

The Early Initial Period Fishing Settlement of Gramalote, Moche Valley: A Preliminary Report

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Introduction

Between 2010 and 2012, I conducted extensive archaeological excavations at the site of Gramalote, an early Initial Period (B.C. 1500-1200 calibrated) fishing village located in the northern sector of the Moche valley. These excavations were part of my doctoral dissertation research and the information presented here is a preliminary report based on the 2010-2013 field and lab work.

When we think about the Late Preceramic Period or the Initial Period, we immediately focus our attention on the impressive monumental architecture these societies left, or the distinctive art they produced in different media. Although in the last 40 years Andeanists have made substantial contributions to understanding these early societies (Burger 1992; Kaulicke 2010; Onuki 1995; Shady 2009), there is one aspect that has hardly been studied at all: the domestic realm. Besides a few efforts made in domestic settlements located around monumental centers such as the residential units of Chavin de Huantar, Monte Grande, Purulen, Cardal and more recently Pernil Alto, Huaca Cortada (Caballo Muerto Complex) and Campanayuc Rumi there is not really much more information available (Burger 1984; Sayre 2010; Tellenbach 1986; Curo 1985; Burger and Salazar-Burger 1991; Reindel and Isla 2006; Nesbitt 2012; Matsumoto et al. 2013) .

On the other hand, prior research on domestic sites that lack monumental architecture does not provide a general perspective on settlements such as their layout or domestic economy. Those earlier excavations have targeted specific themes like the study of ceramic sequences (Rosas 2007; Willey and Corbett 1954), funerary practices (Elera 1998) or subsistence patterns (Pozorski 1976). As a consequence, we do not have all-inclusive perspective on these early residential sites, although they have been intensely theorized.

My current research at Gramalote is designed to fill that gap and to provide a broader perspective about the nature of fishing settlements during the Initial Period. This is relevant because since the mid-sixties, when Edward Lanning proposed that the sea and its resources played a crucial role in the development of complex societies in the Andean Region, there has been intense debate about this idea (Lanning 1967: 59). Indeed, Rosa Fung was the first scholar to mention explicitly that the high productivity of marine resources and the resulting increase of human population, motivated social interaction, in turn providing the basis for the emergence of civilization in the Andean region (Fung 1969: 192). Nevertheless, it was Michael Moseley who first published this hypothesis in his famous book *The Maritime Foundations of Andean Civilization* (1975), which is largely known and widely debated (Moseley 1975; Osborn 1977; Wilson 1981;

Quilter and Stocker 1983; Moseley and Feldman 1988; Quilter 1992; Sandweiss 2008). However, fishing settlements have never been excavated *in extenso* to test this hypothesis.

In the following pages I will summarize my preliminary results as an attempt to reach a better idea of the social dynamics and economic interactions of fishing settlements during the Initial Period.

Site Description

The archaeological site of Gramalote is located on the coastline of the northern end of the Moche valley, 1 km. south of the traditional fishing village and modern beach resort of Huanchaco. In reference to other sites along the coast, Gramalote is 20 km. south of Huaca Prieta in the Chicama valley and 45 km. north of Huaca Negra de Guañape in the Viru valley. With respect to other sites in the Moche valley, Gramalote is 20 km. and 34 km. west of the contemporary Initial Period ceremonial centers of Caballo Muerto and Menocucho respectively (Figure 1).

The site lies on top of a 13 meter high marine terrace overlooking the beach of Huanchaquito, extending roughly 100 meters along the edge of the terrace and at least 200 meters toward the northeast. Today the site covers 2.6 hectares but an aerial photograph of 1942 shows that the site could have been around 3.5 hectares. Although extensive excavations have been made on the western end of the site as well as on its eastern end, it seems that the area between the two sectors is without of archaeological occupation, but further excavations are needed in that area to confirm or discard this assumption (Figure 2).

Gramalote is today surrounded by a modern town but during the Initial Period the area was different. A dry river bed surrounding the site from its south-east end forms its limit on the east side and flows in to the ocean turning west, defining at the same time its northern end. The south limit of the site is defined by the low hills on top of the marine terrace, which provide a good shelter for the cold winds that blow from the southwest. Finally, the west limit of the site is defined by the edge of the marine terrace. Unfortunately the slope of this marine terrace was bulldozed in the late 1990s to open a modern road. Based on the aerial photograph of 1942, I calculate that an average of 5 meters was bulldozed on the northern sector of the edge while on the southern end at least 10 meters was loosened during the bulldozing. This means that in the southwest sector of the site one row of domestic context was lost. The presences of the western walls of domestic structures on the northwest sector of the exposed profile, which are part of complete architectural compounds, indicate that at least the architectural features in this area did not suffer during the bulldozing. Hence, it is likely that around 750 square meters of the western edge of the site have been lost forever, making it impossible to study the access of the households of the site to the lower surrounding areas and the beach.

There is no evidence of architectural elements on the surface and only extended dark soil is observed, indicating areas with dense archaeological occupation. The numerous post-depositional activities carried out in the site since the late-1970s have drastically altered the last occupations of this settlement. Local informants as well as reports from the former Instituto Nacional de

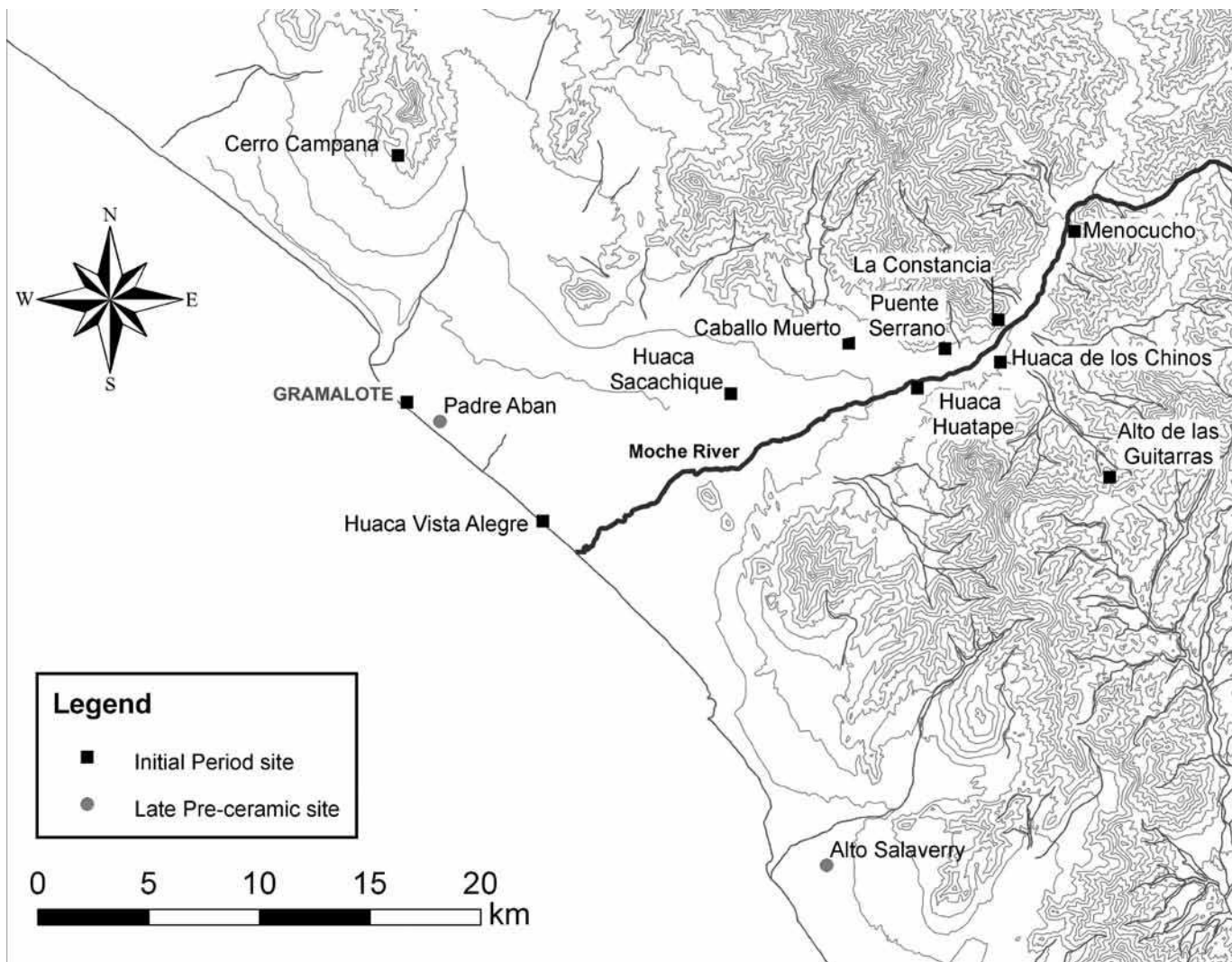


Figure 1 Map of the Moche Valley indicating the most important Late Preceramic and Initial Period sites.



Figure 2 General map of the site and its surroundings.

Cultura de Trujillo indicate that the north-west sector of the site was bulldozed as well as part of the east sector. Additionally, the site was used as a turkey farm for at least ten years between the 1980s and the 1990s. During my excavations, the surface layers contained modern garbage associated with turkey-farming mixed with archaeological materials. However, I am fully convinced that the first floors identified during the excavations, which were found 5 to 10 cm. below the surface, are at least part of the latest phase of the site.

The Surrounding Environment

The site is 300 meters east of the shoreline. The area between the site and the shore, today in process of urbanization, shows ample evidence that extensive marshlands grew there in the past. This is confirmed by the present-day salad-grass or "Gramalote" that grows throughout the area and that, according to traditional fishermen, is an indicator of a high water table level. When Charles Hastings discovered the site in the early 1970s, he was told that the area where the archaeological site is located was known as "Gramalote" due to the abundance of marshlands surrounding it. Indeed, 1.2 km. south of the archaeological site there is still an area where natural springs and marshlands are preserved. In this environment a number of reeds (*Scirpus californicus*) and plants such as achiras (*Canna edulis*) grow naturally (Figure 3). Immediately south of these features, there is an extended marshland along the beach that has not been affected by the urban growth of the modern city of Trujillo. In that area the marine terrace is further toward the east providing a wider area for marshlands and natural springs which have been probably used since the Late Preceramic period. In fact, Padre Aban, one of the few

Late Preceramic sites in the Moche valley is located in that area (Pozorski and Pozorski 1979). The area is still used by traditional fishermen who grow reeds and gourds in the rich wetlands between the marshlands.



Figure 3 Marshland near Gramalote, Huanchaquito.

On top of the marine terrace, where Chan Chan is located, scattered stands of algarrobos and other local trees can be found. It has been suggested that these trees are the result of the extensive irrigation technology during the Late Intermediate period in that area (Moseley and Deeds 1982), but it is also quite possible that these small stands of trees and shrubs grew naturally in this area well before the Chimu occupation. These trees and shrubs are mainly located in lower areas or natural depressions that have access to the high water table, supporting the notion that they may have grown naturally prior to the Late Intermediate Period.

The coast in front of Gramalote is a lineal sandy beach with rough waves for most of the year. However, the archaeological site is located where it overlooks a natural division between sandy and rocky beaches. The latter beaches have a number of "shell-fishing places" or "mariscaderos" as they are known by local shell gatherers. In fact, I would argue that Gramalote was deliberately placed on this spot to control and have better accessibility to both sandy and rocky beaches. A salt source that was exploited by local fishermen until very recently is located 1.5 km. north of Gramalote (Anhuaman 2008; Prieto 2004, 2009). Although there is no proof that this salt-source was used during the Initial Period, it is worth mentioning its close proximity to the site.

Finally, Gramalote is 12 km. from the Cerro Campana, a mountain that has on its western slopes a large area where the fog-vegetation system, known as lomas, develops during the

Peruvian winter months. As I will show later, the resources of the fog vegetation system have been exploited since the Initial Period and until very recently by the local fishermen.

In sum, Gramalote was surrounded by a variety of environments: lomas, small patches of dry forest, marshlands with fresh water sources and rich rocky and sandy beaches. I will contend later in this article that all these ecosystems were vital for Gramalote's population and were heavily exploited and managed for subsistence purposes during the Initial Period.

Antecedents

Gramalote was discovered during the surveys of the Chan Chan Moche Valley project directed by Michael Moseley and Carol Mackey sometime around the end of March and the beginning of April 1973. According to the field notes archived in the Peabody Museum at Harvard University¹, the site was first excavated on April 2nd, 1973 and the first impression was that it was a midden with a Cupisnique ceramic component (Hastings 1973). Possibly, due to this first impression the site was later excavated by Shelia Pozorski who was in charge of the test pitting around the site and Donald Weaver who was in charge of the excavation in an architectural compound partially exposed on the surface of the site's-east sector. Unfortunately, the detailed report of these early excavations was never published. On the other hand, Shelia Pozorski used the information of two of the 23 test pits excavated at the site to study the dietary component of this early settlement. The material and data from Cut 1 and Cut 2 was published in detail in her doctoral dissertation (Pozorski 1976). Later, based on her analysis of these materials and comparing it with the subsistence data from the contemporary Caballo Muerto Complex, she concluded that Gramalote was a domestic fishing settlement that had an extremely systematic seafood procurement while the inland ceremonial center of Caballo Muerto had an increasingly efficient and productive irrigation agricultural system (Pozorski 1976; Pozorski and Pozorski 1979). Together Gramalote and Caballo Muerto were seen as two parts of an integrated economic unit. Shelia and Thomas Pozorski argued that "the specific orientation of this procurement system plus the narrow range of non-subsistence site activities at Gramalote, suggested that the site might have been a subsidiary or even a colony established to insure a continuous supply of marine products for the inland complex" (Pozorski and Pozorski 1979: 430). I will discuss alternative interpretations at the end of this article.

In 1987 Petronila Velasquez from the National University of Trujillo conducted excavations on the east side of the site. Although her excavations did not reach sterile soil, she was able to identify activity areas related to seafood processing (Velasquez 1987). In 2005, Jesus Briceño and Brian Billman opened two small units in the western sector of the site. They found mud floors and stone walls but the limited size of the excavations did not allow them to identify the layout of the architectural structures. Their report documents, two human burials and abundant evidence

¹ I am very grateful for the collaboration of Professor Jeffrey Quilter, director of the Peabody Museum at Harvard for giving me access to the Chan Chan Moche valley archives. Similarly, Professor Steven LeBlanc, director of the Museum's collections was very helpful in helping me to search in the archives.

of food consumption discovered at that site. In addition they recorded a number of ceramic fragments, which constituted the first publication of illustrations of pottery from Gramalote (Briceño and Billman 2008).

Chronology and Gramalote Occupational Phases

One of the problems at Gramalote was the radiocarbon dates presented by Shelia and Thomas Pozorski in their 1979 article. Unfortunately the samples were taken from mixed midden fills rather than from secure contexts associated with reliable and secure occupational surfaces (Pozorski and Pozorski 1979: 418). Additionally, as Brian Billman correctly observed, several of the dates are stratigraphically out of order with older dates occurring in the upper strata, suggesting some mixing of the deposits (Billman 1996: 128). Based on a recalibration of these dates, Billman suggest that the range of the dates is 1750 to 1430 B.C. for the earliest stratum and 1550 to 1310 B.C. for the latest stratum of the site. That allowed Billman to propose an absolute date for his Early Guañape phase in the Moche valley between 1800-1300 B.C. (Billman 1996: 129).

Clearly, the inconsistent radiocarbon dating from the site indicates that the provenience of the samples was not ideal, using scattered organic material from the fills instead of more reliable contexts. Therefore, one of the priorities of the 2010-2011 excavations was to identify optimal archaeological contexts to take samples for absolute dating. Fortunately, several hearths associated with floors contexts were excavated in different occupational levels found at the site. Thanks to this, ten carbonized fragments of achupalla plants (*Tillandsia sp.*) used as fuel and carefully recovered in various domestic hearths associated with floors, were submitted for radiocarbon dating. Table 1 summarizes the exact provenience of the samples as well as the number of samples taken for the different floors excavated at the site.

In general terms the site has a calibrated absolute dating that range from 1500 to 1200 B.C. which is the early part of the Initial Period in the Moche valley. Recent dates obtained from the Cortijo Phase at the Caballo Muerto Complex show a similar range, between 1600-1100 B.C. (Chauchat et al. 2006: 233-4; Nesbitt et al. 2008: 266, Tabla 2; Nesbitt 2012: 199). The similarity in the ceramic assemblages (although some differences have been observed which will be discussed later) as well as the corresponding subsistence patterns indicate a consistent correspondence between the two sites during this early period. This new data, that comes from secure archaeological contexts help us narrow the extent of the Gramalote occupation from Billman's suggestion of 1750-1310 B.C. to 1500-1200 B.C.

The excavations of 2010 and 2011 reached sterile soil both in the west and east sectors of the site, and the samples for radiocarbon dating were taken from the earliest occupational surfaces up to the latest floors registered in the site. This was possible thanks to the excavation strategy that was adopted at the site. Based on the suggestion of professor Richard Burger, I started the operations at Gramalote taking advantage of the exposed profile of the west sector which was a product of the bulldozing the site suffered back in the late 1990s. Indeed, Kent Flannery was a pioneer using this technique for the excavation of domestic settlements in Mesoamerica (Flannery

Sample Number	Material	Provenience	Gramalote Code	Years B.P.	1 Sigma Calibration (ShCal 04)	2 Sigma Calibration (ShCal 04)	Phases	Proposed Dates
BETA-321936	<i>Tillandsia sp.</i>	<i>Circular Hearth on floor, West Sector</i>	UII-A6-C2-R4-MF 04	3030 +/- 30 BP	Cal BC 1264-1129 (68.2%)	Cal BC 1315-1055 (94.2%) Cal BC 1369-1358 (1.2%)	PHASE 3	B.C. 1300-1200
BETA-321937	<i>Tillandsia sp.</i>	<i>Circular Hearth on floor, West Sector</i>	UII-A4-C3-R2-MF 05	3140 +/- 30 BP	Cal BC 1362-1314 (34.7%) Cal BC 1411-1367 (33.5%)	Cal BC 1431-1264 (95%) Cal BC 1300-1250 (4.1%)		
BETA-321939	<i>Tillandsia sp.</i>	<i>Circular Hearth on floor, East Sector</i>	UIV-A1-3-4-C2-R5-MF 12	3070 +/- 30 BP	Cal BC 1317-1212 (56.3%) Cal BC 1372-1344 (11.9%)	Cal BC 1390-1153 (91.5%) Cal BC 1146-1129 (3.9%)		
BETA-321938	<i>Tillandsia sp.</i>	<i>Carbon concentration on floor, West Sector</i>	UI-A1-3-4-C4-MF 11	3180 +/- 30 BP	Cal BC 1441-1378 (58.5%) Cal BC 1337-1321 (9.7%)	Cal BC 1464-1306 (91.3%) Cal BC 1494-1473 (4.1%)	PHASE 2	B.C. 1400-1300
BETA-321940	<i>Tillandsia sp.</i>	<i>Circular Hearth on floor, East Sector</i>	UIV-A1-13-C4-R1-MF 18	3110 +/- 30 BP	Cal BC 1389-1292 (63.9%) Cal BC 1279-1271 (4.3%)	Cal BC 1416-1251 (90.1%) Cal BC 1243-1213 (5.3%)		
BETA-321941	<i>Tillandsia sp.</i>	<i>Circular Hearth on floor, West Sector</i>	UII-A1-2-4-C6-R13-MF 35	3040 +/- 30 BP	Cal BC 1272-1189 (44.9%) Cal BC 1293-1278 (6%)	Cal BC 1321-1112 (88.1%) Cal BC 1377-1337 (5.3%)		
BETA-321942	<i>Tillandsia sp.</i>	<i>Circular Hearth on floor, West Sector</i>	UII-A5-6-C6-MF 36	3140 +/- 30 BP	Cal BC 1362-1314 (34.7%) Cal BC 1411-1367 (33.5%)	Cal BC 1431-1264 (95.4%)		
BETA-321943	<i>Tillandsia sp.</i>	<i>Circular Hearth on floor, West Sector</i>	UI-A1-2-4-C7-R12-MF 38	3200 +/- 30 BP	Cal BC 1456-1390 (63.3%) Cal BC 1490-1481 (4.9%)	Cal BC 1500-1370 (87.7%) Cal BC 1346-1316 (7.7%)	PHASE 1	B.C. 1500-1400
BETA-321945	<i>Tillandsia sp.</i>	<i>Circular Hearth on floor, West Sector</i>	UII-A5-6-C7-AMB1-R3-MF 41	3130 +/- 30 BP	Cal BC 1404-1311 (68.2%)	Cal BC 1429-1260 (95.4%)		
BETA-321946	<i>Tillandsia sp.</i>	<i>Pit filled with ash and carbon</i>	UII-A5-6-C7-R20-MF 45	3170 +/- 30 BP	Cal BC 1433-1375 (54%) Cal BC 1339-1320 (14.2%)	Cal BC 1457-1294 (93.9%) Cal BC 1491-1479 (1.5%)		

Table 1

1976: 68-72). At Gramalote, the entire profile which is 104 meters long was cleaned and recorded (Figure 4). Thanks to this strategy it was possible to define the nature of the depositions and accumulations at the site. Thus we know that the bed rock was not a flat and uniform surface that was later covered by archaeological occupation. On the contrary, the site has several depressions which were first occupied by the earliest inhabitants of the site. Later on, occupations gradually moved out of these deeper areas into the upper parts as the population and settlement grew at Gramalote. Along the profile a total of seven superimposed floors were observed, with fill of different thicknesses separating them. However, not all the segments of the profile showed the sequence of the seven floors. For that reason it was decided to test different areas of the profile, opening large units in order to observe the horizontal distribution of the archaeological contexts. Based on the data for the west sector, one of the depressions was tested to reach the earliest occupations at the site. Similarly, other sectors of the profile that showed the sequence of seven floors, with evidence of architectural elements all the way from the surface to sterile soil, were chosen to become large excavation units. In the east sector extensive excavations were conducted without a profile as a guide, and apart from the area of the public architectural compound, all the operations reached the sterile soil.



Figure 4 Profile section of the west sector, Gramalote

The extensive excavations done at Gramalote both in the west and east sector, exposed 978 square meters (roughly 3% of the site). The data obtained from these excavations allow us to propose three occupational phases for the site, which are well tied to absolute radiocarbon dates (Table 1).

Diet and Subsistence

One of the most important goals of the research at Gramalote was to reevaluate the dietary component of the site, trying to contextualize food remains within and between the excavated houses, their activity areas and other related spaces of the village. The recording process prioritized food remains recovered in secure context such as hearths, pits, caches and especially floors. In these cases, 100% of the remains were recovered using additional fine-grade geological sieves (4.0-0.425 mm.) for small elements that are not sensitive to the human eye (i.e. anchovy bones, seeds, etc.). An important aspect of my research project was also to sift the mixed soils or fill that covered the occupational surfaces. The latter context was the richest in terms of volume and variety of species. Most of these fills, previously separated during the excavation process, were sifted through standard series of fine-grade geological sieves (4.0-0.425 mm.). The materials recovered in this way were later classified in the laboratory as macro-botanical remains, fish bones, seabird bones, sea mammals, terrestrial mammals and mollusks. The materials were analyzed by experts in each field and the detailed results of these analyses will be presented in my doctoral dissertation. Preliminary and very general results are provided in this article, based on reports submitted by the experts to the author. However, to give an idea of the amount of materials recovered, based on NISP, a total number of 207,807 mollusks were counted, 27,486 macro-botanical remains, 21,573 fish bones, 12,702 sea mammal bones, 8,860 seabird bones and 101 terrestrial mammals (mainly rodents and a very few camelids). Both NISP (Number of Identified Specimens) and MNI (Minimal Number of Individuals) were used for counting mollusks, fish, sea birds, sea mammals and terrestrial mammals. For the macro-botanical remains, only NISP was used. Meat volume was estimated for the most important species of each category, but this is a work in progress and will be presented on my thesis.

The subsistence strategy of the inhabitants of Gramalote was clearly marine-oriented. By far shark and sea lion were the main sources of protein. Among fish, 50% comes from cartilaginous species, mainly sharks of the Carcharhinidae family (perhaps requiem sharks), rays (*Myliobatis peruvianus*), sand shark (*Mustelus sp.*) and shortfin mako shark (*Isurus oxyrinchus*). Another 35% was fulfilled by drum fish "corvina" (*Cilus gilberti*); "lorna grande" (*Sciaena calaensis*) and "sucu" (*Paralonchurus peruanus*), among the most important. The remaining 15% came from about 20 fish species (Altamirano, et al. 2012; Salvatierra 2012). The second most important source of protein was from sea mammals. At Gramalote there is strong evidence that dolphins (*Tursiops truncatus*), a small quantity of porpoise (*Phocoena spinipinnis*) and especially sea lion (*Otaria flavescens*) were an important source of food. Following these species, the third most important source of protein came from seabirds, especially guanay cormorant (*Phalacrocorax bougainvillii*),

Peruvian pelican (*Pelecanus thagus*), Peruvian boobies (*Sula variegata*) and penguins (*Spheniscus humboldti*). It should be mentioned that at Gramalote an additional 23 bird species have been identified but they were consumed or used in minor quantities (Altamirano 2012). In general, seabirds contributed an important part of the diet but in lesser quantities than shark and sea lion. Shellfish was also important but less so than the previously mentioned species. Clams (*Semele sp.* and *Protothaca thaca*) and mussels (*Choromytilus chorus*) and a couple of rocky beach gastropods (*Tegula atra* and *Stramonita haemastoma*) were the most important species in terms of meat volume². An exception is the purple crab (*Platyxanthus orbigny*) which seems to have been a preferred food in Gramalote. Unfortunately, the scarce remains left on the middens make it difficult to produce an adequate accounting of this species. However, there are hundreds if not thousands of crab claws remains in the middens. The good conditions for organic preservation at Gramalote allowed the recovery of a large quantity of seaweed, locally known as "mococho" (*Girgantina chamissoi*) from which is assumed that this seaweed was important for the inhabitants' diet.

Macro and micro botanical analysis shows that Gramalote settlers had plenty of access to plant resources such as manioc (*Manihot esculenta*), sweet potato (*Ipomoea batata*), tomato (*Solanum sp.*), avocado (*Persea americana*), beans (*Phaseolus vulgaris*), squash (*Cucurbita sp.*), lucuma (*Pouteria lucuma*), paca (*Inga feuillei*) peanut (*Arachis hypogaea*) and cansaboca (*Brunchosia armeniaca*) as their principal plant food. Additionally, 25 species were identified, among which industrial plants such as cotton, sedges and gourds are included. Interestingly, maize appears to have been infrequently consumed at Gramalote, and only three macro botanical remains, one corn cob in the domestic sector and three inflorescences are found within the Public Architectural Compound (Ubillus 2012). Micro-botanical analyses show that maize starch is present in selected ceramic bottles and very few ceramic neckless ollas, indicating that it could have been consumed in the form of chicha (maize beer) but in a very limited amount (Huaman 2012). This evidence confirms Burger's statement that maize was not yet a staple food during the Initial Period (Burger and Van Der Merwe 1990).

The main source of fuel at Gramalote was achupalla (*Tillandsia sp.*) which grows naturally in the western hills of Cerro Campana. Although local fishermen indicate that until the mid-1960s it was possible to find achupallas in the desert between Huanchaco and Trujillo, it is more likely that the huge demand for this plant required frequent journeys to the hills of Cerro Campana to get this important resource. At Gramalote, achupalla is by far the most abundant macro-botanical remain in all the occupational phases (Ubillus 2012). In addition, woods from a number of trees and shrubs were used but mainly for manufacturing domestic tools and other implements.

Although the diet described above seems to be nutritionally balanced, physical anthropology analyses on the 43 human bodies recovered during the excavations, revealed that 30% of the Gramalote inhabitants suffered infections such as meningitis, periostitis, spongio-sclerosis and possibly syphilis (Tomasto and Lund 2013). On top of that almost all the inhabitants of Gramalote

² A total number of 63 mollusks species have been identified at Gramalote.

had dental hypoplasia during their childhood, indicating that they experienced severe episodes of malnutrition. At present, a number of experts are working with the Gramalote teeth to get additional information regarding oral health and bio-distance measurements³. Currently, there is not a clear explanation for this malnutrition pattern and more research is needed to understand this situation. However, it seems that these infections and poor nutrition were common in fishing settlements during the Initial Period along the Peruvian coastline. A similar pattern has recently been determined for the contemporary site of Puemape, north of Gramalote (Pezo-Lafranco and Eggers 2013). The same situation has been identified for the Initial Period population of the Lurin valley (Vradenburg 2009) and it seems to be the same case in nearly contemporary site of Kasapata in the Peruvian southern highlands (Bauer 2007).

Subsistence Strategies

The study of diet is as important as the study of the subsistence strategies. While the former provides a general perspective on access and exploitation of certain resources as well as food habits, the latter is crucial to for understanding the way in which the community organized to obtain these resources. In spite of its importance, only a few efforts have been made to study the subsistence strategies of fishing communities in the Peruvian coastline (Lavallee and Julien 2012; Sandweiss 1992). In my research I have used local ethnographic data and ethnohistoric documents to interpret food remains excavated at Gramalote. One of the crucial aspects in this attempt is to determine whether or not reed boats were used during the early Initial Period and especially at Gramalote.

For many years the use of watercraft during the early stages of the Prehispanic sequence was debated (Buse 1973; Edwards 1965; Heyerdahl 1978; Lothrop 1932; Means 1942; Sandweiss 1996; Uhle 1918; Vasquez, et al. 2012). Though there is no space here to describe in detail all the available data, there is no conclusive evidence to demonstrate the use of watercraft such as reed boats during the Late Preceramic period on the north coasts of Peru. During the excavations of the Middle Preceramic site of La Paloma, Jeffrey Quilter described the remains of an individual who was attacked by a shark, losing one of his legs during the incident (Quilter 1989). Quilter interprets this as the possibility that the injured fisherman had to have a watercraft otherwise he would not have survived the shark attack (Quilter 2014: 74). This seems to be a very special case, and the faunal remains from La Paloma do not show fish species that were captured in open seas (Reitz 1988). On the other hand, wooden watercraft models have been identified in the southern coast of Peru and northern Chile for the Late Preceramic period (Llagostera 1979), indicating that other contemporary/slightly later settlements may have been using this fishing technology.

Recently, Ruth Shady has claimed that a piece of a wooden watercraft was found at the Late Preceramic site of El Aspero, Supe valley (Shady 2009). The piece in question is a set of three rectangular wooden slabs crossed by other three. It is around 0.50 x 0.50 cm and I think it is

³ Celeste Gagnon from Wagner College is working on the oral health of the Gramalote population. Similarly, Richard Sutter from Indiana University-Purdue University Fort Wayne (IPFW) is working on bio-distance.

unlikely that it was used as a "platform" for fishing practices in the rough ocean of the north central coast of Peru. In addition, the fish remains at El Aspero show a corpus of near-shoreline species instead of open seas fish that would be expected if watercraft was used at that time.

Finally, Victor Vasquez and colleagues have recently proposed, based on the presence of unusually large jurel fish bones (*Trachurus symmetricus murphyi*), that the Late Preceramic fishermen of the Huaynuna site in the Casma coastline used reed boats (Vasquez et. al 2012). Indeed, the authors proposed that the bones belonged to specimens that may have been over thirty years old and were extraordinarily large size in relation to available records. In short, these remains seem to be a unique case that has not been reported at any other site. The authors discarded the possibility that the specimens recovered at Huaynuna are the result of beach stranding because there is a "number of fish species from other sites as well as 20 years of studies regarding this issue that corroborate the uses of reed boats since the Late Preceramic period" but unfortunately they neither cited nor discussed the studies that relate to these early uses of reed boats (Vasquez et. al 2012: 92). Also, there are no natural sources for reed around Huaynuna. If the fishermen from this site walked the five and a half kilometers to get totora from the Casma valley, what other species were captured besides extremely rare and large jurel fish? Traditional fishermen from Huanchaco in the Moche valley told me that old fish come to die in bays because food is easier to get in calm waters. Even more to the point, these fishermen argued that although jurel (*Trachurus symmetricus murphyi*) is an offshore species, it comes to the shore in large shoals during the austral spring season (around October).

I believe that to argue an important claim such as the beginning of reed boat use on the North Coast of Peru more compelling evidence is needed. Fortunately, at the site of Gramalote there are a number of evidential lines that point to the use of reed boats. Physical anthropology data helps us to determine the kinds of subsistence activities in which the Gramalote inhabitants were involved. All the adult males excavated at Gramalote presented marks of stress as a product of constant and heavy work done with their shoulders, arms and knees. Current data suggest that they constantly rotated their arms and forearms as the fishermen of Huanchaco do today when they row their reed boats. Interestingly, there is evidence of stress on the knees and the foot bones of males excavated at Gramalote indicating that they constantly had their feet in a flexed position. When modern fishermen start their journey on reed boats to the fishing grounds offshore, they row on their knees, with their feet flexed for almost an hour in order to propel the boat with the current against them. When they return, they do it seated with their limbs extended on the reed boat, taking advantage of the favorable current. At the contemporaneous site of Puemape, north of Gramalote, human osteology shows a similar pattern in adult males, also suggesting the use of reed boats during the Puemape Temprano phase or early Initial Period (Pezo-Lafranco and Eggers 2013: 205)

In addition, hundreds of discarded reeds have been documented during the excavations at Gramalote as well as two types of ropes: one type thinner and the other thicker. These archaeological examples are twisted in a way similar to that employed by current fishermen from Huanchaco to make their ropes to build reed boats. The thinner ropes are locally known as

"quiranas" and serve to bundle each of the four rolls that make the reed boat. The thicker ropes, which are usually double twisted cords, are known today as "guanganas" and they are used to wrap the final two large bundles of reed that composed the watercraft known as the reed boat or "caballito de totora."

Another line of evidence is the outstanding discovery of the fragment of a reed boat model found as part of a ritual cache in one of the rooms of the Public Architectural Compound. The fragment corresponds to the bow and strikingly, it was bundled just as is done today in full-sized reed boats. There is a very similar reed boat model found by J.C Spahni in the Atacama desert of Chile that is claimed to be roughly 2000 years old (Johnstone 1980: 14, figure 2.9). Therefore, up to now, the Gramalote sample is the earliest reed boat model yet found in the entire coast of the south Pacific with a calibrated date of 1500-1200 B.C. It is possible that the model found in the Public Architectural Compound was a votive offering through which the Gramalote inhabitants sought to guarantee the success of their daily fishing practices.

Finally, based on the analysis of 21, 573 fish bone elements, it was possible to identify 21 families and 30 species of fish. The most popular family is the Scianidae (drums) with seven identified species although the most abundant remains belong to the *Carcharhinidae* family (requiem sharks). Based on the vertebrae shape and circumference, the experts who analyzed the sample suggest that the species in question could have been the blue shark, shortfin mako and broad nose seven gill shark (*Prionace glauca*, *Isurus oxyrinchus* and *Nothorhynchus cepedianus*). Indeed, a total NISP numbers of 16,214 elements of sharks were identified which represents 75% of the total sample. Preliminary data on the measurement of the vertebrae to determine the size of these sharks suggest that they may have been between 1.5 and 2 meters long. The only way to capture such an enormous and potentially dangerous fish would have been by using reed boats. The size of the sample and the consistent recurrence of shark remains during the entire sequence of Gramalote suggest a sophisticated fishing technology that included reed boats. Based on ethnographic and archaeological data from the Melanesia islands, the Maya coasts, Easter Island and South Florida, shark fishing requires at least two fishermen (Borhegyi 1961; Englert 1974; Kozuch 1993; Malinowski 1918). Therefore, it seems reasonable to propose that the early version of reed boats were big enough to fit two or more fishermen for shark fishing. Thus, ancient early Initial Period reed boats may have been much larger than modern examples. Interestingly, in the ceramic collection of the Museo Chileno de Arte Precolombino there is a Late Initial Period / Early Horizon stirrup spout bottle in which two fishermen are rowing a reed boat (Vasquez et al. 2012: 93, Figure 1). As far as I know, this is perhaps the earliest ceramic representation of a reed boat in the Prehispanic Andean world.

At Gramalote, they may have captured from the shore, without using reed boats, other fish species such as rays, small sand sharks (tollos) and even big drum fish (corvinas, lornas, sucos). These species frequent the shoreline during the summer season on the North Coast of Peru, but during the winter season, they disappear, going offshore. The same can be said about crabs (*Platyxanthus orbigny*). At Gramalote there are thousands of crab remains, and crab may have been a primary source of food. Even though crabs can be gathered walking along the shoreline

during low tide, that would have been a time-consuming activity. Ethnographic data (Gillin 1947; Prieto 2009) suggest that fishermen prefer to visit offshore grounds where they can get hundreds of crabs using crab-traps in less than 4 hours. Indeed, today the fishermen from Huanchaco go "crab fishing" during the winter season. During this season, fish go far off the coastlines of Peru, where reed-boats cannot reach. In compensation, modern fishermen from Huanchaco turn to the crab fishing as a winter time activity.

Reed boat fishing and specifically the shark and crab fisheries may have been a gendered activity as it is today among the fishermen from Huanchaco⁴ (Gillin 1947: 31). Fishing in reed boats and from the shoreline with fishing nets or hooks and lines may have involved the participation of more than one man. Besides specific gendered activities as those mentioned above, traditional societies work together as a group, without excluding other members of the society. Women, children and old people all contribute to the subsistence activities in one way or another. This is particularly true in hunting large quantities of sea lions and seabirds, as suggested by the abundant remains of these animals. Traditionally, seaweed and shellfish gathering in Huanchaco is a woman's activity and it is possible that it was also during the Initial Period. Moreover, ethnographic data suggests that when there is an abundance of a given marine resource, men, women and children all-work together to take advantage of the unusual situation (Anhuaman 2008; Malinowski 1922). It can be argued that fishing subsistence strategies tied the community through links of fraternity and friendship, giving a sense of common identity, familiarity and identity in relation to other settlements.

On the other hand, fishermen and their families may have been involved in gardening activities (as suggested by the presence of agricultural tools), taking advantage of the wetlands surrounding the site. Indeed, gourds, squash, beans and especially reeds are species that can be cultivated in wetlands using sunken gardens, like those traditionally used by local fishermen today (Soldi 1982).

Finally products not available in the immediate and surrounding areas were probably obtained by the means of exchange as has recently been proposed by many authors (Burger 2013; Mayer 2013; Prieto 2013b). The Gramalote inhabitants may have had to walk to other inland valley communities or perhaps meet in common grounds (perhaps at ceremonial centers) to barter with other producers who may have supplied ceramic vessels, textiles, fruits, tubers and other products in exchange for the abundant marine resources processed previously at Gramalote.

Occupational Phases at Gramalote

Phase I (1500-1400 B.C.)

The resource rich location of Gramalote, was an important factor in settling this part of the coastline. But for fishermen, the perfect spot is always related to good fishing grounds. It is possible then that multiple factors helped make the decision to establish a permanent settlement

⁴ This is particularly true of the crab-fisheries using reed boats. Sharks disappeared from Huanchaco a long time ago and therefore this is no longer an activity considered by local fishermen.

in this location. This spot was possibly known by fishermen since the Late Preceramic period, considering that the Padre Aban site was situated in close proximity to Gramalote (see Figure 1). Phase 1 is the earliest occupational phase yet discovered at Gramalote. There is no evidence of a Late Preceramic occupation in this early stage, but a low ceramic volume was recovered when compared with later phases. Preliminary results suggest that the site was inhabited by a small population, perhaps a few households who were engaged in specialized fishing and small-scale gardening. Based on current evidence it is possible that no more than 50-100 people inhabited the site during Phase 1. This calculation has been made using the surface exposed during the excavations and the floor area of the houses (Kolb 1985). In addition, ethnographic data from the surrounding area was considered in relation to number of people per household and the area of the house itself. As a result, an average fisherman's family is 4-5 people (see also Gillin 1947; Schaedel 1989). The house, counting the surrounding open areas is on average between 150-200 square meters. Although these modern examples can be considered the result of a long-term process that involved Spanish traditions, it is interesting that many of the features observed in the houses excavated at Gramalote are similar to the ones observed today among modern fishermen in the village of Huanchaco and Huanchaquito.

In the west sector of the site, this early occupation is located in natural depressions of sterile soil. In these natural concavities the first settlers of Gramalote built their houses, using beach stones and mud mortar. Perhaps the purpose of placing domestic structures in these natural concavities was to provide extra protection from the wind. Along the edges of the natural



Figure 5 Example of retaining wall built during Phase 1 to use the natural depressions.

depression they built retaining walls with some protruding stones that were possibly used as steps to get in and out (Figure 5). The inhabitants constructed small rectangular structures with large patios. Indeed, most of the domestic activities were performed in open patios, including food processing and preparation, craft activities and even domestic rituals. The small rectangular rooms were roofed and perhaps used for resting. It has been noted that the area of the houses during this phase were larger than in later phases and interestingly the preferred material of construction was *kiso* a local word that is used to name shaped coral-like blocks. Another house located further south, had a different layout but a similar area (roughly 100-120 square meters) (Figure 6). Preliminary analysis suggests that the inhabitants of this second domestic unit were engaged in sea mammal hunting, especially sea lion (*Otaria sp.*) and dolphins (*Tursiops truncatus*). A large quantity of cranial bones as well as metacarpal bones and other remains of sea lions and dolphins were documented in this house. These bones usually showed evidence of butchering practices. For example, there are many cutting marks on the bones in areas where the flesh is concentrated (Perez 1992). In addition, harpoon points made of bone and stone were found in the patio of the house. It is well known archaeologically and ethnographically that people clubbed at least sea lions on the nose with wooden clubs or sticks (Donnan and McClelland 1999: 122; Anhuaman 2008: 201-202). Numerous circular stone hearths in the nearby patio and caches of sea mammal bones mixed with sea birds suggest that the inhabitants of this household were engaged in butchering, processing and perhaps distributing sea mammal meat at Gramalote.

In the east sector of the site, there is evidence of Phase 1 occupation near the Public Architectural Compound. It should be noted that this building did not exist in Phase 1. At least



Figure 6 Example of a house unit during Phase 1, West Sector, Gramalote.



Figure 7 Partially excavated circular domestic unit in the East Sector, Phase 1, Gramalote.

two possible semi-circular structures were built directly on the sterile soil. They were erected using *kisos* (shaped coral-like blocks) and beach stones. The presence of ceramics in these structures as well as absolute dates suggest that they were contemporaneous with the rectangular structures on the west sector. Later occupations destroyed these early structures but some extant portions of them indicate that in this sector of the site domestic structures may have had a different shape from the ones built in the west sector (Figure 7). Elsewhere, I suggested that while the households located on the west sector were engaged more closely in marine activities, the households located on the east sector were primarily engaged in marine activities but also showed a strong tendency for agricultural practices (Prieto 2013a).

Phase 2 (1400-1300 B.C.)

During this phase, the population of Gramalote increased significantly. Indeed, I will argue that the total extent of the site, as we know it today, was reached during this phase. As a working hypothesis I suggest that the population increased up to 200-300 inhabitants during Phase 2.

The areas occupied in the previous phase continued to be used and the settlers started to build outside of the depressions in the sterile terrain. It is possible that the increase of population was one of the reasons for the site's expansion. That growth may have been the result of the good location of the site plus the suitable fishing grounds. Those factors attracted gradually more and more fishermen and their families. The result was a small fishing village that had to deal with issues such as spatial organization, garbage management and a larger space for its ritual practices.

During this phase, there is evidence that the Gramalote inhabitants started to organize the settlement's layout. First of all, the domestic component was concentrated in the west sector, while the east sector was devoted to the construction of a Public Architectural Compound for ritual activities. In the domestic sector, at least one corridor running northeast-southwest separating two different habitation areas was uncovered during excavation (Figure 8). In addition, low platforms placed along the edge of the bluff overlooking the ocean are present in this phase. Small open spaces (patios? plazas?) were possibly used to locate domestic units. Current excavations did not determine if the households were built around open spaces or small plazas during this phase, but it is possible that this was the case. House 1 and House 2 are aligned with an open space that was partially excavated. It is thus possible that on the opposite side of the

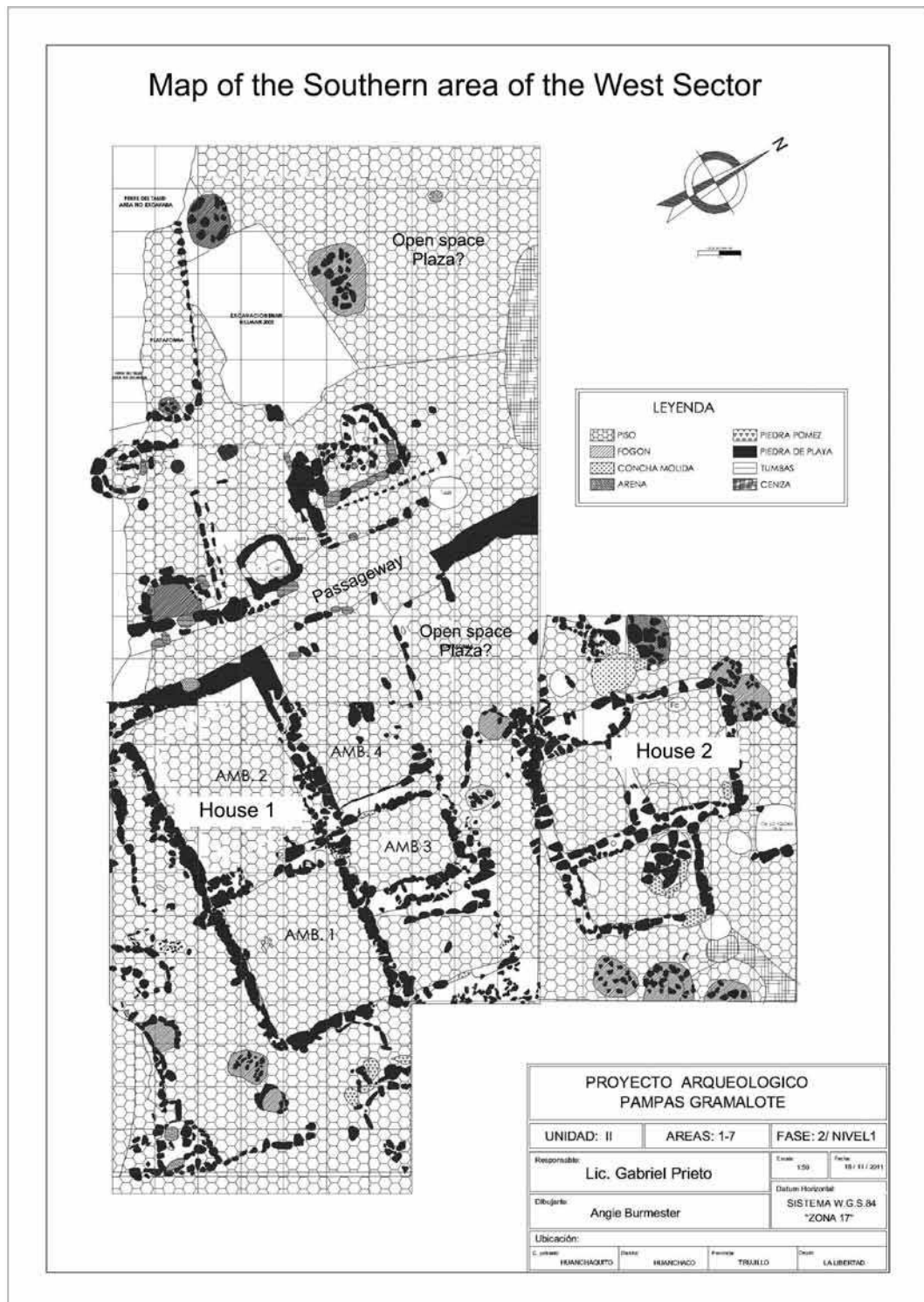


Figure 8 Map of the southern area of the West Sector. Note the passageway and the open space between the two houses.

open space, other domestic structures were built (Figure 8). Similarly, back yards or back patios were used for the intimate interaction of the family and their own domestic activities.

The domestic units were slightly smaller than the ones observed in Phase 1. Indeed, their estimated area during this phase based on fully excavated houses is between 60-80 square meters. Besides the differences in area, they continued using beach stone and *kiso* blocks, along with yellow clay floors. Rectangular structures were the rule, and there is no evidence yet of circular structures during Phase 2. Current data suggest that Gramalote households continued a systematic exploitation of marine resources but at the same time they were gradually becoming involved in specialized activities. For example, it is interesting that in one of the small rooms of a domestic unit located in the north sector of the site, three humans were buried. All of them were adult females. In the same area numerous bone tools were recovered along with abundant twisted sedges, fragments of ropes and reed mats (Figure 9). Based on this evidence, I have suggested elsewhere that the inhabitants of this domestic unit were engaged in basketry and matting (Prieto 2013a, b). Additionally, on the floor of the attached patio, a shaped quartz drill was found. In the same context dozens of drilled shells were recorded, suggesting that the occupants of this house manufactured shell beads (Prieto 2011a). Another house shows strong evidence that its members specialized in the exploitation, processing and perhaps distribution of seaweed and seabird meat. Interestingly this is perhaps the house of a shaman who was buried in front of the main entrance to the house. Apparently the shaman spent most of his time devoted to ritual activities since



Figure 9 Piece of basketry recovered in the fill covering the patio of one of the houses.

the physical anthropology analysis of his bones shows no evidence that he spent time in cold waters, as the other adult males of Gramalote did (Tomasto and Lund 2013). On the contrary, he may have engaged in seabird hunting and seaweed gathering, like the rest of his household. Those activities do not involve being in the water, since seabirds can be trapped along the beach (deFrance 2005) and seaweed is easily gathered during low tides along the shoreline (Masuda 1981, 1986).

Although it seems that most of the households were located in the west sector of the site during Phase 2, a few families stayed in the east sector. One fully excavated structure in the east sector was a house made entirely of perishable materials. Evidence of reed mats has been found around the area of the house, suggesting that it was built primarily with these materials. It consisted on a single roofed room surrounded by an open patio. The open space contained the kitchen and other activity areas (Figure 10). Two adults (male and female) were buried in the patio; a second female was buried inside the roofed space. The adult male had external auditory meatus, indicating that the household was engaged in the marine activities. However, I have pointed out elsewhere (Prieto 2013a) that there is a high concentration of gourd shells, peduncle and seeds around this household. In addition, digging sticks and other farming tools were found. Indeed, on top of one of the female burials, a digging stick was recorded. The presence of digging sticks, lithic hoes and an unusual abundance of discarded gourd elements such as peduncles, seeds and gourd shells suggest that the inhabitants of this sector were engaged in gardening or small-scale agriculture in the nearby wetlands or marshlands.



Figure 10 The only Phase 2 house excavated in Unit IV (East Sector).

It is worth noting that there is no evidence of specialized storage systems within the domestic units. In contrast small circular pits found around houses filled with sand were used to store dry or salted fish and other processed meat. This would suggest that the surplus was either consumed or more probably immediately exchanged with other communities.

Perhaps the most surprising non-subsistence activity identified at Gramalote during Phase 2 is the production of red pigment based on hematite. I have found the raw material; mortars and pestles to grind the mineral; shells used as containers for mixing the red powder, possibly with animal fat or vegetal oils; the containers in which the final product could have been poured and then used; and the tools to apply the pigment, such as cotton bolls, ceramic seals and bone palettes (Figure 11). There are also products that used that pigment such as post-firing red coloring on ceramic beads or dyed textiles. Possibly the red pigment was also used for facial or body decoration as is the case in modern Amazonian communities (Lathrap 1970; Baer 1994). There appears to be no restriction in the use of red pigment and all the inhabitants appear to have had plentiful access to this resource. Recent chemical analysis done by Veronique Wright from the IFEA and Aldo Watanave from Pontificia Universidad Catolica del Peru, demonstrated that Gramalote residents were exploiting a local hematite source located 20 km away in the Cerro Campana (Figure 1). Thus, the possibility remains open that they exported the red pigment to other communities and even to contemporaneous ceremonial centers.

In the east sector of the site, the inhabitants of Gramalote started their largest building project. Previously recorded by the Chan Chan Moche valley project in the early 1970s (Pozorski and



Figure 11 Ceramic stamp used to apply red pigment. It was recovered in Burial T-231, Gramalote.

Pozorski 1979: 417, Figure 3) and partially destroyed during the mid-eighties, the building I call the Public Architectural Compound was erected during Phase 2. According to the Pozorskis the building measured 30x20 meters or 600 square meters in area. My excavations were able to make trenches and follow the outer walls in an attempt to determine its total length but the large size of the building made it impossible to complete the excavation. Our current data suggest that this building was even larger than the Pozorskis suggested, with its eastern wall measuring 40 meters long (and continues in the profile) and with a southern wall of 23 meters long. Based on these measurements, the Public Architectural Compound has an area of at least 920 square meters, even without determining its northern and western limits. A conservative approximation suggests that the structure is over 1000 square meters in area, which is 10 times bigger than the domestic units excavated in Gramalote (Figure 12).

The outer walls of the Public Architectural Compound were double faced with no fill in between but consisted of solid mortar and stone. The walls have a consistent width of 80 cm and they were perfectly aligned, with straight and parallel sides. The stones used in its construction were not shaped, but they were carefully selected, using large basalt and granite blocks for the foundations and first rows, followed gradually smaller stones on the upper levels. A conservative estimate of the height of the outer wall is between 1.5 and 2 meters, based on the fallen stones recorded either outside or inside the Public Architecture Compound. As previously noted by the Pozorskis (1979: 415) at least the inner wall faces were plastered with mud but no color has been discovered yet. On one of the walls, small pebbles were found incrusting on the mud plaster but the evidence is insufficient to determine if these were used as decorative elements. The floors were carefully made using bright yellow clay mixed with sand, while the walls dividing the interior space were similar to the exterior walls but thinner. The Pozorskis documented that some of the rooms were paved with flat river stones (Pozorski and Pozorski 1979: 415) and my excavations found a similar pattern in attached rooms outside of the building.

I believe the layout of the structure presented by the Pozorskis in 1979 is the latest renovation of the building, perhaps associated with Phase 3. Unfortunately these architectural elements were vandalized and destroyed during the mid-eighties. Future excavations in this building will reveal how much is left on the ground from the last occupation and how similar or different its layout was compared with earlier occupation. Based on the Pozorskis' maps, it consists of an open central courtyard area surrounded on three sides by small rooms (Pozorski and Pozorski 1979: 415).

My excavations exposed the architectural elements along the eastern wall of the structure. No evidence of the rooms described by the Pozorskis on the left side of the building was preserved. During my excavations we cleaned a yellow floor which had many burnt features and three human graves (T-207, T-208 and T-215). After we excavated that floor, it was possible to observe the architectural elements built during Phase 2. From south to north, the east area of the Public Architectural Compound has a long and narrow hall 21 meters long and 3 meters wide (Figure 13). This is followed by a small open space and a small platform that overlooks the northern side of the complex. All the architectural features described above are higher than the remaining

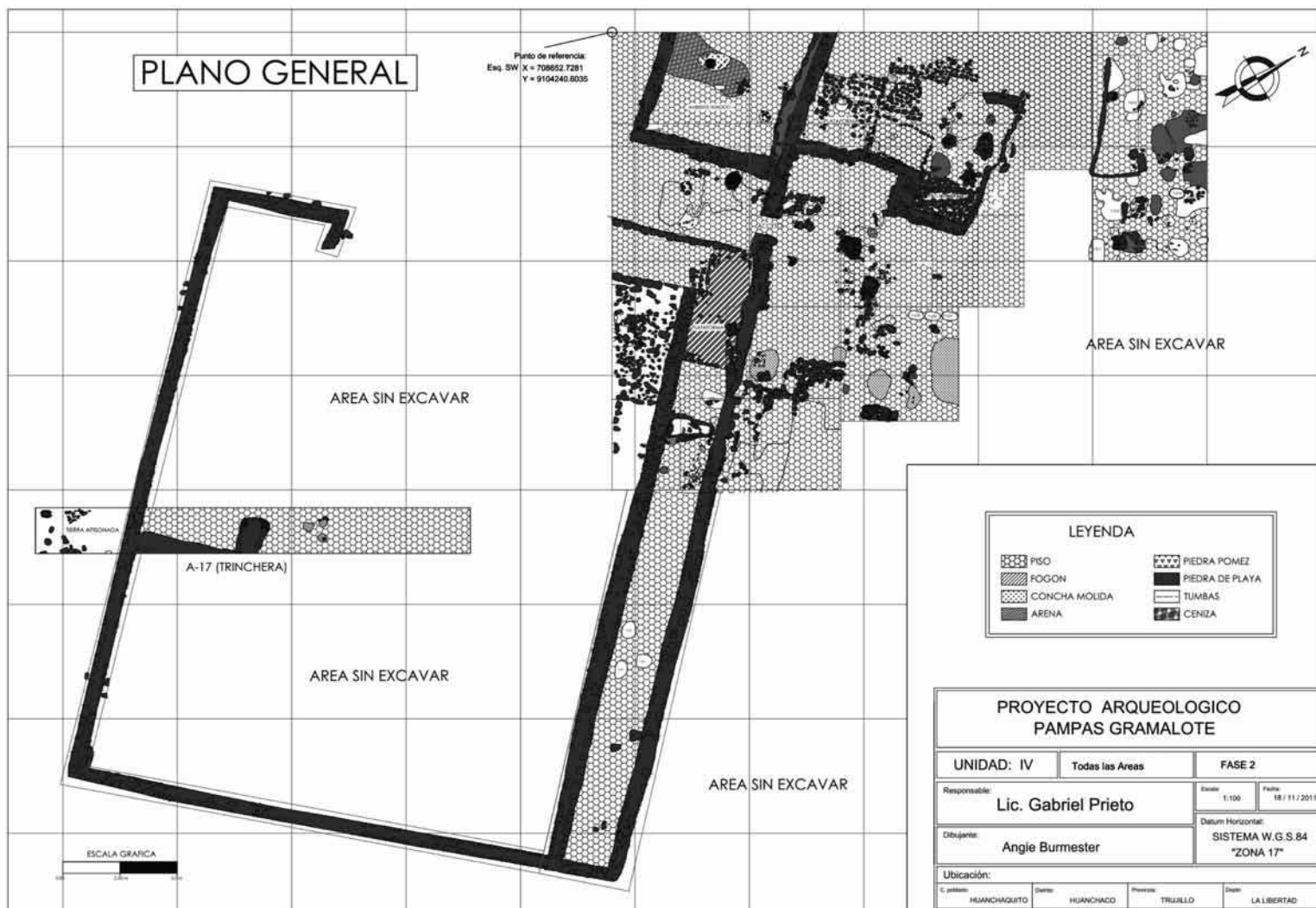


Figure 12 Public Architectural Compound during Phase 2. The map also shows the excavated areas.



Figure 13 General view from south to north of the long hall of the Public Architectural Compound, Phase 2, East Sector.

rooms. There is a 40 cm high platform that seems to run along the entire width of the building (Figure 12). Next to the step of the platform there is an access for entering or leaving the building. This is perhaps an auxiliary access rather than the main entrance to the compound. Next to the access there is a sunken rectangular room with a large bench on its east side. This sunken room was partially excavated (Figure 14). We did not continue to excavate the rest of the building but rather dug trenches following the outer walls. We also excavated a trench through the center of the building from northeast to southwest. Along this trench we found clean spaces, foundation walls and a number of ritual objects. All the evidence points to a stepped compound oriented from southeast to northwest with a strong possibility of a main entrance on its northern end. The gradually increasing height of the building took advantage of the natural inclination of the terrain, with the lowest level at the north end and the highest point at the southern limit.



Figure 14 Rectangular Sunken Room. Note the bench along its east wall.

The Public Architectural Compound has a sacred function within the Gramalote community, and there is ample evidence that a number of communal rituals were performed inside its walls including funerary rituals, feasting, possibly dancing and propitiatory ceremonies. Although our work fully excavated only a few parts of this building, there is no evidence that an individual or a group of people inhabited this building.

Phase 3 (1300-1200 B.C.)

This is the latest occupation at Gramalote and is a period of abandonment of the domestic sector. In contrast, it seems to show increased ritual activity in and around the Public Architectural Compound. This conclusion is based on the fact that there is a concentration of ceramic vessels, seafood and macro-botanical remains in and around the Public Architectural Compound. But more important is the fact that only two houses were identified in the west sector, the same area where seven houses existed during Phase 2.

The most salient feature is that the two houses are smaller than in previous phases and very poorly built, re-using buried walls from abandoned structures (Figure 15). It seems that



Figure 15 General view of a domestic structure of Phase 3, West Sector, Gramalote.

most of the architecture was made using mats and other perishable elements. Beyond that, it is remarkable that in the outer patios of these provisional houses, up to three special storage facilities were found. Storage rooms have not been reported for previous phases in Gramalote. These are rectangular (1x1 meters) semi-subterranean storage rooms that have a small window on its western wall, probably meant for loading in the products. They were hermetically closed and roofed with shaped *kisos* (coral-like blocks), beach stones and mud mortar (Figure 16). Most of these storage rooms or bins were found clean, but on the floor of one of them, small fish bones were recorded, indicating that it served to store seafood. The calculated capacity of each storage bin is approximately 0.5 m³. Although this volume is not large, it has to be considered



Figure 16 Probable storage facility of Phase 3.

that perhaps they were used for storing dried/salted meat of fish, sea mammals, seabirds and possibly shellfish. If this was the case, then a large quantity of these products could have been stored in these small bins. These storage facilities are surrounded by a large number of circular stone hearths. Even though circular stone hearths are common since Phase 1, a notable increase in its number was observed for Phase 3. Their proximity to the storage facilities indicates that they were closely related. Perhaps the seafood was smoked or the drying process was accelerated through heat. This aspect does need more research, but the relationship between the two elements is clear. An alternative is that the fishermen, no longer living in the site, came by seasonally to Gramalote to exploit the nearby beaches, using as many circular stone hearths as they needed during the time they stayed in the area, returning to their homes once they finished their fishing activities. The storage facilities could have been used to store their production while it was processed. This possibility is supported by the fact that many of the circular hearths presented layers of clean sand between different layers of ash, indicating that the hearths may have been abandoned for certain period of time and then re-used (Figure 17).

Another intriguing context was found on the southern limit of the excavated area in the west sector. It was an irregular shaped cache four meters long by approximately two meters wide. It may have resulted from a single cooking event in which a huge seafood banquet was offered. On the surface of the *cache* a large number of sea lion, dolphin, seabirds, sharks and fish bones



Figure 17 Profile section of a Phase 3 hearth. Note the sand layers between the ash deposits.

mixed with clams are evidence that all these different foods were consumed there. Interestingly, two stone fishing net sinker were found in the feasting context, suggesting that at the end of the event, the fishermen may have left their fishing nets there.

Possibly this was one of the last communal events undertaken by the fishermen and their families before they left the Gramalote site. A similar pattern can be observed in and around the Public Architectural Compound. Data from excavations suggest that minor changes were made during the renovation of this building from Phase 2 to Phase 3. The most salient feature was the addition of a large kitchen facility on the east side of the building with up to eight hearths for cooking purposes (Figure 18). These were circular stone hearths and some of them had stones especially arranged to ceramic neckless ollas. The abundant food remains around this area suggest that large amounts of food were prepared there. Next to the hearths, a big flat slab may have served as a chopping table (Figure 18). Next to it a short wall looks like a bench and smaller rooms were probably areas where the food was stored. Possibly all the meals were consumed in the Public Architectural Compound as part of ritual acts and festivities, but not more can be said due to the fact that a very small portion of this building has been excavated.



Figure 18 Concentration of circular stone hearths next to the Public Architectural Compound. East Sector, Phase 3.

As a working hypothesis, I would like to suggest that after a period of plentiful marine resources, the food supplies available to Gramalote inhabitants started to diminish (especially sharks, sea lions and mollusks). Then, possibly, a number of rules had to be set in order to preserve these resources, which subsequently produced social tension over who had the right to exploit certain products. Social tension might also have arisen as the result of certain families specializing in the exploitation of specific products and then fighting for their control. Apparently, during Phase 3 the exploitation and consumption of marine products were controlled by the Public Architectural Compound, and possibly decided to whom and when they gave the right to exploit the resources mentioned. Alternatively, the Public Architectural Compound also started to control the exchange of the marine products with other communities, creating disagreement within the community of Gramalote. There is also very strong evidence that by the end of the occupation, people started to get more resources from rocky beaches, which still today are found in Huanchaco bay. Interestingly enough, later settlements of the Salinar, Gallinazo, Moche, Chimu, Chimu-Inca, Colonial, Republican and even modern eras favored Huanchaco bay as a more suitable spot to live. The abandonment of Gramalote and the location of modern Huanchaco are key to understanding the adaptation of this fishing community through time and choice to relocate their settlement. Many more ideas can be put on the table but all of them are, at this point of this research, speculative. More investigations in the area are needed to understand this

complex process of adaptation that helps a maritime community survive until today. It is clear though, that multiple factors may have caused the abandonment of Gramalote.

Ceramics

The available collection totals 25,364 ceramic fragments, of which 3,010 are diagnostic (rims, decorated elements, etc.). These 3,010 fragments which represent 11.87% of the total ceramic sample were used to create the ceramic typology of Gramalote. A very small percentage of this collection was decorated. In fact, only 459 ceramic fragments or less than 2% (1.81%) of the sample were adorned with incisions, punctuations, *appliques*, modeled or a combination of one or more of these decorative techniques. Exceptions are two miniature vessels (one complete vessel and one body fragment) adorned with complex incised motifs filled with red mineral pigment after firing. A single case of a bottle body fragment had pre-firing painting of a circular design. Also a single case of a stamped motif has been identified on a neckless olla.

In addition, three fragments of solid anthropomorphic figurines were recovered as well as 92 ceramic beads, most of which have incised motifs filled with red and white mineral pigments after firing. Finally, three ceramic seals have been found; one in a burial, another in a ritual *cache* and the last in the domestic refuse of the site.

The ceramic vessels of Gramalote are mainly utilitarian wares used for processing, serving and storing food. Most were apparently used for processing food, specifically for cooking. This conclusion arises from the fact that almost all the ceramic fragments (cooking pots) were covered with soot. The most popular category is the restricted vessels, specifically the globular neckless ollas. There are two main shapes of neckless ollas: the slightly everted neckless ollas (six types), which are the most common at Gramalote and the incurved neckless ollas (eight types) which are less common (Figure 19). The second most popular vessel is the long necked bottle (three types). It has to be mentioned that no evidence of stirrup spout bottles has been found yet at Gramalote. The third most common vessel at Gramalote is the bowl (three types) and finally the necked ollas with four types.

Preliminary analysis of a selected sample of the non-diagnostic ceramic fragments indicates that the most likely technique of manufacturing the ceramic vessels was hand modeling; most samples bear marks of coiling (Baldeos, et al. 2011). The frequent presence of finger prints on the interior of the sherds and the visibly merging horizontal joints in the interior of the vessels make coiling a strong possibility. Many sherds had fine parallel lines and impressed marks on the exterior surface indicating that at some point cloth and/or reed mats were involved during either the shaping or finishing of the vessel. Before firing, the exterior surface was polished but without producing more than a luster. However the surfaces are very smooth and clean. Neither slip nor other coating was used on the exterior or interior of the vessels.

These early ceramic vessels average about 5.53 mm in thickness (n= 1,500) but range from 3.0 to 8.0 mm. Most of the vessels were fired in an oxidizing atmosphere. The appearance of the ceramic fragments is inconsistent, showing very poor control of firing conditions. This poor

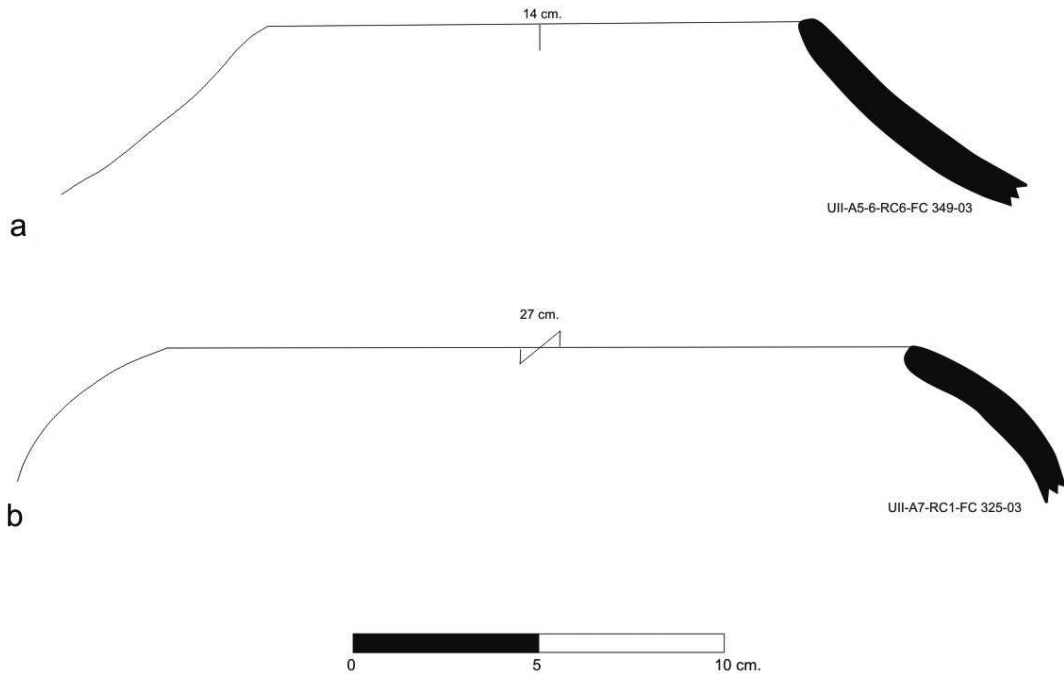


Figure 19 Slightly Everted Neckless Olla and Incurved Neckless Olla from Gramalote. The former is the most abundant and is considered the site type ceramic vessel.

control on firing produced a color spectrum from dark red (10YR3/4, 2.5YR3/2), light red (10R6/6), reddish brown (2.5YR4/4), dark brown (7.5YR3/2), dark grey (N2/0, N3/0) and black (N6/0). The predominance of large quartz inclusions in the paste produced star-shaped cracks, weakening the ceramic vessels. Other inclusions have been identified such as feldspar, crushed shell and crushed baked clay. The bottles are mainly tempered with sand, with very fine quartzite inclusions.

In terms of decoration, there are eight decorative techniques in the Gramalote sample: broad-line incised, punctate, fine-line incised, modeled, *applique*, post-firing painting, pre-firing painting and stamping. Interestingly, the most popular decorative technique is broad-line incising, which is almost exclusively used on bottles, but there are also a few neckless ollas that have broad-line incised motifs on their exterior surface (Figure 20). The second and third most common decorative techniques are punctate and *applique* incised ribs respectively. The other decorative elements are less common; post-firing, pre-firing and stamping are the least used at Gramalote, with just one or two samples of each. The decoration made with these techniques consists mostly of geometric designs, which cannot be reconstructed due to the small size of the sherds. However one can discern a number of squares, triangles, circles, straight lines and "L" shapes. In some cases compositions like triangles enclosing circles or crosses, rectangular elements framed by parallel lines, etc. were made. These motifs are definitely part of larger compositions that could have represented a more elaborate design. A few cases show naturalistic elements such as birds, sea mammals, mollusks, fish and human heads.

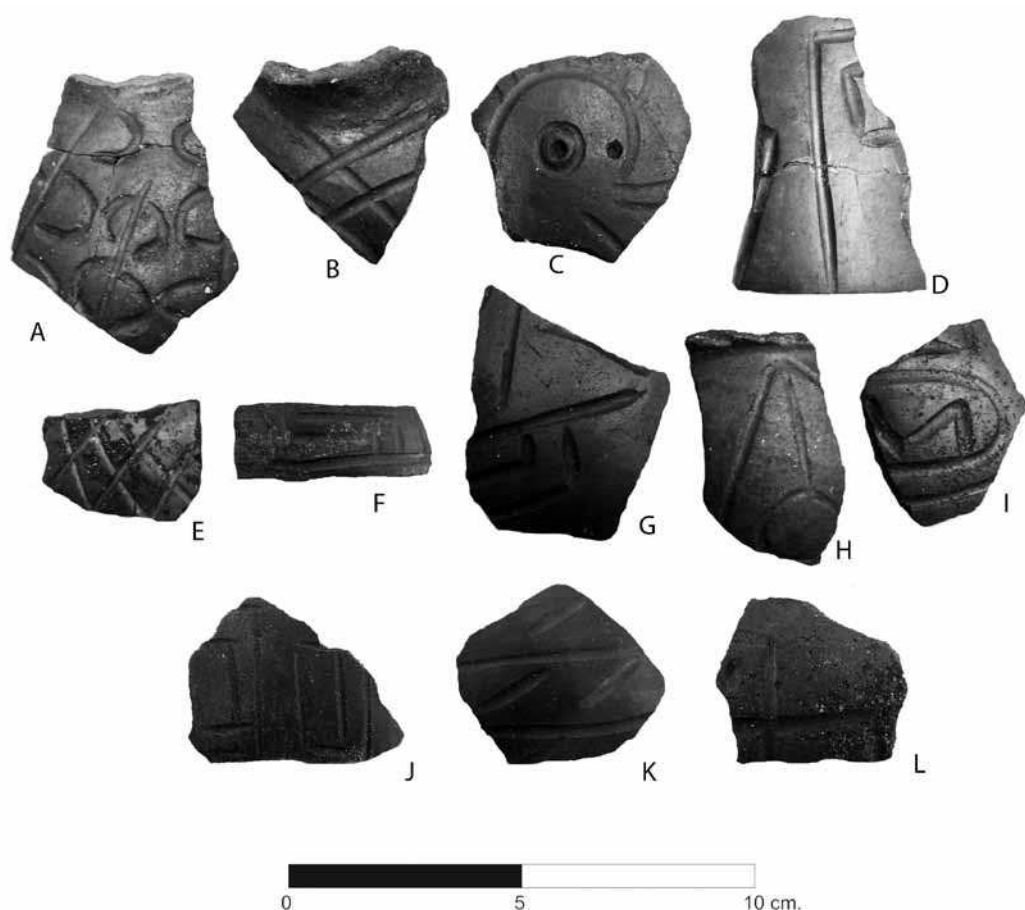


Figure 20 Broad line incision is the most popular decorative technique in the ceramic collection at Gramalote.

In terms of mouth diameters of the neckless ollas, three ranges or sets were determined based on the measurement of the 2204 rims. These are: small (8-14 cm.), medium (15-21 cm.) and large (22-28 cm.). Very few rims exceeded the largest range. In fact only four rims, all found within the Public Architectural Compound belonging to Phase 2, have mouth diameters of 32, 33 and 34 cm. respectively. During Phase 1 and Phase 2, the medium range (15-21 cm.) was the most popular with 53% and 54% respectively, followed by the small range (8-14 cm.), which comprised 35% during Phase 1 and 42% during Phase 2. It has to be mentioned that during Phase 1, the large range (22-28 cm.) comprised 10% of the sample, while for Phase 2 it only represents 5%. By Phase 3, the pattern turns around, with the small range (8-14 cm.) the most popular mouth vessel diameter with 53% while the medium range made up 43%. The large range during this phase comprises only 4%. This gradual narrowing of the vessel size from the earlier periods to the later ones may suggest a reduction in the amount of food prepared and served in daily meals or perhaps a shift in the size of the products cooked in the ceramic vessels although it could be a combination of both. I suggest that this pattern could be the result of a shift in food behavior and the abandonment of the site by the end of Phase 3.

During the excavations a total number of 481 bottle fragments were recovered. This represents 1.9% of the total sample and 17% of the diagnostic fragments. In terms of distribution, 62% of the bottle fragments were located in Unit IV, specifically in the Public Architectural Compound and in Areas 9, 10 and 11, which is a sector located outside of the southeast corner of the Public Architectural Compound. This sector seems to be a refuse area where most of the material used/ consumed at the Public Architectural Compound was discarded. The domestic sector of the site (Units I and II) comprised 38% of the bottle fragments (Unit I=7% and Unit II=31%) indicating that the households at Gramalote did also have access to bottles, using them during their daily domestic activities. The uses of bottles at Gramalote changed through time, exhibiting a dramatic change from Phase 1 where bottles were virtually absent, representing only 6% of the total ceramic assemblage of the site. During Phase 2, bottles experience a dramatic increase that went up to 18% and during Phase 3 its popularity keeps growing, reaching 20% of the total ceramic vessels assemblage.

The only type of bottle present at Gramalote is the long necked bottle (Figure 21). No evidence

of stirrup spout bottles has been found yet at this site. There are two sub-types of bottles: conical spouts and tubular spouts. Conical spout bottles are the most popular comprising around 80% of the available spouts. Usually, conical spouts are longer than cylindrical ones. One complete specimen of conical spout is 15 cm. in length but in general they have an estimated average of 12 cm. while cylindrical spouts are shorter with an estimated average of 6 to 8 cm.

Most of the fragments (63%) showed that they were fired in an oxidizing atmosphere, with dark-brown the most frequent resulting color. There are also few reddish wares and one or two orange fragments. The remaining 37% of the sample

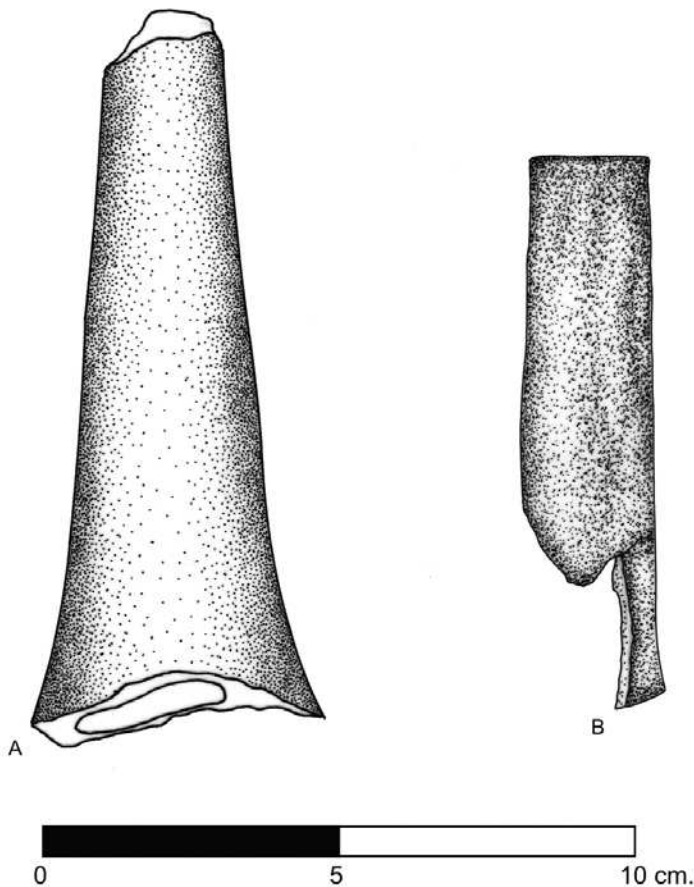


Figure 21 Conical (A) and cylindrical (B) spouts from single necked bottles, Gramalote

is from a reducing atmosphere, with grey as the most common surface color. As part of this category there are a few black wares.

The chamber of the bottle also helps establish different types. However, because no complete bottles were recovered during the excavation and because the fragments are small, it was impossible to link a chamber type with a specific type of spout. Three different chamber forms have been identified, based on a small number of chamber sherds. The most common one is the globular chamber, followed by the composite chamber, which is formed by a small carinated body between the spout and the chamber. The carinated body above the chamber is always smaller. The third one is a rectangular chamber, but only two fragments of this type have been recovered. There is scarce data for the bottle bases (n=20) but flat bases dominate, with 80% of the sample; the remaining 20% is convex. No other types of base have been recovered at Gramalote.

The decoration of the bottles has been applied exclusively to the chamber or body of the bottle. No evidence of decoration on the neck or bottom of the base has been identified. It is interesting that 74% of the body sherds presented decoration. This means that almost all the bottles were intentionally decorated, carrying a specific message or symbolism on its body. There are five types of decoration that have been used on the bottles of Gramalote. These are broad-line incised, fine-line incised, modeled, punctate and pre-firing painting. Broad-line incised motifs are the most common in this sample and should be considered a feature of this assemblage. On the other hand, it is interesting that no incised rib decorations have been identified on bottles, suggesting that it is a decorative technique used exclusively for neckless ollas and bowls.

Bowls are scarce in the Gramalote sample. Of the total number of fragments that have been recovered, only 0.20% (n=47) corresponds to bowls. Of the diagnostic fragments, there is a 2% representation. This means that bowls were not a common ceramic vessel at Gramalote and that their use was restricted. This could be the result of the presence of alternative bowl-like containers made of gourds. No complete bowls were recovered during the excavations, and most of them (53%) (n=25) were recovered in Unit IV, especially in and around the Public Architectural Compound. The other 47% (n=22) were found in domestic fills and refuse areas. Bowls are virtually absent during Phase 1 (n=2) but increased dramatically during Phase 2 (n=22) and Phase 3 (n=23). Three types of bowls have been discovered: two types share the classic convex-curving walls while the third has straight flaring walls. The former shape is similar to gourds, and the potters who made them may have taken *lagenaria* fruit as models. The sizes of the bowls are usually large, which means that most of them were used to serve food or other products. It is interesting that some of them have very interesting decorative elements; one has what seems to be an anthropomorphic face. This specimen has a small diameter, indicating that it was used not to serve food but probably for drinking liquids (Prieto 2011b). In another case, there is a vivid applique of a sea lion on one of the sides of the bowl. This indicates that these vessels may have been intentionally made for a user connected to the ocean (fisherman) or that it was locally produced.

Finally, necked ollas have the lowest representation in the sample, with less than 1% (0.07%) of the diagnostic sherds. This is a very rare olla form, which was mostly used during Phase 3.

Although the difference may not be meaningful, given the size of the sample, there are more necked ollas in the domestic sector than in the Public Architectural Compound or its surrounding areas. The size of these vessels is medium (15-21 cm.) (n=11) followed by small size (8-14 cm.) (n=5) and only one example of large vessel (22-28 cm.). Although the recovered fragments are very small, some of them allowed reconstruction of the body shape of some of the types present in this form. These vessels have a composite silhouette with a carinated shoulder. Usually the upper part, including the carinated shoulder, is decorated. The main decorative designs are parallel lines with zoned punctate in a pattern of repetitive triangles. Between the lower ends of the triangles, appliqued nodes are attached to the carinated shoulder.

The Gramalote ceramic collection could be considered one of the earliest ceramic assemblages of the Peruvian North Coast. It corresponds to the Cortijo Phase of the Moche valley recently established for the Caballo Muerto Complex (Nesbitt 2012), to the Early-Middle Guañape phases of the Viru valley (Strong and Evans 1952; Zoubek 1998) and to the Hamacas phase of the northern Jequetepeque valley (Tsurumi 2008). The equivalent absolute dating (when available) coincides very nicely with the Gramalote dates and can be situated roughly as 1600 - 1200 B.C. The most remarkable characteristics of this early ceramic assemblage is the predominance of the Slightly Everted Neckless Olla instead of the classic Incurved Neckless Olla with seems to be a later addition to this early assemblage. Another main feature is the absolute absence of stirrup spout bottles and the virtual absence of bowls and necked ollas. The last two features are also true for the Huaca Negra de Guañape assemblage. It is interesting that contemporary inland early Initial Period sites such as Huaca El Gallo/La Gallina in the Viru valley, Caballo Muerto in the Moche drainage and Monte Grande in Jequetepeque valley had many bowls in their collections (Ulbert 1994; Zoubek 1998). As previously noted, perhaps this is the result of fishing settlements having easy access to gourd-vessels and mid-upper valley sites lacking access to gourds, having to make their own gourd-like ceramic bowls.

Another major difference that seems to be a chronological marker is the presence of broad-line incision in the earliest component of the Gramalote collection and the increase of fine-line incision during the latest occupation of the same site. The same situation seems to apply at Huaca Negra de Guañape. However at sites like Monte Grande, fine-line incision is a characteristic from the earliest occupation up to the end of the occupation. Therefore, one must be careful in trying to establish a generalization based on this.

The Relationship with Caballo Muerto: An "Independent" Domestic Settlement?

Traditionally Gramalote has been related to the Caballo Muerto Complex (Pozorski 1976; Pozorski and Pozorski 1979). Current data supports early assumptions that indicate that both sites were related during the earliest occupation of Caballo Muerto and not later (Pozorski and Pozorski 1979: 420). In addition, the material culture of the inland site of Menocucho, suggest that Gramalote may have had also a strong relationship with this ceremonial site. Indeed, around the domestic sector of Menocucho there are many anthracite objects (which are very common

in Gramalote), mortars with red pigment, shellfish species such as clams and mussels and similar ceramic shapes and decoration⁵ (Billman 1996; Cherre 2001). Nonetheless, it seems that neither Caballo Muerto nor Menocucho had effective political, religious or economic control over Gramalote.

The excavations did not reveal evidence of an "institutionalized" or imposed religion or political force at the site of Gramalote. In extended religious systems like the Catholic church or the Islam, rigid rituals or specific rules need to be followed during funerary services. These rules are strictly connected with the religious beliefs and dogmas professed by those religions (Halevi 2011; Davies 1997). At Gramalote, there is not a "rigid" funerary pattern; it seems that each family followed its own rules. This is interesting because at later cemeteries such as Puemape, people buried there seem to follow a funerary pattern based on body position, type of offerings, head orientation and so forth (Elera 1998). Also, the Public Architectural Compound does not resemble any of the architectural features observed in the monumental buildings of the Cortijo Phase at Caballo Muerto, which includes rounded corners, central staircases and rectangular rooms on top of platforms. Indeed, I would argue that the Public Architectural Compound itself with its horizontal architectural design is a rejection of the mound-type observed at Caballo Muerto. Current data supports the idea that rather than an "administrative center" this building was used for local ceremonies, feasting events and other local necessities. In addition, there is no evidence of an intrusive occupation or a differentiation of social scale within the community. It seems that all the inhabitants, though specialized in the exploitation or manufacture of specific products, had plentiful access to coarse and fine wares, textiles, red pigment, food, lithic tools and even "exotic" products such as anthracite objects. The distribution of the latter as well as fine ceramic bottles is very uniform between the households during the different occupational phases. In sum, there is no evidence of social ranking and even if there was a leading family or a leader in the community (perhaps a skilled fisherman or a shaman) he or she does not show archaeological evidence of any control from the people of Caballo Muerto, Menocucho or any other inland ceremonial center.

On the other hand, the presence of multiple ritual caches within the domestic units suggests that there was a sort of *libertatem exercere* for domestic rituals among the Gramalote residents. These ritual caches are comprised of shark, fish, shellfish and sometimes plants indicating that Gramalote inhabitants used the most economically-important food resources as offerings in their cult. Thus, it is possible that domestic rituals were performed to guarantee food resources critical for the village's economy. The Public Architectural Compound located on the east sector was probably used for local feasting and for the worship of local deities or spirits of the community. Here were buried more elaborate ritual offerings such as shark teeth, sea lion skin and fossils. These elements were included in *caches* deposited in specific sectors of the communal building. It is possible that this space functioned in the same way as the big "Malocas" of Amazonian groups or the "Baku" and "Meeting House" of the Melanesian and Polynesian groups (Barrow 1976; DeBoer and Blitz 1991; Malinowski 1922). In short, this compound was a space where locals

⁵ Recently, the author of this paper has surveyed this site in several occasions, identifying many similarities in terms of material culture with the Gramalote site.

congregated for a number of activities, mainly ritual in nature. It is interesting to point out that the contemporary Huaca Negra de Guañape fishing community on the Viru coastline had a structure similar in size and shape, named by Strong and Evans the "Templo de las Llamas" (Strong and Evans 1952: 28, Figure 5). Similarly, at Puemape Carlos Elera has found a rectangular enclosure that seems to have the same features as those observed at the Public Architectural Compound in Gramalote and the Templo de las Llamas in Huaca Negra de Guañape (see Elera 1998:102).

From the 43 individuals excavated in Gramalote, one is distinguished for having a pair of pendants in the form of stylized fish, the offering of a young child and a Peruvian booby and also a snuff tablet and palette set. He was a shaman around 40-45 years old. He was not buried in the Public Architectural Compound but close to his probable residence in the west sector. He does not, however, have the external auditory meatus which suggests that he did not participate in fishing activities like the other adult men in the site. His status within the community was such that he was buried in his house and not in the community's most sacred space.

The evidence presented here so far shows a more dynamic, free and constantly changing domestic settlement than previously thought. Instead of consisting of specialized fishermen I argue that Gramalote can be seen as having a marine-oriented subsistence economy with a high degree of sub-specialization within the community. The inhabitants were also engaged in specialized domestic craft activities. Both marine products and non-subsistence products such as gourds, basketry, shell beads and red pigment suggest a high profile interaction between this community and others located in different parts of the valley. Today, we do not know much about the economy of the so-called "farming" communities in the valley, but they certainly manufactured a wide range of non-subsistence products such as ceramic vessels, stone bowls and tools, anthracite mirrors, and fine textiles.

This surplus of food and manufactured products made at the household level in different domestic settlements were the source of frequent economic interchange and social interaction between different kinds of residential sites. If Initial Period fishing and farming communities are viewed as independent settlements without having to be part of an authoritarian redistributive system directed from ceremonial centers, how did they exchange their products? These and many other questions are still waiting for more data. However, the information presented here, although preliminary, sheds new light to reassess the way in which the internal dynamics and economic interactions of the Initial Period were configured and that later shaped the trajectory of the social complexity in this part of the continent.

Acknowledgements

Yale University Joseph Albers Fund, Yale MacMillan Center International Dissertation Grants, Yale Council on Latin American and Iberian Studies, Yale John F. Enders Fellowships and the Yale Program in Agrarian Studies enabled my research at Gramalote since 2010. Wenner-Gren Dissertation Fieldwork Grant (#8427), National Geographic/Waitt Research Grant (#W188-11) and

Sigma Xi Research Grant (#G20110315156259) funded the fieldwork and lab analyses between 2011 and 2012. The fieldwork included the participation of students from the Universidad Nacional de Trujillo. My special thanks to Elvis Monzon, Lorenzo Risco, Jhon Baldeos, Roy Lezama, Pedro Caceres, Aldo Watanave, Sintia Santisteban Barrantes and Sheba Schilk. Jason Nesbitt provided wise advice to calibrate the Gramalote radiocarbon dates. Steve Victor helps me with editing the final version of this text. Richard Burger provided continuous support and advice throughout my research at Gramalote and my academic life in general. I am grateful to the two anonymous reviewers who made important comments and suggestions on earlier versions of this paper. Finally, I would like to acknowledge Yuichi Matsumoto for his friendship and support during those years we spent together at Yale.

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