Journal of Archaeological Method and Theory, Vol. 4, Nos. 3/4, 1997

Haciendas and Economic Change in Yucatán: Entrepreneurial Strategies in the Parroquia de Yaxcabá, 1775–1850

Rani T. Alexander[1]

Using archaeological and historical data from eighteenth- and nineteenth-century haciendas in the Parroquia de Yaxcabá, *Yucatán, this paper demonstrates how documentary records can be employed to create diachronic archaeological explanations. Both the organization of production on the hacienda and the entrepreneurial strategies pursued by the estate owners contribute to the form of the hacienda. The following analysis suggests quantitative and qualitative explanations for variation in hacienda size and architectural elaboration. The archaeological interpretations offer a reconsideration of processes of economic change in central Yucatán prior to the Caste War of 1847.*

KEY WORDS: historical archaeology; haciendas; entrepreneurs; Yucatán.

INTRODUCTION

Haciendas are "agricultural estates, operated by a dominant landowner and a dependent labor force, organized to supply a small-scale market by means of scarce capital, in which the factors of production are employed not only for capital accumulation but also to support the status aspirations of the owner " (Wolf and Mintz, 1957, p. 380). Historians, cultural anthropologists, and archaeologists have been attracted to this topic, because the era of hacienda expansion in Latin America was a critical period of economic and social transition (Borah, 1951; Chance, 1996;

[1]Department of Sociology and Anthropology, Dept. 3BV/Box 30001, New Mexico State University, Las Cruces, New Mexico 88003-8001.

1072-5369/97/0900-0331$12.50/0

Charlton, 1986; Chevalier, 1976; Farriss, 1984; Gibson, 1964; Johnson, 1971; MacLeod, 1973; Patch, 1993). Haciendas constitute a variant whose opposite extreme is known as the plantation, which operates under conditions of abundant capital to supply large-scale markets (Carmack, 1986; Curtin, 1990; Wolf and Mintz, 1957). Both are pivotal institutions that offer a processual explanation of how colonial peripheries undergo integration with the expanding global economy (Wolf, 1982). The distribution of the estates themselves is regarded widely as a proxy measure of the extent of the market-based economy.

Using archaeological and historical evidence from haciendas in the *Parroquia de Yaxcabá*, Yucatán, México, this paper shows how historical data can generate diachronic archaeological explanations. I argue that variation in hacienda size and architectural elaboration is contingent upon the entrepreneurial strategies pursued by the estate owners as well as the organization of production on the hacienda. The archaeological explanation offers an opportunity to reconsider processes of economic change in central Yucatán during the late eighteenth and early nineteenth centuries.

Haciendas and plantations are not just Latin American phenomena. They constitute an archaeologically visible form of "investment specialization" in which elites create or purchase entire communities as productive instruments in the countryside, thus altering the structure of urban–rural relations and fostering integration between cores and hinterlands (Hayden, 1994, p. 201). Entrepreneurial activity that results in increased economic integration under certain conditions may produce an archaeological signature recognizable as architectural variation in haciendas, latifundia, or other large rural estates worldwide. Similarly, decreased integration, where elite enterprises become unsustainable within the larger economy, also may be archaeologically visible. Architectural variation is a sensitive archaeological indicator of capital investment and elite behavior relevant to processes of economic transition between tributary, mercantilist, and incipient capitalist political economies.

Historical explanations of the growth of mercantile capitalism and its demise have examined carefully the role of the haciendas and their Spanish American owners. Attempts to correlate hacienda form and function focus heavily on the principal variables of capital and labor so integral to Wolf's and Mintz's (1957) definition (Bracamonte, 1988; Charlton, 1986; Farriss, 1984; Hunt, 1974; Jones, 1980; Patch, 1993; Strickon, 1965; Taylor, 1972). Because variation in both the value of the estate and the size of resident worker populations frequently is recorded in historical documents, the archaeology of haciendas has been underutilized in explaining capitalist expansion. Archaeology has played a supplementary role to history in this endeavor (see Deagan, 1982; Little, 1994; for an exception, see Jones,

1980). The buildings of an estate are assumed to reflect the wealth and economic success of the owner within the market economy, and the layout of the hacienda corresponds to the amounts of capital and labor required to produce specific cash crops (Bracamonte, 1990; Cline, 1950; Farriss, 1984, pp. 33–36; Millet Cámara, 1985; Strickon, 1965).

Nevertheless, historians long have recognized historiographic problems intrinsic to the documentary evidence used to interpret the hacienda's role in capitalist expansion (e.g., Van Young, 1983). Complete records of capital investment and labor organization are available only for haciendas that proved fairly successful in the market economy. Regional studies, however, continue to demonstrate that globalization and its relationship to larger-scale agricultural enterprises are not an inevitable and unilineal process sparked by labor shortage (Altman and Lockhart, 1976; Chance, 1986; Charlton, 1986; Cline, 1950; Wolf, 1982). Haciendas also appear in systems where the market economy never truly takes hold, and some regions undergo market integration in the absence of haciendas (Chance, 1986; Taylor, 1972). We can no longer view haciendas as a solution to Spain's sixteenth century depression, indigenous population decline, or the simple by-product of incipient capitalist expansion (Borah, 1951; Chevalier, 1963; Gibson, 1964; McAlister, 1984).

Historical interpretations of Yucatecan haciendas generally are similar to those advanced for the institution in other areas of Latin America. The expansion of haciendas in Yucatán between 1750 and 1847 is viewed as an historical marker of economic transition from a tribute-based economy to a broader-spectrum, market-based economy (Farriss, 1984; Hunt, 1974; Patch, 1985, 1993). The hacienda is perceived as an emerging social formation at this time that radically alters the relations of production and supplants the indigenous village as the primary productive and social institution. As in several other regions Latin America, however, the Yucatecan hacienda cannot be described as an unqualified success (Farriss, 1986, p. 101). The economic transformation ultimately failed as a consequence of the Caste War of 1847, an indigenous revitalization movement in which rebel Maya attempted to eliminate the Spaniards from the peninsula, aided by the cult of the talking cross (Bricker, 1981). The Caste War resulted in the destruction of haciendas in most areas except the northwest corner of the peninsula.

Although the historical interpretation outlined above generally is applicable to most of Yucatán, I submit that it is insufficient as a general explanation for the process of change from a tributary to a market economy, largely because it fails to account for regions that were unsuccessful in making the economic transition. In Yaxcabá and other parishes in central Yucatán, economic integration followed a different trajectory from the rest

of the peninsula (Farriss, 1984; Patch, 1993; Strickon, 1965). Although the indigenous population grew dramatically after 1750, haciendas did not incorporate large numbers of resident workers (Alexander, 1997; Bracamonte, 1984; Farriss, 1984). Consequently, the indigenous village was not gradually replaced by the hacienda as the principal social unit in the region (Alexander, 1993, 1997). In Yaxcabá, indigenous villages did not come under significant pressure from land-owning elites until after Independence from Spain in 1821.

The reasons for such small numbers of indigenous residents on the haciendas is the subject of debate. Bracamonte (1985, 1988) views central Yucatecan haciendas as engaged primarily in cattle raising, a labor extensive activity. Patch (1985, 1993; see Strickon, 1965), on the other hand, argues that these estates were characterized by a mixed agricultural and livestock raising economy supported by the labor of nonresident sharecroppers (*luneros*). This debate generally assumes that architectural variation among haciendas follows the organization of production. As a result, the range of variation in the the buildings and facilities of the estates has not been assessed independently of production (see Bracamonte, 1990).

Using data from Yaxcabá parish, I demonstrate how the documentary record can be employed to explain archaeological variation in haciendas. This study explores the process of elite appropriation of the means of production from indigenous villages in an area that became increasingly dominated by cattle raising in the early nineteenth century. Architectural variation on the estates is treated as an independent variable. I suggest that both the function of the estate and the entrepreneurial strategies pursued by estate owners contribute to the physical form of the hacienda. Archaeological explanation of the variation in size and elaboration of haciendas, informed by documentary evidence of elite investment strategies, contributes to the assessment of economic processes occurring in Yaxcabá and central Yucatán prior to the mid-nineteenth century.

The analysis presented below reverses the supplementary relationship between archaeology and history. First, I examine a case in which documentary evidence is incomplete and for which archaeology affords a more accurate view of the range of capital investment in the region. Second, I demonstrate how community-specific historical data can be used in diachronic archaeological explanation. Archaeological analysis of the physical remains of haciendas supplemented with historical information provides a diachronic perspective that suggests how the age of the estate and the size of the resident worker population affected variation in the value of the hacienda's physical plant (the *planta*). Finally, the analysis offered in this paper links the archaeological record of the Yaxcabá haciendas to the organization of elite and entrepreneurial behavior in the past. Capital invest-

ment in the hacienda's buildings and facilities was not simply a function of the owner's access to capital. It also was indicative of economic strategies pursued by the elite, specifically their decisions of when and how to deploy capital, and their roles in the success or failure of political–economic integration.

HACIENDA EXPANSION IN YUCATAN

The expansion of haciendas in Yucatán during the late eighteenth century occurred in conjunction with indigenous population growth and the implementation of the Bourbon political reforms (Farriss, 1984). At this time, a series of natural disasters curtailed agricultural production, which resulted in widespread famines (Patch, 1979, 1993). In response to the agricultural crisis, many Spanish Americans began to produce maize and cattle on their privately held parcels, known as *ranchos* and *estancias*. Encouraged by the Bourbon policies of *comercio libre* that permitted free trade among Spanish colonies, tributary forms of labor organization were supplanted by new labor institutions on haciendas that fostered mercantile capitalism. Production of tributary goods such as cotton cloth, beeswax, and honey declined in favor of exportable goods such as henequen cordage, salt, meat, lard, maize, beans, hides, and dyewood. Labor for production was provided by resident workers bound to the hacienda through debt peonage or by luneros.

By 1800 Yucatán possessed three distinct economic regions characterized by production of different cash crops: (1) the sugar-growing region in the southwest, (2) the northwestern henequen producing region, and (3) the central and eastern cattle and maize producing region (Bracamonte, 1984, 1985; Patch, 1993; Strickon, 1965). Sugar and henequen haciendas producing labor-intensive commodities typically had large resident labor forces, whereas cattle estates generally had smaller work forces.

Following México's independence from Spain in 1821, the distribution of land between hacienda owners and indigenous villages became increasingly inequitable. With the change in administrative authority and the decline in the power of the Church, the interests of ecclesiastical and civil authorities in the taxable production of indigenous villages waned, leaving the hacienda-owning elite relatively unopposed. Land between communities, formerly classified as *monte del rey* and open to all for use, became *terreno baldío* (vacant land) that could be claimed and purchased (BCCA, 1845; Bracamonte, 1984; Cline, 1950; Reed, 1964). Tensions were exacerbated in areas where land-extensive practices, such as swidden maize cultivation and cattle raising, competed.

Table I. Area of Masonry Buildings, Maximum Resident Population, and Age of Haciendas in Yaxcabá Parish

Hacienda	Area of masonry buildings (m^2)	Maximum population[a]	Age (years)[b]
Nohitzá	650	220	148
Cetelac	415	51	87
Kambul	361	169	78
Popolá	694	138	76
Chacxul	403	125	76
Xbac	608	206	76
Holop	226	107	56
Yaxleulá	240	27	45
Xkopteil	284	13	32
Xuul	352	39	32
San José	350	58	32
Cacalchén	145	20	32
Yximché	105	16	32
San Lorenzo	84	23	32
Oxolá	14	37	32

[a]From visitas pastorales (AME, 1828, 1829).
[b]From visitas pastorales (AME, 1784, 1804, 1828) and *notarías* (ANEY, 1800–1850).

The opposition was resolved by the Caste War that began in 1847. The most violent part of the conflict lasted approximately 9 years, during which the rebel Maya almost succeeded in taking Mérida, and haciendas were looted routinely in search of money and supplies (Reed, 1964). Between 1847 and 1862 Yucatán lost approximately half of its population to fighting, cholera, and migration (Cline, 1950). The sugar and cattle haciendas in the south and west were devastated and never rebuilt. In the late 1800s, henequen became the primary export of the province.

DOCUMENTARY ESTIMATES OF PRODUCTIVE CAPACITY

Measuring capital investment in an hacienda from historical documents is an uncertain undertaking even when large amounts of explicit data are available. Detailed historical information usually is available only for the largest estates. For example, wealth invested in an estate sometimes can be extracted from the *bienes nacionales* located in the *Archivo General de la Nación*, which itemized everything contained in the hacienda including furnishings (Bracamonte 1988, 1990), or from notary documents of sale, in which the value of the planta was itemized separately from livestock and lands.

Table II. Tithes Declared for Haciendas in Yaxcabá Parish, 1778

	Nohitzá	Kambul	Cetelac	Total
Maize	35 cargas	4 cargas	5 cargas	44 cargas
Beans	1 almud			1 almud
Cucumbers	7 almudes			7 almudes
Cotton	3 lb			3 lb
Cattle	18 calves; 4 p[a] 4 r[b]	13 calves; 3 p 2 r	12 calves; 3 p	43 calves; 10 p 6 r
Horses		1 colt; 2r		1 colt; 2 r
Mules			1 mule; 8 r	1 mule; 8 r
Pigs			3.5 r	3.5 r
Honey and wax	2 lb	2 lb	2 jars; 2 lb	6 lb

[a]Pesos.
[b]Reales; 8 reales = 1 peso.

In cases where direct historical evidence about production is available, the numbers of resident workers is correlated with the labor intensity of crops produced. The population of the estate and the composition of its labor force are regarded widely as a measure of the hacienda's productive capacity (Bracamonte, 1985, 1988, 1990; Farriss, 1984; Patch, 1985; Strickon, 1965). In cases where direct evidence of an hacienda's production is lacking, the number of resident workers cautiously is assumed to be correlated strongly with the labor requirements of production, although it is difficult to separate the contributions of nonresident sharecroppers from resident workers using census data (Farriss, 1984, p. 383). The proportion of livestock raising to agricultural production is thought to be reflected in the size and composition of the estate's resident worker population, particularly in the numbers of indebted servants (Bracamonte, 1985, 1988). Because cattle raising is not a labor intensive activity, estates that emphasized livestock raising would have had fewer workers. Conversely, intensive production of agricultural commodities would have required a larger number of resident laborers.

Historical sources that describe Yaxcabá's haciendas include three pastoral visits (*visitas pastorales*) in the *Archivo de la Mitra Emeritense* (AME) dated 1784, 1804, and 1828 (AME, 1784, 1804, 1828, 1829). These list the names of the communities in the parish, their distance from Yaxcabá, and their populations (Alexander, 1993, 1997). Fifteen of a total of 29 settlements correspond to haciendas. The remaining settlements described in the visitas pastorales consist of the *cabecera*, Yaxcabá, auxiliary towns (*pueblos*), and independent *rancho* communities (villages or hamlets that escaped direct civil and ecclesiastical supervision). A book of church tithes (*diezmos*) from 1778 also survives in the *Biblioteca Cresencio Carrillo y Ancona* (BCCA), describing what was declared as one-tenth of production for three

of the haciendas in the parish (BCCA, 1778). Notary records located in the *Archivo Nacional del Estado de Yucatán* (ANEY) also are available, through which transitions of ownership, mortgages, and changes in estate classification can be traced (ANEY, 1800–1850). Finally, land claimed as terreno baldío in Yaxcabá is listed in the *Registro de declaraciones de terreno baldío*, which also lists the size of the claim, the claimer, and the location and ownership of property bordering the claim (BCCA, 1845).

Haciendas in the Yaxcabá region were privately owned and managed by a small group of Spanish-Americans who were active in the political life of the parish. Often one person or family owned several estates, especially in the years immediately preceding the Caste War. Haciendas frequently were mortgaged to other individuals or religious institutions as a way of providing the owners with cash to conduct other ventures. The age of the estate, and its dates and length of occupation, also can be assigned accurately from the sources cited above. A list of Yaxcabá's haciendas, their maximum populations, and their ages is presented in Table I.

Stock raising, agricultural production, and apiculture occurred on the haciendas (BCCA, 1778; Patch, 1985). Although the book of tithes does not suggest vast differences in production among the estates, it provides direct historical evidence of production for only three haciendas and only for the year 1778 (Table II).

In early nineteenth century Yucatán, sale documents only rarely itemized the values of the different components of the estates, and the haciendas in the Yaxcabá region did not appear in the bienes nacionales (Bracamonte, personal communication, 1988). Therefore, I was unable to assess the total value of the estates using documentary evidence alone.

YAXCABA'S HACIENDAS: THE ARCHAEOLOGICAL EVIDENCE

An extensive archaeological survey of the 29 settlements listed on the visitas pastorales for Yaxcabá parish was conducted in order to compare historical data on the communities to their archaeological settlement patterns (Fig. 1). Information collected for each settlement included a description of structures and features present at the site, its ecological setting, the location of water sources, an estimate of site size, the amount and stylistic characteristics of standing architecture, and any evidence of specialized functions within sites. Scale maps of the centers of all but three settlements were made using a compass and tape or a theodolite (Alexander, 1993, Appendix A). In the case of haciendas, the map completely detailed the buildings, facilities, and corrals of the estate's physical plant. All settlements

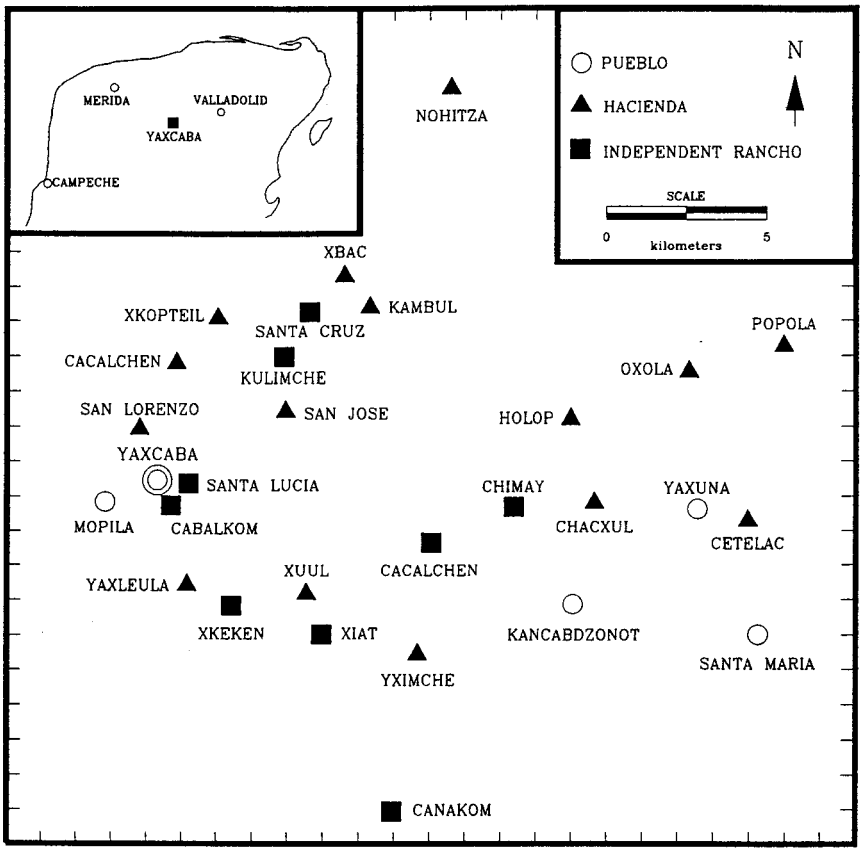

Fig. 1. Settlement locations in the Parroquia de Yaxcabá, 1750–1847.

in the survey were classified into one of four archaeological categories (I–IV) on the basis of site size, amount and function of masonry architecture, and site layout.

Site size was approximated by surveying a radial transect from the site center to the settlement's edge. Masonry architecture was measured in area, and its function was assigned as either religious or residential. Site layout was a categorical variable having two states: (1) house lot enclosures aligned along streets focused on a central plaza and (2) a well or a *noria* (a well in which water is pumped to the surface by a windmill or by animal traction) surrounded by livestock corrals often associated with a masonry residential structure and smaller masonry ancillary features, such as stables and water troughs. This second site layout is characteristic of haciendas. Analysis of the archaeological settlement data indicates that the region con-

tained one category I site, four category II sites, fifteen category III sites, and nine category IV sites. The four categories correspond respectively to the historical community types known as cabeceras, pueblos, haciendas, and independent ranchos.

Among the 15 haciendas (all category III sites) recorded on the archaeological survey, the size and architectural investment varied substantially. The estates generally consisted of a main house (*casa principal*), sometimes with two stories; a noria, with its tank or reservoir; water troughs for livestock; two to four central corrals; and sometimes a small stable or *casa de burros*. Surrounding many of the larger haciendas was an extensive network of walls that delimited streets and house lots for the resident population. Some also possessed small water tanks (*pilas*), irrigation berms (*eras*), dovecotes (*palomares*), ovens, apsidal masonry structures, and wells. The largest estate in the parish, Nohitzá, had a separate standing chapel and a separate building used to house machinery (*casa de máquinas*) (Roys, 1939).

The smallest estates, however, lacked most of these characteristics. Three settlements (San Lorenzo, Oxolá, and Yximché) consisted of little more than a noria or well, a water trough, and a large corral. Main houses were absent. Two other haciendas, Xkopteil and Yaxleulá, had only platforms that supported presumably perishable main houses. In addition, substantial networks of masonry walls linking the norias to water troughs and corrals were noted.

Archaeologists frequently devise measures that rank settlements or architecture according to labor investment and energy expenditure (Abrams, 1994; Garza and Kurjack, 1980; Kolb, this issue; Turner *et al.*, 1981). The amount of wealth invested in the planta of an hacienda in the Yaxcabá region can be estimated by the total area enclosed by masonry walls. It includes the number of square meters in the main house (both stories), the noria, and any stables or ancillary masonry structures. This measure does not include the area of pilas or masonry corral walls, because the cost of constructing these features probably was variable. The area of masonry buildings is not intended to represent actual person-hours or labor estimates, nor does it take into account the effort and expense of architectural decoration. Because the amount of masonry required to enclose an area of specific dimensions is determined partly by physical laws, the masonry needed per unit area probably would have a standard value, consistent for most constructions across the region. The present manner of describing housing in Yucatan as consisting of "*una pieza*" or "*dos piezas*" (pieces) also is found in historical descriptions in the nineteenth century (Bracamonte 1988, 1990). Therefore, the total area of masonry buildings is likely to be strongly correlated with the value of the planta.

Table I summarizes the archaeological variation among haciendas by comparing the area of masonry buildings to their maximum resident population and historical age. Although the designs and arrangements of facilities at the haciendas are appropriate functionally for mixed maize farming and stockraising, resident worker populations and the amount of masonry construction in the plantas vary considerably. The six estates (Cetelac, Popolá, Nohitzá, Kambul, Chacxul, and Xbac) with the greatest architectural investment were also historically older and had the largest resident populations. Haciendas Holop and Yaxleulá were somewhat younger, and the haciendas Xuul, San José, Xkopteil, Cacalchén, San Lorenzo, Oxolá, and Yximché were the most recent. These show less architectural investment and generally had small resident populations. The three variables demonstrate moderately strong Spearman's correlation coefficients (area:population 0.76, $P < 0.001$; Area:Age 0.78, $P < 0.006$; population:age 0.80, $P < 0.0004$).

Archaeological variation in architectural form often is attributed to differences in function, socioeconomic status, and/or duration of occupation. A few historians also have considered how the development of haciendas over time affects their form (Bracamonte, 1990; Jones, 1980; Millet Cámara, 1985). Bracamonte (1990) describes a growth cycle for Yucatecan haciendas. As the initial production of cattle or agricultural products on the estate began to grow, more workers and more investment in buildings and facilities were required to maintain and increase production. Permanent structures for acquiring and controlling water and penning livestock were constructed first, followed by housing for salaried workers and the owner. The replacement of perishable construction with masonry and the size and elaboration of the main house were a reflection of the owner's capacity for capital accumulation and, thus, the economic success of his enterprise (Bracamonte, 1990, p. 53). Although architectural investment in Yaxcabá's haciendas was small compared to that in other estates on the peninsula, this pattern of construction is applicable to the sample. Young haciendas with the least amount of architectural investment had wells, corrals, or norias, suggesting that the construction of these facilities was the first priority. The minimal architecture of these estates gives the impression that they were "unfinished." Larger and older estates had masonry houses for the estate owner.

It is useful to consider the final state of the hacienda from a diachronic perspective, rather than as a one-time infusion of wealth reflecting the owner's socioeconomic status or the organization of production at a specific point in time. In order to quantify the amount of architectural variability that could be accounted for by these variables, I performed an exploratory regression analysis for the area of masonry buildings, using maximum popu-

Table III. Linear Regression Models for the Area of Masonry Buildings

Regression equation	R^2/adjusted R^2
y(area) = 143.12 + 2.23x(population)	0.61
y(area) = 57.38 + 4.69x(age)	0.57
y(area) = 87.30 + 1.42x_1(population + 2.14x_2(age)	0.64/0.58

lation and age as independent variables. The area of masonry buildings is a relative measure of the amount of capital invested in the planta of the hacienda. The maximum size of the resident population is related to the hacienda's function: the labor intensity of crops produced and its productive capacity. Historical age is equivalent to the duration of occupation. The results of linear regression models are presented in Table III.[2]

Sixty-one percent of the variation in the hacienda's form, measured by the area of masonry buildings, can be attributed to variation in the maximum number of residents. The regression suggests that labor-intensive production strategies on the estates induced greater levels of architectural investment in the facilities and infrastructure necessary for production. The regression of age on the area of masonry buildings accounts for 57% of the architectural variability in the Yaxcaba sample. The multiple regression of maximum population and age on the area of masonry buildings does not increase the amount of variation explained. Consequently, a close relationship is presumed between population and age.

Although the regression models offer a substantial explanation for architectural investment in haciendas, 39% of the variation in the sample remains unaccounted for by duration of occupation and maximum population. The third variable commonly invoked in archaeological explanations of architectural investment, wealth and socioeconomic status, is not readily quantifiable with reference to either historical or archaeological data.

Wealth and socioeconomic status also were generated over time. In order to acquire and maintain wealth, hacienda owners shifted productive strategies to cope with changes in the economic climate over the short and long terms. The older estates in the Parish showed substantial investment

[2]The assumptions required for linear regression analysis are met. Scatterplots of all variables indicate that a linear relationship is plausible. The area of masonry buildings is normally distributed, and population and age are free of severe outliers. Residuals are normally distributed and show no patterning indicative of curvilinear relationships or a lack of homogeneity of variance. The strong correlation between population and age suggests that the multiple regression of these two variables on the area of masonry buildings suffers from multicollinearity. In this case, population and age are so strongly related that adding both variables to the regression model does not contribute significantly to explaining any additional variability in the area of masonry buildings.

Table IV. Ownership and Investments for Haciendas in Yaxcabá Parish in 1846

Owner	Estate	Claims of Terreno Baldio	Mortgage
Claudio Padilla	Holop	1 league, 402 p[a]	
	Kambul	1 league, 65 p	600 p
	Xbac	1.5 leagues, 40 p	
	Xuul[b]		
	Yximché	1 league	
	Other lands	0.5 leagues	
Sebastian, Francisco	Popolá	2 leagues	
Antonio, José	Cetelac		300 p
Tiburcio, and Benito	Chacxul		
Díaz	San José		
	Nohitzá[c]		2136 p
	Other lands	5.25 leagues	
Pascual Espejo	Xuul[b]		
	Nohitzá[c]	0.5 leagues	
José Francisco del Castillo	Yaxleulá		600 p
Unknown	Xkopteil		
Unknown	San Lorenzo		
Unknown	Oxolá		
Unknown	Cacalchén		

[a]Pesos.
[b]In 1845 Claudio Padilla sold Hacienda Xuul to Pascual Espejo.
[c]In 1846 Jose Tiburcio Díaz sold Nohitzá to Pascual Espejo for 1862 pesos plus assumption of the 2136-peso mortgage.

in architecture and had relatively large numbers of resident workers. The more recent estates, however, were characterized by little investment in architecture and fewer numbers of residents. A larger resident population and well-developed infrastructure for production arguably allowed a hacienda owner to respond flexibly to market demands under conditions of economic growth. Nevertheless, a large capital investment in an estate's infrastructure might have been difficult to sustain during periods of economic contraction. Although the wealth and socioeconomic status of the owner partly explain architectural form, a consideration of the changes in wealth-generating strategies of hacienda owners prompts more useful explanations of this residual variability.

ENTREPRENEURIAL ACTIVITY IN YAXCABA

According to Fredrik Barth (1966, 1967), entrepreneurs manage undertakings for profit and systematically seek to maximize value in all transactions. Potential for profit is greatest at the intersection of different economic spheres, where disparities in the values of different goods can

Table V. Comparison of Architectural Investments and Estate Population for Hacienda Owners in Yaxcabá Parish, 1846

Owner	Number of estates	Total area of Masonry (m^2)	Mean area of masonry (m^2)	Total population[a]	Mean population per estate	Masonary per worker (m^2)
Claudio Padilla	4	1300	325.0	498	124.5	2.61
Díaz Family	5	2512	502.4	592	118.4	4.24
Pascual Espejo	2	1002	501.0	259	129.5	3.86

[a]From visita pastoral of 1828 (AME).

be exploited by reducing the cost of conversion from one good to another. The net result of entrepreneurial activity is an increase in economic integration. Yucatán and Yaxcabá, which lay at the respective peripheries of Spain's and Mérida's marketing spheres in the late eighteenth century, were areas where the values of different products were likely to be disparate and where the conversion of one good for another was likely to yield a profit. The haciendas played a key role in these entrepreneurial strategies; they provided a source of productive capital for their Spanish American owners (Patch, 1993).

As haciendas grew over time, profits from livestock raising and agricultural production could be reinvested in several ways, only one of which was the elaboration of the planta. Haciendas founded more recently would have had less opportunity to generate and reinvest a profit in this manner than older estates. Investment in an estate's permanent structures and facilities also was cumulative over time. Architectural investment in the hacienda's planta was a means of increasing and insuring productive capital. It represented equity, and the amount for which the estate could be mortgaged was dependent on the value of the planta. A reversal of the economic fortunes of the estate did not necessarily affect previous investment in the buildings, although other investments, such as the size of cattle herds, land holdings, and the ability to pay interest on mortgages, would have been affected more directly.

In many ways it is helpful to view the hacienda and its planta as a consumer good, and the product of multiple decisions about resource allocation and consumption (see Wilk, 1990). Not all economic success would have been reinvested in the planta. Hacienda owners could deploy their profits in several ways: by acquiring more cattle and more land, by purchasing additional estates, or by investing in property outside of Yaxcabá. In Yaxcabá, haciendas frequently were transferred to relatives and other individuals or mortgaged to religious institutions in Mérida. The cash from the mortgage often was used for other entrepreneurial ventures. Entrepreneurs manipulated the flows of agricultural produce, livestock, and private

property to generate a profit through a wide range of tactics. Architectural investment in the haciendas was the result of a combination of emphases on different political and economic strategies.

Tables IV and V present what is known historically about hacienda ownership and investment in Yaxcabá parish for the years immediately prior to the Caste War. These patterns are the result of several changes in hacienda ownership and investment that occurred over time in Yaxcabá. First, from 1775 to 1850 there was a trend away from individuals or families owning single estates to ownership of multiple estates. The haciendas eventually became concentrated in fewer hands. There was an obvious disparity between the number of Spanish American elites and the number of haciendas. By 1850 the majority of estates were held by either Claudio Padilla or several men in the Díaz family. Second, there was a decrease over time in architectural investment as a means of increasing collateral and the amount of money for which the estate could be mortgaged. Mortgages, some of them large and long-standing, were paid off in the 1820s, or in the case of Nohitzá, they were "unloaded" or transferred to other individuals. The newer estates showed little architectural elaboration and had smaller resident worker populations; mortgages became less common.

A comparison of land claims, mortgages, and the amount of investment in architecture suggests some possible differences in entrepreneurial strategies followed by Claudio Padilla and the Díaz family during the period immediately prior to the Caste War (Table IV). The Díaz family owned several of the older estates of the parish, and consequently much of their hacienda wealth was concentrated in the architecture of the estates. Díaz family claims of terreno baldío as a means of expanding their existing haciendas were minimal. In contrast, Claudio Padilla owned a mixture of older and more recent estates. Less wealth was invested in the plantas of the Padilla haciendas than in those belonging to the Díaz family, but the average number of resident workers on the Padilla estates was higher. Padilla took out only one mortgage on his largest estate, Kambul, and he made several claims of terreno baldío to enlarge his existing estates.

Perhaps the most informative data on entrepreneurial strategies in Yaxcabá parish is the amount of masonry per resident worker (Table V). The Díaz estates averaged 4.24 m^2 per worker, whereas Claudio Padilla's estates averaged 2.61 m^2 of masonry structures per worker. The Díaz estates consequently appear somewhat "top-heavy" in terms of the ratio of architecture to residents. In the 1840s both the Díaz family and Claudio Padilla may have been divesting themselves of estates with cumbersome architectural investments in favor of acquiring more land. Rather than investing in the architectural elaboration of their existing holdings, they bought or founded additional haciendas.

The historical data suggest that following Independence in 1821, Yaxcabá's elite shifted their economic strategies to emphasize the acquisition of land and smaller estates with fewer resident laborers. This trend may account for the 39% residual variability in architectural investment on the haciendas not accounted for by age and population in the regression model. Some historians would interpret the change in the size of hacienda populations as a shift in production, from a greater emphasis on agricultural produce with limited livestock raising in the 1780s to a greater proportion of production devoted to livestock and less to agriculture by the 1840s (see Bracamonte, 1984, 1988). The change in administrative authority after Independence and the decline in the power of the Church (which heavily tithed livestock) also altered Yucatán's economic relationship with external markets. The initial expansion of haciendas after the Bourbon reforms was largely a response to internal demand, and the colonial economy afforded the Yucatecan market some protection from competition (Patch, 1985, 1993). After Independence, however, Yucatán's cattle exports had to compete with larger markets in Veracruz and Havana, and civil authorities attempted to foster the development of haciendas and cattle raising by making it easy for entrepreneurs to acquire land in the form of terreno baldío for this purpose (Bracamonte, 1984, 1988).

CONCLUSION

I have examined how the archaeological record of haciendas in Yaxcabá parish resulted from political and economic changes affecting entrepreneurial activity over a period of 75 years. Variation in hacienda size and architectural elaboration was analyzed in terms of the estate's function, the duration of occupation, and the owner's strategies for generating wealth. The archaeological variability in hacienda form was expressed as the area of masonry buildings, a figure likely to be strongly correlated with the value of the hacienda's planta. Because differences in the labor intensity of crops produced on the estates generally affected the number of workers employed, the maximum population of the estate, recorded in the visitas pastorales, was the variable used to approximate function. Similarly, the historical age of the estate, drawn from notary records, was an estimate of the duration of occupation. The regression analysis indicated that 61% of the variation in hacienda form, as measured by the area of masonry buildings, was accounted for by the estate's resident population. The amount of variability in hacienda form due to the hacienda's age was combined with the hacienda's population under this model. In considering whether the hacienda owner's wealth and socioeconomic status could account for the

residual 39% of variation in hacienda form, historical data from haciendas in Yaxcabá were subjected to a qualitative analysis of entrepreneurial strategies. A comparison of the historical information available for each estate owner, rather than each hacienda, revealed three trends. First, individuals and families became owners of multiple estates over time. Second, haciendas founded at earlier dates had considerably more architectural investment and larger resident populations than those founded at later dates. Third, mortgages became less common and claims and purchases of additional land became more common following Independence from Spain in 1821.

If one regards hacienda architecture as the result of multiple decisions about consumption and production, the historical data suggest a transition in productive tactics. Prior to 1821, investment in architecture functioned as a form of storage for productive capital within a system that emphasized mixed agriculture and stockraising. Mortgages of haciendas, based on the value of the estate's planta, were methods of assisting cash flow and convertibility of goods within a region that lay at the margins of the market economy. After 1821, tactics shifted toward a land-extensive and labor-extensive productive strategy centered on cattle raising. Cattle comprised a liquid commodity that easily could be sold or converted into primary products (meat and hides) as demand fluctuated. These patterns suggest that changes in hacienda owners' productive strategies may account in part for the residual variability in hacienda form. The results also suggest variables, such as the amount of masonry construction per worker, that may be sensitive to differences in entrepreneurial strategies. Historical documents provide the control over changes in elite behavior through time, suggesting a diachronic explanation for the residual variation in hacienda architecture.

Ultimately this case study is a first step in developing a frame of reference that links the archaeological record of large estates to the organization of elite and entrepreneurial behavior in the past. The haciendas in Yaxcabá parish form part of a larger pattern in which storage of productive capital in the form of architecture on the edges of an economic sphere is an important component of elite strategies. The decision to deploy profits by investing in architecture is a frequent response in many incipient capitalist economies. It is related to the processes by which elites convert surplus appropriated from primary producers into capital. In situations where capital is scarce, architectural investment is a way of stockpiling and storing economic proceeds within a tributary economy (Wolf, 1982, pp. 79–88). Improving the infrastructure of production within the hinterland facilitates diversification and the move toward a broad-spectrum market economy.

Nevertheless, in situations characterized by land-extensive, frontier strategies (see Margolis, 1977), such as central Yucatán after Independence, a lack of architectural investment typifies rural estates. Elites forego capital

investment in the infrastructure of production and architectural storage in favor of deploying wealth for the acquisition of more land. This pattern seems to be related to political–economic structures that foster the production of single cash crops within a narrow-spectrum economy. These strategies are risky, however, since they are susceptible to boom and bust cycles.

Capital investment in the hinterland, as evidenced by architectural elaboration on rural estates, may constitute an archaeological signature of the trajectory of political–economic integration and the roles of elites in transitions from tributary to market economies. The direction and organization of entrepreneurial activity may be archaeologically visible in architectural variation among estates and regions. Historical data are important tools for developing archaeological explanations that allow us to understand the behavior of elites in processes of economic transformation and their contribution to the success or failure of those systems.

ACKNOWLEDGMENTS

The archaeological and archival research for this project was funded by grants from the National Science Foundation (BNS-8813858), the Wenner Gren Foundation for Anthropological Research (Grant 5089), the Organization of American States, Tinker–Mellon Field Research grants from the Latin American Institute, the University of New Mexico, and Sigma Xi Grants-in-Aid of Research. I gratefully acknowledge the Consejo de Arqueología, Instituto Nacional de Antropología e Historia (INAH), and the Centro-INAH Yucatán for their permission to conduct this investigation as a branch of the Yaxuna Archaeological Survey, directed by Dr. David Freidel of Southern Methodist University. I wish to express my appreciation to Arqlgos. Rubén Maldonado Cárdenas, Fernando Robles Castellanos, Alfredo Barrera Rubio, and Dr. David Freidel for their support of this research. I am indebted to Anthony Andrews, Pedro Bracamonte y Sosa, Robert Patch, and Sergio Quezada for their assistance in locating historical materials. The contributions of my field assistants, Elena Canché Manzanero and Eunice Uc González, are deeply appreciated. Finally, I thank Janine Gasco, Thomas Charlton, Anthony Andrews, Michael Schiffer, Susan Kepecs, and two anonymous reviewers for their comments and criticisms of earlier drafts of this paper. Any shortcomings of this work remain my own responsibility.

REFERENCES CITED

Abrams, E. M. (1994). *How the Maya Built Their World: Energetics and Ancient Architecture*, University of Texas Press, Austin.

Alexander, R. T. (1993). *Colonial Period Archaeology of the Parroquia de Yaxcabá, Yucatán, México: An Ethnohistorical and Site Structural Analysis*, Unpublished Ph.D. dissertation, Department of Anthropology, University of New Mexico, Albuquerque.

Alexander, R. T. (1997). Late Colonial Period settlement patterns in Yaxcabá parish, Yucatán, México: Implications for the distribution of land and population before the Caste War. In Gasco, J., Smith, G., and Fournier-Garcia, P. (eds.), *Approaches to the Historical Archaeology of Middle and South America*, UCLA Institute of Archaeology, Monograph 38 (in press).

Altman, I., and Lockhart, J. (eds.) (1976). *Provinces of Early Mexico: Variants of Spanish American Regional Evolution*, UCLA Latin American Center, Los Angeles.

Archivo de la Mitra Emeritense (1784). *Visita a Yaxcabá. Visitas Pastorales 1783–1784*, Cathedral Archive, Mérida, Yucatán.

Archivo de la Mitra Emeritense (1804). *Visita a Yaxcabá. Visitas Pastorales 1803–1805*, Cathedral Archive, Mérida, Yucatán.

Archivo de la Mitra Emeritense (1828). *Visita a Yaxcabá. Selección Joaquín Arrigunaga Peon, Caja 5, Ticul-Yotholin*, Cathedral Archive, Mérida, Yucatán.

Archivo de la Mitra Emeritense (1829). *Visita a Sotuta. Selección Joaquín Arrigunaga Peon, Caja 4, Pencuyut-Teya*, Cathedral Archive, Mérida, Yucatán.

Archivo Notarial del Estado de Yucatán, (1800–1850). *Notarías.* Registro Público de la Propiedad, Mérida, Yucatán.

Barth, F. (1966). Models of social organization. *Royal Anthropological Institute, Occasional Papers No. 23*, London.

Barth, F. (1967). Economic spheres in Darfur. In Firth, R. (ed.), *Themes in Economic Anthropology*, Tavistock, London.

Biblioteca Cresencio Carrillo y Ancona (1778). *Declaraciones de diezmos en el Partido de Beneficios Altos y Bajos, son frutas de setenta y siete colectados en 1778 años*, Mérida, Yucatán.

Biblioteca Cresencio Carrillo y Ancona (1845). *1845 a 1847 Registro de las denuncias de terrenos baldíos*, Mérida, Yucatán.

Borah, W. (1951). *New Spain's Century of Depression*, Iberoamericana 35, University of California Press, Berkeley.

Bracamonte y Sosa, P. (1984). Haciendas, Ranchos y Pueblos en Yucatán (1821-1847). *Boletín de la Escuela de Ciencias Antropológicas de la Universidad de Yucatán* **11**(66): 3–12.

Bracamonte y Sosa, P. (1985). Sirvientes y Ganado en las Haciendas Yucatecas (1821-1847). *Boletín de la Escuela de Ciencias Antropológicas de la Universidad de Yucatán* **12**(70): 3–15.

Bracamonte y Sosa, P. (1988). Haciendas y Ganados en el Noroeste de Yucatán, 1800-1850. *Historia Mexicana* **37**(4): 613–639.

Bracamonte y Sosa, P. (1990). Sociedades de Sirvientes y Uso del Espacio en las Haciendas de Yucatán 1800-1860. *Historia Mexicana* **40**(1): 53-77.

Bricker, V. R. (1981). *The Indian Christ, the Indian King: The Historical Substrate of Maya Myth and Ritual*, University of Texas Press, Austin.

Carmack, R. M. (1986). Ethnohistory of the Guatemalan Colonial Indian. In Spores, R. (ed.), *Supplement to the Handbook of Middle American Indianas*, Vol. 4. *Ethnohistory*, University of Texas Press, Austin, pp. 55–70.

Chance, J. K. (1986). Colonial ethnohistory of Oaxaca. In Spores, R. (ed.), *Supplement to the Handbook of Middle American Indianas*, Vol. 4. *Ethnohistory*, University of Texas Press, Austin, pp. 165–189.

Chance, J. K. (1996). Mesoamerica's ethnographic past. *Ethnohistory* **43**(3): 379–403.

Charlton, T. H. (1986). Socioeconomic dimension of urban-rural relations in the Colonial Period basin of Mexico. In Spores, R. (ed.), *Supplement to the Handbook of Middle American Indianas, Vol. 4. Ethnohistory*, University of Texas Press, Austin, pp. 122–133.

Chevalier, F. (1963). *Land and Society in Colonial Mexico: The Great Hacienda*, University of California Press, Berkeley.

Cline, H. F. (1950). Related studies in early nineteenth century Yucatecan social history. Microfilm Collection of Manuscripts on Middle American Cultural Anthropology No. 32, University of Chicago Library, Chicago.

Curtin, P. D. (1990). *The Rise and Fall of the Plantation Complex*, Cambridge University Press, Cambridge.

Deagan, K. (1982). Avenues of inquiry in historical archaeology. In Schiffer, M. B. (ed.), *Advances in Archaeological Method and Theory, Vol. 5*, Academic Press, New York, pp. 151–177.

Farriss, N. M. (1984). *Maya Society Under Colonial Rule: The Collective Enterprise of Survival*, Princeton University Press, Princeton, N.J.

Farriss, N. M. (1986). Indians in Colonial northern Yucatan. In Spores, R. (ed.), *Supplement to the Handbook of Middle American Indianas, Vol. 4. Ethnohistory*, University of Texas Press, Austin, pp. 88–102.

Garza Tarzana, S. G., and Kurjack, E. B. (1980). *Atlas Arqueológico de Estado de Yucatán*, 2 vols. INAH, Centro Regional del Sureste, Mexico City, Mexico.

Gibson, C. (1964). *The Aztecs Under Spanish Rule: A History of the Indians of the Valley of Mexico, 1519-1810*, Stanford University Press, Stanford, CA.

Hayden, B. (1994). Village approaches to complex societies. In Schwartz, G.M., and Falconer, S. E. (eds.), *Archaeological Views from the Countryside: Village Communities in Early Complex Societies*, Smithsonian Institution Press, Washington, DC, pp. 198–206.

Hunt, M. E. (1974). *Colonial Yucatan: Town and Region in the Seventeenth Century*, Ph.D. dissertation. University Microfilms, Ann Arbor, MI.

Johnson, A. W. (1971). *Sharecroppers of the Sertão: Economics and Dependence on a Brazilian Plantation*, Stanford University Press, Stanford, CA.

Jones, D. M. (1980). *The Archaeology of Nineteenth Century Haciendas and Ranchos of Otumba and Apan, Basin of Mexico*, Post-Conquest Developments in the Teotihuacan Valley, Mexico, Part 5, Research Report No. 2, Mesoamerican Research Colloquium, Department of Anthropology, The University of Iowa, Iowa City.

Little, B. J. (1994). People with history: An update on historical archaeology in the United States. *Journal of Archaeological Method and Theory*, 1(1): 5–40.

MacLeod, M. J. (1973). *Spanish Central America: A Socio-Economic History, 1520-1750*, University of California Press, Berkeley.

McAlister, L. N. (1984). *Spain and Portugal in the New World 1492-1700*, University of Minnesota Press, Minneapolis.

Margolis, M. (1977). Historical perspectives on frontier agriculture as an adaptive strategy. *American Ethnologist* 4: 42–64.

Millet Cámara, L. (1985). Las Haciendas de Yucatán. *Cuadernos de Arquitectura Virreinal* 2: 34–41 (Facultad de Arquitectura de UNAM).

Patch, R. W. (1979). *A Colonial Regime: Maya and Spaniard in Yucatan*, Ph.D. dissertation. University Microfilms, Ann Arbor, MI.

Patch, R. W. (1985). Agrarian change in eighteenth-century Yucatan. *Hispanic American Historical Review* 65(1): 21–49.

Patch, R. W. (1993). *Maya and Spaniard in Yucatan, 1648-1812*, Stanford University Press, Stanford, CA.

Reed, N. (1964). *The Caste War of Yucatan*, Stanford University Press, Stanford, CA.

Roys, R. L. (1939). *The Titles of Ebtun*, Carnegie Institution of Washington Publication No. 505, Washington, DC

Strickon, A. (1965). Hacienda and plantation in Yucatan: An historical-ecological consideration of the folk-urban continuum in Yucatan. *América Indígena* 25: 35–65.

Taylor, W. B. (1972). *Landlord and Peasant in Colonial Oaxaca*, Stanford University Press, Stanford, CA.

Turner, E. S., Turner, N. I., and Adams, R. E. W. (1981). Volumetric assessment, rank ordering, and Maya civic centers. In Ashmore, W. (ed.), *Lowland Maya Settlement Patterns*, University of New Mexico Press, Albuquerque, pp. 71–88.

Van Young, E. (1983). Mexican rural history since Chevalier: The historiography of the colonial hacienda. *Latin American Research Review* **18**(3): 5–61.

Wilk, R. R. (1990). The built environment and Consumer decisions. In Kent, S. (ed.), *Domestic Architecture and the Use of Space*, Cambridge University Press, Cambridge, pp. 34-42.

Wolf, E. R. (1982). *Europe and the People Without History*, University of California Press, Berkeley.

Wolf, E. R., and Mintz, S. W. (1957). Haciendas and plantations in middle America and the Antilles. *Social and Economic Studies* **6**: 380–411.