isphording 1975:246).

Climate and Weather Patterns

The seasonal nature of rainfall is the primary climatic phenomenon characterizing the peninsula. As should be clear from the proceeding discussion, precipitation is perhaps the single most important factor influencing the historical settlement of the peninsula. Variability in the timing and amount of rainfall has traditionally meant the difference between life and death in Yucatan.

The nature of rainfall, particularly the amount and seasonality of precipitation divides the peninsula into four general climate types (Figure 5). As one moves southward rainfall amounts increase and the length of the dry season shortens. According to the Koeppen climate scale the four climate zones include Dry Steppe (BS), Tropical Dry/Winter (Aw), Tropical/Monsoonal (Am), and Tropical/Rainforest (Af). The majority of the Northern Peninsula, including the Puuc, is classified as having a Tropical/Dry Winter climate. This means the region has an average temperature not less than 18˚ Celsius and there is a pronounced winter dry season (Wilson 1980).

The climate of Yucatan is the result of factors relating to the geomorphologic situation of the peninsula, as well as a series of weather patterns and phenomena. Geomorphic factors affecting the climate of Yucatan include the peninsula's latitudinal situation, relatively low elevations, flat terrain, and the surrounding warm waters of the Gulf and Caribbean. The geographic position of the peninsula, between roughly 16˚ and22˚ latitude, insures moderate temperatures year round. The majority of the peninsula is characterized by flat terrain that ranges in elevation from sea level up to 600 masl at the southern base of the peninsula (Leyden 2002:85). The only real exceptions are the previously discussed Sierra de Ticul and Sierra Bolonchen and the Maya Mountains of Belize with relief of up to 1,100 meters masl. The concave Caribbean coastline, as well as the Maya Mountains of Belize and the Guatemalan Highlands,

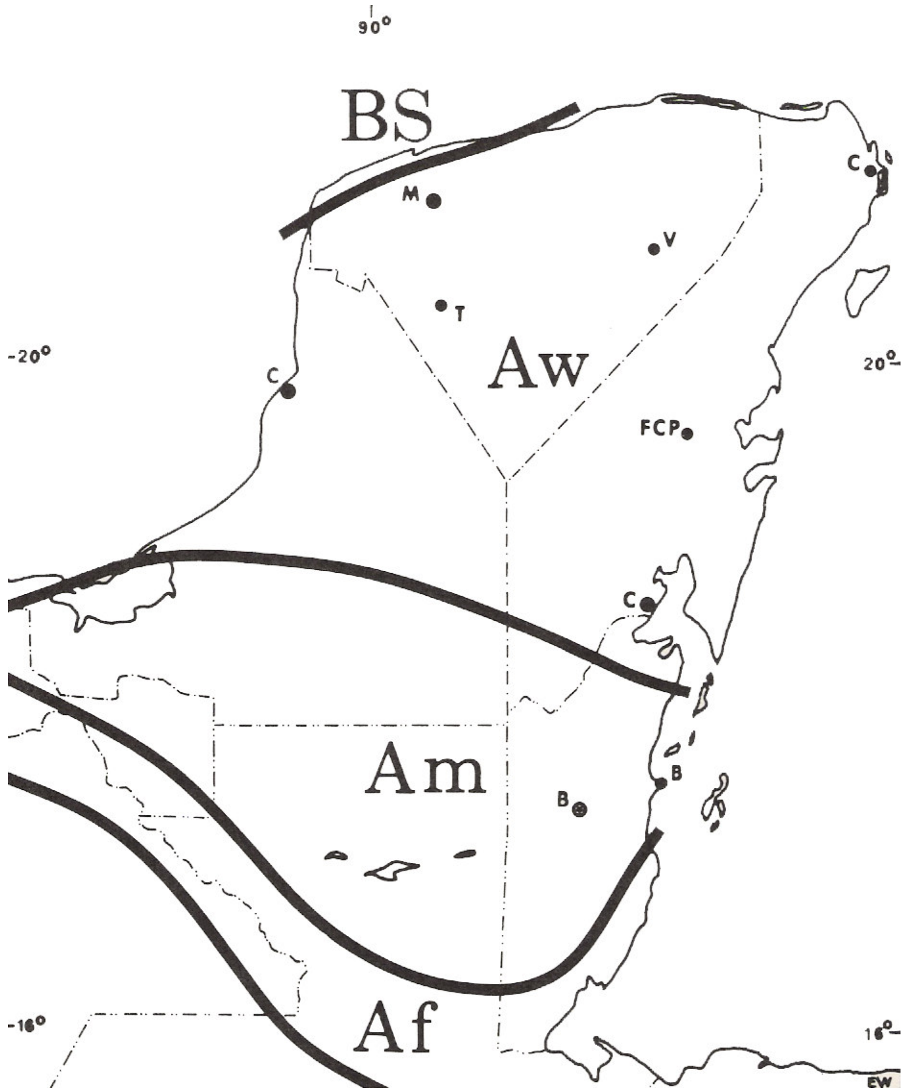

Figure 5. Climate Types of the Yucatan Peninsula (after Wilson 1980).

create uplift, increasing precipitation at the southern base of the peninsula. Additionally, the southern peninsula is affected by its proximity to the Intertropical Convergence Zone and the daily convection and precipitation patterns characterizing that zone.

There are five seasonal weather phenomena that primarily affect climatic conditions on the peninsula, including interaction of the Trade Winds and coastal breezes, the North Atlantic High, *Norte*s, Easterly Waves, and tropical storms. During the summer and fall, the easterly Trade Winds converge with northern coastal breezes over the northeastern portion of the peninsula. This convergence creates exaggerated convectional uplift and promotes thunderstorm formation and a high rainfall anomaly. The Trades blow these thunderstorms across the peninsula creating a decreasing pattern of rainfall as they dissipate in strength (Williams 1976).

During the northern winter months, the North Atlantic High shifts southwest toward Yucatan. This high produces descending air loft, reducing cloud buildup through the re-evaporation of cloud moisture and the interruption of the summer/fall convection patterns. The effects of this disruption lessen as one moves south. At its maximum in the north, the dry season stretches from November to April, with March typically being the month with the lowest average precipitation. Cold fronts known as *Nortes* are common occurrences during the winter dry season. *Nortes* are fronts that push south across the Gulf of Mexico from the interior of the United States, bringing colder temperatures, cloudy skies, moderately strong winds, and occasional rainfall (Dunning 1992:25).

In the six-month period stretching between May and October 87% of the mean annual rainfall occurs (McAnany 1990:265). There are two rainfall maxima occurring in late June/early July and early to mid September. Between these peaks is a period of variable rainfall and duration known as the *canícula*, figuratively meaning the "midsummer heat" or "dog days" (American Heritage Spanish Dictionary 2000). In drought years the *canícul*a is severe in intensity and long in duration and rainfall can vary as much as 30% from long term trends (Wilson 1980). In non-drought years tropical low-pressure troughs called Easterly Waves develop over the Caribbean and Atlantic. The prevailing winds blow these low-pressure systems westward across the peninsula once or twice a week during the summer months, significantly increasing precipitation (Dunning 1992:25).

The Yucatan also lies across one of the most frequent tropical storm tracks and the weather patterns of the peninsula are regularly affected by the cyclonic storms that enter the Western Caribbean. The peninsula averages slightly more than one storm per year, with most storms occurring between August and October. The brunt of these storms is felt along the eastern coast, but major storms can affect the entire peninsula. It is estimated that in 1988 class five Hurricane Gilbert destroyed 90% of the maize crop in large areas across the peninsula (Dunning 1992:25). In any given year, the unpredictable nature of tropical storms, *Nortes*, and Easterly Waves can significantly alter the timing and amount of rainfall experienced on the peninsula.

Rainfall averages from a low of <500 millimeters annually on the northwest coast, to around 1,900 millimeters in parts of the Peten and up to 4,000 millimeters in southern Belize and eastern Guatemala (Flores and Carvajal 1994; Deevey et al. 1980). The mean annual rainfall in the Puuc region is around 1,100 millimeters. This figure is based on a 10-year mean monthly average at the archaeological site of Uxmal, some 30 kilometers northwest of Hacienda Tabi (McAnany 1991). An examination of the monthly averages and the coefficient of variation for rainfall across the peninsula (and at Uxmal specifically) over this period clearly demonstrates the seasonality of precipitation in the region, as well as the variable intensity of the dry season (Figure 6).

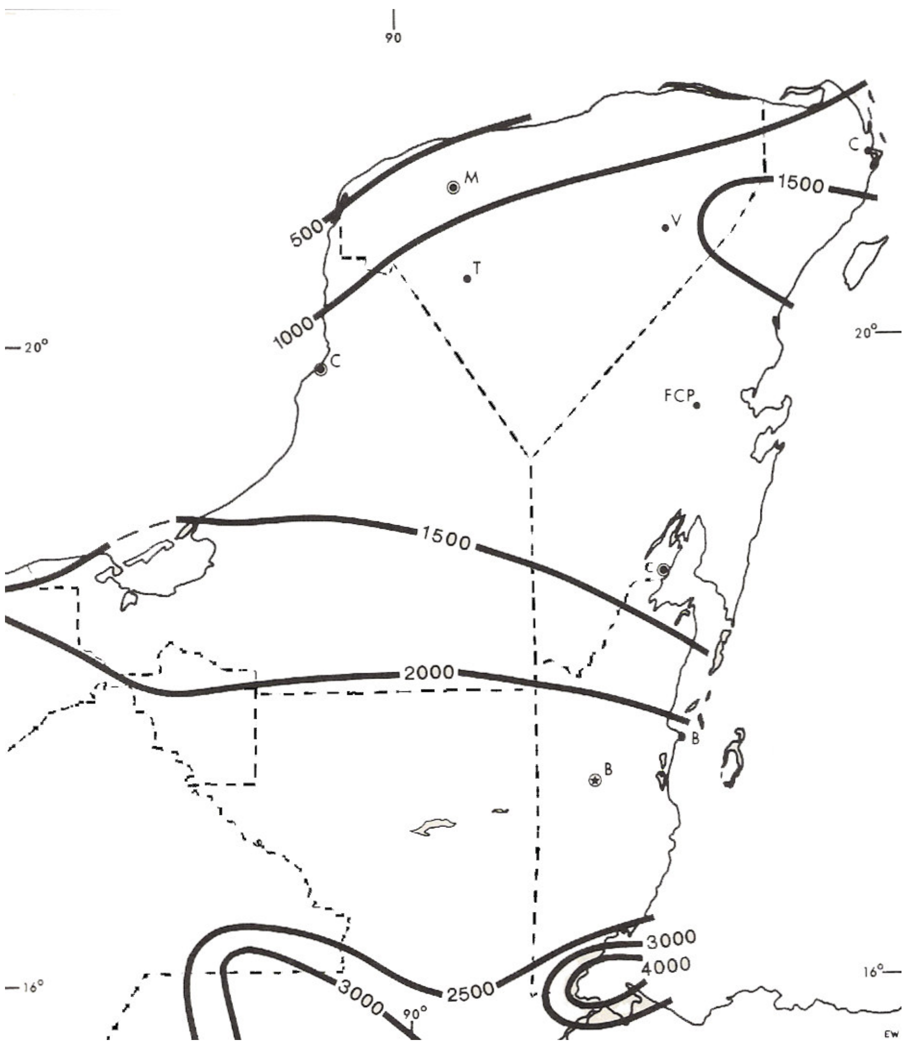

Figure 6. Mean Annual Rainfall on the Yucatan Peninsula (after Wilson 1980).

Vegetation and Soil Types

In general soil depth increases and vegetative variety and canopy height increases as one moves from north to south on the peninsula. Soil types and vegetation are closely linked across the peninsula and vary primarily in accordance with regional climatic variation (e.g. annual precipitation and wet and dry seasonality), soil composition (i.e., parent rock and age of soil), and surface patterns (e.g. drainage and slope) (Dunning 1992:29; Wilson 1980:27, 32). Additionally, for 2,000 years humans have been modifying the landforms and vegetation of the peninsula. The creation of *milpas*, terraces, reservoirs, platforms, and other man-made constructions through time have modified aspects of erosion, drainage, and soil accumulation. In the northern portion of the peninsula, there is virtually no vegetation that has not been affected by aspects of cultivation associated with slash and burn agriculture, the commercial production of cash crops, residential gardening and silviculture, and/or the intrusive effects of clearing associated with the spread of the built environment.

Vegetation

The gradation in rainfall from north to south creates a progression in forest composition similar to the one described by J.S. Beard for other areas of Central America, with the addition of a Scrub Forest category (Dunning 1992; Wilson 1980; Beard 1955). This progression from north to south includes Scrub Forest, Deciduous

Seasonal Forest, Semi-Evergreen Seasonal Forest, Evergreen Seasonal Forest, and Rain Forest. In the northern portion of the peninsula only the Semi-Evergreen, Deciduous, and Scrub Forests are found. The Evergreen Seasonal and Rain Forests are found at the southern base of the peninsula in the Peten, southern Belize, and eastern Guatemala, where rainfall averages at least 1,800mm and as much as 3,000 mm.

On the northern extreme of the peninsula the Scrub Forest is found adjacent to the northern and northwestern coastal regions where annual rainfall is less than 800 mm, with four or five months receiving less than 25 mm of rainfall each. Trees in these areas reach a maximum of approximately seven to eight meters and are encompassed by dense undergrowth of evergreen and deciduous shrubs (Wilson 1980:29). Moving to the south, Deciduous Seasonal Forests occur where annual precipitation ranges between 800 and 1,300 mm, with a total of five months below 100 mm of rainfall each and two months each below 25 mm. These forests cover most of the northern, central, and western portions of the northern peninsula including the Puuc (Dunning 1992:29-30). Common species in these regions include a prominence of leguminous trees such as the Jamaican dogwood or jabín (*Piscidia piscipula*), *Acacia* spp., and *Pithecellobium* spp. Also present are cacti, gumbo limbo (*Bursera simaruba*), *Metopium brownei*, *and Gymnopodium floribundum* (Flores and Carvajal 1994).

An upper tree story reaches approximately 20 meters, while a second story ranges between 3 and 10 meters. Mature tree trunks average half a meter in diameter and branching is low. Approximately two-thirds of the upper story is composed of deciduous trees that shed their leaves in the dry season. The lower story is composed almost entirely of small leaved evergreen trees (Wilson 1980:29). There is a noticeable difference in the density of vegetation between the dry season and the wet season, although at no time is visibility greater than 15 to 20 meters and mobility through the forest is always restricted.

In the Puuc region, the deciduous forest is frequently broken-up by large stretches of savanna in the south and relatively smaller but widely scattered savannas in the north (Dunning 1992:30). These savannas are either associated with low lying areas of poorly drained clay soils or are the result of purposeful burning to create pastureland. Pockets of forest types and plant species, more commonly found to the south, are found in the Puuc in association with permanently or seasonally wet sinkholes. These moist microenvironments were used by the Prehispanic and colonial Maya to cultivate fruit trees, such as cacao that could not otherwise survive the dry northern dry season (Gomez-Pompa 1989; Rico-Gray, Gomez-Pompa, and Chan 1985; Perez R. 1988).

To the south of the Deciduous Forests are the Semi-Evergreen Seasonal Forests. These forests occur in areas that average from 800 to 1,300 mm of annual precipitation, with five months having between 25 and 100 mm of rainfall each. The far southern and central portions of the study area, as well as the northern portion of Quintana Roo are characterized by forests of this type. These forests are composed of two stories, consisting of a closed canopy ranging between 20 and 26 m and a lower story ranging between 6 and 14 m. The upper story is 20-30% deciduous, while the lower story is primarily composed of evergreens. Mature trees average half a meter in diameter, branching is low, crowns are umbrella shaped, and climbing vines are common (Wilson 1980:29).

In addition to the species listed for the scrub/deciduous forests, species in Semi-Evergreen Forests include breadfruit (*Brosimum alicastrum*), sapodilla (*Manilkara zapote*), *Spondias mombin*, *Trema micrantha*, *Cecropia paltata*, *and Ceiba petandra* (Flores and Carvajal 1994). Small areas of pine (*Pinus*) forest and savanna and patches of oak (*Quercus*) forest are also found, as well as mangrove in coastal areas (Leyden 2002). Above 1,200 m masl temperate associations occur. Moist temperate associations consist of a mixture of coniferous and broad-leaved trees, including *Alfaroa*, elm (*Ulmus*), sweetgum (*Liquidambar*), *Myrsin*e, and sweet gale (*Myrica*). Drier associations include pine (*Pinus*) and oak (*Quercus*) forest and thorn-scrub with *Juniperus* (Leyden 2002).

As a result of the extensive land use in the northern portion of the peninsula only isolated pockets of primary forest can be found today. Primary forests are similar in composition to secondary forests, but have noticeably greater numbers of slow growing hardwoods (Dunning 1992:30). The repeated clearing and planting that has occurred across the northern portion of the peninsula has obscured any real trace of past patterns of horticulture and silviculture (Dunning 1992:30). Additionally, even in areas that have remained relatively undisturbed in the historic period it is unlikely that economic species could have survived for any length of time without the special attention necessary to survive repeated dry seasons. The exception to these circumstances is the above mentioned microenvironments where surviving pollen and other evidence might be used to identify past land use patterns.

Soil Types

Survival in agriculturally based societies in part depends on recognition of the different qualities and capacities of the various soil types found within a region. The soil taxonomies created by native populations are adaptive mechanisms, which in this case bind Maya culture, as embodied in agricultural knowledge, practices, and rituals, with the environment. Nearly every ethnographic and pedological study discussing soil taxonomies of the northern peninsula has adopted Mayan nomenclature, but this usage has rarely been based on any systematic study of the meanings and relationships that order the system (Dunning 1992:31).

The study of folk soil taxonomies and their relationship to agriculture illuminates micro-regional settlement decisions. The ethnopedological study completed by Dunning (1992) for the Puuc region represents the only organized folk soil taxonomy on the peninsula. The unchanging nature of this taxonomy over the last 400 years (when compared with colonial era dictionaries) indicates of the stability of the relationship between Maya culture and the environment (Dunning 1992:33; Alvarez 1980). Furthermore, these relationships help explain the nature of Maya settlement both in the present and in the Prehispanic past.

The folk soil taxonomy for Yucatan is composed of inductive categories that describe observable discontinuities in soil structure. The characteristics used to mark these discontinuities, e.g. color, texture, and topography, distinguish the various taxa and connote levels of quality. Taxonomies have structure (hierarchy), a set of taxa groups of related objects, and a mapping relating the taxa to the structure. The Puuc folk taxonomy is composed of levels 0-3, level 0 being the general designation for soil (Figure 7). The Yucatec Maya use both the word *luum* and *cab* to refer to soil, although *luum* is more commonly used. *Luum* has multiple meanings, including homeland, the earth, and soil, similar to the variable nature of the Spanish word *tierra*. As a designation for soil, *luum* is used to identify "fine, unconsolidated surface material" (Dunning 1992:33).

Similar to luum, the term *cab* has multiple meanings, e.g. homeland, village, and soil. Out of 48 informants, 41 stated that there is virtually no difference between the use of *luum* and *cab* as a general reference to soil. One informant identified cab as referring to cultivated soil. The other six identified *cab* as more of clay soil. Evidence suggests this may be a historical vestige as certain types of potter's clay (e.g. *kancab-kat*) use this term, certain types of clay vessels (e.g. *cutzcab*), as well as the use of the term to designate low-lying areas where clay is likely to be found.

Based on the more frequent use of the term *luum*, Dunning designates it as the highest order taxon. He has placed both *luum* and *cab* as second order taxa (Level 1) even though the distinction between them is no longer clearly differentiated among modern informants. *Luum* and *cab* are identified as the primary soils used in *milpa* and *solar* agriculture (Dunning 1992:33-34). The other three general soil types identified in the taxonomy do not refer to agricultural soils. These include *chehluu*m (broken rock surface), *akalche* (saturated soil), and *xibluum* (sterile soil).

Level 2 of the taxonomy is composed of secondary lexemes that modify the primary lexemes of *luum* and *cab*. Seven level 2 soil types were identified as suitable

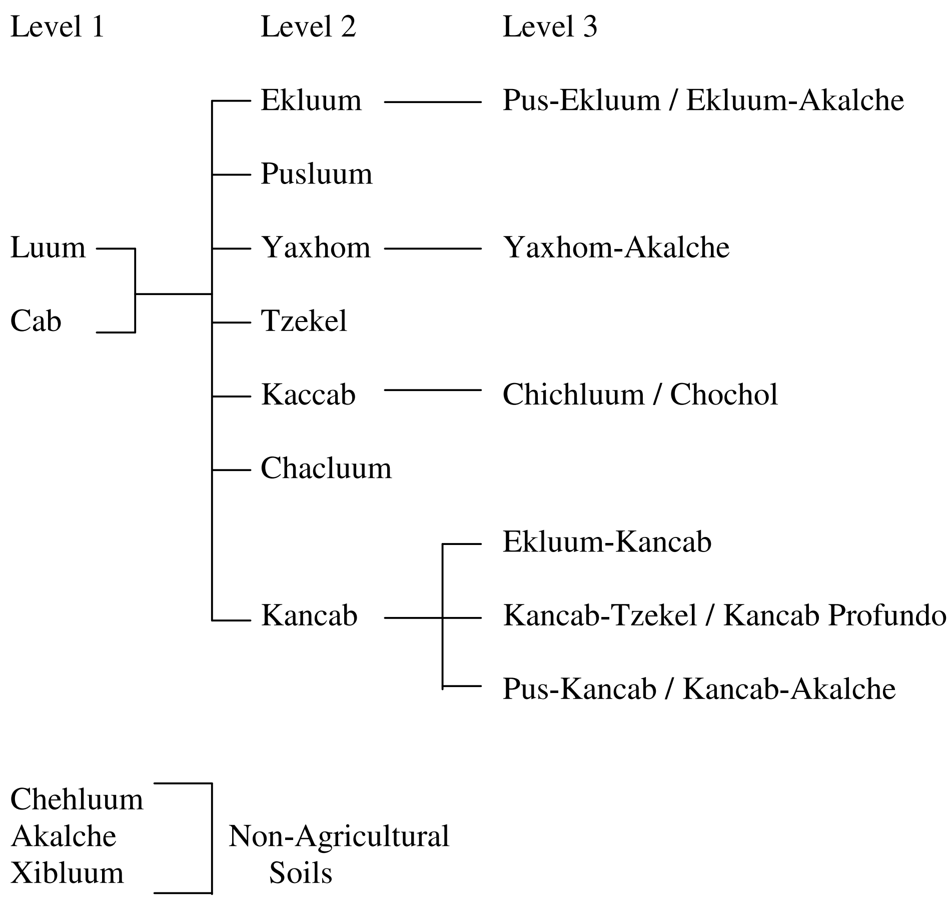

Figure 7. Folk Taxonomy of the Puuc Region - Yucatec Maya Soil Terms (after Dunning 1992).

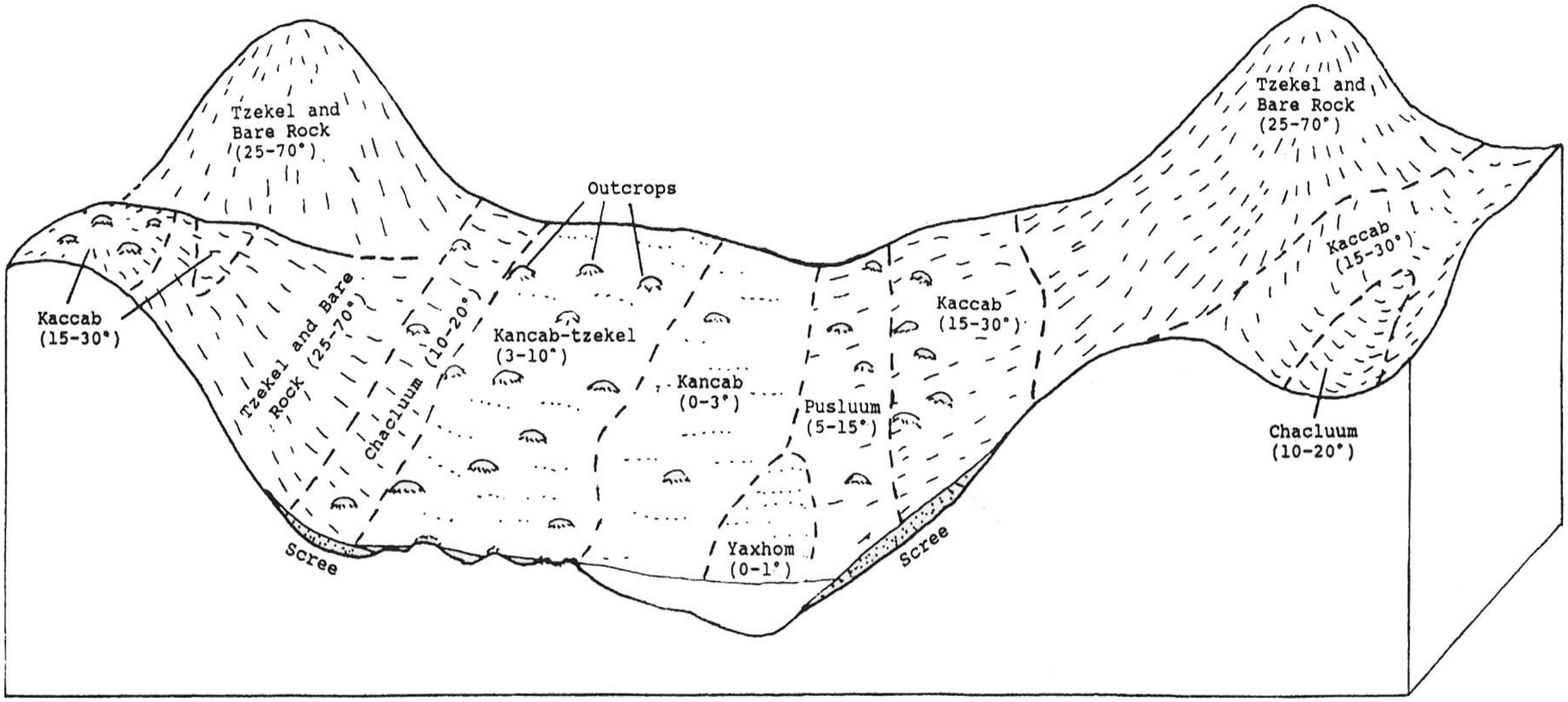

Figure 8. Topographic Location of Pucc Soils (after Dunning 1992).

for *solar* and *milpa* agriculture (Dunning 1992:34). These soil types are broadly separated by topographic location, i.e., soils found in flat or low-lying areas versus those on hillsides. The conditions of topography effect soil makeup and composition further creating subdivisions within the local folk taxonomy (Figure 8).

Four taxa are characterized as relatively deep soil deposits that accumulate in flat or low-lying areas, ranging between 0° and 15°. *Ekluum* (black/dark soil) is a dark, gray-brown, firm soil with high organic content, clayey texture, good moisture retention, and high fertility. *Pusluum* (dry soil) is a dark soil that has a silty, loose structure and is characterized by good drainage. *Kancab* (red-yellow soil) is a low-lying, heavy clay soil capable of retaining great amounts of moisture. *Yaxhom* (green-black, low-lying soil) is a gummy olive hued soil characterized by poor drainage. *Yaxhom* is the only soil type not found in colonial dictionaries, suggesting that it might be a more recent derivation, or that its usage is spatially restricted and distinct.

The remaining three level 2 taxa are found on the hill slopes greater than 10°. Due to their topographic situation these soils experience very little in situ weathering and therefore exhibit virtually no profile development. *Chacluum* (red earth) is a silt loosely structured, deep red, organic soil found in pockets on hillsides. *Kaccab* (high-lying soil) is a dark red-brown soil that occurs on the breaks of open slopes. *Tzekel-luum* (stony soil) is a shallow, stony, marginal agricultural soil of varied color and organic content found on steep, open slopes (Dunning 1992).

Level 3 soils are composed of compounded forms of the secondary lexemes, typically in contrasting pairs (Dunning 1992:35). *Ekluum* is subdivided into the siltier *pus ekluum* and the clayey, often inundated, *ekluum akalche*. Similarly, *kancab* can also be classified as *pus kancab* and *kancab akalche*. With the introduction of more modern agricultural techniques a distinction between *kancab-tzekel* (a shallower, stony *kancab*) and *kancab-profundo* (deep *kancab*) became necessary, as *kancab profundo* is better suited to plowing. *Kaccab* is subdivided into contrastive *chichluum* and *chochol*, both of which are dark red-brown, thin, hillside *kaccab* soils. A thin veneer of small stones overlying the soil distinguishes *chichluum*, while *chochol* indicates pockets of *kaccab* among large rocks. Further level 3 soil classifications include *ekluum-kancab*, a *kancab* with a thick, dark surface layer, and *yaxhom-akalche*, a *yaxhom* soil more prone to inundation. In addition to the soil taxa above, numerous non-taxa soil terms are

Table 1. Puuc Non-Taxa Soil Terminology (after Dunning 1992).

TERM	MEANING
apa'luum	Pockets of good soil amidst rock outcrops.
apal kax	Broken forest cover found on *apa'luum*.
boxluum	Dark, fertile earth often found in *hoyas*.
chakancab	Grass-covered area of overworked soil.
kaccab kax	Forested hill with good *milpa* soil.
kancabcalap	A small valley with good soil (not always *kancab*).
kancab kat	Red-yellow potter's clay.
kul luum	A forested area good for *milpa*.
sacluum	White potter's clay.
sascab	Limestone marl.
sis luum	Fertile soil (rich or with substance).
tul-luum	Fertile soil (full or abundant).
tsu'luum	Moist and fertile soil.
u nix chich-luum	A *chich*-covered (cobble-covered) slope with fertile soil.
`uts luum	Fertile soil (general designator of good soil).

commonly used in the Puuc (Table 1). These terms refer to topographic and vegetative features reflective of productive and nonproductive agricultural soils.

In reference to the preceding folk taxonomy, Puuc soils can be categorized according to four course capability classes based primarily on slope and drainage characteristics (Dunning 1992:48, 1989):

> Class 1: shallow, stony, well drained soils that occur on slopes greater than 10°, including *tzekel*, *kaccab*, and *chacluum*;
>
> Class 2: well drained soils of 20 to 100 cm depth that occur on slopes of 3° to 15°, including *pusluum* and *kancab-tzekel*;
>
> Class 3: generally well drained soils of greater than 1 meter in depth occurring in topographic lows of 0° to 5° slopes, including *kancab*, *ekluum*, and *yaxhom*;
>
> Class 4: poorly drained, seasonally inundated soils that occur in topographic lows, including *akalch*e and hydromorphic soils [soils formed under anaerobic conditions].

The elevation and relief of the Santa Elena and Bolonchen districts have fostered the thickest and some of the most productive residual soils found anywhere in the northern peninsula (Isphording 1975:255). In the Puuc, *pusluum* and *ekluum* are the preferred soils for *solares* as they most easily support a variety of crops. *Milpas* commonly include tracts of different soils and a range of maize varieties are typically planted as a hedge against environmental vagaries. Two generic categories of maize *xnuc nal* (slow growing, large kernelled varieties) and *xmehen nal* (faster growing, small kernelled varieties) are planted according to the different soil types. The slow growing *xnuc nal* varieties are planted in the thin, rocky and therefore less moisture retentive *kaccab*, *chacluum*, and *tzekel* soils, as well as in the water-binding *kancab* soils that are also less drought resistant. The fast growing varieties of *xmehen nal* are planted in *pusluum* and *ekluum* soils, which are generally deeper, have higher fertility, and benefit from a more even balance of moisture retention and drainage (Dunning 1992:36).

Survival of traditional lifeways depends on the success of agricultural production and production, in turn, depends on an understanding and efficient exploitation of the idiosyncrasies of a particular environment. An intricate knowledge of these attributes as expressed in folk taxonomies and varied agricultural techniques represents the ongoing correlation between the environment, agricultural technology, and Maya social organization.

Maya Agrotechnologies

Archaeological perspectives on the subsistence patterns of the ancient Maya have changed significantly over the course of the last three decades. Until the late 1960s and early 1970s most archaeological reconstructions described Maya agricultural production as limited to long-fallow swidden agriculture. These models were based on modern behavior and misconceptions surrounding the perceived limitations of tropical environments and soils. The model of swidden agriculture fit nicely with the understanding at that time that settlement patterns and Maya social organization were based on vacant ceremonial centers and dispersed populations.

In the 1970s, more rigorous settlement pattern studies changed archaeologists' conceptions of Prehispanic population levels and density. It became clear that the Maya area contained large populations that were densely settled in and around the centers.

Faced with large population numbers, archaeologists had to reevaluate Maya agricultural technology. In 1972, Siemens and Puleston reported the use of wetlands by the Maya and in 1974 Turner demonstrated the use of terracing in the Rio Bec region. Throughout the 1970s and 1980s numerous reports were published on the intensive agricultural techniques of the Maya (e.g. Adams 1983; Turner and Harrison 1983).

By the 1990s it became clear that the extent of intensive agriculture had been overestimated (Dunning 1996; Pope et al. 1996). At the same time researchers began to acknowledge the importance of agricultural techniques that involved the use of a wider range of cultigens and sophisticated management of natural subsistence resources and zones (see Fedick 1996). The landscape of the Maya area is no longer viewed as a homogenous, agriculturally limited environment. Instead, archaeologists now recognize the complexity of microenvironments and techniques that characterize the area.

The Prehispanic Maya developed a number of techniques for improving crop yields and dietary variability. The best known of these agricultural techniques are those that involved landscape modification, including raised fields, canalization, and terracing. These engineering techniques were used to intensify production and in the case of terracing to control erosion. Less well known are the multi-cropping system, agro-forestry, and house garden techniques that the ancient likely employed. These methods had more of an impact on the diet and nutrition of the Maya than techniques involving landscape manipulation. Although, in certain areas with high populations, agricultural engineering and intensification would have been necessary to sustain diet and nutrition at even basic levels.

The modification of wetlands by the Maya included the building of raised fields and systems of canals. The best evidence for raised field technology comes to us from Northern Belize, were the technique was practiced both in the Pulltrouser Swamp area (Turner and Harrison 1983; Harrison 1996) and in the area of Albion Island, Douglas Swamp, and Cobweb Swamp (Pohl 1990). There is some disagreement, however, as to when these fields were cultivated, with Turner and Harrison arguing for Late Classic exploitation and Pohl et al. arguing for Preclassic use of these fields.

Raised field technology has also been argued for the Pasion region. R.E.W. Adams et al. interpreted from synthetic aperture radar extensive networks of canals and raised fields (Adams 1983; Adams et al. 1981). Subsequent research by Dunning has shown that this earlier interpretation was flawed. Using air photo interpretation and ground checking by Dunning has been unable to find any evidence of raised field or canal systems in the region (Dunning 1996). The most striking use of canals comes from Cerros in Northern Belize (Freidel and Scarborough 1982). They suggested that the canal system at Cerros was used to redirect water from the New River to the site and that they were used in conjunction with drained fields.

As mentioned previously, the first strong evidence for terracing in the Maya area came from Turner's work in the Rio Bec region (Turner 1974). Terracing is also found at the site of Caracol in Belize, the Belize River area, in the Peten, Petexbatun area and to a limited degree in the Puuc area. Beach and Dunning (1995) have identified five types of terracing used in the Maya area, including dry-slope contour terracing, box terraces, footslope terraces, and weir terraces. The placement of terraces was not a simple response to slope, but a complex decision in which slope, soil type, bedrock, drainage, and availability of other land resources were considered.

In addition to land modification techniques, the Maya used multi-cropping strategies, agro-forestry management, and infield agriculture. Multi-cropping in the Maya area has been suggested as a means of intensifying production (Culbert et al.1978). Similarly, Fedick (1996) has suggested that the Maya may have used risk management techniques involving planting at multiple locations. Atran (1993) has suggested that the complex tropical-forest management techniques employed by the modern Itza Maya exemplify the similar types of management that ancient Maya populations would have utilized. Additionally, modern research has also demonstrated the importance of infield or garden agriculture in providing variation and additional nutrients in Maya diets.

It is clear from the above that the ancient Maya used a variety of agricultural techniques. Unfortunately, much more work is needed to better define the types of techniques that were in use in particular regions at particular times. Identifying techniques like terracing requires extensive ground surveys that have not been undertaken in many regions. Other elements of Maya agrotechnology, such as multi-cropping and agro-forestry, do not create archaeological signatures, allowing archaeologists to only infer their use based on modern analogy. Mayanists are now beginning to understand the complexity of Maya agricultural practices and the importance of micro-regional investigations.

Environmental Trends

A complex relationship exists between culture, climate, and the environment. Human populations are subject to the conditions created by the unique interaction of geographic and climatological provisions within a particular region, while at the same time modifying and changing the ecosystems they inhabit. The combination of geographic/climatological interaction and human/environmental interaction are "reciprocal and dynamic" and create a unique set of circumstances at any one time (Leyden 2002:85). On the Yucatan Peninsula, the historical interface between culture and the natural world is reflected in the paleoenvironmental and archaeological records that characterize the region.

Alterations to the environment affected by local anthropogenic modifications further complicate the interpretation of past climatic change. The relationship between climate and vegetation is complex. Climate determines the amount of biomass while vegetation modifies climate through variations in the interception of precipitation and solar radiation and also through differences in amount of transpiration that occurs at various points across the landscape. Extensive human exploitation alters the structure and composition of plant associations, often resulting in modification of the regional climate. These modifications, which occur within the lifetime of individuals, also occur within the context of millennial and centennial cycles of environmental change.

Climate Forcing

Several large-scale mechanisms have historically affected the climate and therefore environment of the Yucatan Peninsula. These mechanisms include solar forcing, orbital forcing, and changing ocean/atmosphere interactions. Solar forcing refers to changes in the intensity of solar radiation experienced on Earth. Changes in the intensity of solar radiation are reflected in records of cosmogenic nuclide production of both ^{14}C and ^{10}Be. The record is characterized by 206-year cycles in which periods of increased solar activity correspond to lower cosmonuclide.

It is believed that changes in solar intensity affect global mean temperatures, humidity, convection, and the intensity of Hadley circulation in the tropics. The exact processes through which these small variations in solar intensity affect shifts in the balance between evaporation and precipitation are not known. It is hypothesized that mechanisms such as changes in the ultraviolet part of the solar spectrum, which would affect ozone production and stratospheric temperatures, and the effects of cosmic radiation intensity on cloud formation, and precipitation may amplify the effects of changes in solar activity production (Pope et al. 2001:1369-1370). As previously outlined, changes in convection patterns or in the movement of the Intertropical Convergence Zone can modify the precipitation regime of the peninsula.

Orbital forcing involves climate fluctuations caused by the orbital relationship of the Earth to the Sun. The processes of orbital forcing are responsible for the amount and seasonal distribution of solar radiation that reaches the Earth as a function of orbital change, as predicted by Milankovitch Theory (Baum 1997). The Earth's orbit is characterized by cycles of eccentricity, precession, and obliquity, each of which influences the orientation of the Earth at any particular time in relation to the sun's solar radiation.

Eccentricity relates to the path of the Earth's orbit, which varies from near circularity and an ellipticity of 0.06 over a 413,000-year period. Change in the ellipses of orbit alters the distance that the Sun's radiation waves must travel to the Earth and therefore effects the intensity of solar radiation. Today there is approximately 6% difference between the intensity of solar radiation in January as opposed to July. During periods when the Earth's orbit is more elliptical, seasonal differences in radiation can vary as much as 20-30% (Baum 1997; Miles 2003).

Precession is comprised of two components: axial precession and elliptical precession. Axial precession refers to the wobble exhibited by the Earth as it spins on its axis. This wobble alters the orientation of the Earth's axis tracing a circle in space with a periodicity of 26,000 years. The second component, elliptical precession, describes the elliptical orbit of the Earth around an axis. Together these components are known as the "precession of the equinoxes," in which the solstice and equinox shift around the Earth's orbit with a periodicity of 22,000 years. The forces of precession cause warm winters and cool summers in one hemisphere and the opposite in the other. The effect is greatest at the equator, decreasing towards the poles (Baum 1997).

Obliquity refers to the inclination of the Earth in relation to its plane of orbit around the Sun. This inclination ranges between 22º and 25º; it takes the Earth approximately 41,000 years to oscillate between these extremes. The degree of inclination affects the amount of solar radiation experienced by a particular region of the Earth and tends to amplify seasonal cycles in the high latitudes of both hemispheres, with lesser effects near the tropics. Deviations in obliquity create more pronounced variation in seasonal temperature, meaning harsher winters and hotter summers, in effect, creating greater seasonality (Baum 1997).

Large-scale ocean/atmospheric interactions are also responsible for climatic variation. The North Atlantic High serves as a prime example of the importance of the correlation between oceanic and atmospheric conditions. As previously discussed, the movement of the North Atlantic High to the south in the winter months affects convection patterns and therefore contributes to the creation of dry season conditions. Similarly, the movement of colder North Atlantic waters toward the equator also create drier conditions. When sea surface temperatures in the tropical Atlantic are greater than 27º C deep atmospheric convection is possible as the warmer waters evaporate greater amounts of water vapor. Conversely, when surface water temperatures are below 27º C less water vapor is released and conditions are not conducive to deep convection.

This relationship is exactly the case for the waters of the Caribbean off the coast of the Yucatan Peninsula. During the rainy season, average surface water temperatures rise above 27º C and fall below 27º C during the winter dry season when the North Atlantic High and colder waters shift southward (Gill 2000:160). It follows that an increase or decrease in the average surface temperature of the waters surrounding Yucatan can dramatically affect the amount of rainfall experienced across the Peninsula.

Long-term patterns of deep-water convection are one mechanism responsible for large-scale fluctuations in average surface water temperatures.

The Atlantic is a net evaporative basin with the dry continental air that sweeps across the relatively warm ocean waters drawing off great amounts of moisture and leaving the salt behind. The moisture-laden air crosses the Isthmus of Panama and the water is precipitated in the Pacific. Through this process, the Atlantic loses more water than it gains through precipitation and continental runoff, creating high salinity. Eventually, the excess salt is redistributed throughout the world's oceans through the circulation system known as the ocean conveyor belt. This system also serves to move warm tropical waters to the northern latitudes and colder northern waters into the tropics.

Crucial to the movement of surface water are the subtropical ocean gyres (circular oceanic surface currents) that rotate between 10º N and 45º N in the Atlantic. Due to the Isthmus of Panama, the waters of the tropical Atlantic flow north through the Yucatan Strait into the Gulf Stream. A portion of this water separates from the Gulf Stream and moves into the far Northern Atlantic. In the vicinity of Greenland and Iceland, cold winter winds sweep the surface waters aside allowing warmer waters to rise to the surface. The cold winds pull out the heat from these warmer waters as they reach the surface, in the process creating heavily salinized, chilled waters. These very dense waters sink towards the ocean depths, creating convection cells that carry on the process by pulling more warm water from below up to the surface. The arriving southern waters have an average temperature of 52º F, while the deep waters returning to the south have an average temperature of 37.4º F. This process of deep-water formation is known as thermohaline circulation (*thermo* meaning temperature and *haline* meaning salinity) and is responsible for the warm climate Northern Europe enjoys in the winter relative to similar latitudes in North America (Gill 2000:175-179).

The cessation of the conveyor belt, and therefore of thermohaline circulation in the North Atlantic, plays a major role in shifting climatic conditions between periods of cold and periods of milder weather. Changes in the salinity of the North Atlantic, through greater influxes of freshwater, cause the formation of deep water to move south of Bermuda or into the South Atlantic. Under these circumstances, temperatures in Northern Europe and the North Atlantic drop dramatically. At the same time, the southerly shifting of deep-water formation creates warmer temperatures to the south, thereby altering the climates of these regions as well (Gill 2000:182-184).

All of these processes - solar forcing, orbital forcing, and oceanic/atmospheric interactions - individually have the potential to produce profound effects upon climatic and environmental conditions. In concert, they form a highly complex system in which the effects of each component are defined by the way in which they interact with all other components. The outcome is a highly dynamic system that operates on cycles that span millennia, centuries, or decades and on a planetary wide scale. The effect of this system on the trajectory of smaller scale human cultural development should not be underestimated. Local human populations respond to these cycles and their actions may serve to amplify or mitigate the overall effect of these large-scale processes as these cultures adapt to and modify their environments.

Lowland Paleoenvironmental Correlations

A number of research projects have addressed long-term environmental and climatic change in order to define the relationship between Maya culture and the environment. These studies have attempted to place the changing fortunes of the Maya within the context of environmental change by examining the depositional records of lakes, swamps, and lagoons on the peninsula. These sites in Northern Yucatan and the Peten are primary repositories of paleoenvironmental information and cores have been studied from some 29 sites in the Maya Lowlands (see Table 2). The climatic and environmental events delineated in the depositional records of these lakes have been correlated with similar cores from around Latin America and the Caribbean.

These cores have yielded information related to pollen, stable isotopes, lithology, mineralogy, animal microfossils, and diatoms, all of which detail the paleoenvironment of the peninsula. Pollen, stable isotope ratios of $\delta^{16}O$ to $\delta^{18}O$, and gypsum to calcite ratios in sediments have proved to be the most informative for describing past changes in the climate and environment of the region. Pollen documents past climatic fluctuations and environmental patterns in the range of plant associations found in a particular record. At the same time, climatic change can be difficult to discern in the pollen record when coupled with extensive human disturbance. For example, typical indications of increased aridity - such as deforestation - are not available where humans are actively clearing land and planting cultigens (Leyden 2002).

The ratio of the stable oxygen isotopes $\delta^{18}O$ and $\delta^{16}O$ are used as a measure of long-term fluctuations in lake water levels in the Maya region. Fluctuations in lake levels represent shifts in the balance of evaporation and precipitation of a reservoir (the recharge rate of a reservoir), changes that may reflect drier or wetter climatic regimes. Alterations in the ratio of the two stable oxygen isotopes, as recorded in the calcium carbonate of the shells of invertebrate lake organisms like snails, reflect change in the water balance of sampled lakes (Brenner et al. 2002:144; Covich and Stuiver 1974:684). The $\delta^{18}O$ and $\delta^{16}O$ isotopes have different masses and therefore undergo differential fractionation when subjected to physical, chemical, and biological processes present within a given environment. The proportion of $\delta^{18}O$ to $\delta^{16}O$ in evaporated water vapor is approximately 1:500. The more abundant $\delta^{16}O$ is lighter mass, and therefore, evaporates more readily than $\delta^{18}O$. Under evaporative conditions, the remaining lake water becomes increasingly enriched with $\delta^{18}O$ isotopes (Covich and Stuiver 1974:682). The incorporation of bicarbonate ions (HCO_3) from lake water into the shells of aquatic organisms preserves a record of oxygen isotope ratios. Dry periods with higher evaporation/precipitation (E/P) ratios are characterized by higher ratios of $\delta^{18}O$ due to the preferential evaporation of $\delta^{16}O$. Wet periods with low E/P ratios have low $\delta^{18}O$ratios (Brenner et al. 2002:144-145).

Two principal factors affect the stable oxygen isotope ratios of freshwater shells in Yucatan: 1) the temperature at which the carbonate was precipitated and 2) the relative $\delta^{18}O$ ratio of the water entering the lake. It is thought that temperature changes during the Holocene were minimal and that the oxygen isotope ratio of water entering

Table 2. Lake, Swamp, and Lagoon Sites Tested in the Maya Lowlands.

Site Name	**Reference(s) – (Not Necessarily Inclusive)**
Quexil	Brenner 1983, 1994; Deevey 1978; Deevey et al. 1979; Leyden 1984; Leyden et al. 1993, 1994; Vaughan et al. 1985; Wiseman 1985
Salpeten	Brenner 1994; Leyden 1984, 1987, 2002; Rosenmeier et al. 2002a, 2002b
Peten Itza	Covich 1976; Curtis et al. 1998; Islebe et al. 1996
Coba	Leyden et al. 1998; Whitmore et al. 1996
Chichancanab	Covich and Stuiver 1974; Curtis et al. 1996; Hodell et al. 1995, 2001
Chilonche	Brenner et al. 1990
Punta Laguna	Curtis et al. 1996
Laguna de Petenxil	Cowgill et al. 1966; Cowgill and Hutchinson 1966
Yaxha	Deevey et al. 1979; Rice and Rice 1983, 1990; Rice et al. 1985
Sacnab	Deevey et al. 1979; Vaughan et al. 1985
Macanche	Vaughan et al. 1985
Laguna de Cocos	Hansen 1990
Laguna Tamarandito	Dunning et al. 1997a, 1998
San Jose Chalchaca	Brenner et al. 2000; Whitmore et al. 1996
San Andres	Pope et al. 2001
Cobweb Swamp	Jacob 1992; Jacob and Hallmark 1996; Jones 1994
Cob Swamp	Pohl et al. 1996
Lago Catemoco	Byrne and Horn 1989
Lago Yoja	Rue 1987
Cerros	Crane 1996
San Antonio	Wiseman 1990
Los Pozas	Johnston et al. 2001
Izabal	Tsukada and Deevey 1967
Petapilla Swamp	Rue 1987
Chimaj	Brenner et al. 1990
Oquevix	Brenner et al. 1990; Leyden 2002
Santa Ana Vieja	Cowgill and Hutchinson 1966
Pulltrouser Swamp	Wiseman 1983
Sayaucil	Whitmore et al. 1996

these basins was also fairly constant. Closed basin lakes are used in these studies because water levels in these lakes are solely the product of inflow from precipitation and water loss through evaporation. Therefore, changes in the oxygen isotope ratio of lake water must have been governed by changes in the relationship between hydrologic inputs (rainfall and inflow) and outputs (evaporation) (Brenner et al. 2002:145; Covich and Stuiver 1974:682).

The ratio of gypsum to calcite in the sediments of lakes also indicates shifts in E/P climate conditions. Gypsum precipitation occurs during drier periods when E/P is high, lake levels are low and gypsum solubility is exceeded. When wetter conditions prevail and E/P is low, gypsum deposition ceases and is replaced by calcite sedimentation. In this way the relative proportion of gypsum to calcite in lake sediments reflect past levels of lake water saturation, and therefore, changes in E/P regimes (Brenner et al. 2002:149; Hodell et al. 1995:391).

The Late Pleistocene

Lowland temperatures were probably 5° C cooler during the last glacial maximum (Bush et al. 2001). There were also sharp declines in temperatures and precipitation during this period. The water table was at least 26 m lower than current levels and possible as much as 30-40 m lower (Leyden 2002:88). For this reason only Lake Peten Itza and Lake Quexil contain deposits spanning the Late

Pleistocene/Holocene transition, and only the deposits from Lake Quexil having been studied (Deevey et al. 1983; Leyden et al. 1993, 1994).

The pollen record from Lake Quexil represents three distinct climatic periods including Interstadial Stage 3 (ca. 36k-24k B.P.), a full glacial period (ca. 24k-14k B.P.), and a late glacial period (ca. 14k-10k B.P.). The Interstadial Stage 3 climate was moist but drier than today, supporting mesic temperate forests composed of pine, oak, *Aforoa*, as well as limited numbers of other temperate trees in isolated wetter areas. Temperatures were likely 4.7° - 6.5° C cooler than today, based on calculations using estimated elevational changes for represented vegetation associations and moist adiabatic lapse rates. Pollen concentrations during the last glacial maximum (ca. 24k-14k B.P.) are minimal, with the Peten being characterized by sparse thorn-scrub, grasses, and cacti. Prevalent marsh taxa suggest that Lake Quexil had reduced water levels and a higher evaporation to precipitation ratio. During the latter portion of this period, conditions were likely most severe with temperatures 6.5° - 8° C cooler than today (Leyden 2002:88).

During the late glacial period (14k-10k B.P.), conditions improved enough to allow mesic temperate oak and hardwood forests to populate the Peten, although vegetation was still sparse. The slightly warmer conditions during the first half of this period promoted fluctuating lake levels as E/P ratios declined. The second half of the period corresponds to the Younger Dryas, which saw a near return to glacial conditions in the northern latitudes. During this time, the ocean conveyor belt and thermohaline convection were disrupted by catastrophic releases of previously dammed melt water into the Northern Atlantic (Gill 2000:183-184). This climatic reversal in the north curtailed forest expansion in the Peten and the previous warming trend was reversed. Temperatures declined by up to 1.5° C. Modest decreases in E/P ratios continued during the period as evidenced by an increase in aquatic macrophytes. The pollen record demonstrates that Lowland subtropical forests were not present in the Maya Lowlands before 10,000 B.P. (Leyden 2002:88).

The Early Holocene (12,000 - 8,000 Years B.P.)

Early Holocene climatic reconstructions suggest the onset of a warmer, wetter climate with rising lake water levels and a colonization of the Lowlands by tropical forest (Brenner et al. 2002; Deevey et al. 1983; Leyden 1984; Leyden et al. 1993, 1994). Only five lakes contain pollen records for this period; these are Lake Salpeten, Lake Coba, Lake San Jose Chulchaca, Lake Quexil, and Lake Peten Itza. Ground water levels during this period were still depressed and sea level would not reach modern levels until the mid-Holocene. This last factor was especially important to lake levels in the Northern Peninsula where groundwater levels are strongly influenced by sea level change.

Pollen samples from Lake Quexil record a transitional phase prior to 10,000 B.P. when tropical forest associations were developing but were not analogous with modern forest composition. These forests consisted primarily of arboreal taxa, including pine, oak, mesic temperate hardwoods, as well as *Moraceae* taxa, which would ultimately accounted for 80% of the pollen count for this period (Leyden 1987, 2002; Leyden et al. 1993, 1994). Temperatures gradually warmed from values 3-4° C cooler than modern values, as E/P ratios continued to decline (Leyden 2002:91).

The decline in E/P ratios during the Early Holocene was the result of increased seasonality as the movement of the Intertropical Convergence Zone (ITCZ) fluctuated more widely during this period. The ITCZ represents the belt along the equator where northern and southern trade winds converge, resulting in convection and precipitation. One of the factors affecting the seasonal movement of the ITCZ is solar insolation. Increases in insolation cause increased movement of the ITCZ, resulting in increased seasonality as the zone moves far to the north in the summer and far to the south in the winter. Solar insolation, and therefore the movement of the ITCZ, is in part regulated by the Earth's precessional cycle. Based on this cycle, the Earth passed closest to the Sun around 8,000 B.P., resulting in the greatest amount of seasonality and therefore the most intense summer rainy seasons (Brenner et al. 2002:149; Hodell et al. 1995:392).

The period from 10,000 to 8,000 B.P. was the wettest of the last 36,000 years in the Peten as warm and moist conditions prevailed (Leyden 1987, 2002; Leyden et al. 1993, 1994; Vaughan et al. 1985). Evergreen forests were established throughout the Peten by 8,000 B.P. These forests were dominated by Moraceae species with a notable scarcity of temperate taxa and herbs. To the north, the lakes of Northern Yucatan were beginning to fill in response to rising sea levels. Lake Coba began to fill by 8,400 B.P. and to San Jose Chulchaca began filling prior to 8,200 B.P. (Brenner et al. 2000; Leyden et al. 1998; Whitmore et al. 1996). Vegetation in the northern peninsula was affected more by local soil conditions than climatic factors. The pollen from Lake Coba reflects wooded swamps that graded into upland semi-deciduous forests, which included *Dalbergia* and *Metopium* species. The pollen record at San Jose Chulchaca indicates of dry deciduous forest species, including *Bursera*, *Trophis*, *Acalypha*, *Piscidia*, and *Brosimum* (Leyden 2002:93).

Thus, by the Early Holocene, the basic distribution of contemporary Lowland vegetation had been established. This implies that essentially modern gradients of temperature and precipitation were in place at the time. Drier vegetational associations had developed in the northwest portions of the peninsula and more mesic associations had developed to the east and south. Also, the transitional vegetation between scrub and subtropical deciduous plants had been established for northwest Yucatan by this period.

The Mid to Late Holocene (8,000 Years B.P. – to the Present)

The Mid Holocene saw a continuation and a general increase in the moist conditions that characterized the Early Holocene. As previously noted the lakes of northern Yucatan began to fill during the Mid Holocene. In this region conditions were somewhat drier than those to the south in the Peten, as revealed by $\delta^{18}O$ isotopic analysis from Lake Chichancanab (Hodell et al. 1995). Cores from this location are comprised of high $\delta^{18}O$ values and concentrations of gypsum between 7,600 and 7,000 B.P. By 7,000 B.P. gypsum deposition had ceased and $\delta^{18}O$ levels had decreased by approximately 3‰ at Lake Chichancanab, indicating a significant decline in E/P (Brenner et al. 2002:149; Hodell et al. 1995).

After 7,000 B.P. wet conditions prevailed at Lake Chichancanab, as they did throughout the Lowlands and circum Caribbean region. Wet conditions are also recorded in the northwestern portion of the peninsula at San Jose Chulchaca, where the period from approximately 6,100 to 3,800 B.P. was the most mesic period of the Holocene (Leyden 2002:95). The prevalence of *Brosimum* in the pollen record reflects the expansion of forest similar to that found in southern Campeche. As previously noted, this period was marked by the height of ITCZ seasonality circa 8,000 B.P. As the Earth's precessional cycle progressed, the seasonal movement of the ITCZ gradually declined and conditions in the Lowlands grew drier with the reduced intensity of this annual cycle (Brenner et al. 2002:149).

Whereas pollen records from the Early and Mid Holocene demonstrate minimal population and little to no change in the vegetational associations as a result of human activity, the Late Holocene in the Maya Lowlands is characterized by extensive environmental alteration caused by human populations. During the Mid Holocene, human population in the Lowlands was ephemeral, with archaeological evidence pointing to occupation primarily concentrated in the coastal areas. Widespread agricultural production in the Late Holocene is indicated by increased charcoal deposition, the appearance of agricultural pollen, and by a rise in the number and variety of herbaceous taxa represented in the pollen record. All of these changes indicate forest clearing and the introduction of intensive farming in the region.

Coincident with the rise of Maya agriculture, a general drying trend began to characterize the Lowlands around 3,000 B.P. (Brenner et al. 2002:149). This trend continued for the next two millennia, peaking during the Maya Terminal Classic period ca. 1,150 to 950 years ago. Evidence for this dry period is recorded at Lake Chichancanab where the highest $\delta^{18}O$ values and gypsum concentrations since the Early Holocene date to the period between A.D. 800 and 1,000. This period was the driest of the last 8,000 years and coincides with the Maya Collapse (Hodell et al. 1995:393). The information from Lake Chichancanab is corroborated by stable isotope information from Punta Laguna, where $\delta^{18}O$ values demonstrate that the climate during the Classic and Early Postclassic (ca. A.D. 250 – 1050) was drier than the periods proceeding and following, with dry peaks occurring around A.D. 590, 860, 990, and 1050 (Curtis et al. 1996).

Results from lakes in the Peten are more equivocal in relation to the climate of the Classic and Early Postclassic periods. Cores from Lake Peten Itza and Salpeten demonstrate contradictory pollen and stable isotope sequences and the well-documented moisture shifts of the northern peninsula are not evident in the region. The most likely reasons for this discrepancy are a combination of factors particular to the Peten including alterations in the hydrology as a result of deforestation, greater rainfall, and greater topographic relief all of which led to greater infusions of isotopically "light" water into the region's lakes (Brenner et al. 2002:150-151). Confirmation for Late Holocene drying is evidenced on a regional scale from sites of reservoirs such as Lake Valencia in northern Venezuela (Bradbury et al. 1981; Curtis et al. 1999), Lake Miragoane in southern Haiti (Brenner et al. 1994; Curtis and Hodell 1993; Curtis et al. 2001; Higuera-Gundy et al. 1999; Hodell et al. 1991), and cores from the Venezuelan coast (Haug et al. 2001).

Drought in the Maya Lowlands

At this point it should be clear that the oscillating climate of the peninsula has significantly challenged the agricultural society of the Maya. The question of water availability is central to any discussion of Maya social organization. The old axiom "water is life" is especially salient for the Maya Lowlands, where the assurance of a secure water supply was a societal focus. The paleoenvironmental studies undertaken in the Lowlands have made it clear that the Maya were right to be concerned with the vagaries of the weather. Not only was the period associated with the rise of Maya agriculture and civilization the driest of the Holocene, but it was also marked by frequent episodes of drought.

Evidence of the cyclical nature of drought on the peninsula was revealed in two cores taken from Lake Chichancanab in 2000 (Hodell et al. 2001). These cores were collected specifically to answer questions relating to the last 2,600 years of paleoclimatic activity. Like previous cores from the lake, these samples showed periodic bands of gypsum indicating past drying periods. Gypsum abundance was estimated by gamma-ray attenuation. Power spectra evaluation of the density of the gypsum revealed cyclical drying periods that peaked at 208, 100, or 50-year intervals.

The Lake Chichancanab record is dominated by the 208-year cycle. This cycle approximates the 206-year cycle of cosmogenic nuclide production associated with solar forcing. As previously discussed, high production of radionuclides is representative of low solar activity. The gypsum banding in the Lake Chichancanab cores is exactly out of phase with this production, implying that drought episodes on the peninsula were associated with times of increased solar activity (Brenner et al. 2002:151). The Lake Chichancanab cores reveal three specific dry periods: 475 to 250 B.C., A.D. 125 to 210, and A.D. 750 to 1025 (Hodell et al. 2001:1367).

Similarly, $\delta^{18}O$ results from Lake Punta Laguna indicate of droughts occurring at 208-year cycles, again suggestive of a correlation with periods of elevated solar activity. Further evidence recovered from marine cores extracted from the northeastern Caribbean indicates that this cycle was likely regional in extent (Nyberg et al. 2001). Although the droughts recorded in the Yucatan samples transpired at regular intervals, the precise intensity and duration of episodes is varied. As outlined above, changes in solar intensity alone are not enough to alter climate on a regional scale and one or more amplifying mechanisms are necessary to create significant climatic response. Also, the fact that significant drought events occur at intervals other than the 208-year cycle further underscores the fact that solar forcing is only one of the factors affecting climate on the peninsula (Brenner et al. 2002; Hodell et al. 2001).

Native vegetation appears unaffected by the drought, as evidenced by little change in the pollen record. In particular, native taxa are adapted to the cyclical nature of droughts on the northern peninsula (Hodell et al. 2001:1367; Leyden 2002:97). In the forested areas, vegetational diversity ensures subtropical forest maintenance through overlapping tolerance levels. In semi-evergreen forests the understory plants, which are often the dominants in dry forests, take over in times of drought. When moist conditions return, the overstory plants return to dominance. In contrast, domesticated maize has restricted growing requirements and, therefore, is not as flexible in meeting climatic fluctuations.

In the Maya Lowlands, human modification of the environment contributed to and, in some cases, exacerbated the long-term and large-scale climatic processes discussed above. Anthropogenic changes to the environment bring about local climatic change and in Maya area the process of agricultural intensification and deforestation likely contributed to the effects of the prevailing dry regime that characterized the climate of the Peninsula during the rise and florescence of Maya culture.

Studies of deforestation have shown that forest clearance decreases evapotranspiration and, by extension, precipitation, and leads to warmer and drier local conditions. The alteration of local climate through deforestation is affected by three factors. The first factor deals with the amount of heat absorbed by a particular landscape and the resulting increase in temperature this absorption creates. The amount of solar radiation absorbed by forested areas (88%) is slightly higher than that for cleared areas (80%). Nevertheless, because the biomass of the forest is much greater than that of a cleared area, temperatures in the forested area are lower relative to the cleared area (Shaw 2002:161).

The second factor involves the amount of humidity drawn out of the soil surface. The hotter air associated with cleared areas absorbs greater amounts of water vapor from the ground surface than in forested areas. However, because the air mass associated with cleared areas is smaller than that of the forested area, the net amount of vapor absorbed is less. Therefore, in a cleared area system, less humidity is absorbed from the soil surface. Any apparent advantage in moisture retention held by the cleared area system is mitigated by the third factor, the wind.

In forested areas, the canopy effectively blocks winds from effectively disturbing the moisture-saturated air below, preventing further evaporation. Conversely, in a cleared area, winds move unabated across the ground surface, continually replacing moisture-saturated air with dry air. The constant exchange of moist air for dry air allows for the continued evaporation of moisture from the ground surface. The decreased amount of biomass in a cleared area contributes further to the aridity of the system by allowing for greater amounts of rainfall to be lost through surface run-off and/or through subsurface drainage (Shaw 2002:161).

The effects of deforestation were probably more noticeable in the interior of the Southern Lowlands where populations were more dependent upon rainfall produced through evapotranspiration. Regions more adjacent to coastal areas would have been affected less, as rainfall is dependent more on water vapor from the ocean. The depth of groundwater further complicates the situation in the Southern Lowlands. Even though the Northern Lowlands suffer from relatively less rainfall than the south, groundwater is actually more accessible in the north where the water table is shallower.

The Maya were certainly aware of the limitations of their environment and as the archaeological record demonstrates, took steps to counter water scarcity and episodic droughts. In the north, this meant a focus on features designed to conserve scarce water resources (Shaw 2002:163). There is a relative lack of water related agricultural features in the Northern Lowlands, in comparison to the Southern Lowlands (Dunning 1996). Instead, in the Northern Lowlands water was conserved through the use of agricultural features such as *chich* mounds, which were used to retain moisture around trees, and through the maintenance and improvement of moist depressions known as *rejolladas* and *bajadas* (Beach 1998; Kepecs and Boucher 1996).

In the Southern Lowlands, agricultural features were designed to deal with both year round and seasonal water surpluses (Shaw 2002:163). Examples of these types of features are numerous, including raised fields and drained fields(built in areas with year round water resources and reservoirs), canals, check-dams, and terraces (built to collect and direct seasonal waters). The different focuses employed by the Northern and Southern Lowland Maya, water conservation versus control of water excesses, may have had a profound impact on the ability of each group to respond when aridity and episodic drought became especially severe (Shaw 2002:163).

The Geohistory of Yucatan

The environment is a central theme in any discussion concerning the Yucatan Peninsula and the Maya Lowlands. As discussed above, there is a growing body of evidence suggesting that increased aridity and drought likely played a role in the cultural crisis that faced in the Maya in the Late Classic and Early Postclassic periods. It is perhaps a tribute to the tenacity and ingenuity of the Maya that sedentary agricultural communities arose and prospered coincident with the beginning of what would turn out to be a 3,000-year period of increased aridity and cyclical drought. An important part of this continued longevity was the core cultural constructs that provided the stability necessary to meet evolving environmental and social challenges.

CHAPTER V

THE LONG DURATION: CULTURE HISTORY

The Cultural History of Yucatan

In Annales methodology, the long duration encompasses forces that act at the longest wavelength of time. This includes the historical trajectory of civilizations and the gradual, cumulative processes of culture change. The long duration is characterized by slowly changing forces including stable technologies, ideologies, and worldviews. The previous chapter explored the long-term geological, environmental, and climatological patterns that provided the stage on which Maya culture has waxed and waned over the last four millennia. In the interest of brevity, this chapter will be confined to Northern Yucatan. Chronologically, I focus on the most part to the cultural history of the Maya in this region during the Classic and Postclassic periods, ca. A.D. 250 to the Spanish Conquest.

The Classic Background of Northern Lowland Culture

Classic period culture in the Northern Lowlands can be divided on the basis of architecture and ceramics into two general spheres of influence: a Western Sphere that included the northwestern and north-central plains, as well as the Puuc area, and an Eastern Sphere which encompassed the far eastern region of the peninsula (Robles and

Andrews 1985). The material culture of the Western Sphere in the Late Classic/Terminal Classic was characterized by the Puuc cultural tradition. The Puuc tradition originated in northern Campeche during the Middle Classic and spread into the Puuc Hills area and the central peninsula. The tradition represented a combination of indigenous development, traits from the Rio Bec/Chenes regions, and most importantly influences from the Gulf Coast and Central Mexican Highlands (Andrews and Robles 1985:65). These influences combined to create the distinctive Puuc style of architecture and the Cehpech ceramic sphere.

Politically, the Western Sphere appears to have been composed of a confederacy of sites including Ichkantiho, Itzamal, Uxmal, and Chichen Itza. Uxmal and Chichen Itza were the prominent regional centers in the Western Sphere, with Uxmal emerging in the 8th century and Chichen Itza in the first half of the 9th century (Andrews et al. 2003:152). The alliance of these sites is recorded in the Books of Chilam Balam as having occurring in A.D. 790, and is suggested archaeologically by a shared corpus of architectural and ceramic styles. Sites in the Western Sphere experienced rapid population growth in the Late Classic and Terminal Classic. For as yet unknown reasons, most of the northwestern population centers, including the Puuc area, were depopulated or abandoned by the end of the Terminal Classic period (Dunning, 1992:71). Hypotheses proposed to explain the decline of the area include internal stress from overpopulation and competition for limited resources and/or detrimental competition from an expanding Itza polity (Andrews et al. 2003:152; Sabloff 1990:126).

The Terminal Classic Period fortifications found at the sites of Cuca, Chacchob, Muna, Ake, Chuchucmil, and Uxmal may be indicative of widespread warfare.

A distinctively different tradition had arisen in the eastern portion of the peninsula. The Eastern Sphere, centered on the Coba polity, was dominated by Peten - style architectural, sculptural, and ceramic forms beginning in the Early Classic period. Based on epigraphic evidence from Stela 1, Schele and Mathews (1998:202) propose that Coba was a subject of the Calakmul polity. In the Late Classic period Coba emerged as a large-scale polity, the apparent result of an increasing role in long distance trade. From its port at Xelha, Coba functioned as a middleman in the trade network that stretched from the northwestern coast of Yucatan to the Gulf of Honduras (Andrews and Robles 1985:66).

Precisely as Coba reached its preeminence in the east, the Itza were expanding their influence through military conquest, the establishment of outposts along the coastal trade routes, and through control of the lucrative coastal salt beds. Based on the distribution of Itza distinctive Sotuta ceramics, it appears that Itza influence reached across the peninsula from Tabasco to north-central Yucatan and from there to the northeastern and southeastern coasts of the peninsula. However, the paucity of Sotuta sphere ceramics at the site suggests that the Itza were unable to conquer the Coba polity (Andrews and Robles 1985:69).

By the 10th century, the Northern Lowlands had become polarized between the competing Itza and Coba polities. This conflict may have been a continuation of the warfare that engulfed the polities of the Southern Lowlands in the Late Classic period;

Coba allied with the Calakmul-lead hegemony, and the Itza allied with the Tikal-lead Peten and Chiapas sphere of power (Schele and Matthews 1998:368). However, the competition would be relatively short lived, as the Itza effectively encircled the Coba polity and took over their traditional Caribbean trade networks. The Itza accomplished this by establishing outposts to the north of Coba at El Meco, on Cozumel Island, and to the south of Coba at Nohmul and Ambergris Cay. Thus, Coba was effectively faced with "economic strangulation" and public works at the site ceased in the 11th century. At this time, the satellite communities and sites connected to Coba by *sacbes* were also abandoned (Andrews and Robles 1985:71).

The Rise of Chichen Itza

The origins of the Itza have been a source of great debate for over a century. The Books of Chilam Balam record the story of the migration of the Itza and the founding of Chichen Itza, but do not document their origins. Several hypotheses have been put forth concerning the origins of the Itza, variously suggesting that they were Toltec invaders from Central Mexico (Charnay 1885; Tozzer 1957), Mexicanized Putun Maya from the Tabasco-Campeche area (Thompson 1970), or a group that entered the northern peninsula from the sea, gradually expanding south into the interior (Andrews 1978). Schele and Mathews (1998:201-202) present strong evidence that the Itza in fact migrated out of the Peten region beginning in the late 7th century as a result of the political turmoil and warfare that enveloped the Southern Lowlands during the period.

Classic period epigraphic evidence from the Peten refers to Itza lords, and people calling themselves Itza are both documented in the ethnohistoric record, and still inhabit the region today (Schele and Mathews 1998:203). It is likely the Itza were the preeminent of several refugee groups that moved into the Northern Lowlands and allied themselves with the emerging polity that came to bear their name. These groups probably included the Itzas from central and northeastern Peten, Cholan speaking Maya from the Usumacinta drainage, peoples related to the Olmeca-Xicalanca from the Gulf Coast of Tabasco, and local groups (Schele and Mathews 1998:203-204, 367).

As a means of establishing the legitimacy of their dynasty, the Itza capitalized on a long-standing Maya tradition of claiming ancestry from *Puh* or the "Place of the Cattail Reeds." This legendary place was the origin of all the elements of civilization, including the arts and writing and therefore was imbued with great significance and reverence. This mythical tradition likely originated with the Olmec and their homeland on the southern Gulf Coast and then grew to become a pan Mesoamerican tradition (Schele and Mathews 1998:200).

Many Mesoamerican groups claimed descent from the "Place of Reeds," which over time came to be associated with many different places. The Classic period Maya used the word *Puh* in reference to Teotihuacan and constructed a lexicon of origination and warfare based on the symbolism of this preeminent Classic period central Mexican site. The adaptation of Teotihuacano imagery and symbolism was but the latest in a long tradition of appropriation, with such behavior in evidence in the Maya area at least 250 years before the rise of theTeotihuacan specific tradition (Schele and Mathews 1998:200).

During the Classic period, the idea of Puh became a generalized designation for any city claimed as a place of ancestral origin. It is within this tradition that the Itza Maya appropriated symbolic elements from Toltec culture, and therefore, the presence of these influences at Chichen Itza “does not imply or require an invasion of outsiders” as explanation (Schele and Mathews 1998:201). In fact, the *Puh* tradition suggests that the Itza were the active agents in expropriating elements of Toltec symbolism and architecture (Jones 1995:78).

The Itza may have gathered their knowledge of the Toltec through the Olmeca-Xicalanca, a group from the Gulf Coast of Tabasco who likely traded with the Itza and were possible related by ties of kinship (Xicalanca was near a region named Nowonal, claimed as the place of origin by a branch of the Itza). The Olmeca-Xicalanca were important transmitters of Maya imagery into Central Mexico and of Central Mexican political and religious imagery into the Maya area (Schele and Mathews 1998:361-362).

Central Mexican influences present at Chichen Itza date to the late 9th and early 10th centuries. It was during this period that a major shift in the organization of political, economic, military, and ideological spheres of the Itza polity took place. The reorganization of these cultural complexes is literally and figuratively reflected in emphasis from what is traditionally called “Old Chichen Itza” to the architectural precinct known as “New Chichen Itza,” where the site’s most famous structures are located. The new architectural, symbolic, and epigraphic elements of “Toltec Chichen” found in this section of the city represent the fluorescence of the Itza polity in the Terminal Classic Period.

During the Terminal Classic period, the Itza capital at Chichen, as well as the hegemony of the Itza polity were expanding demographically and spatially (Cobos 2002). The long distance ties that the Itza forged with groups from around Mesoamerica are reflected in the variety of exotic goods like fine orange and gray wares and plumbate pottery, green obsidian, turquoise, jade, and serpentine items, imported from the Gulf Coast, Pacific Coast of Guatemala, the Highlands of Guatemala and Central Mexico, Coastal Belize, and from areas as distant as lower Central America and Northern Mexico. In addition, the shift away from the indigenous Puuc architecture of “Old Chichen Itza” to the eclectic borrowing of architectural elements from Oaxaca, the Valley of Mexico, Puebla, Morelos, Tajin, and Palenque further reinforce the cosmopolitan nature of the Itza capital and of Itza Maya culture in general (Dahlin 2002:334).

The symbolic themes embellished in the Terminal Classic architectural corpus emphasize themes of war and death and suggest a new era of increased conquest and expansion through militarization (Dahlin 2002:333). The rise of the feathered-serpent motif in public spaces and in facets of personal adornment suggests a further ideological shift. The feathered-serpent (K’uk’ulkan in Maya) motif has great antiquity in the pantheon of Mesoamerican gods, but came into preeminence in the Late Classic period. Traditionally associated with aspects of warfare and militarism, K’uk’ulkan is also linked to craft production and trade, as indicated by the iconographic elements symbolic of long-distance traders that characterize the anthropomorphic representations of the god. The role of K'uk'ulkan as a patron deity of traders (Ringle et al. 1998; Thompson 1970), may have "allowed long-distance traders from all ethnic groups and polities to emerge in a brotherhood or community of relatively peaceable and orderly economic exchanges (Dahlin 2002:336).

Furthermore, it has been argued that the feathered-serpent was, in fact, a supreme deity, with K'uk'ulkan being a homophone for K'u u k'ul ka'an, meaning God, the Lord of Heaven, as well as being a rebus representation of the deity (Gill 2000:337-339). The figure of K'uk'ulkan, then, symbolically represented the combined aspects of militarism and trade, and was also imbued with religious importance. Indeed, these three aspects seem to have come together in a historical personage who held a political title or office during the Terminal Classic at Chichen Itza (Dahlin 2002:336; Taube 1992:140).

Epigraphic research (Krochock 1988, 1998; Krochock and Freidel 1994; Freidel 1994) indicates that rulership at Chichen Itza involved shared rulership rather than individual rulers. The glyphic texts at Chichen record the relationships of individuals and do not relate the "biographical and genealogical propaganda" of individual rulers as found at sites in the Southern Lowlands (Dahlin 2002:335). The hieroglyphic data in concert with Landa's (1941) later description of joint rule at Chichen, have led some to suggest a shared form of government that was an antecedent to the *multepal* (joint or shared rule) confederacies found in some later Postclassic states (Fox 1989; Freidel and Schele 1990; Schele and Matthews 1998).

David Freidel (1985) has argued that the Itza polity was a substantial derivation from the indigenous antecedents of the region. Freidel contended that the Itza polity represented a successful syncretism of foreign concepts and materials into a Maya framework and was due as much to active collaboration as to coercion. Under this model he envisioned Chichen Itza as “a new kind of international Maya state” in which external influence was as much an instrument of power as a sign of internal decay (Freidel, 1985:304). Regardless of the level of foreign influence introduced by the Itza polity, it remained a political and economic unit, focused upon an elite minority, and supported by military conquest and the control of trade. Traditionally, the demise of the Itza polity circa A.D. 1200 marks the transition from the Early Postclassic to the Late Postclassic in the Northern Lowlands.

The Confederacy of Mayapan

The void left by the collapse of the Itza was soon filled by a new political regime centered at the fortified site of Mayapan, circa A.D. 1250. According to Robles and Andrews (1986:96), the political order centered at Mayapan was a superficial attempt to replicate the old order represented at the Itza capital of Chichen Itza. However, unlike the Itza dynasty that was ruled by members of the same elite family, political control at Mayapan was based on the joint rule of representatives from a number of provinces that then divided the Northern Lowlands.

When, why, and how these provinces formed is not currently known. They may have formed in the power vacuum created with the demise of the Itza polity or they may have been political divisions formed during the Classic or Terminal Classic period, and that subsequently were subsumed under the Itza polity. Regardless of their origins, the alliance of these provinces formed what has been termed the Confederation of Mayapan (Roys 1957).

The Postclassic Tradition of Northern Yucatan

The Postclassic period in Yucatan is enigmatic. It has been variously described as the decadent remnant of Classic Maya culture, or as a dynamic time of new adaptation. Both these interpretations are valid in that the Postclassic in the Northern Lowlands was a period that witnessed both the continuation of many traditional aspects of Maya culture alongside new cultural forms particular to the circumstances of the time, which included large scale demographic shifts and external contacts.

Dating events in the Postclassic period is complicated by the lack of dated monuments, the scarcity of stratified deposits, and a general paucity of excavation data from sites of this period (Chase and Rice, 1985:4). The beginning date of the Postclassic period in the Northern Lowlands is a point of contention among researchers. Traditionally, the period's inception is placed circa A.D. 900 – 1000. This period corresponds both to the last known written date of A.D. 909 in the Southern Lowlands, and to the decline of sites in the western and central regions of the Northern Lowlands.

The desertion of these sites took place as a series of regional abandonments beginning with the Rio Bec region between A.D. 850 – 900 and ending with the fall of the Puuc region between A.D. 950 – 1000 (Andrews 1994:263).

Within the last two decades the clear boundaries that once separated the Terminal Classic from the Early Postclassic have become blurred. Under the traditional scheme, the Puuc architectural tradition and related Cehpech ceramic sphere characterized the Terminal Classic period, while a modified Puuc style of architecture and the Sotuta ceramic sphere - associated with the rise of the Itza polity - characterized the Early Postclassic period. As the archaeological database for the Northern Lowlands has increased, it has become clear that these horizons may overlap by 200 years or more. Excavations suggest that Cehpech sphere remains date later than A.D. 1100 and Sotuta ceramics and associated architecture may have originated prior to A.D. 900 (Robles and Andrews 1986:67).

This overlap suggests that the traditional methodological break between the Terminal Classic/Early Postclassic or Puuc/Chichen Itza cultural traditions is somewhat arbitrary. Gulf Coast and Central Mexican cultural traits are both a part of the "Toltec Chichen" and Puuc cultural traditions. These traits were probably brokered by Mexicanized Maya groups, like the Putun, from the southern Gulf Coast region who facilitated cultural exchange between regions. As Jones (1995:78) states, "it now appears that some sort of constituency of the Putun Itza Maya were the active, internationalizing agents who reached out and found in the architecture of Tula, Hidalgo – the Central Mexican capital of the Toltecs - the preeminent among many

Mesoamerican models, the synthesis of which was intended to give their Chichen Itza capital a singularly cosmopolitan allure and appeal."

In this milieu of cultural exchange, it is no surprise that elements of the Toltec cultural tradition incorporated by the Maya of Chichen Itza into central Yucatan are also found in the Puuc region. Similarly, it is not surprising that elements of Puuc culture, like architecture, are found alongside Toltec inspired material culture at Chichen Itza. For a currently unknown amount of time, sites with Puuc architecture coexisted with "Toltec Chichen," while for a substantial period of time Puuc ceramics overlapped with "Toltec Chichen" ceramics (Andrews and Sabloff 1986:434).

The ebb and flow of cultural material between Maya and Mexicanized Maya groups created a continuity from Puuc culture, circa A.D. 700-950, through to Itza culture, circa A.D. 950 – 1200. This continuity has led some researchers to argue that the major change in Maya civilization came with the fall of Chichen Itza in the thirteenth century, not with the fall of the Southern Lowland centers or rise of the Puuc. Proponents of this argument believe there is greater continuity from the Late Preclassic through the fall of Chichen Itza than there is between the fall of Chichen Itza and the rise of Mayapan. Andrews and Sabloff (1986:451-452) state that, "On the basis of architecture, use of space, ceramics, and other material items, it can be argued that the major elements of classicism persisted in the Puuc region and at Chichen Itza through the Modified Florescent or Early Postclassic Period".

At the same time, Andrews and Sabloff see a significant break between Chichen Itza and Mayapan in terms of site layout and construction and in a variety of material classes. Ultimately these differences and the sociopolitical and economic inferences that they entailed suggest that the organization of the confederacy of Mayapan was fundamentally different than its antecedents. This issue will be examined in greater depth below.

The problem of dating the Classic to Postclassic transition reflects the difficulty of applying one set of standards to a cultural area that clearly demonstrates regional variation in both cultural traditions and environment. At this point, it is enough to note that the transition from the Classic to Postclassic in the Northern Lowlands did not involve the same set of circumstances and events that characterized the Southern Lowlands at this same period in time.

Although Classic period culture on a large scale ceased to function in the south, northern populations kept alive those traditions for centuries. An understanding of the Postclassic period in the Northern Lowlands is necessarily linked to Classic period ideas and patterns that served as the foundation for the subsequent Postclassic culture. In the Northern Lowlands, this was a period in which political and economic strategies were linked to and influenced by outside forces through a restrengthening of long distance trade, an increasing militarism, and the evolution of joint political rule.

Maya Settlement in Northern Yucatan

The location of settlements in Yucatan dependends on several natural and cultural factors. As is the case with all human settlement, the environment has played an important role in influencing settlement decisions in Yucatan. The region is composed of roughly three environmental zones: the coastal zone, the Puuc area, and the northern karst plain. As a general rule, precipitation and soil thickness increase as one moves southward down the peninsula. True to this, soils along the coast and on the karstic plain are thin. The Puuc area is the exception to the rule, with relatively deep soils having formed in the depressions between the karst hills. Of greatest importance is the absence of surface water on this portion of the peninsula. The only accessible water is found at the base of deep caves, in cenotes, aguadas, or from sartenejas, and the handful of lakes that dot the region. Wells were only an option for the coastal Maya where the water table was much shallower than the 40 to 100 m depths of the Puuc area.

Maya settlement in the northern peninsula during the Classic and Postclassic periods was intimately tied to water and soil. As is to be expected, where water could be collected, settlements are found. For example, large sites like Chichen Itza and Dzilbilchaltun are often located next to cenotes. Coba is situated around natural lakes that were expanded by the Maya. As a general rule, populations in the northern interior of the peninsula have tended to lie to the east of the Puuc area, where cenotes are common or to the northwest of the Puuc area where aguadas are more common and where the depth of the water table is much shallower. The coastal areas have also benefited from a shallower water table. The density of settlement in the northern portion of the peninsula was never high, with the exception of the Puuc area. However, settlement density increased as one moves further south to the Rio Bec and Chenes areas. Aided by water catchment strategies, these areas benefited from the deeper soils and increased rainfall that made agriculture more productive.

As mentioned previously, the Puuc area is the exception to the rule. The soils here are deep, making them attractive to agriculturalists, but there are no readably available sources of drinking water other than several very deep caves. For this reason, settlement in the Puuc was ephemeral before the Late Classic period. The way the Late Classic Maya adapted to this lack of water was fairly ingenious. The household groups in the region are almost always situated in areas where the limestone bedrock is at or near the surface. In these locations, the Maya dug *chultunes* that were then used as cisterns.

At Sayil, McAnany (1990) has shown a positive correlation between room numbers and *chultun* frequency, as well as between basal platform area and *chultun* frequency. Using this information, she has calculated population density to have been approximately 2000/km^2 at Sayil. This large Late Classic influx of population into the Puuc area may be seen as a function of the depopulation that was occurring in the Southern Lowlands. The adaptation of the *chultun* for cistern use was an invention of necessity and allowed a large population to take advantage of the deep soils of the region.

To a large degree, settlement in Yucatan can be seen as a function of the availability of water for drinking and soil for agriculture. However, in regions like the Puuc and the Rio Bec where soils were deep, but water was scarce, people were motivated to adapt in more ingenious ways. Additionally, settlement in coastal areas was influenced by the availability of marine resources and salt, which were important trade goods. In conjunction with environmental factors, settlement in Yucatan was also influenced by a number of cultural factors. These cultural factors include trade, political demarcation, and considerations related to ceremonial behavior.

Trade can be seen as having influenced settlement predominately in coastal areas, but it probably also determined the location of some inland sites. Coastal sites would have been involved with the sizeable amount of sea trade that took place from the Gulf Coast, around to the Caribbean coast, and as far south as Honduras. This would have involved the movement of exotics, but also subsistence items like salt and foodstuffs that could be readily harvested within these coastal areas. Included in this category are those sites that survived as coastal entrepots for major inland centers like Coba (Xelha) and Chichen Itza (Isla Cerritos). Inland, one can imagine that settlements were located along the main overland trade routes that connected the northern portion of the peninsula with the Peten and beyond.

Political demarcation was undoubtedly the factor behind the location of certain settlements. This would have especially been true in the Postclassic period when northern Yucatan was divided into warring states. Freidel (1992) argued that the reoccupation of Yaxuna in the Postclassic period was a move by the Coba polity to create an outpost demarcating their boundary with Chichen Itza. The construction of the sacbe connecting Coba and Yaxuna helped cement this bond and facilitate communication between the sites. It could also be argued that the other sacbe systems, such as those in the Puuc, served a similar purpose.

Finally, some settlements may have been founded to serve ceremonial or ritual functions. These sites would include possible island necropoli like Jaina, ritual sites like Tulum, and sites that served as points of embarkation to offshore ritual sites. Sites like Jaina that may have had multiple functions tend to blur the line between settlements founded solely for natural factors or cultural factors. As is the case anywhere in the Maya area, the location of many settlements in Yucatan was probably predicated on a combination of both natural and cultural factors.

Prehispanic Maya Social Organization

For decades our understanding of Maya cultural history was based on the "priest-peasant model," a romantic and impressionistic model based on the limited data retrieved from excavations on monumental architecture (Thompson 1954; Morley 1946). Under the influence of scholars such as Morley and Thompson, the Maya were viewed as a rural society making periodic visits to vacant ceremonial centers where only priests, rulers, and their scribes resided. The bulk of the population was thought to be peasant farmers scattered in the surrounding rural areas, from whose labor the achievements of the elite in the ceremonial centers was made possible. In return for their support, the priests invoked the favor of the gods on behalf of the people, ensuring rains, good harvests, and the overall survival of the community. It was thought that Maya population numbers were relatively low, limited by the large territory needed to practice slash and burn or swidden agriculture. Archaeologists during this period also believed that Mayan inscriptions referred solely to calendrical, astronomical, and religious concerns and did not record historical events. Above all, the Maya were seen as a peaceful civilization of politically independent ceremonial centers, living in harmony and in relative isolation from their neighbors in Central Mexico, the valley of Oaxaca and from those to the south. A pan Maya culture was seen as existing from one end of the Lowlands to the other during the Classic period ca. A.D. 250 - 900.

Over the past half century in Maya archaeology, our understanding of Maya settlement patterns, agricultural innovation, and social organization has steadily increased. Epigraphic breakthroughs in the 1950s and 1960s, coupled with the more rigorous methodology of Postprocessual archaeology, have vastly improved our understanding of Maya society and cultural history. For instance, we now know that intensive agricultural techniques allowed the Maya to obtain large population numbers and allowed for the development of specialization and that Mayan hieroglyphic writing is both historical and that much of it deals with dynastic succession and warfare. Most importantly for this study, we know a great deal more about the fundamental unit of Maya civilization, the household.

Household Organization

As discussed in Chapter III, the study of household archaeology in the Maya area has made great progress in the last several decades. Household studies look to answer complex questions concerning issues such as wealth, status, and adaptation to ever changing political and economic conditions. Archaeological projects designed to examine issues related to household development, architecture, spatial use, activities, social stratification, and wealth have provided information on which a fundamental understanding of Maya social organization is based. An expanding archaeological database, coupled with ethnohistoric and ethnographic analogy, has broadened our understanding of prehispanic Maya household organization.

Although the family is the basic unit of all societies, the nature of the household is culture-specific, and ethnographic study has demonstrated that among the Maya there is a range of regional variation in household size and organization. In Northern Yucatan extended families have traditionally exhibited a tendency towards patrilineal rules of descent (Farriss 1984:133; Gillespie 2000:470; McAnany 1995:123; Schele and Friedel 1990:84-85), the composition of these units can also result from matrilocal or avunculocal residence patterns, depending on the group and/or particular circumstances. Differences in household organization may be linked to factors such as population density, agricultural intensity, social rank, economic production, political status, wealth, or normative customs. Ethnohistoric and ethnographic records do indicate that not all households were extended, and that at any particular moment in time, Maya communities contained both isolated nuclear family households and multiple-family households. However, the prevalence and continuity of the extended family household between prehispanic and modern Maya communities in Yucatan represents a normative tradition with deep roots.

The extended family household - consisting of patrilineally-related males, their wives, and unmarried children represents the basic unit of Maya social organization. Under ideal circumstances, the household was comprised of three generations, with four or five adult males forming a standard labor unit (Farriss 1984:133). Evidence from Postclassic and colonial documents show that residential groupings could also include large numbers of unrelated individuals (Roys et al. 1940; Scholes and Roys 1968). Large households tended to contain higher proportions of unrelated individuals in the capacity of in-laws, servants, and/or slaves, who were critical to household production. From a functional standpoint, the extended family household –in its many forms - represented a more efficient productive unit, as well as a support group that could provide reciprocal aid to its member families in times of need.

Extended families are an effective response to the labor demands of agrarian production. Among the present day Tzotzil, large extended family households are maintained by withholding the means of production from inheritors, preventing the fission of the family through the domestic cycle (Collier 1982:347). As a result of this strategy, large multigenerational households are formed. McAnany (1995:120-122) describes a series of alternate social and productive relationships particular to systems of patrilocal residence and inheritance, that might also explain the formation of extended family households, including: 1) sons and their families remain in the home of their father in order to increase their odds of inheritance; 2) ethnohistoric accounts record the practice of bride service, although the antiquity of this custom among the Maya is unknown; 3) household elders must eventually relinquish power to the younger generation as part of the developmental cycle, increasing the heterogeneity of the household; 4) multifamily compounds contain individuals and families, related or unrelated, who are attached to the household as domestic and field laborers; 5) enslaved men, women, and children may have resided at or near the compound of their owner. Any of these situations, alone or in concert, could have ordered the social and physical organization of the extended family household.

Regardless of the circumstances surrounding its particular formation, Maya informants in ethnographic and ethnohistorical accounts point to the household as the primary social group within society (Wilk, 1988:137). Historically, consanguineal relationships between parents and sons, or between brothers ordered the extended family household in Yucatan (i.e. patrilineal rules of descent, succession, and inheritance). The typical expression of this multiple-family household tradition is the group of dwellings situated around a central patio. Modern ethnographers still report the institution in places like Chan Kom (Redfield and Villa Rojas, 1962) and Ticul (Thompson, 1974) in Yucatan, Zinacantan in Chiapas (Vogt, 1969), as well as among non-Yucatecan groups like the Chorti Maya of Guatemala (Wisdom 1940) and the Kekchi Maya of Belize (Wilk, 1981). Among these modern groups, there does not appear to be any one clear principle organizing the ways in which multiple-family households are structured. There are tendencies to which particular groups adhere, as in the aforementioned consanguineal arrangements of the Yucatec Maya, but regardless of the composition, size, or structure of the household, "the persistence and pervasiveness of multiple-family households in the Maya area suggests that this is an ancient pattern, one that serves economic purposes and is part of a cultural tradition" (Wilk 1988:139).

The antiquity of the extended family residence has been preserved in the archaeological record of the Maya region. In particular, research has demonstrated that a common component of Maya sites are the groups of small dwellings surrounding patio areas. These units have been termed "patio groups" and represent domestic residential units associated with the extended family households (Haviland 1963, 1988; Willey et al. 1965; Tourtellot 1983, 1988). Excavations completed at Tikal (Haviland 1965, 1988) and Seibal (Tourtellot 1983, 1988) suggest that these patio groups represent an extended family type of household in which each dwelling around the patio represents a nuclear family. Evidence suggests that variability in the size and number of structures comprising these extended family compounds are reflect stages within the developmental cycle of the extended household (Haviland 1988:121; Tourtellot 1988:98).

The continuity of these extended families is maintained by the introduction of affinal kin and the birth of new members to replace those who die. In response to population and other pressures, elements of extended families split-off, forming new households that begin their own developmental cycle. Settlement pattern research suggests that the Classic period Maya household -depending upon its stage of development- was composed of from two to five structures, each housing related nuclear families (Willey 1981:388-389). Through time, the size of a compound may ebb and flow, but the cyclical nature of the household insures the continuity and longevity of the extended family unit, and as a result, of Maya social organization as a whole.

The present day Kekchi Maya offer a relevant model concerning extended family household patterning. Among the Kekchi, there is a correlation between the social and economic relationships between people and the distance separating their houses (Wilk 1983, 1984, 1988). Multiple-family extended households that act as a single economic entity often cluster around cleared patio spaces in dwellings that nearly touch one another. The individual size of each dwelling in these multiple-family household clusters often indicate the age and rank of individuals within the household (Wilk 1983). The patterning is different among multiple-family households that are not as tightly knit. In these households, children may still expect to inherit land and production may still be cooperatively based, but decisions are made independently and each household has its own fields, granaries, and ancillary structures. These dwellings tend to be farther apart - up to 30 meters- and there is no formal plan to the household cluster. Finally, households that have established neolocal residences are typically more than 30 meters from the nearest house (Wilk 1988).

Archaeological, ethnohistoric, and ethnographic data confirm the traditional importance of the extended family household in Maya social organization. Ethnohistoric and ethnographic records indicate that the structural principles organizing these household units were variable and complex. In fact, research shows that there is "no clear unilineal pattern in the kinship composition of ethnographic and historical Maya households in any area" (Wilk 1988:139). Despite the variability involved with the composition of the extended family, the physical representation of these households in the built environment is consistent and identifiable. The clustering of dwellings in an extended family compound is a highly visible manifestation of household organization and represents a potentially rich source of information for archaeological inquiry. The physical remains of these compounds, or perhaps more importantly, the absence of multi-family compounds, has important implications for archaeologists studying the composition of past social units in the Maya area.

Household Economy (Subsistence Production)

The preceding discussion on household social organization outlined a number of aspects concerning the organization of agricultural production within the household, including the utility of the extended family unit and the importance of the corporate group and access to land. It should be clear that prehispanic Maya agricultural production corresponds to a kin-ordered mode of production. The kin-ordered mode of production utilizes social relations along the line of filiation, marriage, consanguinity, and affinity to mobilize social labor. Under this mode of production, organized clusters of social labor, i.e. the extended family, expend labor cumulatively and transgenerationally upon the environment. Under this system, the means of production are held by the household.

As discussed in the preceding chapter, prehispanic Maya agricultural production involved a number of intensive techniques and took advantage of a variety of ecosystems. Agricultural production in Northern Yucatan was very much limited by the limitations of the environment. For the most part, subsistence production in the region relied upon a combination of fixed-plot variable-fallow farming and permanent cultivation. Fixed-plot farming, unlike swidden or slash and burn agriculture, refers to lands that are held by families in perpetuity. These lands are subject to the same mechanisms of ancestral sanctioning and corporate group control, discussed in connection with the household residence. Fixed-plot farming reflects the constraints of residential stability and population density that defined the conditions of Classic period agricultural production (McAnany 1995:78).

At any particular point in time, the various plots controlled by an extended household will be in various stages of production and fallow. Fixed-plot fields, variously termed outfields, are typically distant from the main residence. Fields in production are referred to as *milpa*, a term synonymous with corn field, although multiple species are usually present. Other fields will be in various stages of fallow. Newly fallow fields will still be used to plant quick-return species, while those in mature stages of fallow still serve as plots for the growth of economic species such as herbs, medicinal plants, and construction materials. In addition, these mature fields serve as game preserves for hunting and as land for apiaries (McAnany 1995:69-73). In contrast to the distant fields of the fixed-plot system, are the permanently cultivated fields, gardens, and orchards adjacent to the residential core. These plots supply the household with a wide variety of both staple and economic crops. Of particular importance are the ‘kitchen gardens’ located next to structures. The plants and trees cultivated in the kitchen garden provide valuable supplements to the staple foods grown in fixed-plots and permanent fields. These gardens, as well as the orchard species, can also today be a valuable source of extra income through the sale of goods in the market or as an item of trade.

Corporate Organization

Beyond the extended family household, the Maya were organized into larger corporate groups based on descent and residence. The term "corporate" refers to the group's ability to own property, organize productive activities, distribute goods and labor power, assign status, and regulate relations with other groups. The corporate group has a perpetual existence that endures after the death of members, as new members are continually being born into the group. Maya corporate groups are best understood as macrofamily level economic, political, and ritual units that "strategically utilize relationships of consanguinity and affinity, real and fictive, in order to legitimate expressions of unity and perpetuity," while perpetuating "itself through the transmission of its name, its goods, and its titles down a real or imaginary line" (Gillespie 2000:468, 476; Levi-Strauss 1982:174). Therefore, Maya corporate organization was a function of both descent, as expressed through lineage, and residence, manifest through the continual retention of physical place and material property.

The intersection of descent and residence among the Maya is epitomized by the lineage, a descent group that is generally territorially based and residentially stable.

These lineages, under the rubric of the larger corporate group, can almost be predatory in nature (McAnany 1995:112; Sahlins 1961). The demographic and economic success of the group can lead to the monopolization of resources and the "codification of differential access to resources both within and between lineages" through the establishment of proprietary resource rights (McAnany 1995:112-113). In this way, the corporate group not only established social identity through kinship and descent, but also regulated access to resources through the criteria of residence. These two basic aspects of social organization – descent and residence - tied individual households to specific locations on the landscape and established a genealogy of place through "the coalescence of lineage and locale" (McAnany 1995:110).

Although land was nominally held by the corporate group, ownership was functionally in the hands of the individual households that occupied and passed down land through inheritance. The extended family compound - including structures, gardens, fields, and orchards - represented a "totally managed cultural landscape" characterized by long-term, intensive investment (McAnany 1995:94). The perseverance of the household -symbolized by this long-term occupation and investment -demonstrated the established link between the extended family and place. This connection was legitimized and sanctified by the bones of ancestors buried within the residential compound (McAnany 1995:94). The conception of land rights was closely associated with the ancestors, who had first established such rights (Gillespie 2000:474; McAnany 1995:96-97). The interment of ancestors within the residential complex reinforced the primary connection between descent, residence, and entitlement to land as a means of production.

The deep connection between household, lineage, corporate group, and land is represented in the traditional practice of ancestor veneration. Ancestors serve as a focus for group identity and provide legitimacy to the social and territorial claims of the corporate group by establishing descent and proprietary rights to place. In a very literal sense, the claims of the household and corporate group are embodied in the principle of residence (as dwelling and as the act of residing), as the context "where ancestral genealogy is encoded both ritualistically and corporally" (McAnany 1995:111). Therefore, acts of ancestor veneration are both declarations of descent and affirmations of residence, functioning to unify households within the corporate group. At the same time, ancestors -as emblematic of the lineage structure- "serve to underwrite and reinforce social and economic inequality" through the development and reinforcement of asymmetrical relationships "within the residential compound, within the lineage, and between lineages" composing corporate groups (McAnany 1995:111).

As discussed regarding the extended family, the reckoning of lineage among the Maya was principally based on patrilineal genealogy. However, epigraphic data, burial data, and patronymic evidence suggest that at least among higher ranking lineage groups, matrilineal descent was also of importance (Gillespie 2000: 470-473; Marcus 1983:470-471; McAnany 1995:123). Thus, both consanguineal and affinal aspects of descent were utilized to legitimize the place and performance of individuals and households within the larger corporate group structure. The affirmation of legitimacy through the veneration of ancestors played a crucial role in establishing the rights, privileges, and authority of individual households, lineages, and corporate groups. These "actions directed toward ancestors' bodies and spirits were used to create social and political differences between nobles and commoners and among different noble groups" (Gillespie 2000:475). In the same way their ancestors did before them, present day Maya groups lay claim to resources through the principle of first occupancy (a claim to resources based on the act of initial occupation), in which "the authority of a corporate group to enjoy certain proprietary and jural rights and to limit the number of persons entitled to share in those rights, is based on establishing an idiom for expressing continuity with the past, when it is believed such rights were first created or distributed" (Gillespie 2000:474).

The process of creating ancestors through the act of veneration became a means of not only legitimizing unequal access to resources, but also of ranking corporate groups based on the antiquity of their pedigrees (McAnany 1995:116). Among the Yucatec Maya founding lineages were denoted by a specific term, *yax ch'ibal* or first lineage, and held a dominate position in society (Roys 1957:12). At the time of the Conquest the Spanish encountered sixteen native *cuchcabal* (jurisdictions) in Northern Yucatan, each dominated by a ruling corporate group, e.g. the Xiu, Cehpech, and Sotuta (Roys 1957:3). These groups were the *yax ch'ibal* of their particular territories, ruling over less powerful corporate groups.

Corporate groups were also subdivided, based on the relative rank of households along the lines of descent. Furthermore, households were ranked according to distinctions of class, including *almehen* (elites) and *yalba uinic* (commoners). The relative ranking of these households within the corporate group was institutionalized through a hierarchy of permanent leadership positions. Two such positions, *hol pop* and *ah kuch kab*, represented both the hierarchical organization of leadership and the potential role of class in corporate group organization. The title *hol pop* or "head of the mat" appears in the ethnohistoric record as the head of the most important and powerful corporate group within a particular area, and is sometimes listed as the local governor of the town where he resided (Roys 1957:7). The title *ah kuch kab* or "he of the burden of land" refers to the administrator of a ward or *barrio* within a town, who may have also served as head of a minor corporate group (Roys 1957:7). Unlike the *hol pop* who would have been an elite, a commoner might serve as an *ah kuch kab* (McAnany 1995:24). At the most basic level of social organization, were the heads of households or *ah chun kah*.

It is at the level of the household that the inequality and asymmetry of relationships inherent in Maya social organization most affect the individual. At basic level, asymmetry in the extended household is a function of criteria such as age, gender, and wealth. Tension in extended families usually arises in conflicts related to decision making. The power to make decisions rested with an older individual who was not necessarily required to take into account the desires and opinions of subordinate family members. The father-son relationship was the most asymmetric of these relationships and is characterized by both conflict and cooperation (McAnany 1995:120). Central to this relationship is the issue of inheritance and the transmission of land rights from one generation to the next. Writing about the present day Quiche Maya of Guatemala, Bunzel (1952:24-25) summarized this relationship as follows: “Land is something which a man receives from his father and withholds from his son . . . [it] is the focus of bitter and suppressed antagonism between father and son, and the still more bitter rivalry of brothers for their father’s favor.” The particularities of the father-son relationship are situational and will vary, the inherent inequality of the relationship is not.

A relationship of unequal also exists between the household and those extra families and/or individuals attached to the unit as servants, laborers, and slaves. The asymmetric relationship between these individuals and the household head are obvious. The relationships of sons and dependents to the head of the household represent “a continuum of inequality… from the partially power-engaged senior sons to the totally dominated slaves and orphans whose very lives were dependent on the whim of the *ah chun kahil*” (McAnany 1995:122).

Corporate Economy (Tribute Production)

The kin-ordered mode of production clearly describes the subsistence oriented production that likely characterized most prehispanic Maya households. At the same time, the kin-ordered mode of production does not account for the tributary demands placed upon the extended household by the corporate group. Under the tributary mode of production, surplus is expropriated through extra-economic means from the direct producer. This description does describe the tribute system present in the prehispanic period, where the hierarchical organization of the corporate group was used to extract tribute on the basis of descent and residence. The majority of our information on prehispanic Maya tribute system relates to our knowledege of Postclassic society as recorded by Landa (Tozzer 1941), who recorded that the extended family was responsible for paying tribute into a stratified system extending from the local nobility on up to the *halach uinic*, as well as the resident religious leaders. Tribute, termed *hol* in Yucatec Maya, included such items as cotton cloth, produce, salt, game, cacao, honey, and wax (McAnany 1995:117; Morley et al. 1994:218; Tozzer 1941). Landa also records that commoners built the houses of their lords as part of their tribute and service obligations (Tozzer 1941:86).

The exact nature of the extractive mechanisms in place under the prehispanic tribute system. The system appears to have been based more on filial and customary obligations, rather than through coercion. Some of the most important aspects of the tribute mode of production, as theoretically defined, are not found in prehispanic Maya social organization. Conceptually, tributary modes of production involve the exercise of power and domination through political processes to extort surpluses from producers. The political or military apparatus necessary to extort tribute on a large scale likely did not exist among the prehispanic Maya. Even though the prehispanic Maya were not characterized by a true tributary mode of production, the existing framework would play an important role in the later Conquest and colonial periods.

CHAPTER VI

HISTORICAL OUTLINE OF HACIENDA TABI

Hacienda San Juan Bautista Tabi is located in the Mexican state of Yucatan, approximately 65 kilometers south of the capital Merida, and 23 and 17 kilometers southeast of the towns of Ticul and Oxkutzcab respectively (Figure 9). The hacienda is located in a fertile valley between the Sierrita de Ticul or *Puuc* Hills to the northeast and the Sierra de Bolonchen or *Witz* hills to the southwest. In this fertile region the archetypal prehispanic sites of the *Puuc* architectural style, including Labna, Sayil, and Kabah flourished.

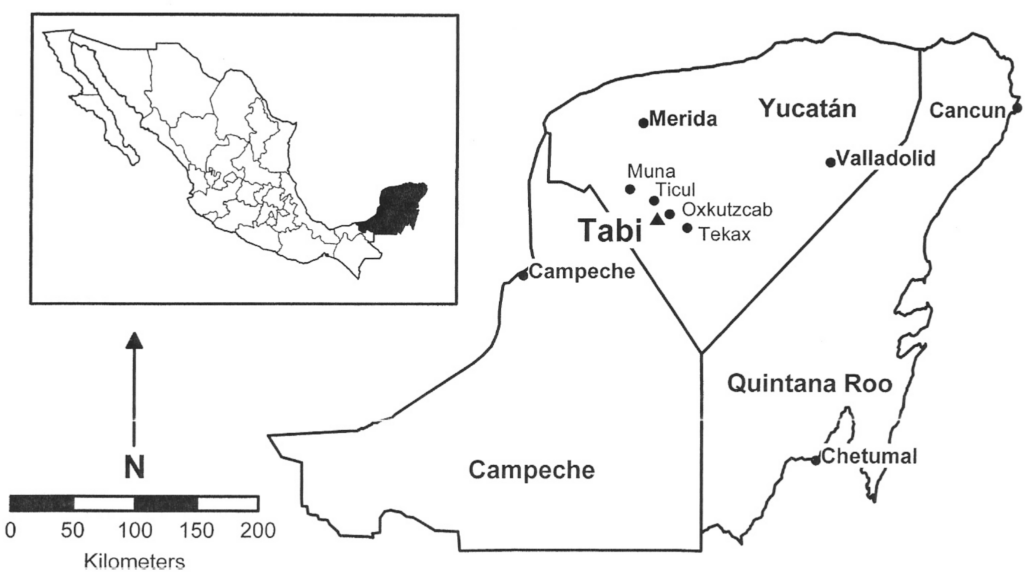

Figure 9. The Location of Hacienda Tabi.

The earliest known document relating to a portion of the lands that would eventually become Hacienda San Juan Bautista Tabi dates to 1569. This document is an affidavit in support of the Pox family claim to the area known as Humpit Kuh, where they had resided since before the Conquest (*Documents of Tabi, Yucatan, 1569-1820*, *Vol. 1*). In 1698, Don Juan del Castillo y Arrue, *encomendero* of the Indians of the town of Oxkutzcab, sought permission to establish an *estancia* or cattle ranch on the lands that would become Tabi. A commission was convened to determine whether the current towns or estancias in the area would be harmed. The counsel for the Indians and the witnesses for the towns of Pustunich, Yotholin, and Xocnaceh had no objection to the sale. The next two available records date to 1733 and 1739, and involve the purchase of additional lands. In 1733, the governor of Mani, Don Francisco del Rey, acting as mediator between the Spanish government and the Indians, commissioned Don Hernando Baez to broker the land sale. The document from 1739 is illegible, but relates to the purchase of the property San Jose Ehlum.

The earliest known records using the name of Tabi date to the 1780s. In 1784, Bernardino del Castillo (perhaps the grandson or great grandson of Juan del Castillo) is listed as owner of the estate, the eastern limits of which had been extended to within twelve kilometers of the town of Pustunich, and within eight kilometers of the town of Yotholin. More significant are the church documents that record the resident population for Tabi. In 1782, reports indicate that Tabi had 1,700 resident Indians and 84 *vecinos* (non-Indians), and that the estate was an *estancia de visita*, indicating the presence of a church or chapel (Thompson 1999: 400n.11). The size of the resident population at this early date indicates that Tabi was a substantial operation and a commercial enterprise with diversified agricultural production geared towards the market. Tellingly, documents from this period also record a change in the manner in which land purchase contracts were structured. Contracts from this period are no longer couched in terms of usufruct rights, but rather in terms of purchases and sales (Rejon 1993:16).

In its role as hacienda, Tabi continued to expand throughout the late 18th century and well into the 19th century, aided by legislation that abolished communal lands and property. Church documentation indicates that, in 1803, 1,898 Indians resided on the hacienda (Thompson 1999: 400n.11; Patch 1993:199). The diversified nature of the

Figure 10. The Palacio at Hacienda San Juan Bautista Tabi from Across the Great Yard (Photo by Author).

hacienda is further evidenced in documentation from 1811, which places Tabi as one of the three largest *estancias* in the peninsula, with some two thousand head of cattle (Farriss 1984:373) (Figure 10).

In 1815, Canary Island native Francisco Calero y Calero purchased the hacienda at auction for approximately 51,000 pesos. In 1817, Calero commissioned the first recorded survey and map of the lands comprising the hacienda (Figure 11). The execution of this survey was a source of controversy, as the Indians and Parish of Oxkutzcab contended that Calero, under the "pretext of clarifying the true boundaries of his land," had in fact stolen an extra seven leagues of their land (Tabi Documents Vol. IV, Folio 226). In addition, the owners of the nearby rancho Sabacché brought litigation against Calero, presumably for a similar offense. In 1825 the hacienda gained seven leagues legally through the purchase of public lands ceded from the towns of Oxkutzcab, Ticul, and Tekax, under the newly enacted Ley de Terrenos Baldios (Vacant Lands Law).

With Mexican political independence from Spain, Yucatan's traditional markets dwindled or were altogether lost. The near halt in leather and tallow exports to Havana dealt a heavy blow to the region's cattle industry (Cline 1948:90). As entrepreneurs scrambled to find new commodities to buttress the failing economy, increasing attention was focused on sugarcane, and to a lesser extent henequen, as experiments with products like coffee and silk failed. In order to encourage the production of sugarcane, the Yucatec government declared the cultivation and manufacturing of sugar to be tax and

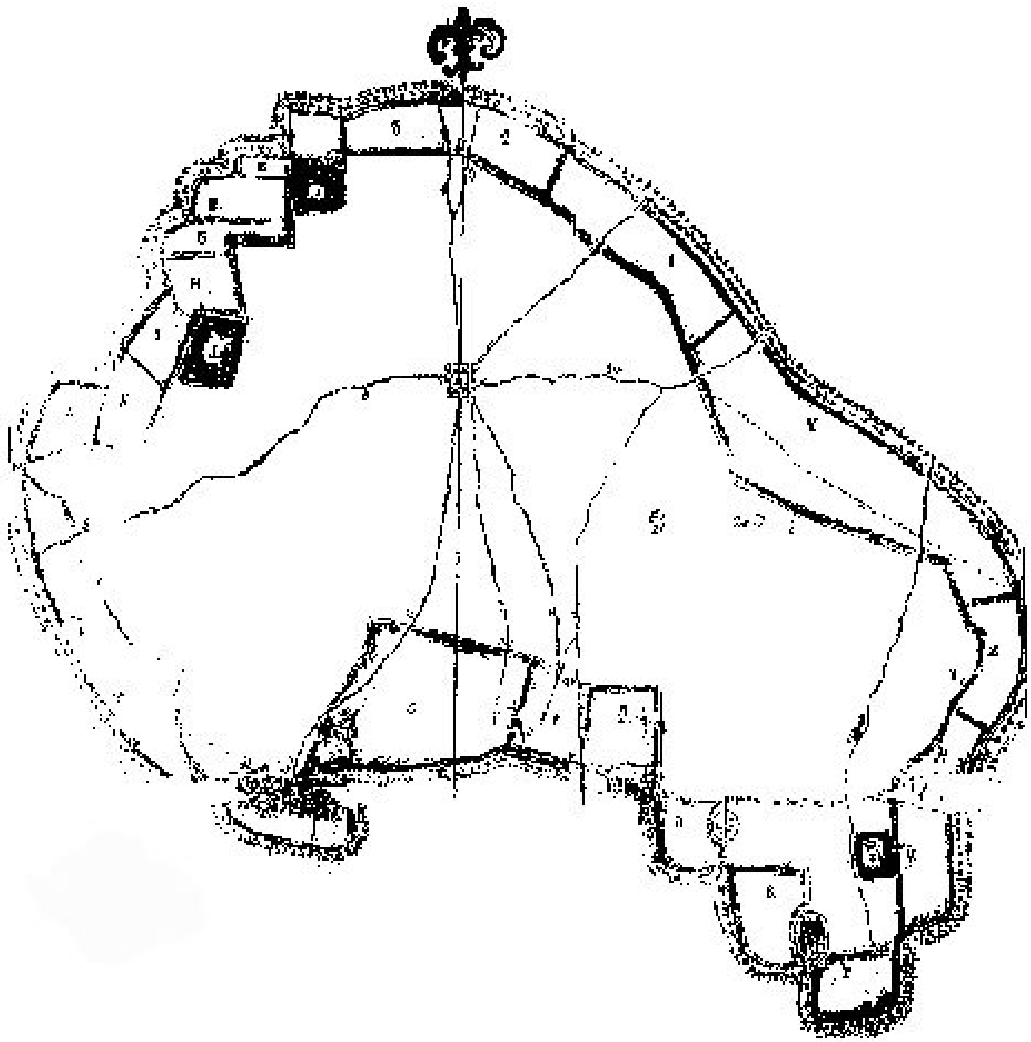

Figure 11. 1817 Map of the Lands Composing Hacienda Tabi (after Documents of Tabi, Tulane University).

duty-free. Concurrent with these tax breaks were the aforementioned land laws, passed in the 1820s, that facilitated the acquisition of land by sugar-producing haciendas. Taking advantage of the favorable soils at Tabi, Calero introduced sugarcane into the diversified economy of the hacienda. The production of sugarcane quickly became the driving force behind the Yucatecan economy and the industry flourished until the outbreak of the Caste War in 1847.

By mid 19th century, the operation at Hacienda Tabi had become sufficiently large to prompt the American explorer John Lloyd Stephens to comment on the prosperity of the hacienda, as reflected in the large number of buildings that lined the great yard (Stephens 1843 2:40-41). Reflecting this pre-Caste War boom period Stephens writes of his visit in 1841:

> I rode with Bernaldo to the hacienda of Tabi . . . which [along with two other haciendas] . . . were distinguished as the three finest in Yucatan. Before the gate were some noble seybo trees, and near it a tiendicita, or small shop, supplied with articles adapted to the wants of the Indians appertaining to the hacienda. The great yard was lined with buildings, among which were the church and an enclosure for a bullfight, prepared for a festival which was to commence the next day.

Stephen's description, while brief, does allow us an enticing glimpse of Hacienda Tabi during the pre-Caste War period. However, the economic prosperity witnessed by Stephens would only last another six years.

In 1847, a series of revolts by Mayan Indians in the eastern portion of the peninsula touched off the mass uprising commonly known as the Caste War. The Caste War pitted a large portion of the Maya population against the significantly smaller Hispanic population that controlled the government and owned a large percentage of the land in Yucatan. The revolt had been a response to the increasing pressures placed upon the Indian population. With the outbreak of the Caste War the Maya rebels burnt the cane fields across the peninsula. At the height of the uprising 90% of the pre-war sugar producing lands were under the control of the rebels (Lara Vega 1939:31). The major military skirmishes were over by 1853, but the damage to the haciendas and overall economic system would not be repaired for another decade.

In 1851, Don Vicente Calero (Francisco's son) petitioned for a reduction of the hacienda's debts. The hacienda that had been worth 51,000 pesos early in the century was now valued at 6,000 pesos and was 9282 pesos in debt (Bracamonte 1993:109). At this time, Calero described the principal house as roofless, damaged, and without doors (Figure 12). The vestry of the church had collapsed, the granaries were ruined, one of

Figure 12. The Palacio as Seen from the Ruins of the Stables (Photo by Jason Barrett).

the wells was useless, and the garden and corrals were damaged (Bracamonte 1993: 109).

In 1855, the elder Calero died and the hacienda was sold at auction to Felipe Peón Maldonado, one of the most powerful *hacendados* on the peninsula. Peón promoted the development of sugarcane throughout the peninsula and three of the 15 haciendas he owned, not including Tabi, were sugarcane haciendas (these included Santa Ana in Santa Elena, Yokat in Ticul, and Thul in Peto). Upon purchasing Tabi, Peón entered into a contract with Miguel Gutierrez, with the objective of assembling workers to restart production at Tabi. Under this partnership, cultivation of sugarcane began again with a new industrial infrastructure, including a tram and cars to transport the cane from the fields and distillation equipment (Barcelo 1981:144). Tabi began to expand again during this period, still benefiting from the Terrenos Baldios law of 1825, and later under the Ley De Colonización which passed in 1883. However, the effects of the Caste War were still evident in 1861 when the resident population only 53 persons (Rejon 1998: 6).

Peón died in 1876 at the age of 73, at which time his widow named her son Carlos administrator of her estate. In 1890, Carlos Peón became owner of Tabi, and then sold it to Eulogio Duarte Troncoso three years later. Duarte was from an important family of sugar hacendados, including Anselmo Duarte de la Ruela, who had been dedicated to the production of sugarcane beginning in the early years of the 19th century. With his sons, Anselmo Duarte formed "Duarte Hermanos" which was a major player in the henequen industry and actively promoted the most modern advances in sugarcane production. This included the importation of 60 Cuban technicians to implement the latest agricultural and industrial techniques in the production of sugar (Barcelo 1981:145).

Eulogio Duarte saw opportunity in the sugar industry, with the possibility to enter local and international markets through the diversification of production. Toward this end, he introduced modern technology to produce sugar, rum, and *panela* (unrefined sugar) at Tabi. In 1900, Tabi was the highest producer in the state, manufacturing 920 tons of sugar (Suarez Molina 1977). At this time, Tabi was also producing maize, cattle, honey, tobacco, fruits, henequen, hides, and was exploiting precious woods.

Henry Mercer (1896: 95-97) described what life was like on a "great sugar hacienda" during this period. He wrote of Tabi:

> Tabi had a great court-yard, where in the morning the hissing of steam, the rattle of machinery, and the voices and noise of men, mules, *volans*, dogs, and cattle waked us early. There was a great colonnade, with an upper story and terraces, cattle-sheds, palm-trees, a ruined church, a distillery, a tienda, and a large, new, American-made crushing-engine, all looking upon the court-yard, with an Indian village beyond. Like all the other haciendas, the large buildings had few furnished rooms, and appeared to be rarely visited by the family of Señor Duarte, though he himself came once a week to superintend the work.
>
> At Tabi work stopped at the roll of a drum and a bugle-call. Then scores of Indians from the cane-fields, stables, cattle-yard, pumps, tanks, and engines crowded the overseer's door for wages. All night lights glowed from the engine, and the air was full of a savory smell of boiling sugar.
>
> One evening the sound of an accordion brought us down-stairs after supper, to find one of the lower rooms crowded with Indians. We had forgotten that it was Carnival time, and to our surprise saw through the door the dancing figures of masked workmen dressed in fantastic costumes. While the crowd laughed at tricks and jokes, or commented in low tones in the Maya language, the pretty music, played in Spanish rhythm, set our heels tingling. There were girls enough standing near, but, just as we had half decided to waive ceremony and choose partners, the party broke up, and we saw them cross the cattle-yard with torches

> and enter the village, where the dance-tunes echoed merrily from house to house. Then the cook of the hacienda brought out his guitar and sang, and a Negro danced till bedtime. By ten o'clock all the lights in the lower rooms were out, except one at the end of the colonnade, where drums, horns, and muskets hung on the walls, and men kept watch all night, lying in hammocks or stretched upon the bare stones, their heads resting on folded arms. Some of their positions seemed most uncomfortable, but none equaled that of our old waiter on the veranda, who, in spite of guitars and talking, had gone to sleep early in the evening. A narrow ledge of the wall overhanging the staircase was his choice, and there, in sound oblivion, he lay on his back, left leg on the wall-top, right foot on the steps, and head hanging over the brink.
>
> These moonlight nights were so cool that we went out after dark muffled in our striped blankets. When the girls had ceased carrying water, loud, tremulous cries often filled the night air. Once, to learn their cause, I had stepped stealthily to the well, and there saw three very large toads, who were making all the noise, as they hopped with many pauses down the steps of the tank and came out upon the court-yard.

Mercer's words paint a vivid and dynamic picture of daily life at Tabi, while also providing interesting, albeit unintended, insight into aspects of the economic and social structure of the hacienda.

Duarte also made numerous improvements to the built environment at Tabi. Under his ownership an upper story was added to the *palacio*, as well as neo-classical façade. The present church was also built at this time, utilizing a combination of *fajina* labor (obligatory work contributions) and imported workers from Campeche to expedite the construction process (Figure 13). The church was dedicated on June 15, 1896. The timing of this construction, coupled with Mercer's description of "a ruined church" (1896:95), suggests that the hacienda may have been without a formal church from the time of the Caste War until 1896.

Figure 13. The Ruined Church at Hacienda Tabi (Photo by Author).

The years 1890-1905 were the height of sugar production on the peninsula (Figure 14). The best technology was available at the large mills like Tabi, Catmis, and Kakalna. The mills used steam engines, centrifuge machinery, Decauville trams, and

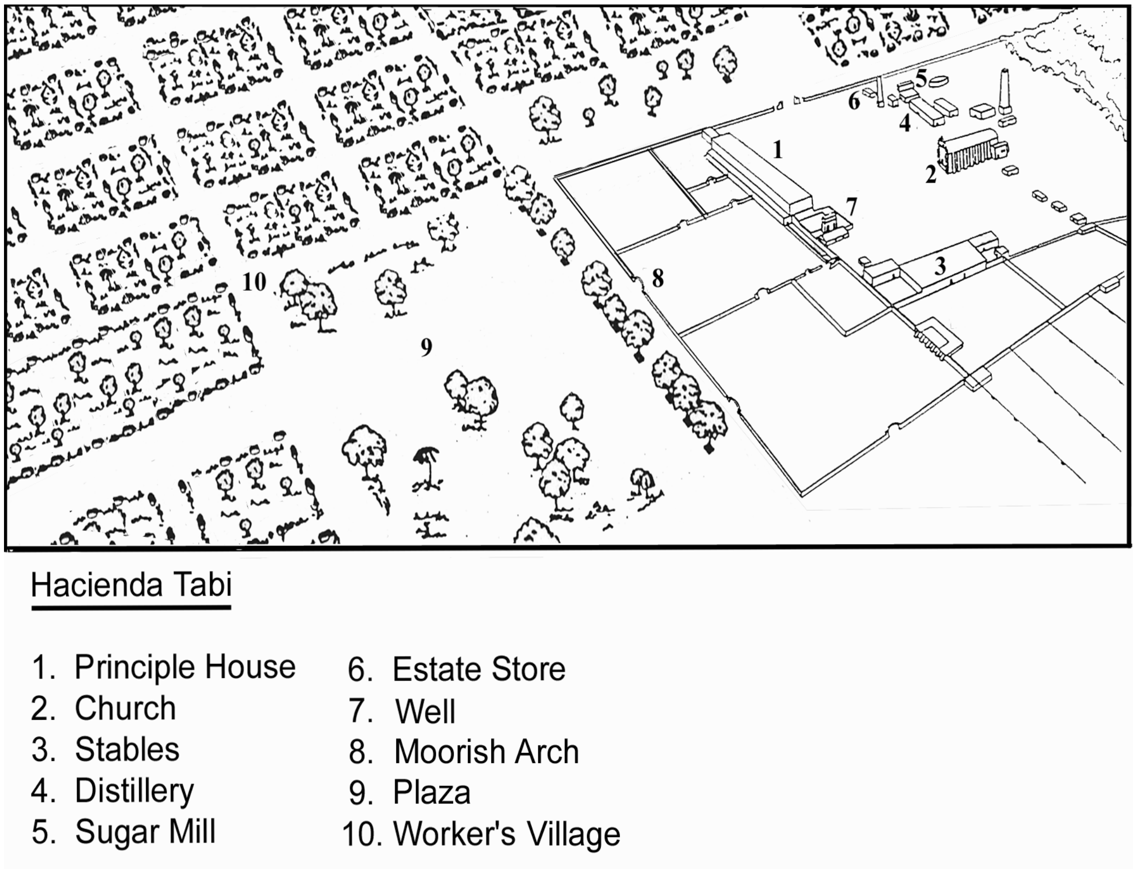

Figure 14. Principal Structures at Hacienda Tabi, Post 1896 (after Benavides1985:55).

employed the most experienced labor forces, including the aforementioned Cuban technicians. Sugar production increased steadily through these years and the number of distilleries on the peninsula proliferated, producing primarily for the henequen haciendas. The population of Tabi was also building during this period. In 1887, near the end of the Peón families' ownership, the population at Tabi numbered 499 persons. Thirteen years later. under the direction of Duarte the population reached 851 persons (Rejon 1998:7).

Notably, these numbers reveal a large jump in the male population between 1887 and 1900, but not in the female population (Table 3). Prior to 1900 the ratio of men to women on the hacienda had been relatively even. These numbers likely are a result of the regional labor shortage that was occurring throughout the later decades of the 19th century, reflecting the introduction of extra-regional laborers into the peninsula. Ethnohistoric records and local folklore document the importation of Chinese and Korean contract laborers, as well as Yaqui exiles, into the haciendas of Yucatan during this period (Rejon 1993; Meagher 1975; Katz 1974; Turner 1969; Gann 1924).

In 1904 Eulogio Duarte died, leaving Tabi to his son Francisco Duarte Padrera. At this time, the hacienda had reached its maximum extent, measuring a little more than 14,167 hectares including more than 2,000 hectares comprised by the annexes

Table 3. Hacienda Tabi Census Data, 1861-1921.

Year	Male	%	Female	%	Total
1861	33	62.2	20	37.8	53
1874	123	52.6	111	47.4	234
1879	170	51.5	160	48.5	330
1881	227	49.0	236	51.0	463
1886	218	49.3	224	50.7	442
1887	252	50.5	247	49.5	499
1900	513	60.3	338	39.7	851
1910	245	56.1	192	43.9	437

Source: Rejon 1998:6

of Xnibacal, Sacnicte, Yaaxche, and Sabacche. Yucatan was undergoing an economic crisis at this time, related to the declining price of agave fiber on the world market. Sugar and aguardiente prices were also falling at this time as a result of the repeal of the protective tariffs the industry had enjoyed since the 1820s. The region's *hacendados* were severely weakened as a result of this economic downturn.

These events also signaled the decline of Tabi, a process hastened by the sale of the hacienda in 1907 to three businessmen who had no prior experience running a hacienda. In response to the plummeting price of sugar, the new owners Wenceslo Lizarraga, Enrique Vales, and Santiago Espejo focused production on maize, vegetables, tobacco, henequen, and cattle. Despite their efforts, many laborers left the hacienda at this time. Don José Cruz Tun, who lived through this period at Tabi, recalled that "during this time, the sugar harvest was so little and the people were so poor that they had to wear "pitas" (sugar sacks)" (Rejon 1993:21). Between 1900 and 1910, the population at Tabi dropped by nearly half, from 851 persons to 437 persons (Rejon 1998:6).

In 1912, Eduardo Bolio Rendón replaced Lizarraga in the partnership and a year later became the sole owner of Tabi. Bolio wanted to reinstate sugar production on the hacienda and contracted with an American named Alfonso Ailloud who rented 20 hectares for this purpose. However, the Mexican Revolution and the liberation of the peones cut short their efforts. In September of 1914, General Salvador Alvarado's army entered the hacienda and freed the workers. Nicolas Villarreal, a former worker at Tabi, remembered the final days leading up to the liberation:

> Mr. Ailloud in addition to cane planted vegetables, corn, and tabacco. Many *palitziloob* (Maya men) and Chinese slaves had left the hacienda in 1907 when they sold (the hacienda) to Mr. Espejo and Mr. Vales…[A]s there was no one to work, Ailloud used a plow pulled by oxen to sow the cane. He reclaimed and cleared the old fields for harvest and when the cane was ready for the sugar mill, they granted liberty and nobody did the work…It was then when General Salvador Alvarado's soldiers came to Tabi and everybody had to leave the hacienda, although many had nowhere to go…The fields were burned and others were eaten by the cattle, the same ones the soldiers took when they left. The vegetables, corn, and tobacco that had been sown were also lost…Misters Bolio and Ailloud were confined in Merida for a time (Rejon 1993:22).

In the process of liberating the workers the hacienda registers recording the personal debts of each worker were burned.

In 1917, Bolio, who had retained ownership of Tabi, began breaking up the hacienda lands. He intended to plant henequen on the hacienda, as sugarcane was no longer commercially viable due to a lack of inexpensive labor or *acasillados* to exploit and the unfavorable price of sugar on the market. In 1921 and again in 1925, the hacienda lost lands to the town of Pustunich. In response to these appropriations and the associated litigation, Bolio sold the property in 1926 to Doña Fernanda Ayora de Vega, at which time Tabi became an annex of Hacienda Sacnicte.

By the 1920s, the principal buildings of the hacienda and the worker's village had fallen into decay (Figure 15). Archaeologist Thomas Gann visited Tabi in the early 1920s, recording a brief but poignant account of the decadence he found at the hacienda. This statement is especially telling when contrasted with the earlier descriptions of Stephens and Mercer. Gann writes:

> The village occupied by the labourers was close to the house, but here - as elsewhere in Yucatan - the houses were falling into ruins, and the *peons* had deserted the *rancho* for better-paid work, or to start small *fincas*, or farms, of their own. The sugar mills and distillery, amongst the finest in Yucatan, were

> closed - in fact, work on the *hacienda* was confined almost exclusively to stock-raising (Gann 1924:236; italics in original).

In 1930, the sugar mill machinery from Tabi was sold to Hacienda Thul for 60,000 pesos, definitively ending sugar production at Tabi. At a later date, this machinery was moved to Kakalna and was eventually being sold as scrap iron (Barcelo 1981:148).

Throughout the 1930s and 1940s, Tabi continued to shrink in size as lands were taken for the *ejidos* (common lands) of Yotholin and Oxkutzcab. In 1952, Doña Ayora transferred the lands to her children, who then sold 46 hectares of land that was used in establishing the small village of Yaaxhom. In 1959, the Vega children sold the hacienda to Renán Manzanilla. At this time, Tabi measured a little more than 3,201 hectares.

Figure 15. Moorish Arch at the Northern Entrance to the Main Hacienda Grounds.

Coming full circle, Manzanilla dedicated production at Tabi to stock raising and apiculture. He also began remodeling the palacio, making repairs to the roof and installing bathroom facilities in three of the upstairs rooms. In 1992, the State of Yucatan purchased 1,533 hectares of the hacienda, including the principle buildings, and designated the lands as an ecological reserve. In 1995, the non-profit Cultural Foundation of Yucatan assumed responsibility of the hacienda and is currently developing the site as a center for environmental education and as a destination for ecotourism. In 2001, the Foundation opened a small museum at the site exploring the cultural patrimony of the Puuc region and of Yucatan and future plans call for the reconstruction of a portion of the worker's village for use as tourist lodging.

CHAPTER VII

THE MEDIUM TERM (16th – 19th CENTURIES)

The Colonial Social Organization of Yucatan

The Spanish brought to the Americas a long cultural tradition of conquest, settlement, and subjugation that had been perfected during the centuries long *Reconquista*. Among the cultures of the New World they recognized tribute and service systems similar to their own tradition. There was no need to replace or create a new system, instead the Spanish merely co-opted the existing native structures of kin-ordered production and tributary organization to meet their needs. Out of this appropriation grew the coercive institution of the repartimiento, which the Spanish used to draw both goods and native production into capitalist exchange networks. This emerging system of capitalist circulation represented the first stage in the historical articulation of capitalist and non-capitalist modes of production leading to the formation of the hacienda in Yucatan.

Iberian Conquest Traditions

The Iberian empires founded in the Americas were unprecedented in the speed in which they formed and in the immensity of their territory. The scale of administration and institutions needed for ordering such an empire was virtually unknown in the

Western world. Any European group who had stumbled upon the America would have had to scramble to formulate a policy of colonization. Any, that is, except the inhabitants of the Iberian Peninsula whose unique background had prepared them for just such an enterprise.

Of particular importance is the *Reconquista*, the period beginning in 711 with the Muslim invasion of Iberia and ending in 1492 with the surrender of Granada. During this period the inhabitants of Iberia formed a uniquely Hispanic civilization, founded upon the culture institutions of the medieval *reconquistadores* and the frontier movement of which the New World conquistadors were inheritors. The Iberian experience in the eight centuries preceding the conquest of the Americas "were a complex succession of conquests, the founding of cities, the establishment of Episcopal sees and monasteries, the creation of institutions of war and government, the mixture of cultures and peoples – in short, the transplantation of a race and a language, of a faith and a civilization" (Sanchez-Albornoz 1970:46). The centrality of the frontier theme is not isolated to the heroic figure of the *reconquistador*, but permeates the whole of Iberian society in which the challenge of conquest and of colonizing conquered territories demanded the adaptation and creation of new institutional, socioeconomic, and technological forms of society. The idea of the frontier with its "sense of danger and struggle, and its prizes of prestige, power, booty, and land as the rewards of individual and collective effort," were central to the medieval Iberian experience (Bishko 1975:398).

The colonial organization possessed by the Spanish at the time of contact with the New World was the result of an unparalleled set of historical circumstances. In addition to the cultural forms that grew out of the *Reconquista*, at the time of the conquest, Hispanic culture was heavily influenced by a corporatist Catholic worldview inspired by the writings of Saint Thomas Aquinas and the Thomist Universe. The corporatist paradigm provided the framework through which the Spanish interpreted and ordered their world. Everything from principles of institutional administration and economics, to the nuclear family was hierarchically organized according to this system. In Hispanic thought, the ideal society was composed of corporations, e.g. nobility, clergy, military, and Indians, each corresponding to a particular set of functions and privileges (Arrom 1985:76).

Under the corporatist model individuals were not equal, but were hierarchically ordered within a system of social control predicated on dependence and subordination. The essence of the corporatist view is expressed in an 1806 opinion rendered by the Council of the Indies – the late date of which stands as a testament to the enduring nature of the corporatist model in Spanish thought: "It is undeniable that the existence of various hierarchies and classes is of the greatest importance to the existence and stability of a monarchical state, since a graduated system of dependence and subordination sustains and insures the obedience and respect of the last vassal to the authority of the sovereign" (McAlister 1963:364). The cultural forms of the *Reconquista* were ordered within the principles of corporatism to produce the hierarchical structures necessary to support an empire in the New World. These structures included the key socioeconomic institutions of *encomienda* and *repartimiento*.

The *Encomienda* and *Repartimiento*

The institutions of encomienda and repartimiento were the evolutionary result of Castilian policies involving the practice of donations and grants. As part of the near constant warfare of the Reconquista, Castilian monarchs and their representatives used donations and grants to establish and maintain government, provision for defense, people or re-people conquered lands, reward service, and establish obligations of fealty and continued service (Chamberlain 1939:33-34). The donations and grants made assumed any number of forms, each varying in terms of territorial status, jurisdiction, and tenure. The *encomienda* was a temporary grant of territory, cities, towns, castles, and monasteries that included the right to receive the revenues and services, or part thereof, owed the Crown. The *encomendero* (grantee) held dominion over the area granted, as well as the inhabitants of said territory, which were considered vassals of both the *encomendero* and the sovereign. A grant of encomienda was temporary, given for the life of the encomendero, for the life of the sovereign, or at the will of the latter. However, the lords assigned these grants often considered them patrimonies and in the case of grants awarded by the sovereign, in practice they tended to become heritable lifetime grants (Chamberlain 1939:35).

Encomienda was of great political, economic, social, and religious importance throughout the Spanish Empire during the early Conquest. However, from the beginning the Crown meant to curtail the powers of the *encomenderos* by removing any rights of dominion or jurisdiction attached to *encomienda* grants, in order to prevent the same type of semi-independent and hereditary landed aristocracy only recently brought under control in Spain (Chamberlain 1939:31). The native population of the Americas were to be free and direct vassals of the Crown alone. With this new understanding, the objectives of the Crown in transferring the institution to the New World were fourfold: 1) to reward discoverers, conquerors, and settlers and their descendents; 2) to insure the permanent colonization of acquired territories; 3) to provide for the internal and external defense of the colonies; and 4) to protect the natives, indoctrinate them in Christianity, and to impart the rudiments of European civilization to them (Chamberlain 1939:24).

Until the mid-sixteenth century, *encomienda* grants included the right to both tribute and labor services, the amounts of which were determined by the *encomenderos* themselves. The widespread abuses associated with this unregulated activity forced the Crown to enact legislation, including the New Laws of 1542-1543, which established fixed amounts and types of tribute in accordance with the population, available resources, and skills of the assigned *encomienda* Indians. Tribute was to be collected only at designated periods, by civil officials who then assigned the encomenderos their portion, or alternatively under the supervision of officials who verified the amounts and types of goods collected. Most importantly, the new legislation eliminated labor service as an encomienda privilege (Chamberlain 1939:8-9). In its final expression in the

Americas, encomienda "was a grant of revenue and not of Indians or land, and the term encomienda, which originally connoted an actual assignment of natives came to signify a royal donation of revenues" (Chamberlain 1939:27).

The term *repartimiento* - literally referring to "the process of distributing, allocating, or dividing something up" (Patch 1991:30) - was originally inseparable from the term *encomienda*. The initial partitioning of native populations and pueblos was known as *repartimiento* and these groups were then referred to as *repartimientos* given under particular grants of *encomienda*. Later on, when labor service was removed from *encomienda* grants, Spanish colonists needed to find new sources of labor. At that time, the term *repartimiento* was used in Mexico and Central America in reference to the rotational labor drafts required of Indian communities. In Yucatan these drafts were colloquially known as *servicios personales*, in which each community was required to provide a weekly quota of both male and female workers called *semaneros*, assigned to individual Spaniards whose official permits entitled them to a specified number of workers (Farriss 1984:48; Patch 1993:29-30). *Semaneros* were ostensibly paid a minimum wage and to provide one week of service per year. However, the wages were well below what free wage laborers would earn, if payment was even made at all, and the term of service typically was extended beyond one week to three or four weeks (Farriss 1984:49; Patch 1993:30).

An alternate, more pervasive form of labor extraction known as *repartimiento* in Yucatan, involved the forced sale of goods or forced advances of money and credit to Indians, who were expected to repay their debts in kind within a stipulated period of time. This *repartimiento* system in Yucatan most commonly involved cash advances with repayment expected in wax and cotton cloth (Farriss 1984:43; Patch 1993:31). In essence the *repartimiento*, as the system was known, became a means of appropriating native labor and converting it into cash profits by incorporating "Indians into the world economy as involuntary producers of raw materials, primary products, and manufactured goods, which the Spaniards acquired at bargain prices and then resold to make handsome profits" (Patch 1993:30). High profits were possible due to the demand for these products, especially cotton textiles, in the mining communities of New Spain. In Central Mexico, declines in population, in cotton production, and in the production of cotton textiles, resulted in the tribute payments being made in money, rather than in the traditional form represented by textiles. As a result of these demographic and economic changes, a strong market existed for textiles and other goods produced in Yucatan.

The ultimate effect of the Spanish upon the fundamental structure of Maya social and economic organization, as will be elaborated upon below, was minimal during the first two centuries of the colonial period. The Spanish Crown and colonists were more interested in adapting the pre-existing structures of prehispanic Maya organization to their particular needs, than in redesigning the whole system . Toward this end, the basic institutions and structures the Spanish encountered upon conquest were maintained, with the Spanish simply placing themselves at the top of the social and economic hierarchies. From an economic standpoint, the Spanish colonists and Crown were successful in managing to extract increasing amounts of surplus labor and goods from the Maya household, in order to support both their basic needs, as well as a burgeoning market economy. From a social standpoint, the Spanish colonists were for the most part uninterested in Maya society unless they stood to gain personally. Even when the Spanish attempted to make organizational changes, e.g. the resettlement of Indians into nucleated communities, their successes were most often temporary and marginal at best.

The Colonial Household

Household Organization

The colonial Maya household, despite Spanish interference, remained similar in both form and function to its prehispanic counterpart. Most households continued to be organized around the extended family and a kin-ordered, subsistence oriented mode of production. Family life continued to center around the multi-family, multi-structured household compound and outlying agricultural fields. The corporate group also continued to play an important role in colonial social organization, as a means of defining status and class. An individual's status was defined both within the corporate group as a matter of descent and between corporate groups as a matter of membership in differentially ranked groups. The exogamous marriage patterns that defined these corporate groups not only created alliances between groups, but also helped to perpetuate class distinctions as marriages tended to ally families of similar socioeconomic standing. As stated in the last chapter, to be outside the corporate group, was in a very real sense, to be outside Maya society (Restall 1997:92).

It is certainly not an exaggeration to state that Maya social identity –including status, prestige, and wealth- was intimately linked to the extended family household and corporate group. Issues of descent were central to both prehispanic and colonial Maya social organization. Of equal importance, were issues of residence, residence having been defined earlier as both the act of residing and as a physical location. In discussing residence we are again making reference to the importance of the extended family household and corporate group as they are physically embodied on the landscape. However, the idea of community or *cah* is also central to the concept of residence. Once more, the duality of residence is reflected in the word *cah*, which can mean community as in the physical place, but also can mean "to be" as in the phrase "*yn ca'h lic*" or "I am here" (Barrera Vasquez 1995:281, 449). After the Conquest the term and the concept of *cah* became a common way in which the Maya distinguished themselves from outsiders, specifically the Spanish (Restall 1997:15). Therefore, similar to the link between individual identity and the corporate group, there existed a link between the individual identity and the cah. In this manner, to be outside Maya society was to be "non-Maya in the *cah*, or Maya entirely removed from the *cah*" and as such identity in Maya society was a function of the overlapping entities of the corporate group and the *cah* (Restall 1997:92).

Almost from the inception of the colonial regime in Yucatan, the Spanish attempted to forcefully impose their own idea of community upon the Maya. In the worldview of the Spanish, the concept of *civilización* or civilization (from the Latin *civis* meaning city), was both literally and figuratively embodied in the city (Patch 1993:48).

The Spanish, like the Maya, also viewed settlements as a source of being and a way of living, beyond the simple physical existence of the built environment. However, unlike the Maya who were more concerned with the identity and affiliation associated with location, the Spanish conception of place was defined by the need for order, nucleation, and a sense of urbanism, in an attempt to impart control over the landscape. In order to bring the Maya inline with this conception of settlement, the Spanish embarked on a program of *congregación* or forced resettlement.

Beyond organizing Maya settlements in a manner more consistent with Spanish ideals, *congregación* also had spiritual and economic motivations. The Franciscan missionaries who attempted to carry out the program saw it as necessary first step in the evangelization of the indigenous population, by facilitating the teaching of Christian doctrine and administration of the sacraments (Farriss 1984:160). The urban settlement represented Christianity, civilization, and security, much like the fortified towns the Spanish had relied upon during the uncertainty of the *Reconquista*. In the minds of the Spanish, the ideal of civilization was represented by the urban, nucleated town with the Church literally at the center. This was directly opposed by what they perceived to be the barbaric lifestyle of the Maya who lived in rural, dispersed settlements where heathenism ruled.

The immediacy of the perceived problem is illustrated by the speed with which the Spanish moved to institute resettlement. After their arrival in late 1544 or early 1545, the Franciscans were granted approval by royal decree in 1548 to proceed with the plan, although it took the arrival of the royal *visitador*, Tomas Lopez Medel in 1552 to officially move things forward. To prevent the Maya from returning to their homes, dwellings, gardens, and orchards were destroyed (Farriss 1984:161-162). In conjunction with the implementation of *congregación*, Lopez issued a list of ordinances which included directives for the layout of towns and prohibitions against elements of Maya social organization deemed potentially sinful, including a prohibition against the extended family household due to what the Spanish considered a potential for incest (Lopez de Cogolludo 1971, vol. 1: 390-405; Farriss 1984:169).

The Spanish Crown considered *congregación* as a practical means to increase control and thereby revenue. The movement of previously out of reach and uncounted tributaries into Spanish administered towns, meant increased tribute and labor services. At the same time, helped strengthen the rather tenuous grip the government had in the territories not immediate to the major Spanish settlements of Merida, Campeche, Valladolid, and Bacalar. Not surprisingly, many *encomenderos* lobbied on behalf of the Maya against the policy of *congregación*, as the removal of entire populations from their granted lands entailed a loss of potential revenue (Farriss 1984:162).

In the long run the *encomenderos* had little to worry about. After the initial zeal of the first round of congregación resettlements the colonial authorities failed to maintain the vigilance necessary to keep their early gains in place. Thirty years after the policy was put into effect, nearly 40 percent of the relocated settlements had again appeared at their original sites. Restall (1997:39) attributed the resiliency of Maya communities in the face of Spanish policies, such as *congregación*, to three aspects of continuity within the structure of social organization, including: 1) the continued maintenance of *cah* social and political structures by resettled communities, insuring identity during the period dislocation; 2) the continued working and exchange of the lands and resources of the territorial *cah*, even though the residential *cah* had been resettled; and 3) the continued use of the territorial *cah* led to the gradual re-establishment of what were first satellite communities built for convenience at the site of the original settlement, that eventually returned to being full town sites.

The continuity that Restall noted is predicated on the key element of land and the ability of the Maya to maintain control of the means of production. As I will demonstrate, when the means of production were no longer owned by the Maya, but were instead controlled by the hacienda, continuity could not be sustained. Therefore, what the Spanish could not do through force, the hacienda would accomplish through economic means.

Household Economy

As discussed in the previous chapter, prehispanic Maya production was primarily based upon a kin-ordered mode of production. These households relied upon principles of descent and residence to define both the social relations of production and to lay claim to the means of production through proprietary rights to land and resources. Production organization within the extended family revolved around a cooperative partnership of related nuclear families, in which the basic subsistence needs of the household were met. Access to the land and resources necessary to preserve household subsistence were established and reinforced through the process of ancestor veneration and through maintenance of the household's place within the hierarchical structure of the larger corporate group.

Although household production was ostensibly kin-ordered, elements of a tributary mode of production were also present in prehispanic Maya society. The tributary system relied upon, and perhaps even accounted for, the hierarchical structuring of both individuals and groups within society. Present within this system were the productive units and distribution systems necessary to mobilize labor and to successfully redistribute extracted surpluses. The various forms of labor drafts and tribute the Spanish imposed upon the Maya were merely permutations of the customary obligations in place during the prehispanic period (Chamberlain 1951:7; Farriss 1984:56). As previously discussed, the important Spanish institutions of *encomienda* and *repartimiento* co-opted the forms of tribute and types of service the Maya had given in the prehispanic period to their lords, communities, and religion, but left intact the productive structures that made the system function. However, in their continual quest to accumulate and expand profits, the Spanish increasingly sought to draw both resources and native producers into the wider market economy (Farriss 1984:46-47).

The *repartimiento* was the primary mechanism by which the Spanish incorporated native producers and goods within larger networks of commodity exchange. The uneven exchange characterized by the *repartimiento* yielded considerable profits for the Spanish and "by extracting goods that could be exported, it was the major mechanism integrating Yucatan into the world economy as a producer of manufactures for consumption by the poor of silver-rich Mexico" (Patch 1993:90). Entrepreneurs in a position to take advantage of this system of exchange were participating in a nascent form of mercantilism, in which the primary mechanism for capital accumulation was not through capitalist relations of production, but through capitalist relations of exchange. This situation was not unusual as Wolf (1982:84) noted in his study of fifteenth century European expansion, "tributary relationships and mercantile activity have long existed side by side," with agents "drawing subsistence or prestige goods produced within the kin-ordered or tributary mode into the channels of commodity exchange, the market" (Wolf 1982:84). This was the situation in seventeenth century Yucatan where a diverse group, including governors, *encomenderos*, and ecclesiastical institutions, all drew commodities into the market through inequitable exchanges with Maya producers.

In Yucatan, native culture survived the first two centuries of colonialism in part because the Spanish did co-opt the productive systems of the Maya as they found them (Patch 1993:92). Importantly, the means of production involved with subsistence remained in the hands of native producers for most of the colonial period, and it was in this arena that the Maya were able to operate on a more even footing in the marketplace. Even though Spanish entrepreneurs were continually drawing native producers into capitalist networks of exchange, the Maya still controlled the means of production and relations of production on which the population of the peninsula survived.

In the first two centuries of colonialism, native producers monopolized the production of food on the peninsula. Early in the colonial period Spanish colonists were able survive on the foodstuffs procured through tribute and taxation, however the demand of growing urban populations soon outstripped this supply. The fact that the bulk of tributary and taxable goods were non-food goods destined for extra-local markets, made the deficit even more acute. As the number of urban dependents grew, so did the importance of a market economy based on Maya agricultural production. The dependency upon native production meant that to one degree or another, the majority of the Maya peasantry was incorporated within the regional market system (Patch 1993:78).

The *pósitos* or granaries that the major urban centers maintained were the primary means by which Maya agriculturalists were enlisted in supplying the non-native population. *Pósitos* were established in order to supply maize at reduced cost to the urban poor, orphans, and widows, and as means of insuring a food supply in case of drought or other natural disasters. In order to stock the *pósitos*, cities like Merida, Valladolid, and Campeche contracted up to a year in advance with the governments of local Indian villages. Paid in advance, the village governments acted as a brokers between the urban centers and the individual Maya producers who filled the contracts and were paid. In one form or another, the majority of the native population was incorporated into the colonial market through the *pósito* system (Patch 1993:75-80).

Demographics also helped insure that agricultural production remained in the hands of Maya producers well into the eighteenth century. Yucatan attracted fewer Spanish settlers and therefore the size of the urban population, and as a result the urban market, was much smaller than in other parts of Mexico. In addition, the Maya population of Yucatan was not devastated to the same degree as other native populations (Farriss 1984:58), meaning that the relative ratio of native producers to urban consumers remained much higher in Yucatan. This demographic superiority effectively insured agricultural production would remain in the hands of the Maya, as market demand could be met entirely through native production (Patch 1993:75).

Ecological factors also helped keep food production in the hands of the native population. In Yucatan it was impractical to store maize for more than a single year due to the heat and humidity of the climate, which promoted decomposition. This meant that maize supplies had to be used within a year and therefore maize prices in years with adequate harvests the market was adequately provisioned through peasant production. This was unlike the situation in central Mexico, where Spanish producers could afford to store grain supplies at a loss for several years in anticipation of periodic shortages in which supplies could be sold at higher market prices. In Yucatan, it was not until the chronic food shortages of the late eighteenth century that Spanish agricultural estates could begin to compete with native producers (Patch 1993:75).

The Hierarchy of Colonial Social Organization

The existing prehispanic hierarchical structure of society created and organized the basic divisions found between nuclear and extended families, as well as divisions between ever larger segments of society, including corporate groups, communities, and polities. On an individual level, the hierarchical organization of prehispanic Maya society created asymmetrical relationships among members of nuclear and extended families, between nobles and commoners, and in association with various political and economic offices and titles. During the colonial period the gap between individuals was compressed under the weight of the Spanish -now at the top of the hierarchy- but real differences in inequality continued and even became codified under the colonial regime.

The Spanish were interested in the stability of the system, and depended upon the Maya nobility to act as their intermediaries, and in this way "colonial rule facilitated rather than depressed class differences in indigenous society" (Restall 1997:87). For this reason the Spanish had a vested interest in maintaining the prehispanic social structure. Toward this end, the colonial regime confirmed the status of the nobility by conferring the title of *señores naturales* (natural lords) to those *halach uinicob* (territorial leaders) and *caciques* (hereditary chiefs) left in place to govern, collect tribute, and organize labor drafts. In recognition of their social and political standing and in exchange for these services, the *señores naturales* were allowed to use the Spanish honorary don, to ride horses, and to bear arms (Roys 1943:148-160). More importantly, this title exempted the holder from tribute and labor service and likely entitled them to some portion of the tribute and labor they organized (Thompson 1999:38). However, *señores naturales* constituted a relatively small subcategory within the traditional Maya noble class of *almehen*. The basic division within colonial Maya society, as it had been in the prehispanic period, was still between noble and commoner or *almehen* and *ah col cab*. (The Spanish commonly referred to Maya commoners by the term *macehual*, the

Nahuatl term for a tribute paying, commoner, and this term is often employed by present day researchers.)

Despite the fact that class differences among the Maya were maintained, the distance between the nobility and commoners – at least economically – shrank. The tribute and trade goods that had previously been the purview of the elite, were now largely in the hands of the Spanish. The Maya elite still maintained increased access to land and resources through dint of their continued high status and position within the social hierarchy, and also stood to profit from their role as middle men in organizing labor drafts and maize consignments. The latter economic privileges being a result of the nobilities continued monopoly over political power at the local level (Farriss 1984:187). In spite of certain economic advantages during the colonial period, social identity among the Maya was for the most part a matter of perceived social rank and descent (Farriss 1984:167).

Above the indigenous Maya on the colonial social hierarchy were the *vecinos* or non-Indians, a group composed of Spanish or *españoles* (either a *peninsular* born in Spain or a *creole* born in Yucatan), mestizos (individuals of Spanish and Indian heritage), and individuals of African ancestry, variously termed *negros* (unmixed African ancestry) and *mulattos* (descendants of Africans and whites). In Yucatan, no term existed for individuals of African and Indian descent, although eventually the term *pardo* (dark person) came into usage. The term *pardo* eventually came to designate all individuals, either wholly or partially descended from Africans. However, the terms *negro* and *mulatto* continued to be used, with *negro* still identifying a person of pure

African ancestry, but implying status as a slave, and *mulatto* (along with *pardo*) signifying free persons (Patch 1993:95).

Vecinos were a highly stratified group. Atop this hierarchy were of course the Spanish (*peninsulares* and *creoles*), followed by *mestizos*, and then the *mulattos/pardos*. Officially, this diverse group of people were known as the *República de Españoles* or Spanish Commonwealth, a designation encompassing all Hispanicized elements within colonial society. The indigenous sector of society was called the *República de Indios* or Indian Commonwealth and was composed solely of Maya, both nobles and commoners. On the outside, at least in terms of status, were the *negros* who as non-Indians were part of the *República de Españoles*, but as slaves were at the bottom of the social hierarchy.

Rise of the Hacienda System

In the late 18th century the economy of Yucatan was at a crossroads. For nearly two centuries the economy of the region had been based on the extraction of tribute and labor from the native Maya population through a series of institutions, the most predominate of which were the *encomienda* and the *repartimiento*. These institutions were limiting, in that the only way to increase production and therefore the accumulation of capital was to expand the number of people working within the system. Large scale economic expansion was impossible as long as production was tied to a tributary mode of production in which the means of production remained in the hands of the primary producer. In essence, the economy of the peninsula had stagnated under the inertia of a system tied to the vagaries of slow, incremental population growth and decline. For most of the colonial period Yucatan truly was a "colonial backwater" (Farriss 1984:32).

In a very real sense, the lethargy that characterized the colonial economy of the peninsula was a direct outcome of a poor first impression. The Spanish viewed the peninsula as a marginal, resource poor environment, where the soils were thin, water was scarce, and there was no mineral wealth to develop. The only exploitable resource the Spanish conquerors and settlers could see was the native population. All Spanish colonies were initially founded upon the tribute and labor service of the native populations, with the colonists extracting whatever goods and services they could in order to sustain themselves. This "primitive system" quickly proved inadequate in many regions and the Spanish were either forced out of necessity to organize production themselves or did so in order to exploit potential sources of wealth (Farriss 1984:32-33). Regardless of the contributing factors, the economies of most colonial regions demonstrated a diversity and complexity not found in Yucatan.

In Yucatan, the colonists saw very little potential for the types of commercial pursuits that had developed in these other regions. Instead, the Spanish population of Yucatan became content to leave production in the hands of the Maya, appropriating available surpluses to meet their own subsistence needs and to produce modest profits through the *repartimiento*. There was very little initiative on the part of the Spanish to develop new methods and forms of production. Instead, considerable effort was spent in trying to refine and maintain the tributary system, as exemplified by the policy of *congregación*. The colonists were very vociferous, and ultimately extremely successful, in maintaining royal permission and protections for both the *encomienda* and *repartimiento*, always arguing that these institutions were essential for the survival of Spanish rule in Yucatan.

As previously discussed, the *repartimiento* played a seminal role in the accumulation of capital by providing access to Maya labor and production. Understandably, *Yucatecos* were fiercely protective of this institution, eventually gaining its legalization in 1731 (Patch 1993:155,162). At the time it was the only province in the empire where repartimiento was legally recognized (Patch 1993:1342). The *encomienda* continued to function in Yucatan for more than a century after it had disappeared in most of the core areas of the colonies. In 1717, when the Crown attempted to incorporate all remaining *encomienda* grants, Yucatan successfully lobbied for exemption from the incorporation decree, allowing the institution to survive on the peninsula for another seventy years. In addition to the tribute revenue an encomienda provided, the grant could also serve as an asset used to procure mortgage capital. Most often this was mercantile credit extended by merchants, who then gained the right to collect the debt in kind from the Maya of the *encomienda* (Patch 1993:100).

The cattle *estancias* that began to appear in the late 15th century were the only commercial enterprises the Spanish undertook in the first two centuries of the colonial regime, in which they controlled the productive forces. *Estancias* were often based on lands acquired through *real merced* (royal land grant) or through direct purchase from Maya individuals or communities. Frequently, *estancias* were associated with the landed estates of *encomenderos* who had established themselves near their Indian tributaries.

Although these enterprises were relatively small in scale (in terms of both the size of the labor force and in total production), the *estancia* played a key role in the development of the landed estate in Yucatan.

Problem History and Historical Events

As discussed earlier in this dissertation, the idea of problem history is an important approach within the Annales methodology. It focuses study on specific historical questions; in this case, what led to the formation of the hacienda system in Yucatan and what types of economic and social change were associated with this system? The formulation of such specific historical questions allows us to focus on the relationship between the structures formed of long and medium term forces and the individual, historically particular event or suite of events that bring about change within the system. Placing our inquiry within the larger context of historical time provides perspective on the dialectical process that mold the development of human societies.

Crucial to this process are "events, the tumultuous, bubbling and confused flood of events, often directed by the permanent forces studied in the first part and influenced and governed by the stable forces listed in the second part, only here chance comes into play embroidering her most brilliant and unexpected variations on the loom of events" (Febvre 1973:37). As the preceding illustrates, these events can be the result of historical "accident," such as climatic events or demographic change, or they may occur when certain aspects of culture reach critical mass. From the vantage point of the present, these historical processes represent a progression summarized as structure, event, structure.

As I stated in Chapter II, I see this process taking place in Yucatan in the late 18th with the rise of the hacienda system. The series of events that coalesced during the period roughly spanning 1770-1785, conspired to bring about a change in the structure of life on the peninsula. The cumulative effect of these events (events that included both historical accidents, as well as economic and political change), brought about fundamental changes in the organization of economic and social relationships. I attribute this change –change expressed in the entity of the hacienda- as part of a greater process of articulation through which Yucatan was becoming incorporated within the larger capitalist world system. The fundamental difference and the defining characteristic of the new structural configuration that came out of the events of 1770-1785, was a transfer of the control of the forces of production from Maya producers to Spanish entrepreneurs, and the resulting changes that occurred in the organization of the relations of production.

The Events

In the fifteen year period from 1770-1785 a rapid series of events brought change to the Yucatan Peninsula. These events, en masse, served as a catalyst for economic and social change. The hacienda system that arose from these changes was both the physical and symbolic embodiment of this new structure. The events I have identified are organized into three major categories, including demographic change, famine and pestilence, and Bourbon economic reforms.

Demographic Change, in the form of decline in population, had been a source of concern for the Spanish tribute based economy from the early days of the Conquest. Due mostly to the introduction of previously unknown diseases, the population of the Maya dropped precipitously in the first century after contact. Estimates of the contact period population of the peninsula very widely, ranging from a high of 8 million to a low of 300,000, but a number of 2.3 million is probably more accurate (see Farriss 1984:57). By the end of the 16th century population decline reached its nadir at approximately 160,000 persons and began to grow again, reaching approximately 210,000 in 1643 (Garcia Bernal 1978). However, over the course of the next three decades a series of drought induced famines and epidemics devastated the Indian population, reducing it to approximately 100,000 persons (Garcia Bernal 1978; Farriss 1984:61). It was during this period from the late 17th century to the late 18th century that large tracts of now abandoned land became incorporated into *estancias*. As long as populations remained relatively low, the Indian agricultural production and the large estates could co-exist. However, as the colony neared the end of the 17th century the population began to rise more or less steadily, until 1785 when population had increased to nearly 250,000 persons (Cook and Borah 1974).

Thus, by the mid 1780s population the native population had grown nearly 2.5 times over the course of one century. This rapid growth created immense population pressure between native producers in need of land for subsistence production and the landed estates of the Spanish. This pressure was especially acute in the western portion of the peninsula where the bulk of native population was concentrated (Patch 1993:139-140). The western region also happened to have some of the largest estates, located – like the lands of the future Hacienda Tabi- on the richest and deepest soils in the peninsula (see Chapter V). Therefore, by the late 18th century landed estates not only had control over the means of production, but also were in a position to take advantage of an increasingly landless Indian peasantry in need of both foodstuffs for purchase and/or access to land.

As alluded to in the preceding discussion, famine periodically devastated the colonial population of Yucatan. More often than not, famine was brought on by the droughts that had frequently affected populations throughout human history on the peninsula, but crop failure could also result from severe storms, hurricanes, and locusts. Moreover, severe famines were often followed by epidemics of yellow fever, measles, smallpox, and typhus, which spread through the already weakened members of the population. Yucatan experienced a series of severe famines between 1769-1777.

This nine year period began with the famine of 1769-1771, the worst in recorded history of the province. In 1769 locusts devoured the milpas before harvest, returning the next year with the same result. In 1771 the locust returned in small numbers and the harvest was adequate, but nearly all of the following year's harvest was destroyed by a hurricane. In 1773 drought and locusts greatly diminished the food supply. As if to add insult to injury, after a successful harvest in 1775 drought again struck in 1776 causing inadequate food supplies for the year 1777. As a result, with the exception of the years

1771 and 1775, the province suffered nearly continuous food shortages from the summer of 1769 to the fall of 1777 (Patch 1993:219).

It is easy to understand why Patch (1993:218-224) termed this period "The Crisis of Production," as this long series of devastating famines came on the heels of the unprecedented population growth mentioned earlier. The population figure of nearly 250,000 in 1785 is even more impressive when you consider that an estimated 70,000 people died during the famines of the 1770s (Patch 1993:139). Maize prices during the period reflect not only the desperation of the times, but also underscore the types of profits to be made. In normal years a *carga* of maize (55.5 liters) sold for two *reales* or less in the countryside and between two and three *reales* in Merida. In non-normal years, when famine was widespread, prices rose to eight *reales* and sometimes as high as 18 to 24 *reales*. On one occasion during the height of the 1770 famine, a *carga* of maize was selling for 36 *reales* (Patch 1993:220). Entrepreneurs were now acutely aware of the possible profits to be made, not only in years of famine, but also as a result of an increasing landless indigenous peasantry. An estate with wells and irrigation systems, now had control over the two most important means of production, land and water.

Under the rule of Charles III (1759-1788), the Spanish attempted to revive their American colonies through a series of reforms known collectively today as the Bourbon Reforms. In 1770 *Comercio Libre* (free trade within the Spanish empire) was extended to the port of Campeche. Prior to this date ships could only sail between Spanish ports under special license and convoy and were subject to heavy export and import taxes. The bureaucracy and expense associated with trade before the *Comercio Libre* served to further isolate and retard the growth of peripheral regions like Yucatan (Farriss 1984:367). The lifting of the former restrictions had the desired effect, as a new export economy based on the exportation of hides, tallow, and beef (both on the hoof and salted), to Havana. Also of importance were shipments of logwood used to make dyes, rice, and henequen fiber and finished goods. Importantly, a greater number of goods could be imported into the peninsula, including both foodstuffs and luxury items. The period was also characterized by the increasing importation of maize, not only in years of famine, but also in non-famine years as the gap between production and population steadily increased (Patch 1993:206).

At the same time free trade was creating new export goods and markets, the traditional export market based on the products produced through repartimiento was in serious decline. Prices for cotton textiles in Mexico had been depressed since the 1740s and exports from Yucatan were increasingly meeting competition from producers in Oaxaca, the Philippines, China, and India. The final blow came with the entry of Great Britain into the market in the late 18th century. Yucatecan cloth, still produced according to prehispanic methods, could not compete with the industrially produced textiles from Britain (Patch 1993:159). The evaporation of the traditional export economy, in conjunction with the new opportunities afforded through free trade, finally sounded the death knell of both the *repartimiento* and the *encomienda*, in 1777 and 1785 respectively (Patch 1993:100, 162-163).

The processes outlined above represent separate and specific events that individually probably could not have effected change. However, the cumulative weight of these events, occurring within such a short span time, were enough of a catalyst to bring about a reorganization of the colonial structure that had existed for more than two centuries. The crucial change was the reorganization of the forces of production, with a shift in the control of the means of production away from the Maya producer into the hands of the Spanish landed estate. The presence of this new structure is symbolized by the use of the term "hacienda," which appears in reference to the lands of Tabi for the first time in a document dating to 1784.

The Hacienda System

The formation of the hacienda in Yucatan represents a moment in the history when the requirements of capitalist accumulation and reproduction had outgrown the capacity of the tributary system in place since the 16th century. The system required additional labor and direct access to the means of production in order to increase production. The growth of the landed estate, both in terms of territory and residents, increasingly removed the means of production out of the hands of the indigenous Maya population and into the control of the Spanish entrepreneur, the would be *hacendado*. This period represents an overlapping of the structures related to the pre-existing tributary mode of production with a burgeoning capitalism, creating what Rey (1976:82-83) termed a "double history." As a result, the late colonial period in Yucatan represents a transitional phase, particular to this region, during this time.

Evolution of the System

Bracamonte y Sosa (1993:120-121) identifies three important periods in the evolution of the organization of labor in Yucatan: 1) the estancia or cattle ranch; 2) the commercial hacienda; and 3) the agricultural reforms of the Mexican Revolution. Only the first two periods fall under the purview of this dissertation. Estancias began appearing on the landscape around the turn of the 17th century, lasting into the last half of the 18th century. Although the estancia was devoted primarily to the raising of cattle, maize production was introduced on a small scale in the first half of the 18th century. At this time agricultural production was used to feed the salaried workers, mostly *vaqueros* (cowboys) who were paid in wages and maize rations (Bracamonte y Sosa 1993:122-123).

This early phase of agricultural production relied on *semaneros* contracted to individual *estancias* as part of the forced labor draft, *servicio personal*. In the mid 18th century *estancias* began drawing a small number of inhabitants from the villages eager to escape life as a tributary. These workers were known as *luneros*, because they traded one day of service a week, usually Monday or *Lunes*, for the right to live on the estate. In essence the *lunero* system on the estancia was the same as the *tequio* or residence tax, which required one days labor a week, traditionally Monday (Farriss 1984:56). However, living on the estancia had several advantages, not the least of which was escape from the tributary requirements of the village (Bracamonte y Sosa 1993:123).

Although in theory, *luneros* were still members of the *República de Indios*, and as such were not exempt from tribute payment (Farriss 1984:217).

The real draw to the *estancias* were the privileges it afforded. Each *lunero* was assigned parcels on the estate by the *Mayordomo* (administrator). All *luneros* were required to cultivate 10 *mecates* (a 20 x 20 area) of *milpa rosa* or first year *milpa* and 10 *mecates* of *milpa caña* or second year *milpa*. These 20 mecates served as the *luneros milpa de obligación*, the fields they were obligated to cultivate as payment for the right to cultivate *milpas* for their own subsistence needs. They were also given a *solar* (house lot) on which to live, raise animals, and garden, and were entitled to water, wood, and the right to hunt (Bracamonte y Sosa 1993:123). *Luneros* were used for tasks other than cultivation of milpa, including tending cattle, cutting firewood, construction and repairs, or any odd jobs around the estate (Bracamonte y Sosa 1993:124; Farriss 1984:216). *Luneros* also had *fagina* or work obligations on the estates similar to the *tequio* service requirements in the villages, in which individuals were required to work one day a week on community projects for free.

Occupation on the hacienda during the colonial period was completely voluntary. The Maya who came to the estates did so for any number of personal reasons, but for most the hacienda represented access to critical resources, as well as an escape from onerous tributary obligations. For the Maya who chose to join the estates, becoming a lunero involved only minor changes in the way of life (Farriss 1984:215-216; Patch 1993:149). For the most part, luneros were allowed to follow their own pursuits and to organize their households as they saw fit. Most *luneros* lived in scattered settlements throughout the hacienda lands, away from the core of hacienda administration and management. All of this provided of course that labor obligations and "rent" in the form of *milpa de obligación* were dutifully paid.

In the 1770s and 1780s, the events that would lead to the rise of the hacienda system were unfolding, and agricultural production on the *estancias* began to expand beyond mere subsistence production. At first the estates found themselves at a loss for workers. In the 1770s the estates had begun to rely more on rents from *luneros* to meet the small subsistence needs of the labor force, relying less and less on the labor drafts. However, estate owners quickly realized that the one day of labor a week provided under the *lunero* system was not sufficient under the demands of commercial agriculture. The problem was simple, while the *lunero* system introduced many people onto the estate, it introduced relatively little productive labor (Bracamonte y Sosa 1993:126). To fill the need for laborers, owners again began to rely upon *semaneros*, now being organized under the system of *mandamientos*. Government officials feeling the sting of lost revenues when the repartimiento was abolished, had discovered that they were in a position to recoup these losses by organizing and allocating labor drafts under the title *mandamientos* (Patch 1993:166). The need for laborers due to food shortages was so acute, that the government openly authorized *subdelegados* (local Spanish magistrates) to order Indian officials to supply estates with labor (Patch 1993:148).

As haciendas were increasingly becoming reliant upon *semaneros*, owners were also attempting to increase production from the *luneros* by introducing a task system into the productive relations of the estate. This system, known as *trabajo por tareas* (task work), paid *luneros* one *real* and a ration of maize per day to perform tasks on the estate, the same conditions given *semaneros*. Regardless, still provided the bulk of the required labor on the newly forming haciendas, as the number of *luneros* on the estates were insufficient to meet the demands of commercial production. Semaneros and the mandamientos continued to be the driving force behind agricultural production on the haciendas until the system was abolished with Mexican Independence (Bracamonte y Sosa 1993:125).

The *lunero* system was a natural first step in solving both the labor needs of an evolving commercial agricultural system, as well as the land needs of a growing Indian population. However, the system was inherently limited by its large territorial demands, with each lunero requiring approximately 60 mecates of land for subsistence production alone (Bracamonte y Sosa 1993:125). The large-scale expansion of haciendas in the late 18th and early 19th centuries were symptomatic of the relationship between land and the labor system. The territorial expansion Hacienda Tabi underwent during this period exemplifies the seminal relationship between commercial expansion, territorial expansion, and the expansion of productive forces (see Chapter IV).

In spite of its limitations, or perhaps because of them, the system continued to evolve as new techniques for extracting labor from the *luneros* were added. The aforementioned system of *trabajo por tareas* serves as the primary example. Production was also increased through *milpa pagada* or paid *milpa*, in which *luneros* were paid one peso per extra *carga* of maize produced. The system encouraged luneros to produce surpluses beyond their subsistence needs and *milpa de obligación* requirements. Again, this was only a partial solution, as the system was inherently limited by the finite amount of surplus each *lunero* could produce, and perhaps more importantly, *milpa pagada* did not focus production on more lucrative cash crops like sugar cane. The limitations of the *lunero* system insured the continued importance of the *semaneros* and forced labor drafts through the end of the colonial period.

The Hierarchy of Occupation

In general there were four classes of workers on the colonial hacienda: 1) salaried workers, including the *mayordomo* (administrator), *mayocol* (agricultural foreman), *mayoral* (livestock foreman), agricultural/mechanical specialists, and artisans; 2) luneros; 3) tenant farmers; and 4) temporary workers filling a variety of positions (Bracamonte y Sosa 1993:128). The haciendas also had relationships with tenant farmers who worked for a portion of the harvest. Tenant farmers were divided into two types, those who produced solely for subsistence and those who produced for the market. They primarily lived in their villages, traveling to the hacienda to work, or lived in small, nearby *ranchos* -independent hamlet clusters in the forest (Bracamonte y Sosa 1993:125). Although semaneros, as discussed, carried out the bulk of the work done on the estates, they were not officially part of the occupational hierarchy of the hacienda.

Within the occupational hierarchy of the colonial hacienda, luneros were the most numerous class of workers. The classification *lunero* was ordered according to the tributary traditions of the *encomienda*, in which any male between the ages of 14 and 60 were considered to be of working age. For the purposes of work, *luneros* were further divided into three categories: 1) *reservados*, workers who due to age or infirmity were assigned easier tasks; 2) *luneros*, household heads who had agreed to provide labor in exchange for the privileges granted by the hacienda; and 3) *solteros*, youth between 14 and 18 years old, who were not married, and were dependents within their father's home (Bracamonte y Sosa 1993:127-128).

Salaried workers were always a minority on the hacienda regardless of the period. Prior to commercial agricultural production, salaried workers consisted of those involved with the management and operation of the cattle *estancias*, including *mayordomos*, *mayorales*, and *vaqueros.* The introduction of commercial agricultural increased both the number of salaried workers, as well as the variety of salaried positions. This was especially true of haciendas where products like sugarcane were produced, as the cultivation and processing of these crops required specialists to meet the particular agricultural and mechanical demands associated with production. The number and variety of salaried positions, with associated differences in remuneration, created stratification among salaried workers. All salaried positions were paid in both wages and in rations, with *mayordomos* receiving the greatest amount of compensation, followed by specialists and artisans, *mayocoles* and *mayorales*, and finally *vaqueros*.

In addition to the occupational hierarchy that existed on the colonial hacienda, there was also an ethnic hierarchy. The divisions found on the hacienda echoed the larger societal division found during the colonial period, namely the division between the República de Españoles and the República de Indios. Almost to the man, salaried positions on the estates were filled by Spanish, *mestizo*, or mixed heritage individuals (like *mulattos* and *pardos*), who belonged to the ethnically Hispanic República de Españoles. In contrast, nearly all the Maya who worked on the hacienda (representatives of the República de Indios), were either *luneros* or *semaneros*. Hacienda ownership was almost exclusively held by Spanish individuals.

The Hacienda in Colonial Society

The formation of the colonial hacienda represents an important point in the cultural history of Yucatan, a critical moment in which long term cultural and environmental trends, historical *conjonctures*, and specific events intersected. Out of this came new forms of social and economic organization, characteristic of the new historical structure. Some of the changes associated with the new organizational forms did not surface immediately, nor where they necessarily expressed to the same degree or in the same way in all places. By this I mean that the changes in economic and social organization that effected the Maya of the hacienda as opposed to the Maya villagers were not necessarily of the same magnitude and/or scope. Regardless, the changes that brought about the hacienda did effect all economic and social life on the peninsula to one degree or another.

Part of this disjunction comes from the unevenness in which the new forces of production were applied. An examination of the "laws of motion" (see Chapter II) at work during this period, reveals an economic system characterized by an articulation of modes of production. The economic system in place at the end of the colonial period was composed of both capitalistic and non-capitalistic modes of production. On the one hand the system was marked by a capitalistic system of exchange, in which the ownership of both the means of production and the goods produced from those resources were held by capitalist or in this case the would be capitalist in the form of the hacendado.

At the same time, the relations of production particular to this system were somewhere in between a tributary mode of production and a capitalistic mode of production. The production of both luneros and semaneros was transacted in part under the logic of tributary obligation. On the part of the lunero, labor was given in exchange for privileges associated with living on the hacienda –similar to a tributary system- or alternatively, they were paid a wage for their services under the trabajo por tareas system –more like capitalism. On the one hand, semaneros were paid a wage in exchange for providing labor on the hacienda –more like capitalism-, but they only participated in the system as a result of coercion –more like a tributary system. The system would only become more complicated after Independence.

CHAPTER VIII

ARCHAEOLOGICAL INVESTIGATIONS AT HACIENDA TABI

Nine years ago the Hacienda Tabi Project began conducting archaeological research in Yucatan. Initial reconnaissance of the site occurred in 1996 and excavations were conducted in 1997 (Meyers 1998) and 1999 (current study). Additionally, Meyers directed two summer field schools at the site. Prior to our investigation little was known about the quality and quantity of archaeology still existent at the hacienda. It quickly became apparent that the worker's village at the site had experienced negligible disturbance in the 80 odd years since its abandonment and that the site had great potential for furthering our knowledge of life in nineteenth and early twentieth century Yucatan. Continued work at the site has proven the validity of these initial impressions.

Survey and Mapping at Hacienda Tabi

In July of 1996, a team of archaeologists from Texas A&M University conducted a preliminary survey of the archaeological remains at Hacienda Tabi. Prior to this survey, no real data on the size and composition of the worker's village existed. The primary goals of this survey were to assess the quantity and quality of archaeological remains still extant at Hacienda Tabi and to evaluate the potential for further research at the hacienda. As a result of this survey, we found very little evidence of site disturbance in the 82 years since the abandonment of the hacienda.

The 1996 survey concentrated on the positioning and layout of the worker's village at the site in relation to the structures of the main hacienda grounds. An article by Benavides (1986) provided an abbreviated archaeological overview of the site and guided our initial reconnaissance to the areas north and east of the principle hacienda structures. In these areas, we were able to identify a grid pattern of streets and blocks delineated by *albarradas* (stone walls), as well as two plaza areas and the remains of numerous ruined structures.

We used a theodolite to record the locations of street corners and structures within the village. At this time we were not able to plane map every feature due to dense rainy season vegetation and time constraints. At a minimum, we recorded two corners of every block, including all four-way intersections. Of the 90 structures we identified, we mapped 46 with the instrument, and recorded the relative positions of the remaining 44 structures. Additionally, the architectural style of each dwelling was recorded in order to demonstrate the spatial distribution of dwelling types within the village.

In January of 1998 we initiated a joint research project at Hacienda Tabi with members of the Department of Forestry Science at Texas A&M in order to conduct Global Positioning System (GPS) mapping at the site. We established a base station at the hacienda and used hand-held receivers to record the location of features in the field. At this time, we recorded all the features identified in 1996 and added features from previously unsurveyed portions of the site. Every identified surface feature at the site was recorded in this fashion, including the roads leading to and from the site, the hacienda cemetery, Loltun Caves, and Prehispanic archaeological sites associated with the lands of the former hacienda.

Physical Layout of the Hacienda

The built environment at Hacienda Tabi is comprised of two architectural groups, the principle hacienda structures bounded by a tall stone wall and the residential blocks that make up the worker's village, the two physically and symbolically separated by a high stone wall (see Figure 16). The site is roughly oriented north/south (approximately 9 degrees east of magnetic north), with four principle roads radiating out along the cardinal directions towards the nearby towns of Ticul and Oxkutzcab to the north and east, and the former Haciendas of Santa Ana and San Francisco to the west and south, respectively. A large plaza (375 x 200 m) dominates the area adjoining the northern wall and a smaller *plazuela* (230 x 100 m) occupies the space bordering the eastern wall. The two primary entrances to the main hacienda grounds were located next to these plazas. The elaborate Moorish arch in the northern wall is the larger of the two entrances and would have served as an impressive introduction to the site for those traveling to Tabi from Merida by way of Ticul (see Figure 8). The less ornate eastern gate directly accesses the work areas of the hacienda and the third and smaller gate permitted access to the hacienda south of the industrial workings.

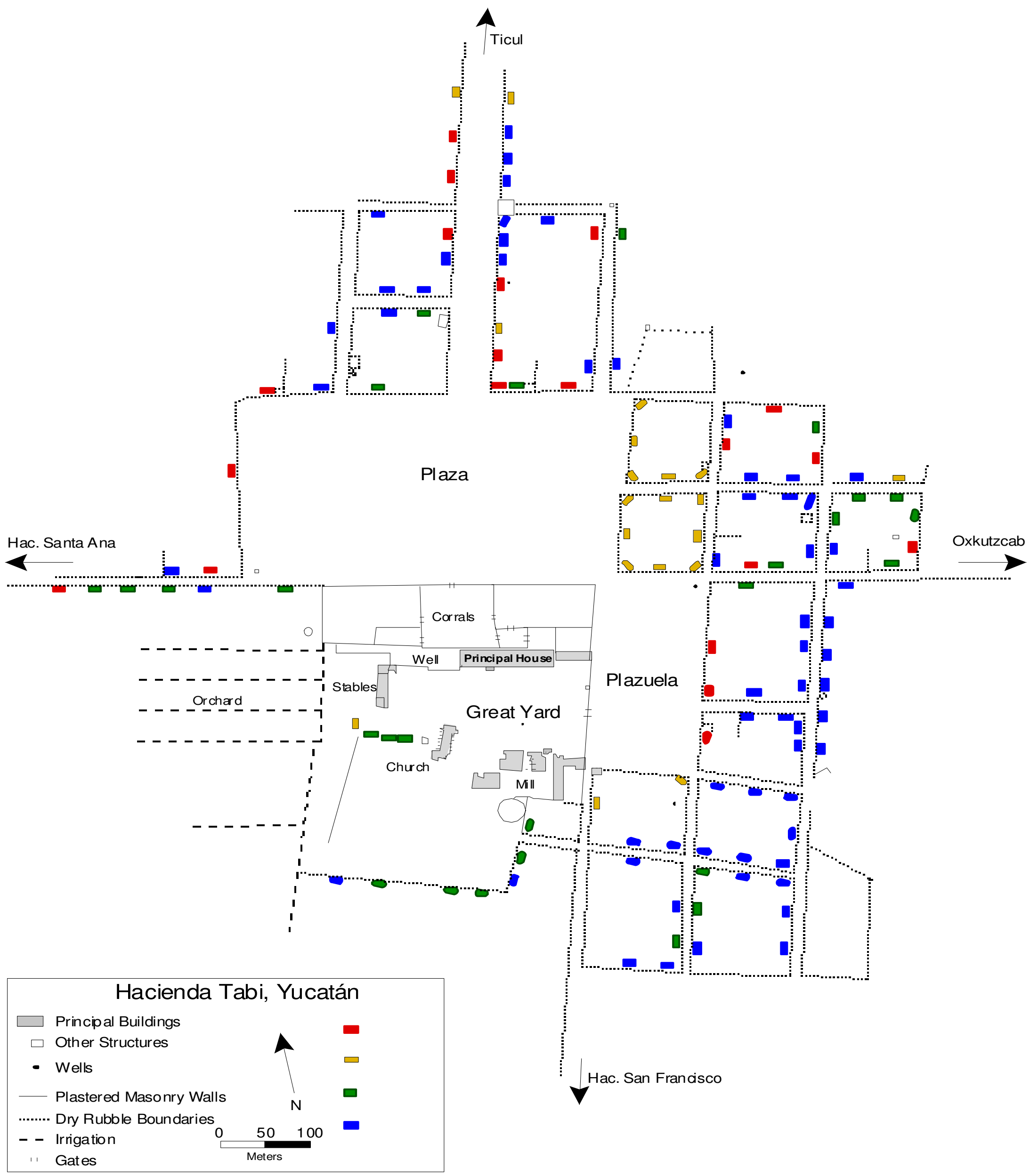

Figure 16. Site Plan for Hacienda Tabi.

The Principal Architectural Group

The principal architectural group covers an area of approximately 0.8 km^2. These principle hacienda structures include the *palacio* (principal house), church, stables, livestock corrals, *ingenio* (sugar mill and refinery), distillery, trapiche, primary wells, tienda (hacienda store), and various ancillary buildings located within the main hacienda walls (see Figure 7). The principal structures surround the *patio* or great yard of the hacienda. The great yard served as the primary stage for public performance on the hacienda, being the location where workers assembled for role call each work morning, where corporeal punishment was enacted, and as a gathering place before and after church services.

The Worker's Village

The worker's village is located outside the main walls to the north and east. The village is composed of 14 blocks lined by *albarradas* and laid out on a grid pattern (see Figure 1). There are 141 structures in the village, 134 of which conform to the shape and dimensions of typical Yucatecan dwellings (Figure 17). The majority of structures in the village are apsidal in shape, measuring roughly 8.5 m long x 4.5 m wide at their maximum points. The earliest examples of dwellings of this type date to at least 1,700 years B.P. at Prehispanic archaeological sites on the peninsula (Kurjack 1974) and are still commonly found in communities across present day Yucatan.

Despite the similarities in shape and size, the dwellings at the hacienda differ in the energy expenditure associated with each of the four types. Some of the structures were constructed of completely perishable materials, while others were made of stone and mortar. All dwellings would have featured perishable thatch roofs. Four types of dwellings were ultimately identified at the hacienda, including:

> Type A: Rubble Masonry. This type has full walls (2 m) constructed of limestone and mortar built-up around a framework of vertical poles. When these walls are plastered, rubble masonry houses are known as *mamposteria*. From the front of these dwellings two masonry "wings" jut from the front of the house, connecting to the *albarradas* that delineate the streets of the village (Figure 18).

> Type B: Front Masonry Façade. These dwellings appear to be the same as rubble masonry structures when viewed from the street side, with the attendant masonry "wings". However, only the front façade of these dwellings are *mamposteria*. The remainder of the structure is made of perishable materials, with upright poles set into the ground and tied together with vine. Stones are placed at the base of these perishable walls, which remain as a characteristic ring of stones (Figure 19).

> Type C: Masonry Base and Doorjambs. In these dwellings the lower base of the walls and the front and rear doorjambs are of *mamposteria*. The remainder of the

structure was built of perishable materials. Unlike the first two types, these dwellings are not found with the masonry wings fronting the street (Figure 20).

Type D: Stone Ring. These dwellings are completely made of perishable materials except for the ring of stones that abutted the base of the walls (Figure 21).

The remaining seven structures in the worker's village are for the most part rectangular in shape and their particular functions are currently unknown.

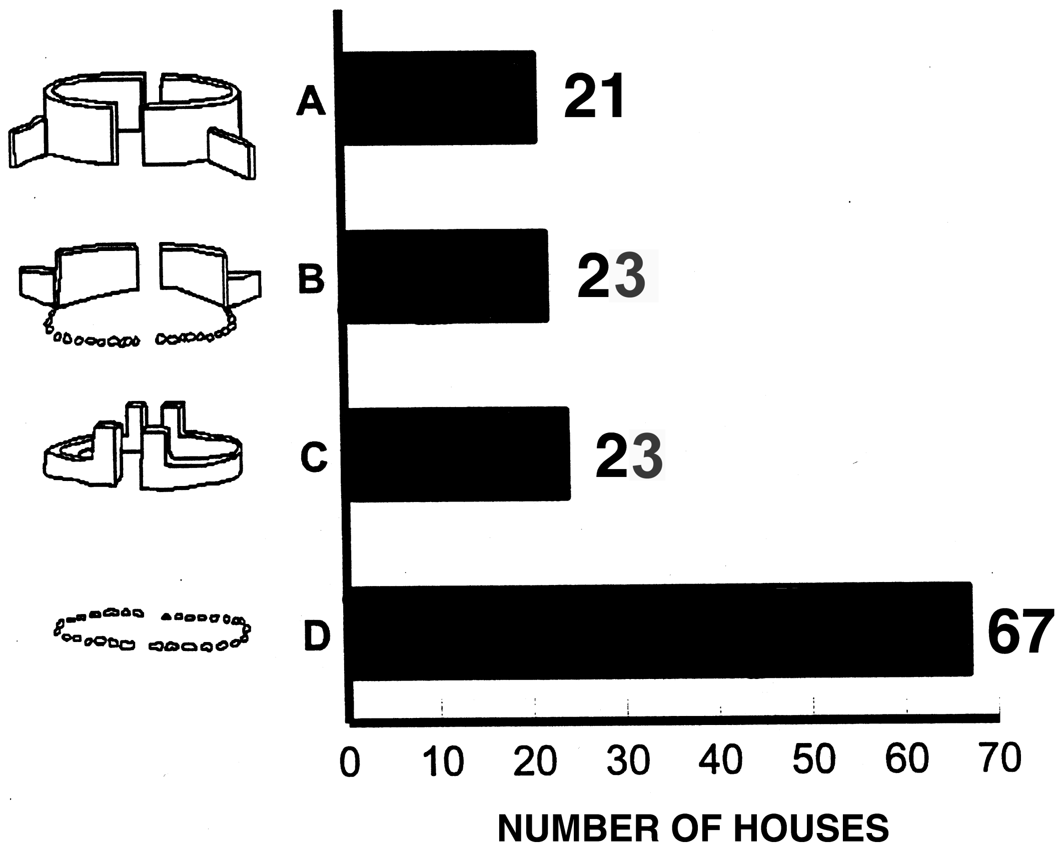

Figure 17. Frequency of House Types at Hacienda Tabi.

A

B

Figure 18. A) Type A Dwelling, Hacienda Tabi. B) Modern Analog, Yotholin, Yucatan.

A

B

Figure 19. A) Type B Dwelling, Hacienda Tabi. B) 1940s Analog, Location Unknown.

A

B

Figure 20. A) Type C Dwelling, Hacienda Tabi. B) Modern Analog, Yotholin,Yucatan.

A

B

Figure 21. A) Type D Dwelling, Hacienda Tabi. B) Modern Analog, Yotholin, Yucatan

Comparison of Dwelling Type Labor Costs at Hacienda Tabi

Increases in the quality, size, and permanency of dwellings indicate increased energy costs. Social scientists commonly use energetics as an approach to quantifying the amount of energy expended in activities associated with the production, distribution, and consumption of materials within a cultural system (Abrams 1994:37). The value of the energetic approach is the ability to quantitatively define variables of scale and quality, categories typically quantified by archeologists with subjective terms like "massive" (Abrams 1994:38). Accordingly, the greater the scale and quality of a building the higher the quantitative value associated with the energy expenditure. This agrees with the qualitative suppositions of archaeologists and ethnographers who have cited an association between status and architecture.

Aspects of stratification and status, in terms of power and social control, provide access to non-household forms of labor and "energy" that can then be spent on the built environment (e.g. on public architecture or dwellings for wealthy households). The higher status and power needed by individuals to produce greater allocations of energy for architectural works reflects a hierarchical structuring of social status. This increased access is but one use of the "human wealth" that may constitute an individual's or household's physical wealth (Smith 1987:299).

In order to more completely understand the relationship between he various energy expenditures associated with each dwelling type, labor costs were calculated through the use of energetic modeling. Energetics is a method of analysis through which human behavior is translated into measurable units of energy more amenable to scientific analysis (Abrams 1996:37). Energetic analysis translates the labor, time, and money exerted in completing a job into the currency of energy. In the case of the hacienda, I converted behaviors associated with the construction of dwellings into labor costs associated with each specific task. I generated labor costs for Hacienda Tabi by adapting and supplementing formulas originally outlined by Abrams (1996) for the analysis of structures at Copan, Honduras. The labor cost estimates produced here are based on the dimensions of the four dwellings excavated in 1997 and 1999 (House 1 (Type A), House 2 (Type D), House 3 (Type B), and House 4 (Type C)). Any inadequacies in the formulas used to calculate these costs - such as estimating transport distances of materials - will not affect the strength of the analysis, as I am primarily interested in relative relationships between the particular dwelling types, rather than definitive values. Since the same constants are used for all dwellings types, any imprecision is carried through the calculation of each type and the overall relationships between types are preserved.

In order to figure the cubic mass of the masonry walls of a dwelling, I calculated the volume of two ellipses – one using measurements to the outside surface of the wall and the other to the inside surface of the wall. By subtracting the smaller volume from the larger volume, I was left with the mass of the existing rubble wall. In order to find the outer and inner surface areas of walls I calculated the circumference of the dwellings walls. These calculations supplied the linear length of the wall, which, when multiplied by the height of the wall, gave me a total surface area. For particular components of dwellings, such as the masonry walls attached to the front of Type A and B dwellings or the masonry front walls of Type B dwellings, I calculated costs using simple formulas for area and mass. The costs associated with these individual components were then added into the figures compiled for the rest of the dwelling.

A number of constants and suppositions were applied when calculating costs. In formulas where a quantification of time worked is necessary, I used a standard of 5 hours for strenuous activities such as quarrying, excavating, and transporting has been applied, while I assume an 8 hour work day is assumed for all less strenuous construction tasks (Abrams 1996:43; Erasmus 1965). I calculated all plastering based on a standard thickness of 2.5 cm per contemporary observations (Abrams 1996:51; Mahoney 1981:44). I based the costs associated with the manufacture of plaster on a formula that accounts for the cutting, transporting, and stacking of wood necessary for processing limestone, as well as the excavation, preparation, and transportation of the stone (Abrams 1996:49; Erasmus 1965:290). This formula accounts for the processes followed in the open-air method of lime burning, as recorded in a number of ethnographic accounts (Morris, Charlot, and Morris 1931; Roys 1934; Hyman 1970). The manufacture of plaster has been figured at 1 m^3 per 43.9 person-days (Abrams 1996:49).

The calculation of transport cost associated with both limestone cobbles and plaster also relied on the use of several constants. The transport formula is based on United Nations experiments (ECAFE 1957:22) later revised by Aaberg and Bonsignore (1975:46). Constants used in this formula include velocity loaded (V = 3 km traveled with load), velocity unloaded (V' = 5 km traveled unloaded), and number of hours worked per day (H = 5). A value for transport distance (L) is needed. Since there are no identified quarry sites at Hacienda Tabi and because limestone is generally available, I used a constant of 1 km in all calculations.

Finally, a value expressing quantity per load (Q) is required. Following Abrams (1996:48), I calculated quantity per load for both limestone and plaster based on an average load of 22 kg. Using the respective weights per m^3 of these materials the average mass of each load is constant. For instance, an m^3 of broken limestone weighs 1,554 kg (web citation), therefore a 22 kg load represents 0.01 m^3 of limestone (22 kg/1,554 kg = 0.1 m^3). The cubic mass per load of plaster is the same at 0.01 m^3 per 22 kg load (Abrams 1996:48). It is likely that the use of this formula is exaggerating the labor cost associated with the transport of materials on the hacienda. If larger loads were being carried in a more efficient manner, such as by wagon, the transport cost for these materials would be decreased. However, this inflation will be carried across my calculations and the relationships between dwelling type costs will be preserved.

Labor costs for each dwelling type at the hacienda were calculated for each of the major building stages, including procurement of raw materials, transport, manufacturing, and construction processes, as outlined above. The labor cost for each stage was calculated in numbers of person-days, with the sum of all stages representing the total energy expenditure associated with each dwelling type. The estimates contained in this study do not include labor costs associated with the roofing of Type A and Type C dwellings, as I currently do not have access to a formula for calculating these costs. The labor cost of roofs associated with Type B and D dwellings are contained in the formula used to calculate the wattle and daub component of these types. However, any error introduced with the included calculation of roofing for these dwellings is partly negated by an inability to account for the ring of stones placed next to the perishable walls. I could not calculate the labor cost associated with the placement of these stones around the wattle and daub portions of these dwellings, as I do not have figures relating to their volume.

The first step in the building process involves the number of person-days spent gathering the necessary raw materials for construction. As previously outlined, the cost of gathering limestone is included in the transport calculation for plaster. The cost associated with the procurement of the perishable materials used in wattle and daub dwellings is built into the formula used to estimate costs associated with the building of these types of dwellings. The few perishable materials associated with the construction of masonry components, i.e. wooden posts, are not included in these calculations. Therefore, the primary calculation related to the procurement of raw materials used at the hacienda is related to the gathering of limestone rubble.

The procurement of limestone rubble is based on Abrams' observations of the collection of naturally occurring cobbles at Copan (1996:46). It may be the case that some limestone rubble used at Hacienda Tabi was manufactured through quarrying, which would increase the labor costs associated with procurement of stone. For the sake of this study we will use figures associated with the gathering of stone. Abrams' observations demonstrated that 7,200 kg of stone could be collected over the course of an eight-hour workday. Using the known weight of a cubic meter of broken limestone (1,554 kg), I was able to calculate the cost of procurement by multiplying the volume of rubble for a particular dwelling by 1,554 kg and then dividing by 7,200 kg (Abrams 1996:47).

Estimates of the labor costs associated with the actual construction of dwellings included estimates of the person-days necessary for building masonry walls, plastering of exterior and interior surfaces, and the assembly of wattle and daub structures. Based on 21 separate observations, Abrams estimates that on average 0.8 m^3 of masonry wall can be laid per person-day (1996:51). In order to find the number of person-days necessary to build a particular wall, it is simply a matter of dividing the total wall volume by 0.8 m^3. The labor cost of plastering is also based on modern observations, which estimate that an average surface area of 80 m^2 can be plastered per eight-hour day (Mahoney 1981:44). The number of person-days spent plastering is calculated by dividing the total plastered surface area of the dwelling by 10 (where 10 = 80 m^2/8 hours). The labor costs incurred in the building of wattle and daub structures are calculated using a regression formula that accounts for the procurement, transport, and construction of the walls and roof (person-days = -13.838 + 1.832(area)). The formula is a revised version (Gonlin 1993) of a formula based on data obtained through a survey of fourteen houses in the Copan Valley (Abrams 1984: Appendix D).

Using the above stated methods and formulas, I calculated the total numbers of person-days associated with the building of each of the four representative dwelling types on the hacienda. Again, these calculations have been based on measurements taken from the four dwellings excavated in 1997 and 1999, and therefore, also relate specifically to the quantitative differences between these dwellings. The results of these analyses provide scientific backing to the previously assumed relationships between dwelling type and energy expenditure. Table 4 shows the estimated person-days necessary to complete the construction each of the four dwelling types. As can be seen in this table, the labor cost associated with the construction of a Type A dwelling is significantly greater than the labor costs associated with the other types. The labor cost of a Type A dwelling is nearly four times greater than that of Type B dwelling, nearly six times greater than that of a Type C dwelling, and is 12.5 times greater than the labor cost of a completely perishable Type D dwelling. The discrepancy between the most labor-intensive Type A dwelling and the other three types is magnified when extra features such as the rubble subflooring found in House 3 are added into the equation. The presence of this floor adds an additional 136.5 person-days and 25% to the labor cost of this dwelling. It is apparent that Type A dwellings are in a class of their own relative to the other three dwelling types found at Hacienda Tabi.

In comparison with Type A dwellings, Type B, C, and D dwellings are more closely grouped together. Type D dwellings are markedly inferior to all types in terms of labor cost, quality, and permanency and serve as the greatest contrast to Type A dwellings. Type B and Type C dwellings are more problematic. These two types are relatively close in terms of labor cost, especially when the cost associated with the attached masonry walls (36.57 person-days) is subtracted from the Type B total. The similarity in these numbers reveals a kind of trade off made in the decision to build

Table 4. Dwelling Type Labor Costs.

Dwelling Type	**Labor Cost in Person-days**	**Ratio of Type A Labor Cost to those of other Dwellings**
Type A	539.36	------
Type B	136.92	3.9:1
Type C	93.27	5.8:1
Type D	43.11	12.5:1

either of these types. In terms of permanence, Type C dwellings are superior to Type B dwellings having low masonry, that contacts the ground rather than perishable wattle and daub walls. Yet in terms of appearance and cost, Type C dwellings are inferior to Type B dwellings. This is because Type B dwellings incorporate high front masonry walls and have attached masonry "wings," both of which emulate the more costly Type A dwellings. Therefore, the decision to build one type over the other involves a consumer choice in which appearance is weighed against quality. Of course, on the hacienda this consumer choice was not made by the households destined to occupy the dwelling, but rather by the *hacendado*.

The Hacienda Settlement Pattern

Historical archaeology is the archaeological investigation of the global connections of the modern world, the most prominent processes of which have been colonial expansion and capitalism. A major element of these processes has been the expansion of institutionalized inequality around the globe (Delle 1998:8). Material culture, especially space -in the form of landscape and built environment– has played a major role in this inequality. Paynter (1981, 1982, 1983, 1985) has argued that space is a vector of social inequality that actively creates capitalist hierarchies on a variety of scales, ranging from the greater region down to specific centers of production like Hacienda Tabi.

Upton (1986, 1988) has argued that the most salient expression of power on Chesapeake tobacco plantations involves the control of spatial relationships across landscapes. In Chesapeake, as in other areas, these relationships are often signified through the manipulation of natural landscapes. For instance, elevation was often used as means of literally and symbolically dominating the surrounding landscape. In Yucatan, where topographic relief is the exception, administrative and economic power was imparted both physically, through the separation of the principle structures of the hacienda, and symbolically, through expensive and elaborate expressions of architecture. The *hacendado* used space as a media for communicating and negotiating social identity by controlling the spatial organization of the hacienda landscape. The *hacendado* expressed his power through the construction of the built environment in deciding not only the placement and cost of structures, but also through the process of determining entitlement to the different types of structures.

The existing settlement pattern at Hacienda Tabi provides clues as to the past manipulation of social space. The conspicuous placement of higher cost dwellings fronting the major roadways and public spaces serves as a prime example of this manipulation. This is especially true of the northern road to Ticul. The importance of this road as a link to the parish seat of Ticul and the capitol city of Merida is evidenced by the width of the road being more than three times wider (50 m) than the other major roads that lead into the hacienda (15 m). Of the 29 dwellings that front the main road or plaza, 21 (72.4%) are Type A, B, or C dwellings. Moreover, 18 of the 21 dwellings are Type A dwellings and their look-alike Type B counterparts. Nearly one third (21/67 = 31.3%) of all Type A, B, and C dwellings are associated with the Ticul road and the main plaza. Furthermore, more than half (37/67 = 55.2%) of all Type A, B, and C dwellings front one of the four major roads leading into the hacienda or plaza areas. In fact the numbers show that the proportions of each dwelling type associated with a main road or plaza area increase dramatically as one moves up from Type D dwellings to Type A dwellings (Table 5). When looking specifically at dwellings that front the main plaza (i.e. the core of the hacienda), 13 of the 14 dwellings (92.9%) are Type A, B, or C dwellings and 10 of the 14 (71.4%) are Type A or B dwellings. This pattern is even more pronounced around the plazuela where all 7 dwellings that front the space are Type A (n=3) or Type B (n=4) dwellings.

Table 5. Ratios and Percentages of Dwelling Types on Plazas and Major Roads.

Dwelling Type	**Ratio of Dwellings on Major Road/Plaza to Total Number of Dwelling Type**	**Percentage on Major Road/Plaza**
Type A	15/21	71.4%
Type B	13/23	56.5%
Type C	8/23	34.8%
Type D	12/64	18.8%

Running counter to this hypothesis are the seven Type D dwellings, which also front the road to Ticul. The placement of these less impressive structures directly on the road seemingly detracts from any argument concerning visual statement as a motivation. However, the negative effect of the Type D dwellings is somewhat mitigated by their relative position further out from the core of the hacienda. Just as in any urban area of the period, one would necessarily pass through lesser neighborhoods on the way to the core area surrounding the plaza.

Evidence of spatial manipulation through the controlled placement of households is found in the high profile areas next to the southern hacienda wall and within the hacienda walls near the church and stables. The dwellings in these areas are predominately Type B and C dwellings (nine out of 11 structures). Of the dwellings next to the southern entrance to the mill complex five of the seven structures are Type C dwellings; the other two are Type D dwellings. The dwellings next to the church include four Type C dwellings and one Type B dwelling. The fact that none of these dwellings are affiliated with a *solar* suggests that these households were not associated with the same types of activities as those of the bulk of the hacienda population. On some Yucatecan haciendas *asalariados* (salaried workers) were prohibited from growing any foodstuffs (Betancourt Perez 1953:30). This prohibition was apparently meant to guarantee that their time would be spent performing their prescribed duties on the hacienda, rather then having to dedicate time to their subsistence needs. It may be that the workers who lived in these dwellings functioned in supervisory roles, were foremen, or artisans who merited dwellings in these privileged areas.

The southern portion of the worker's village –the area south of the road to Oxkutzcab- is distinguished by a predominance of Type D and C dwellings. More than half of the Type D dwellings are located in this part of the village (35/64=54.7%) as well as nearly forty percent of Type C dwellings (9/23=39.1%). In contrast, only three of 21 Type A dwellings (14.3%) and two of 23 Type B dwellings (8.7%) are found in this part of the worker's village and all these dwellings are located around the *plazuela*. This concentration of lower quality dwellings seems to indicate some sort of segregation within the village, possibly along occupation/status lines.

Analysis of the Hacienda Tabi settlement plan demonstrates that while the built environment may not have been strictly regimented, there certainly was intent behind its layout. This intent is especially apparent when contrasted with the dispersed, free form appearance that traditional Maya villages demonstrate.

Excavation Methodology, Sampling, and Results

In 1999, I carried out the second field season of excavations in the worker's village. These excavations were designed to complement and expand upon the excavations conducted in 1997 by Allan Meyers (Meyers 1998). Toward this end, Block 4 was shovel tested and two house sites were excavated (House 3 and House 4). Block 4 was selected for three reasons. First, it was chosen for its location next to the main plaza. I wanted to test the possibility that the higher visibility of this block might engender different behavioral patterns than those of Block 7. Second, would the presence of exclusively Type B dwellings in Block 4 create differential behavioral patterns than the Type D dominated Block 7? Third, does the lack of surface remains in the northern and eastern portions of the block indicate an absence of subsurface remains? Answering this question would tell us if there was a fifth, more ephemeral house type that we were not recording, or alternatively, if earlier phases of the settlement history of the village were being masked by later settlement pattern changes.

The 1999 dwelling excavations were designed to build on the first season of archaeology at Hacienda Tabi. In his 1997 excavations Allan Meyers (1998) excavated one Type A dwelling and one Type D dwelling. I systematically tested the remaining two house types – Type B and Type C - to complete a comparative database of all house types found at the hacienda. With a complete database at hand, issues concerning architectural/artifactual variation and socio-economic status could be explored. I selected House 3 (Type B) because of its location within Block 4, its prominent corner location, and its state of good preservation. House 4 (Type C) is located in Block 9, almost directly across from the Type A dwelling (House 1) excavated in 1997. I selected House 4 because there were no Type C dwellings in Block 4 and because it was a well-preserved example in close proximity to the earlier excavations.

Testing of Block 4

Block 4 is located on the northeast side of the village plaza, approximately 150 meters east of the main road leading to Ticul. The block is a slightly irregular rectangle measuring approximately 100 m on the east and west sides, 80 m on the south side, and 75 m on the north side (Figure 22). The block contains the remains of five Type B dwellings, all located adjacent to the block perimeter. The three block corners occupied by dwellings - the northwest, southwest, and southeast corners - are clipped due to the angled alignment of the dwellings. The central portions of the block, as well as the northern and eastern portions, are devoid of any surface remains.

Systematic shovel testing was done at 5 m intervals over Block 4 (Figure 23). To accomplish this a 5 m grid was superimposed over the block, aligned on an east/west baseline tied to an arbitrary datum established during the 1996 survey. North south transects were then shot off this baseline, each being marked at 5 m intervals. The resulting grid was composed of east west transects labeled X1 thru X17 and north south transects labeled Y0 thru Y19. Each shovel test unit is identified by its unique X, Y

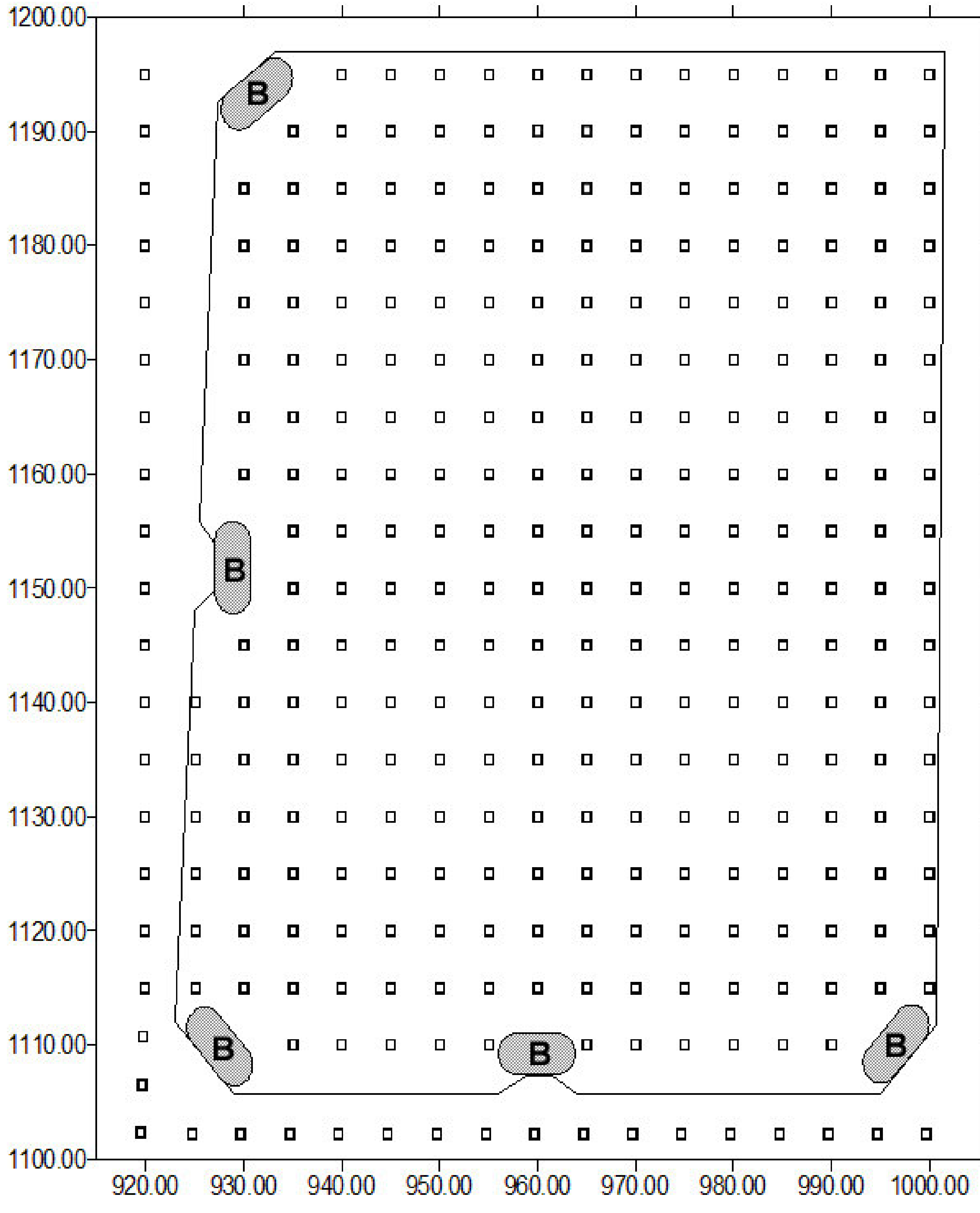

Figure 22. Block 4 Test Locations, with Dwelling Types Indicated.

A

B

Figure 23. A) Block 4 Shovel Test Line. B) Excavating a Shovel Test Unit in Block 4.

coordinate, e.g. X4 Y2. Testing was conducted in the street areas adjacent to Block 4 on the west and south in order to evaluate refuse disposal behavior associated with these areas (transects X1 and Y0). Of a possible 340 shovel test units (Y transects (n=20) x X transects (n=17) = 340) a total of 304 units were excavated. The remaining units not excavated either fell within dwellings/excavation units (n=8), within the western wall (transect X 2, n=11), or were within the southern wall (transect Y1, n=17).

Each point on the 5 m grid served as the northeastern corner of a 30 cm x 30 cm shovel test unit and each unit was excavated to a minimum depth of 40 cm. The units proved to be culturally sterile by this depth. All excavated soil was screened through 6.4 mm (0.25 inch) wire mesh and recovered materials were collected, bagged, and labeled with the appropriate provenance information. Artifacts were subsequently cleaned, sorted, counted, weighed, and then analyzed according to the requirements particular to each class of artifact.

Block 4 Artifact Distribution and Density

A total of 2,516 artifacts were recovered from the shovel test units excavated in Block 4. The artifacts fall into eight major artifact classes (Table 6). Coarse earthenwares are by far the most numerous artifacts recovered (n = 2,258), and accounting for 89.7% of the artifacts recovered. These sherds represent the locally manufactured indigenous pottery, which was still being produced in vessel forms found in prehispanic Yucatan. The next highest categories recovered are metal (n = 67) and

Table 6. Artifact Totals from Block 4.

Artifact Class	n	% Total	Wt. (g)	% Total
Coarse Earthenware	2,258	89.75	10,627.2	76.66
Refined Earthenware	9	0.36	30.05	0.22
Glass	61	2.42	368.32	2.65
Metal	67	2.66	395.42	2.85
Ground Stone	2	0.08	400.00	2.89
Sim Tun (burnt stone)	51	2.03	1,495.65	10.79
Faunal Remains	34	1.35	171.28	1.24
Other	34	1.35	375.07	2.70
Totals	2,516	100.00	13,862.99	100.00

glass (n = 67), accounting for only 2.66% and 2.42% of the total assemblage respectively. The glass shards and nails recovered were diagnostic of the period ranging from the 1870s to the 1910s. I will provide a more detailed discussion of individual artifact classes from all Block 4 excavations in the Artifacts section in Chapter IX.

The fourth largest artifact category is *sim tun* (n = 51, 2.03%), the burnt limestone left from the firing of earth ovens called *pibs* in Mayan (Diccionario Maya 1995:651, 729). The archaeological signature of a *pib* is very distinctive and relatively easy to identify, being composed of *sim tun* in a matrix of charcoal. *Pibs* are primarily associated with festive or ritual events, although there are exceptions. Redfield cites a number of ceremonies in Chan Kom that involved the use of earth ovens. In particular Redfield recounts offerings of bread baked in earth ovens being made to the *Balams* and to commemorate anniversaries of the dead, cooking venison in earth ovens as a prelude to the *cha chaak* or rain ceremony, and roasting corn in the *hol-che* or first fruit ceremony (Redfield and Villa Rojas 1990:129,140,144,152). Today, these ovens are used to cook pork, chicken, turkey, venison, and breads.

The fifth and sixth largest artifact categories include equal numbers (n = 34) of faunal material and a category titled "Other," which is composed of daub, slate pieces, tile fragments, lithic debitage, and shell. Each of these categories accounts for 1.35% of the total assemblage. Finally, a total of 9 refined earthenware sherds and 2 ground stone objects were recovered, respectively accounting for a miniscule 0.36% and 0.08% of the shovel test assemblage.

As noted earlier, one of the primary motivations for selecting Block 4 for testing was its location next to the main plaza. This is a highly visible location next to one of the more important roadways into the hacienda. The *hacendado* and important visitors traveling from Merida would have entered the hacienda community from this direction and Block 4 would have been clearly visible. Did this prominence affect the behavior that took place in the block? Specifically, was there a greater amount of vigilance in maintaining the appearance of the block through the exclusive placement of Type B dwellings in the block and through proscriptions regarding refuse disposal?

The prominence of Type B houses in Block 4, as well as in Block 6, is very conspicuous. While not the most expensive dwelling type, Type B dwellings do emulate the appearance of Type A houses. Only upon closer inspection –from the side or rear of the house– does one discover that they are not of the same quality. Therefore, the sole placement of Type B dwellings in Block 4 may be a result of the prominence of the block and the desire of the *hacendado* to make a visual statement on the importance and prosperity of the hacienda. The exclusive presence of Type B dwellings on the block fits into the overall pattern of placing expensive dwellings next to important roadways and public spaces, as previously elaborated upon in the above section on settlement patterns.

The excavation results regarding refuse behavior on the block present somewhat contrasting patterns in terms of behavior related to the dumping of refuse. Archaeological testing allows us to comment on disposal patterns both within and outside the block. A total of 36 shovel test units were excavated in the streets on the west and south sides of Block 4. Ethnoarchaeological studies of Maya refuse disposal reveal that hard refuse is at times disposed of in the streets of present day Maya villages (Hayden and Cannon 1983:151-153). Streets serve as convenient alternatives to disposal within lots or at off-site dumps. Approximately one-fifth of the households surveyed by Hayden and Cannon (1983:146) disposed of refuse in the streets in front of their *solares.*

I designed the testing of the streets around Block 4 to evaluate possible prohibitions against such behavior in this high profile area within the worker's village. While not necessarily proving the presence of such proscriptions within the social organization of the village, it was hypothesized that these areas would be relatively artifact free, indicating the presumed restrictive social environment of the hacienda. This turned out to not be the case. Of the artifacts excavated in Block 4 shovel tests, 17.96% (n = 352) of the total count -16.64% of the total weight- were recovered in street units. These numbers show that dumping indeed occurred within the street. In fact this behavior is even more pronounced on the plaza-facing side of the block where 277 of the

352 artifacts were recovered. This behavior has implications for the types of control that were exerted specifically upon the workers in this block and generally within the village. It suggests that supervision on the hacienda was not so strict, at least in terms of refuse activity, that dumping activities seemingly counterintuitive to the well being and maintenance of the hacienda were not being strictly regulated.

Refusal disposal behavior within the block conforms to patterns recognized among present day Maya *solares*. Multiple ethnoarchaeological studies have presented closely corresponding models of *solar* organization and the refuse patterns associated with this organization. These models consist of a structural core that includes one or more dwellings, ancillary structures such as kitchens or animal pens, and one or more activity areas such as a patio or porch. This area is relatively clear of refuse, except for discrete areas of "provisional discard" where potentially reusable or hazardous items are temporarily stored for future use or disposal (Deal 1983:253, 1998:118; Hayden and Cannon 1983:130-133). These items may be stored in out of the way places within houses or next to houses, walls, hedges, etc. Surrounding this "clear area" is an intermediate area or "toft zone" in which casual refuse such as organic waste, bone, ash, and small inorganic remains are discarded (Hayden and Cannon 1983: 126; Killion 1992:124). Beyond the toft zone is the garden area where a mixture of cultivated and wild plant species and fruit trees are grown, serving a variety of food, condiment, ornamental, medicinal, fuel, and construction uses. Refuse may also be found in garden areas, although Hayden and Cannon (1983:148-149) report a correlation between gardening activities and relatively refuse free *solares*. In fact, gardening was the only activity that they were able to identify in association with clutter free compounds.

The Type B dwellings in Block 4 appear to conform to the types of refuse behavior described in the ethnoarchaeological literature. A distribution plot of the block shows concentrations of refuse in areas at the back or to the sides of the presumed houselot. There do appear to be defined patio/activity areas behind each house. These are not the pristine zones idealized in the models, but there is a noticeable difference in density of refuse between these areas and the areas that surround them (Figure 24).

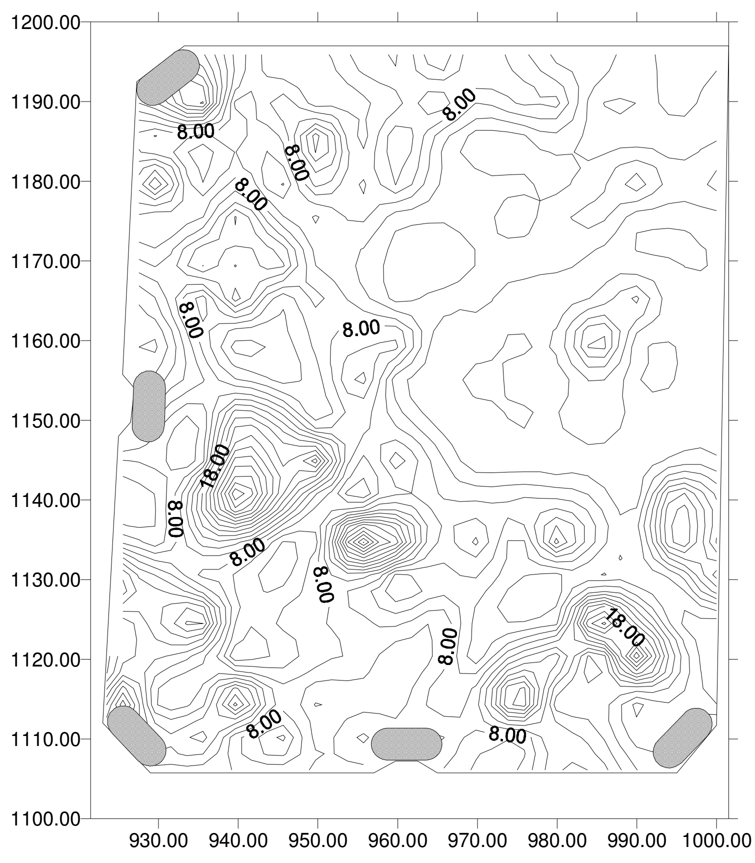

Figure 24. Block 4 Artifact Density.

The absence of surface structures in the northwest/western portion of the block reflects the lack of subsurface remains, suggesting that this area has been vacant throughout the settlement history of the village. Beyond a few isolated finds, there appears to have been little activity in this portion of the block (Figure 25). Three *pibs*

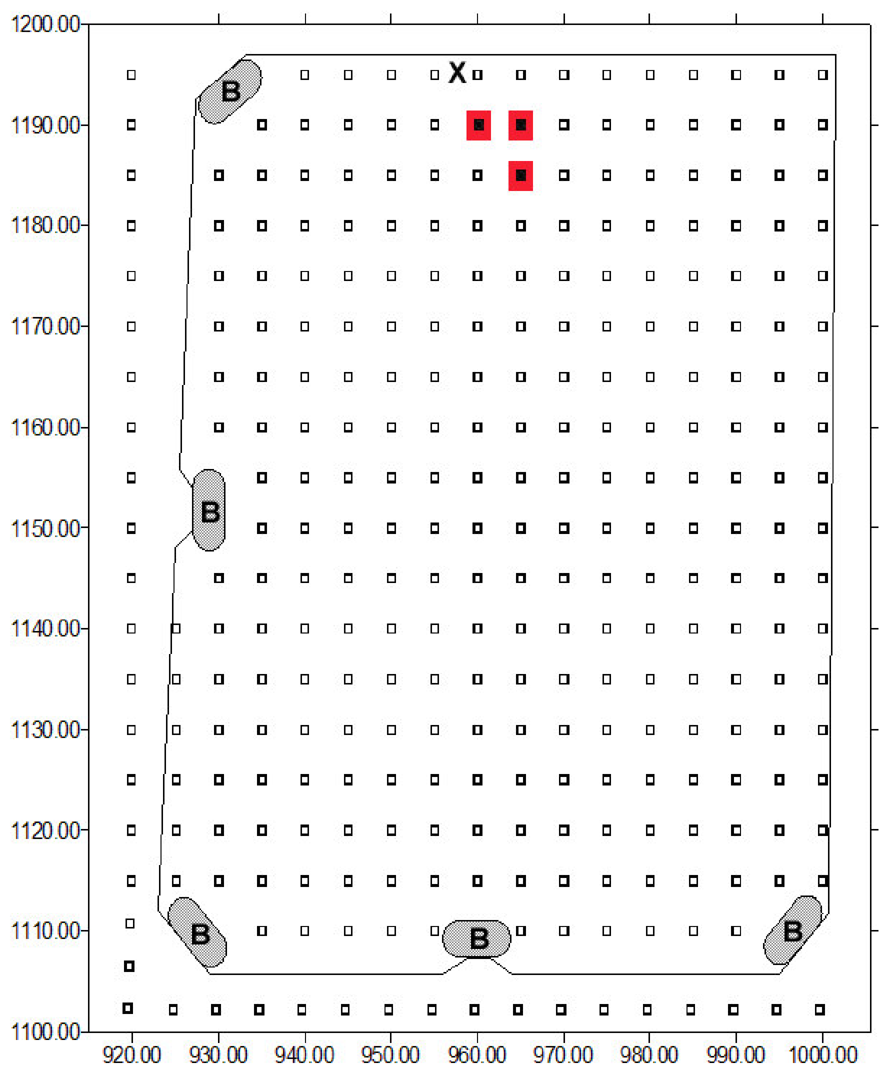

Figure 25. Block 4 with Pib Locations Marked in Red and Chicken House Feature Marked with an X (Features Not to Scale).

were discovered in shovel test units 5-10 m from the northern wall, in the middle of the block (units X9 Y18, X10 Y17, X10 Y18). A circular feature composed of seven stones roughly two meter in diameter was found next to the northern wall 7 m northwest of the western-most *pib*, approximately 20 m from the dwelling in the northwest corner. A local informant suggested this was a foundation for a *gallinera* or chicken house (a structure modeled after indigenous dwellings) and upon further research I found references for chicken houses of this style (Wauchope 1938:130-132; Pierrebourg 1999:343). Wauchope (1938:130-132) discusses two types of *gallineras*, one made entirely of perishable materials and a second type constructed with a dry rubble foundation. Wauchope's examples are similar in size, but are square in layout. Based on this information and the informant's opinion, it appears that this feature was a chicken house located at the rear of the *solar* associated the dwelling in the northwest corner. (A similar feature was found in association with House 4 and will be discussed in the section dealing with this dwelling.) It is likely that the pibs are also associated with the activities of these households.

Even though the northeast portion of the block appears to have been vacant, it was not used as a neighborhood dump. The rest of the residences in the block chose to dump their refuse at the back of their lots and the two households directly across the street or in the vicinity also chose not to dump refuse in this area. This lead me to speculation regarding the use of this space. Perhaps it was set aside for activities that would require vacant areas not encumbered by materials that might be a hindrance or potentially hazardous to the work. A lack of surface features, such as boundary walls and pens, suggests that large animals probably were not kept in this area. Smaller animals may have been kept in the area if perishable boundaries and structures were in place to hold them. It is more likely that the area was used for gardening activities. The lack of refuse in the area is consistent with findings from ethnoarchaeological studies, which suggest a correlation between refuse free areas and gardening activities (this correlation will be discussed more fully below). If the area was used for gardening, its apparent lack of association with a particular household is very unusual. It seems unlikely that such a large tract of land within the village would be left unused, but at this time no definitive use can be assigned to the area.

The overall distribution pattern of Block 4 conforms with ethnographic and ethnoarchaeological information concerning Maya refuse patterns and the organization of space. However, when compared with Block 7, some notable differences are found. Most striking is the large difference in artifact density between blocks. The number of artifacts recovered in Block 4 (n = 2,516) is approximately half that of Block 7 (n = 4815), even though the number of probable dwellings in Block 4 (5) and Block 7 (6) are similar. (Both blocks were tested at 5 m intervals and Block 7 had a similar number of test units (306)). The difference in density is especially evident when behaviors concerning individual artifact classes are examined. A total of 128 (128/2,516 = 5.08%) of glass and metal artifacts were recovered in Block 4, as opposed to 765 (765/4,815 = 15.8%) in Block 7. Especially noticeable are the differing amounts of refined earthenwares recovered from the two blocks. While the number of artifacts recovered in both blocks is small, there is conspicuous disparity between the totals. A total of 9 refined earthenware pieces were recovered in shovel test units in Block 4, as opposed to 74 in Block 7. The 9 pieces recovered in Block 4 represent 0.36% of the total assemblage, while those recovered in Block 7 represent 1.5% of the total assemblage, or more than four times the number from Block 4. A distribution map with counts shows that refined earthenwares are distributed throughout Block 7 and are not only associated with the Type A and Type C dwellings on the south side of the block (Figure 26). These

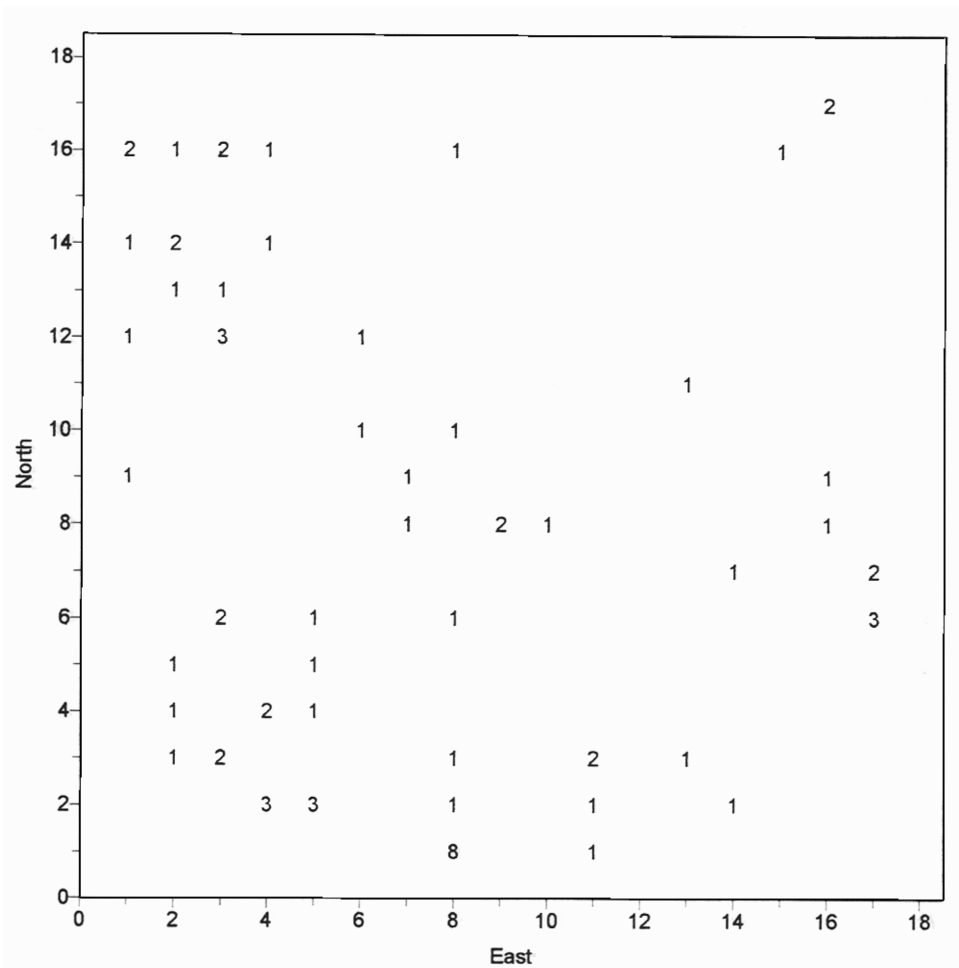

Figure 26. Block 7 Refined Earthenware Counts (After Meyers 1998).

results concerning refined earthenwares are unexpected as the majority of dwellings in Block 7 are Type D dwellings and therefore presumably of lower status than the all Type B dwellings located in Block 4.

The discrepancy in artifact patterning between the blocks also involves the presence of *sim tun*. The Block 4 shovel test assemblage is comprised of 51 pieces of *sim tun* (n = 51), the burnt limestone cobbles used as heating elements in *pibs* (earth ovens). As mentioned, the remains of three intact *pib* features were discovered in shovel test units in Block 4 and two more were recorded in two excavation units associated with House 3. The evidence for the use of this common cooking method by the inhabitants of Block 4 stands in stark contrast to the behavior of Block 7 residents, where no examples of *sim tun* were recorded.

The behavioral differences between Blocks 4 and 7 seem to extend to land use practices within the *solar*. A comparison of density plots for the blocks shows apparent differences in the way space was allocated in each block (Figure 27). The Block 4 plot suggests the outline of individual *solares*, each defined by a dwelling at the front and a patio/activity at center surrounded by refuse accumulations at the sides and rear of the lot. It appears that the architectural core, activity area, and intermediate zones of these lots are closely circumscribed, leaving little space for extensive gardening activities. As previously noted, ethnoarchaeological study suggests that garden areas are kept relatively refuse free and that there is a strong correlation between refuse free areas and gardening activity. In *solares* where space is not at a premium, e.g. where garden activity does not demand space, maintenance is often less rigorous, and therefore, refuse

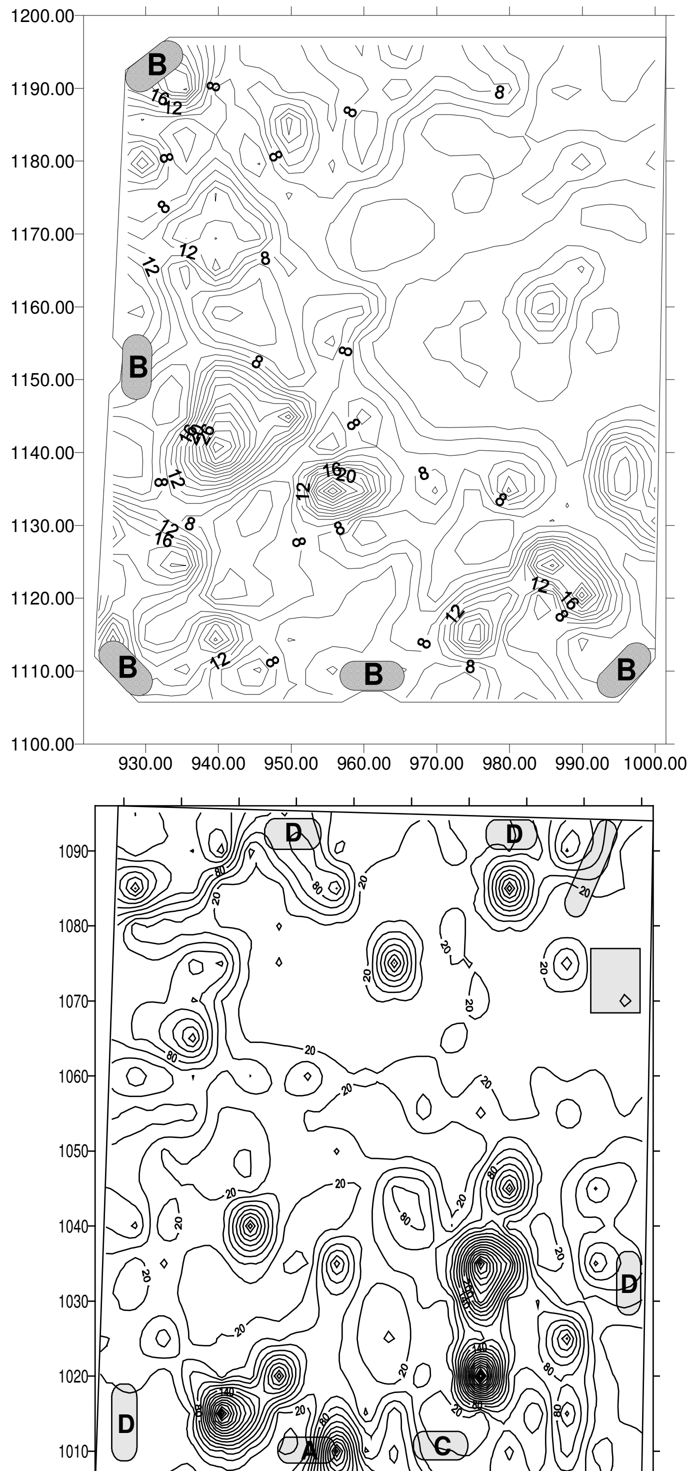

Figure 27. Comparison of the Artifact Densities for Block 4 (top) and Block 7 (bottom).

tends to be more equitably distributed throughout the *solar* (Smyth 1991:81). The dispersed nature of the refuse in Block 4, along with the constrained nature of the *solares*, implies that these households were not involved in extensive gardening activity.

The density plot for Block 7 reveals a different pattern. Refuse on the block is not widely dispersed, but rather confined to a series of more discrete dumping locations. According to present day informants, the disposal of refuse in concentrated dumping areas is related to the perceived effect inorganic refuse has on the wear and breakage of garden implements (Hayden and Cannon 1983:139-140). As a consequence of this localized dumping behavior, the block is characterized by large areas that are free of refuse. This suggests that the inhabitants of Block 7 may have been more active in supplementing their household economies through gardening activities than their counterparts in Block 4.

The inconsistency in the size and weight of the block assemblages may be explained by the differential organization of space within the two blocks. The size of the Block 7 assemblage is nearly twice as large as that of Block 4 by count, but the assemblages are virtually the same in terms of total weight (Block 7 = 13,124.47g; Block 4 = 13,862.99g). Based on these figures, the average weight of an artifact recovered from Block 4 (5.5g) is twice the weight of an artifact recovered in Block 7 (2.7g). This relationship is exemplified in the differences between the coarse earthenwares unearthed in both blocks. This artifact class represents the bulk of artifacts recovered in shovel test units at the hacienda (5,956/7,331 = 81.2%). On average the coarse earthenwares in Block 4 are 1.7 times the weight/size of the coarse earthenwares found in Block 7. We are left with the following situation: both Block 4 and Block 7 are producing comparable amounts of refuse, but the refuse recovered in Block 7 is on average half the weight/size of the refuse recovered in Block 4.

The disparity in artifact counts between blocks may be the result of cultural transformation processes. Repeated gardening activities, such as hoeing, digging, and increased traffic associated with planting, weeding, harvesting, etc. over time could act to break up artifacts. The shifting use of space used in gardening activities might subject more artifacts to breakage. These activities would also serve to disperse any materials deposited within the garden area over a larger area, resulting in lower densities of materials within these spaces. In conjunction with a tendency to concentrate refuse in specific dump locations, this behavior would keep densities relatively low in the garden area. Additional contributing factors could include isolated incidents of dropping or tossing refuse, children's play, as well as animal activity, all of which can lead to the displacement, scattering, and breakage of materials (Smyth 1991:77-79; Hayden and Cannon 1983:131-132; Hammond and Hammond 1981).

Above I have delineated two contradictory lines of evidence concerning the behavioral patterns associated with the households of Block 4 and Block 7. These contradictions involve the seeming incongruity of behavioral patterns reflected first in the organization of space within each block, and second, in the composition of the assemblages associated with each block. The organization of space within each block suggests different levels of socioeconomic status. As previously discussed, in Block 4 there is little evidence for gardening activity, which might suggest relatively greater economic freedom and greater access to goods produced outside the household. By contrast, Block 7 is characterized by a relatively greater amount of refuse-free space, suggesting more extensive gardening activity and a greater dependence on household production. By extension, greater dependency on production within the household represents less economic power outside the household and therefore less access to goods produced outside the household.

The depositional patterns associated with the blocks appear to run counter to the above suppositions based on the spatial organization of each block. There is a large discrepancy between the two blocks in terms of the types of artifacts, e.g. refined earthenwares, glass, and metal, commonly associated with households which have greater socio-economic power and access to more expensive manufactured goods. More than six times the amount of refined earthenware, glass, and metal artifacts were recovered from Block 7 than in Block 4 (839/137 = 6.12). The fact that the total shovel test assemblage weights are virtually the same for both blocks would seem to argue against any specialized removal of these materials from Block 4 to a location outside the block. However, the total assemblage weight for Block 4 may be skewed by the inclusion of *sim tun*.

The production of *sim tun* through the use of *pibs* creates specialized buried features, which for the most part will be left *in situ* after use. *Sim tun* accounts for the second highest percentage of the total artifact weight in Block 4 at 1,495.65 (10.79% total weight). The total assemblage weight of Block 4 minus *sim tun* is 12,367.34g. As previously noted, no pieces of *sim tun* were recorded in Block 7, and therefore, its

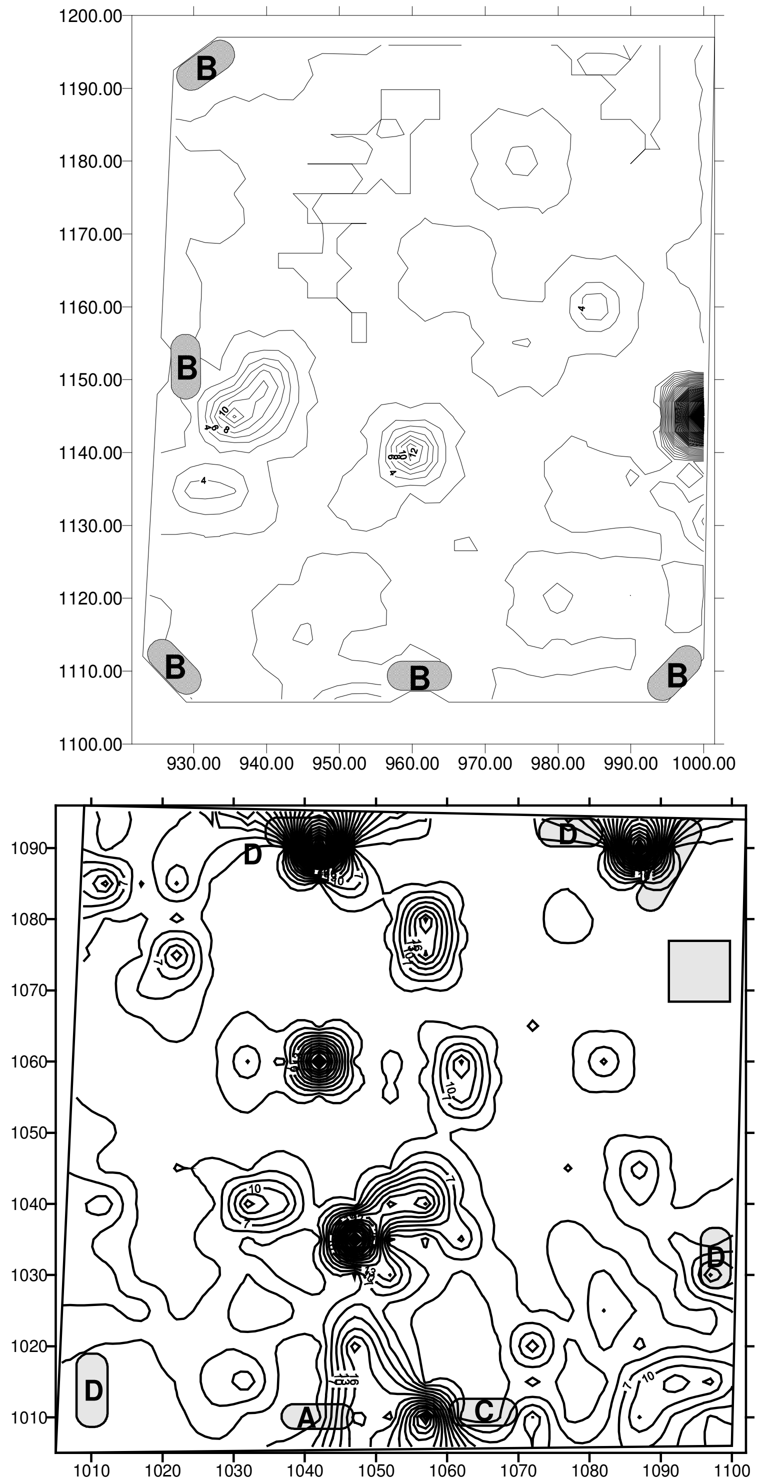

Figure 28. Glass Concentrations in Block 4 (top) and Block 7 (bottom).

presence in Block 4 significantly alters our understanding of the relationship of total assemblage weight between blocks. The total weight for metal and glass from Block 7 is 1,589.28g, a number very similar to the total weight of *sim tun* in Block 4. Furthermore, an examination of the distribution of glass and metal deposits between blocks offers some interesting parallels.

By weight, the glass found in Block 7 is concentrated in five discrete concentrations, three of which are associated with dwellings and two are found in the center of the block. Dividing the total assemblage for glass (964.52g) by 5 gives an average weight of 192.90 g per concentration. The glass recovered in Block 4 is confined to two concentrations, weighing a total of 368.32g or 184.16g per concentration (Figure 28). The 1,389.02g of metal artifacts recovered from Block 7 are concentrated in eight locations, which are associated with the six dwellings (Figure 29), providing an average weight of 231.50g per concentration. Figure 29 shows that in Block 4 395.42g of metal artifacts are concentrated at two locations producing an average concentration weight of 197.71g. The average weights for concentrations of glass and metal are very similar between blocks. Moreover, it appears that these concentrations can be linked with specific dwellings, and therefore, to behavior specific to particular dwellings. This suggests that the difference in total assemblage weights between blocks is not an issue related to differences in access to these materials, but rather one related to individual household refuse disposal behavior.

The glass and metal concentrations in Block 4 appear to be associated with the behavior of two households, which were provisionally storing or dumping these artifact

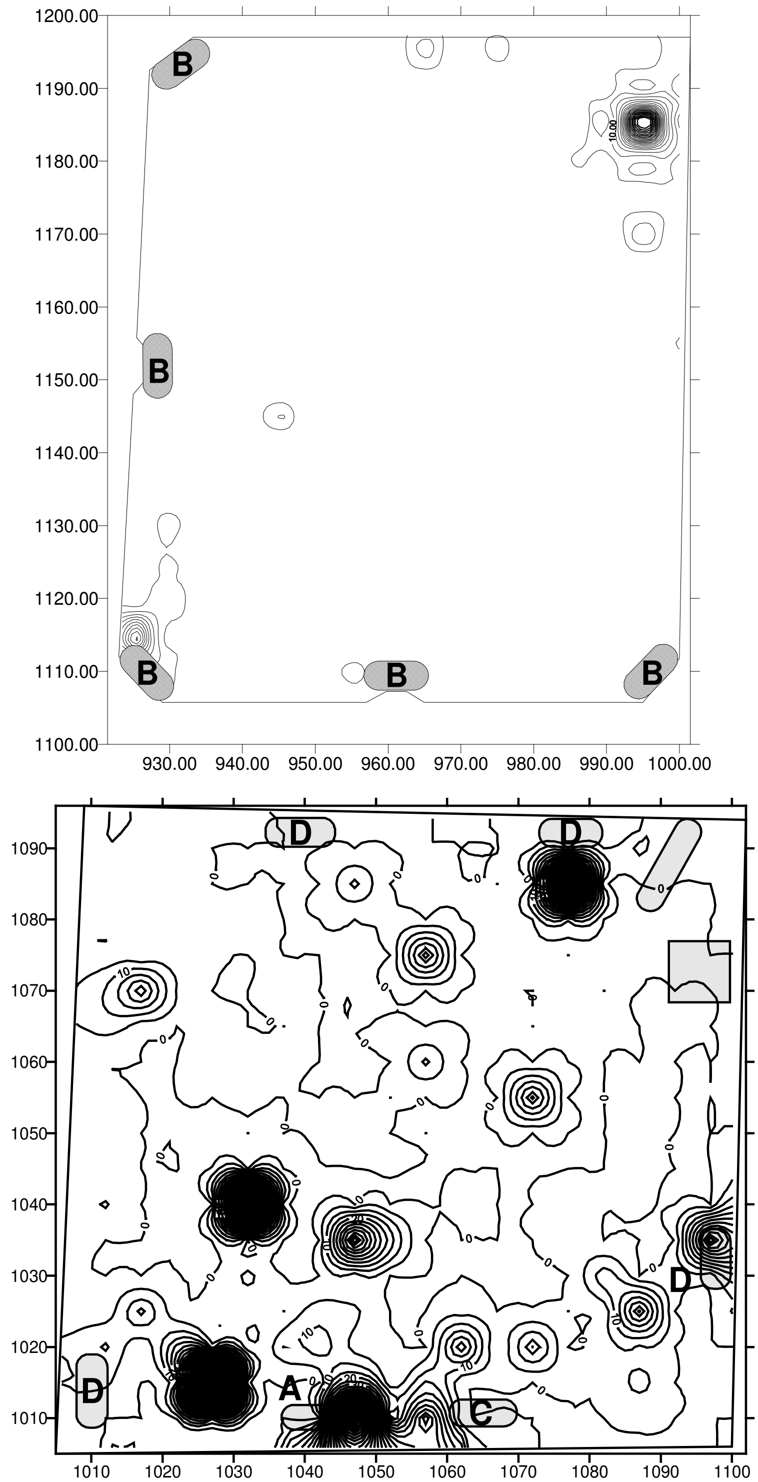

Figure 29. Concentrations of Metal in Block 4 (top) and Block 7 (bottom).

classes within the block. The other three households on the block may have been removing these types of potentially hazardous materials to locations outside the block. Ethnoarchaeological studies show that glass and metal refuse typically receive special attention through disposal outside the *solar* or within discrete dumping areas within the *solar* (Hayden and Cannon 1983:153-154; Smyth 1991:77). The burial of these materials is unlikely as this behavior is uncommon in the Puuc area and in the Maya region in general (Smyth 1991:75; Hayden and Cannon 1983:140-144). Many of the glass and metal concentrations found within Blocks 4 and 7 are directly associated with structures, suggesting that these may be items placed in areas of provisional discard. Items in these areas are considered to have reuse or hindrance potential and will eventually be recycled or when it becomes a nuisance will be removed to a final dumping location (Hayden and Cannon 1983: 139; Deal 1998:118-120).

We can test the above hypothesis regarding the differential behavior in Block 4 by calculating average numbers for glass and metal concentrations. The average weight of the glass concentrations for each block provides an average weight of 157.83 g per glass concentration (192.90 g + 122.77 g) / 2 = 157.83 g. The same procedure for metal provides an average weight of 237.75 g per concentration (277.80 g / 2 + 197.71 g / 2 = 237.75 g). The above averages are then multiplied by three -the number of dwellings hypothesized to be dumping these materials outside of the block– in order to estimate the hypothetical total weight of glass and metal artifacts for Block 4. This operation gives us 473.49 g and 713.25g respectively, which, when added to the 763.74g recovered from excavations, totals 1,950.48 g or an average of 390.09 g per each of the five households on the block. These numbers are very similar to those from Block 7, where the material excavated represents 2,353 g or an average of 392.25 g for each of the six households on the block. The preceding calculations are admittedly crude, but they do offer an explanation for the discrepancies found in the distribution of glass and metal between Blocks 4 and 7, as well as some insight into possible behavioral differences between households on the hacienda.

I feel that the following ethnoarchaeological example, as related by Deal (1998) for the Highland Maya community of Aguacatenango, represents the type of behavioral patterns found at Block 4. Regarding behavior associated with the differential treatment of artifact classes and gardening in this community, Deal writes that "while larger items and glass were often taken to neighborhood dumping areas, and cobbles and smaller refuse often ended up in the streets, potsherds were generally scattered about the compounds" and "this differential disposal of pottery seems to be associated with the lack of intensive gardening" (Deal 1998:121). All the elements Deal describes with the behavior at Aguacatenango also apply to Block 4, including the absence of glass (and metal from Block 4), refuse dumping within the street, and the proposed lack of gardening activity as represented in the widespread distribution of material within the *solares* of the block.

The Dwelling Excavations

As previously noted, the research design guiding the present work called for block wide testing, as well as testing on the scale of the individual household. In the preceding discussion block wide excavations provided the context necessary to study refuse behavior, the use of space, and settlement patterns on the hacienda. I designed the testing of individual dwellings to provide more specific data on the hypothesized household differences between the various dwelling types on the hacienda. A major component of my hypothesis was that socioeconomic differences did exist on the hacienda and that these differences would be expressed in the material culture associated with particular households. We have already seen that differences in the built environment and in the possible use of space did exist at Hacienda Tabi. The excavation of individual dwellings provides the means by which material culture differences between households can be investigated.

The 1997 excavations of a Type A dwelling (House 1) and a Type D dwelling (House 2) provided the first empirical evidence that differences between dwelling types were tangible and that they could be documented through archaeological excavation (Meyers 1998). The dwelling excavations undertaken in 1999 were meant to further our understanding of these differences by providing a complete sample of the dwelling types found at the hacienda. The excavation of a Type B dwelling (House 3) and a Type C dwelling (House 4) provided the data necessary to flesh-out the relationships between all the house types at the hacienda, greatly furthering our understanding of the social and economic factors affecting households of the period. Moreover, these excavations illuminate the daily lives of those who worked on the hacienda and places their lives within the larger historical trajectory of the hacienda system and of the peninsula as a whole. The knowledge gained through excavation helps detail the evolution of the Maya household from its prehispanic and colonial antecedents to the present day households existing within a global system.

Field Methods

Before excavations could begin, both house sites had to be cleared of vegetation and mapped. Mapping involved the establishment of datums at both sites tied into the site grid. The remains of each structure, including existing walls, wall fall, and loose rubble ringing stones were mapped in detail. To facilitate the systematic sampling of the dwellings, a 50 x 50-cm grid was placed over the interior of each dwelling. Every second 50 x 50 cm unit was excavated (including partial units), for a total of 72 units in the 30.14 m^2 of House 3 and 64 units in the 28.08 m^2 of House 4.

In addition to the interior excavation units, a series of five 1 x 1 m units were excavated outside each dwelling. These units served to: 1) compare the density of artifacts inside and outside of dwellings; 2) locate possible activity areas; and 3) test for differences in artifact classes and/or densities at different locations within the dimensions of the hypothesized *solar*. The placement of these units was based upon the author’s knowledge of the ethnographic, ethnoarchaeological, and ethnohistorical literature, and with input from local informants as to the most probable spatial organization of the House 3 and House 4 *solares*. Units were placed at locations with a high probability of being on and off the patio area, possible provisional discard areas next to dwellings and walls, where an ancillary kitchen structure might be located, and at possible discard locations in front of the dwellings.

Each of the 1 x 1 m units were divided into four 50 cm squares in order to provide for greater horizontal control. The excavation of all units, both inside dwellings and within 1 x 1 m units, proceeded in arbitrary 10cm levels down to culturally sterile subsoil or bedrock. Excavated soil was screened through ¼ inch (6.4 mm) wire screen, with all cultural material collected, bagged, and recorded with the appropriate provenience information. All materials were subsequently cleaned, sorted, and analyzed with methods appropriate to each class of artifact. The material collected during these excavations is currently curated at Hacienda Tabi.

Excavation of House 3 (Type B)

House 3 is a 8.3 m x 4.6 m single room, apsidal dwelling with front and rear entrances (Figure 30 and 31). The entrances are of different width, with the front entrance measuring 1.3 m wide and the rear entrance measuring 1.5 m wide. The dwelling is built on an angle at the junction of the western and southern walls of Block 4. The front walls on either side of the doorway are of masonry construction and measure two m high and 50 cm wide. Extending out at an angle of approximately 22º from the outer edge of these walls were two one m tall masonry walls or "wings" that connected with the *albarradas* bordering the block. Except for the tops of the house walls all masonry surfaces had been plastered. Only the wall and part of the wing on the western side of the dwelling remain standing. The eastern walls have fallen due to tree growth. Two rows of flat stones lined the area adjacent to the front entrance, with the back row forming the threshold of the doorway. The remainder of the structure was constructed of wattle and daub, the dimensions of which were outlined by the remaining limestone rubble that formerly abutted the base of these walls. The roof would have been constructed of perishable materials.

Figure 30. Architectural Remains of House 3.

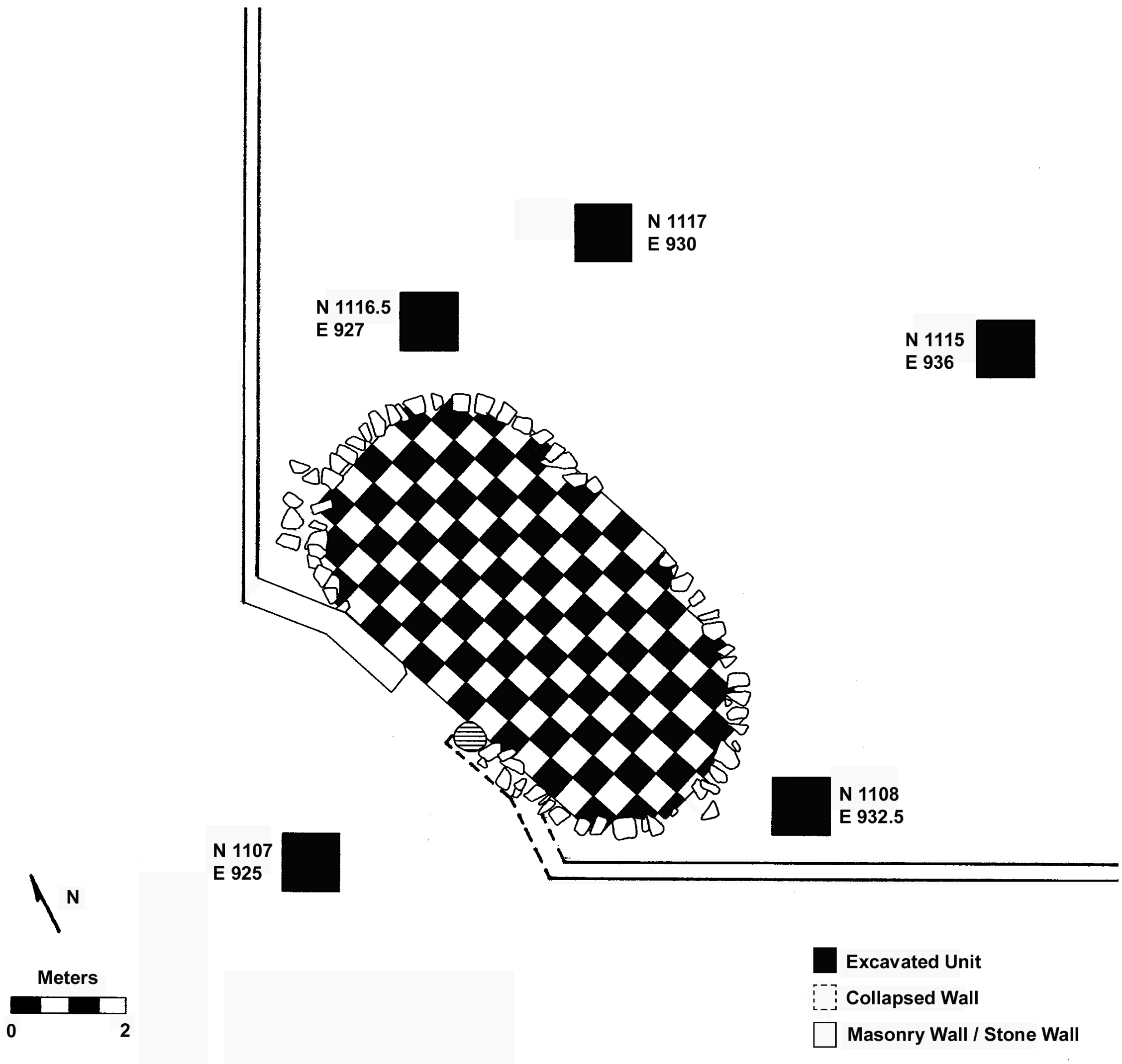

Figure 31. House 3 Plan Drawing.

The vegetation covering the house site was removed to expose the interior of the dwelling and the area surrounding the structure. Soil disturbance within the dwelling was evidenced by tunnels and spoil piles that were created by burrowing animals. Loose limestone rubble littered the central portion of the dwelling where the front masonry wall had collapsed. This rubble was removed, taking care not to destroy any features that might be located within the interior of the structure, such as the stone hearth typically found in Maya dwellings. No such surface features were identified during the removal of this rubble. The dwelling was then divided into 50 cm units and surface elevations were recorded with a theodolite. Excavations proceeded at the prescribed 10 cm intervals for the units comprising the systematic sample. All these units were excavated to a maximum depth of 60 cm, except in five units where subsurface obstructions, such as roots, caused the units to be terminated at a shallower depth.

The subsurface matrix of House 3 is composed of five strata: an upper stratum (Zone A), a *sascab* floor (Zone B), a disturbed stratum (Zone C), and two underlying strata (Zone D and Zone E). This profile is illustrated in the cross-section of House 3 (Figure 32). Zone A is an 8-14 cm deep, silt loam laying above the *sascab* floor surface. Zone B is the 5-6 cm thick sascab floor, which separates Zone A from Zone D. Zone C is a silt loam, ranging 5-34 cm below the ground surface, created by the mixture of Zone A and Zone D through bioturbation. Zone D is a silt loam, 15-45 cm below the ground surface, resting directly beneath the *sascab* floor in the undisturbed portions of the dwelling. Zone E consists of a loamy clay, ranging from 28 cm below the ground

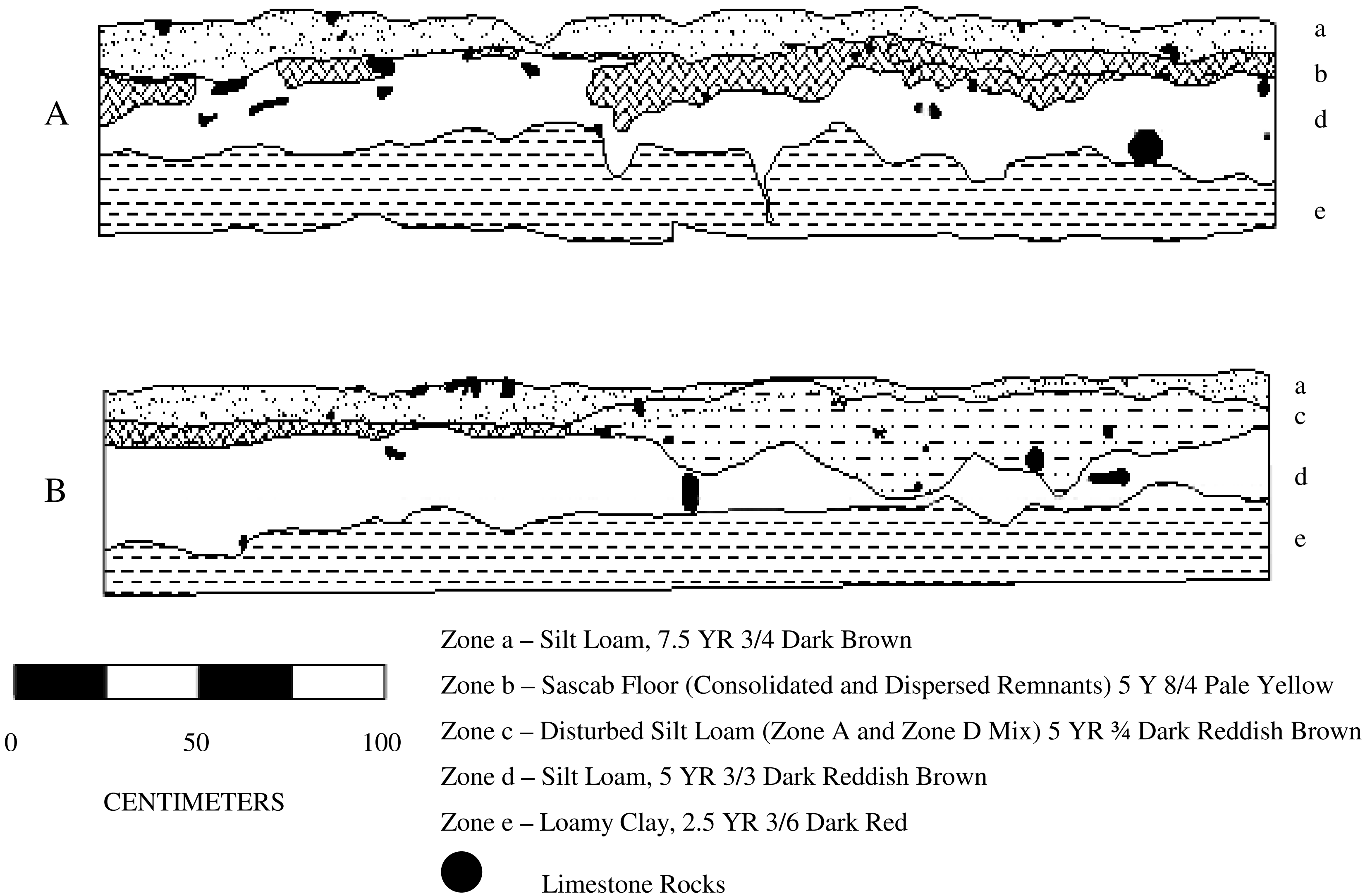

Figure 32. House 3 Interior Cross-Section: A) West End; B) East End.

surface, down to the excavation limit of 60 cm. The natural limestone bedrock was not encountered in any of the House 3 excavation units.

In addition to the sascab floor, two other features were encountered during the excavations. Both features are *pibs* located in units next to the existent rubble foundation of the dwelling (Figure 33). One of these *pibs* was discovered in a unit on the southeast end of the dwelling (Unit N4 E9). The feature consisted of a layer of *sim tun* underlain by a lens of ash and charcoal. The composition of the second *pib* was the same as the first. It was discovered on the northwest side at the opposite end of the dwelling at a depth of 30 cm (Unit N17 E4). The excavation unit only caught the edge of this feature,

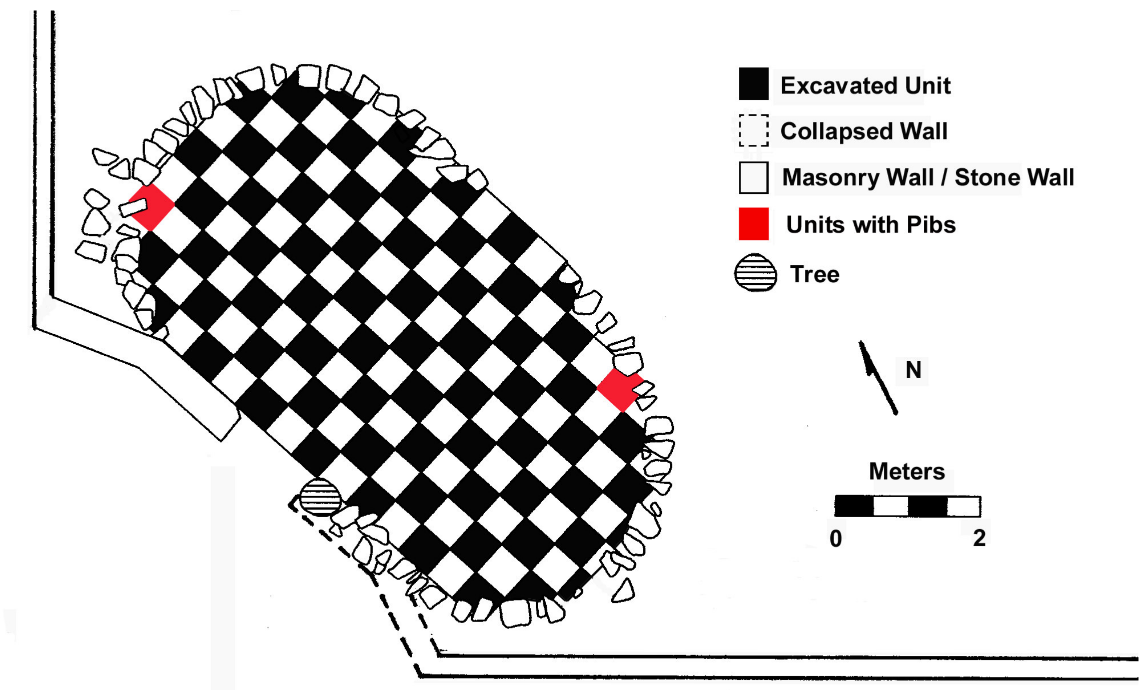

Figure 33. House 3 Plan Showing Units with Pib Features.

as it extended into the wall of the excavation unit directly under the rubble footprint of the dwelling.

The five 1 x 1 test units excavated outside House 3 are remarkably similar in terms of stratigraphy. All are composed of two zones, which correspond to the two main zones found within the dwelling. Figure 16 demonstrates the typical depositional sequence. Zone A is a dark reddish brown, silt loam anywhere from 20-40 cm thick in which the majority of artifacts were recovered. Zone B is a dark red, loam clay that extends from the bottom of Zone A to the excavation limit of 50 cm. Artifacts were typically not found below the first 10 cm of Zone B and counts were noticeably lower. None of the excavation units reached the natural limestone bedrock.

Of the five 1 x 1 test units, Unit N1117 E930 is of particular interest (Figure 34). This unit contained high concentrations of artifacts and charcoal, including charred bone and a large amount of *sim tun* (n = 46). The unit also contained an ash lens that extended 30 cm deep, ranging from 5 cm to 2.5 cm thick as it tapered into the wall of the unit. The combination of these materials indicates a midden created by the dumping of hearth ash and sweepings from either the dwelling or from a kitchen structure. Cooking in the Maya area is often done in a separate structure called a *k'oben*, the same name given to the traditional three stone hearth. According to Wauchope, the *k'oben* is usually located directly behind the dwelling and is of a similar size and construction (1938:134). Gann has noted that "The kitchen, which is a replica of the house on a small scale, is usually placed a few yards behind it" (1918:27). The midden is located in an area that would have been at or near the northwest end of such a structure. There is no

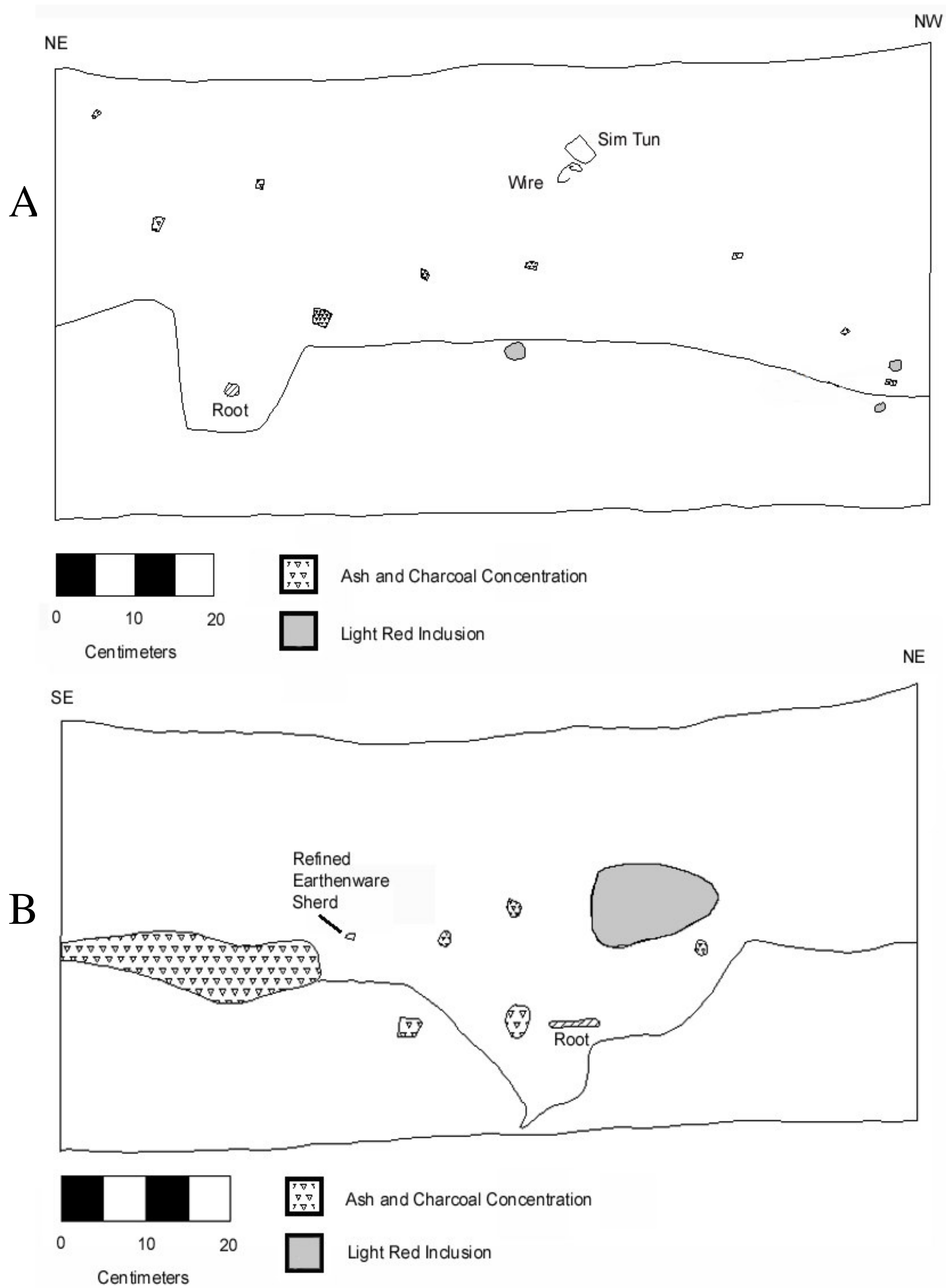

Figure 34. House 3 Test Unit N1117 E930: A) Northwest Profile; B) Southwest Profile.

evidence of burning of trash in the midden at the periphery of patios as reported for modern houselots (Arnold 1991:121; Smyth 1991:75). Except for the *sim tun* and some charred bone, none of the other artifacts demonstrated signs of burning. An early date for this midden is suggested by the presence of a cut L-headed nail that dates from the late eighteenth century to roughly 1850.

There is some inconclusive evidence for the presence of a *k'oben* associated with House 3. First, the norhtwest profile of Unit N1117 E930 records what may be a 10 x 10 cm posthole associated with the vertical wall poles of a structure of this type. The possible occurrence of additional postholes within the unit was not reported to me in the field. Wauchope (1938:63) found that walls made of vertical poles were the most common type in Yucatan, and especially so in the Ticul area, where 62% of the total structures he observed had walls of this construction. He recorded an average diameter of 4-8 cm for poles used in these structures and noted that they are sometimes embedded in the earth (Wauchope 1938:62). These wall poles are set side by side, lashed to horizontal stringers for support, and then may be daubed with mud. A second line of evidence concerns this daub. Unit N1117 E930 was the only test unit in which daub was recovered. The number of pieces recovered is very small (n = 3), but the presence of daub indicates the presence of a structure. Furthermore, a number of anomalous light red inclusions within the matrix of the unit may be degraded remnants of daub – as seen in both the northwest and southwest profiles of the unit (see Figure 34). This is highly inferential, but it represents the only potential evidence for ancillary structures or features encountered within the House 3 test units.

The results from test Unit N1107 E925 are also informative. This unit was placed in the street in front of the dwelling in order to compliment the street shovel test data previously collected. As discussed earlier, shovel tests placed within the street confirmed the use of these areas for refuse disposal. The excavation results from Unit N1107 E925 further substantiate these findings. A total of 281 artifacts (1,181.95 g) were recovered from this unit, which when added to the street shovel test total (n = 352; 2,307.77 g) produces an average density of 353.63 artifacts per one m^3 (633/1.79 m^3 = 353.63). This number is 1.5 times greater than the average density of refuse within the block, calculated at 224.48 artifacts per one m^3 (2,164/9.64 m^3 = 224.48). The ratio increases to 1.3 times greater if we compensate for the low density of refuse in the northeast quarter of the block by removing these units from our calculations (the units removed include X10-17 Y9-19). This correction produces an average density of 272.22 artifacts per 1 m^3 within Block 4 (1,764/6.48 m^3 = 272.22).

A similar treatment of the other 1 x 1 test excavations reveals some interesting patterning associated with space immediately surrounding House 3. Unit 1108 E932.5 was positioned next to the *albarrada* at the south end of the dwelling to test this area as a possible site for provisional discard (Deal 1998:120; Hayden and Cannon 1983:131). The unit has the lowest density of all the units at 128 artifacts per 1 m^3 (64/0.5 m^3 = 128), with an average artifact size of 4.12 g (241.97 g / 64 = 4.12). This indicates that this area was not used as a provisional storage area for larger items. Unit N1116.5 E927 was placed off the northeast corner of the dwelling in an area judged to approximate the possible toft zone off the edge of the former patio. The density of this unit is a more robust 326 artifacts per 1 m^3 (163/0.5 m^3 = 326), with an average artifact size of 3.58 g (584.79 g / 163 = 3.58). These numbers seem to reflect those expected for a toft zone where accumulations are higher due to the sweeping of materials off patio areas (Arnold 1991:121; Killion 1987).

Unit N1115 E936 was originally intended to test a section of the patio for comparison with the toft zone. This unit has a relatively large density of 430 artifacts per 1 m^3 (215/0.5 m^3 = 430), with an average artifact size of 6.40 g (1,376.39 g / 215 = 6.40). The density and large average size of artifacts in this area of the compound was unexpected. Ethnoarchaeological research suggests that the density and size of material on patio areas should be smaller, consisting of small items missed while sweeping or which become embedded within the patio surface (Deal 1998:121-122). The numbers from Unit N1115 E936 may represent a provisional discard site where larger items were accumulated for later removal to a permanent disposal site. Perhaps this provisional discard site was located next to an ancillary structure, such as the hypothesized kitchen. The location of the unit would be adjacent to such a structure, whether apsidal or square in design, if the structure were similar in size to the House 3.

Unit N1117 E930 was positioned in order to provide a counter to Unit N1116.5 E927 in the toft zone and to possibly detect the presence of ancillary structures behind the main dwelling. The unit did record the earlier described midden and possibly the edge of a related kitchen structure. As would be expected, the midden has high density relative to the other test units at 554 artifacts per 1 m^3, with an average artifact size of 5.72 g (1,585.74 g / 277 = 5.72). The average artifact size for the unit is skewed by the presence of *sim tun*, with an average weight of 18.76 g per piece (n = 46, wt. = 863.1 g). Moreover, Unit N1117 E930 is the only unit of the four excavated in the *solar* to contain *sim tun*. Removing the *sim tun* from the sample produces an average artifact size of 3.12 g (722.64 g / 231 = 3.12), the lowest average size for any of the units. The small size of the artifacts lends further credence to the interpretation of this midden as constituting the sweepings and hearth ash from a kitchen structure or possibly from within the dwelling.

A final comparison can be made between the density of material culture inside and outside the dwelling. The systematic sample of units within House 3 resulted in the excavation of 10.05 m^3 of material. A total of 3,239 artifacts were recovered from within the dwelling, yielding an average density of 314.46 artifacts per 1 m^3 (Table 7). The five 1 x 1 test units outside of House 3 produced a total of 2.50 m^3 of excavated soil and produced 992 artifacts (Table 8). This generates an average artifact density of 396.80 artifacts per 1 m^3. At first glance the similarity of these averages seems incongruent with what is known. Sweeping is the most common maintenance activity, although estimates of the regularity of this activity within households vary from twice a day (Arnold 1991:121) to once every two or three days (Deal 1998:120), reflecting the idiosyncratic behavior of individuals. Regardless of frequency, the sweeping of dwelling surfaces is a common activity and, therefore should theoretically drastically reduce the amount of material found within dwellings.

Table 7. House 3 Artifact Totals.

Artifact Class	n	% Total	Wt. (g)	% Total
Coarse Earthenware	2,255	69.61	9,918.41	46.51
Refined Earthenware	11	0.31	14.28	0.07
Glass	41	1.24	361.98	1.69
Metal	354	10.90	1,242.42	5.83
Ground Stone	2	0.06	374.69	1.76
Daub	14	0.41	38.89	0.18
Sim Tun (burnt stone)	173	5.32	7,721.95	36.21
Tile	282	8.70	1,005.62	4.72
Faunal Remains	74	2.26	216.39	1.01
Other	33	1.01	431.02	2.02
Totals	3,239	100.00	21,325.65	100.00

Table 8. House 3 Test Unit Artifact Totals.

Artifact Class	n	% Total	Wt. (g)	% Total
Coarse Earthenware	730	77.49	3,443.95	68.99
Refined Earthenware	7	0.75	8.75	0.18
Glass	10	1.06	31.66	0.63
Metal	93	9.87	163.32	3.27
Ground Stone	0	0.00	0.00	0.00
Daub	3	0.32	29.93	0.60
Sim Tun (burnt stone)	72	7.64	1,241.25	24.86
Tile	15	1.59	50.53	1.01
Faunal Remains	7	0.75	7.87	0.16
Other	5	0.53	15.47	0.30
Totals	942	100.00	4,992.73	100.00

However, there are several behavioral processes that work to counteract the expected pattern, both of which may account for the equivalence of artifact densities found inside and outside the dwelling. These behavioral processes relate to the basic underlying principles Hayden and Cannon (1983:154) identified for Maya refuse behavior, including economy of effort, the retention of re-usable items, and hindrance minimization. These processes greatly affect the spatial patterning of cultural material moving from the systemic context to the archaeological context. The first process relates to economy of effort and the amount of diligence associated with sweeping behavior inside dwellings. As Deal noted, "frequently, difficult to reach places such as under tables and benches, around hearths, along walls and in corners were left unswept" and therefore "such places were likely to become artifact traps for small items, including potsherds" (Deal 1998:120).

A second set of processes includes the creation of provisional discard areas associated with the interior of dwellings. This behavior is often associated with passive areas, spaces not intentionally used or associated with the generation of refuse, e.g. areas along the base of walls, in corners, under tables, beds, corn bins, or hanging from beams (Deal 1998:119; Sommer 1990:52). Potentially reusable items are easily stored in these out of the way places within the dwelling for future treatment. Also, provisional discard areas for refuse that have no reuse value are created in an attempt to economize effort; i.e., one trip instead of many trips to dispose of these materials (Hayden and Cannon 1983:131). These locations are also used to temporarily store items which, due to size or other factors, are thought to pose a potential hindrance to movement or other activities, and therefore, require special disposal (Deal 1998:118-120; Arnold 1991:121-122; Hayden and Cannon 1983:131-133). These processes increase artifact accumulations within dwellings during occupation and are likely to be left in place upon the final abandonment of a structure (Deal 1998:119-120; Hayden and Cannon 1983:131).

House 3 Chronology

The occupational history of House 3 is comprised of at least two living surfaces, a later period associated with the *sascab* floor and an earlier period represented by temporally diagnostic artifacts, concentrations of apparently *in situ* artifacts, and by the *pib* feature at the northern end of the dwelling. The stratigraphic location of this earlier living surface was not identified in the matrix, nor was it demarcated by any clear temporal separation of artifacts. The latter is a symptom of the heavy bioturbation that has occurred in parts of the dwelling, which have resulted in the vertical movement of artifacts within the matrix. This disturbance was especially noticeable in the rear and southeastern portions of the dwelling.

Ceramics are especially important for attributing an early period component to the House 3 site. Three diagnostic early ceramic types were found in House 3, including a pearlware sherd, four transfer printed sherds, and a majolica sherd. The blue, hand painted pearlware sherd is attributable to the period ca. 1775-1820 (Miller 1991:7). Four transfer printed sherds – two blue, one light blue, and one purple - are also highly diagnostic and date to ca. 1820-1860, 1826-1831, and 1829-1860 respectively (Esary 1982; McCorvie 1987; Miller 1987; Sonderman 1979;Stelle 2001). The sixth sherd is majolica dating to ca. 1790s-1820s (Seifert 1977; Stelle 2001). The mean dates for these sherds are as follows: blue, hand painted pearlware 1800; blue transfer printed 1845; light blue transfer printed 1829; purple transfer printed 1845; and majolica 1810 (Esary 1982; McCorvie 1987; Miller 1987; Sonderman 1979;Stelle 2001). This provides an overall mean date of 1829 for these early ceramic types. The sample of early diagnostic ceramic sherds is admittedly small, but it clearly represents an era significantly earlier than that associated with the final living surface.

Three other artifacts lend credence to an early occupation at the House 3 site. A cut L-headed nail diagnostic of the period ranging from the late eighteenth century to approximately 1850 was recovered from the ash midden behind the dwelling. In addition, a silver Spanish coin dated 1807, cast with the image of King Charles the IV, was recovered in the disturbed deposits at the southern end of the house. It is possible that this coin was a keepsake that found its way into the House 3 deposits at some late date, but it seems more likely that it was lost during the earlier occupation at a time more contemporaneous with its circulation. Also recovered was a knapped flint from a flintlock gun. The flintlock was popular until the mid-nineteenth century when it was replaced by the percussion-cap lock gun. Again, like the Spanish coin, the flint may be residue collected from an earlier era or may represent a firearm used long after it was technologically obsolete. However, two facts argue against this interpretation. First, the flint was found at a depth of 40 cm in the front portion of the dwelling, an area where no real post depositional disturbance was noted. Second, a 30 caliber Winchester external center fire shell casing dating to the 1880s or later was recovered from the house, suggesting that the later inhabitants of the site may have had access to a more modern firearm.

Despite the bioturbation that affected portions of House 3, two artifacts appear to have remained *in situ*. Both artifacts were in units located close to the ring of rubble stones marking the footprint of the dwelling. The subsurface stratigraphy in the areas next to these walls showed no signs of post depositional disturbance, possibly due to the protection of these stones. At the north end of the dwelling an axe head was discovered at 30 cm below the ground surface, almost directly under the wall rubble above. The positioning of this still serviceable tool suggests that it might have been placed in storage on an earlier living surface. When this previous dwelling was abandoned, the axe was left behind. The placement of the axe under the wall stone and some 20 cm below the sascab floor indicates that the tool was likely obscured or buried by post abandonment events and lay undiscovered when the current structure was built.

Similarly, in unit adjacent to the south side of the dwelling, a partial vessel was found embedded in a matrix of ash and charcoal, at approximately 25 cm below the ground surface. The vessel is similar to the large bowls reported by Thompson (1958:44) in his memoir on modern Yucatecan pottery; it has an inturned wall, direct rim, and encircling ridge decoration (Figure 18). Thompson " (1958:117) describes these large bowls as being used for "storing water for washing and cooking, preparing food which does not require cooking, and general storage. He further states under method of use, "the vessels are placed on the ground or on boards and arranged around the interior wall of the house, or they are set in shallow depressions in the ground" (Thompson 1958:117).

Further information is found in Wauchope (1938:138) under the heading "Wash-Bowl and Wash-Trough Shelters" where he writes, "In many places one sees big bowls of pottery embedded in the ash heaps which are part of the cleansing equipment." He further states that "sometimes the bowls and rocks which are packed against their rims are found in their original position, especially when the bowls have broken and are of no further use to anyone. Otherwise the bowls are taken away either by the moving family or by neighbors" (Wauchope 1938:138). Wauchope (1938:120, 122) provides pictures of wash bowls embedded in ash and discusses ash heaps he found banked against the wall in an abandoned house in Valladolid, Yucatan, speculating that they probably were used to hold bowls for washing. While Wauchope's discussion focuses on the washing of clothing, Thompson provides additional evidence for the use of a series of similarly placed basins for use in maize processing, the making of *atole* (corn gruel), or following Redfield and Villa (1934:36), as a vessel for storing water or sometimes *balche* (fermented bark beer) (Thompson 1958:117). This evidence indicates that the partial vessel found next to the wall of House 3 may have been left *in situ* when the structure was abandoned, in a similar manner to the axe on the opposite side of dwelling.

The *pib* feature discovered next to the northern edge of the existing dwelling rubble base (Unit N17 E4) offers further evidence of an earlier living surface. Only the edge of the feature was excavated, as it extended west into the wall of the unit. This *pib* could only have been dug in this location prior to the building of the existing structural remains. The presence of the axe in the same position 70 cm away indicates that the current structural remains were not present when the activity associated with these artifacts took place. Furthermore, it suggests that the current structure does not match the exact footprint of the earlier structure and allows the possibility that the earlier dwelling may have been of a different type.

The preponderance of evidence outlined above suggests an early component for House 3, which I feel dates to the pre-Caste War period, prior to 1847. According to census information from 1841, the population at Hacienda Tabi during this period was at least as high as the 851 persons recorded in 1900 (personal communication, Rejon Patron,1999). It is reasonable to expect that a high profile location such as the House 3 site would have been utilized during this earlier period. The depositional deposits separating the earlier living surface from the above sascab living surface probably represent a 15-20 year abandonment of the house site, contemporaneous with the events of the Caste War.

When the Caste War broke out in July of 1847 the haciendas located in the areas near the unpacified region of the peninsula were devastated, e.g. the sugar haciendas of the south. The rebel Maya were quick to burn the cane fields, and it is estimated that at the height of the uprising nearly 90% of the pre-war sugar producing lands were controlled by the rebels (Lara Vega 1939:31). The effect of the Caste War on Hacienda Tabi is reflected in the census records from after the uprising. The earliest post-war census records for the hacienda indicate a total population of 53 persons (33 males, 20 females) in 1861 (Rejon Patron 1998). Based on this information I argue that House 3 may have been reoccupied in the late 1850s at the earliest, but probably not until the 1860s. At some point after the reoccupation of the site, the sascab floor was placed within the dwelling and the floor was there upon abandonment.

Excavation of House 4 (Type C)

House 4 is a 8.5 m x 4.2 m single room, apsidal dwelling with front and rear entrances (Figures 35 and 36). As is the case in House 3, the entrances at House 4 are of different widths, with the front entrance measuring 1.3 m wide and the rear entrance

Figure 35. Architectural Remains of House 4.

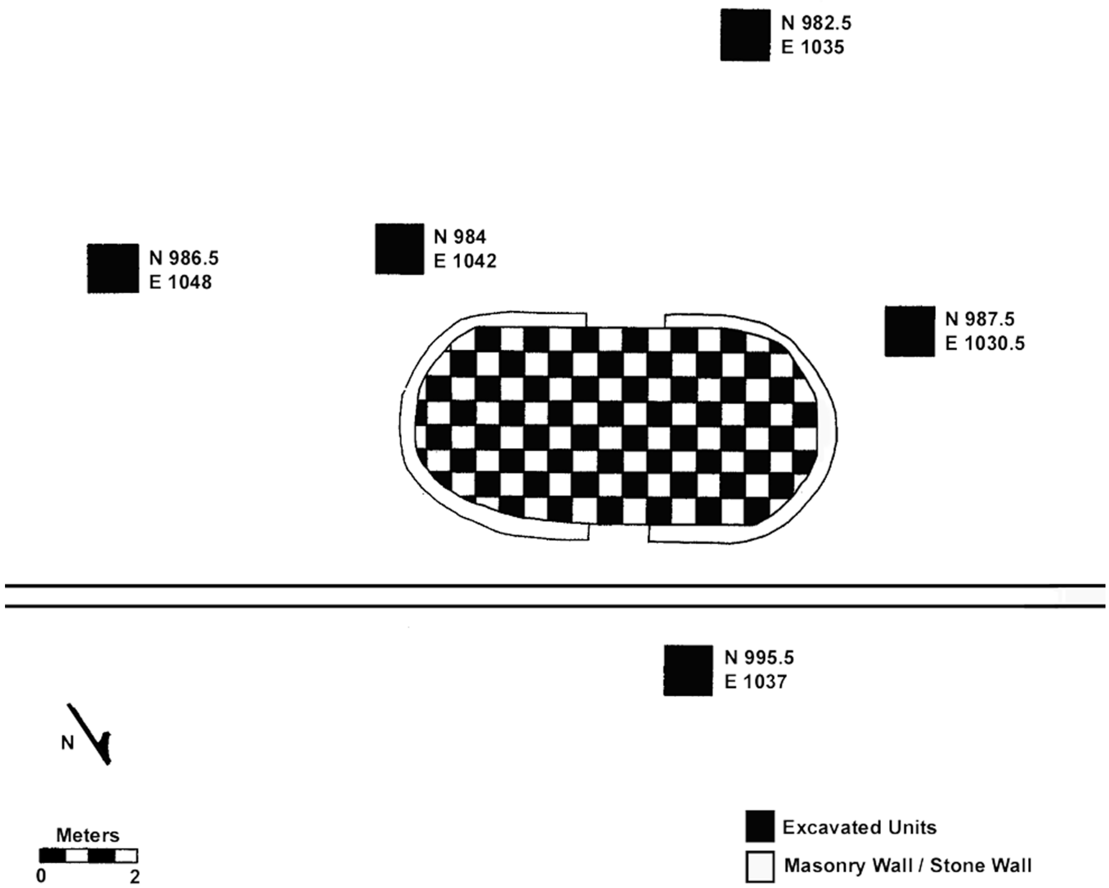

Figure 36. House 4 Plan Drawing.

measuring 1.5 m wide. The dwelling is the only structure on the north side of Block 9, directly across the street from House 1. The house is oriented parallel to the street and set back approximately 1 m from the *albarrada* that lines the street. The *albarrada* is lower directly in front of the entrance to the dwelling, with a flat stone placed in front of the wall to aid in stepping over the wall into the *solar*. The footprint of the dwelling is marked by a 50 cm tall masonry wall that varies between 35-40 cm wide. This masonry is relatively intact on the rounded ends, but has degraded along the front and rear walls. Of the four original 2 m tall masonry door jambs, only the jamb on the east side of the front entrance is still standing. A portion of the standing jamb has fallen into the interior of the dwelling as has the other front jamb and the eastern rear jamb. The western rear jamb has collapse into the area behind the house. The remainder of the structure above the short masonry wall and between the jambs was constructed of wattle and daub. The roof would have been constructed of perishable materials.

The vegetation covering the house site was removed to expose the interior of the dwelling and the area surrounding the structure. Loose limestone rubble littered the central portion of the dwelling where the masonry jambs had collapsed. This rubble was removed, taking care not to destroy any features that might be located within the interior of the structure, such as a stone hearth. No such surface features were identified during the removal of this rubble. The dwelling was then divided into 50 cm units and starting elevations were recorded with a theodolite. Excavations proceeded at the prescribed 10 cm intervals for the units comprising the systematic sample. The units were excavated to a maximum depth of 50 cm, but the majority of units terminated at bedrock at shallower depths.

The subsurface matrix of House 4 is composed of three strata: an upper stratum (Zone A), a *sascab* floor (Zone B), a stratum underlying the floor (Zone C). This profile is illustrated in the cross-section of House 4 (Figure 37). Zone A is a 5-20 cm deep, silt loam laying above the *sascab* floor surface. Zone B is a 5 cm thick sascab floor that separates Zone A from Zone C. Zone C is a silt loam, ranging from 5-30 cm in depth. Excavation showed that House 4 had been built atop an outcrop of the natural limestone bedrock. In several places, this outcrop reached the surface or near the surface, and lay directly under the *sascab* floor. In other places, limestone rubble had been used to fill voids in the outcrop and were incorporated into the floor surface.

In addition to the sascab floor, two other features were encountered during the excavations and a third was recorded several meters west of the structure. The first of these features was a hearth located near the northeast corner of the structure (Unit N7 E14), approximately 60 cm from the north wall and 1 m from the east wall (Figure 38). The feature consisted of a 28 cm wide x 50 cm long x 7 cm deep lens of ash and artifacts approximately 15 cm below the ground surface. The ash lens was directly on top of the sascab floor which dipped 7 cm to create the depression holding the matrix. A second unit south of the hearth not scheduled for excavation, was opened to expose the extent of the feature (Unit N6 E14). A total of 19 artifacts were recovered from the hearth, including 13 coarse earthenware sherds, 5 pieces of *sim tun*, and a one centavo coin.

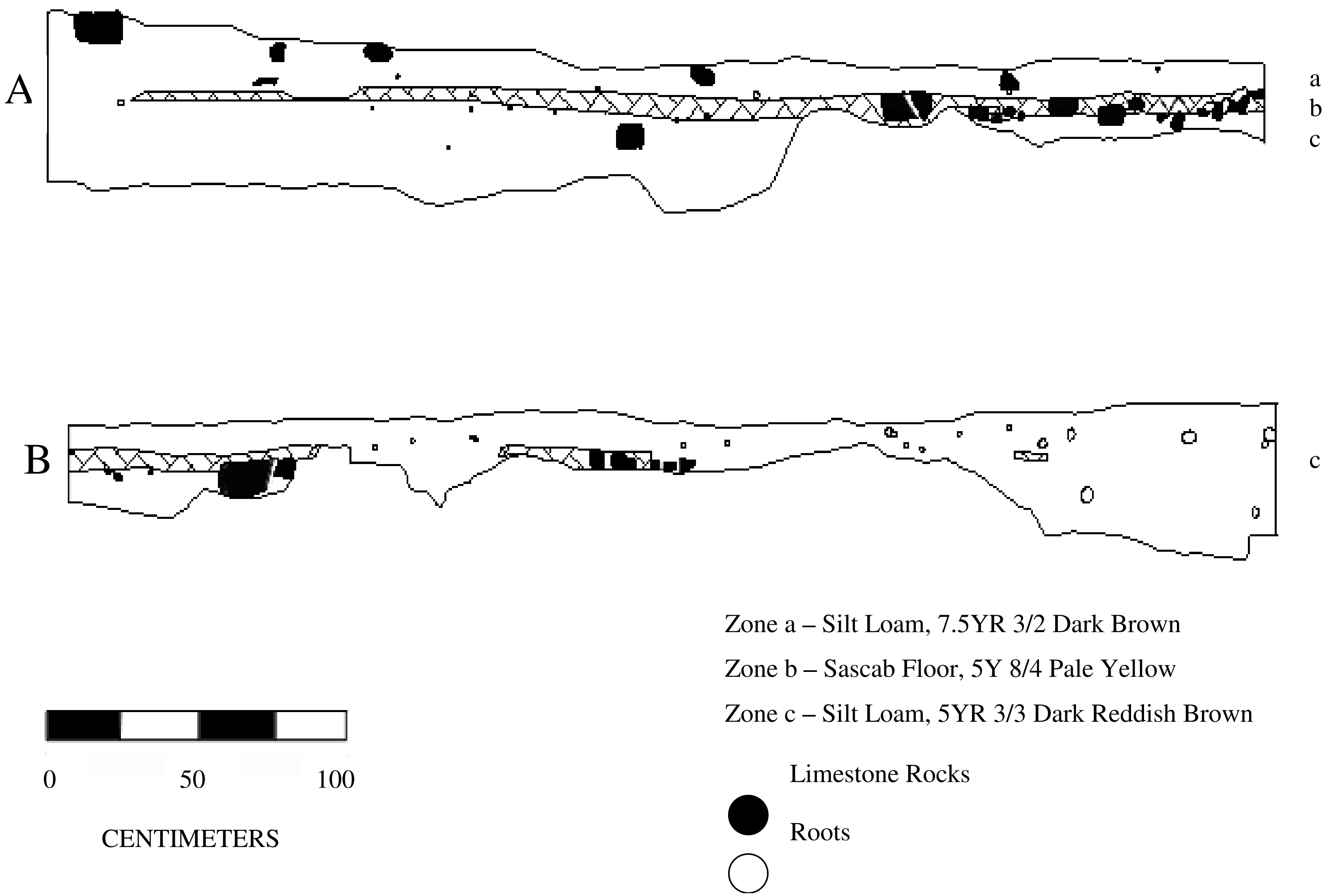

Figure 37. House 4 Interior Cross-Section: A) West End; B) East End

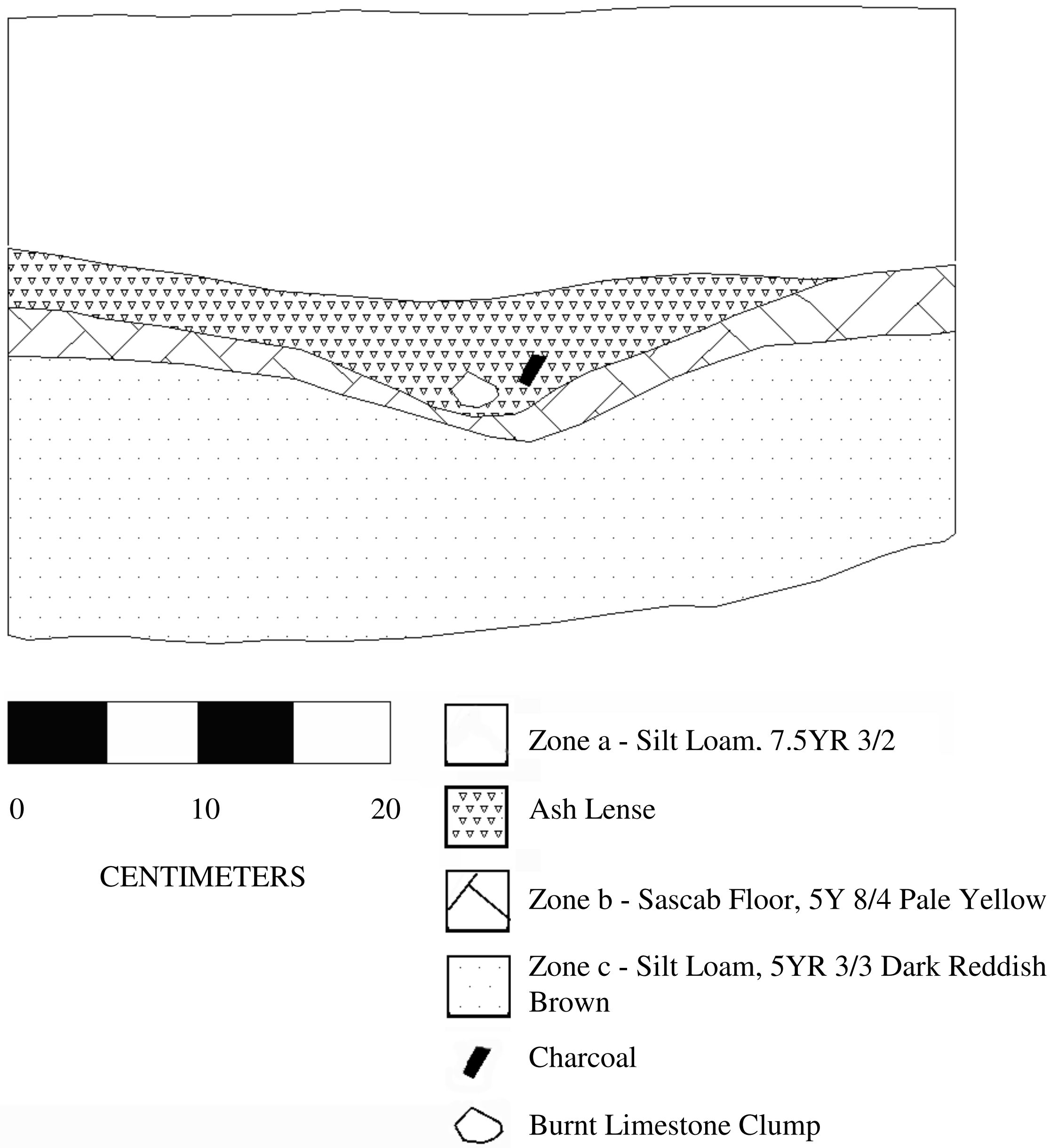

Figure 38. House 4 Hearth Feature.

The coin was too corroded to yield a date, but it was of the same style as coins found in House 3 that date to between 1900 and 1910.

The three traditional hearth stones had been removed at some point and there was no evidence to suggest where they had been placed around the depression. According to Wauchope (1938:117), hearth stones are sometimes removed by former inhabitants or neighbors for re-use in another structure. The location of the hearth in House 4 closely matches Wauchope's description of hearths as typically being situated at one end or corner of the dwelling near a mainpost (1938:117). The nearest mainpost would have been approximately 40 cm from the edge of the hearth. There is some indication that this end of the house may have served as the household's kitchen, rather than there having been a separate *k'oben*. In dwellings that incorporate cooking activities within the main structure, the kitchen is located at the same end of the house as the hearth. Various utensils and pottery associated with food preparation are kept at this end of the house including the *metate* (corn grinding stone). *Metates* are often kept after being broken, and are commonly placed in a position of provisional discard within the kitchen end of the house (Wauchope 1938:119). A broken *metate* (Unite N5 E16) was found against the wall at the hearth end of the dwelling, left in its provisional discard position when the dwelling was abandoned. This circumstantial evidence suggests that food preparation was taking place within House 4, rather than in a separate structure.

The second feature associated with House 4 was a complete bowl placed on the limestone bedrock at the bottom of Unit N4 E1, 43 cm below the ground surface and 22 cm below the *sascab* floor (Figure 39). This unit is located at the far western end of the

Figure 39. House 4, Feature 2. A Complete Bowl Placed on Bedrock.

dwelling. The red-slipped bowl is 13 cm in diameter and is 5 cm tall. It has a subhemispherical body, with a flat bottom, and a direct rim with rounded lip. This form is called *lac* in Yucatec and is defined as a bowl used for eating (Diccionario Maya 1995:433). The term is also used to refer to clay idols, most likely referring to the effigy incense burners discussed in the *Relaciones de Yucatan*, which held copal or other or substances to be burned in the bowl shaped body of the censer (Thompson 1958:105; Tozzer 1907:85-87, 186). The incense in these censers is considered food -delivered as the rising smoke- for the gods or to “feed” inanimate ritual objects (Freidel et al. 1993:117, 204).

The connection between *lac* as bowl and *lac* as incense burner is substantiated in the use of these typically red-slipped bowls to hold offerings of food for religious ceremonies (Thompson 1958:105, 107). Redfield and Villa Rojas recorded this usage in the village of Chan Kom in the 1930s, writing “The small shallow bowl (*lac*) is sometimes employed in daily use and is also used to hold offerings of food on the occasion of *rezos* (ritual Catholic prayers)” (Redfield and Villa Rojas 1934:36). In some places such as Quintana Roo, these bowls were used exclusively for ceremonial purposes (Villa Rojas 1945:53), because gourd vessels (*luch* and *lec*) were used almost exclusively for eating and drinking prior to the introduction of refined earthenware and metal vessels (Redfield and Villa Rojas 1934:36; Thompson 1958:107). Use of the *lac* in Yucatan is particularly associated with *Día de Muertos* (All Souls’ Day) and *Todos Santos* (All Saints’ Day), when these bowls are filled with food and offerings and are placed near graves (Thompson 1958:107). Redfield and Villa Rojas (1934:36) note that larger *lac* (approximately 15 cm in diameter) are used with offerings for the souls of adults and smaller *lac* are used for the souls of children. *Lac* are also used in other ceremonies such as the *u hanil col* (meal of the milpa) or the harvest celebration, but their use in these ceremonies is uncommon, as *luch* and *lec* gourd vessels are typically employed (Thompson 1958:107).

I was able to find a number of references to ceremonies performed at the inauguration and completion of house construction (Redfield and Villa Rojas 1934:146-

147; Wauchope 1938:143-144; Nash 1970:11-18), however, none of them involved the use of *lac*. In his *Historia de Yucatan* (1867) Cogolludo states that a dwelling could not be occupied without first being blessed and purged of evil spirits (Wauchope 1938:144; Cogolludo 1867, vol. 1:295-296). Typically house dedication ceremonies involve some combination of blessing the mainposts, blessing the poles composing the house (especially those forming crosses), blessing by a Catholic priest, a dedicatory cache at the center of the house, and/or blessing the inhabitants of the house. Interestingly, some of these rituals involve sacrifices and interment of foodstuffs into the dwelling itself (Nash 1970:16-17; Redfield and Villa Rojas 1934:146-147). Nash writes of a house dedication ceremony in Chiapas called "meal for the house" in which "the spirit of the house earth" is fed the head of a sheep, and sometimes bread, chocolate, and liquor (Nash 1970:13, 16-17). In Chan Kom in the 1930s hens, *kol* (broth), *zaca* (cornmeal), tortillas, and rum were used in these types of ceremonies (Redfield and Villa Rojas 1934:146-147).

Thus it is easy to understand why a *lac* might be used in an apparent dedicatory ritual at House 4. This vessel likely contained some sort of foodstuff, which was then placed on the bedrock under the dwelling, either prior to construction, or at the dedication of the house. Why the vessel was placed on the western edge of the dwelling cannot currently be explained. Units corresponding to the other three cardinal directions failed to yield similar deposits. To the contemporary Maya, west is considered "the entryway into the earth where the Sun-Christ had to go before he could rise in triumph" (Freidel et al. 1993:128). This modern belief is a syncretic blending of the prehispanic

Maya association of the west with death and the Underworld and the Christian notion of the crucifixion and death of Christ (as represented by the setting of the sun), before his ultimate resurrection (an event which is associated with the east and the rising of the sun). What, if any, connection this has with the dedicatory activity at House 4 is purely speculative.

The third feature associated with House 4 appears to be the footprint of a chicken house, similar to the one already discussed in Block 4. This feature is composed of 13 stones placed in circular pattern, with a diameter of approximately 1.6 m (Figures 40 and

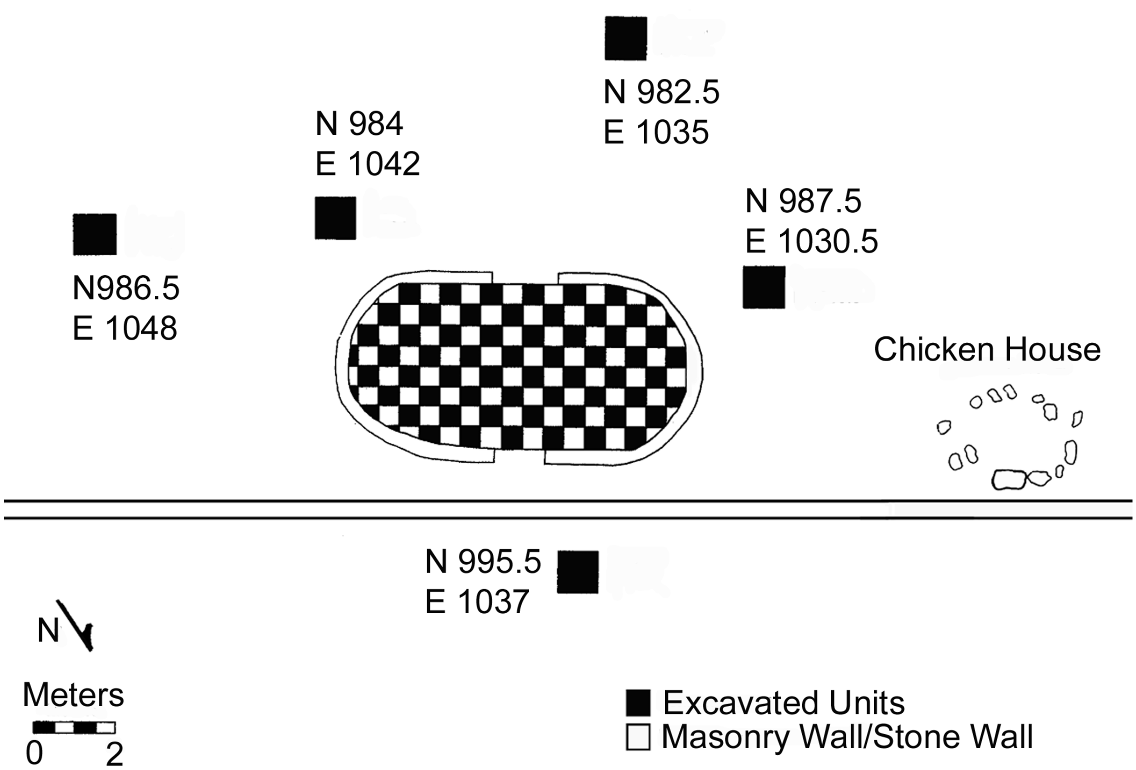

Figure 40. House 4 Plan View Showing Location of Chicken House Feature.

41). These stones would have abutted the perishable walls like those associated with Type D structures. As noted for the Block 4 feature, this feature is for the most part analogous to the chicken houses Wauchope discusses, except that it is round rather than square (1938:130).

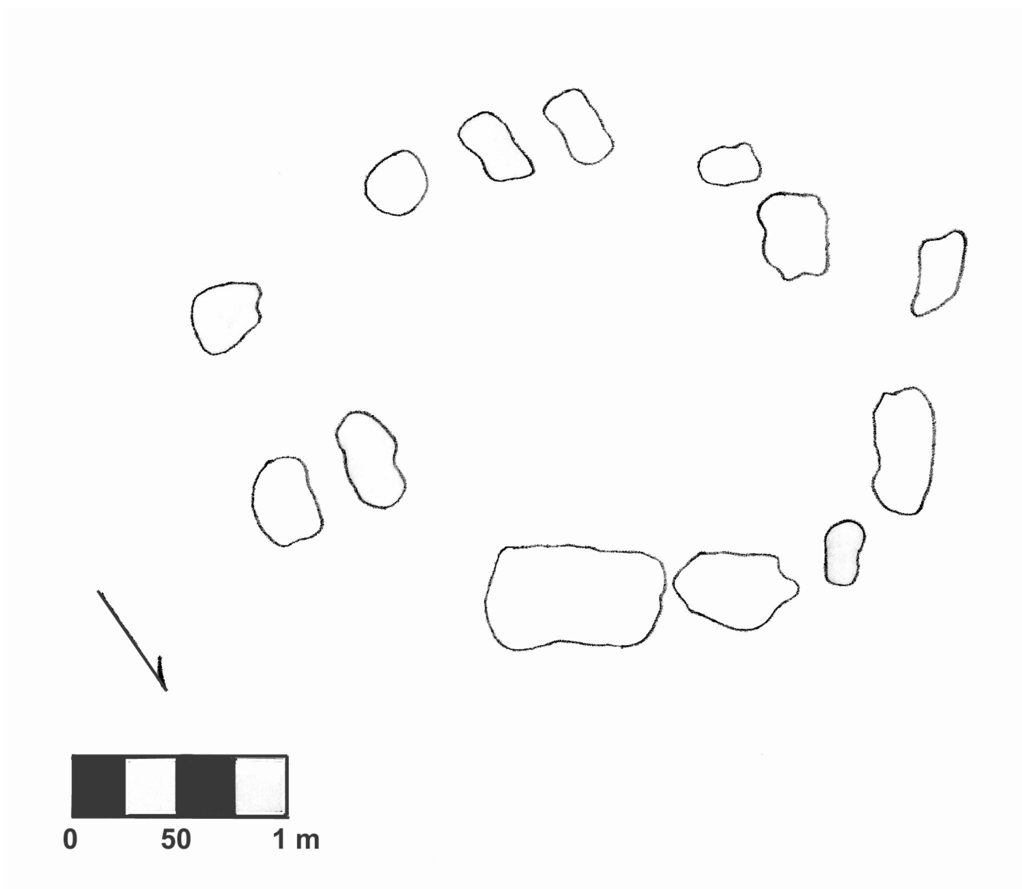

Figure 41. Plan of Chicken House Associated with House 4.

The five 1 x 1 test units excavated outside House 4 were similar in terms of stratigraphy. All were composed of a single zone (Zone A). Figure 42 demonstrates the typical depositional matrix as exemplified by two of these units. Zone A is a dark brown, silt loam anywhere from 2.5 - 55 cm deep, with cultural material represented at all levels. All of the excavation units reached the natural limestone bedrock and no features were encountered within the test units.

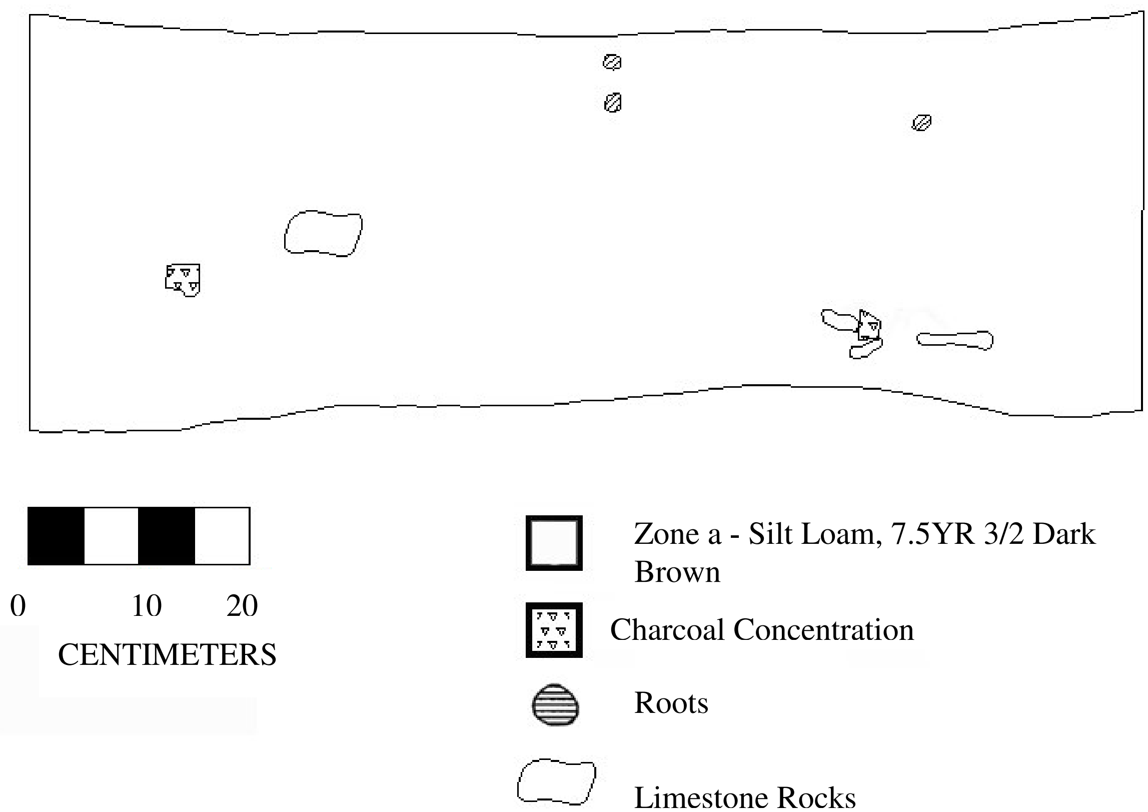

Figure 42. House 4 Test Unit N1117 E930, East Wall Profile.

A comparison of the density of artifacts per 1 m^3 shows that it is relatively low for all units at House 4. The units with the two highest densities were both located off the back corner of the dwelling, an area expected to represent the toft zone at the edge of the patio. Note that all calculations of average artifact size do not include *sim tun*. Unit N984 E1042 on the east side had a density of 272.5 artifacts per 1 m^3 (109/0.4 m^3 = 272.5), with an average artifact size of 4.14 g (368.86 g / 89 = 4.14 g). Unit N987.5 E1030.5 on the west side had a density of 172 artifacts per 1 m^3 (86/.5 m^3 = 172), with an average artifact size of 3.48 g (289.52 g / 83 = 3.48 g). These numbers fall are comparable to the calculations for Unit N1116.5 E927 (326 artifacts per 1 m^3, 3.58 g per artifact), which was located in a similar position at House 3.

Unit N982.5 E1035 at House 4 was located at 5.4 m behind the dwelling at a distance similar to that of Unit N1115 E936 at House 3, which was located 5.8 m behind that dwelling. The numbers for these units are drastically different. Unit N982.5 E1035 has a density of 89.41 artifacts per 1 m^3 (38/0.425 m^3 = 89.41), with an average artifact size of 6.70 g (234.55 g / 35 = 6.70 g). Unit N1115 E936 had a density of 430 artifacts per 1 m^3 and an average artifact size of 6.4 g. As previously discussed, the numbers for Unit N1115 E936 appear to be the result of a possible provisional dump associated with a structure on that patio. The situation at House 4 is very different due to the prevalence of limestone outcrops within the *solar*. The presence of these outcrops would have meant that the patio behind House 4 was abbreviated in size when compared with House 3. The relatively large size of the artifacts recovered from Unit N982.5 E1035, combined with the low density of artifacts from that unit indicates that the unit was located in an unusable area of the *solar*, where the larger items may have been occasionally tossed for expediency.

House 4 Unit N995.5 E1037 was located in the street in front of the dwelling to test the possibility of refuse disposal in this area. The unit has a density of 115 artifacts per 1 m^3 (23/0.2 m^3 = 115), with an average artifact size of 5.08 g (116.9 g / 23 = 5.08 g). House 3 Unit N1107 E925 has a density of 562 artifacts per 1 m^3 and an average artifact size of 3.15 g. A comparison of these numbers shows that relatively little refuse was being deposited by House 4 in the street, especially in comparison with House 3. While artifacts were occasionally tossed or dropped in front of House 4, the household's refuse strategy was clearly focused on other areas rather than the street. The final 1 x 1 at House 4 (Unit N986.5 E1048) was placed approximately 5.8 m from the dwelling in an attempt to test an area that might be a dump site. Unfortunately this unit was dominated by an outcropping of bedrock and produced few artifacts. The density for the unit is 100 artifacts per 1 m^3 (10/0.1 m^3 = 100), with an average artifact size of 3.14 g (31.46 g / 10 = 3.14 g).

Overall, the total count for the House 4 test units was low at 266 artifacts (1,646.23 g) (Table 9). The outside numbers are reflective of the relatively small size of the artifact assemblage recovered within the dwelling. A total of 841 artifacts (8,772.74 g) were excavated in the interior (Table 10). The relative density of artifacts inside and outside the dwelling are very similar, at 146.26 artifacts per 1 m^3 inside the dwelling (841/5.75 m^3 = 146.26) and 163.69 artifacts per 1 m^3 outside the dwelling (266/1.625 m^3 = 163.69). Two possible explanations may account for the comparative paucity of artifacts in House 4: (1), the dwelling may have been occupied for a brief period of time and therefore little refuse was deposited within the dwelling and *solar*; or (2), the household utilized a different strategy concerning the disposal of refuse, that resulted in the differential behavioral pattern associated with the areas inside and outside of the dwelling. As will be discussed below, the House 4 assemblage dates to the last peak period of hacienda production, i.e. the 1880s through the abandonment of the site.

Table 9. House 4 Test Units Artifact Totals.

Artifact Class	n	% Total	Wt. (g)	% Total
Coarse Earthenware	179	67.29	745.00	45.26
Refined Earthenware	5	1.88	4.77	0.29
Glass	27	10.15	108.91	6.62
Metal	24	9.02	160.68	9.77
Ground Stone	0	0.00	0.00	0.00
Daub	0	0.00	0.00	0.00
Sim Tun (burnt stone)	26	9.77	604.88	36.75
Tile	0	0.00	0.00	0.00
Faunal Remains	2	0.76	5.14	0.31
Other	3	1.13	16.50	1.00
Totals	266	100.00	1,645.88	100.00

Table 10. House 4 Artifact Totals.

Artifact Class	n	% Total	Wt. (g)	% Total
Coarse Earthenware	630	74.91	4,579.21	52.20
Refined Earthenware	5	0.59	17.80	0.20
Glass	48	5.71	257.84	2.94
Metal	61	7.25	1,180.39	13.46
Ground Stone	2	0.24	305.52	3.48
Daub	0	0.00	0.00	0.00
Sim Tun (burnt stone)	67	7.97	1,934.00	22.05
Tile	1	0.12	14.56	0.17
Faunal Remains	18	2.14	113.80	1.29
Other	9	1.07	369.62	4.21
Totals	841	100.00	8,772.74	100.00

There is no real evidence to suggest that occupation of the site was temporally limited.

However, there is the circumstantial evidence mentioned earlier concerning the spatial limits of the *solar*, which might suggest a behavioral explanation for the patterning found at House 4. The presence of limestone outcrops at or just below the surface of much of the front portion of the *solar* create a rocky landscape with thin soils. The large outcrops 6-7 m behind the dwelling would have seriously restricted the activity space available, and may have provoked the placement of the kitchen within the dwelling rather than in a separate structure. In such close quarters, it is reasonable to expect that the disposal of refuse would be treated in a more organized manner in order to maximize the available activity area. In fact, there is ethnoarchaeological evidence suggesting that considerations of hindrance potential are central in affecting patterns of refuse behavior. Hayden and Cannon (1983:155) have outlined three major determinants affiliated with the potential of refuse to interfere with household activities, including "(a) the area available for activities (or amount of minimally used area available), (b) the number, type, extension, and intensity of activities occurring in the area available, and (c) the amount of refuse involved." Two of these determinants can be estimated for House 4, the third, involving the nature of activities associated with the dwelling, is more problematic.

The area available for activities, in this case represented by the potential depth of the patio, is estimated at seven m^2 for House 4. Potential space for dwellings on Block 4 and Block 7 were calculated by measuring the distance from the rear of each dwelling to artifact concentrations suggestive of off patio areas. The average for Block 4 is 14 m, with a low of eight m and a high of 20 m. The Block 7 average is 21.66 m, with a low of 15 m and a high of 30 m. These rudimentary calculations demonstrate that the immediate activity space available to the inhabitants of House 4 was significantly less than that available for the majority of the residents in Block 4 and Block 7. These numbers also seem to support the earlier conclusion that more gardening activity was taking place in the less restricted *solares* of Block 7.

The number, type, extension, and intensity of activities taking place in the various *solares* under study are assumed to be roughly equivalent, with the exception of gardening activities. Because the majority of households on the hacienda were subject to the same or similar demands on their labor and time, it is likely that the number of activities taking place within the household revolved around the same set of basic daily activities, such as cooking, cleaning, the maintenance of tools and household items, etc., the extent and intensity of which are defined by the space available and not the other way around. All households would have had to attend to these basic needs, although idiosyncratic behavior would have dictated the relative amount of space members of particular households would have allocated for each activity. The major difference would have been with those households that also required space in the *solar* for gardening activities. Households not dependent upon the needed subsistence production of a garden, could manage within smaller *solares* and could organize their space and behavioral patterns accordingly.

The amount of refuse produced per household is assumed to be roughly equivalent for each household on the hacienda. The previous analysis has shown that when behavioral differences are accounted for, the average refuse production attributable to individual households is similar between Block 4 and Block 7. Based on our current understanding of the historical and archaeological realities of life on Hacienda Tabi, there is no reason to believe that refuse production rate at House 4 would vary significantly from that of the other three house types tested. Examining the average densities for the total number of artifacts recovered from both inside and outside each of the excavated dwellings reveals the disparity between House 4 and the other structures: House 1, 350.30 artifacts per 1 m^3 (2,601/7.425 m^3 = 350.30); House 2, 248.75 artifacts per 1 m^3 (2,699/10.85 m^3 = 248.75); House 3, 330.54 artifacts per 1 m^3 (4,231/12.8 m^3 = 330.54); and House 4, 150.10 artifacts per 1 m^3 (1,107/7.375 m^3 = 150.10). I suggest this divergence is the result of disposal behavior in which refuse is being removed to a location outside the *solar* or it is being placed in specific dumping locations at the back of the *solar* (an area not tested archaeologically).

House 4 Chronology

The occupational history of House 4 appears to be comprised of a single occupation represented by the *sascab* floor. Because of the shallow depth to the limestone bedrock, the volume of soil within the house was not great. It appears that fill and limestone rubble were used to level the uneven limestone outcrop and then the *sascab* living surface was laid down. The artifacts recovered from both above and below the floor level contained very few temporally diagnostic objects. Those objects that are chronologically sensitive, i.e. glass, nails, and coins, provide only a wide chronological range for the dwelling site. Container glass fragments from House 4 provided a late nineteenth–early twentieth century date range based on glass color. Only two nails were recovered from the site. Both are wire nails, a type not widely distributed until after the 1880s (Wells 1998:86-87). Four coins were recovered during the excavation of House 4, including a 1906 centavo. The dates on the other three coins were obscured by corrosion, but they all conformed to the style of the 1906 coin and to the coins dating between 1900 and 1910 from House 3. A total of 10 refined earthenware sherds were also recovered from the excavations, none of which are diagnostic. Overall, these artifacts suggest an occupational date ranging from the 1880s to the abandonment of the hacienda in 1914.

This period corresponds to the final peak in sugar production at the hacienda between 1890 and 1905. The population at the hacienda had been steadily rising through the 1880s and almost doubled between 1887 (n = 499) and 1900 (n = 851) (Rejon Patron 1998). It was during this 1890s period of growth that House 4 was probably occupied. The seeming lack of an earlier occupation of the site may reflect the previously described deficiencies of the location. Support for this is found in Wauchope (1938:10), where he states “Limestone outcrops are avoided, because post holes are harder to dig where outcrops occur.” Perhaps with the rapid rise in population during the 1890s this site, which was previously considered marginal, was utilized to fulfill the increased housing needs of the hacienda.

CHAPTER IX

THE HACIENDA TABI ARTIFACT ASSEMBLAGE

Summary of the Artifact Assemblage

The identification of household types at the hacienda relies in part on artifact assemblages and the presence or absence of specific subsets within artifact classes, like ceramics and container glass. In the preceding pages, these materials have been evaluated in conjunction with the built environment in order to infer household organization and behavior. This information has also provide insight into issues concerning social status, issues which will be discussed in greater detail in the following chapter. Furthermore, analysis of the material assemblages provides insight into the evolution and adaptation of household organization within the hacienda and community.

A total of 7,854 artifacts were recovered from the shovel testing of Block 4 and the excavations at House 3 and House 4. All recovered artifacts were cleaned, sorted, and identified at Hacienda Tabi using procedures and processes appropriate for the different artifact classes. The systematic methods of data collection were designed to facilitate quantitative analyses. Analysis and classification of artifacts involved the use of ethnohistoric, ethnographic, and ethnoarchaeological references documenting the material culture of Yucatan. The following discussion collectively summarizes the artifacts recovered from all excavations, with more detailed information on significant or diagnostic items. For descriptive purposes the materials have been grouped into functional categories, including domestic, architectural, tool, and personal groupings.

Domestic Group

The Domestic Group consists of artifacts associated with household consumption activities and artifacts involved with food preparation, food containers, serving vessels, and food refuse. Categories within this group include ceramics, container glass, faunal material, and ground stone.

Ceramics

Ceramics are a particularly good example of an archaeological material that has high interpretive value. The presence of relatively expensive refined earthenwares with decorative techniques like transfer painting or in vessel forms such as tureens, typically indicate wealthier households, and by extension, higher status households in Western contexts (Spencer-Woods and Heberling 1987; Heberling 1987). On the haciendas of Yucatan, access to refined earthenwares was very limited. This is especially true of the more expensive types of wares, e.g. semi-porcelain and porcelain, as well as the more elaborate vessel forms. For this reason, I am primarily interested in the relative frequency between coarse earthenwares (i.e. local ceramics) and refined earthenwares (i.e. imported ceramics). High frequencies of refined earthenwares relative to coarse earthenwares are useful as markers of high household status. Diagnostic ware types and styles of decoration are of more interest as chronological markers, than as individual indicators of status relative to each other.

Coarse Earthenware

The coarse earthenware sherds recovered from the hacienda represent locally made ceramics (Figure 43). Up until the last few decades of the 20th century, a centuries old tradition of pottery manufacturing had existed in Yucatan. This tradition had changed little in the years since the Conquest. A number of studies undertaken in the

Figure 43. Coarse Earthenware Ceramics from Hacienda Tabi (after Meyers 1998).

middle of the last century recorded the similarity of techniques and forms between present day pottery manufacture and prehispanic techniques and forms (Thompson 1958; Brainerd 1955; Rendon 1949). Regarding the antiquity of this tradition Brainerd wrote "there is no doubt . . . that the pottery-making practices now used in Yucatan are in overwhelming proportion pre-Hispanic. Vessel forms and materials are very close to those of the Late Mexican substage [the Postclassic in current terminology] which shortly preceded the Conquest" (Brainerd 1955:69).

Ethnohistoric and ethnographic descriptions indicate that ceramic assemblages associated with Maya households were relative simple and utilitarian in nature. Wauchope (1938:120) suggested that the typical dwelling in Yucatan contained "from two to eight large vessels, such as jars and storage bowls, and many smaller bowls for dipping, serving, and storing." Gann (1918:28) noted that the Maya made "vessels in considerable variety, both as to size and shape, which are used for the storage of water and dry material, …and as cooking pots." For the households of Chan Kom, Redfield and Villa Rojas (1934:36) noted that the two most used forms were a narrow-mouthed wide-bodied jug used to carry water and large wide-mouthed jar used to store water. They also observed the use of ceramic incense burners in conjunction with the household shrine. These sources agree that ceramic vessels were used primarily for food preparation and storage or for water gathering and storage. Serving vessels traditionally consisted of objects made from gourds or wood, sometimes supplemented with metal or refined earthenware vessels (Wauchope 1938:120; Redfield and Villa Rojas 1934:36).

In his 1955 study, Thompson recorded fifteen basic vessel forms out of a sample of 175 vessels collected between 1877 and 1958 (1958:39-48, 147). These vessel forms fall into three general categories: jars, bowls, and dishes. The folk taxonomy of Yucatan recognizes two major use categories; cooking pots and water containers (Thompson 1958:146). A third category related to specialized ceremonial items may also be recognized. Jars are typically associated with carrying and storing water (Figure 44). Jars are characterized by subspherical bodies, typically have flat bottoms, and are the only significant vessel form to have handles.

As noted in the above passage regarding the village of Chan Kom, there is a definite relationship between vessel form and vessel function. The overall shape and size of the vessel, as well as in the shape of the rim indicate the functions of these vessels. For example, narrow mouth jars are characterized by long narrow necks with recurved or everted rims, conducive to the transport of water. The diameter of these narrow mouth orifices range from 8 to 15 cm (Thompson 1958:39). In comparison, wide mouth jars are larger, with short necks and everted or direct rims, which are more suitable for storing and accessing water. The diameter of the orifices of these vessels range from 10 to 37 cm (Thompson 1958:39). The small long neck jar has a direct rim and is used as a canteen for carrying water. The orifice diameter on these vessels ranges between 6 and 8 cm (Thompson 1958:39). Numerous examples of both wide and narrow mouth jars of this type were recorded at Hacienda Tabi (Figure 45). Bowls in Yucatan are characterized by subhemispherical bodies, round or flat bottoms, and collar or direct rims (Figure 46) (Thompson 1958:44). Large bowls range from 13-42 cm in

A

B

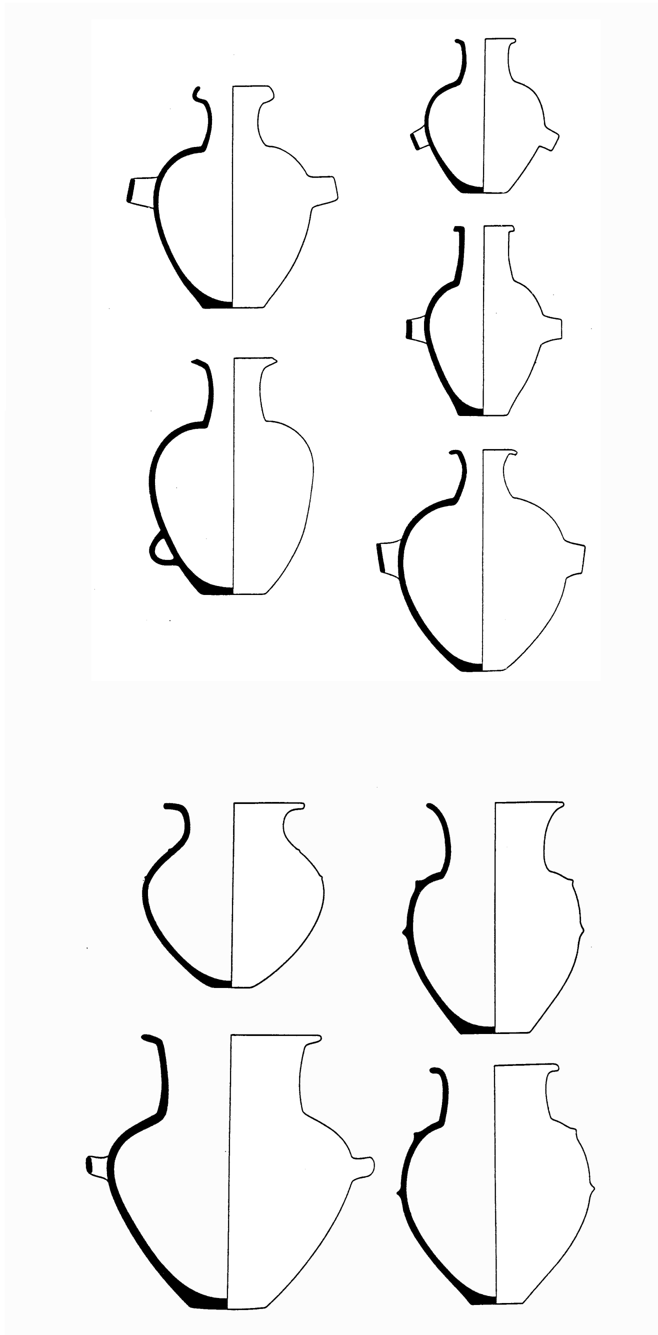

Figure 44. Ethnographic Examples of A) Narrow Mouth Jars and B) Wide Mouth Jars (after Thompson 1958).

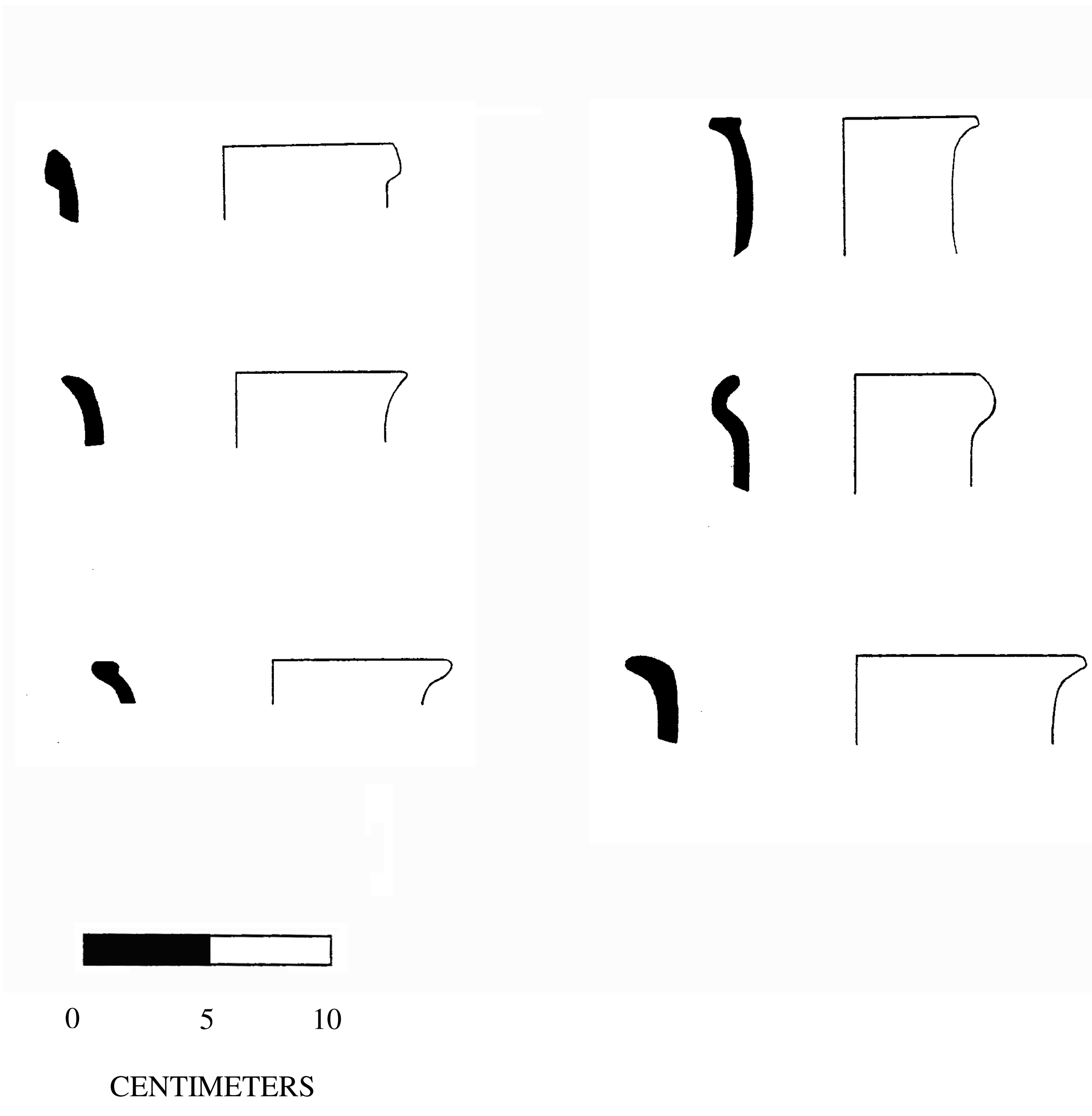

Figure 45. Coarse Earthenware Jar Forms Found at Hacienda Tabi (after Meyers 1998).

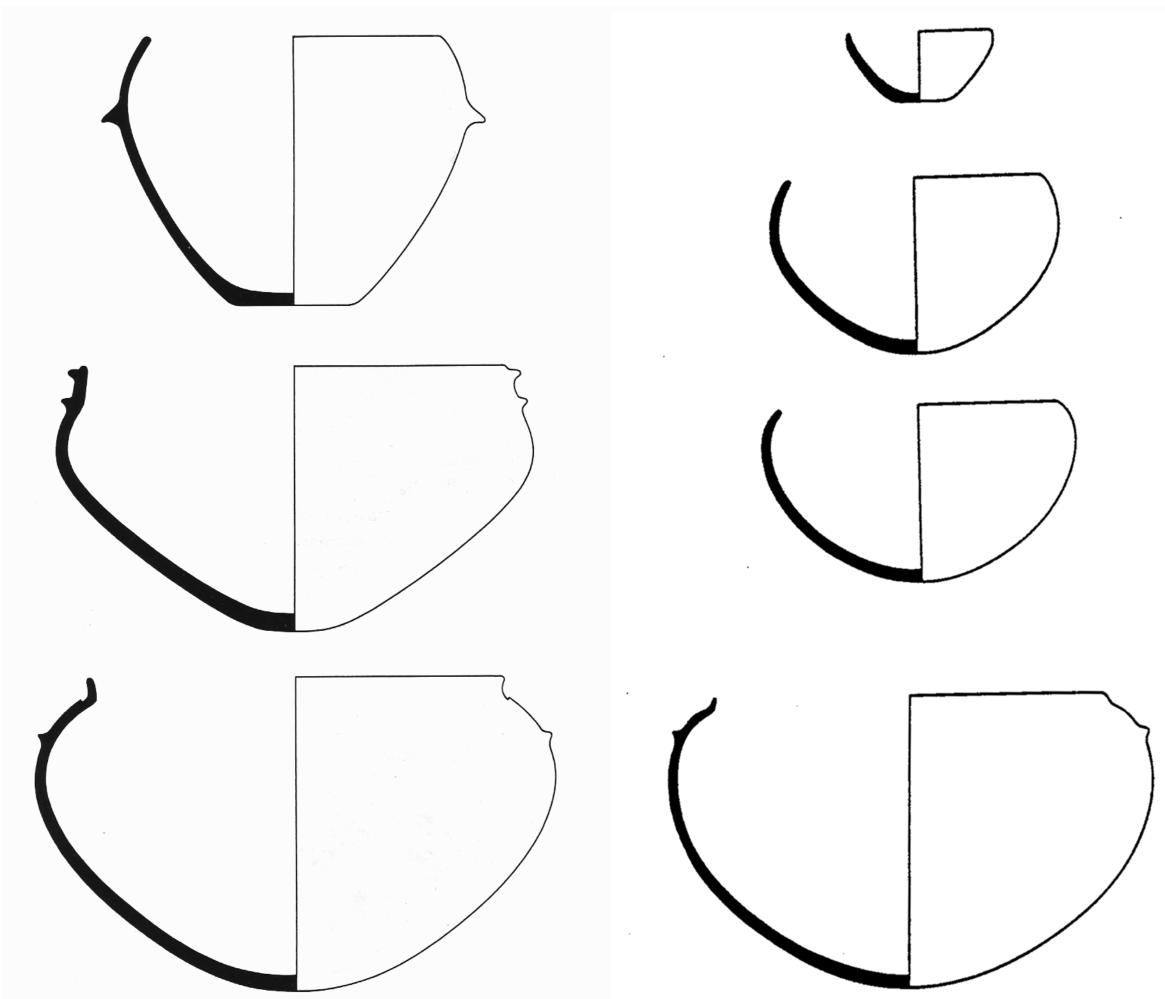

Figure 46. Ethnographic Examples of Bowl and Dish Forms (after Thompson 1958).

diameter. Two different types of large bowls are used for cooking or for storage. Large bowls used for cooking are often left unslipped and commonly have encircling fillets (Thompson 1958:115). Large bowls used as basins for storing water or food preparation not involving cooking, are usually slipped, almost always have flat bottoms, and typically have collar style rims (Thompson 1958:117). As discussed earlier, small bowls are used for both ceremonial purposes and as serving vessels, although the later is relatively uncommon (Thompson 1958:106-107). Small bowls usually have direct rims and range in diameter between 7 and 13 cm (Thompson 1958:44). Numerous examples of bowl type vessels were also recorded archaeologically at Hacienda Tabi (Figure 47).

Thompson (1958:48) identified two dish forms for Yucatan, the flat-rim dish and the shallow dish, one with a flat everted rim and one with a direct rim. These forms were not common in Thompson's sample (n = 5) and are not mentioned in the ethnographic or ethnohistoric record. I assume that these forms were not common for the same reason that small bowls were relatively uncommon, in that serving vessels are typically made from gourds or wood. The detection of dish forms from sherds found in the archaeological record is complicated by the close resemblance these forms have to other vessels in the pottery assemblage, making them difficult to identify. The flat everted rim of the flat-rim dish may be an exception, but none of these were identified in the assemblage.

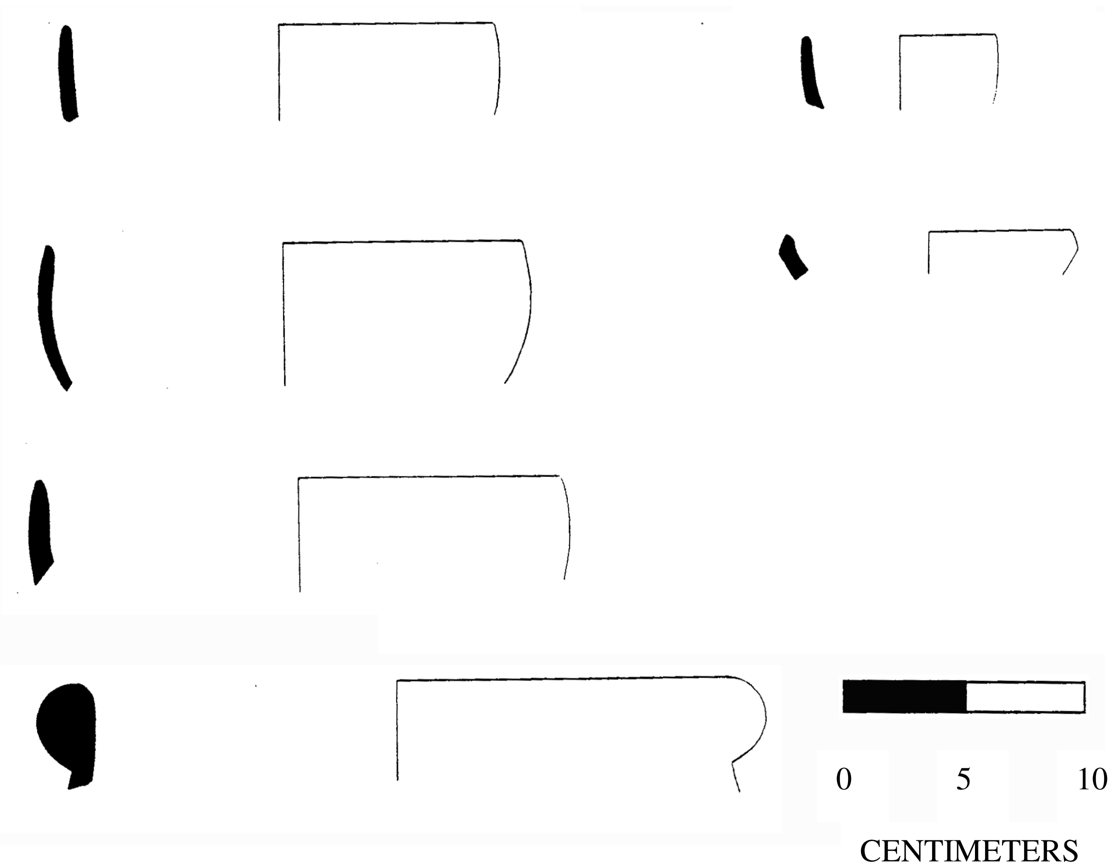

Figure 47. Coarse Earthenware Bowl and Dish Forms Found at Hacienda Tabi (after Meyers 1998).

Refined Earthenware

Refined earthenwares are high-fired (> 1,200º F), vitrified white ceramics typically used as tableware (Rice 1987:5). Various grades of refined wares were produced depending upon the types of clay used, temper added, and firing temperatures achieved. The refined earthenwares recovered at Hacienda Tabi include sherds of pearlware, whiteware, and semi-porcelain (Figure 48). A variety of decorative techniques were used on these wares, some of which are highly diagnostic. Examples of other common refined earthenware types, such as stoneware, creamware, and porcelain were not recovered. All the refined earthenware ceramics found at Hacienda Tabi were

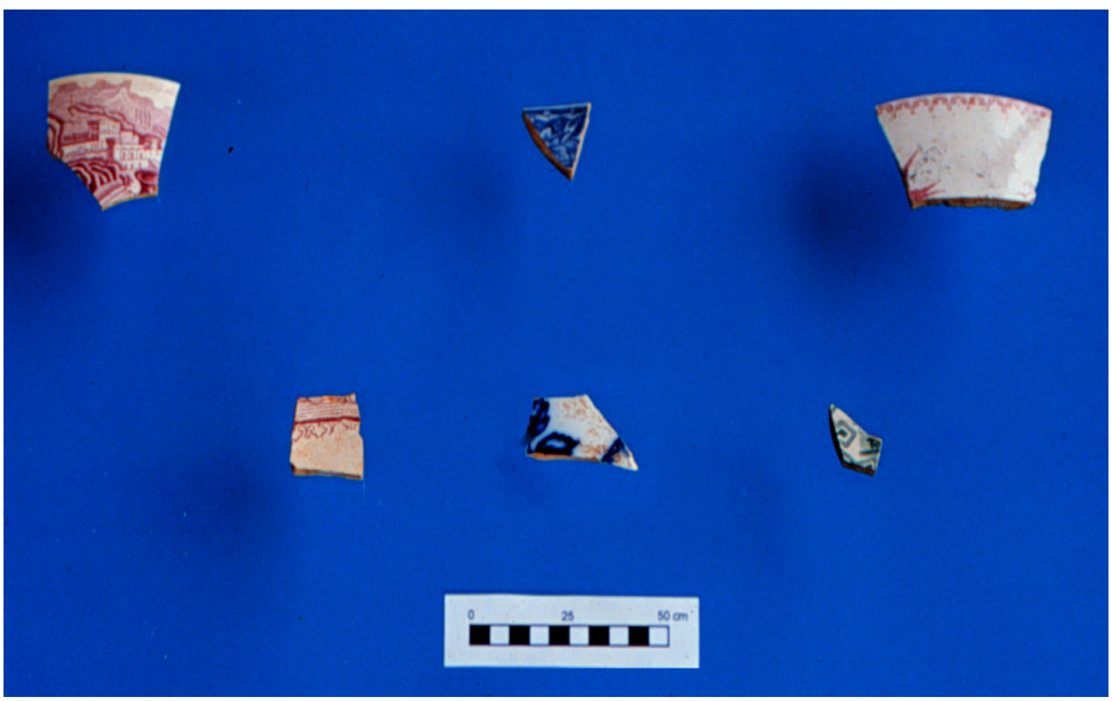

Figure 48. Refined Earthenware Ceramics from Hacienda Tabi (after Meyers 1998).

imported. Despite prohibitions placed on trade by the Spanish Crown, an illicit trade in English goods thrived throughout the eighteenth century. The illegal importation of goods grew especially strong after Spain recognized a permanent British colony in Belize in1763 (Patch 1993:208). By the time of Mexican Independence in 1821, European countries had already established strong trade relations with the country, including (in order of importance) England, France, Germany, and Spain (Fournier-Garcia 1997:51). After 1825, the United States entered the Mexican market through the re-exportation of European goods into the country (Fournier-Garcia 1997:51; Herrera Canales 1977:79-91, 108). By the end of the nineteenth century, the United States was exporting domestically- produced refined earthenwares to Mexico (Borg 1975:44). There is no real evidence for Mexican whiteware production until the 1920s, after the Mexican Revolution (Borg 1975), probably as a result of the market strength of European and American exports.

A total of 37 refined earthenware sherds were recovered from the Block 4, House 3, and House 4 excavations. Nineteen of these sherds were decorated in a variety of styles, most of which are not diagnostic (Table 11). The remaining 18 undecorated sherd show no sign of decoration, but may represent undecorated portions of vessels that were in fact decorated. Any number of these sherds may or may not be related to the growing popularity of undecorated whiteware ceramics after the 1850s (Miller 1980:18). Nine sherds do have decorations that are considered diagnostic of particular periods. All but one of these are transfer printed wares of various colors, each of which corresponds

Table 11. Decorative Techniques Found on Ceramics.

Decoration	Block 4	House 3	House 4
Annular	1	1	0
Hand Painted	1	3	2
Stamped	0	2	0
Stenciled	1	0	0
Transfer Printed	1	7	0
Total	4	13	2

to a particular date range. Transfer printed refined earthenwares were first introduced in the 1780s after having been used on porcelain vessels for approximately 20 years (Miller 1991:9). The process involved the printing of a design from an engraved copper plate covered with pigment to a piece of paper. This paper was then pressed against the body of the vessel transferring the print onto the piece. As the process improved increasingly more detailed shadings and fine lines were possibly. Over time, colors came in and out of popularity, creating date ranges for the various colors (Table 12). Seven transfer printed sherds are associated with House 3, including four blue printed sherds (1820-1860), two purple printed sherds (1829-1860), and one light blue printed sherd (1826-1831). One blue printed sherd (1820-1860) was recovered from the shovel test excavations.

Table 12. Transfer Print Date Index.

Type	Maximum Popularity	Production Range	Median
Dark Blue	1820-1830	1820-1860	1845
Light Blue	1827-1828	1826-1831	1829
Purple	1829-1839	1829-1860	1845

The final diagnostic decorated sherd is a piece of pearlware that is hand painted in blue from House 3. Pearlware evolved out of creamware in the 1780s, emulating hard paste porcelain (Miller 1980:2,16). Pearlware is distinguished by the blue tinted glaze that produced a whiter appearance of the vessel body, which also creates a distinctive blue tone in places where the glaze has puddled. Painted wares had become more common after 1772 with the invention of the necessary technology for refining cobalt blue paints (Miller 1991:7). Early pearlware vessels were painted with Chinese motifs in imitation of the Chinese porcelains that was being driven from the English market by increasingly high tariffs. Blue painted pearlware remained widespread into the 1820s when floral motifs were popular (Miller 1991:8).

Majolica

Majolica is tin glazed coarse earthenware originally brought from Europe bythe Spanish. The production of majolica in Mexico began in the sixteenth century and flourished until the late eighteenth century when inexpensive European whitewares entered the market. In the principle production center of Puebla, the number of manufacturers fell from 46 in 1793 to 16 in 1802 (Barnes and May 1972:5; Gerald 1968:54). The industry was further reduced after Independence as majolica “suffered a loss of prestige and market demand with the opening of trade” (Seifert 1977:143). An Anglo-Mexican trade treaty was signed in 1824, which allowed English ceramics to be imported directly into Mexico nearly destroyed the Mexican industry (Barnes and May 1972:5; Caywood 1950:87-88). In addition to the residual Puebla manufacturers, the industry was revived in several central Mexican cities during the nineteenth century (e.g. Guanajuato/Dolores, Hidalgo, Oaxaca, and Sayula, Jalisco). However, the distribution of these wares was confined to central and northern Mexico (Seifert 1977:143).

Based on this description of the majolica industry in Mexico and our knowledge of European importation, it is safe to put a terminal date for the importation of majolica into Yucatan in the 1820s. As previously reported, a single majolica sherd was recovered from House 3. This sherd in concert with the diagnostic refined earthenwares and other artifacts, provides evidence for an early pre-Caste War component for the dwelling site.

Container Glass

A total of 166 container glass fragments were recovered (Block 4, n = 61; House 3, n = 51; House 4, n = 54), accounting for 2% (166/7,854) of the total artifact assemblage. The majority of these were non-descript bottle glass fragments. Five diagnostic vessel parts or nearly complete bottles were recovered from the Block 4 and House 3 excavations. No diagnostic fragments were recovered from House 4. The Block 4 shovel tests yielded a nearly complete, light olive, three piece mold-made bottle minus finish and a clear glass, plate molded proprietary medicine bottle. The three piece mold bottle dates to between 1830 and 1880 and the proprietary medicine bottle dates to the period 1870-1914 (Lindsey 2004; Rosenberg and Kvietok 1981) . Three diagnostic vessel parts were recovered from the House 3 excavations. The oldest of these is a light olive, laid on ring finish bottle, dating to between 1840 and 1870 (Rosenberg and Kvietok 1981). The other two examples are from machine made bottles dating to after 1904. The first is a nearly complete, light green bottle, with an Owens scar and the second is an amber, machine-made, crown closure finish bottle.

Three bottles embossed with lettering, all from the Block 4 shovel test units, were recovered. One of these is the proprietary medicine bottle described above. The panel fragment from this bottle is embossed “Co. Inc.” and “SA___”. The presence of the abbreviation for incorporated, rather than S.A. (*Sociedad Anónima*), indicates the wording on this bottle was in English, and therefore, suggests that it was an imported good. The origins of the other two embossed bottles cannot be determined from the existing text. One of these is a clear green bottle fragment embossed with “AN” and the other is an amber colored shoulder fragment embossed with the letter “E”.

Faunal Material

Faunal material was recovered from the Block 4 shovel tests (n = 34), as well as from both House 3 (n = 81) and House 4 (n = 20). Analysis of the material, by Anna Lee Presley in the field, provides some insight into the types of food consumed within the worker’s village. This information is primarily from the material recovered from Block 4 and House 3, as the limited material from House 4 consisted mostly of fragmentary non-diagnostic material. Faunal material from the shovel test units is composed primarily of long bone fragments from medium to large size mammals, which in the context of the hacienda are probably deer (Cervidae) or goat (*Capra hircus*). In addition, two specimens are positively attributed to medium sized artiodactyls, again probably deer or goat. Two other fragments were diagnostic of cow (*Bos taurus*).

The faunal assemblage from House 3 was also dominated by long bone fragments from medium to large size mammals (n = 33), with four additional specimens identified as artiodactyls. Seven large to very large mammal specimens were recovered, most likely representing cow (*Bos taurus*). Two specimens probably representing chicken (*Gallus gallus*), but possibly rabbit (Leporidae) were also collected. Specimens from three clearly non-domesticated species were also recovered from House 3, including a lateral incisor from a tapir (*Tapirus bairdii*), the enamel from the canine of a peccary (*Tayassu* sp.), and a dermal scute from an armadillo (*Dasypus novemcinctus*).

Many of the recovered bones show evidence of butchery in the form of chopping, as with a cleaver, or more likely, a machete. In addition, many of the bones also show spiral fracturing, indicating that they were broken while fresh. This behavior reflects the extraction of marrow. One interesting specimen, identified as a long bone shaft from a medium to large artiodactyl, demonstrates periosteal remodeling and is truncated by chopping at both ends. This specimen may represent a domesticated animal, in this case probably a goat, as it is more common to find evidence of periostitis on the bones of domesticates than on the bones of feral specimens (Anna Lee Presley, personal communication 1999).

Ground Stone

A total of six ground stone artifacts were recovered from the excavations, including fragments of a *mano* (hand grinding stone), a *metate* (stationary grinding surface), and a footed vessel. A *mano* is a cylindrical stone used to grind corn into meal on a slab of stone called a *metate*. The mano and metate fragments were recovered in House 4. In House 3, a fragment of a ground stone vessel was recovered. This fragment consisted of the 2 cm tall foot attached to a portion of the inner convex surface of the vessel. The fragment is reminiscent of the short legs found on a *molcajete*, a footed stone vessel used as a mortar for grinding spices. Also found in House 3 was a ground limestone disc 7 cm in diameter and 3 cm thick. The use of this object is unknown, although it may have been used as an abrader of some sort as its size fits nicely in the palm of the hand.

Architectural Group

The Architectural Group is represented by nails, wire, and fragments of tile. All of these items are somewhat unexpected and the amount of wire and tile fragments found during excavations – primarily associated with House 3 - suggests atypical behavior on the part of the residents of this household. Traditional Maya structures are constructed of entirely natural materials and the use of non-traditional manufactured materials indicates a departure from traditional practices. Nails are not traditionally used in dwelling construction and their presence at the site most likely reflects their use in objects such as crates, furniture, conveyances, and other objects constructed of wood, rather than in elements of the built environment. The low number of recovered nails confirms that they were not being used in the construction of dwellings or other structures.

Historic sites are associated with three chronologically sensitive nail types, including hand-forged nails, machine-cut or “cut” nails, and wire nails (Wells 1998). Hand-forged nails, characterized by a lack of uniformity in the four tapering sides, were common before the 1830s. Cut nails are more uniform in thickness and have only two tapered sides. Both hand-hammered and machine-headed nails were being manufactured in the late eighteenth century, but it was not until the 1820s that uniform machine-headed nails became popular (Edwards and Wells 1993:36). The peak production for cut nails dates to the period 1850-1888 (Orser 1988:191). A subset of cut nails included a type known as the L-headed or angle-headed nail, which also appeared in the late eighteenth century and continued in use until the 1850s (Rosenberg and Kvietok 1981:84). Wire nails are the type in common use today, having a uniform round shank and head. Wire nails were first produced in 1855 and gradually increased in popularity, becoming widely distributed in the late 1880s (Wells 1993:86-87; Orser 1988:191). By 1902, nearly 100% of all nails produced were wire nails (Fontana and Greenleaf 1962).

A total of 18 nails were recovered from the excavation units (Table 13). No hand-forged nails were recovered, indicating that the majority of nail use by the inhabitants of Block 4 and Houses 3 and 4 dates to the period after 1850. The one exception to this is a L-headed nail associated with the ash lens found in test unit N1107 E925, which strongly suggests that this feature dates to the earlier occupation of the site. The five other cut nails recovered in association with Block 4 and House 3 confirm the reoccupation of this block in the period after the Caste War. Similarly, the sole presence of wire nails at House 4 affirms the dating of the occupation of the dwelling to the 1880s and later.

Fontana and Greenleaf (1962) have produced an index that provides a mean chronological date based on the relative proportion of cut to wire nails recovered from a site (Table 14). Cut nails account for 29% (5/17 = 29) of the total nail assemblage at Tabi, representing a mean date range of 1890-1895. This date range corresponds to the

Table 13. Frequency of Nail Types.

Nail Type	Block Survey	House 3	House 4
Machine-Cut	2	4	0
Wire	1	8	3
Total	3	12	3

Table 14. Chronological Index Based on the Frequency of Nail Types.

% Cut Nails	Date Range
100	Prior to 1887
80-99	1887-1889
25-79	1890-1895
1-24	1896-1902
0	Post 1902

late nineteenth century zenith of production at the hacienda, and it is no surprise that the occurrence of introduced artifacts such as nails would increase during this time of heightened production, a period in which a greater number of imported goods were likely to be introduced into the hacienda.

Increased access to imported goods is evidenced at House 3 in the high frequency of wire recovered in the upper most excavation units of the dwelling. Fifty-two of the seventy-two surface units in the dwelling (72%) yielded pieces of wound wire. In traditional dwellings, framing members are lashed together exclusively with vines or bark. I propose that the wire recovered in House 3 was used in the construction of the roof in place of the traditional natural lashings. The patterning of the wire throughout the dwelling is explained by the collapse of the perishable roof structure into the interior of the structure. The use of this introduced, non-traditional material has interesting socioeconomic implications regarding the household that occupied the structure, which will be addressed further in the following chapter.

Tile is another introduced construction material that was found in abundance in House 3. A total of 282 fragments of tile were recovered within the structure, including 237 pieces of terracotta tile and 45 pieces of glazed whiteware tile. Examples of whole terracotta tiles identical to the fragments recovered in House 3 can be found in the palacio (Figure 49). The fragments do not represent the broken-up remnants of whole tiles, but rather unrelated pieces of different tiles. The quantity of tile fragments found at House 3 may represent artifacts associated with specific economic activities. Although, the true significance of these fragments is not understood at this time. Similar to metal,

Figure 49. French Terracotta Identical to the Sherds Recovered from House 3.

glass, and refined earthenwares, the tile fragments within the House 3 assemblage further exemplify the incorporation of non-traditional/imported goods into the households of the hacienda. Similar to the wire, the high frequency of tile (9% of the total assemblage) in House 3 suggests that the residents of this household had access imported goods, either as an occupational necessity or through personal privilege.

Tool Group

A number of tools were recovered within the excavations, as would be expected for a community intimately involved with agricultural production. Two *coa* digging sticks (a hand held tool with a hooked blade) were recovered inside House 3. This a common tool in Yucatan used in weeding around plants and for any number of other planting utilities. A file was found in the deposits of House 4 that would have been used to sharpen common tools like the *coa* or the machete.

Evidence for firearms on the hacienda was found in the presence of a flint from a flint lock gun and a shell casing from a rifle, both of these items have been discussed above. Firearms were highly desired items in Yucatan, commonly employed in hunting. The presence of these items in House 3 may suggest ownership of such a weapon, and therefore, may suggest a certain amount of socioeconomic power. Alternatively, ownership of a firearm may signify that the head of the household occupied a position of authority on the hacienda. Along with this authority came occupational status and typically increased socioeconomic power. This will be discussed in greater detail in the following chapter.

House 3 also yielded two other tools which have important occupational implications for the household. Two iron needles (20 cm and 11 cm long) were recovered above the *sascab* floor surface in the house. A local informant identified these needles as *puts maskab* or needles used by muleteers in sewing-up sacks of maize for transport. Further research seemed to confirm this identification. The Diccionario Maya

(1995:678) defines the *puts maskab* as a large muleteer's needle (*aguja grande arriera*). Apparently the job of sealing the maize sacks was a job specifically for the muleteer, as such a specific definition exists. The implications of these tools will also be discussed in the following chapter.

Personal Group

The Personal Group is comprised of items that would have been in the possession of individuals on the hacienda. Several of these items are associated with the clothing individuals on the hacienda would have worn. Male laborers would have worn short white trousers known as *culex*, a white shirt, and a rectangle of cloth called a *delantal* that was tucked in the waist and worn like an apron to the knees (Redfield and Villa Rojas 1934:41; Gann 1918:18). On their feet they would have worn leather or rope sandals. Women would have worn the traditional long blouse known as the *huipil*, a calf length skirt under the *huipil* called a *pik*, a long shawl called a *rebozo*, and slippers (Redfield and Villa Rojas 1934:41-42; Gann 1918:18-19). Non-Maya individuals or those Maya who did not wear the traditional dress would have worn western style clothing, including button-up shirts with collars, trousers, jackets, boots.

Of these garments, only the closures found on male garments might be recovered archaeologically. Pictures from the period show men dressed in traditional clothing wearing long-sleeved shirts with a series of buttons at the neck. Western style shirts and jackets also had buttons. It is also possible that the waist of the *culex* may have had a button closure. Western style trousers would have had some type of closure, most likely buttons. The traditional items of women's clothing had no fasteners.

A total of four buttons were recovered, all from House 3. These included one soft- paste, white ceramic two-holed button, one white china four-holed button, one two-holed mother of pearl button, and one two-holed button made of bone. By the mid nineteenth century china buttons were being produced in England, France, and the United States (Poole 1991:7). Regardless of their origin, these china buttons, as well as other ceramic buttons, represent items imported into the Yucatan (Whether these buttons were also being produced in Mexico is unknown). Mother of pearl buttons were being produced in Europe up until the mid nineteenth century (Poole 1991:6), but they may have also been manufactured locally. Similarly, the bone button recovered may represent an imported item or one manufactured locally. A brass thimble recovered from the shovel testing of Block 4 would have been used by household members to make and repair clothing.

A total of 10 coins were recovered during the course of excavations. Five of these were found in association with House 3 (1807, 1900, 1906, 1906, 1910), four in association with House 4 (1906, others undetermined), and one was recovered from the shovel test units in Block 4 (1906). The predominance of coins dating to after the turn of the century may reflect a change in the way wages were paid on the hacienda. Oral tradition related to Hacienda Tabi (Rejon Patron 1993:85), as well as historical evidence from other Yucatecan haciendas, records the payment of workers in *fichas* (tokens) rather

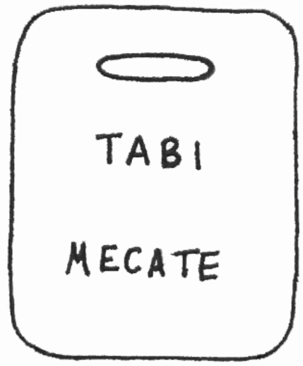

Figure 50. Mecate Planchet from Hacienda Tabi.

than in specie (Rulau 1992; Grove 1989; Leslie and Pradeau 1972). The declining economy of Yucatan in the early twentieth century coupled with the death of owner Eulogio Duarte led to the sale of the hacienda in 1907. Perhaps along with this change in ownership came a change in the way wages were paid on the hacienda.

Two additional personal items of note were recovered during the excavations. A clay marble was found in House 3, possible signaling the presence of a child in these household. This was the only evidence suggestive of a child recovered during the coarse of excavations. At House 4 a holed metal planchet embossed “Tabi/Mecate” was recovered in the test unit placed next to the southwest corner of the house (Figure 50). These tags were fastened to bundles of henequen to denote the area of land represented for record keeping purposes – in this case one *mecate*, an area of 20 square meters - or they were alternatively given as receipts of work done, which would later be turned in for payment or redeemed directly at the hacienda store.

The Implications of Archaeology at Hacienda Tabi

It is the fundamental premise of this dissertation that larger economic changes associated with the rise of the hacienda system will be manifest in the organization of the individual households incorporated within the system. From the beginning, I have hypothesized that the inclusion of Maya households into this evolving rudimentary capitalist mode of production brought about a fundamental reorganization of the principles on which these households were ordered. It has already been shown that occupational differences existed on the hacienda and that these differences corresponded to a hierarchical ranking of occupational status. We also know that the *hacendado*, or the *mayordomo* acting on behalf of his master, assigned dwellings to the different households residing on the hacienda.

Although we have no records connecting specific households with particular dwellings, I believe it is reasonable to infer that the quality of dwelling given to an individual was incumbent upon his status within the occupational hierarchy of the hacienda. As discussed in Chapter VII, there is great historical precedence in Yucatan confirming the association of high status individuals with high quality structures in prominent locations. In addition, the increased economic and social privileges associated with higher status individuals has also been demonstrated for the hacienda. Therefore we should expect correlations to exist between dwelling types and the material culture associated with those types. The above relationships constitute the primary thesis of this study, i.e. household wealth will co-vary with the different dwelling types, which in turn are linked to, and are representative of, occupation and status on the hacienda.

Social change has been a constant theme throughout this dissertation. In particular, I am interested in how the economic and social lives of the individuals and households, which were incorporated within the hacienda system in Yucatan, changed as a result of the processes involved with the rise and elaboration of the hacienda system. In order to evaluate change, the archaeological results outlined in the previous chapter need to be placed in the context of everyday life at Hacienda Tabi. Specifically, I want to evaluate household tenure on the hacienda as it relates to four interrelated problem areas, including: household wealth, individual and household social status, household organization, and the use of social space (including aspects of social control and power relationships) on the hacienda.

Household Wealth at Hacienda Tabi

Household wealth at Hacienda Tabi constitutes the sum of goods having both social and material value found in association with individual dwellings. The social value of a good is determined by the social perceptions and symbolic value connected

Table 15. Percentages of Total Household Assemblages by Count and Weight for Refined Earthenwares, Coarse Earthenwares, Glass, and Metal.

	Refined Earthenware		Coarse Earthenware		Glass		Metal		Total Household Assemblage	
	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight
House 1	140	230.01	1,679	5,664.69	173	520.19	608	2,462.52	2,726	9,275.22
% of Total	5.13%	2.47%	61.59%	61.07%	6.34%	5.60%	23.38%	22.30%	96.44%	91.44%
House 3	18	23.03	2,985	13,362.36	51	393.64	447	1,405.74	3,936	17,355.18
% of Total	0.46%	0.13%	75.83%	76.99%	1.29%	2.26%	11.36%	8.09%	88.94%	87.47%
House 4	10	22.57	809	5,324.21	75	366.75	85	1,341.07	1,014	7,879.74
% of Total	0.98%	0.28%	79.78%	67.56%	7.39%	4.65%	8.38%	17.01%	96.53%	89.05%
House 2	21	33.10	1,844	7,854.87	71	223.26	763	584.26	2,803	8,757.59
% of Total	0.74%	0.37%	65.78%	89.69%	2.53%	2.54%	27.22%	6.67%	96.27%	99.27%

with a particular item or class of items. The most conspicuous items during the hacienda period, in terms of monetary as well as symbolic value, were those imported goods sold in the *tienda de raya* or the shops of neighboring villages. The social perception of these goods was intimately linked with their material value in terms of labor (production and transport costs) and scarcity (market related issues of supply and demand). Of the artifact categories recovered at Hacienda Tabi glass, metal, and ceramics (specifically refined earthenwares) are not only the most prevalent, but also the most informative. These four artifact categories constitute the majority of each household assemblage (Table 15). Approximately 96% of the House 1, 2, and 4 assemblages – by count – are composed of these materials. At House 3 these categories represent 90% of the recovered deposits, with tile fragments comprising much of the remainder. (Please note that the artifact percentages calculated in Table 15 for House 3 and House 4 do not include *sim tun*. The relative weight of this material would seriously skew the overall percentages for these assemblages, and would distort intra-household comparisons since no *sim tun* was recovered from the House 1 and House 2 excavations.)

Of all the items recovered from dwellings in the worker's village, refined earthenwares are the goods that most likely represented increased social value. Refined earthenware vessels were expensive replacements for the locally manufactured coarse earthenware and gourd vessels traditionally associated with serving functions. Refined earthenwares represent imported goods with higher production and transport costs than locally produced wares. These wares would have been relatively scarce in comparison to the more readily available traditional coarse vessels. Thus refined earthenware vessels were imbued with increased symbolic value as non-essential luxury goods, which in the social perception of the day were linked with more urbane, higher status creole and mestizo households.

Less clear are the social and material values associated with goods represented by the glass and metal recovered in the artifact assemblages at Hacienda Tabi. The majority of these artifacts probably represent foodstuff packaging and miscellaneous materials available in the *tienda de raya*. Due to their wide availability it is unlikely that these materials carried any real social value. The importance of these goods would have been in their representative material value derived from being imported. These items were purchased to supplement household subsistence and material needs, and in many cases probably represented luxury items, such as liquor or canned meats. The interpretive value of these items is found in their relative quantity and variety within the assemblages of households. Increased quantity, quality, and/or variety of these goods may be indicative of differences in purchasing power, access to credit, etc., associated with particular households.

Individual household wealth is based on the expectation that all goods imported into the hacienda were available to any individual who could afford them. This assumes that there were no sumptuary type laws in effect on the hacienda and that presumably any items available in the *tienda de raya* could be purchased by anyone. This assumption appears to hold true, as imported goods - represented by the refined earthenware, glass, and metal in the assemblages – were found in association with each of the excavated dwelling types, thus demonstrating that all households had access to these materials.

There are several caveats surrounding this assumption of equal access. Workers who were not indebted to the hacienda (*trabajadores libres*) had the freedom to leave the hacienda and therefore had greater access to the stores in the surrounding towns and by extension to a greater variety of extra-local items (Rejon Patron 1993:78). However, this advantage may have been offset by traveling vendors called "*conchuchos*" who periodically visited the hacienda to sell their wares (Rejon Patron 1993:83). Higher status workers may have also been paid in specie, which could have been used to purchase goods in stores outside the hacienda. Again though, this advantage may have been mitigated by the ability to exchange hacienda issued *ficha* (tokens) for specie. Former hacienda workers recalled that an accumulated sum of *ficha* could be exchanged for currency, which could then be used at stores in the towns (Rejon Patron 1993:85). However, this was probably the exception rather than the rule, as it was not in the best interest of the hacienda to exchange legal currency for what were in effect valueless tokens. Such an exchange would mean a loss of capital to outside businesses and the hacienda would be forgoing an opportunity to either collect on debts owed or to further increase the indebtedness of workers.

The majority of items recovered in the household excavations at Hacienda Tabi are associated with utilitarian functions related to the completion of daily household activities. Any additional social information these artifacts carry are key to evaluating socioeconomic status, e.g. the differential levels of quality, decoration, function, and price associated with various types of ceramics. These differences, as expressed in the patterning of the archaeological record, are discernable and measurable along variables of quantity, quality, and variety (Shephard 1987:165-168; Smith 1987:319-320). As outlined in Chapter III, several hypotheses can be forwarded regarding the correlation between socioeconomic status and the relative quantity, quality, and variety of artifact assemblages. These hypotheses are:

> 1) the higher the socioeconomic status of a household is, the greater the *quantity* of possessions composing its material assemblage will be; 2) the higher the

> socioeconomic status of a household is, the greater the *quality* of its material assemblage will be; 3) the higher the socioeconomic status of a household is, the greater the *variety*, or diversity, of items composing its material assemblage will be (Shephard 1987:168; emphasis in original).

Quantity

The variable quantity refers not only to the overall size of an assemblage, but also to the quantity of items within particular artifact categories (see Table 1). Quantity is closely associated with a household's income level and household studies demonstrate a direct correlation between income, household size, purchasing power, and quantities of refuse. This basic relationship does not hold true for the households at Hacienda Tabi, where households were constrained by restrictions imposed by the hacienda system. Firstly, differences in household size that could potentially affect the quantity of materials consumed - consequently the amount of material deposited as refuse in association with a particular dwelling - were limited due to the hacienda's management of household formation and organization. The hacienda limited household organization to nuclear families and controlled the formation of households by arranging marriages for youths of a certain age set. For this reason household size would have been roughly the same for all households on the hacienda, all represented by nuclear families following similar development cycle trajectories.

Secondly, differences in consumption linked to disparities in income were mitigated at Hacienda Tabi due to the generally limited amount of consumer goods available and the limitation of these goods, primarily, to consumables. Households with smaller incomes typically spend more on necessities like food than on non-food consumer goods (Shephard 1987:166; Smith 1987:306-307; Douglas and Isherwood 1979:97). The hacienda represents a situation in which the households have access to, and a certain amount of dependence on, the imported goods available in the *tienda de raya*. At Hacienda Tabi there appears to have been very limited access to non-food and non-utilitarian consumer goods. The goods available in the *tienda de raya* were primarily food and utilitarian items that would have been needed and purchased by all households. This is reflected in the household assemblages, which are composed of artifacts primarily related with consumables packaging and items representing a standard inventory of utilitarian items involved with the preparation, and consumption of foodstuffs. The potential for dissimilarities in the quantities of the major artifact classes of coarse earthenware, metal, and glass between households is diminished, because differences in the allocation of income for consumer goods of these types were likely negligible between households on the hacienda.

Refined earthenwares represent the exception to the above conclusions regarding income allocation. The distribution of refined earthenwares between the different house types demonstrates a significant difference in the purchasing power of households on the hacienda (Table 16). A chi-square (x^2) test of independence statistically evaluates the difference in the relative proportions of refined earthenwares and coarse earthenwares between the four excavated dwellings. In order to mitigate the effects of the large

Table 16. Counts and Percentages of Total Ceramic Assemblages for Refined and Coarse Earthenwares.

	Refined Earthenwares		Coarse Earthenwares	
	Count	%	Count	%
Type A (House 1)	140	7.7	1,679	92.3
Type B (House 3)	18	0.6	3,045	99.4
Type C (House 4)	10	1.2	809	98.8
Type D (House 2)	21	1.1	1,844	98.9

sample sizes associated with the coarse earthenware counts, a chi-square test evaluating only refined and coarse earthenware rim sherds was performed. The resulting contingency table results ($x^2 = 63.61$, $df = 3$, $\alpha < .001$) indicate that a statistically significant difference exists in the proportion of refined and coarse earthenwares between dwellings (Table 17). In this instance the null hypothesis – that there is no significant difference in the proportions of refined and coarse earthenwares between dwelling types – is rejected as the resulting x^2 value of 63.61 is greater than the critical value of 16.27 established for a test with three degrees of freedom at a significance level of .001.

Further statistical comparison confirms the relationship between Type A, House 1 and the other three dwelling types (see Appendix A). Chi-square tests comparing Type B, Type C, and Type D dwellings demonstrate that there is no significant difference between the proportions of refined earthenwares to coarse earthenwares between these three assemblages. The contingency table results for these tests are as follows: Type B

Table 17. Chi-Square Contingency Table for Refined and Coarse Earthenware Rim Sherds.

	Refined Earthenware	Coarse Earthenware	
Type A (House 1)	34	133	167
Type B (House 3)	4	261	265
Type C (House 4)	2	66	68
Type D (House 2)	2	98	100
	42	558	600

(House 3) to Type C (House 4), $x^2 = 0.61$; Type B (House 3) to Type D (House 2), $x^2 = 0.11$; and Type C (House 4) to Type D (House 2), $x^2 = 0.15$. The x^2 values for these tests fall well below the critical value of 3.841 calculated for tests with one degree of freedom at a significance level of .05 and therefore the null hypotheses are not rejected (see Appendix A). These statistical results confirm the results of the energetic analysis, suggesting that there is a clear difference between Type A, House 1 and the other three dwelling types. Furthermore, these x^2 tests confirm that dwelling Types B, C, and D are much more similar in terms of both ceramic assemblages and energetic costs when compared with the Type A dwelling.

Refined earthenwares clearly represent expensive substitutes for the more accessible and less expensive coarse earthenware vessels. The special nature of these vessels is further underscored by the fact that most consumptive activities in Maya households involved the use of gourd serving vessels (*lac*). As previously discussed, ceramic vessels were rarely used for these purposes. Therefore, ownership of refined earthenware vessels not only represents a household's access to these expensive wares both monetarily and physically, but also suggests a different set of behavioral and consumer constructs characterizing the individuals that occupied the different dwelling types found on the hacienda.

The use of refined earthenware vessels represents non-traditional, non-Maya consumptive activities. The presence of refined earthenware ceramics suggests activities associated with non-Maya households or Maya households emulating creole or mestizo behavioral patterns based upon European cultural practices in which these ceramic types of vessels were used for serving. Either of these situations is intriguing. The association of refined earthenwares with non-Maya households would help confirm ethnohistoric observations that link higher-level, more specialized occupations with individuals having non-Maya surnames at Hacienda Tabi (Rejon 1998:10). This would suggest that the highest status occupations and highest status households – predominantly represented by Type A dwellings – were associated with non-Maya or mestizo workers. These households would have had the socioeconomic status and income necessary to access and purchase these luxury items, as well as an ethnic tradition associated with the daily, utilitarian usage of such vessels. However, the presence of refined earthenwares at all four excavated households indicates that at least to some degree the ethnically Maya households were also participating in the behavioral practices of their creole or mestizo counterparts by incorporating refined earthenware vessels into their household inventories.

Finally, it is important to note that several complicating factors may also affect the quantity of artifacts associated with the assemblages of the different dwelling types. First, differences in the occupational spans of the different dwellings will affect the quantity of material deposited. Discrepancies of this type are especially reflected in utilitarian artifact classes like coarse earthenwares, e.g. the multiple time components of House 3 are demonstrated by an assemblage having nearly twice the weight (three times if *sim tun* is included) and nearly 1.5 times the total count of the next closest dwelling - House 1. Second, differences in refuse behavior associated with the different households, as discussed in Chapter VIII, will affect the accumulation and patterning of artifacts, e.g. the proposed differential refuse behavior reflected in the numerically small assemblage of House 4. However, the calculations performed in the previous chapter demonstrated that the average quantities of metal and glass produced by households were roughly similar. Third, the limited excavation of the interior deposits of House 1 in 1997 affected the relative quantity of material recovered in association with this structure. The rubble floor encountered within the dwelling reduced the total count and weight of artifacts recovered from the dwelling. Despite this, the percentages of artifact counts and weights for House 1 should still be representative as the excavation still approximated a systematic sampling of the dwelling interior.

Quality

The dissimilar patterns of consumption recovered in the archaeological record indicate reflective of the consumer choice decisions made by former households regarding the relative quality or value of available goods. In market based economies quality is typically represented by a monetary value, which is most often a function of the rarity and/or desirability of a particular class of goods. The majority of goods available in the marketplace have technomic value, or value related to a particular utilitarian function served within the daily maintenance of household activities. However, some of these items also carry additional sociotechnic value attached to their participation in social group behavior (Spencer-Woods 1987:9). The higher quality and price of these items made them both rarer and more desirable, while at the same time insuring that only higher status individuals had the income and access necessary to purchase them. Thus, these items came to denote the higher status of those who had the means to procure them.

On the hacienda, consumer choice decisions were influenced by factors relating to socioeconomic status, such as income, market access, and ethnicity. These factors determined a household's ability to acquire differentially priced goods within the marketplace. Households with high socioeconomic status have greater purchasing power and increased access to goods and are correlated with higher quality goods. The distinctive patterning of these goods in the archaeological record represents behavioral differences reflecting socioeconomic status.

The major artifact categories certainly represent goods that held value to the residents of Hacienda Tabi. As previously noted, most of these items were available in the *tienda de raya* and, while for this reason were not rare, they were certainly desirable. Refined earthenwares again stand-out as the exception. Refined earthenwares had value as both desirable and rare goods. These vessels were rare on the hacienda as a result of the higher cost and limited availability associated with them. These factors insured that only those of high socioeconomic status could afford them in any great quantity, thus creating an exclusivity of ownership.

At the same time, there is a reflexive and mutually reinforcing relationship between the economic value of goods like refined earthenwares and the symbolic value of such goods. Refined earthenwares helped to structure and reproduce social relations on the hacienda by signaling the socioeconomic position of those who possessed these goods. These vessels gained symbolic value by being associated with the wealth, prestige, and status of those households in the position to acquire them. On the hacienda the socioeconomic status necessary to afford and procure refined earthenwares was linked directly to occupation, specifically to individuals in high ranking occupational positions, such as the *mayordomo* and other salaried workers such as artisans, technicians, and agricultural specialists. The use of refined earthenwares on a daily basis reinforced status differences and created dissimilar patterns of consumption between households on the hacienda.

The correlation between consumer choice, quality, and status is most clearly demonstrated in the relationship between refined earthenwares and the built environment. As the chi-square tests in the previous section demonstrated, there is a significant correlation between the highest quality dwellings at the hacienda and refined earthenwares. The results of the energetic analysis from Chapter VIII show that there is a clear difference between the cost and quality of the Type A dwelling in comparison to the other three dwelling types. As discussed above, the proportion of refined earthenware recovered from Type A, House 1 is also significantly different from the other three dwelling types. When these archaeological results are compared with the ethnohistorical record, I see a scenario in which high status households, defined by occupation, are affiliated with a pattern of consumption characterized by high quality dwellings and goods. In short, there existed at Hacienda Tabi a mutually reinforcing relationship among high status occupation, consumption of high quality goods, and high socioeconomic status.

Variety

Variety reflects the diversity of items in an assemblage that have differing and/or specialized functions (Shepherd 1987:167; Smith 1987:319). By virtue of greater means and access, higher status households should have assemblages composed of not only utilitarian goods, but also luxury or non-essential items. In general, there is a positive relationship between variety and quality in household assemblages, where increased variety results from the presence of both utilitarian items and higher quality luxury items. This correlation holds true for the assemblages at Hacienda Tabi, where assemblage variety progressively increases from Type D to Type A dwelling types.

Coarse earthenware, constituting common utilitarian wares employed by all household types, functions as a baseline for comparing the relative percentages of artifact classes within the household assemblages and therefore acts as a gauge of the overall variety present within each assemblage. The trend toward decreasing variety is represented in the count percentages for coarse earthenware in Table 1. The percentage of coarse earthenware in each assemblage increases steadily until Type D, House 2. The count percentages in the House 2 assemblage are disproportionately skewed by the high metal artifact count. During the House 2 excavations, a site high total of 763 metal artifacts were recovered, yet these artifacts weighed a site low of 584.26 g. This suggests that through either behavioral processes that affected this material during its use life or transformational processes –both natural and cultural – that affected the material after deposition, the metal artifacts at House 2 were highly fragmented.

To correct for the anomalous count to weight ratio, a standardized weight per piece was calculated from the assemblages of the other three dwellings. This operation produced a corrected count of 128 artifacts for the House 2 assemblage (5,209.33 g / 1,140 artifacts = 4.57 g average per artifact; 584.26 g / 4.57 g = 127.84 artifacts). Using this corrected number produces a count percentage of 85.06% for the House 2 coarse earthenware, a number more representative of the overall variety present within the assemblage (1,844 coarse earthenware sherds / 2,168 total artifacts = 85.06%). The overall difference in coarse earthenware as a percentage of the total household assemblage between Type A, House 1 (61.59%) and Type D, House 2 (85.06%) is 23.5% (Table 4). Sixty percent of the difference between Type A and Type D dwellings is represented by the disparity between Type A, House 1 (61.59%) and Type B, House 3 (75.83%). Similar to dwelling cost (Chapter VIII) and refined earthenware quantity (above), the Type A dwelling clearly separates from the other three dwelling types, which are more closely grouped together. As with dwelling cost, Type B, House 3 and Type C, House 4 cluster more closely together than House 4 does to Type D, House 2 (see Table 18).

The increased variety associated with the higher status Type A dwelling demonstrates the greater access and income enjoyed by this household. Households with lower incomes must devote a greater portion of their income to purchasing subsistence goods. Conversely, higher income households have surplus funds available after meeting their subsistence needs, allowing them to spend on higher quality, more costly substitutes for utilitarian items or on other luxury goods. For example, many of the glass and metal artifacts recovered from the House 1 excavations may represent more costly canned foods and beverages used to supplement the household's diet or as substitutes in lieu of household or locally produced food items. Again, the ultimate display of such income is represented by the relatively large assortment of refined earthenware vessels associated with the household.

Table 18. Coarse Earthenware as a Percentage of Total Artifact Assemblage.

	Coarse Earthenware as % of Total Assemblage
Type A (House 1)	61.59
Type B (House 3)	75.83
Type C (House 4)	79.78
Type D (House 2)	85.06

Conclusions Regarding Household Wealth

The preceding discussion of household wealth confirms will co-vary with the different dwelling types, which in turn are linked to, and are therefore representative of, occupation and status on the hacienda. There is a clear progression among the dwelling types found at Hacienda Tabi in terms of the quantity, quality, and variety of artifact assemblages. These expressions of wealth confirm This progression At either end of the range are the Type A and Type D dwellings. In between are the Type B and Type C dwellings, which are more closely clustered together. There is a significant difference between the Type A dwelling, House 1 and the other three dwelling types, which cluster more closely together. These results suggest that all households had access to imported goods (most likely through the *tienda de raya*), but as might be expected, purchasing power decreased from one from the higher to lower status households.

The distinctive patterning of these assemblages the cumulative result of consumer-choice decisions made by these households on a daily basis, where the selection of particular goods is related to both income and perceptions of status –a combination of both self-perception and intended displays of status. This trend is most evident when examining the distribution of high status refined earthenwares. Type A households had a much greater ability to acquire these goods and while the presence of these wares at the other three dwelling types demonstrates the potential capability of all households to own these goods, they clearly did not have the status, means, or opportunity to acquire them in any quantity.

Wealth differences between households likely extended to materials not recoverable in the archaeological record, including goods like fresh foodstuffs. For example, informants who had lived on the hacienda recalled that every Thursday and Saturday fresh beef and milk was put on sale, first to high ranking workers and then in limited quantity to the indebted *acasillados* (Rejon 1993:57). I have already suggested that less gardening took place in the higher status household *solares* of Block 4 (all Type B houses), than in the larger, less cluttered *solares* of Block 7 (dominated by Type D houses). This implies that these higher status households were supplementing their subsistence with goods purchased from the hacienda.

CHAPTER X

THE SHORT TERM: THE IMPLICATIONS OF ARCHAEOLOGY ON DAILY LIFE AT HACIENDA TABI

Reconstructing Daily Life at Hacienda Tabi

The hacienda was an acculturative force that was first accepted by the Maya because of its allowances for prehispanic organization and the benefits if afforded in access to resources and relief from tributary obligations. The *lunero* system represented a reoccupation of the lands depopulated after the Conquest and as such represented in many ways a return to prehispanic settlement patterns (Farriss 1984:213-215). However benign initial settlement on the estates seemed, it set the stage for the eventual domination of Maya life by the hacienda system and the *hacendado* (Patch 1993:151).

The rapid economic growth that took place in final years of the colonial regime generated increasing labor demands upon the Maya living and working on the haciendas. In 1786 the colonial government began to collecting *lunero* taxes directly from the *hacendados*, who in turn began extracting greater amounts of labor from tenants (Patch 1993:151). The evolving system of debt, coupled with a need to organize the relations of production in a manner more consistent with surplus commodity production, would led to the oppressive debt peonage system of the late 19th century. Attached to this system were new forms of social and economic organization that would significantly alter the Maya household.

Population at Hacienda Tabi

Population data exists for Hacienda Tabi from a number of years between 1782 and 1910. For the period prior to the Caste War (before 1847), population numbers for only two years are available and both date to the colonial period. In 1782 the population of Hacienda Tabi was listed as 1,700 resident Indians and 84 vecinos and the estate was listed as an *estancia de visita*, indicating the presence of a church or chapel (Thompson 1999:400, n.11). In 1803 the population of Hacienda Tabi is recorded as being 1,898 inhabitants (Patch 1993:199; Thompson1999:400n.11). These numbers indicate that Hacienda Tabi was one of the largest haciendas on the peninsula from an early date and that it was in fact the largest as of the 1803 population numbers (Patch 1993:199). The presence of such a large population and church in 1782 demonstrates how quickly the hacienda had grown during the crucial years of the 1770s and leaves no doubt that commercial agriculture was being undertaken on the estate.

At the time of this dissertation, the majority of available census data corresponds to the second half of the productive history of Hacienda Tabi, the period dating to after the Caste War. The census data for this period ranges from 1861 to 1910, with the most detailed information corresponding to the years 1874, 1879, 1881, 1886, and 1887. This 14 year period represents a time of rapid growth, a stage in which the population of the hacienda more than doubled (from 234 to 499 persons). The available data provide information concerning total population, age, sex, marital status, ethnicity, and literacy during this important period. In order to better understand this information a couple of clarifications regarding demographic categories are necessary. First, the minimum marrying age for females was 12 years old and 15 years old for males. Therefore on average individuals 13 years and younger can be considered children, while individuals 14 years and older are of marrying age (Rejon 1998:7). This division between children and "adults" is based on the assumption that the percentage of males to females in the population was approximately fifty-fifty, an assumption which the census numbers support (see below). This is important because the census data at hand is broken into age groups, where one of the breaks is between the ages 13 and 14. Second, the census data contains 208 surnames of which Rejon (1998) has classified 83 as being of Maya origin and 125 as being of Spanish or an alternate, non-Maya ethnic group.

The population growth Hacienda Tabi experienced in the second half of the 19th century reflects the economic growth of the hacienda after the destruction of the Caste War (Figure 51). In the 40 year period between 1861 and 1900 the population grew from 53 to 851 persons during the peak of production at Hacienda Tabi, when the hacienda was the largest producer in the state (Rejon 1993:59). The near halving of the population between 1900 and 1910 represents the economic downturn that occurred between 1904 and 1907, a period of prolonged drought that reduced harvests. Additionally, in 1905 the protective tariffs that producers in Yucatan relied upon were lifted and the resulting importation of sugar from other regions of Mexico and the world were ruinous to the local industry (Rejon 1993:45-46).

The census data for this period, with the exception of the initial reoccupation of the hacienda after the Caste War in 1861 and during the peak of production in 1900,

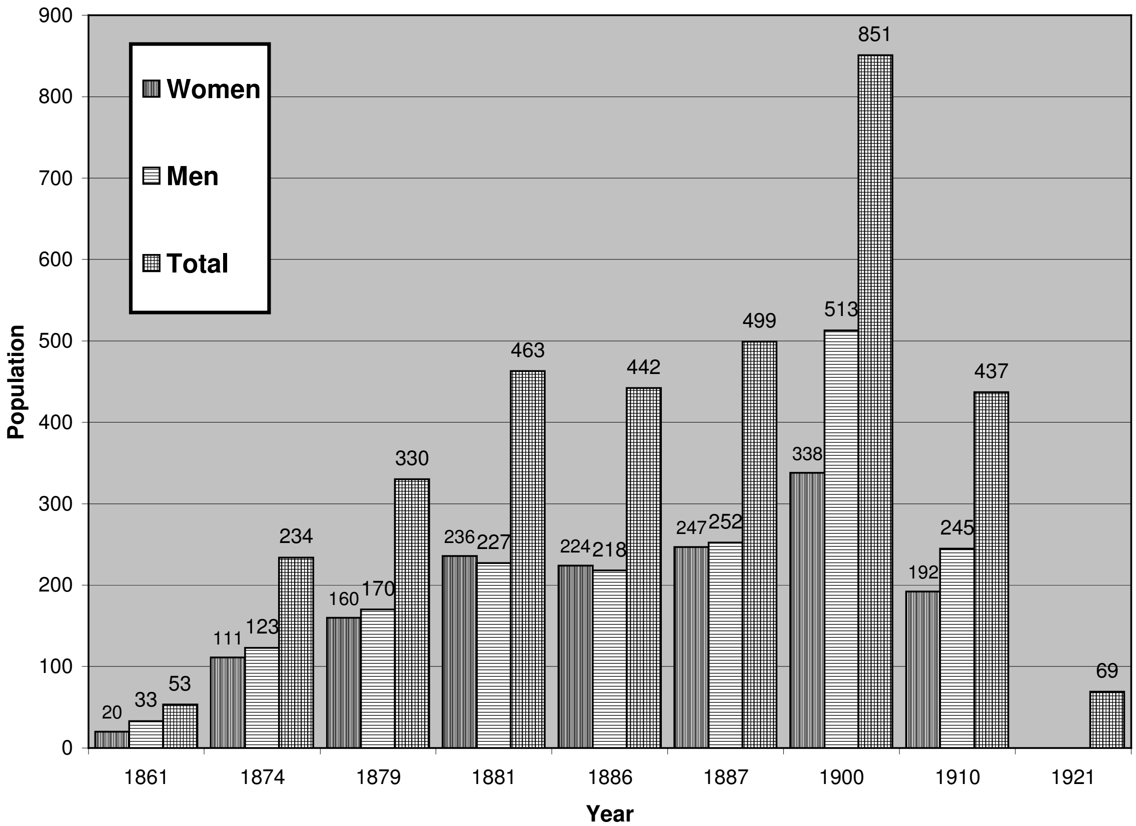

Figure 51. Population of Hacienda Tabi, 1861-1910 (note: chronologically not to scale).

records a population that was roughly even in the ratio of males to females (Table 19). These early and late stages represent periods in which an emphasis upon expanding production, initially in rebuilding infrastructure in 1861 and later maximizing production in 1900, might have preferentially focused recruitment on single males to fill the increased demand for labor. Otherwise, the data demonstrate the importance of the domestic unit on the hacienda, with approximately one-third of the population being children at any given time (Table 20).

Table 19. Census Data for Hacienda Tabi, 1861-1910.

Year	Male	%	Female	%	Total
1861	33	62.2	20	37.8	53
1874	123	52.6	111	47.4	234
1879	170	51.5	160	48.5	330
1881	227	49.0	236	51.0	463
1886	218	49.3	224	50.7	442
1887	252	50.5	247	49.5	499
1900	513	60.3	338	39.7	851
1910	245	56.1	192	43.9	437

Source: Rejon 1998:6

Table 20. Age Data for Hacienda Tabi, 1874-1887.

Age Range	1874	%	1879	%	1881	%	1886	%	1887	%	Total	%
1-6	51	21.8	77	23.3	62	13.4	65	14.7	92	18.4	347	17.6
7-13	48	20.5	47	14.2	69	14.9	62	14.0	67	13.4	293	14.9
14-20	39	16.7	53	16.1	98	21.1	84	19.0	84	16.8	358	18.2
21-27	20	8.5	39	11.8	70	15.1	61	13.8	65	13.0	255	13.0
28-34	16	6.8	40	12.1	80	17.3	75	17.0	63	12.6	274	13.9
35-41	23	9.8	38	11.5	51	11.0	43	9.7	53	10.6	208	10.6
42-48	10	4.3	11	3.3	13	2.8	19	4.3	34	6.8	87	4.4
49-55	19	8.1	12	3.6	11	2.4	18	4.1	28	5.6	88	4.5
56-62	6	2.6	6	1.8	4	0.9	14	3.2	6	1.2	36	1.8
63+	2	0.9	7	2.1	5	1.1	1	0.2	7	1.4	22	1.1
	234	100	330	99.8	463	100	442	100	499	99.8	1968	100

Source: Rejon 1998:7

A breakdown of the population in terms of individuals either married, single, widowed, or classified as children is also informative (Table 21). Data shows that at any given time during this 14 year period the number of married individuals was around one-third the total population. However, adding the number of widowed individuals are added to those who were married shows that at any given point during this period approximately 40% of the population was or had been married. The population of single individuals expanded by nearly 10% during this period, perhaps reflecting the above discussed trend towards expansion of the hacienda labor force through the recruitment of single males. Although, the concurrent decline in children at or under the age of 13 may reflect a natural aging of the population with a declining per capita birth rate. It is likely that this trend (increasing percentages of single individuals, decreasing percentages of children), is the result of all three factors, an increase in single workers, the natural aging

Table 21. Population by Group for Hacienda Tabi, 1874-1887.

Year	**Married**	**%**	**Single >/= 14 Years Old**	**%**	**Children < /= 13 Years Old**	**%**	**Widowed**	**%**
1874	78	33.3	46	19.7	99	42.3	11	4.7
1879	101	30.6	77	23.3	124	37.6	28	8.5
1881	174	37.6	109	23.5	131	28.3	49	10.6
1886	141	31.9	136	30.8	127	28.7	38	8.6
1887	168	33.7	138	27.7	159	31.9	34	6.8
Total	662	33.6	506	25.7	640	32.5	160	8.1

Source: Rejon 1998:13

of children, and a lessening in the per capita birth rate due to population growth as a result of the aforementioned single workers.

Another important aspect of the census data from this period concerns the possible ethnicity of individuals on the hacienda. This information is contained in the entries concerning the surnames of those living on the hacienda between 1874 and 1887 (Table 22). This table demonstrates a definite trend in increasing numbers of individuals with non-Maya surnames for the first 13 years of the period covered by the census data. I would suggest that this trend represents the incorporation of an increasing number of ethnically *mestizo* workers onto the hacienda. *Mestizo* workers would have carried a Spanish surname representing their ethnically mixed background. This trend comes to a dramatic climax in the year 1886 when nearly two-thirds of the hacienda population have non-Maya surnames. Then just as suddenly the trend is reversed with the addition

Table 22. Hacienda Tabi Population by Surname, 1874-1887.

Year	Maya Surname	% Total Population	Non-Maya Surname	% Total Population	Total Population
1874	129	55.2	105	44.8	234
1879	168	50.9	162	49.1	330
1881	210	45.4	253	54.6	463
1886	163	36.9	279	63.1	442
1887	259	51.9	240	48.1	499
Total/Avg.	929	48.1	1,039	51.9	1,968

Source: Rejon 1998:8

of 96 Maya workers and a loss of 39 *mestizo* workers the very next year, a swing of 135 individuals. The change in Maya individuals might be explained by an emphasis on the increased recruitment of Maya laborers and their families between years, but at this time I have no explanation for the loss of 39 non-Maya individuals during the same time.

Further examination of the differences between Maya and non-Maya individuals reveals a couple of telling trends regarding ethnicity, sex, and literacy. First, there is a striking difference between the number of literate Maya and non-Maya individuals (Table 23). It is clear, that although a very small percentage of the hacienda population was literate, the majority of those who were literate were non-Maya individuals, most likely *mestizos* who were being recruited from surrounding villages during this period, as discussed above. Second, further examination of literacy in terms of sex reveals strong biases within each ethnic group (Table 24). Again, the total numbers for literacy are small, but the data shows that there was not a single literate Maya male resident on the

Table 23. Literacy by Surname at Hacienda Tabi, 1874-1887.

Year	**Maya**	**%**	**Non-Maya**	**%**	**Total**	**% Literate**
1874	0/129	0	0/105	0	0/234	0
1879	1/168	0.5	6/162	3.7	7/330	2.1
1881	0/210	0	17/253	6.7	17/463	3.7
1886	0/163	0	13/279	4.7	13/442	2.9
1887	3/259	1.2	21/240	8.8	24/499	4.0

Source: Rejon 1998:11

Table 24. Literacy by Surname and Sex at Hacienda Tabi, 1861-1887.

	Maya Surnames		Non-Maya Surnames	
Year	Men	Women	Men	Women
1861	0	0	1	0
1874	0	0	0	0
1879	0	1	6	0
1881	0	0	16	1
1886	0	0	10	3
1887	0	3	12	9
Total	0	4	45	13

Source: Rejon 1998:11

hacienda during this 14 year period. Of the four Maya literate individuals, all of them were women. In contrast, a full two-thirds of the literate, ethnically non-Maya individuals on the hacienda were males. Even so, at any particular point during this period the majority of literate females were typically non-Maya individuals.

Household Organization

The household as an economic entity is sensitive to larger scale political and economic changes. Prior to the rise of the hacienda system in Yucatan, household production was focused primarily on subsistence. The tribute system that had existed long before the arrival of the Spanish on the peninsula continued, but as outlined previously the bulk of household production was still geared toward cooperative based relations of subsistence production. The Prehispanic period multi-family extended household was typically expressed in the clustering of dwellings around a central patio. Indeed, these organizational patterns continue to function in many parts of the present day Maya world (Hanks 1990; Wilk 1983, 1988, 1991; Press 1975; Thompson 1974). As has been demonstrated, fundamental changes in household organization – in terms of both spatial organization and social organization – occurred with the expansion of the hacienda system and its attendant relations of production (see Chapter VII). The nascent capitalism of the hacienda system introduced new relations of production, which required a reorganization of the Maya household. The productive system of the hacienda was based on a direct relationship between those who controlled the means of production (the *hacendados*) and those who bargained for permission to operate them (the Maya *peones*). Under this system, individual heads of households contracted directly with the hacienda for the right to access the lands of the hacienda in exchange for some portion of their labor. As has been shown, the exact terms of this exchange evolved and changed over time.

The hacienda system brought about fundamental changes in mode of production and the land tenure system. Household production was now concentrated on market production. The land tenure system no longer involved the corporate ownership of lands. The multi-family household and cooperative production of the prehispanic and colonial periods was no longer optimal nor was it necessarily desired by the *hacendado*. As discussed in relation to the policy of *congregación*, during the colonial period ordinances were enacted in attempt to force neolocal residence. This policy met with limited success under a system in which the means of production and relations of production were still under Maya control and direction. It was more natural, and more practical, to continue to organize tribute and subsistence production around the extended family household and therefore Maya households tended to gravitate back towards this more functional form.

The extended family household likely also dominated the early colonial hacienda landscape. During the late colonial period and early Independence era hacienda, when the *lunero* system represented the bulk of individuals residing on the hacienda, settlement was scattered across the entire estate. Although the hacienda had extremely high population numbers during this early period (see above), it is likely that most of the households representing these numbers were dispersed around the hacienda lands in small hamlets composed of extended family households (although it is likely that some workers chose to settle adjacent to the resources associated with the main house, e.g. the occupants of the early phase of House 3). Initially it was to the advantage of both the hacienda and the *lunero* to organize production in this manner, which was the most efficient and practical manner for maximizing yields under the existing subsistence mode of production.

As the system became increasingly focused on market production and capital accumulation for the *hacendado*, it became necessary to restructure the relations of production. To maximize production it became necessary to create a permanent workforce that labored six days a week, rather than relying on the one day a week provided by the *lunero* or the rotating system of *semaneros*. The *lunero* system was also limited in its potential expansion by the territorial demands of the system, demands which also took land away from potentially being utilized for market production. Ultimately it became necessary for the hacienda to bring the relations of production more in line with the already capitalist controlled means of production. The new system required a nucleated and dependent labor force, almost completely removed from the means of production.

The reorganization of the hacienda involved the movement of households into a central nucleated location from which production could be organized more efficiently and under the watchful eyes of the *mayordomo* and his assistants. It also now became necessary to create new methods to tie laborers to the hacienda. The *lunero* system had relied on the household's need for land to create a dependent relationship. Now, debt was used to obligate the individual to both continue working and living on the hacienda. Under the new debt-peonage system, it was more advantageous for the hacienda to have its workforce live as individuals, accumulating individual debt. Within this system the critical factors in traditional household formation (labor availability, resource availability, and complexity of tasks) were non-factors on the hacienda ,where workers were laboring for the hacienda and not for the household. As a result, worker's households were organized around the nuclear family housed in individual dwellings on individual *solares*. Within the hacienda system complexity in the household was not necessary, nor was it desirable on the part of the *hacendado*.

The Occupational Hierarchy

As described in Chapter VII, the colonial period hacienda occupational hierarchy was composed of *asalariados* or salaried workers and *luneros*. After the Caste War the labor system on the estates became more restrictive and hacienda production became increasingly centered upon a labor force bound to the estate through indebtedness. During the early years of the system debt was also present, but it seems that in many cases the extension of credit was a tool of recruitment "demanded as part of the terms of employment" by the workers who "often held the upper hand in these transactions" (Farriss 1984:215). Of course, as the colonial period progressed the system came to increasingly benefit the *hacendado*. However, the basic dichotomy between *asalariados* and *luneros* continued to characterize the hacienda up to the Caste War.

The organization of labor at Hacienda Tabi after the Caste War was composed of permanently residing laborers (both free and indebted) and temporary seasonal workers, all under the supervision of the *mayordomo*, by authority of the *hacendado* (Table 25). Most of the permanent labor force were *acasillados* (indebted laborers), a group composed of five subclasses, each with correspondingly higher levels of socio-economic status: 1) house servants; 2) agricultural workers; 3) mill workers; 4) *vaqueros*; and 5) *mayocoles* or overseers (Griesbach et al. 1993:20; Rejon 1993:75-79). The permanently residing free workers included agricultural specialists and artisans who earned higher wages than any of the *acasillados* and were granted greater privileges and freedoms. A second group of free laborers included mill technicians and agricultural laborers that

Table 25. The Occupational Hierarchy at Hacienda Tabi, Late 19th Century.

Occupation	Residence	Condition	Approximate Daily Wage
Mill Technician (Técnicos del Ingenio)	Seasonal	Free	5.00 - 8.00
Agricultural Specialist (Obreros del Campo)	Permanent	Free	5.00
Artisan (Artesanos) Carpenter (Carpintero) Blacksmith (Herrero) Mason (Albañil) Cooper (Carretero)	Permanent	Free	2.00 – 5.00
Agricultural Laborer (Jornalero)	Seasonal	Free	1.50 – 2.00
Overseer (Mayocol)	Permanent	Indebted	2.00
Ranch Hand Foreman (Mayoral) Cowboy (Vaquero)	Permanent	Indebted	2.00
Mill Laborer (Obreros de Ingenio - Seasonal)	Permanent	Indebted	1.25 – 2.00
Agricultural Laborer (Labradors)	Permanent	Indebted	1.00 – 1.50
House Staff Servants (Sirvientes) Guards (Guardas)	Permanent	Indebted	0.50 – 0.75

Source: Rejon 1993:Table 11

joined the hacienda labor force on a seasonal basis. At Hacienda Tabi these workers were brought in under contract during the harvest, in the case of technicians, to supervise and run the mill. Temporary agricultural laborers were brought in from the neighboring towns of Yotholin, Ticul, Oxkutzcab, and Pustunich to help with the cutting and processing of the cane (Rejon 1993:79-80).

All free laborers were paid in currency and were allowed to move freely from the hacienda. Mill technicians, agricultural specialists, and artisans were all paid well and were considered the elite of the work force. When they were on the hacienda they were treated with great respect and some of the more important seasonal workers were allowed to stay in the *palacio* (Rejon 1993:81). Indebted workers were paid in a combination of currency and tokens redeemable at the *tienda de raya*. The movement of indebted workers was highly restricted, with some estates requiring workers to requisition passes in order to leave the hacienda. The *mayocoles*, mill overseers, *mayoral*, and *vaqueros* were paid the highest wages of all indebted workers and garnered respect due to their positions as supervisors (Rejon 1993:75-76). At the bottom of the wage ladder were the field laborers and house staff who formed the bulk of the labor force. These individuals were completely dependent upon the disposition of the *hacendado* and their more immediate supervisors, as well as the subjection of such coercive mechanisms as the *tienda de raya* and corporal punishment (Rejon 1993:78).

Social Control and Power

Social control and power on the hacienda were intimately linked with the hierarchy of occupation. In the early years of the hacienda social control was based on the constructs of traditional domination, in which the power held by a *hacendado* power was an outgrowth of the patron/client relationship found in the institutions of *encomienda* and *repartimiento*. Under the patron/client relationship both parties had obligations of obedience and service to the other. Over time, but especially after the Caste War this relationship changed to one of legal domination, in which the *hacendado* gained authority through legal means, such as debt and the right to administer corporal punishment. Operating from the a mandate of legal domination, the *hacendado* was no longer required to operate within the niceties of past paternal obligations.

As an illustration of the transformation of the basis of domination from traditional to legal domination I offer the example of the hacienda church. The current church was finished in 1896 under the direction of Eulogio Duarte, who was responsible for substantial changes to the infrastructure of the hacienda culminating in the boom period of the 1890s (see Chapter IV). Apparently, the church Duarte replaced had been in ruins since the Caste War, nearly 50 years earlier, for Mercer made note of the "ruined church" during his visit in 1895 (Mercer 1896:95). Ethnohistorical documents record the condition of the church in 1851, describing the vestry as having collapsed, but that the church was in otherwise good condition (Bracamonte y Sosa 1993:109). The fact that not only had the vestry not been repaired by 1895, but seemingly the entire church itself was in ruins, says much about the perceived obligations of the owners towards their workers in the intervening years. Apparently, the Peon family who purchased the hacienda shortly after the Caste War, did not feel it necessary to provide for the spiritual care of their workers, running counter to one of the central tasks of the patron as the role had developed out of Spanish feudal traditions.

Social control and power at the Hacienda Tabi were exhibited in the kinds of public displays and theatre that took place in the public places of the hacienda. These displays were necessary to back claims of legitimacy and power no longer based on reciprocal obligation. These displays included acts of corporal punishment, habitual/ritualized behavior, the use of enforcers, as well as the formalized structure of the built environment. Corporal punishment on the haciendas of Yucatan is well documented (Baerlein 1914; Katz 1974; Turner 1969) Punishment often took the form of public whippings in front of the assembled hacienda workforce. Turner (1969:16) describes one such incident involving “a formal beating before the assembled toilers of the ranch early in the morning just after the daily roll call” in which “[t]he slave was taken on the back of a huge Chinaman and given fifteen lashes across the bare back with a heavy, wet rope, lashes so lustily delivered that the blood ran down the victim’s body.”

Acts of dominance such as this were of course high profile theatre discipline to reinforce dominant ideology by structuring domination into daily life. The very act of assembling each morning in the great yard for roll call further enforced the domination of the hacendado and hacienda elite through the controlled habituation of individual social behavior. This principle extends to the built environment by controlling aspects concerning the structuring of the landscape. The different types of dwellings found in the worker’s village are a prime example of the manipulation of the built environment as a means of reinforcing the dominant ideology of the hacienda by creating a common sense relationship between the elite ideal and common practice. In the worker’s village this is seen in the association between occupation, high status individuals, and quality architecture. In essence, the built environment in this case is advertising the dominance of the occupational elite through an association with quality and permanence. In this example the dwelling serves as a structuring structure – "culturally loaded spaces that socialize by encouraging practices consistent with the meanings that they encode" – and control over these structures means control over socialization and a reification of dominant power structures (Johnston and Gonlin 1998:145). At Hacienda Tabi, the meanings encoded in the built environment expressed the dominance of the occupational structure and reinforced the dominate relations of production and ultimately mode of production of the hacienda. Thus, the hacendado who was ultimately responsible for deciding the types of houses that would be occupied by particular individuals, was actively reproducing an idealized set of social relations through the production of social space.

Social Status at Hacienda Tabi

In colonial Yucatan status was still a blend of heredity rank and associated wealth. In its simplest forms, social stratification during the period was based on the hidalgo/commoner dichotomy outside the household, and on relations of seniority within the extended family. By the late 18th century, when the hacienda system was forming, landed property and material goods had created considerable economic inequality among the Maya (Patch 1993:232). The corporate group in colonial community of Ixil exemplifies the types of divisions that had formed among the Maya. Colonial Ixil was divided into four status groups: 1) those having no title, wealth, land, or office; 2) those with estates, but no office; 3) landed, lower level officers; and 4) *almehenob* or elites with titles, high political status, and large land holdings (Restall 1997:97). On the hacienda, these colonial cornerstones of status –title, wealth, land, and office- were drastically redefined. On the hacienda there were no political titles, no land was owned, and material wealth was relatively minimal. However, on the hacienda political office and titles were redefined through occupation. Individuals on the hacienda drew status from the ranked occupation hierarchy and the relative wealth associated with the incomes and privileges afforded by these positions, all which were intimately connected with each other and ultimately with ethnicity.

Following Otto (1984), there are a great variety of ways in which status might produce patterning in the archaeological record. Patterning may be related to age/sex differences, ethnic, legal, linguistic, political, and/or occupational status to name some of the possibilities (1984:11). As described above, the occupational hierarchy at Hacienda Tabi is fairly well documented. We know that particular individuals were ranked and were rewarded differentially according to occupation and it has been demonstrated in the preceding chapters that variation associated with the location, form, quality, size, and permanency of the built environment at Hacienda Tabi reflects the types and levels of household stratification and status present within the community. Based on the evidence presented in this dissertation, definite connections between the four dwelling types and particular characteristics of artifact assemblages –along variables of quantity, quality, and variation- have been demonstrated, and an association between the higher quality

Type A dwellings and high social status within the Tabi labor force has been demonstrated.

As one moves from Type A to Type D dwelling, there is a clear division between the Type A, House 1 and the remaining three house types, which are clustered more closely together. There is clearly a difference between the highest quality house type and the lower three. I have asserted that this difference reflects a clear division between upper status individuals such as agricultural specialists, artisans, *mayorales*, and vaqueros and the rest of the occupational classes at Tabi, cumulatively grouped under the title *acasillados*. The number of Type A houses (16%) at Tabi correlates well with the figures Bracamonte y Sosa (1985) documented for several 19th century haciendas in central Mexico where the number of upper level workers ranged from 5 – 18% of the total worker population. These would suggest a division of the resident labor force into two components based on occupational ranking and associated access to resources, including: 1) an upper stratum composed of the aforementioned agricultural specialists, artisans, *mayorales*, and vaqueros accounting for approximately 15% of the hacienda population; and 2) a lower stratum composed of indebted workers of lower occupational status, including *mayocoles* and *acasillados*, accounting for approximately 85% of the total population, who are internally stratified among the Type B, Type C, and Type D dwelling types.

The link between dwelling and occupation is also backed by ethnohistorical information, suggesting that *hacendados* did indeed provided dwellings for their workers. In regard to a peon named Juan Pablo Can who was forced to take-up residence on the hacienda of Yokat. Baerlein (1914:196) writes that the *mayordomo* of the hacienda, Señor Ferraez, "came with carts belonging to the same hacienda to fetch the furniture of Can which was in his house at Ticul and transferring it to the house which had been *appointed* for him in the farm." Additionally, Betancourt Perez (1986:31) states that in addition to the land necessary for making milpa, *luneros* were also given a house, in addition to the other perquisites of hacienda living. Based on information from her informant Don Nicolás Villareal, Rejon (1993:94) noted that when the Villareal family came to Hacienda Tabi in the 1894 the administrator of the hacienda provided them with a house.

The importance of occupation and the advantages associated with it on the hacienda have been described by Katz (1974) for the central Mexican hacienda, where the only possibilities for upward mobility existed for a small group of labor contractors, foremen, and wealthier tenants. As Katz (1974:30) noted, "[t]he great mass of acasillados (indebted laborers)… not only had no possibility to accumulate capital, but on the contrary their living standard was constantly decreasing." This situation was especially accurate for Yucatan in the late 19th century when worker debts were so large, and wages so low that there was no real possibility of every paying the debt off.

Katz also notes that ranked labor hierarchies are often accompanied by differential access to goods. Often times this may represent greater access to agricultural surpluses. But with the incorporation of the tienda de raya, or company store on the hacienda, some workers had access to manufactured goods from outside the hacienda. It follows that those workers afforded higher occupational status, with an accompanied increase in wealth would have had access to high status imported goods, like refined earthenwares. This dissertation does not mean to imply that social status will always be related to specific patterns of inequality identified within the archaeological record -such as those associated with refined earthenwares- but rather that when archeological patterns of inequality are found in the archaeological record they are evidence of status differences (after Wasson 1994:31-32). Furthermore, these inequalities can be connected with critical resources or wealth items (i.e. items that are available to all who can afford them) rather than simply sumptuary goods, archaeologists can begin to discuss aspects of economic social stratification and wealth. Preferential access to resources like milpas or increased rations might correlate with increased status indicative items or vice-versa. Therefore dwellings demonstrating unequal access to wealth items like refined earthenwares, may then be tied to known occupations that received these perks (see Wasson 1994:121). Working backwards, we might argue that unequal distributions of prestige items, e.g. refined earthenwares and better dwellings, may imply increased access to basic materials through occupational privilege.

As seen in Yucatan, ethnicity indirectly influenced wealth by defining and limiting individuals to particular occupations and therefore statuses. In this way ethnicity and occupation were correlated with wealth and power on the hacienda. The basic ethnic division on Yucatecan haciendas was between *Indios* (native Maya laborers) and mestizos (individuals of mixed Spanish and Mayan ancestry). In this historic situation the Maya were assigned to the lower echelons of the social and occupational hierarchies, determinations which in turn determined the amount of mobility and amount of wealth available to individuals. In later years Sonoran Yaquis, central Mexican deportees, Cubans, Chinese, and Koreans would also inhabit the haciendas of the peninsula. Each of these ethnic groups was accorded a certain level of status and a place in the occupational and social hierarchy of the hacienda and in turn had specific opportunities or more often, specific limitations, placed on their potential occupational status, wealth, and access to goods.

CHAPTER XI

SUMMARY AND CONCLUSIONS

In summary, the hacienda system in Yucatan represented a change from control of exchange relations by the Spanish to control of the means of production and alteration of the relations of production. This can be observed as the evolution of an economic system in which *encomienda* led to *repartimiento*, followed by systems of wage labor (which grew out of *servicios personal*) that became forced tenancy and finally, debt peonage. Initially the system paralleled prehispanic institutions and therefore was a superficial change in form, but the functional realities of the system- specifically, mode of production -stayed the same for the native population. For the Spanish conquerors, the system was the logical outcome of conquest methods and institutions honed within the economic and political climate of the *Reconquista*.

The hacienda system provided for a new means of attaining status through occupation. Higher status occupations moved to the top of the social hierarchy in the position held previously by Maya cultural elites and officers connected to the corporate group and extended families of the villages. The reasoning behind the initial movement to haciendas – the exchange of labor for certain privileges like access to water and land, the tribute system, and requirements of corveé labor - had historical precedents among the prehispanic Maya; subjugation under a *hacendado* was not that different from the prehispanic system of the *ahau* or *batab* or the social statuses of the *almehen* and *yalba uinic* (small man) or *pizil cah* (commoner).

Research Goals

Archaeological investigations at Hacienda Tabi have allowed us a glimpse into the lives of workers on the hacienda. My research has made some explicit connections between the social and cultural history of the area and the archaeological record. First, I documented the rise of the hacienda system in Yucatan beginnning with its Spanish antecedents. Second, I examined aspects of continuity and change within local social and economic organization associated with the rise of the hacienda system. Finally, I related specific archaeological materials to aspects of social organization, such as social stratification, household organization, and occupational status. Specifically, my research has demonstrated an explicit link between the built environment, material culture (particularly refined earthenwares), and individual and household behavior on the hacienda.

The demonstrated correlation between visible surface features and subsurface archaeological materials provides a framework on which future researchers can approach other hacienda sites, not only in discussing the built environment and material cuture, but as a means of moving from the static physical realm of material culture to the dynamic world of past individual behaviors. The research conducted at Hacienda Tabi has identified correlations between dwellings, material culture, and occupational status, while also examining behavioral inferences related to issues of land use and refuse behavior associated with individual households.

Conclusions

In conclusion, I would like to emphasize two key points realized through excavation at Hacienda Tabi: First, ocupational status can be observed in the archaeological record through the examination of architecture and artifact assemblages, and second, households at Tabi do not exhibit the range of variation found in prehispanic sites in Yucatan. Thus, it is my interpretation that the hacienda system promoted changes in the character of the Yucatecan Maya household. During the first two centuries of the colonial period, most Maya had the ability to live outside the prevailing system (both the social and economic systems) -- the hacienda system took away that ability by controlling the means of production.

The people of modern Yucatan live simultaneously in two worlds (they are still experiencing a double history), the first centered on the kin-ordered mode of production and the second on the capitalist mode of production. From day to day, they may move back and forth between these two spheres. Many people outside the commercial centers of the peninsula still make milpa, cooperating with family through kinship in sharing the labor of clearing, planting, and harvesting. These people control the means of production and have the social organization necessary for reproduction of the household. What is not grown in their milpas can be found in the kitchen gardens, along with the economically valuable trees and palms that inhabit almost every *solar*. Other essentials are there for the taking alongside the roadways or in the open countryside.

In this way, much of the peninsula's population is self sufficient in terms of basic subsistence. At the same time, the people of Yucatan have been brought into the modern market place and as good consumers they find themselves desiring and needing goods that are beyond mere subsistence. A man may desire beer, a radio, blue jeans, or may wish to live in a modern cinder block house. He may need medicine, land, or legal representation. For these things money is required and therefore goods and/or labor must be sold. In this way, modern Yucatecos choose to function within the capitalist mode of production. Whether it is selling the produce from their fields and gardens in the local market, working in one of the resorts along the Mexican Riviera, or laboring for the many archaeologists and archaeological projects being undertaken at any one time on the peninsula, Yucatecos can choose to profit from their surplus production and labor.

This foray into the capitalist world-economy is for the most part voluntary. The Yucatecos may choose to participate in the system according to their own individual level of desire and motivation. It is for this reason that a worker on an archaeological dig may show up for work one day and then, inexplicably, decide to stay home the next. Because his subsistence is not contingent upon the archaeologist's wage, he can take it or leave it accordingly. Many people in Yucatan today find themselves in this situation. Unlike most of their American counterparts, who must earn a wage or find themselves hungry on the street, the Maya of Yucatan can move freely between both spheres of the Yucatecan economy.

The degree to which participation in the capitalist world-economy is voluntary has fluctuated through time in Yucatan. In the 18th century Indian communities could choose to contract their surplus maize production to the *depositio* (granary) of one of the peninsula's major towns. At the same time these Indians might find themselves "encouraged" to produce cotton *mantas* for the markets of central Mexico by agents of the *repartimiento* (Patch 1993:30).

In the late 18th century those Indians who voluntarily moved to the newly forming haciendas exchanged one day of labor as *luneros* for the right to work the lands of the estate for themselves the other six days. Eventually, this arrangement evolved into the slave-like debt peonage of the mid-to-late 19th century, in which most Indians had no choice but to participate in the system in order to survive.

The participation of the Maya of Yucatan in the varied stages of this procession records the history of the capitalist world-economy and the world system in Yucatan. As is often the case with social history this story is complicated and not as clear-cut as implied by the tidy frameworks laid out by the social sciences. Such is the narrative of life on the periphery of the periphery.

I disagree with Patch (1993:153) when he states that the market for sugar and cane alcohol that came to be "met by local producers *owed nothing to external forces* " (emphasis added). I agree with Patch that sugar production, or nearly all hacienda production prior to henequen, was dedicated to the internal market rather than an export market. However, the very fact that such an internal market existed was a function of the world economy and the articulation of the peninsular population into that economy. The appearance of the Spanish and sugarcane in Yucatan at all was the result of the historical trajectory of the developing world system. Furthermore, the mode of production, technology, social organization, etc., that formed to meet the demand was a direct translation of the capitalist mentality of the world system, translated onto the particularities of the geographic, social, and economic reality of Yucatan in the 16th trough the early 20th centuries. He is missing the anthropological perspective, in which the processes of diffusion, acculturation, and assimilation that occurred as a result of contact with the Spanish had an effect on all aspects of Maya culture, including the desire for sugar and alcohol. To say that new political, economic, and social realities were being introduced into the peninsula is not to say the Maya were dependent. These changes altered Maya culture, but the Maya were active agents in adapting and interpreting external influences.

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APPENDIX A

CHI-SQUARE CONTINGENCY TABLES

	Refined Earthenwares	Coarse Earthenwares	
Type A (House 1)	34	133	167
Type B (House 3)	4	261	265
	38	394	432

$x^2 = 45.36$, $df = 1$, $\alpha < .001$; Null Hypothesis Rejected, > Critical Value of 10.83

	Refined Earthenwares	Coarse Earthenwares	
Type A (House 1)	34	133	167
Type C (House 4)	2	66	66
	36	199	235

$x^2 = 11.30$, $df = 1$, $\alpha < .001$; Null Hypothesis Rejected, > Critical Value of 10.83

	Refined Earthenwares	Coarse Earthenwares	
Type A (House 1)	34	133	167
Type D (House 2)	2	98	100
	36	231	267

$x^2 = 18.06$, $df = 1$, $\alpha < .001$; Null Hypothesis Rejected, > Critical Value of 10.83

	Refined Earthenwares	Coarse Earthenwares	
Type B (House 3)	4	261	265
Type C (House 4)	2	66	68
	6	327	333

$x^2 = 0.61$, $df = 1$, $\alpha < .05$; Null Hypothesis Not Rejected, < Critical Value of 3.84

	Refined Earthenwares	Coarse Earthenwares	
Type B (House 3)	4	261	265
Type D (House 2)	2	98	100
	6	359	365

$x^2 = 0.11$, $df = 1$, $\alpha < .05$; Null Hypothesis Not Rejected, < Critical Value 3.84

	Refined Earthenwares	Coarse Earthenwares	
Type C (House 4)	2	66	68
Type D (House 2)	2	98	100
	4	164	168

$x^2 = 0.15$, $df = 1$, $\alpha < .05$; Null Hypothesis Not Rejected, < Critical Value of 3.84

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