

## THE PRE-ARAWAK POTTERY HORIZON IN THE ANTILLES: A NEW APPROXIMATION

Reniel Rodríguez Ramos, Elvis Babilonia, L. Antonio Curet, and Jorge Ulloa

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*Pottery in contexts that predate the entrance of Arawak societies to the Antilles (500 B.C.) by at least one millennium demand a reassessment of the introduction of this technology to the islands. We summarize the available evidence of what we term the Pre-Arawak Pottery horizon and address the social implications of the introduction of such technology to the insular Caribbean, based on the role of pots as tools. We show that this early pottery is more widespread than originally thought, extending from Cuba to Hispanola and perhaps to Puerto Rico and the Lesser Antilles as well. We argue that the paucity of early ceramic contexts discovered thus far could have resulted from the consideration of pottery as intrusive in Pre-Arawak contexts and because of its technological and stylistic overlap with wares associated to the Ostionoid series (A.D. 600–1500) of the Greater Antilles. Based on this evidence, we conclude by suggesting that some of the post-Saladoid manifestations that have been identified in the islands could have resulted from a multifocal development of these pre-Arawak cultures rather than simply from the divergent evolution of Saladoid societies as has been argued thus far.*

*El hallazgo de cerámica en contextos anteriores a la entrada de sociedades Arahuaacas a las Antillas (500 a.C.) demanda la revisión de su introducción en las islas. Presentamos la evidencia disponible para lo que denominamos el horizonte Ceramista Pre-Arahuaaco y analizamos las implicaciones sociales que tuvo esta tecnología en dichas sociedades. Demostramos que la presencia de esta cerámica temprana es de mayor amplitud espacial que la que se había pensado originalmente, extendiéndose desde Cuba hasta la Española y, quizás también, hasta Puerto Rico y las Antillas Menores. Argumentamos que una de las posibles razones por la cual se han identificado tan pocos contextos cerámicos tempranos antillanos ha sido el carácter intrusivo que se le ha sido asignado a su presencia en depósitos Pre-Arahuaacos, así como a la superposición tecnológica y estilística que estos complejos tienen con los asociados a la serie Ostionide (600–1500 d.C.) de las Antillas Mayores. Sobre la base de tales similitudes, proponemos que algunas de las manifestaciones post-Saladoides que han sido identificadas en las islas pudieron haber resultado de un desarrollo multifocal en estas sociedades pre-Arahuaacas en vez de la simple divergencia evolutiva de sociedades Saladoides como ha sido argumentado hasta el momento.*

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**T**he reasons for the introduction of pottery to different regions has been one of the most pervasive issues in archaeology. Until relatively recently, it was assumed that pottery production formed part of a “Neolithic package” (Marshall 2006) that also included agriculture, sedentism (i.e., village life), and social complexity. Although evidence worldwide has shown that each of these elements might have developed independently, in some areas the Neolithic axiom is still alive and well. This is the case of the Antilles, where the generalized idea has been that pottery was first

brought to the islands by the Saladoid immigrants that ventured from the Orinoco basin around 500 B.C. (Rouse 1992). Alongside a pottery repertoire characterized by the presence of white on red painting and complex vessel forms, these Arawak speaking peoples introduced agriculture, zemiism, and concentric village arrangements. Based on this model, it was the evolution of the Saladoid in the islands that later gave way to the Taíno society, the first people who suffered the effects of the arrival of Europeans to the western hemisphere.

This scenario was challenged in the early 1980s

**Reniel Rodríguez Ramos** ■ Universidad de Puerto Rico, Recinto de Utuado, P.O. Box 2500, Utuado, Puerto Rico 00641 (renielrodriguez@gmail.com)

**Elvis Babilonia** ■ Programa Doctoral, Centro de Estudios Avanzados de Puerto Rico y el Caribe, Apartado 9023970, San Juan, 00902-3970. Puerto Rico

**L. Antonio Curet** ■ Department of Anthropology, The Field Museum, Chicago, IL 60605

**Jorge Ulloa** ■ Instituto Tecnológico de Santo Domingo, Avenida Los Próceres, Apartado 342-9, Santo Domingo, República Dominicana.

by the discovery of a cultural manifestation in Puerto Rico characterized by the presence of unpainted pottery decorated with zone-incised crosshatched designs, named the Huecoide by Chanlatte and Narganes (1980). Upon the discovery of this manifestation, the debate centered on whether it represented an earlier migration of pottery-making horticulturalists (Chanlatte and Narganes 1980; Rodríguez Ramos 2001) or a subculture within the Saladoid (Roe 1985; Rouse 1992; Siegel 1992). Irrespective of the particular positions within this debate, both sides agreed that these migrating societies introduced pottery and agriculture to the islands, leading either to the development (Chanlatte and Narganes 1980) or displacement (Rouse 1992) of the previous Archaic groups that inhabited the Antilles who were primarily characterized by "the absence of agriculture and pottery" (Alegría 1965:246).

While these debates were taking place in Puerto Rico and the Lesser Antilles, in Cuba and the Dominican Republic archaeologists were finding ceramics that did not seem to correspond to either of the aforementioned cultural complexes. Furthermore, the pottery that was being recovered was rather coarse, thus contrasting with the fine-pasted Huecoid and Saladoid wares, and was found alongside otherwise Archaic assemblages. These findings led Greater Antillean archaeologists to postulate the presence of a pottery horizon that preceded the arrival of both Saladoid and Huecoid peoples to the Caribbean. Even though the presence of these early ceramics was first recognized in Cuba more than eight decades ago (Harrington 1921), the repercussions of these discoveries have not been fully absorbed by archaeologists working outside the Greater Antilles. In the few cases in which this issue has been addressed outside Cuba and Hispaniola, it has been treated as an isolated phenomenon (e.g., Rouse 1992) with no major effects for the general sociocultural landscape of the Caribbean.

As has been customary in Caribbean archaeology, the analyses conducted thus far on this early pottery have focused on sherds as the basic analytical unit. Fortunately, several studies carried out by Cuban and Dominican archaeologists have paid attention to the technical aspects of the production of this early pottery and have attempted to recreate possible vessel morphologies (e.g., Rímoli and

Nadal 1983; Ulloa and Valcárcel 2002; Veloz et al. 1976). By synthesizing such work and combining it with the information that has been generated in other islands, we address the probable reasons for the incorporation of pottery making into the technological repertoire of those pre-Arawak societies.

These inferences are based on the probable functions for which this early pottery was primarily suited, as indicated by the performance characteristics reflected in the technological choices that led to its production (Mills 1989; Schiffer et al. 1994; Skibo 1992). Thus, the approach to the problem is based on the study of these vessels as tools (*sensu* Braun 1983). This approach considers that culture and sociality are reflected not only in the finished pots but also in the operational sequences involved in their manufacture. In a very similar fashion to the *chaîne opératoire* approach applied to lithics (i.e., Sellet 1993), technofunctional treatments of pottery focus on the whole systemic trajectory of the vessels, from the selection of clays and tempering agents to the application of particular forming and termination techniques, their use, discard, and recycling. In doing so, technofunctional studies have been able to surpass the strict assignment of variations in pottery production to culture-historical explanations, and have explored other social aspects (although acknowledging that these are conditioned by and condition culture) that might account for such variability. By allowing us to infer the probable primary functions for vessels based on a set of technological and functional dimensions, this approach has proven useful for understanding the reasons for the adoption of pottery in other parts of the world (e.g., Rice 1999; Sassaman 1993; see chapters in Barnett and Hoopes 1995 and Saunders and Hays 2004). This approach departs from previous studies of early pottery in the Antilles, which have focused either on its culture-historical aspects or on the economic impact that ceramic making in its generic sense had on those early societies.

We refer to these early Antillean ceramic complexes as the Pre-Arawak Pottery horizon (PPH). The use of this concept does not imply that the reasons for the appearance of this pottery nor its formal attributes are homogeneous in the different loci where it has been uncovered. On the contrary, variability seems to characterize these early ceramic assemblages and their contexts. We simply use the

concept to refer to the pottery manifestations that existed on the Antilles prior to the Saladoid and Huecoide migrations, with the hope that further studies will establish the presence of distinct complexes within and between the different islands in which early ceramic assemblages are found.

We start by providing a general background of the discovery of this early pottery. The available information from Cuba and the Dominican Republic is presented, followed by the mention of other probable early pottery contexts from Puerto Rico and the Lesser Antilles, demonstrating that arguments about the cultural association of this early pottery have a longer history than previously supposed and that it is probably more widespread than what was initially thought. Then we summarize the major technological information that has been provided in the rather patchy available literature to reach the second objective of this work, which is to address the reasons for the adoption of pottery making based primarily on its social role in those early societies. Finally, we explore an aspect that has been almost totally overlooked thus far in early pottery studies in the Antilles, the probable effects that the presence of the Pre-Arawak Pottery horizon on the development of the post-Saladoid cultural manifestations that have been identified in the islands, especially in the Greater Antilles.

### Previous Research

#### *The Cuban Evidence*

The documentation of early pottery in association with otherwise pre-Arawak assemblages in the Antilles started early in the twentieth century. The first mention of this phenomenon was by Harrington (1921) as a result of his extensive work in Cuba, where he noted the presence of pottery in Ciboney (i.e., Archaic) sites. He not only stated the possibility of the direct association of ceramics with the Ciboney culture, but also provided the first description of the major vessel forms and decorative elements. Harrington (1921:394–395) explained that:

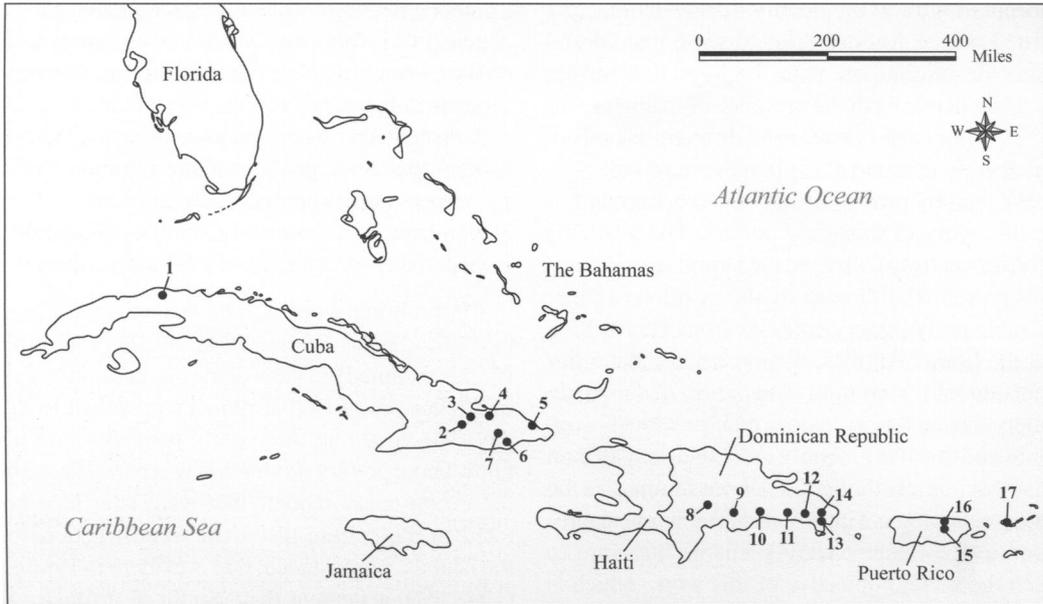
Pottery of any kind is very rare on Ciboney sites, except in certain cases where it is found on or near the surface and is obviously Tainian and intrusive, but once in a while, as the early village-site at Mesa Buena Vista, near Jauco, may be found sherds, usually plain but

sometimes decorated with simple angular patterns, or rather crude vessels which seem to have been of flattened globular form.... Now, semi globular and boat-shape forms and angular patterns are by no means unknown to Tainian ware, although they are not common; yet it seems significant that such forms and such patterns, and these only, should be found apparently associated to the Ciboney culture.

Harrington's words fell on deaf ears for at least two decades, as future works on this and other islands assumed the view of the pre-ceramic nature of Archaic cultures that remains prevalent to this day. The view that these early peoples could not know about pottery production was partly based on the evolutionary models that were later incorporated in the culture-historical reconstructions on the islands. For instance, this is evident in Rouse's (1948:499) statement that "So far as artifacts are concerned, certain negative data characterize all Ciboney sites. Pottery is never present, nor are the griddles on which the Arawak used to bake cassava." To erase the possibility raised by Harrington of pottery in these sites, he added the note that "The few pottery-bearing sites which Harrington... called Ciboney have since been shown to be Arawak" (Rouse 1948:49). Further work in Cuba has proven conclusively that Harrington was right.

Interestingly enough, when Rouse excavated Ciboney sites in Cuba he also mentioned the presence of pottery at El Nispero, which he attributed to the fact that it was "deposited there after the abandonment of that site by the Indians" (Rouse 1942:133). However, a review of the available data by Pichardo (1946) reestablished the presence of pottery in association to Ciboney sites on the southern coast of Camagüey. Pichardo, among others (for a review see Godo 1997), provided a careful evaluation of this issue and, among other alternatives, argued for the possibility that these non-Taíno people had the ability to produce ceramics, which he described as crude and undecorated (Pichardo 1946:75–76). Not only was his mention of the presence of ceramics in Ciboney contexts an important contribution at the time, but also the ceramics' association with ritual contexts such as burial caves and shellmounds (i.e., *caneyes*) was a vital observation, as will be discussed later.

Twenty years later, Tabío and Rey (1966:82–83) revisited these ceramics in association with what



**Figure 1. General locations of sites mentioned in the text: (1) Canimar, Playita and Cayo Jorajuría; (2) Mejías and Mayarí; (3) Arroyo del Palo; (4) Corinthia 3; (5) Aguas Verdes; (6) Caimanes 3; (7) San Benito; (8) Los Limones; (9) Cueva del Pomier; (10) Honduras del Oeste; (11) El Caimito; (12) La Piedra; (13) Cueva de Berna; (14) Musié Pedro; (15) Cueva Gemelos and Cueva La Tembladera; (16) Paso del Indio and Palmar de Animas; (17) Grambokola and Cancel Hill.**

they called the Cayo Redondo aspect of Ciboney culture and indicated that they were most probably intrusive to the sites, although they did not totally discard the possibility of their production by pre-Arawak peoples. In that same year, Tabío and Guarch (1966) published the results of their excavations at the Mejías and Mayarí sites (Figure 1), which showed the presence of a cultural manifestation that presented a different pottery assemblage from those found in sub-Taíno and Taíno sites of that island. They labeled this manifestation the Mayarí culture and argued that it probably represented a Meillacan migration from Haiti that arrived and lived in Cuba between A.D. 900 and A.D. 1100.

A different interpretation, however, was provided by Kozłowski (1974), upon his review of the lithics collected by Dacal in his excavations at Canimar, Aguas Verdes, and Playita. This led him to define the Canimar-Aguas Verdes culture, in which ceramics were found in association with a microlithic blade industry. The purported similarity that he observed between this lithic assemblage and that found in association with some Formative cultures, such as those from Poverty Point and Jake-town in the southeastern United States or Momil I

in Colombia, led him to postulate that such pottery was indeed produced by early societies that could have migrated to the Caribbean from either of those areas around 1000 B.C. Kozłowski's work was also important because it provided a thermoluminescence assay for one of the sherds from the Playita site, which dated to 26 B.C. (Dacal 1986, cited in Tabío 1995:46).

The finding of similar sites by Herrera Fritot (1970) and Navarrete (1989), among others, and the fact that the pottery found in excavations at the Mejías and Mayarí sites associated with otherwise pre-Arawak assemblages, led Tabío (1991) to revise his original postulation and to consider the Mayarí culture as the final phase of what he then termed the *protoagrícola* societies of Cuba. Since Tabío's work, the detailed analyses carried out by archaeologists in Cuba (e.g., Godo 1997; Jouravleva 2002; Martínez 1997; Ulloa 2001; Ulloa et al. 2001; Ulloa and Valcárcel 2002; also see Brito and Pereira 2001 for a bibliographical overview of this issue) have definitely raised the bar regarding social implications of early pottery on that island. Their studies have also provided new radiocarbon dates for this manifestation. For instance, Godo (1997:26) and

Jouravleva (2002:36) cite three early assays from the Cayo Jorajuria site obtained from three different pottery-bearing artificial levels that reportedly dated to 2160 B.C. (80–90 cm below surface), 1810 B.C. (60–70 cm below surface), and 1920 B.C. (40–50 cm below surface) (no sample numbers or dated materials are reported), although the contextual integrity of those dates has been questioned by Godo (1997). Other dates for this early pottery come from sites such as Corinthia III (2300 ± 60 B.P. [Beta 133952; charcoal]), San Benito (2020 ± 60 B.P. [Beta 93851; charcoal]), and La Herradura (uncalibrated 2050 ± 70 B.P. [Beta 140075; charcoal]), among others (for a list, see Ulloa and Valcárcel 2002). Finally, they have been able to show the wide distribution of these materials across the whole island and the very diverse array of environmental settings in which they are found.

### *The Dominican Evidence*

The Dominican Republic was the second major focus of study of this early pottery, following Cuba. The first indications about this pottery horizon there were provided by Krieger (1931:118–119), who indicated that:

Most writers on the Ciboney are not quite sure in their own minds whether these culturally supposedly impoverished aborigines made pottery or not. It fits in well with any scheme of culture sequence or hypothesis regarding the crude pottery forms frequently appearing in village sites and in caves in Santo Domingo and in Cuba to attribute such undecorated pottery form to a prepottery or early pottery-making tribe.

Discussions about the possibility of the association of pottery with a pre-Arawak culture were not registered again in the Dominican Republic until the 1970s, with Veloz et al.'s (1974, 1976) work on the Caimito and Musié Pedro sites, which provided dates as early as 2255 ± 80 B.P. (I-8646; shell). Later work by Rímoli and Nadal (1983) in Honduras del Oeste provided dates as early as 2310 ± 90 B.P. (I-6012; charcoal), and their revisions added new sites into the mix (e.g., La Piedra, El Pomier, Cueva de los Limones). Work at the El Barrio and de Pepe sites of Punta Cana has recently documented the presence of another early pottery complex dated to as early as 2290 ± 60 B.P. (sample

number not reported; shell; Veloz and Ortega 1996; Veloz 2001). Pottery has also been reported in earlier sites such as El Curro in Puerto Alejandro, dated to 3400 ± 95 B.P. (sample number and material dated not reported) (Ortega and Guerrero 1981:48). More recently, Atilés and López (2005) have also indicated early pottery at the Punta Bayahibe site, with earliest dates between 3530 ± 70 B.P. (Beta 199782; shell;  $\delta^{13}\text{C} = .5$ ) and 3380 ± 60 B.P. (Beta 199781; shell;  $\delta^{13}\text{C} = 1.0$ ).

It should be noted that when faced with the Dominican evidence of early pottery from the El Caimito and Musié Pedro sites, Rouse (1989) argued that the pottery present at those sites was a result of the adoption of this technology by the Casimiroid from Hacienda Grande people by a process of transculturation. In his latest culture-historical flowchart Rouse included El Caimito as a style within the Ceramic Age cultures, although he affiliated it with the Courian Casimiroid sub-series, which paradoxically is classified within the Archaic age (Rouse 1992:52). Rouse (1992:92) justifies this by stating that:

It would seem, then, that the makers of El Caimito pottery were El Porvenir people who copied Hacienda Grande-style pottery, thereby creating a dual culture. Because their El Porvenir heritage was dominant and their ceramics was [were] borrowed, I have assigned them to the Courian Casimiroid subseries in figure 14.

Such an interpretation merits further scrutiny.

### *Other Probable Early Pottery Contexts*

Aside from Cuba and the Dominican Republic, no clear evidence for this early pottery horizon has been produced thus far in the Antilles. However, a literature review indicates that this PPH might have extended beyond those two countries. For instance, in Haiti this phenomenon has not been formally documented, although this country clearly is fertile ground for this early pottery horizon based primarily on its existence in both Cuba and the Dominican Republic. This is made evident by reviewing the work of Rainey (1941:24) and Rouse (1941:50), who mentioned the presence of pottery at the Couri 1 site. However, Rouse (1941:50) again indicated that "They are probably intrusive in the Couri 1 site, i.e., they must have been dropped on the site after it was abandoned."

Since the work of these two archaeologists, pottery in pre-Arawak contexts has not been documented, although this might relate to the limited work conducted there as well as to the probable erroneous association of these sites to Meillacan or Finca occupations. The potential presence of sites with early pottery in Haiti is shown by "small crude sherds" in the Archaic Source Pascade II site, dated to 1090 B.C. (Moore 1998:188). Hopefully, more work will be done there to evaluate the presence of pre-Arawak sites with pottery.

In Puerto Rico, the available evidence is still tentative, although pottery associated with pre-Arawak contexts has been proposed. The first to mention pottery associated with what he later termed the Coroso culture was Rouse (1952a, 1952b) in his island-wide survey. For instance, he mentioned pottery in some of the middens at the Playa Blanca (Rouse 1952b:550–551) and Jobos sites (Rouse 1952b:538), where he observed "several Indian sherds on the surface of one heap," but again he considered them to have been deposited post-abandonment. Pottery was also found three decades later at the pre-Arawak Cueva Gemelos site, but it was considered to be intrusive (Dávila 1981:177). It was not until the work of Martínez (1994) at the Cueva La Tembladera site in the north-central portion of Puerto Rico that "crude" pottery was established as having been produced by the Archaic inhabitants of the island. Other work in the north-central portion of the Puerto Rico (e.g., Ayes 1989; Rodríguez and Ayes 1997) mentioned pottery in pre-Arawak contexts, although detailed published reports and radiocarbon assays of those contexts are lacking.

More recently, new work at the Paso del Indio site, also in north-central Puerto Rico (García 1998; Rodríguez Ramos 2005a; Walker 2005), led to the discovery of highly weathered pottery in two stratigraphic units sealed under 2.0 to 2.5 m of sediment (Figure 2). This pottery, originally classified as Ostionoid, was found in two recovery units (8I-D and 8I-E), where two distinct pre-Arawak components were documented, one of which dated between  $2520 \pm 40$  B.P. (Beta-178678; charcoal) and  $2330 \pm 110$  B.P. (Beta 178677; charcoal) (lithostratigraphic unit B), and the other to  $1920 \pm 80$  B.P. (Beta-87611; charcoal) (lithostratigraphic unit C) (Walker 2005). Classic pre-Arawak artifacts such as an edge-grinder and a round *bola* stone,

among others, were uncovered in lithostratigraphic unit B, leading further credence to the association of the pottery with a pre-Arawak context (Figure 3). Two sherds were found in an even earlier component in unit 8I-C dated to  $4110 \pm 40$  B.P. (Beta 17680; charcoal;  $\delta^{13}\text{C} = -29.2$ ) and  $4060 \pm 60$  B.P. (Beta-77165; charcoal;  $\delta^{13}\text{C} = -28.4$ ), which led García (1998) to postulate the possibility that these indeed corresponded to an early occupation by pottery-making peoples. Unfortunately, the use of heavy machinery and the small area excavated where these early dates were found limit the resolution of the data.

A brief review of the available literature from Puerto Rico indicates the probable existence of additional Archaic sites at which pottery has been uncovered but has been considered intrusive, mostly because the sites are associated with earlier dates than what were considered acceptable for Ostionoid contexts (ca. A.D. 600). For example, Siegel and Joseph (1993:45) obtained a date of  $2080 \pm 70$  B.P. (Beta-64388; charcoal) from the Palmar de Animas site near a pottery fragment described (with the assistance of the late Irving Rouse) as "transitional between Esperanza and Capá, based on the complexity of the incising and paste characteristics." However, after selecting this sample as suitable for dating, Siegel and Joseph (1993:45) considered this date to be too early for this type of pottery and argued that "the best interpretation for this anomalous date in connection with an Esperanza deposit is that a fire occurred naturally in the vicinity of VB-27 prior to human occupation of the area." Although that explanation is possible, the fact that only one sample was submitted for dating from the site definitely limits the determination of its temporal placement. Nevertheless, this case serves as an example of the common interpretation of the intrusive nature of pottery found in Archaic sites and the definition of early dates for Ostionoid contexts as anomalous. These types of interpretations could partly explain the low number of early ceramic sites on Puerto Rico and the rest of the Antilles.

In the Lesser Antilles, the possible presence of this PPH has been almost totally overlooked, but a brief review of the available information shows the need to pay more attention to the probable existence of the horizon in those islands as well. This possibility should not be surprising based on the inter-

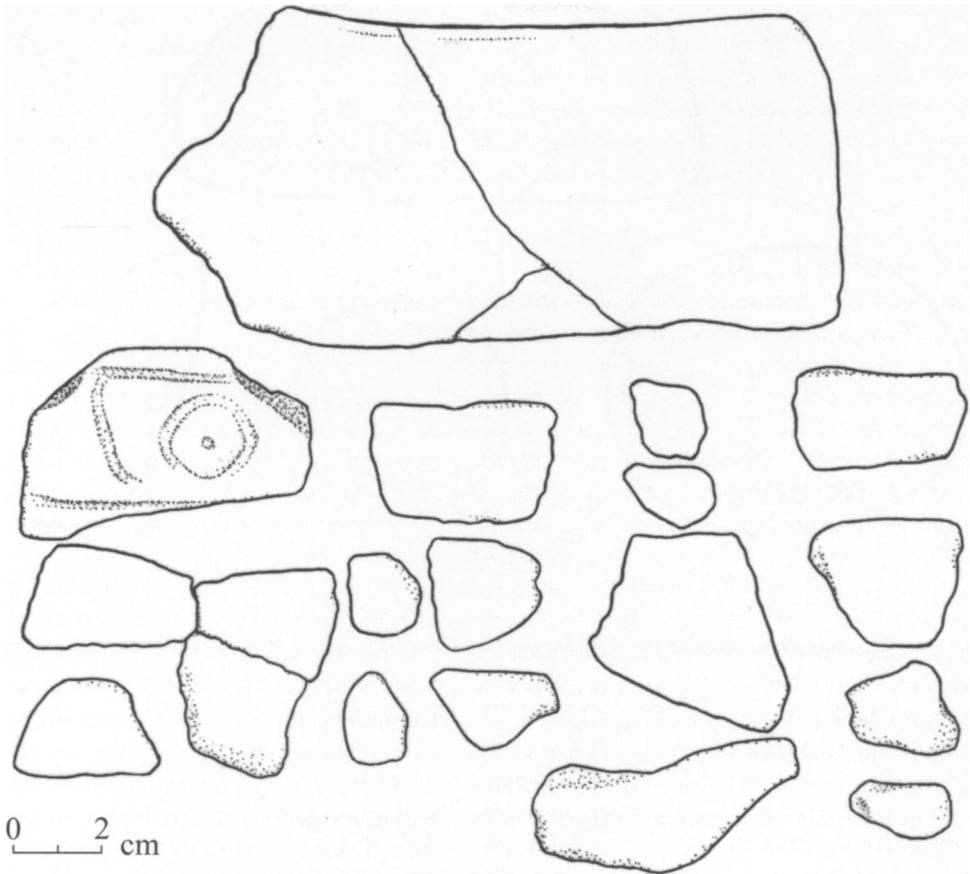


Figure 2. Early pottery from Paso del Indio site, Vega Baja, Puerto Rico (units 8I-C and 8I-D, lithostratigraphic unit B).

island interaction spheres that existed prior to the Saladoid migration (Rodríguez Ramos 2002), which might have led to an early spread of ceramic technology between the islands. For instance, pottery has been recovered from pre-Arawak sites such as Grambokola (dated to  $2790 \pm 90$ ; I-8642 B.P.; shell) and Cancel Hill (dated to  $2820 \pm 90$  B.P.; I-8693; shell) in St. Thomas (Lundberg 1989:84). According to Lundberg (1989:134), Bullen and Sleight (1963) describe Grambokola's sherds as "tempered with grit and/or shell, smooth surfaced, and medium thick, with upright or inturned rims, one instance of narrow-line incising paralleling the lip, and one instance of a red painted rim." Lundberg (1989:139) argued that the dissimilarity of this pottery to other pottery collected in the Virgin Islands seemed to indicate that it was either incor-

porated to the site by inter-group contact or that it was deposited there by later peoples. Unfortunately, the contextual integrity of these sherds is dubious as most were surface finds, and thus further work is urgently needed to evaluate the presence of the PPH there. One of the reviewers of this paper also suggested the presence of pottery in an early context of the Deep Bay site in Antigua, although its association to a Pre-Arawak component is still under review.

Several issues become apparent when examining the available evidence of pre-Arawak pottery collected thus far in the Antilles: (1) the presence of pottery in pre-Arawak sites has been an important issue since early in the twentieth century, but it was later eclipsed outside Cuba by the strong influence of Rouse's model; (2) this is a widespread

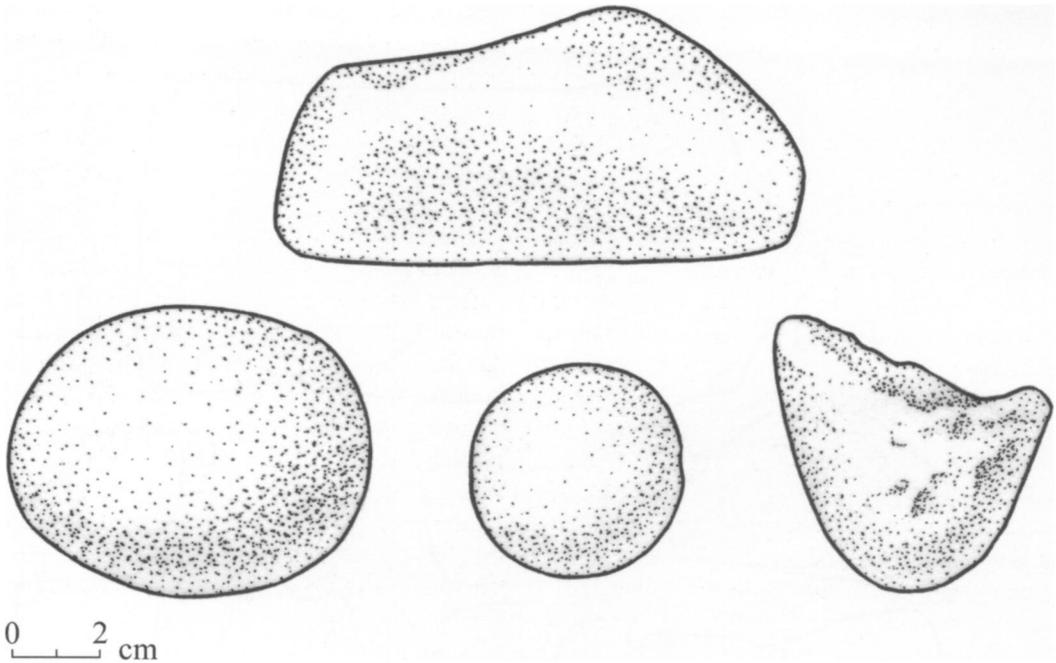


Figure 3. Lithics associated with the early pottery from Paso del Indio site (unit 8I-D, lithostratigraphic unit B).

phenomenon, extending from Cuba to the Dominican Republic, and perhaps to at least Puerto Rico and the Lesser Antilles as well; (3) ceramics appeared in the Caribbean earlier than traditionally accepted; (4) in many cases, this pottery in pre-Arawak contexts has been viewed as intrusive and thus not considered in the interpretation of these sites; and (5) more studies are urgently needed outside Cuba and the Dominican Republic to determine whether the PPH extends beyond those islands and its timing.

Even though these are all important issues, in order to come to grips with the significance of the incorporation of this technology for those pre-Arawak societies, we must move beyond the role of ceramics as cultural markers and treat them as tools. In order to do this, we provide a brief overview of the existing technological information regarding this early pottery in order to generate informed estimates about its probable uses.

### A Description of the Early Pots

In this section we summarize the available technological information on early pottery in the Caribbean. Unfortunately, there are several limi-

tations inherent in the present work due to the state of the data and the nature of the assemblages. In many cases, the analytical units and the conceptual frameworks that have been used to describe the different assemblages are not comparable, rendering them difficult to compare and contrast. Also, the collapsed description of attributes for the whole pottery assemblages hampers the determination of the extent to which each refers to a specific vessel type. Finally, the few sherds found at the sites, their small sizes, and their usually poor state of preservation imposes additional limitations, especially for addressing vessel forms or surface finishing techniques. Irrespective of these limitations, however, the data produced thus far allow us to provide a general perspective about this early pottery that might serve as a basis for comparison when new assemblages are analyzed and old ones are revisited.

### Temper Selection

The use of temper tends to be highly variable between and, in some cases, within assemblages. However, in almost every case the added nonplastics consisted of shell and mineral tempers such as sand, crushed rocks, and/or quartz grit. In some

contexts, especially in Cuba and the Dominican Republic, grog temper has also been documented (e.g., Rímoli and Nadal 1983; Ulloa 2001; Veloz et al. 1976).

In addition, a very limited number of sites show the use of organic tempers. For instance, mineral nonplastics were mixed with crushed shell, charcoal, and/or ash, as was documented at the Musié Pedro and El Caimito sites (Veloz et al. 1974, 1976). In other sites fiber temper was also used, although it always seems to have been incorporated along with other materials such as sand and quartz grit (Jouravleva 2002; Veloz et al. 1976). Jouravleva's (2002:41) petrographic analysis of early pots from central Cuba indicated that in sites such as Venta del Río, Bijurey, and Birama, these fibers tend to constitute around 30 percent of the temper. She also noted that the fibers that were selected were rather thick, similar to the ones identified in early pottery from Colombia. The specific fiber utilized has not been identified.

### *Forming Techniques*

The major manufacturing technique documented in this early pottery is coiling, especially for globular and boat-shaped vessels. Whether the coils were spiraled or added in layers is unknown.

Plates and griddles most likely were produced by flattening clay slabs over a flat rigid surface. The borders of griddles were probably produced by adding a single thicker coil that encircled the body, as has been noted in later contexts (e.g., Espenshade 2000).

### *Vessel Shapes*

In most of the assemblages for which vessel shapes have been estimated, two main forms have been repeatedly described: globular bowls with round or flat bottoms and boat-shaped vessels.

In most cases, the globular bowls have unrestricted orifices, although some rim profiles seem to indicate incurving walls resulting in some restriction. Their rims are mostly simple, either round or squared, although in a few cases these bowls have outward-thickened rims. In later sites, D-shaped strap handles were added to some of these bowls, as has been documented in El Caimito (Rímoli and Nadal 1983), Belleza, and Catunda (Ulloa 2001).

Boat-shaped vessels are characterized by a lenticular morphology when seen in plan, with

unrestricted orifices. The extremes tend to be higher than their centers when seen in frontal cross-section and the ends are pointed when not decorated. Their bottoms are somewhat flattened, although they do not tend to show marked boundaries with the vessel walls. In some cases loop handles or modeled figurines are attached to the vessel corners.

In almost every case, the potsherds associated with those two vessel forms tend to be rather thin, ranging between 4 and 8 mm. In his study of southeastern Cuban pots, Ulloa (2001:254) indicated that they were mostly either small (from 4 to 12 cm in orifice diameter) or medium (18 and 24 cm in diameter), with a few larger specimens of approximately 25 and 30 cm in diameter in later contexts. Although it is not clear to which vessel form these measurements refer, these are most likely estimated for globular vessels, as it is very difficult to ascertain diameters of boat shaped vessels due to their non-circular shape.

In addition to those two shapes, some sites have what have been called stone plates, which are rather thin and shallow vessels with small expanding walls (e.g., Navarrete 1989; Veloz et al. 1976). Another vessel form is the so-called cassava-griddle. These first appear in later contexts at sites such as Musié Pedro (Veloz et al. 1976), although they are absent at contemporaneous and nearby sites such as El Caimito (Veloz et al. 1974). They are commonly described as flat and thick, with one smooth side where the cooked mass is put and a rougher underside that is heated. These tend to be much thicker and coarser than the other vessel forms.

### *Finishing*

Surface finishing techniques seem to have been rather coarse during the earlier periods, although that could result from the obliteration of burnishing or polishing due to weathering. However, in all of the described cases pots seem to have been simply left in a smoothed stage.

Some archaeologists have also mentioned a technique known as *espatulado* (i.e., scraping) (e.g., Ulloa and Valcárcel 2002). This finishing technique is observed by the presence of drag marks that might have resulted from use of a spatula-like implement.

Regarding the types of decoration, three main techniques have been documented thus far: painting, linear and punctate incision, and the addition

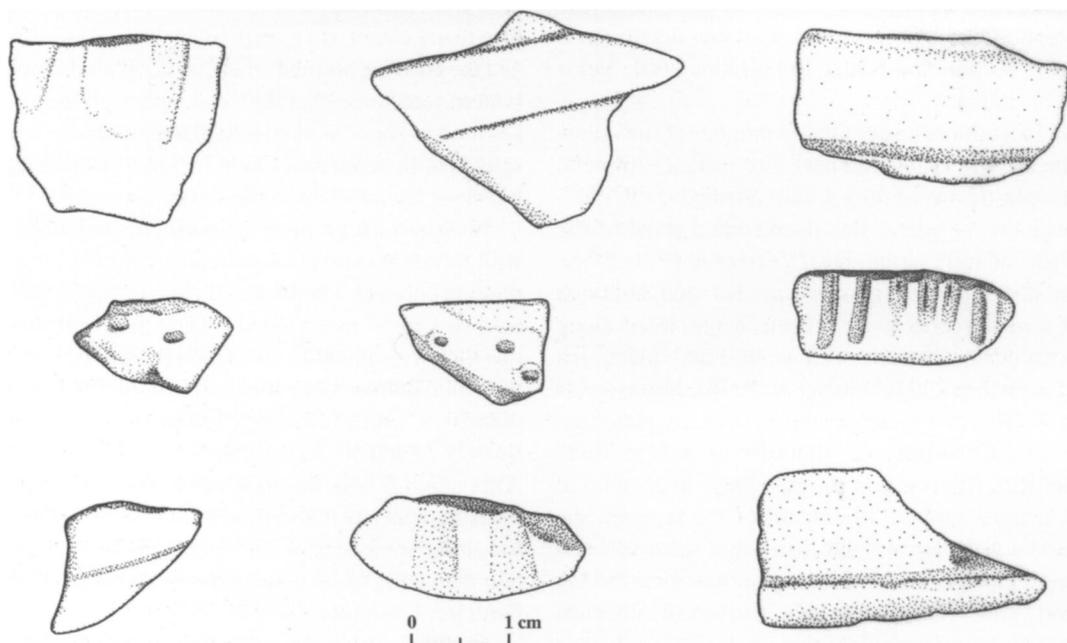


Figure 4. Incision types, Belleza site, Cuba.

of modeled designs. Incision is the most widely cited decoration technique. The configuration of incisions varies greatly between and within sites (Figure 4). For instance, linear incisions were made parallel to rims (e.g., Dacal 1986; Lundberg 1989), perpendicular to them (e.g., Tabío and Guarch 1966; Valcárcel et al. 2001), and in angular patterns (e.g., Castellano et al. 2001). In others cases curvilinear incision patterns were documented (e.g., Veloz et al. 1976). Another form of plastic decoration is the use of zoned punctuation (e.g., Ulloa and Valcárcel 2002). Veloz et al. (1976) indicate a variation in this decorative technique, which includes filling the incisions with black paint.

In all reported cases, these plastic decorations have been applied to vessel exteriors, confined mostly to the rim portions. In most cases the incision patterns encircle the pot completely, although in others they are limited to specific rim sections. The incision techniques vary from its application when the pots were in their leather-hard state (e.g., Rímoli and Nadal 1983; Ulloa 2001) to engraving (e.g., Kozłowski 1974; Ulloa 2001).

The earliest evidence for the use of paint, was recovered from Cayo Joujaría, where sherds from the lowest stratum had red paint on their exter-

iors, while in the overlying layers other colors such as black and white were also incorporated (Godo 1997:26, citing Jouravleva 1995). In the Paso del Indio site in Puerto Rico, we observed both red and pink paints applied to vessel exteriors. Although the mineralogical composition of this paint has not been determined, the presence of ochre in most of these sites has led to the conclusion that this was the parent material from which the red pigments were produced. The use of red slips in both the interior and exterior of some vessels has been also documented in some Cuban sites (e.g., Ulloa and Valcárcel 1997:38). It should be noted that the combined use of paint and incision has been documented only at late sites (e.g., Castellanos et al. 2001).

The final form of decoration is the use of additive strategies such as complex modeled figures and appliqué, as documented in the Barrio phase pottery from the Dominican Republic (Veloz and Ortega 1996). These modeled elements tend to be zoomorphic with representations of birds and reptiles.

#### *Firing*

The firing regime for this pottery also seems to be somewhat variable. In almost every case, the pot-

tery is described as highly oxidized, most likely indicating an open firing process (although this oxidation could have resulted from use). Based on an archaeometric study, Ulloa et al. (2001:39) state that the early pottery from west-central Cuba was fired at 600 to 900 degrees Celsius. This, however, was not always the case as Jouravleva (2002:37) indicates the presence of black cores in some of the sherds she analyzed in her petrographic study, thus leading her to argue for firing in a reducing atmosphere. However, as she notes, this was not the case for all the sites in her area of study, as some of the sites such as Charcón VI contained highly oxidized pottery.

### Early Pottery Use

As we previously suggested, the attributes of this early pottery provide an indication of the probable uses for which it was suited. However, it should be noted that assessing the probable uses for the different wares is a tricky task, especially when considering the multiple functions that each vessel type might have served, as has been demonstrated ethnoarchaeologically (e.g. Stark 2003). Furthermore, there seems to be considerable spatial and temporal variability in these early pottery assemblages, indicating the problem of trying to establish a single explanation for the advent of this technology at all times throughout the Caribbean.

However, certain patterns in the data provide clues of the most likely uses of this pottery. First, the low quantities of pottery in earlier contexts should be taken into account. Even though the small number of sherds reported in most contexts could have resulted from the initial use of sun dried or low fired pots that are not commonly preserved in the archaeological record (i.e., a software horizon, Rice 1987:89), the low frequencies can likely also be explained by the gradual nature in which early pottery replaced other utensils. The low quantity of sherds in earlier sites and their gradual increase through time indicate that the advent of this technology did not necessarily have a drastic effect on the subsistence of these societies, and that perhaps its incorporation took more time than previously thought. For instance, based on the relative frequencies of ceramic sherds, lithic, and shell artifacts in the Musié Pedro site, Veloz et al. (1976:264–265) indicate an increase in the per-

centages of sherds in the overall assemblages from 6.3 percent in the lowest pottery-bearing level to 62.75 percent in the upper stratum. This same situation is reported by Ulloa (2001:255) for sites in southeastern Cuba, as well as by Atilés and López in Punta Bayahibe (2005) in the Dominican Republic. It should also be reiterated that in most sites the presence of ceramics was preceded by an apparently aceramic period.

Furthermore, the evidence collected thus far does not indicate that the initial use of pottery was associated with significant changes in diet or settlement patterns. The variable locations where this pottery has been found and the associated faunal remains not only indicate the breadth of the dietary spectrum of at least some pre-Arawak societies, but also that the early use of this pottery was not linked to any particular environmental contingencies, as it has been uncovered in lacustrine, estuarine, alluvial, and inland rock shelter contexts.

We argue that the most likely explanation for the initial production of these pots was that they were first made for functions that were earlier performed by other containers, and not for carrying out new tasks as has been argued thus far (see Brown [1989] and Rice [1999] for a similar view in other contexts). One possible explanation is the early pottery had a similar function to bottle gourds, as has been suggested in other areas (e.g., Hoopes 1995). This possibility is made evident when one analyzes the major early pottery vessel shapes, which are the small-to-medium globular bowls and the boat-shaped vessels. Both resemble the shapes of the serving utensils that are commonly derived from bottle gourds that are still used in the Caribbean today. For instance, two globular drinking or soup cups are produced by cutting a bottle gourd radially in half, while two boat-shaped serving plates are produced by cutting it longitudinally. This raises the possibility that early pottery was produced for serving vessels (most likely for wet foods or beverages) and that it was used initially in conjunction with other nonpottery containers. The concomitant use of pottery with other materials for similar serving purposes can be noted in an ethnographic example provided by Espenshade (2000:9, citing Allaire 1984:214) in which he mentions that “Among the Island Carib, small globular vessels were apparently used interchangeably with gourds to hold single-serving ceremonial offerings at feasts.”

Also, similar morphologies to those of these early vessels have been observed in other materials uncovered from pre-Arawak contexts such as wood and stone. For instance, a globular wooden vessel was recovered from a Ciboney context from Cuba (Dacal 1984:94–95) while stone vessels, in some cases decorated with incisions similar to those noted in this early pottery, have been recovered from a great array of sites in the Greater Antilles (e.g., Rímoli and Nadal 1983). Globular and boat-shaped wooden containers and incised bottle gourd fragments have also been recovered from an underwater Taino context in the Dominican Republic (Conrad et al. 2001). This again illustrates the possibility that this early pottery could have mimicked not only the shapes but perhaps also the decorations of other nonceramic containers.

This, however, does not totally undermine the use of some of these pots as cooking utensils. In the case of the globular bowls, their thin and spherical walls, as well as the common use of temper of high heat conductivity and high thermal shock resistance, provided the vessels with performance advantages for cooking (e.g., Braun 1983; Rice 1987; Schiffer and Skibo 1987). Later additions of strap handles might indicate their use for transport of heated foodstuffs. It is also likely that at least some of them were being used, or at least were suited for, moist cooking. Unfortunately, with the exception of the description by Jouravleva (2002) of one pot with soot on both its exterior and interior (perhaps indicating smudging rather than soot), there has been no mention of direct technological indicators of their use in food preparation activities.

The boat-shaped vessels seem unlikely to have been used for cooking. Their asymmetrical interior would have precluded even heat distribution and their open orifices would not have allowed the heat retention needed when cooking over a direct fire. Also, their openness allowed for the handling of their contents and the later addition of modeled decorations on their extremities indicate that these were most likely employed as serving utensils. Espenshade (2000:8), citing Im Thurm (1967:275), indicates that this vessel shape is similar to that of serving bowls used in Guiana.

This opens the door for proposing an alternative explanation for the initial incorporation of pottery into the technological repertoire of at least

some of these societies. The vessel morphologies documented thus far in the earliest pottery-bearing contexts seems to indicate that they were initially introduced for performing similar serving functions to those that were being carried out with other utensils. We argue that the production of these serving vessels was likely associated with social functions such as prestige-enhancing activities (e.g., feasting and/or sharing), as has been noted in other contexts (e.g., Hayden 1994, 1995; Rice 1999). This could explain the presence of this early pottery in sites with apparent superstructural importance such as caves with pictographs and petroglyphs (e.g., Martínez 1994; Rímoli and Nadal 1983), and *caneyes* (i.e., shellmounds) (e.g. Guarch and Payarés 1964; Pérez 1943; Pichardo 1946). Also, when this pottery has been found in open air sites it has always been recovered from mounded middens, which is where some pre-Arawak burials (mostly secondary) have been unearthed, also suggesting sumptuary meaning to these contexts.

In general terms, the conditions in which this pottery first appeared seem to adhere to the patterns established by Hayden (1995) and Rice (1999) for the adoption of ceramic technology in other contexts in relation to prestige-enhancing activities. For instance, it tends to appear in or near lacustrine, riverine, or coastal settings next to mangrove strands, all areas of relative resource abundance and predictability. This abundance may have been even more prominent if we accept the possibility that in addition to this environmental richness, at least some pre-Arawak societies were already managing Panicoid grasses as well as maize and root crops such as manioc and sweet potatoes (Fortuna 1980; Newsom and Pearsall 2003; Pagán et al. 2005). This landscape richness could have planted the seeds for an asymmetrical resource appropriation, which could have later resulted in increased social asymmetry (Hayden 1995).

In some cases the early pots have also been found associated with other prestige items such as stone daggers (mostly in Cuba), stone balls (in all three islands), beads, and pendants (in all three islands) some with polymorphic representations (in Puerto Rico and Cuba). These possible prestige goods might serve as additional indicators of an incipient social hierarchy (Curet 2003; Rodríguez Ramos 2008). Thus, it is possible that pottery was an additional commodity that legitimized the role

of aggrandizers in those communities, as it allowed their power discourse to be portrayed in another media, whose production technology could have also been of restricted access (Hayden 1995). In this sense, perhaps the small quantities of sherds and the small vessel sizes reported in the earlier sites might indicate that these containers were reserved for people of higher order ranking and/or for special occasions (e.g., feasts), while their increase in size and quantity in later periods might show that these activities were expanded for the display of power at higher political scales, as has been observed by Mills (1999) among Pueblo communities from the southwestern U.S.

There is considerable spatial and temporal variability in decorative designs that might represent individual ethnic and/or political identities, perhaps to assert territorial boundaries (Hayden 1995), as noted by Godo (1997) and Ulloa and Valcárcel (1997, 2002). This is shown, for instance, in the variable configuration of incision patterns on these early pots in the different areas. In the earlier contexts, there seems to be a preference for distinctive incision patterns (e.g., angular versus curvilinear), but in later sites they merge into singular decorative sequences. In this light, it is also very interesting to note the presence of what have been traditionally considered Chican Ostionoid incised motifs in some of this early pottery, which tend to show a combination of linear, curvilinear, and punctate patterns. For instance, in northern Puerto Rico there are many sites where Chican Ostionoid pottery is associated with Archaic assemblages, especially in rock shelters with pictographs and petroglyphs, such as Cueva Gemelos (Dávila 1981) and Cueva La Tembladera (Martínez 1994). The use of these Chican Ostionoid-like motifs has also been documented in open air sites from the island, such as Paso del Indio and Palmar de Animas. The adornment of pots with Chican Ostionoid-like incisions and/or modeled designs has also been observed in the Dominican Republic. Veloz and Ortega (1996) documented Chican motives (similar to those described for the Punta style) in the pottery recovered from Sitio Pepe in the Punta Cana area. Interestingly enough, these sites are contemporaneous with other Dominican sites such as El Caimito, Musié Pedro, and Honduras del Oeste, in which the decorations include contrasting elements. This shows that these early pottery contexts pre-

sent considerable variability that seems to be both spatially and temporally sensitive, and that more attention should be paid to it in the future.

Later, other vessel forms were introduced into the mix indicating that the role of this pottery began to diversify, perhaps being incorporated in a wider range of activities (as noted by Brown 1989 in other areas). The most notorious vessel type introduced in later contexts was the so-called cassava griddle. The appearance of these griddles in the Dominican Republic in sites such as Musié Pedro, La Piedra, Los Limones, and El Barrio (Rímoli and Nadal 1983; Veloz 2001) has led to interpretations about the subsistence arrangement of these peoples. In fact, the absence of cassava griddles led Tabío (1991, 1995) to label these early potters as *protoagrícolas*. This direct association of griddles with agriculture has been one of the most deep-rooted correlations in Caribbean archaeology. However, as has been previously noted (De Boer 1975; Rodríguez Ramos 2005b), the direct correlation between griddles and cassava consumption is ill-advised, as manioc and other tubers might have been processed in other ways not requiring the complex process usually defined for cassava bread making. Furthermore, as recently documented in the Antilles (Jouravleva and González 2000; Rodríguez and Pagán 2004), other foodstuffs such as maize and even meats could have also been cooked with these griddles, thus evidencing the need to further study the variety of uses this food processing utensil might have served.

### Concluding Remarks

Establishing the reasons for the incorporation of pottery in the early societies of the Antilles is a complicated endeavor, as it is unlikely that there was a single cause for its appearance in all contexts on the islands. We have explored only one of the alternative scenarios that may have led to the incorporation and later elaboration of this technology in pre-Arawak societies, which had to do with the social role that pottery might have initially served. However, this does not preclude the possibility that in some contexts the initial use of vessels may have responded to other exigencies (e.g., subsistence, medicinal). There is still much work to be done before more definite conclusions can be reached.

However, even with all the variability that may

exist, certain trends in this early pottery can be isolated: (1) the appearance of pottery followed a pre-pottery period in most Pre-Arawak pottery-bearing contexts; (2) the size, quantity, and variability of shapes, sizes and decoration techniques increases through time; (3) the use of inorganic temper (sand, grog, quartz grit) seems to be the almost universal in early pottery in the Antilles, as organic temper has been observed in only a few cases; (4) the earliest vessel forms were globular and boat-shaped, and later forms included plates and cassava griddles; (5) the main decoration techniques were first incision (linear, curvilinear, and pointed) and the use of red and pink paints and slips, while in later times (around 500 B.C.) the use of modeled designs was introduced.

When examining the range of designs and vessel forms present in this early pottery, it is interesting to note that they are all repeated in most post-Saladoid wares from the islands, especially in the Greater Antilles. For instance, the production of globular and boat-shaped vessel forms, the use of incision parallel to the rims, and the use of quartz and sand as the main nonplastics are all attributes of post-Saladoid wares such as the Elenan Ostionoid pottery from Puerto Rico (Rouse 1952b). This coincidence of attributes can also be observed in the Ostionoid pottery from Cuba, Haiti, and the Dominican Republic. This makes obvious the need for further studies of this early pottery to see if there could be a continuum of modes with later styles, which based on the evidence collected thus far is highly likely.

This leads us to formulate an alternative hypothesis regarding the development of some of the Ostionoid pottery styles from at least the Greater Antilles. Currently, the main idea is that the post-Saladoid scenario started with the evolution of the Saladoid into the Ostionoid series in Puerto Rico around A.D. 600, which later expanded to the Greater Antilles. Supposedly the cultural branching of these Ostionoid peoples and the gradual degeneration of their pottery-making abilities in the different areas eventually resulted in the different styles that have been identified in the Greater Antilles. This led to the idea (e.g., Rouse 1992) that the migration of the Ostionoid people to the Greater Antilles was of such scale and magnitude that allowed them in less than 50 years not only to reach, conquer, and establish themselves on previously

inhabited islands (Cuba, the Dominican Republic and Haiti), but also others that were supposedly previously unpopulated (Jamaica and the Bahamas).

However, based on this evidence we would argue that instead of those different styles being strictly a result of the degeneration and regional diversification of Ostionoid pottery making through time, some could at least partly represent evolved versions of the early pottery of the islands. In line with this, the regional variations that seem to have existed in this early pottery could have eventually evolved into the different pottery styles present in "Pre-Taino" (in Puerto Rico and the Dominican Republic) or "Sub-Taino" (in Cuba) contexts. This multifocal development perhaps could explain the appearance of very distinctive Ostionoid styles in the Greater Antilles, that which in some cases were supposed to have evolved in less than two generations (e.g., Jamaican redware). Thus, instead of looking for those different post-Saladoid pottery variations originating either from subsequent migrations from outside the Antilles (e.g., Veloz et al. 1981) or from the westward expansion of Ostionoid populations (e.g., Rouse 1992), we should start looking for those answers within the islands as a consequence of both the internal developments of pre-Arawak societies and the considerable interaction that they were probably registering with peoples from other islands and/or with Circum-Caribbean populations (Rodríguez Ramos 2002, 2005a). Obviously, we consider that the migration of Saladoid peoples must have had a great effect in the articulation of the cultural and political landscape of the time. However, what we argue that the development of these pre-Arawak societies in the islands should be considered as an important element when trying to make sense of the articulation of the sociocultural landscape of the Caribbean before, during, and after the Saladoid migration (see also Curet 2005 for a similar argument).

Hopefully, future studies of the pottery of the Caribbean will shift from sherds to vessels as units of analyses, as this is where the most direct interpretations of human behavior can be derived (e.g., Espenshade 2000). Also, incorporating other techniques for the interpretation of the function of these implements, such as residue and use-wear analyses, might help us gain a clearer understanding of their roles. Until we move past using pottery merely

to explain the rise and dispersion of cultures in the islands, we will not be able to address other issues of importance in Antillean archaeology that are desperate for our attention.

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