

***Latte* household economic organization at Ritidian,
Guam National Wildlife Refuge, Mariana Islands**

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Abstract—Although Chamorro society was profoundly altered by Spanish contact and colonialism during and after the 17th Century, few archaeologists have investigated the material consequences of this phenomenon. Our study compares archaeological assemblages from two adjacent *latte* buildings within a single Spanish-period village at Ritidian. Our preliminary research suggests that economic practices varied among different *latte* buildings within this contact-period village, indicating some degree of activity specialization. Moreover, it appears that traditional Chamorro households were potentially comprised of multiple buildings so that certain domestic activities were spatially segregated. Based on this pattern we offer the following hypotheses: 1) traditional household organization in the Mariana Islands shared some similarities with Ancestral Polynesian society; and 2) traditional Chamorro economic organization persisted after Spanish contact at Ritidian.

Introduction

Mariana Islanders were colonized by the Spanish in the 17th Century, almost 150 years after Ferdinand Magellan initiated Europe's first contact with Guam in 1521, and their native *latte* buildings atop capped-stone columns (*harigi*) have captivated the imagination of Western scholars. Spanish accounts

offer only limited guidance to the precise functions of these buildings, and archaeological research is critical for understanding these distinctive examples of vernacular architecture. Archaeological examination of Marianas sites, combined with careful studies of Spanish records by Dixon (2006:56-58) and others (e.g., Craib 1986; Reinman 1977; Russell 1998; Spoehr 1957; Thompson 1940) indicate that *latte* buildings served a variety of purposes that include sleeping, food consumption, craft production, storage, and ancestor veneration. Activities undertaken in the vicinity of *latte* buildings apparently included competitive sports, oratorical events, food preparation and feasting, gardening, and performance arts (e.g., dancing and singing) (Dixon 2006:56-57). *Latte* buildings were clearly a nexus for activities related to household economic organization.

Archaeologists throughout the world distinguish between *subsistence economies* and *craft economies* in their studies of households and political organization. Such studies implicitly assume that specialization supported an economy of scale in middle-range societies and early states (Costin 1991; cf. Spielmann 2002). Moreover, many researchers argue that the pursuit of political power was an added incentive for economic intensification, such as craft specialization (e.g., Brumfiel and Earle 1987; Olausson 2008; Schortman and Urban 2004). Although archaeologists have now studied household organization and economic specialization for more than two decades, many key questions remain unanswered concerning economic organization at the household level.

Two lingering questions about *latte* buildings and household organization dominate the archaeological literature of the Mariana Islands: 1) did *latte* buildings materialize differences in indigenous social and political status? 2) was the organization of activities at *latte* buildings spatially structured with respect to economic specialization? Our study complements research by other scholars on the second question, and investigates whether *latte* buildings were functionally redundant. This second goal is necessary, we believe, to fully document the economic organization of pre-colonial and colonial-period Chamorro society; it will also provide important information for answering questions concerning indigenous political economy (see also Peterson, this volume).

Although various earlier studies (e.g., Craib 1986; Egami and Saito 1973; Graves 1986; Thompson 1932) have examined *latte* sites, their specific roles in traditional Chamorro society remain poorly understood. Innovative research by Dixon et al. (2006) used shovel tests and limited sub-surface excavations at six *latte* sites on Tinian to argue that the economic organization of economic activities was not consistently structured in terms of their spatial organization. Instead, archaeological assemblages imply that food preparation, consumption, craft production, and the interment of human burials was undertaken along the front, back, and ends of *latte* buildings (Dixon et al. 2006:65-66).

Our intensive archaeological excavations at a single *latte* site in the Guam National Wildlife Refuge at Ritidian complements this previous research by

detecting more fine-grained patterns in the spatial organization of economic activities. Such work holds the potential for determining whether groups of contemporaneous *latte* buildings varied in their functions. Accordingly, we excavated a series of contiguous excavation units to examine the spatial organization of economic activities within a single *latte* building and its surrounding extramural areas. With few exceptions (e.g., Carson and Peterson 2010; Sheppard and Green 1991, 2007), the scale of horizontal area excavations is relatively limited in Guam and elsewhere in Oceania, and yet they promise to clarify the spatial dimensions of economic organization.

Preliminary findings from our research suggest that individual *latte* buildings served different functions in traditional households in a pattern that is broadly comparable to domestic organization in Ancestral Polynesian society (APS) (*sensu* Green 1986). It appears, for example, that *latte* households (like APS households) included multiple buildings and the spatial segregation of certain domestic activities. This traditional system of economic organization, which originated before contact, initially persisted in the Spanish colonial period. Before we consider these findings and their broader implications, we offer a brief background on the environment, archaeology, and ethnohistory of the Guam National Wildlife Refuge.

Background to Study

The University of Guam and University of Hawai'i hosted archaeological field schools in 2008–09 that involved area excavations at two *latte* sets in the Guam National Wildlife Refuge (Figure 1). The project area is situated on a sandy coastal plain, seaward of an uplifted limestone cliff. This broader locale is approximately 50–250 m from the shoreline and 2–12 m above sea level. Present vegetation at Ritidian includes a number of historic introductions, invasive species, and secondary-growth taxa. Notably, in 1819, Freycinet (2003:248) described Ritidian as one of two places in Guam with “the finest building timber.” Coconut and breadfruit trees are currently common on the coastal plain, and many are likely derived from former plantations or informal groves. Sources of animal protein included coconut crabs, fruit bats, and a variety of birds and marine life. Monitor lizards were another potential source of protein, but their consumption has not yet been documented in the archaeological record. The refuge lacks perennial streams, but potable water is available in karstic limestone grottoes in immediate proximity to the sites. Water is also available from a shallow coastal aquifer that is accessible in natural sinks and hand-dug wells.

The first archaeological study at Ritidian was part of an archipelago-wide effort by Hans Hornbostle (1924–1925). Although Hornbostle's field work was relatively cursory, he did record its Spanish “block house” (*casa real*) and a

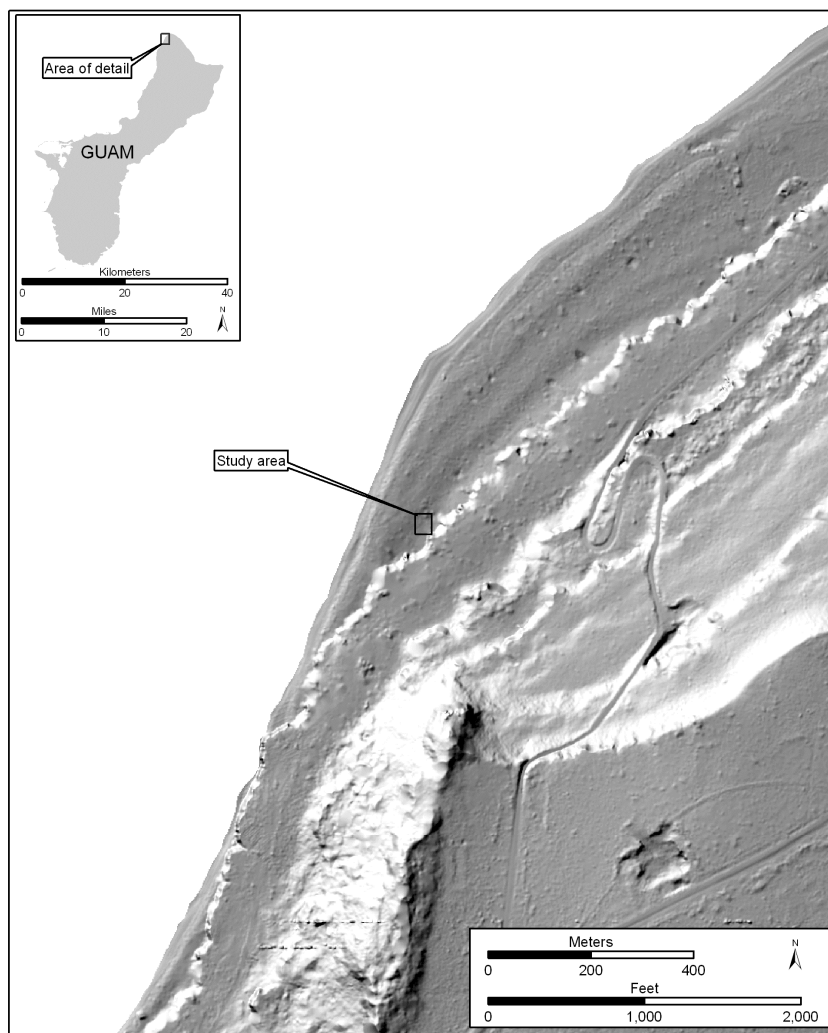


Figure 1. Location of field school excavations in the Ritidian Unit of Guam National Wildlife Refuge, northern Guam.

nearby cluster of *latte* sets; he also excavated a grotto (Thompson 1932:20). Subsequent efforts by several other researchers further documented the rich archaeological evidence of both pre-contact and early Spanish period occupations at Ritidian (e.g., Dixon 2000; Kurashina 1990; Osborne 1947). The Spanish period archaeological record is corroborated by a map produced by Alonso Lopez in 1671; he indicated “Ritidian” as a village with a Christian church (le Gobien 1700:75).

However, relatively few early Spanish-period documents refer specifically to the Ritidian area, and they cover a narrow time span from 1672 to 1676. Lopez's observation that 400 individuals attending mass at the Ritidian church of San Xavier (Levesque 1995:303) suggests that Ritidian sustained a sizable population. Although mass was apparently well attended, there were also flashes of Chamorro resistance to the Spanish at Ritidian when a priest was killed in 1681 or 1683 (Fritz 1904:32). The Spanish found control of this region too costly and abandoned Ritidian about 1682; at that time the region's indigenous population was forcibly relocated into fewer settlements elsewhere on the island (Stephenson 1990)

Each of the two *latte* buildings excavated during the archaeological field schools are comprised of four rows of paired uprights (Figure 2); four rows is the modal number for *latte* sets in the Marianas archipelago, although they range from as few as 3 to as many as 14 (Craib 1986). The long axis of each *latte* set parallels the coast and the limestone cliff face. The two buildings are located in close proximity, and occupants of each structure likely shared the small common area between their distal ends. The end-to-end orientation of the two *latte* buildings and the fact that both of them produced at least some Spanish-period artifacts (e.g., glass bead, forged iron, and East Asian porcelain ceramics) suggests contemporaneous, contact-period occupation. Because there is no evidence exists for recycling *latte* stones or other materials at either of the buildings, archaeological deposits in this locale are largely undisturbed. The pristine condition of the two *latte* sets, and the fact that Ritidian was forcibly abandoned about 1682, indicates that these buildings were most likely occupied during the last *intensive* traditional use of the area. Today, Chamorro cultural practitioners visit and gather traditional resources (e.g., medicinal plants) from Ritidian. However, because they are unable to construct houses and reside in the Guam National Wildlife Refuge, their use of resources is much less intensive than it was in the 17th Century, when they lived in the area on a permanent basis.

The Ritidian area offers an exceptional opportunity to examine the archaeological record of traditional Chamorro household economic organization during an early stage of Spanish colonialism. The following sections outline our field and laboratory methods, and our preliminary findings and their implications for archaeology of the Mariana Islands.

Field and Laboratory Methods

Subsurface archaeological assemblages were recovered from *latte* set #1 and *latte* set #2 by excavating twenty-four 1 by 1 m units (Figure 2). Excavation units at both *latte* sets focused on the landward side of each building. Sixteen contiguous 1 by 1 m units were excavated at *latte* set #1 in 2008; eight

contiguous 1 by 1 m unit were examined at *latte* set #2 in 2009 (Figure 2). Each excavation unit was excavated in 10-cm arbitrary levels; all sediments were sieved using 1/8-inch inch. Excavations continued until sterile sediments were encountered (generally near the bottom of the third levels) (Figure 3). In each unit, a 2-liter bulk sample was collected from the interface of the cultural and sterile deposits.

Laboratory cataloging of excavated assemblages entailed counting and/or weighing cultural materials according to analytical category including ceramic, chipped stone, shell adze, fishhook, marine shell, animal bone, bead, forged iron, bone tool/awl, and charcoal (Tables 1 and 2). Cultural artifacts with a clearly identifiable function (like fishhook and adze) were only counted; most materials that were not easily counted (e.g., marine shell and charcoal) were only weighed. Some materials like ceramics, chipped stone, and forged iron, were counted and weighed.

To accommodate differences in excavation sample size between the two *latte* sets, statistical comparisons were standardized according to artifact counts and/or weights per excavation unit (Tables 1 and 2). Doing so enabled us to compare the relative abundance of different categories of cultural material from the two *latte* sets. Although assemblages from these *latte* sets will undergo more detailed study of their attributes, these first-level comparisons offer provisional hypotheses that will sharpen the focus of continued and future analyses and field investigations.

Preliminary Findings on *Latte* Household Economy

Our field research offers insights on the nature of *latte* building economic organization. If the two adjacent *latte* buildings that we excavated at Ritidian were functionally redundant, as some scholars have implied, we anticipated that they would produce archaeological assemblages that were comparable in their content and relative abundance, controlling for excavation sample size and recovery. If both *latte* buildings, for example, were used for the preparation and/or storage of food, their assemblages should yield relatively equivalent amounts of ceramics, marine shell, and faunal remains, once such material categories were quantitatively standardized. Similarly, if craft production or other economic activities were practiced at each *latte* building with comparable degrees of intensity, then the archaeological signatures of such activities (like shell adzes, fishhooks, and bone tools) would be somewhat equivalent.

The production and use of such tools was vital in traditional Chamorro economy, both during and after Spanish contact and colonialism. Chamorro artisans used marine shell adzes to carve wood for watercraft, structures, and containers. The fabrication of fishhooks would be signaled by the presence of at least some unfinished hooks and/or the debris from their production. Although

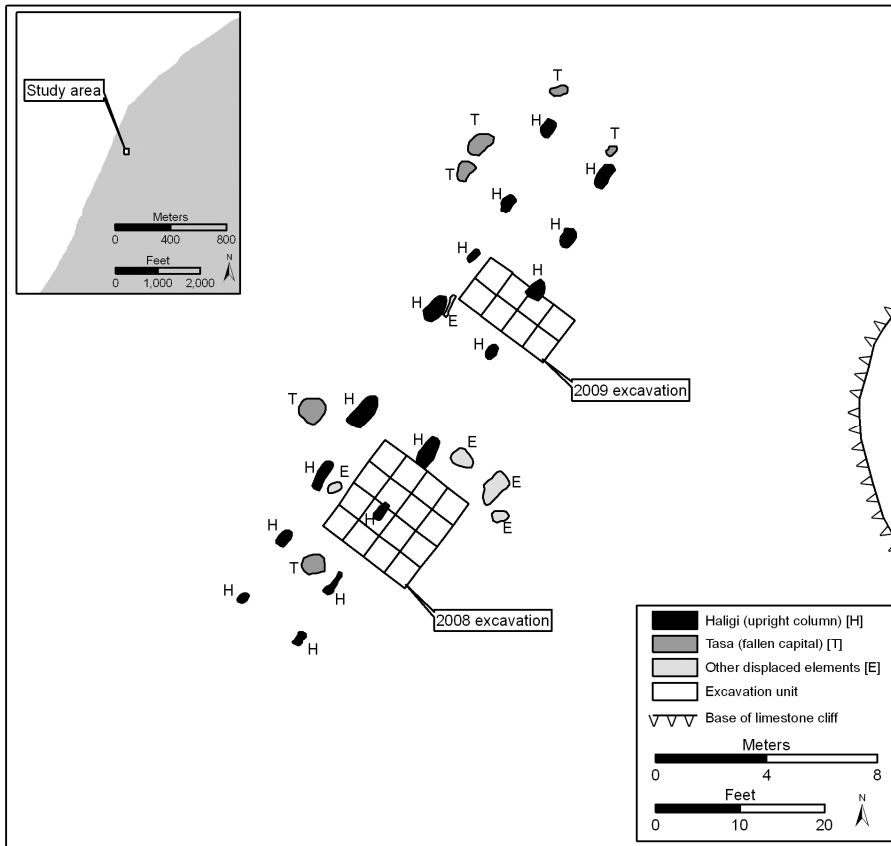


Figure 2. Schematic plan of grid-based excavation areas at *latte* set #1 and *latte* set #2.

bone awls were likely used for a variety of craft activities, the production of fishing nets and sails is particularly notable. Finally, if the occupants of the two *latte* buildings had equivalent access to high-value goods such as beads or forged iron, such materials should be comparably abundant in the two *latte* set assemblages. Notably, however, analyses of archaeological assemblages from the two *latte* buildings illustrates that different activities were practiced in extramural areas that border the two buildings (Figures 4a–i).

Subsistence economy: Food preparation and storage

Food preparation and storage was apparently concentrated at *latte* set #1. On average, excavation units for *latte* set #1 contained more than twice as many ceramics than excavation units in *latte* set #2 (Tables 1 and 2; Figure 4a). Moreover, the discovery of large ceramics in *latte*_set #1 that were easily refitted



Figure 3. Photograph of completed excavations at *latte* set #1 (Photograph by Hiro Kurashina).

indicates that at least some whole vessels were broken *in situ*, possibly after site abandonment. Surprisingly, ceramics from vessels that appear to be easily restorable were not evident during the excavation of *latte* set #2.

Dominant foods in the pre-colonial Marianas diet included fish, roots, rice, breadfruit, coconut, ginger, bananas, and sugar cane; some of these were probably best cooked through boiling in clay pots (Moore 2002:3) and Juan Pobre observed islanders who prepared breadfruit by boiling (Driver 1989:39). Clay jars were likely also used for storing water and certain foods, such as rice, which required protection from rats which were already present in the early historic period (Driver 1989:12). Catholic priests described large feasts with as many as 1000 individuals and such feasts probably required the use of clay vessels (Levesque 1993:180 in Moore 2002:4).

Plant residues from the *in situ* vessels were extracted and identified through the analysis of microfossils including pollen, phytoliths, and starch grains (Horrocks 2008). Several cultigens were detected in the samples: taro (*Colocasia esculenta*), breadfruit (*Artocarpus*), sweet potato (*Ipomoea batatas*), and yam (*Dioscorea nummularia*) (Horrocks 2008). The recovery of sweet potato from *latte* set #1 is particularly notable as an early Spanish introduction in the western

Table 1. Material recovered from excavation at *latte* set #1 (16 units).

Category	Count total	Standardized frequency / unit	Weight (g) total	Standardized weight (g) / unit
Ceramic	3097	193.6	20161.5	1260.1
Chipped stone	367	22.9	28151.5	176.0
Shell adze	4	0.3	-	-
Fishhook	5	0.3	-	-
Marine shell	-	-	15915.8	994.7
Animal bone	-	-	179	11.1
Bead	4	0.3	-	-
Forged iron	7	0.4	233.5	14.6
Bone tool / awl	3	0.2	-	-

Table 2. Material recovered from excavation at *latte* set #2 (8 units).

Category	Count total	Standardized frequency / unit	Weight (g) total	Standardized weight (g) / unit
Ceramic	690	86.3	3661	457.6
Chipped stone	152	19	1159	144.6
Shell adze	11	1.4	-	-
Fishhook	14	1.8	-	-
Marine shell	-	-	5538	692.3
Animal bone	-	-	156	19.5
Bead	46	5.8	-	-
Forged iron	7	0.9	212	26.5
Bone tool / awl	8	1	-	-

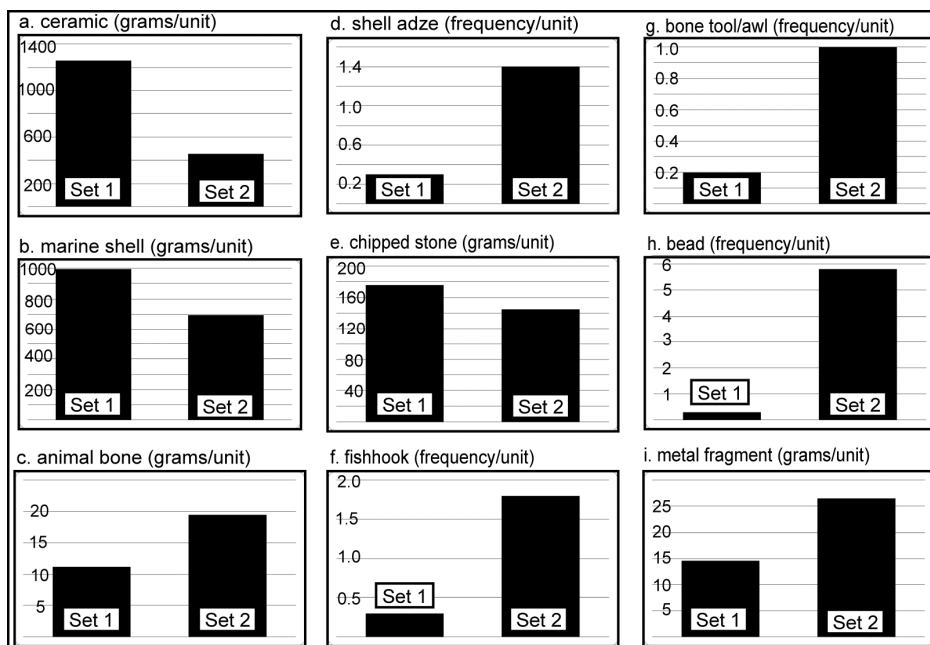


Figure 4. Findings per excavation area.

Pacific. Although contamination of the ceramic vessel sediments cannot be ruled out, their microfossils offer direct evidence of plant cultivation and preparation in the immediate vicinity of *latte* building #1. Moreover, ceramic residue studies elsewhere on Guam have also detected evidence of cooked taro and other economic plants, such as sugarcane and *Cordyline* (Horrocks 2002). Evidence of other plants at Ritidian included *Pandanus*, palms, ferns, herbs, grasses, and possibly coconut (Horrocks 2008).

An emphasis on the preparation (and perhaps consumption) of marine resources at *latte* building #1 is marginally corroborated by its relative abundance of broken marine shell (e.g., *Strombus gibberulus*) (see Tables 1 and 2; Figure 4b). The average weight of marine shell in the excavation units at *latte* set #1 was 994.7 grams, whereas the average weight at *latte* set #2 was 692.3 grams. The fact that excavation units at *latte* set #1 produced about 300 additional grams of marine shell (per unit) than those at *latte* set #2 is notable.

Quantitative difference in the abundance (via standardized weights) of animal bone (i.e., fish and bird) at the two *latte* buildings is also notable, since it does not parallel patterns for marine shell (Tables 1 and 2; Figure 4c). The average weight of animal bone (per excavation unit) at *latte* set #2 is almost twice as high in comparison to *latte* set #1. While detailed analyses must still be

undertaken to document the diversity of faunal species that are present, it is already apparent that the consumption of fish and bird protein was more frequent at *latte* set #2, even though it was possibly prepared at *latte* set #1.

Craft economy: Tool manufacture and use

Our preliminary studies indicate that craft production was more intensive at *latte* set #2 in comparison with *latte* set #1 (Tables 1 and 2). The use and discard of *Tridacna* shell adzes was more than five times as common at *latte* set #2, than at *latte* set #1 (Figure 4d). Certain steps of wood-working and other crafts potentially required lithic tools. Although evidence exists for lithic core reduction at *latte* set #2, such evidence is also present and marginally more abundant at *latte* set #1 (Figure 4e). Chamorro likely used lithics for a variety of activities (e.g., resource extraction, food preparation, and craft production).

Two more striking differences between the two *latte* sets concern the production and use of fishhooks and bone tools/awls (see Tables 1 and 2; Figures 4f and 4g). A comparison of standardized counts confirms that fishhooks are six times more abundant at *latte* set #2. Field observations indicate also that at least some of the fishhooks at the two *latte* sets are unfinished. Notably, the much higher abundance of fishhooks at *latte* set #2 parallels its much higher abundance of *Tridacna* shell adzes, as well as worked-bone awls. Bone tools and awls are five times more common at *latte* set #2; some of the awls were probably used to make nets for fishing. The combined occurrence of adzes (for making *proa* watercraft) with fishhooks (for catching fish) and bone awls (for making sails and nets) underscores the value of pelagic and reef fish at Ritidian. The fact that these three particular tools were exceptionally abundant at *latte* set #2 highlights its vital role in both the craft and subsistence economies of Ritidian.

The production and use of marine shell beads at Ritidian, as well as the importation of a European glass bead (Lon Bulgrin, personal communication), inform on the role of ornamental goods in Chamorro society. Marine shell beads were more than 20 times more abundant at *latte* set #2, using standardized frequencies (see Tables 1 and 2; Figure 4h). Moreover, *latte* set #2 yielded the European bead that must have been acquired through interaction with Spanish colonists. The presence of encrusted fragments of probable Spanish-period forged iron at both *latte* buildings (see Figure 4i) is also notable; prior to colonization in 1668, Chamorro traded fresh water and produce to acquire metal from crew on passing ships (Driver 1989:15).

Implications of Study

Preliminary analyses of archaeological assemblages from two adjacent *latte* buildings indicate that striking differences existed in economic activities during the early Spanish period (see Laguana et al., this volume, for a relevant

discussion). The assemblages are derived from both a subsistence economy and a craft economy. Finding that individual *latte* buildings “specialized” in different economies is significant because most previous interpretations of *latte* buildings argued for redundant functions. While this study reveals that such interpretations must be qualified, we must also note that our heuristic distinction between a subsistence economy and a craft economy should not be overstated because these two realms of economic production intersected with one another. For example, the craft economy at *latte* building #2 - where fishhooks were made - was ultimately integrated with the subsistence economy (of food preparation) that was practiced at *latte* building #1. Furthermore, the consumption of high-value sources of protein (e.g., bird and fish) was evidently undertaken at *latte* building #2.

This intersection of craft and subsistence economies at the two adjacent and contemporaneous *latte* buildings could imply that their occupants were members of a single cooperative household. Such households were surely gendered and perhaps the economic activities that were practiced at these two *latte* buildings were distinguished by age, and perhaps status (see Russell 1998:165–196 for a relevant discussion). Adult males, for example, might have made and used the fishhooks and marine shell adzes that were discarded at *latte* building #2, whereas women could have made and used ceramic vessels that were needed for food preparation or storage (Pollock 1986:133) at *latte* building #1. In any event, archaeological evidence that adjacent *latte* buildings at Ritidian were functionally differentiated confirms that traditional Chamorro household economic organization should be further investigated using horizontal excavations, as we did for this study.

It is intriguing to consider this functional differentiation of *latte* buildings at Ritidian as a parallel with “Ancestral Polynesian” settlement organization, as construed by Green (1986) and many others (e.g., Cordy 1981; Weisler and Kirch 1985). Green (1986) concluded that archaeology, comparative ethnology, and historic linguistics all point to consistent regularities in traditional Polynesian household organization. Such households, depending on the status of their occupants, typically included two or more structures such as “dwellings,” “cooking/storage sheds,” “canoe sheds,” “men’s houses,” and/or “god houses.” Thus far, horizontal excavations at Ritidian indicate that some traditional Chamorro households included two adjacent buildings in some instances. This particular household may well have included other buildings that were not erected atop stone or coral *latte*, but we have not yet detected evidence of post holes for wooden uprights in our excavations. Although post holes have been documented in some Marianas sites (Peterson, this volume), they tend to occur in locales that lacked *latte* uprights.

Preliminary findings of this archaeological study indicate that traditional Chamorro households, like Ancestral Polynesian households, were comparable

manifestations of a pan-Oceanic settlement pattern and that this pattern persisted into the early Spanish colonial period. This hypothesis provides a compelling rationale for additional fieldwork and assemblage analyses at other archaeological localities that are slated for study at Ritidian. Accordingly, we hope that other researchers will apply and refine this approach elsewhere in the Mariana Islands and the Greater Pacific.

Acknowledgments

This research was undertaken during the 2008-2009 University of Guam and University of Hawai'i Archaeological Field School in the Mariana Islands. Both seasons of the field school were supported by the Guam Preservation Trust; the Guam National Wildlife Refuge (US Fish and Wildlife Service); the Guam Historic Resources Division; the Micronesian Area Research Center (University of Guam); and the Anthropology Department, University of Hawai'i at Mānoa. Support from the Guam Preservation Trust was coordinated by Rosanna Barcinas; she also delivered a guest lecture and provided a tour of cultural sites across the island of Guam during the 2009 field school. We are grateful for insights on contemporary Chamorro cultural traditions that were shared with us by Leonard Iriarte and other members of *Guma Palu Liie*. Their willingness to share their perspectives was a source of inspiration for the field school students and staff. Similarly, the field school particularly benefited from the watchful oversight of Patrick Lujan and Joe Garrido, at the Guam Historic Resources Division, and Emily Sablan of USFWS at the Guam National Wildlife Refuge. We also benefited greatly from the strong support and encouragement of Professor Emeritus of Anthropology at UOG, Dr. Rebecca A. Stephenson. Finally, we thank each of the field school students for sustaining the field school with their enthusiasm for discovering and celebrating Guam's rich archaeology and cultural heritage.

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Received 1 August 2010, accepted 10 September 2010