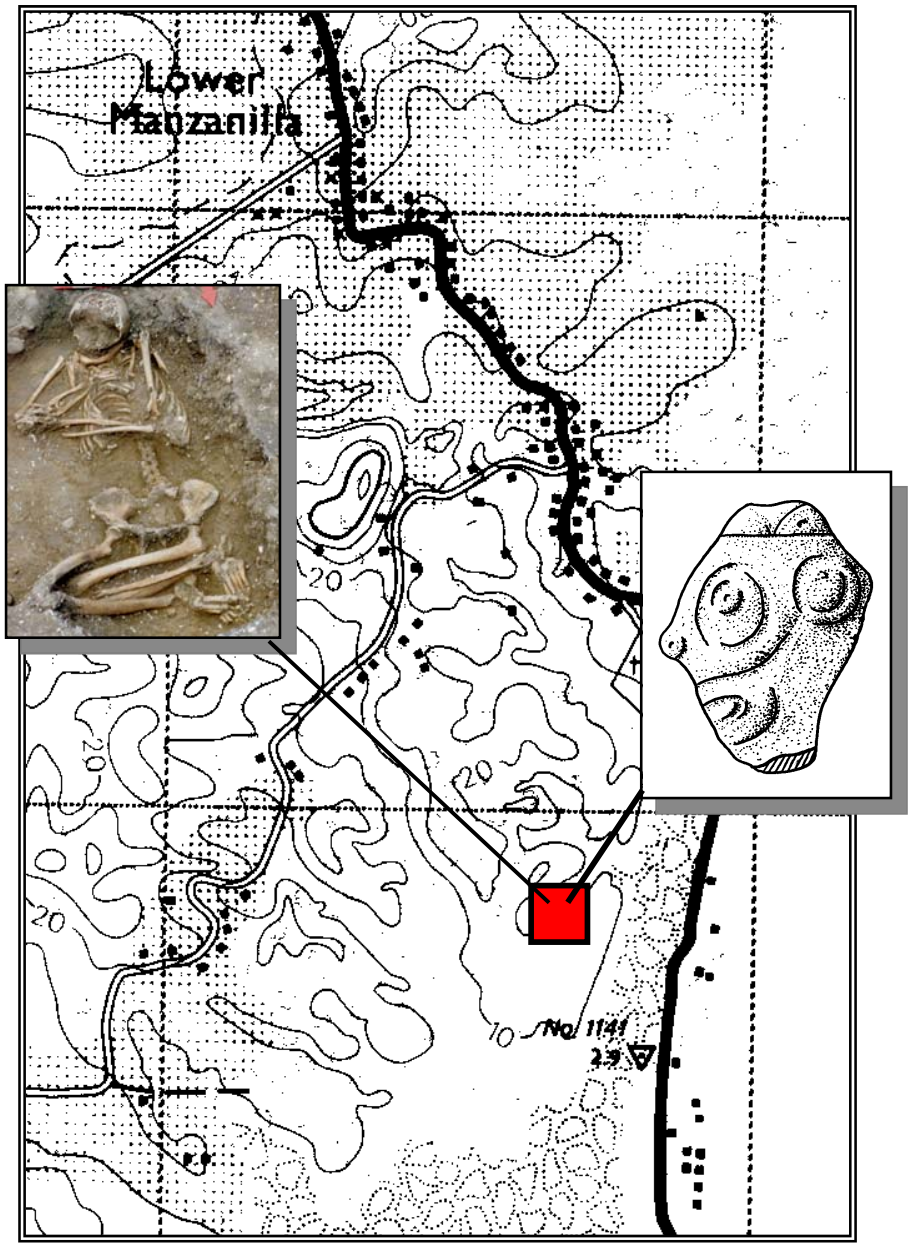
Manzanilla 1 (SAN 1)

An excavation of an Amerindian habitation area
September 2001

M.C. Dorst, D.C. Nieweg, S. Baetsen
5 April 5, 2003



Contents

Preface

This following report is the final product of a research program that was conducted by a team of Dutch researchers in September 2001. This research was a continuation of the study of the pre-historic Amerindian Manzanilla 1 (SAN 1) site on Trinidad's Eastern Shore, which had started in 1997. During this initial phase of research the site was mapped and subsoil tested by means of an augertest program and three small test excavation pits. This resulted in two Master thesis's by M.C. Dorst and D.C. Nieweg.[1]
The idea for a second fieldwork campaign was initiated by Prof. K.O. Laurence of the Department of History of the University of the West Indies. The University of the West Indies partly funded this project after approval of the research proposal.[2] With this research budget housing, food and transport was paid for. The aim of this second phase of study at the Manzanilla 1 site was to investigate one of the four habitation areas that were located in 1997 in more detail. The team consisted of six persons, including:

Mr M.C. Dorst,	MSc. in archaeology, currently working for Jacobs & Burnier (archaeological contract company), the Netherlands
Mr D.C. Nieweg,	MSc in archaeology, currently working for the archaeological service of the municipal Den Haag, the Netherlands
Mr M. v.d. Bel,	MSc in archaeology, currently working for the archaeological service of the municipal Den Haag, the Netherlands
Mr S. Baetsen,	MSc. in archaeology, osteo-archaeologist, currently working as a human bone specialist for the Free University of Amsterdam, the Netherlands
Mr B. Jansen,	MSc. in geophysics, currently working for RAAP (archaeological contract company), the Netherlands
Mr G.H. de Boer,	MSc. in soil science (agricultural en environmental sciences), currently Ph.D. student in historical geography, University of Wageningen, the Netherlands.

During the fieldwork dhr. S. Baetsen was responsible for the study of the inhumations. Drawings of the burials were done by dhr. D.C. Nieweg. The augertest programs, focussed on the local geophysical characteristics, and the profile drawings of the results were done by dhr. B. Jansen and G.H. de Boer. Scans of artefacts are made by D.C. Nieweg.
Artefact drawings and AutoCad drawings of levels, profiles and maps were done by M.C. Dorst.

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[1] Dorst, M.C., 2000, *Manzanilla 1, An archaeological survey of a Pre-Colombian site on Trinidad. Spatial patterning, ceramics, lithics and faunal remains.*
Nieweg, D.C., 2000, *Shells in Archaeology, Archaeological shell on Trinidad and Guadeloupe: two case studies.*

[2] Dorst, M.C., 2001, *Manzanilla 1 (SAN 1) Phase II proposal. The study of a patch of open space at a Pre-Columbian site in Trinidad.* March 4, 2001

Chapter 1 General introduction: Trinidad and Manzanilla

Trinidad is one of the Caribbean islands situated just north (18km) of Venezuela in the mouth of the Orinoco river system, separated by the waterway called the Dragon's Mouth. Its western shores face the Atlantic Ocean, while the eastern coast borders the calm, brackish waters of the Gulf of Paria. The closest neighbouring island is Tobago, located some 32 km north of Trinidad. Both islands are separated by a sea-channel, which is called the Galleons Passage. At a distance of ?? kilometres north, the first island of the Lesser Antilles, Grenada is situated. Its climate is characterised by humid and tropical conditions with two seasons. The dry season called *car/me* normally last from January to May. This is followed by a wet season which lasts from June to December and is interrupted by a short dry season (*petit car/me*) somewhere in September. Rainfall in Trinidad is fairly related to its physiographic nature. Due to its close orientation near the tropical lowlands of South-America, its flora and fauna is very much alike.

The site of Manzanilla 1 is located on Trinidad's central-east coast in the County of St. Andrew near the town of Lower Manzanilla (figure 1). This is some 400 m south of the point were the Eastern Main Road reaches the Atlantic coast and continues as the Manzanilla-Mayaro Road in southern direction running parallel to the Cocos Bay coastline. From this point the site can be reached by walking some 150-m trough the most northern tip of the Nariva Swamp reaching the Manzanilla 1 hill on the left-hand side[3] (fig.2). It is situated some 300m south of the cemetery of Lower Manzanilla and the flat plateau top covers a total area of some 200×250m. Today this hill is owned by mr. Sinanan. The southern parts is covered with forest and overgrown gardens which once belonged to mr. Ronald Joseph who still lives in a small house on this side of the hill. The northern part of the hill was recently (2000) cleared of vegetation in order to develop the site in the near future. However, this development program was stopped when the owner was informed about the archaeological value of this site.

1.1 Geology of Trinidad and the Manzanilla Region

The Manzanilla 1 site is situated on the border of two geological divisions called the Southern Basin or Naparima Lowlands and the Central Range. The low hill where the site is located marks the transition of the soft yellowish Lower Tertiary and Cretaceous hills and the lower region of Miocene and Pliocene sandstones, siltstones and clays. From this Central Range many seasonal rivers and streams drain in the large Nariva swamp, which most northern extension encompass the seaside slopes of the Manzanilla 1 site.

[3] Trinidad topographical map 1:25,000, Sheet 36, co-ordinates 713,725-750 E/1,161,825 N.

1.2 Ceramic stylistic and cultural framework

In terms of ceramic style, two ceramic complexes belonging to two different series were so far recognised at the Manzanilla 1 site. The Saladoid series is represented by the Late Palo Seco complex (300 AD-650 AD). The Arauquinoid series (called Guayabitoid in Trinidad) is represented by the Bontour complex (650 AD-1400 AD) (diagram 1.2.1).

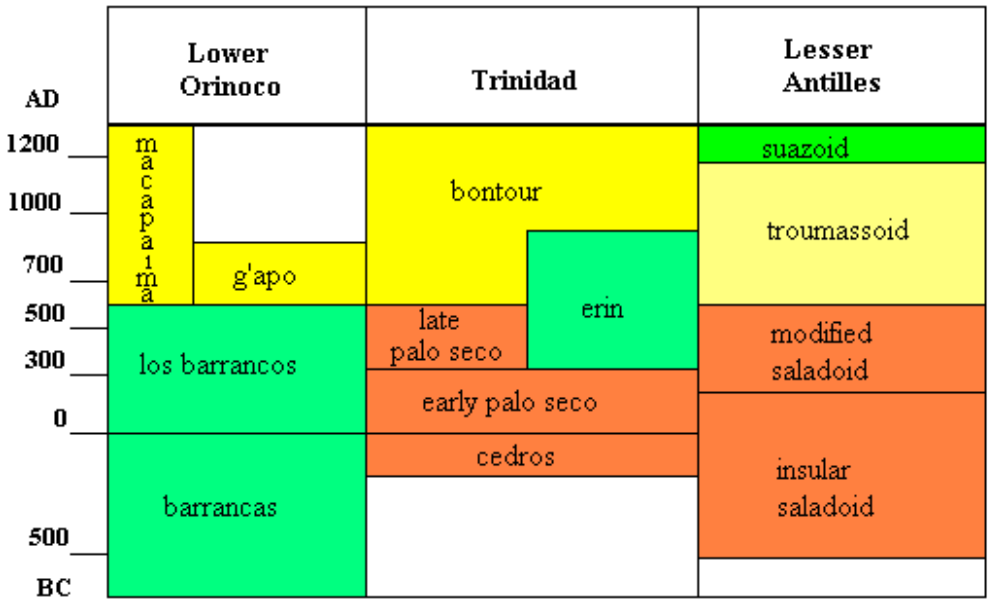

Diagram. 1.2.1 chronological chart of ceramic complexes on Trinidad and the Caribbean region(after Boomert,2000:218 fig. 15)

From AD 0 the Cedrosan ceramic style became more and more influenced by a ceramic style on the mainland of South-America (Orinoco region) called the Barrancoid. This Barrancoid culture strongly influenced the Cedrosan ceramic style and forms a characteristic ceramic complex within the Cedrosan Saladoid in Trinidad, which is called the Palo Seco style. In the Lesser Antilles this style is called the *Modified Saladoid* (Rouse 1995) and roughly corresponds with the same time span, from 300 AD-650 AD.
This Barrancoid influence in Cedrosan Saladoid pottery is signified by the following characteristics: the sherds become thicker and coarser, flanges are added to the rims, the appearance of modelled-incised lugs. Furthermore, the incised and modelled designs become more complex and elaborated and punctations are added to the range of ceramic decorations (Rouse, 1963:117). The current definition of the Palo Seco complex is still mainly based on this Barrancoid influence in the Saladoid ceramics, although it is now separated into an Early Palo Seco (0 –AD 350) and a Late Palo Seco (AD 300-AD 650). This separation is based upon the degree of Barrancoid influence on the Palo Seco ceramics.

According to Harris the shift towards the Arauquinoid series is caused by a downfall in power of the Barrancoid on the mainland (around 700 AD) in the Middle-Orinoco region. Following this collapse (or causing it), the Arauquinoid started expanding downwards along the Orinoco touching upon Trinidad around 600 AD, thereby introducing a completely different ceramic style in the Caribbean region which suggests a major shift in culture (Harris, 1977).
Arauquinoid ceramics are characterised by the following features: pottery has thin walls, is relatively soft and is dominantly tempered with shell and further with ground sherd and sand. Minor temper types are mica, cauixi and *caraipe*. Boomert (1983) and Harris (1983) consider these three temper variations to reflect social relationships with other areas (Orinoco region and Guianas) due to its exotic origin.
The most striking feature of this ceramic style is that decorations are very rare. Only 2-3% of sherds in the Bontour complex has some kind of decoration and vary from punctated, incised and simple modelled decorations. Small rim knobs, wall appendages and triangular, trapezoidal and "horned" rim lugs, sometimes with a central perforation and few zoomorphic adornos occur. Appliqué decorations appear for the first time.

As Boomert states (2000) the Saladoid/Barrancoid socio-economic and political organisation was probably a tribal society. Within such an egalitarian system the social society consists of a group of interacting, semi-independent local communities. These are linked by a network of descend groups, trade and reciprocal exchange and ceremonial and shamanic interaction. Status variations within this system is very small and are only important in special occasions such as organising ceremonies, raids or war-parties and hunting. In such a case the most capable person is selected for the specific task. Labour division is only based on sex and age and semi-specialists only work within the local community group (Boomert 2000:328).
These tribal systems are mainly very homogeneous and standardised in cultural aspects. Furthermore, it is ideologically and religiously based and local differentiation in material culture is almost non-existing (Voss,1982).

1.3 Previous Research on the Manzanilla 1 (SAN 1) site

It is not clear when and by whom the Manzanilla 1 site was discovered. According to Boomert (1984) the site was found in the late 1930's and known by John A. Bullbrook in the early 1940's. The problem here is that, as Boomert mentions the site is located too far to the north on the maps of both Bullbrook (1961a) and Rouse (1955a fig.13).

Based on a description by Bullbrook of a single headlug from this site, which Rouse identified as belonging to the Palo Seco complex this site was classified as a Palo Seco site. However, it is possible that this site was not the same as Manzanilla 1 because of it is incorrect location on their maps. In an article by Phil Vieira in the Sunday Guardian (12th of May 1963:4) an excavation was reported on a site that fits the described location and characteristics of the Manzanilla 1 site. This site was located at Manzanilla, facing the Atlantic Ocean and situated not far from the sea. The location of a small stream in the vicinity and a total area of the midden covering three to five acres (between 12.141 and 20.235 m²) are also mentioned.
Although these are quite general features of a Palo Seco site it is likely that this is the Manzanilla 1 site. Furthermore, this article states that this excavation is carried out at:..."*a new Indian Midden at Manzanilla*.", which indicates that the site might be discovered somewhere in the early 1960's.

This excavation was carried out on the 1st. of May 1963 by three students (of whom two were from St. Mary's College, P.O.S[4]) and J. Archibald, Civil Engineer led by Mr. T. Cambridge, the chairman of the National Museum and Mr. A. Collier, the secretary director of the Trinidad Publishing Co. A testpit and survey were executed yielding a range of artefacts like ceramic bowls, jars and two adornos, stone axes and faunal remains, unfortunately neither the location of this testpit nor any stratigraphic information is given in this article. Cambridge describes one of the adornos as:"....*a representation in grotesque form of a human in brownish clay*..." and identifies the two "faces" as of a similar make to several adornos which were found in Tobago. The presence of many Barrancoid sites on Tobago, Cambridge identification of the adornos with those found on Tobago and his description of one adorno as "grotesque" could indicate that those belong to the Barrancoid complex. He also states that an axe was found that was*:"...made from a stone not often found in Trinidad*.", possibly igneous rock. The present whereabouts of this collection is unknown, but Boomert (1998) noted that some pieces of this collection are kept in the Tobago Museum of History. After this the Manzanilla 1 site is mentioned again in a letter from Gloria Gilchrist to Rouse dated the 8th of January 1964. Gilchrist reports that a priest N. Rodriquez and some students from St. Mary's College have been digging in a very large shell mound at Manzanilla. He also made a testpit on an unspecified location, digging through a midden accumulation of some 105 cm in thickness yielding pottery, stone artefacts, faunal remains and a burial.

Gilchrist notices about this pottery that it is predominantly very crude in shape and manufacture right through from surface to natural soil. Rims appear to be flangeless, bases flat and the paste is usually rather porous looking. Beside these there were also WOR, black painted sherds and some adornos were also reported and red painted ware which Gilchrist classified as belonging to the Erin or Palo Seco complex. Furthermore, she mentions a piece of ceramic consisting of a part of a small bowl with one leg and a design of incised circles of which she says never to have seen it in Trinidad before and that it presumably had three legs. The material of this excavation was kept at St. Mary's College, but most of it has disappeared now (Boomert, personal comm.).

From this time on the site has been examined three more times by P. O'Brien Harris; he was the first scholar who has drawn a simple map of the site.

During his first visit to Manzanilla 1 in 1968 he surveyed a small stream on the top at the north east part of the site where he collected some painted and modelled ceramics belonging to the Palo Seco complex. Halfway down the north-western slope he made a small testpit that yielded a lot of shells, but only a few plain sherds.

In 1972 (17th of June) he checked the site for flood damage and on the 13th of October 1974 he checked it for hurricane damage and dug again on the same spot as in 1968. He reported one decorated sherd. The material Harris collected is nowadays kept at the Archaeological Research Centre at UWI.

These previous investigations give some information about the status of the Manzanilla 1 site, but also show some problems. First of all, there is a great variety in the characteristics of the ceramics found on Manzanilla 1. Some parts of the site clearly yielded Palo Seco complex ceramics as claimed by Harris. However, another testpit (made by Father Rodriquez) produced only ceramics with flangeless rims and since these flanged rims are one of the main marks of the Palo Seco complex they must represent another complex or a local variety. Harris too made a testpit that only revealed plain sherds.

This indicates that the Manzanilla 1 site is most likely a multicomponent site, a hypothesis that was confirmed by the research program that was done by a team[5] of the Leiden University in 1997.

[4] Port of Spain

[5] D.C. Nieweg, J.J. Arts, A. Vredenbregt and M.C. Dorst

During this fieldwork the site was mapped, an augertest program was done and three small testpits were made. As a result of these investigations the following conclusions could be made:

- the total extensions of the site were some 200 x 250 m.
- four "empty" zones (no midden material) with almost equal extensions of some 60 x 30 m surrounded by thick midden deposits (*Chip-Chip shell)* were found. These "empty zones" (all located on the flat hilltop) were interpreted as vacant spaces (*plaza* areas and house locations) with surrounding dump areas on the edges of the hill and its slopes (fig.4).
- radiocarbon dates indicated a habitation span between 406 AD and 892 AD corresponding with the start of the Late Palo Seco and beginning of the Arauquinoid phase.
- the habitation of both periods was reflected in the ceramic repertoire; the lower stratigraphic levels yielded more elaborately decorated Palo Seco ceramics, while in the upper levels also more crude plain, undecorated ware was found with different temper types such as crushed quartz and cauixi.
- features were present, a large pit, two postholes and one burial were documented.

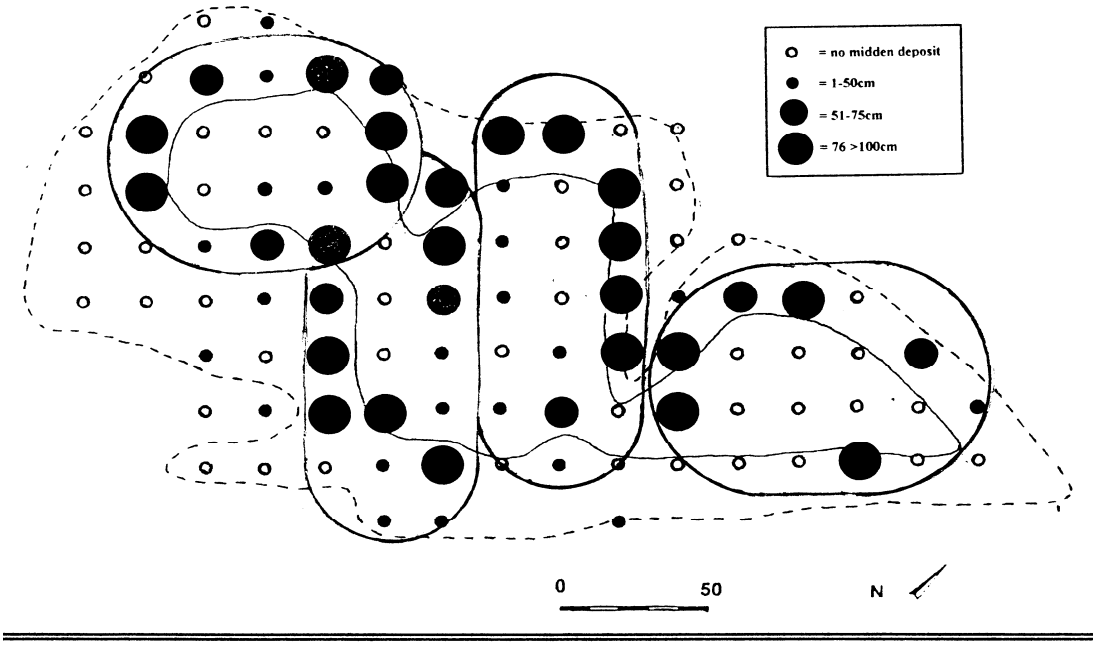

Fig. 4 location of the four habitation areas and their surrounding middens

1.4 Research objectives of the 2001 fieldwork

The main objective of this research campaign was the investigation of one of the habitation areas, which was distinguished during the inventory survey of 1997. All of these four habitation areas were characterised by the existence of an "empty zone" surrounded by thick refuse deposits (shell middens with faunal remains, pottery sherds, stone and lithic refuse)[6]. These "empty zones" are believed to represent the habitation areas where houses and *plaza's* (communal and religious area) were situated.
The 2001 fieldwork campaign was focused on the northwestern habitation area in the middle part of the site (fig.5).

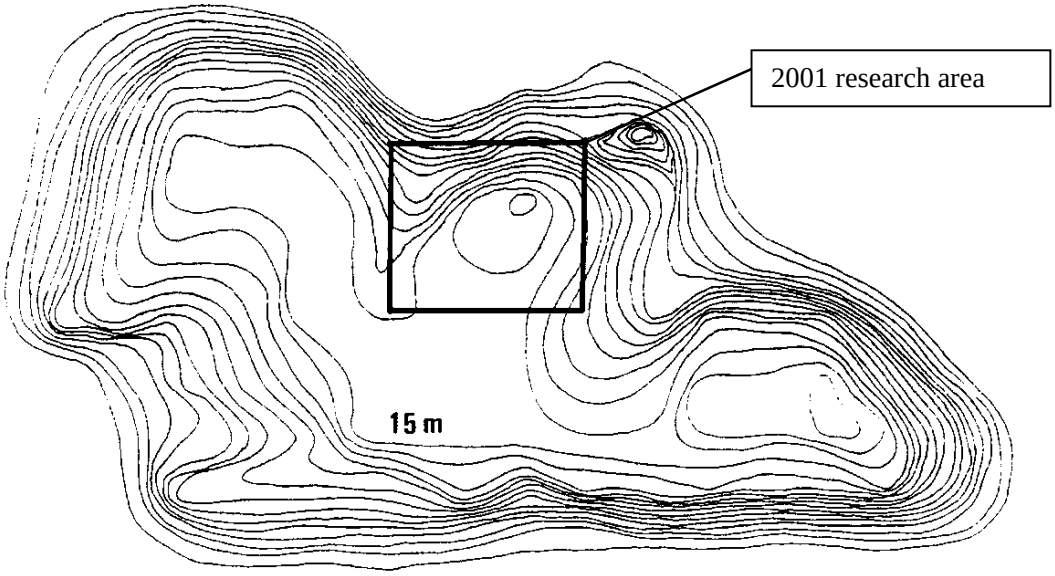

Fig. 5 contourmap of the Manzanilla 1 site with the 2001 research area

This vacant space was selected for the following reasons:
- it was completely free of vegetation
- the other two suitable habitation areas (free of vegetation) had specific characteristics. The southwestern area revealed only Palo Seco style ceramics in the surrounding midden area, which suggest that it could be a single component habitation phase. The habitation area on the most northeastern extension was somewhat larger than the other three, which could indicate that it represents a (later, single phase) habitation area of Arauquinoid people or a complex habitation area of both Palo Seco and Arauquinoid ceramic style people. Before investigating these areas, a better understanding has to be available on the nature of features and geology of the Manzanilla 1 site.

[6] Results of the augertest program of 1997, (Dorst, 2000 and Nieweg, 2000)

The vacant space area, which has been examined (fig.5) during this campaign, measured a supposed 60 x 40 m.
The primary research questions were:

1. Are there any features present within this assumed habitation area?
2. What type of features can be distinguished? (postholes, refuse / firing pits, burials)
3. Do the features represent a certain spatial distribution within the supposed habitation area?, in other words, can the presence of house structures or the existence of special purposes/activity areas (*plaza*, burials, etc) be distinguished within this vacant space?
4. What is the condition and preservation (types and grade of damage of post-depositional processes) of the features and the residency area at the site in general?

Other research objectives concern more specified questions such as:

1. What is the stratigraphy of the habitation area and encircling middens?
2. Can specific areas within this vacant space, midden layers and individual features be dated? relatively, by means of ceramic style and stratigraphic context.
3. What are the specific characteristics of retrieved artefact categories such as ceramics, lithic, stone, shell, faunal remains and possible burials?

Chapter 2 Research Design Fieldwork 2001

During the course of this fieldwork campaign a specific strategy was followed in order to test this habitation area in the best suitable way. This involved the following subsoil testing methods: Trenches (T), Small test Units (SU), Large excavation Units (LU) and Augers Tests (AT). A plan view of all excavated areas in presented in figure 6.

2.1 Trenches (T)

All Trenches (T) that have been excavated had a prospective aim. These were made in order to examine the spatial lay-out and locate specific areas such as *plaza* and dwelling locations (represented by features, postholes, hearts, pits and burials). Trenching is the most suitable strategy for revealing a sites spatial lay-out with a minimum of subsoil disturbance. Furthermore, trenches provide the opportunity to document an extensive, concatenated subsoil profile. This way a specific stratigraphic and geological data was obtained. Both trenches were dug using a backhoe with a bucket width of 2,5 m. Digging was stopped at the first level were features became visible. All artefact categories in these trenches were collected while working with the backhoe, during shovel scraping of the first feature level or retrieved from the dirt pile. All materials are collected and documented per separate trench.
Of each trench a wall profile was documented by drawing a profile column (30cm in width) every 5 meter (scale 1:20). Thus, a Northeast-Southwest geological stratigraphic profile was obtained. Of both trenches a level plan of the first level with all features was drawn on a 1:50 scale. Height measurements of the encountered (first) feature level were taken at every 10m per trench.
A total number of two Trenches (T 1 and T 2) were excavated.

Trench 1 has been dug somewhat in the center of the research area. It measured 40 meters in length and had a Northwest - Southeast orientation.

Trench 2 has been dug in a parallel orientation on the right side of Trench 1 close to the edge of the plateau. This trench measured 30 meters in length.

2.2 Small (test) Units (SU)

Small test Units were dug for the purpose of testing specific site areas of this habitation location. In this case, this concerned the testing of the southwestern midden deposit of this habitation location[7] and examining an incidentally discovered inhumation. A total number of two Small test Units (SU 4 and SU 5) were excavated. The Units that were excavated in 1997 called Unit 1, Unit 2 and Unit 3 are also Small test Units. So, naming these Small Units continued in the 2001 campaign starting with Small Unit 4.

-Small test Unit 4 measured 1 x 2 m and was initially started in order to examine an incidentally discovered burial (F17) while digging a hole for storing drinking water.

[7] this midden was selected because the other encircling midden deposits appear to be severely damaged by bulldozer activity in 2001

Only a small part of the *cranium* was cleared. Uncovering this burial was stopped due to the priority of the features in other excavation units.

-Small test Unit 5 measured 1 x 4 m and was dug in order to investigate a (buried) midden deposit on the plateau of the hill, which was discovered during some (not documented) augers tests, prior to the start of the fieldwork of this campaign. The more specific objective was to check the extension and relation of the superimposed geological and cultural layers at the site. Furthermore, it was dug in order to sample this midden deposit, whereby archaeological material of the artefact categories shell, faunal remains, ceramic, lithic stone and coral were collected from their stratigraphic context. This unit was excavated in arbitrary 10-cm levels, and was dug by using shovels and trowels. Interesting levels were drawn on a 1:20 scale. Height measurements of all levels were taken. This unit was divided into four 1x1m (A, B, C, D) squares and materials were collected per square meter.
The dirt per level was sieved at a 1cm mesh. All four sections were drawn in a profile plan on a 1:20 scale. SU 5 had a SSW - NNE orientation.

2.3 Large (excavation) Units (LU)

Only one Large excavation Unit has been made (LU 1) and its specific objective was to examine the cluster of features which had been discovered in Trench 2. It was adjoining (serving as an extension) Trench 2 on the northeastern side and measured 8,5 m x 3,5 m in a somewhat trapezium shaped form. This unit was also dug by using the backhoe up to the level where features became clearly visible. Materials where collected when they where found during digging this unit by the back hoe, shovel scraping the first level and picked from the dirt pile. A level plan of the first feature level was drawn on a 1:50 scale.

2.4 Auger Tests Program (AT)

Two rows (A-A' and B-B') of augertest were set up with a mutual distance of 21 meter running in a SSW- NNE parallel direction. Both rows covered the largest width of the examined habitation area. Within these rows auger tests (AT) were made with an interval of 1 meter. Drilling was stopped when the undisturbed subsoil level was reached. For this purpose an Edelmann auger with a diameter of Ø 10 cm was used.
The geological stratigraphy and, if present, subsoil disturbances and material contents of each augertest were recorded in order to be able to reconstruct a stratigraphic profile.
The function of this small interval augertest program was to test the subsoil in a SSW-NNE orientation on the characteristics of its geological stratigraphy, locate (recent) subsoil disturbances and to locate clusters of features.

-Row A-A' is the most northern row. In the south-west it is connected with the south wall profile of SU 5. It holds a total number of 57 augertests, starting with AT –6 up to AT 50. Within this row at certain points every a half meter an extra augertest was made in order to document some discovered local sub-soil disturbances in this area.

-Row B-B' runs in the same SSW-NNE direction some 21 south of Row A-A' and holds a total number of 52 augertests, starting with AT –5 up to AT 46.

2.5 Features

The features that were found were studied by two different methods. This was because of the distinct characteristics of the features. A separation was made between features of burials and “normal” features of posts and pits. All burials were excavated by removing the dirt from the burial pit thereby uncovering the inhumation. This was done by using a trowel, a dentist toolkit and soft brushes. The excavation method and treatment of burials is discussed in more detail in chapter 4. Features of posts and pits were sectioned by using a shovel and trowel, up to the depth were the undisturbed subsoil was reached. Of all feature sections a photo and section drawing was made on a 1:10 scale. Depth, diameter, shape, colour, soil texture and contents of the fill of all features were documented and an initial interpretation was made.
The following material categories were collected: ceramic, stone and lithic. Incidentally faunal remains such as bones and shell were collected as a sample. Especially ceramic was important, which was used as a method to present a relative date of the features. Collecting and submitting samples (charcoal, bone etc) for radiocarbon dating was outside the scope of this research campaign.

Chapter 3 Fieldwork Results

In the following chapter the results of the 2001 fieldwork at the Manzanilla 1 site are presented. These will be discussed in four subchapters. A division is made between the different units, because of their different characteristics and results. The subchapters consists of:

Small Unit 5 (*Ch.3.1*)
Trench 1 (*Ch.3.2*)
Trench 2 and Large Unit 1 (*Ch.3.3)*
Augertest program (*Ch.3.4*)

Within these subchapters the following results will be discussed: stratigraphy (both geological and anthropomorph), recovered artefacts and features. Finally, all units will be summarized individually in a conclusive chapter where some interpretations on the results are suggested. All burials will be discussed in a separate chapter (chapter 4) due too the special character of these features.
The overall conclusions and interpretations are presented in chapter 5.

3.1 Small Unit 5, stratigraphy and feature

Unit 5 was located on the plateau near the western edge of the investigated habitation area (fig.6). Today this exact spot is part of the flat plateau, but in Amerindian times the edge of the slope started at the beginning of square B of this unit. Throughout the time span of habitation of the Manzanilla 1 site hill these slopes were used for the disposal of all sorts of household refuse. The larger part of this refuse consists of *Chip Chip* shell (*Donax sp*.) mixed with animal bones, ceramic sherds and lithic and stone refuse. Over time these slopes became less and less steep up till the point where this gully, between the two different plateau areas of the hill, was totally leveled and became suitable for habitation.
In square A the undisturbed pre-occupation level was reached at a depth of 50 cm below ground level. Here the undisturbed subsoil level was practically flat and can be seen as the edge of the hill in Amerindian times. In the squares B, C and D the ancient slopes were found and the midden deposit here reached a depth of 130 cm in square D (fig.7).
A total number of five distinct anthropomorph and geological layers have been recorded.
On top of the natural soil a total number of three different layers of refuse were recorded. One layer consists of wash-off material and the other two layers represent midden dumps. The final layer (6) represents an occupation floor mixed with later, post-occupation wash off and soil accumulation. The NW-NE section of LU5 is presented in fig.7.

The lowest level consists of light brownish-yellow sandish clay and forms the natural undisturbed subsoil level (layer 1). On top of this is the refuse of the first phase of occupation on this part of the hill. It consists of light greyish-brown clayish sand, which contains some fragmented shell, charcoal, animal bones and ceramic (layer 2). It is not a midden dump but a layer consisting of the wash-off material of the first habitation phase of this part of the plateau. This layer can be interpreted as an anthrosol. The natural undisturbed soil is mixed with all sorts of household refuse such as ash and food remains.

This accounts for a discoloration and alteration of the soil, it becomes more grayish and fertile and is also known as Indian black soil (anthrosol*)* and *Terra preta*. These human-modified soils are a clear mark of human habitation and also form an important reason for returning to ancient habitation locations by Amerindian groups (Petersen, J.B., Neves, E., Heckenberger, M., in McEwan, C., Barreto, C. & Neves, E. 2001:86).
This anthrosol is superimposed by the first midden dump consisting of light brownish-grey clayish sand (layer 3). It contains some 40% shell mixed with ceramic, stone, lithic and faunal remains. On top of this is a second midden dump layer (layer 4). It is consists of grey clayish sand with 90% shell with ceramic, stone, lithic and faunal remains and forms an extensive midden deposition with very little dirt as a matrix. This final midden deposition apparently levelled the slopes completely and made this area suitable for occupation. This is suggested by two observations. The first is the presence of a large posthole (F21). This post had a diameter of some 27cm and a depth of at least 48cm. It has been dug some time after the final midden layer (layer 4) has deposited here. At the base of this post a large red sandstone slab was found. Whether this rock was deliberately placed here in order to give the post more stability in the loosely sorted shell could not be stated with certainty, but it seems most likely. A total number of 18 wall ceramic sherds, three rims and one base was found in the fill of this posthole. This ceramic could be dated by characteristics such as temper and fabric type. Some soft orange fabric sherds and one sherd with crushed quartz as temper were found. These finds suggest a date somewhere around the transition period between the Late Palo Seco and beginning of the Arauquinoid, roughly around AD 600-700. Furthermore, a sherd was found here with a black substance on the interior. This could either be some form of concretion or deliberately added such as pitch.
The second indication that this area was used as a habitation location is the presence of the final layer (layer 6) in this unit. This consists of humous brownish-grey clayish sand with some 30% mostly fragmented shell. This layer can be interpreted as the livingfloor/occupation level corresponding with the period of the encountered posthole (F21). Material characteristics that were found in this layer indicate a similar date. This is discussed below. Another layer, or feature, (layer 5) has been found, however this most likely represents a fallen tree.

3.1.1 Ceramics

Ceramics formed the largest artefact category in SU5. A total number of 1734 ceramic sherds was recovered from SU5 (table 3.1.1.1).

sherd type	**#**
body	1504
base	32
rim	170
appendage	4
handle	10
griddle	12
unknown	2
sum	**1734**

Table 3.1.1.1 sherd types and numbers of LU5

A figure with all ceramic sherd types and their numbers per layer is presented in table.??
In order to make the conclusions more reliable the ceramic characteristics were analyzed per distinct layer. Because this unit was excavated in arbitrary levels of 10cm and not in actual stratigraphic geological/anthropomorphic layers, each level had to be ascribed to a specific

layer. This resulted in the following divided layer-groups, 2, 2+3, 3, 3+4, 4+5, 4, 4+6 and 6. Because of the slanting character of the layers on the slope and the method of excavating in straight 10cm levels some “double-layer” groups exist.

Decorations and temper

In the tables below the records are presented of the numbers of decorated sherds per layer (table 3.1.1.2) and the different decoration types in numbers per layer in SU5 (table 3.1.1.3).

layer	# sherds	# decorated	% decorated
6	1217	42	3,45 %
6+4	69	4	5,79 %
4	153	7	4,57 %
4+5	58	2	3,44 %
3+4	78	9	11,53 %
3	196	15	7,60 %
2+3	46	11	23,40 %
2	7	0	0 %
Sum	**1734**	**90**	**5,19 %**

Table 3.1.1.2 numbers of decorated sherds per layer in LU5

Layer	red slib	BOR	WOR	polychrome	simple incision	simple modelling	combinations
6	30				5	2	5
4+6					1	2	1
4	4		2	1			
4+5	1				1		
3+4	8						1
3	13			2			
2+3	10	1					
Sum #	**66**	**1**	**2**	**3**	**7**	**4**	**7**
%	**73 %**	**1.1 %**	**2.2 %**	**3.3 %**	**7.7 %**	**4.4 %**	**7.7 %**

Table 3.1.1.3 decoration types per level in SU5

Overall 5.1 % of the ceramic in SU5 has some type of decoration. Among the decoration types the following forms have been accounted: red slib, black on red paint, white on red paint, polychrome paint, simple incision, simple modelling (nubbins and slid eye) and combinations. Red slib is the most common decoration form, 73 % of all decorated sherds is covered with red slib.

The largest percentage of decorated sherds is found in the lower layers, 2+3, 3 and 3+4. These layers are identified as waste and refuse dump layers. The most upper layer (6) has the lowest percentage of decorated sherds, only 3.45 %.

This low percentage in decorated sherds could indicate that this layer dates from the end of the Palo Seco and beginning of the Arauquinoid period (between AD 600-700). A dramatic decrease in decorated ceramics is one on the characteristic features of the Arauquinoid complex (Boomert, 1985a:105-106). Especially red painted (slib) sherds are rare (Boomert, A.,

1983:103). This is also the case with red slib decorated sherds in the upper layers 6, 4+6, and 4. Red slib is in percentages in larger quantities present in the lower layers 2 and 3.
As can be seen in table 3.1.1.3, the large numbers of decorated sherds in the lower layers are almost all accounted for by red slib decoration. Incisions, modeled decoration and combinations are almost absent here.
However, these later categories are well presented in the upper layer, layer 6 that has been identified as a living/occupation floor. This is most likely caused by the fact that these decoration types are more rare and change of finding these types gets larger when more sherds are analysed.
Layer 6 yielded the highest number of sherds, namely 1217.
Among the sherds with combinations of decorations the following types were found.
In layer 6 was one sherd with red slib and black painted incision, one sherd with red slib, simple modelling and incision, two sherds with red slib and simple modelling (a nubbin and a slit eye) and finally, one sherd with red slib and incision.
Layer 4+6 yielded also one sherd with red slib and incision and in layer 4+3 one sherd with red slib and anthropomorphic modelling was found. This later sherd (square B, level 5) could be identified as a wall sherd of some sort of anthropomorphic vessel. It is a soft orange fabric sherd with red siltstone temper and very little sand. It represents a human head. Only a small part of this was found. This sherd has one round eye and one ear (fig.8).

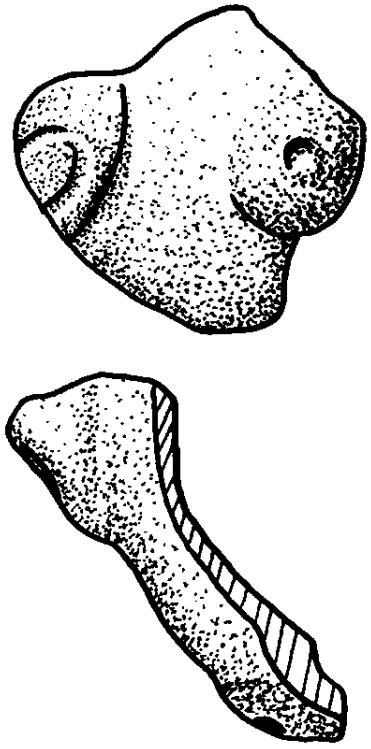

Fig.8 sherd of a anthropomorphic vessel (scale 1:1)

A second interesting ceramic object is a small ceramic disc (4,5 x 4,8cm). It has been made from a specially selected ceramic sherd with a black paint decoration. The disk is shaped in such a way that the original decoration on the original vessel forms a new decorative pattern on this ceramic disc (fig.9).
Its purpose is not clear, it could be an unfinished spindle whorl or a decorative lip or ear disk.

Another possibility is that is some form of inlay, the decorative motive could be interpreted as some sort of eye. It was found in the lower layer 3+4, square C, level 7.

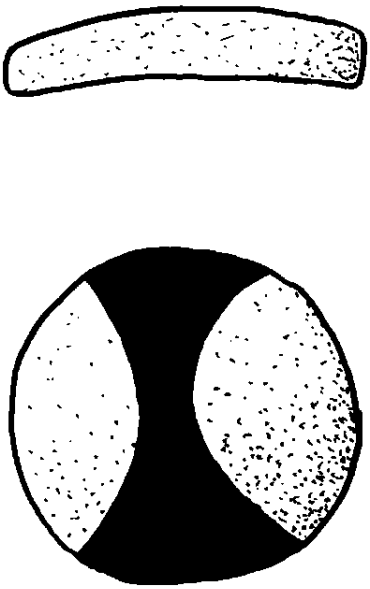

Fig.9 disc made from a ceramic sherd (scale 1:1)

Noticeable is that a very common decoration type for the Cedrosan Saladoid period is totally absent in the decoration repertoire in SU5. This is the ZIC decoration, or Zone Incised Crosshatching. In the research done in 1997 the ZIC decoration was accounted for at 8,2 % of all decorated sherds (Dorst, 2000:95).
Also in unit 2 (SU2) which was excavated in 1997 no ZIC was found. The absence of ZIC decoration in the Palo Seco complex has been claimed a long time ago by Rouse (1953a).
We know now that ZIC is present in the Palo Seco complex, however it could have been rejected as a decorative mode somewhere during the Palo Seco period.
Because the locations of midden dumps shifted with the building of each new house at a certain habitation location, the disappearance of a certain decorative element is very hard to notice in the archaeological record. This is even more difficult because all middens in their present state consist of very mixed composition of material of different age.
This absence of the ZIC decoration at certain midden locations at the Manzanilla 1 site could suggest that the sites different habitation areas are the result of a single (Palo Seco) group shifting their houses at various locations on the hill.
If a group would reject a specific ceramic characteristic such as the ZIC decoration, this would result in an archaeological record (Palo Seco midden deposition) with no ZIC in its ceramic repertoire. From this point of view, the conclusion of Rouse that the ZIC decoration is absent in (certain) Palo Seco middens could be correct.
Based on the decoration types all layers could be identified as belonging to the Palo Seco complex. However, fabric and temper types indicate that also Arauquinoid characteristics are present in the ceramic complex of SU5.
The total number of sherds has been examined on their fabric types. No numbers have been counted, each level has been analysed on the presence of the six distinguished fabric types.
In table 3.1.1.4 these occurrences are presented per layer. In the left column the six different fabric types are summarised.

fabric types	layer	accounted fabric type
type 1 soft, orange/red	6	1/2/3/4/5
type 2 hard orange/red	4+6	1/2/3/5
type 3 hard brown/gray	4	1/2/3/5
type 4 soft brown/gray	4+5	1/3
type 5 soft, light yellowish brown	3+4	1/2/3
type 6 hard, light yellowish brown	3	2/3
	2+3	1/3/6
	2	3

Table 3.1.1.4 fabric occurrences per layer in LU5

The most striking observation is that in the lower layers 2 and 3 only the hard fabric types of all colours (orange/red, brown/gray and light yellowish brown) occur.
In the upper layers also softer fabric types appear in the ceramic repertoire. The soft brown/gray fabric only appears present in the upper layer 6.
One of the characteristics of the Bontour complex (a ceramic complex in the Arauquinoid style) is the relative softness of pottery (Harris, 1983:266). This is also an indication that the upper layers can be dated in the beginning of the Arauquinoid series. A part of the midden deposit of layer 4 and the complete layer 6 (the living/occupation floor) can therefore be dated somewhere between AD 600 –700.
The different temper types per layer in LU5 support this suggestion. An overview is presented in table 3.1.1.5 Sherds with specific tempers are not counted, only the presence of each temper type per level was documented. In the left column the different temper types are summarised.

temper types	layer	accounted temper type
type 1 siltstone & shell	6	1/2/3/4/5/6/7/8
type 2 siltstone & quartz sand	4+6	2/8/6
type 3 quartz sand	4	2/8
type 4 shell	4+5	2
type 5 quartz sand with mica	3+4	2/3
type 6 shell & quartz sand	3	2/3/8
type 7 crushed quartz	2+3	2/3
type 8 siltstone	2	1/9
type 9 organic material		

Table 3.1.1.5 temper types per layer in LU5

The distribution of temper type occurrences show that in the most upper layer (6) almost all distinguished temper types are present. Pounded shell (type 4) as the mayor temper agent is an important characteristic of the Bontour complex, which is an Arauquinoid period complex (Boomert, 1983:102, Harris, 1983:266). Furthermore the use of crushed quartz (type 7) as temper is representative for the Erin style (Barrancoid) and can be dated between AD 300-700. (Boomert, 2000:204).
The explanation for the occurrence of this temper type in only layer 6 in combination with specific Arauquinoid temper types could be that it represents a blend between Arauquinoid and Barrancoid ceramic traits which appear to occur somewhere between AD 550-650.

This combination has also been noted for the Arauquinoid style St. Catherine's complex (Boomert, 1983:96-100).
Finally, the occurrence of sand with mica as temper represents a social relationship with either the Paria mountain region in north Trinidad or the northeastern area of Venezuela. Mica is foreign to the Manzanilla region (Boomert, pers. com., Harris, 1983:266).

3.1.2 Stone and lithic

All stone and lithic artefacts that were found in SU5 are presented in table 3.1.2.1 per level.

level	layer	artefact type	stone type	#	remarks
A4	3	chert	flake	1	1 gray flake
B1	6	chert	debitage	3	2 black and 1 red chert, small blocky parts
B6	2/3	chert	flake	2	1 black flake, 1 red flake
B7	2/3	chert	debitage	1	1 piece of red chert debitage
		chert	flake	2	both black, one with possible use-retouche
C2	6	chert	flake	8	5 cortex, 2 possible use-retouche, 5 black, 3 gray
C4	4/6	chert	flake	1	1 brown flake
C5	4	chert	flake	1	black chert, cortex, possible use-wear traces (use retouche)
C6	4	chert	flake	2	1 red flake, 1 black flake
C8	3	chert	flake	1	black chert, possible use-wear traces (use retouche)
D2	6	chert	flake	2	1 black flake, 1 burned flake?
D3	6	chert	flake	2	2 black flake
		chert	debitage	2	2 blocky chert parts
		crystal	flake?	1	1 small piece of crystal 1x1cm
D4	6	chert	flake	2	both with possible use retouche, one black possible arrowhead
D5	4/5	chert	flake	1	1 gray flake
		chert	flake	1	1 red flake, arrowhead-shape, possible arrowhead

Table 3.1.2.1 stone and lithic finds in Small Unit 5

Except for one artefact all concerned chert material. Twenty-six were flakes of which seven have use-retouche marks. Two of these flakes could represent arrowheads (fig.10).

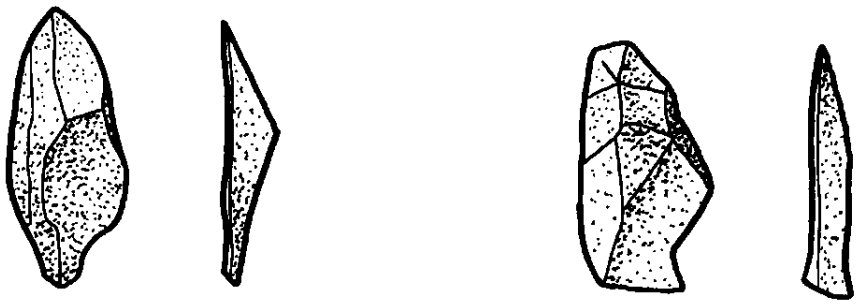

Fig. 10 possible chert arrowheads (scale 1:1)

Only six pieces of debitage were found in this unit. This number can be considered very low for a midden deposit.
In layer 6, square D3 a flake of crystal was found. This stone material is foreign to the Manzanilla region. Nearby sources can be found in the Northern Range. A historic reference for the use of crystals in Amerindian society can be found among the Makiritare. This Arawak group live on the Upper Orinoco river banks in Venezuela. Small quartz crystals in this culture group where known as “shaman power stones”. Every shaman, during his initiation had to travel to heaven and receive his own *wiriki* stones. These *wiriki* stones (quartz crystals) were put in their *maracas*, the shamans gourd rattle which is used in all shamanic activities (Civrieux, 1989:202 and 210).
Another explanation is that it could have been collected for the purpose of using it in a crushed form as ceramic temper.

3.1.3 Interpretation and conclusions on LU5

Before the presence of the Amerindian people the edge of the plateau of this natural hill was located at this location. The first inhabitants, somewhere during the (Late) Palo Seco, of this spot used these slopes for the disposal of their waste. Three layers of dump are distinguished here. Finally, the whole gully was filled with refuse consisting mainly of *Chip Chip* shells. This happened somewhere at the end of the Late Palo Seco period (AD 600-700). The former slopes where now flat, and at the same level as the plateau itself. This made the location suitable for habitation. A large posthole that had been dug from this later period level was found. Based on the characteristics of the ceramic that was found in the posthole fill and on the living floor, this habitation phase could be dated somewhere between AD 600 and 700. This marks the transition between the Late Palo Seco Saladoid complex and the succeeding Arauquinoid ceramic style.
In the ceramic repertoire in the final layer (habitation and wash-off) some Barrancoid traits are recognised in the form of the use of crushed quartz crystals as temper. Furthermore, for this period a relationship with either the Paria mountain region in north Trinidad or the northeastern area of Venezuela can be understood. This is based on the find of mica sand, which was used as temper for ceramics vessels.

3.2 Trench 1, stratigraphy and features

Trench 1 measured some 40 x 2,5 m. It reached a maximum of some 40 cm below present day surface. A stratigraphic section of Trench 1 is presented in figure 11, every 5 m a column of 30cm was drawn.

Fig. 11 section drawing of the Northwest – Southeast profile of Trench 1

The first layer (layer 1) is the undisturbed subsoil layer. It consists of light brownish-yellow sandish clay and is reached at various depths in this trench. Between 0-5 meters it is present almost at the nowadays-surface level. After 10 m this layer gradually starts to decline towards the end of the trench. Somewhere around 30 and 35 m the undisturbed pre-occupation level was

reached between 30 and 35 cm below present day surface. Here at the end of the trench this layer contains a lot of natural stones. These probably migrated in this clay matrix following the decline of the layer and stopped moving were this subsoil layer is flat again, which is between 30 and 40 m in this trench. This layer is superimposed by a deposition that clearly consists of refuse caused by human occupation. At the edge of the hill a midden deposition is present in the first 1-1,5 m of Trench 1 and consists of a thick deposition of shell, bone and artefacts such as ceramic and chert.
After these initial meter a layer (layer 2) of light greyish brown clayish sand is present. It is very organic and contains a large portion of fragmented shell (mainly Chip-Chip, *Donax sp.*) and some charcoal. This represents the Amerindian surface level. Here the formation of an anthrosol can be ascertained, just was observed in SU5 (the same layer 2). This Amerindian habitation level has been coloured greyish by continuous accumulation of organic refuse, ash and charcoal. In average this anthrosol layer has a thickness of some 15 à 20 cm. In Trench 1 this layer is present at the surface between 5 and 15 meter. This is probably caused by the bulldozer activity on the site in the summer of 2000.

Finally, between 15 and 40 m a third top layer (layer 3) is present consisting of brownish-grey humous (organic) clayish sand containing some 30% (mainly) fragmented Chip-Chip (*Donax sp.*) shell. This layer can be interpreted as post-Amerindian soil accumulations due to secondary forest overgrow following the Amerindian habitation of the Manzanilla 1 hill. In this process the soil commingled with wash-off material of the middens, thus forming this top layer. In average this layer is only between 25 cm and 30 cm in thickness.

The most striking characteristic of this trench 1 is the almost complete absence of features, only two postholes were found somewhere around the 20m point. These are F4 and F65, and both represent large postholes (fig. overzicht features appendix).
Feature 4 had a diameter of 16 cm and a depth of 34 cm and contained ceramic, stone debitage, shell and charcoal in its fill. The ceramic could be dated in the (late) Palo Seco period, between AD 350-650. A section of this posthole is presented in figure 12.
Feature 65 was also interpreted as a large posthole and has similar characteristics as feature 4. Its diameter is also 16 cm and had a depth of 35 cm. The fill only contained ceramic that could be dated in the (late) Palo Seco period (AD 350-650). Section photos of these postholes are presented in figure 12.

Fig. 12 section photos of features / posts 4 (left) and 65 (right) (scale rod 25 cm)

Both posts probably belonged to the same structure, which can be dated in the late Palo Seco period. What sort of structure this could have been is not clear but because of the diameters and depths of the postholes a house structure is likely.

Another important observation is the low number of artefacts that has been found in Trench 1. This concerns all categories, ceramic, stone, lithic, shell and faunal remains. Of all the artefacts that have been recovered from this trench, the majority was found on the dirt pile and are likely to belong to layer 3, the post-occupation layer with midden wash-off material. Only a few artefacts are obtained from the actual habitation level (level 2).

3.2.1. Ceramics

A total number of 47 sherds have been collected from Trench 1. A list of all sherd types and their decorative modes is presented in table 3.2.1.1.

sherdtype	no deco	incision	incision & red slib	red slib	simple modelling	total # and %
wall	28			2		30
rim	7	1	1	2	1	12
base	2					2
appendage					1	1
adorno			1			1
griddle	1					1
total #	**38**	**1**	**2**	**4**	**2**	**47**
total %	**81 %**	**2,1 %**	**4,2 %**	**8,5 %**	**4,2 %**	**100%**

Table 3.2.1.1 ceramic sherd types and decoration of Trench 1

Out of the total number of 47 sherds, nine sherds have some form of decoration, among which red slib is the most frequent decoration type that was accounted.
Within this ceramic complex, one sherd was found which could classified as a part of a griddle. It is a flat, 2,3 cm thick sherd of an open, porous fabric with large red sandstone inclusions, which are probably deliberately added as temper. The appendage that was found in this trench is a sherd that represents a hand or paw with red slib and a large quantity of sharp edged crushed quartz (fig 13). Since this is a temper type that was frequently used in Barrancoid (Erin) style ceramics, it could be part of an Erin style vessel.

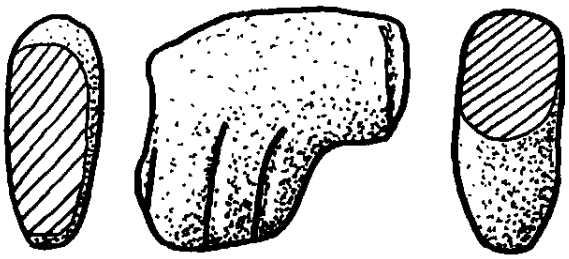

Fig. 13 ceramic appendage in the shape of a hand or paw (scale 1:1)

Two bases were found. One with a high stand-ring and one flat based foot containing a large quantity of quartz sand, which probably dates from the Arauquinoid period.

Among the rims are two flanged lips that could be dated in the late Palo Seco period. Another rim has a black pitch or black paint on the interior. This same black pitch or paint is also found on two wall sherds, also on the interior. Both these sherds are tempered with large quantities of quartz sand, and probably date from the late Palo Seco or early Arauquinoid period, around AD 600-700. Finally, an anthropomorphic adorno must be mentioned. It is a part of a human head seated on a rim (fig.15). Unfortunately, the top part has been broken off. The mouth and eye(s) are accentuated by incisions and the adorno is completely covered with red slib. The fabric type is hard, grayish brown and is tempered with a small amount of quartz sand and fairly large red siltstone particles are also included. This adorno can be dated in the late Palo Seco period (AD 350-650).

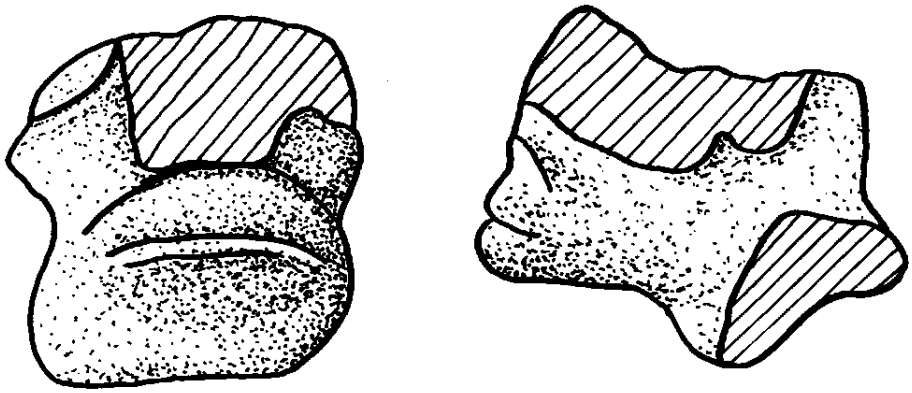

Fig. 15 anthropomorphic adorno (scale 1:1)

3.2.2 Stone and lithic

All stone and chert artefacts that were found in Trench 1 are presented in table 3.2.2.1. This stone and lithics repertoire represents the artefacts: flaked pebbles, pebbles, flakes, hammerstone, axe lithic material that cannot be determined.

artefact type	stone type	#	remarks
flaked pebble/core	chert	3	3 flaked pebbles
pebble	chert	3	3 black chert pebbles
flake	chert	3	1 with use-retouche
flake	sandstone	1	possibly chip of larger artefact, 1 smooth side
indet.	chert	3	3 blocks of chert, possibly flaked
hammerstone	chert	1	1 small hammerstone or percussor
axe	chert	1	top part of "celt"-shaped, flat axe
axe	metamorphic rock	4	petaloid forms, 1 with wear marks

Table 3.2.2.1 stone and lithic artefacts of Trench 1

A total number of four flakes were found. Three were of chert and one of sandstone material. One of the chert flakes shows scares, which can be interpreted as use-retouche marks (fig.16). The black dots signify the used edge of the flake. On what type of material this flake was used could not be specified.

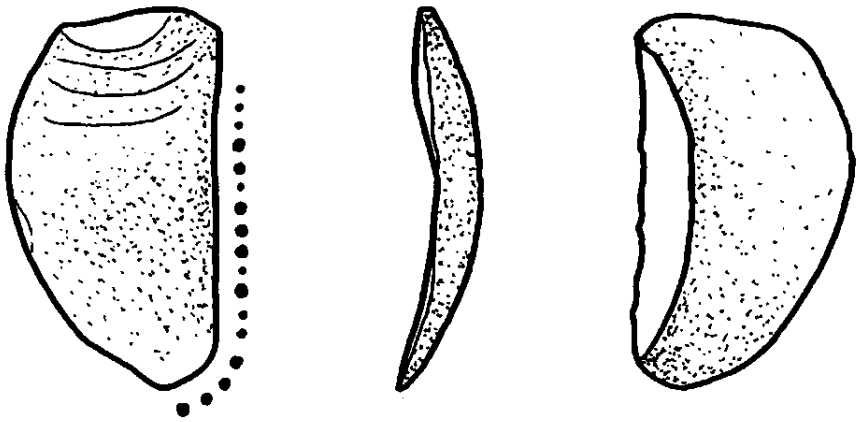

Fig. 16 chert flake with use-retouche on one edge (scale 1:1)

Furthermore a chert hammerstone or percussor was found (fig.17). Both the upper and lower part had a battered area.

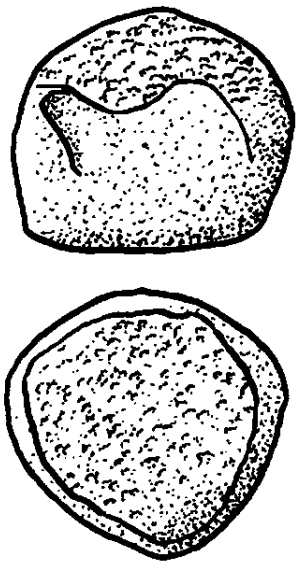

Fig.17 chert hammerstone or percussor (scale 1:1)

The most striking artefact category in this trench are the axes. A total sum of five axes was found. One concerned the top part of a “celt” shaped flat axe, which is shaped from a black chert pebble. The other four are made from metamorphic rock, which is foreign to the

Manzanilla region. Four of these axes seem unused, no scars are visible and the cutting edges are sharp (fig.18).

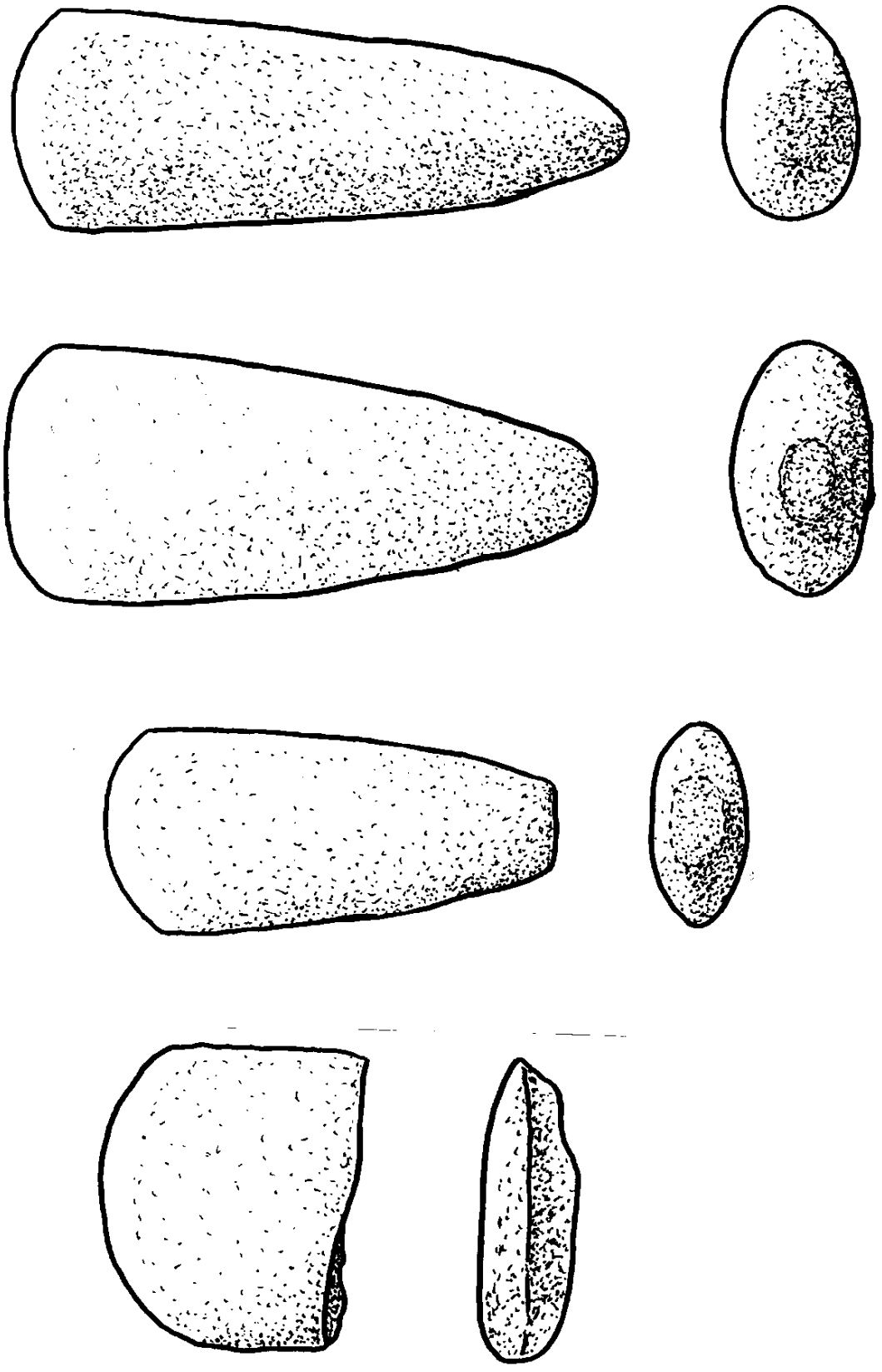

Fig 18 stone axes (scale 1:1)

Only one show marks of (heavily) use. Both marks of use as well as scars from the fitting of the axe in the wooden handle are clearly visible (fig.19).

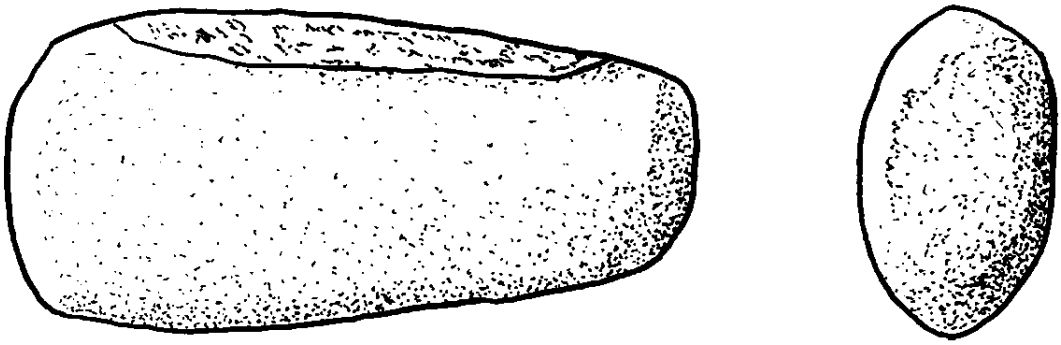

Fig.19 stone axe with marks of use and fitting (scale 1:1)

The nearest source for this stone material can be found in the Northern Range in Trinidad. Axes are associated with the male gender and war. In the Cedrosan Saladoid culture axes of foreign stone material (such as greenstone) are one of the main objects that are distributed along the long trade connections that exist between the Caribbean islands. This suggests that the possession of these axes where probably the subject of symbolic representation of power and prestige.

3.2.3 Conclusions and interpretations of Trench 1

The absence of large quantities of midden material suggests that this area was a habitation location. This it supported by the find of two large postholes, probably of a house structure. These where found in the northwestern end of Trench 1.
Characteristics of the ceramic in the fill of these postholes suggest a date of this structure somewhere in Late Palo Seco period, between AD 350 and 650.
The absence of features in the rest of this trench indicates that this area probably served as a communal open space or *plaza*, within the village configuration.
The presence of a large number of stone axes of foreign material in this *plaza* area support the suggestion that it had a specific ritual and symbolic significance. Possibly it suggests some form of public display of power of a certain person or group within this village society indicating a form of social stratigraphy.
No clear date can be presented for this *plaza* area. Both ceramics of the Late Palo Seco period and ceramics with more Arauquinoid traits were found in this trench. The original configuration is most likely Late Palo Seco, based on the orientation of the postholes of this date that surround the *plaza*. Most likely continuity in habitation exists between the Late Palo Seco period and later habitation of a group that produced ceramic with the Arauquinoid traits. This is because the original village configuration doesn't seem to have been altered, since no features (postholes) were found within the early *plaza* location.

3.3 Trench 2 and Large Unit 1, stratigraphy and features

These two units are discussed together because they were joined together and the fact that in both units a continuous feature level was revealed. The stratigraphy of Trench 2 was drawn. This Southeast-Southwest section drawing is presented in figure 20.

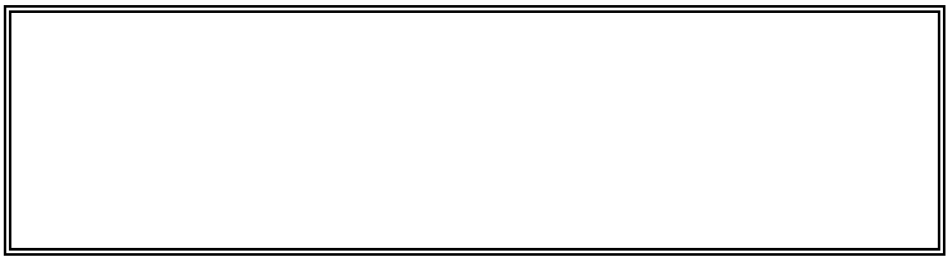

Fig.20 section of the Southeast-Southwest stratigraphy of Trench 2

The stratigraphy is similar as in Trench 1. The natural undisturbed soil (layer 1) is reached between 5 and 15 cm below present day surface. This is topped by the accumulation of livingfloor/occupation level waste, and forms an anthrosol layer (layer 2), varying between 4 and 10 cm in thickness. At the beginning of Trench 2 this *anthrosol* layer is exposed at the surface. From between 12 and 15 m the third layer (layer 3) of post-occupation accumulation and midden wash-off is present. The stratigraphy of LU1 was not drawn.
In these units a large number of artefact was found during digging the pits and shovel scraping. A total number of 12 sherds were found in Trench 2 and 349 in LU1. Lists of all sherd types and their decorative modes per unit are presented in tables 3.3.2 and 3.3.3.

sherdtype	**no deco**	**incision**	**incision & red slib**	**red slib**	**simple modelling**	**total # and %**
wall	232			30	3	265
rim	39	1	10	16	3	69
base	5					5
handle	5		1		2	8
adorno	1					1
spindle whorl	1					1
total #	**283**	**1**	**11**	**46**	**8**	**349**
total %	**81 %**	**0,20 %**	**3,10 %**	**13,10 %**	**2,20 %**	**100 %**

Table 3.3.2 ceramic sherd types and decoration of Large Unit 1

sherdtype	**no deco**	**incision & red slib**	**red slib**	**simple modelling**	**total # and %**
wall	4		1		5
rim	3			1	5
appendage				1	1
adorno		1			1
total #	**7**	**1**	**1**	**2**	**12**

total %	**58 %**	**8,30 %**	**8,30 %**	**16,60 %**	**100 %**

Table 3.3.3 ceramic sherd types and decoration of Trench 2

3.3.1 Ceramic

A total number of 361 sherds were found in these units (table ?). A percentage of 19.3 % was decorated in some form. Among these decoration modes occur such as: red slib, red slib with simple incisions and simple modelling. This later decoration group is represented by both nubbins and slit eyes. These are mainly found on the rim part of vessels, mainly on flanged lips. Several base types have been found in these units. Among these flat bases are dominant, only a few stand rings occur.
A special base is a leg-base of a (possible) anthropomorphic vessel. On this leg is also a hand or paw present (fig.21). It is made of a hard reddish-brown clay fabric, which is tempered with siltstone, sand and some shell.

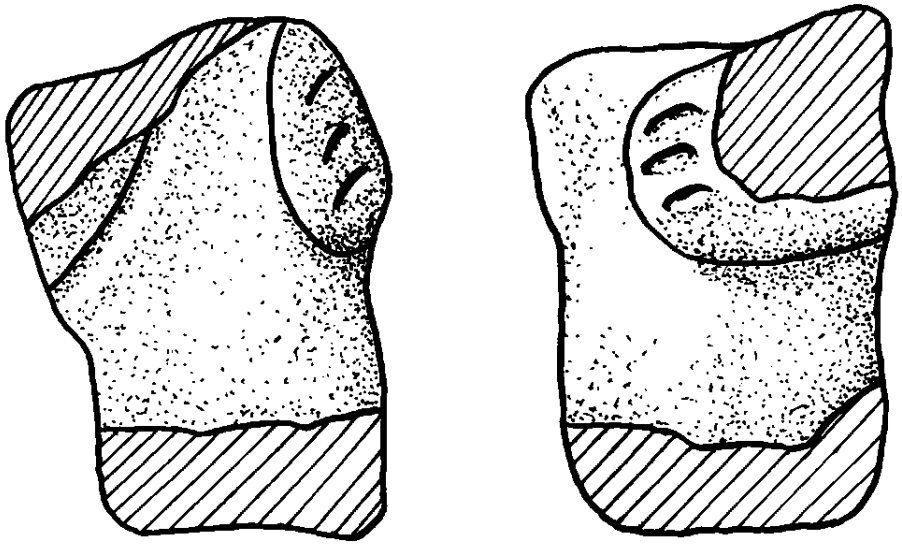

Fig.21 ceramic anthropomorphic leg-base (scale 1:1)

Two anthropomorphic adornos were found here. One is a small human face measuring 3 x 3 x 3 cm. It main characteristic is its large nose, which gives it a somewhat animal-like appearance. It is a soft orange fabric with siltstone and small sand particles. The eyes, mouth, nose and ears are accentuated by incisions and the whole adorno is covered with red slib (fig.22).

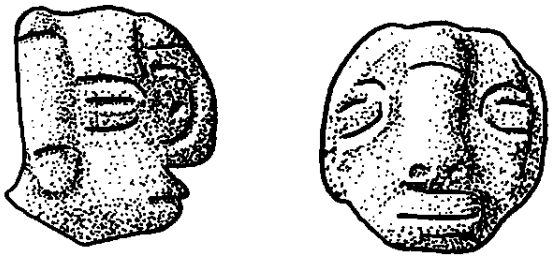

Fig. 22 anthropomorphic adorno (scale 1:1)

The second adorno (fitted on a handle) is larger and measures 5,5 x 3,5 x 4,4 cm. It probably also represents a human face, but also has some animal-like features. The mouth and ears are very large. On top of this head a small figurine is seated, which could represent a stylistic frog (fig.23).

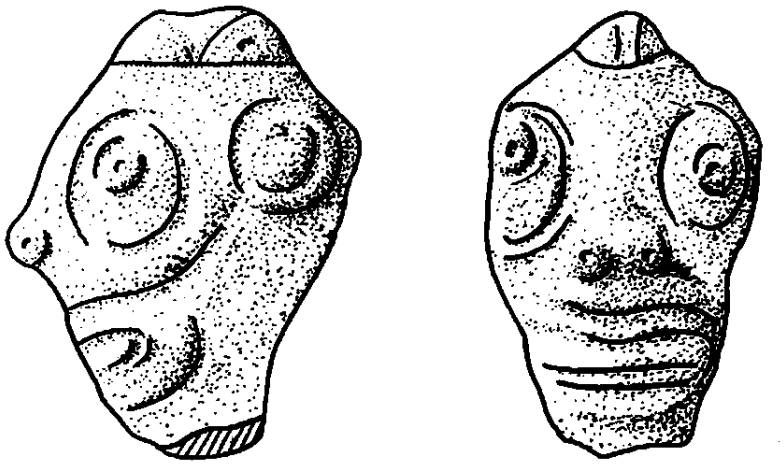

Fig. 23 anthropomorphic adorno (scale 1:1)

Frogs are a popular stylistic decoration form among Pre-Ceramic Amerindian groups. Frog pendants of semi-precious stone (called *muiraquitas*) have been found in large numbers at La Huaca (Baik, 1984) on Vieques, made of shell in Anse a la Gourde on Guadeloupe (2001) and as ceramic appliqué in ceramic styles (Santar⌠ m) of Brazil (McEwan, Barreto, and Neves, 2001:141-142).
From historical sources (Pane, 1974) it appears that frogs in Amerindian mythology are associated with the female gender, children, the rain season and fertility.
This adorno maybe does represent one of these symbolic expressions. Some others explanations could be that it represents an animal guardian spirit (alter ego) or it has some shamanic connotation. The occurrence of adornos representing animals seated on top of a human head (alter egos) are a specific Barrancoid characteristic associated with guardian spirits and shamanic activities (Boomert, A., 2000:449-454).

In Large Unit 1 also a ceramic spindle whorl was found. It is a biconical, disc-shaped spindle whorl of a hard reddish brown fabric tempered with sand and siltstone. In the centre is a straight hole with on one end a small, thickened edge. It has a diameter of 5.2 cm and a height of 2.4 cm (fig.24). It is directly associated with the spinning of cotton for the purpose of producing textiles. Towards the end of the Cedrosan (Palo Seco) period more and more spindle whorls are found midden deposits indicating an intensification of the production and use of cotton. This was used for the manufacture of hammocks, waistbands, armlets, baby slings, club slings, girdles and fishing lines (e.g. Quandt, 1807:235-237, Roth, 1924:96-108, 381-395).

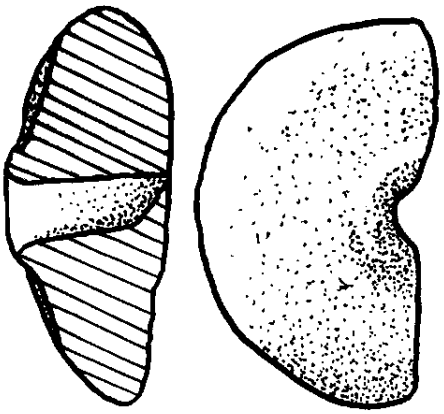

Fig. 24 ceramic spindle whorl (scale 1:1)

Futhermore, a D-shaped handle is present in this ceramic repertoire. The wall of this vessel is covered with red slib, while the handle itself is decorated with a simple nubbin on the upper part (fig.25).

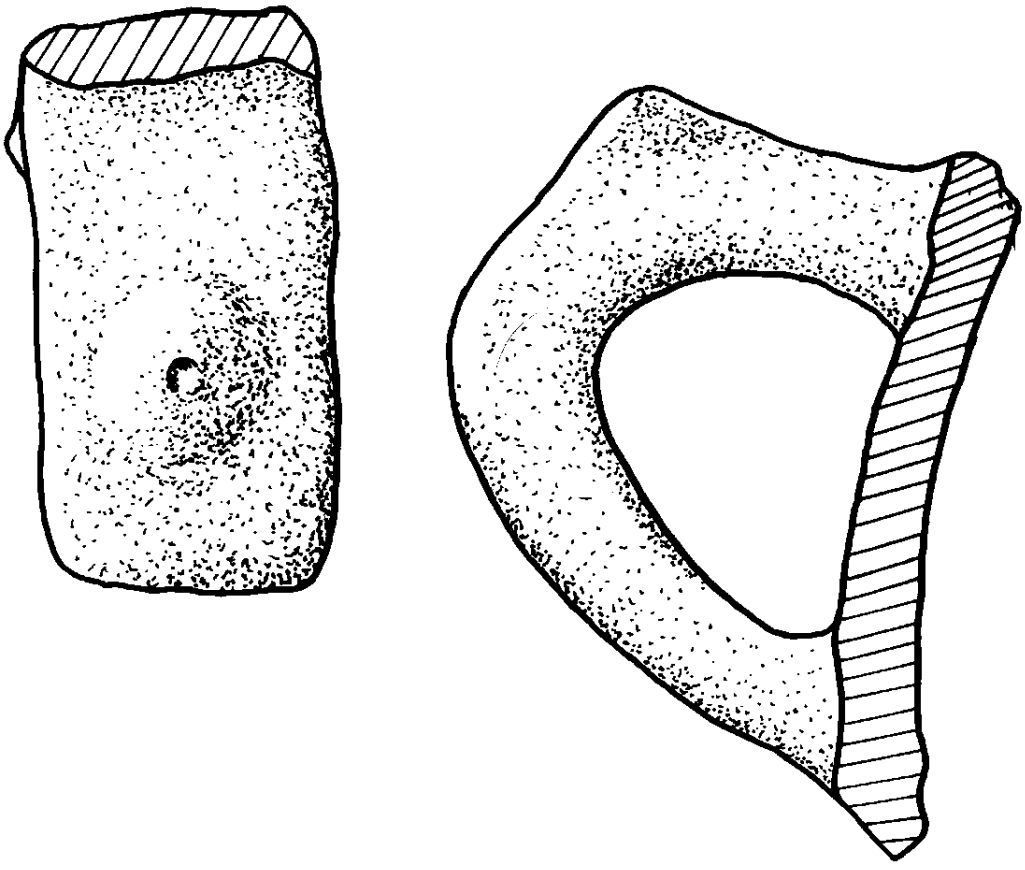

Fig. 25 D-shaped handle with simple decoration (scale 1:1)

Based on the fabric types, the decoration types and numbers of decorated sherds this habitation floor can be dated in the Late Palo Seco period between AD 350 and 650.

3.3.2 Stone and lithic

In both Trench 2 and Large Unit 1 chert and stone artefacts were found. In tables 3.3.2.1 and 3.3.2.1 these artefacts of both units are presented.

artefact type	stone type	#	remarks
flake	chert	1	1 large flake, black chert
flake	chert	1	1 small rectangular black flake, possibly a craterboard tooth
flake	chert	1	1 small brown flake
indet.	sandstone	1	1 small, flat piece of grey sandstone
indet.	chert	1	1 block black chert, possibly flaked
core	chert	1	1 small black chert core, 6 flakes removed

Table 3.3.2.1 stone and chert artefacts of Trench 2

In Trench 2 only a few stone and lithic artefacts are found. These are: three small flakes of which one can be identified as a possible craterboard tooth. These small pointed flakes were in large numbers fitted in a wooden board with all sharp edges pointing at one end of this board. Usually they were secured in their setting with natural resins (called *karamani* in Arawak or *peram(ni* in Carib) derived from trees (Boomert, 2000:325).
These boards were used for mashing the manioc roots into a pulp mass which was put in a press called *matapi* or *tipiti* in order to squeeze out the poisonous cyanic juices.
Another artefact that should be mentioned is a small black chert core. Six small flake negatives are counted on this core. Obviously flaking chert pebbles was an activity that was performed in the close surrounding of the houses. Large numbers of debitage, which is produced during this process are missing in this area, possible because this area belonged to the sweeped livingfloor surrounding the direct space around a house.

artefact type	stone type	#	remarks
hammerstone/percussor	chert	1	red chert percussor with one scared point
hammerstone/percussor	sandstone	1	a waterworn pebble with one scared, abraded side
pebble with abraded sides	sandstone	1	a waterworn pebble with two abraded flat sides with black residu
pebble	chert	4	4 small black chert pebbles
flaked pebble/core	chert	1	one core with 5 flaked sides
shatter	chert	8	8 blocky chert part
axe	metamorphic	1	1 small butt-end of a axe, 2,5x1,5cm trapezium-shaped with a flattened point
unknown	metamorphic	1	5,4x3x0,2cm, sharpened flat object
unknown	sedimentary	1	6,4x6,5x0,6cm, flat rounded object
indet.	metamorphic ?	1	1 block of quartzite, large quartz sand particles and quartz bands
grinding stone	sandstone	1	1 grinding stone with one smoothened, flattened side (*mano*)

Table 3.3.2.2 Stone and chert artefacts of Large Unit 1

Here also large numbers of debitage are not found, only eight small pieces of shatter are recorded. This is also because it represents, for the larger part, the livingfloor of a house and its close surroundings. Here objects are found which refer to specific household tasks. Two hammerstones or percussors were found (fig.26). One is a chert pebble and the second a waterworn sandstone pebble. Both have scared and abraded areas and are most likely used for flaking chert pebbles.
Also an abraded waterworn sandstone pebble was found with an undefined black residu on one side (fig.26).

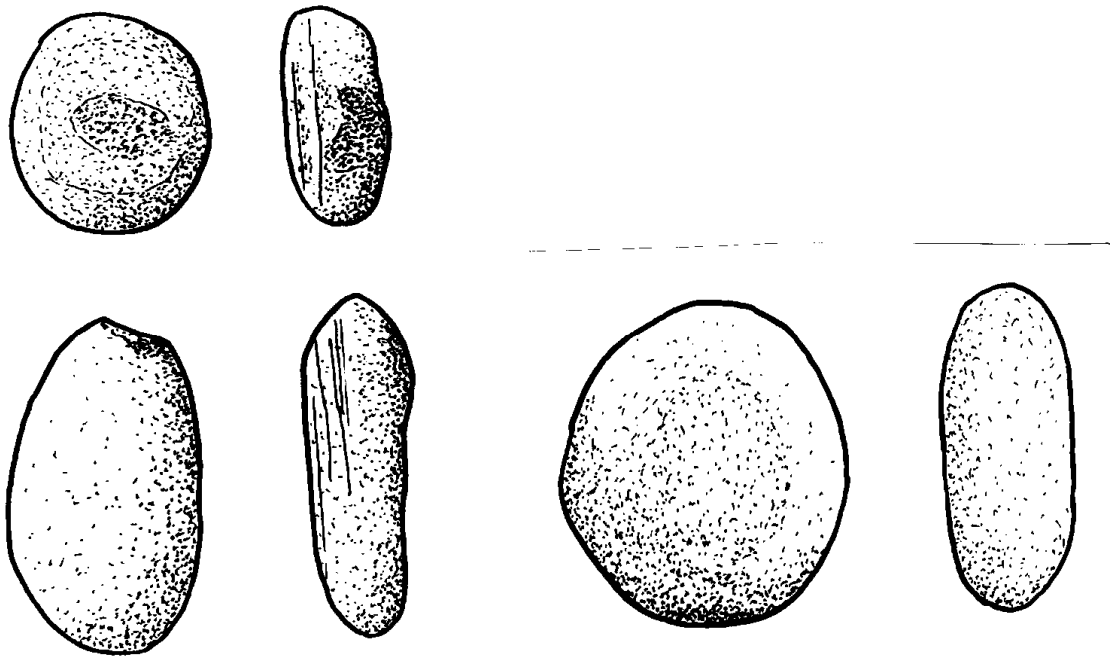

Fig. 26 from left to right: a sandstone percussor, a chert percussor and sandstone pebble tool (scale 1:1)

Also two unknown objects are found. One is an artificially rounded flat piece of some sedimentary stone, possible slate. The surface of one end is polished and shows diagonal striations (fig.27).

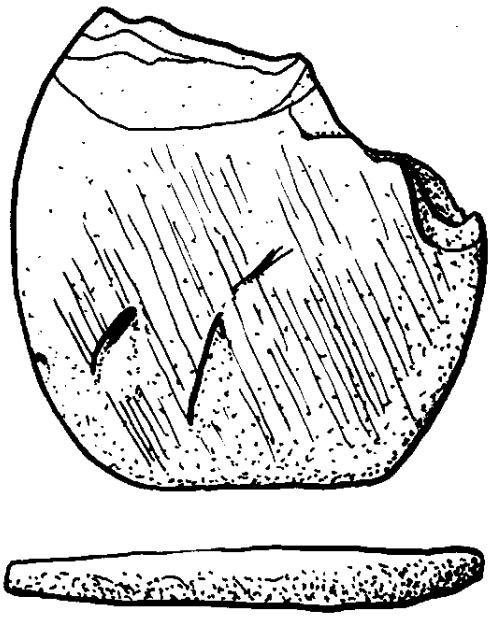

Fig. 27 unknown stone object (scale 1:1)

The second unknown object is of a metamorphic stone. It is flat and very thin (only 0,2 cm) and has three sharp points. All the present edges of this tool are sharpened, which suggests that it could have served as a cutting tool (fig.28).

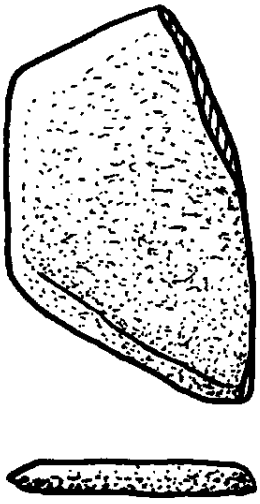

Fig. 28 unknown stone object, possible a cutting tool (scale 1:1)

Furthermore a butt-end of a metamorphic axe was found and a waterworn sandstone pebble with one smoothed, flattened side. This latter object is probably a grindingstone (*mano*) which were used for cracking nuts and grinding things (fig.29).

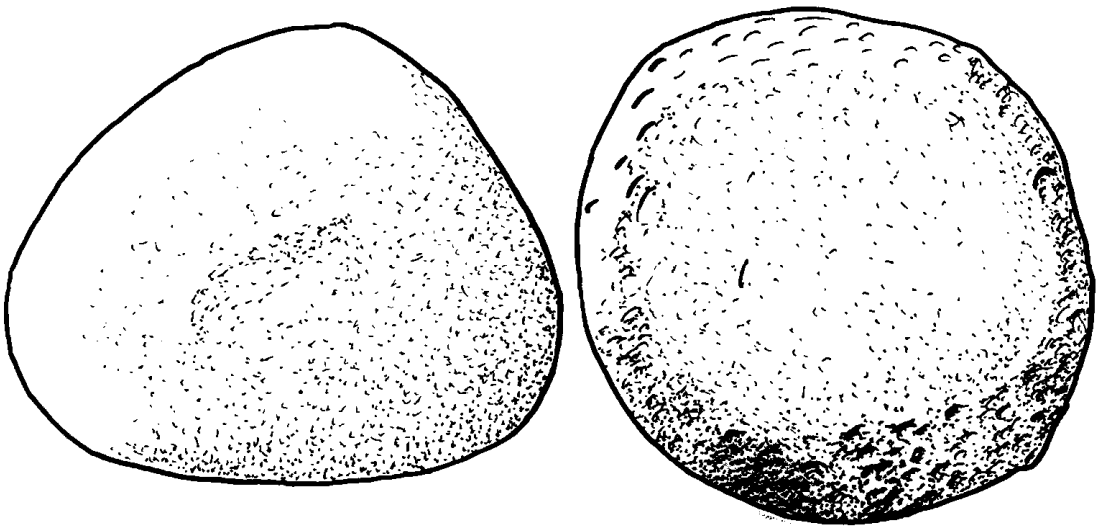

Fig. 29 grindingstone with the smoothed lower area (left) (scale 1:1)

3.3.3 Features

In both the Trench 2 and Large Unit 1 a large number of features was found. In figure 30 a plan drawing is presented of all features in these units. This feature level was present just under the anthrosol layer. These features were identified as postholes (large and small), pits (i.e. cooking pits) and burials. Most likely those have been dug from somewhere during the formation of this layer 2, however since most holes and burials were filled with the soil from this layer these features could only be recognised below the anthrosol layer in the undisturbed yellowish subsoil. All features were found at a depth ranging between 25 and 30 cm below present day surface level. A total number of 70 features have been found, of which 28 were identified as (recent) tree roots or small natural depressions filled with the grayish anthrosol.
In table 3.3.2.3 an overview is presented of all features that were discovered in Trench 2 and LU1.

Feature	Unit	Width/Depth (cm)	Materials in fill	Complex/Date	Interpretation
F7	T2	??/18	human bone, shell, ceramic, chert	Palo Seco AD 350-650	burial
F8	T2	?/?	human bone, ceramic	Palo Seco/ Arauquinoid AD 600-700	burial
F9	T2	41/10	shell, charcoal	unknown	small post or pit
F10	T2	20/58	human bone, ceramic, chert	Palo Seco/ Arauquinoid AD 600-700	large post/burial, centre post structure A
F11	T2	14/30	ceramic, stone, shell, charcoal	Palo Seco/ Arauquinoid AD 600-700	large post, structure A
F14	T2	41/15	ceramic, shell, chert	Arauquinoid?	small post or pit
F15	LU 1	46/5	ceramic, burned bone, shell, charcoal	Palo Seco AD 350-650	hearth/cooking pit
F16	T2	?/?	human bone, ceramic	Palo Seco AD 350-650	burial
F18	T2	160/45	human bone, stone, ceramic, shell	Palo Seco AD 350-650	burial
F23	T2	?/?	human bone	unknown	burial
F26	T2	22/7	----------	unknown	small post or pit
F27	LU 1	?/?	human bone	unknown	burial
F28	LU 1	?/?	human bone	unknown	burial
F29	LU 1	10/5	ceramic	Palo Seco?	small post or pit
F30	LU 1	25/7	ceramic	Palo Seco?	small post or pit
F31	LU 1	20/43	shell	unknown	large post, structure A
F32	LU 1	98/18	human bone	unknown	burial
F33	LU 1	?/?	human bone	unknown	burial
F34	LU 1	?/?	human bone	unknown	burial
F35	LU 1	37/12	ceramic	Palo Seco AD 350-650	small post or pit
F36	LU 1	27/8	-------	unknown	small post or pit
F39	LU 1	25/5	ceramic, shell	Palo Seco AD 350-650	small post or pit
F41	LU 1	10/4	shell	unknown	small post or pit
F42	LU 1	?/?	human bone	unknown	burial
F45	LU 1	9/6	shell	unknown	small post or pit
F49	LU 1	10/6	--------	unknown	small post or pit
F50	LU 1	18/25	shell	unknown	large post, structure A
F52	LU 1	?/?	human bone	unknown	burial
F54	LU 1	19/47	bone, shell, charcoal, ceramic	Palo Seco?	large post, structure A
F55	LU	48/12	stone, shell	unknown	small post or pit

	1				
F59	LU 1	?/?	human bone	unknown	burial
F61	LU 1	15/38	charcoal	unknown	large post, structure A
F62	LU 1	11/7	shell	unknown	small post or pit
F64	LU 1	35/8	shell, bone	unknown	small post or pit
F66	LU 1	?/?	human bone	unknown	burial
F67	LU 1	?/?	human bone, ceramic	Palo Seco AD 350-650	burial
F68	LU 1	24/35	ceramic, stone, bone, shell		large post, structure A
F69	LU 1	25/7	--------	unknown	small post or pit

Table 3.3.2.3 list of all features in Trench 2 and Large Unit 1

This group of features was categorised into four groups: large post molds /holes, small postholes and pits, hearths or cooking pits and burials. The later group is discussed in chapter 4.

Large postmolds / holes

Only at the features F10, F11 and F68 a clear posthole could be identified, all the other features in this category should be indicated as postmolds. All these posts have a depth ranging between 35 cm and 58 cm and have diameters between 15 cm and 37 cm. Since no deeper post molds / holes were found, these were categorised as large posts. However, compared with data from other sites (Anse a la Gourde, Hofman, C.L., Hoogland, M.L.P., Delpuech, A., 2001, ch.5, Morel, Hofman, C.L., Hoogland, M.L.P., in press, and Golden Rock, Versteeg, A.H. & Schinkel, K., 1991, ch.4) these postholes appear to be relatively shallow, suggesting that these structures could have been smaller.

The fill of these features consists of dark greyish-brown clayish sand (anthrosol) containing a variable quantity of fragmented shell and sporadically ceramic, bone, stone or lithic material.

All seven large postholes belonged to one possible, reconstructed house structure named structure A (fig.31). This structure can (partly) be reconstructed by the following large postholes (F10, F11, F68 and F54). The centre post is represented by F10 while the other three served as side posts. All of these feature have the same fill and approximately the same diameter (ca. Ø 20 cm) and same depth (between 35 and 40 cm). Sections of those four large posts belonging to structure A are presented in figure 32.

Fig. 32 sections of the four large posts of structure A. from upper left to lower

right: F10, F11,F54 and F68

The supposed centre post (F10) has the largest depth (58 cm) of all recovered large postholes of this structure (fig.32a). The secondary burial in this posthole is more elaborately discussed in chapter 4. The diameter is ca. 20 cm and the fill of the posthole consisted of light brownish gray sandish clay that contained some 5 % fragmented shell, ceramic and chert. The possible postmold consisted of grayish brown clay with some 50 % fragmented shell. However, this deposition could also the result of the process whereby the bones were placed in this posthole. The base of this post is flat and slightly rounded.
Based on the ceramic characteristics this posthole can be dated in the end of the Late Palo Seco and beginning of the Arauquinoid period, between AD 600 and 700 (table features?).

Fig.32a posthole F10 with secondary burial (scale rod 25 cm)

Feature 11 showed a very clear postmold which also contained a lot of shell just as the mold of feature 10, but also charcoal and fragments of red sandstone. The posthole fill consisted of gray sandish clay. The post of F11 had a diameter of 14 cm and a depth of some 30 cm and a possible flat base. The fill contained stone fragments, some shell fragments and ceramic which also could be dated between AD 600 and 700 (table features?).
The post of feature 54 had a diameter of 19cm, a depth of 47 cm and stood under a slight angle; the base end pointing south and post top pointing north. The fill consisted of brownish gray sandish clay and contained some 80% fragmented shell (of which a large number complete *Anadara braziliana*), (animal) bone, charcoal and ceramic. No clear characteristics were found for the ceramics but they most likely can be dated in the Late Palo Seco (table features?).

Large post, feature 68 had a diameter of 24 cm and reached a depth of 35 cm. At a depth between 28 and 30 cm below (present day) surface a large slab of red sandstone was present. The Amerindians, while digging the hole for this post encountered this rock. Instead of digging a new hole it was cut trough and shaped in order for the post to fit in (fig.32b).
This way it helped to secure the grip of this post. This has also been observed at sites as Anse a la Gourde (Hofman, C.L., Hoogland, M.L.P., Delpuech, A., 2001, ch.5). The fill of posthole 68 consisted of dark gray sandish clay with fragmented shell in the lower deposition. Furthermore it contained animal bone and ceramic that probably belongs to the Late Palo Seco period.

Fig.32b posthole 68 coupe from above showing the hole trough the sandstone slab (left)
posthole 68 coupe with at the lower level the sandstone slab (right)
(scale rod 25 cm)

The supposed centre post F10 is located in a somewhat isolated “feature empty” spot and the distance of the suggested side posts to the centre post range between 4 and 4,5 meters. The mutual distance between the side posts is 3 and 2 meter.
Another indication that this represents a possible structure is that the implied centre post served as a secondary burial pit after the post was removed. This represented one of the two secondary burials that were found during this fieldwork, and could imply that posthole F10 had some significant (ritual) meaning, indicated by the secondary deposition of human remains here.
The “inner space” of this supposed structure is, in relation to the “outside” distribution of features, almost empty (fig.30). Only 5 pits or small postholes and 1 burial are situated inside the structure. This inhumation is also an oddity, it is buried deeper than the surrounding burials “outside” and has been partly emptied. The *cranium*, pelvis and leg bones of this individual were removed (see chapter 4).

All the other burials are located outside this supposed structure and closely encircle it, suggesting an associated relationship. Therefore, the contour of this structure can be identified (partly) by the distribution of the burials. This is reflected by the location of burial 16 (F16). The distance of this burial to the centre post is the same as the distance from the centre post to the opposite side post (F11), namely 4 meters.
This way a oval-shaped house structure can be reconstructed of 9 x 6 m with post F10 as the centre post and 8 side posts, of which three (F11, F54 and F 68) have already been located (fig.30).
The supposed locations of the missing side posts (uncovered) are marked with an X in figure 30. Notable, there are three other large posts (F31, F50 and F61) which form a semi-circular arc and runs in an eastern direction. This construction most likely belonged to structure A. The posts of this arc had the following characteristics and their sections are presented in figure 33.

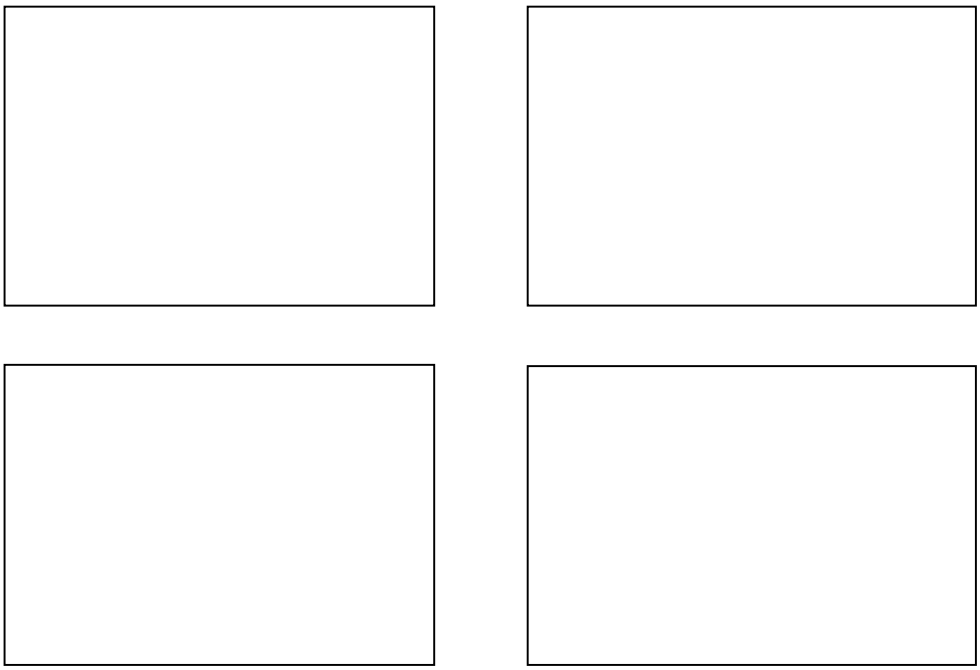

Fig.33 Section drawings and photo of large posts F31, F50 and F61

Post 31 had a depth of 43 cm and a largest diameter of 20 cm. The fill contained patches of fragmented shell and red, soft (local) sandstone rock fragments. It contained no artefacts whatsoever. Post 50 was somewhat more shallow, only 25 cm and a largest diameter of 18 cm. It had two fills, one of grayish brown sandish clay with 30% fragmented shell and a grayish brown clay with no shell and only some charcoal. This feature also contained no artefacts.
The third post of this arc had a depth of 38 cm and a largest diameter of 15 cm. The fill consisted of grey sandish clay with some charcoal and also no artefacts.
An explanation for the lack of artefacts in these holes is that, unlike the posts of the house structure, these posts may not have been re-used and left standing. This way no open hole ever existed which could be filled with material from the livingfloor or nearby midden.
Besides for the fact that non-of these features contained any artefacts they have a second characteristic in common. In contrast to the large posts of the house structure A all three posts in the arc had a somewhat pointed base. At the Golden Rock site on St. Eustatius (Versteeg & Schinkel, 1991) similar arcs added to a house structure were found.

Here, the semi-circular arc was interpreted as a wall that served as a windbreak. Hurault (1961) is referred to as describing an ethnographic parallel for this interpretation. He reported semi-circular walls that were attached to the exterior of the houses in coastal French Guyana (Hurault, 1963:146)

Small postholes and pits
A total number of 15 small posts or pits were found. These features are characterised by the fact that they are all no deeper than some 15 cm and all have a larger diameter than their depth (fig.?). These features can be considered as either deliberately dug (shallow) pits, the lower bottom part of smaller posts and natural depressions which have been filled with the anthrosol while the settlement was in use. Most features in this category can be interpreted as small pits or shallow pits. The minority of features in this category more likely represents small posts or stakes.
Unlike the fill of the category Large postholes, some of the features in this category also have a considerable amount of (fragmented) Chip-Chip shell in the fill, which makes them more easy to recognise in this subsoil level.
For now, no structures can be reconstructed from the spatial distribution of these small posts. However, it must be considered that some small posts could have functioned as just a single post for certain purposes. Small post structures in an Amerindian settlement include drying racks and barbecue racks, however, as stated above no clear observation for a structural distribution of these posts was observed. Because of there size these holes did not contain much fill, therefor little artefacts were found in this feature category. F35 could be dated in the late Palo Seco, F30 is most likely late Palo Seco and F14 possible Arauquinoid.

Hearths or cooking pits
Only one feature can be identified as a small hearth or cooking pit, although it is somewhat speculative, for this feature is no deeper than 5 cm. This concerns feature 15 (F15) in Large Unit 1, it is oval shaped and the fill consists of mainly shell (80 %) with charcoal, burned bone and ceramic.

3.3.3. Interpretations and conclusions on Trench 2 and LU1

These units revealed a habitation spot at the plateau of this hill. A large number of postholes and burials were found. A possible oval-shaped house structure could be reconstructed which measures 9 x 6 m. Characteristics of the ceramic material in the fill of these posts suggest a date between AD 600 and 700, the end of the Late Palo Seco period and start of the Arauquinoid ceramic style period. All burials that were found in these units are closely surrounding this house structure. Inside this house a Late Palo Seco burial was found which had been partly emptied in Amerindian time, probably before the house structure was build. After the abandonment of this house the hole of the centre post was used for as a secondary burial pit for the remains of two individuals (chapter 4).
Ceramic finds from this habitation floor date from the Late Palo Seco and first phase of the post Saladoid period. Among this are some Palo Seco anthropomorphic adornos. Furthermore other tools have been found that suggest all kinds of household activities. A spindle whorl which was used for spinning cotton, percussors for flaking chert pebbles and a grinding stone (*mano*) used for cracking and grinding things. Also a part of a stone axe was found.

Somewhat similar (circular) structures (structures 1 and 2) have been reconstructed for the Golden Rock site on St. Eustatius (Versteeg & Schinkel, 1991). One of these small structures was (radiocarbon) dated between AD 560-794, which corresponds with the Late Palo Seco – Arauquinoid transition period.

Another circular structure with this diameter (between 5 and 10 m in Ø) and a floor plan of one (or two) central posts and a single ring of surrounding wall posts have been reported at the Heywoods site on Barbados. Several (early) ethnohistorical sources reported the existence of large, round communal dwellings in the Lower Orinoco Delta, Paria Peninsula and Trinidad (Boomert, 2000, Chapter 8).

Ethnographic parallels for these size and type of houses correspond with the smallest type among Amerindian people, which are according Roe single-family houses (Roe, 1987:57-58). As noted by Boomert many different house form and sized where present in Trinidad during the contact period (Boomert, 2000:288-291). These include large, communal bell-shaped house, which could shelter up to 100 people as well as smaller round to oval shaped houses.
This reconstructed house most likely represents a small multifamily house. It is difficult to present a somewhat accurate number of possible inhabitants for a house with this size. Counting of huts and inhabitants in the Xingu area in Brazil indicate that numbers per house appear to vary among all Amerindian groups (Arawak, Carib and Tupi). These numbers range between 9 and 23 with an average of some 16 persons.
This can also be observed among the Mund in Brazil. Here bell-shaped houses with a diameter of some 10 m accommodated five or six families (figure 34, from Claude L vi-Strauss, 1936:171-181).

Fig. 34 bell-shaped round house of the Mund in Brazil

This ethnohistoric parallel is probably a good representation of the recovered house and a number between 15-20 inhabitants is acceptable.
Traditional houses among Amerindian people are often a reflection of their perception of the universe and worldview. For example, among the Yekuana (a carib-speaking group in southern Venezuela) their house (*atta*) is a symbolic replica of heaven. Large, multi-family houses consist of a centre post, which represents the umbilical cord or *axis mundi* by which heaven and earth (the invisible and visible) are connected.
The circular (surrounding) ten support beams are called the “sky trees” which are said to hold up heaven itself. Two North-South and East-West positioned cross beams represent the Four Corners of the world (Guss, 1989).
It is also possible that this plan represents a house that was build on large posts with a livingfloor above the ground. This is because clear and abundant cooking pits are apparently

almost absent. Houses on posts, with a wooden livingfloor above the ground are accounted for among the Caribs in the Antilles in the 17th century. In a French report dating between 1618 and 1620 the following is recorded about their houses: :…*Il fout savoir que touts leurs cabanes sont appriyée sur de piliers plus haut qu'ils nomment "ouaccabou" ont au bout desquels ils y apprivient après des bâtons, qui sont tous en traverse de la maison assez proches les uns de autres, et là dessus ils y mettents tout leurs meubles comme coffres de roseaux, arcs, fleches et autres choses…"* (Unknown, 1618-1620. Manuscript inédit de bébit du XVIIe siècle publié Jean-pierre Moreau : Un flibustiers français dans la mer des Antilles en 1618/1600.)

3.4 Augertest program

A total number of 107 augertests have been made. These were performed in two rows running parallel to eachother across this part of the hill in a SSW-NNE direction (fig.6).
These two rows (A-A' and B-B') of augertest had a mutual distance of 21 meter and both rows covered the largest width of the examined habitation area.
The results are presented in figures 35 and 36. These presentations have two different scales, the relative height of the hill is noted on the vertical axis with a scale of 1:25. On the horizontal axis the distance of the augertests is noted at a scale of 1:100.

-Row A-A' (fig. 35) is the western row and is connected in the south with the profile of SU5. It holds a total number of 57 augertests, starting with AT –6 up to AT 50.
The location of the trenches can be seen in this profile at augertest number 20 (Trench 1) and at number 31 (Trench 2).
In the augers –6 up to augertest 0 the gully filled with midden material (shell) can be noticed.
The lower layer (in yellow) is the undisturbed subsoil layer. It consists of light brownish-yellow sandish clay. On top of this is an anthrosol layer, somewhat similar to the *terra preta* soil (in light brown). This anthrosol is a direct manifestation of residential waste, which was produced during the occupation phase.
A layer of fragmented shell (in red) with some soil tops this layer. It is not clear whether this deposition belongs to the period of habitation or that it represents post-habitation wash-off material from the original shell midden that would have been located at the edges of the plateau.
The final (top) layer (in dark brown) consists of brownish-grey humous (organic) clayish sand. This soil contains some 30% fragmented shell (mainly Chip Chip) and small ceramic sherds and is caused by erosion of the shell middens and post-habitation soil accumulation.
A few augertests revealed a disturbed stratigraphic profile, where midden material or soil from the top layer is found at a large depth. Three of these might represent features. It concerns the augers 18, 23 and 29. The possible features in augers 18 and 23 are located in the vicinity of the features (F4 and F65) that have been found in Trench 1 possible belong to the same (suggested) house structure at this location. The third possible feature is located next to Trench 2, near a cluster of burials (F7, F8 and F27).
The stratigraphy on the slope on the right can be considered completely disturbed. Here an inverted stratigraphy can be noticed, where older midden material is found on top of the soil layer (dark brown) that has been deposited much later. This is caused by the bulldozer activity in the summer of 2000.
Scraping off the soil from the plateau and pushing it over the edge of the hill causes an inverted stratigraphic order of the original deposited layers. This problem is also caused by the natural process of erosion of midden deposits on slopes but presumably not in such a dramatic manner.

-Row B-B' (fig.36) is located in the east (south of Row A-A') and holds a total number of 51 augertests, starting with AT –5 up to AT 46.
The original stratigraphy at this location is very well intact. The undisturbed soil is topped by a anthrosol layer, which is superimposed by the top layer of post-habitation soil accumulation. Also the midden deposition on the slope at the right can be considered intact. The recent disturbances at augers 22 and 33 are the dirt piles of the trenches.
Only one feature was located in this augertest row. In auger –1 fragments of a human *cranium* were found, which mark the location of a burial (chapter 4).

Chapter 4 Burials

This chapter describes the features of burials, the methods used for determination and some initial conclusions. A comprehensive report interpreting the context of the burial features and the physical anthropological results of the Amerindian skeletal remains at the Manzanilla 1 site will be presented in a master thesis scheduled to appear in the summer of 2003.

Methods

The burials were excavated in horizontal levels. If necessary, for instance in cases when bone material was positioned vertically, a vertical profile was left standing.
During the excavation physical anthropological observations, that hold indications for sex and age determination, possible pathological bone changes and burial processes, were instantly noted on specific forms (Maat, 1995). A description of the colour, structure and contents of the features was made. The position and orientation of almost every single human bone was noted using appropriate terminology (Ubelaker, 1989 and White & Folkens, 1991). Different types of posture of the skeletons are noted described the position of the arms, legs and head (Ubelaker, 1989).
The different levels of the excavated burials are photographed and drawn on a 1 to 5 centimetre scale, connected to the local grid system. When possible and useful the altitudes of the surface and bottom of the features and locations of individual bones were measured. After documentation of a level, the bones were removed, washed, preserved, labelled individually and stored in anatomical categories (Left, right, arm, leg, pelvis, vertebral column, etc).
Morphological sex determination is based on the sex traits of the pelvis and the skull (Acsádi & Nemeskéri, 1970 and Workshop of European Anthropologists, 1980). Metrical sex traits, although population specific, are noted as well. (Steward, 1979 and MacLaughlin & Bruce, 1985). Skeletal age determination for unadults is based on the dental eruption (Workshop of European Anthropologists, 1980 and Ubelaker, 1989), ossification of the axial skeleton (Rauber-Kopsch, 1952 and Wolff-Heidegger, 1954) and epiphyseal fusion of the postcranial skeleton (Workshop of European Anthropologists, 1980 and Brothwell, 1981). The adult skeletal age is based on average attrition of the teeth for prehistoric populations (Brothwell 1981, and White & Folkens, 1991), ectocranial suture obliteration (Rösing 1977), deformation of sternal extremity of the costae (Isçan, Loth & Wright, 1984 and Isçan & Loth, 1986), deformation of the pubic symphysis (Acsádi & Nemeskéri, 1970 and Workshop of European Anthropologists, 1980). The dental status is recorded (Brothwell, 1981, Pot, 1988 and Bouts & Pot, 1989) and pathological bone changes are described (Ortner and Putschar, 1985, Roberts and Manchester, 1995 and Rogers and Waldron, 1995).

Results

During the fieldwork the locations of several features were discovered. A total of 17 could be identified as burial features because human bone fragments were present on the surface. On eight burials excavation activities started, eight burials remained untouched (Features 23, 27, 28, 33, 42, 52, 59 and 66). Fragments of human bones are also identified in auger B -4, indicating another possible burial (burial no.18).
The excavated and partially excavated burials will be described extensively by feature, a summery of the main characteristics can be found in tabel ?.

FEATURE 7

About two centimetres beneath the level surface an ovalshaped 50 x 30 cm dark greyish brown feature appeared. The southern part of the feature is missing due to the excavation of another feature. Beside the human bones the feature is filled with grayish clayish-sand and midden material (shell, stone, pottery sherds and animal bones). No burial gifts were found which could be related to the feature. Upper parts of the skull (os frontale and os parietale) were missing. This is most probably due to erosion and working activities (clearing of the vegetation) on the present surface. The torso of the skeleton laid more or less parallel to the base of the grave and the angle between the axis of the trunk and both femurs approached zero, indicating a tightly flexed position (fig 37).

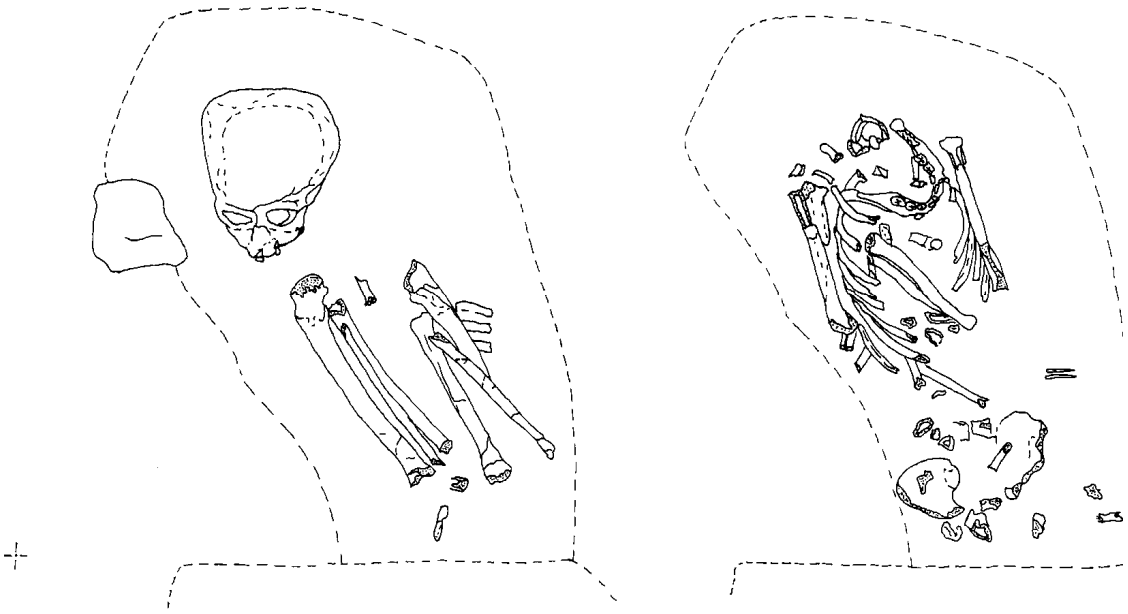

Fig. 37 burial / feature 7, left: level 1, right: level 2
below: photo of burial / feature 7 (scale rod 25cm)

The right arm was positioned with the hand on top of the pelvis, the left arm was folded on the chest. The skull rested on the condyli occipitalis facing southwest. A line between the skull and the centre of the pelvis indicated a north-south orientation of the skeleton. The feature was completely excavated but the vertebrae, costae, humeriï, radiï and ulnae are not removed from the feature. No complete bones were missing. The position of the skeleton indicated a primary burial although several bones were not in their right anatomical position. The distal parts of tibiae and fibula were not articulated on both the right and left side. The proximal part of the right femur was found above the pelvis although the acetabulum was faced down towards the bottom of the burial pit. The upper part of the cranium was rotated, approximately 45 degrees from the first cervical vertebrae and mandibule towards the southwest (fig 37). The right ulna and radius were positioned beneath the sixth costa, but above the seventh, appearing they were pushed or fallen down in between. The disarticulated position of these bones indicated that, at the end of decomposition of the soft tissue, some space was available in the burial pit for the bones to leave their original position. Because most parts of the skeleton laid articulated some support for the bones must have been present. It seems for example that both humeriï were positioned against the wall of the burial pit.
Other possibilities are that the body was wrapped in a hammock or the burial pit contained perishable artefacts, which decomposed before the soft tissue of the body did, given some bones the space to leave their original position.
The small size of the bones suggests the skeleton belong to an unadult. Dental eruption provides data useful for the skeletal age determination for unadults. The first molars of the permanent teeth are completely erupted but show no traces of attrition. The central incisors of the decidious teeth are missing, the distal are still present. This suggests an age of seven years (+/- 24 months). Because the skeleton belongs to an unadult and is not full-grown, a morphological determination of the sex is not reliable. No pathological bone deformations are found.

FEATURE 8
At the level surface an irregular shaped feature was visible. Approximately two centimetres below the surface the contour resembled most a triangle with round edges. It has sides measuring 30, 30 and 35 centimetres. The feature was filled with clayish-sand, dark greyish brown in colour. Almost no midden material was found in the deposit of the feature. In the southwestern area, appearing immediately at the surface, a concentration of pottery sherds was visible. Most of them fit together but seem to be spread out over the surface. Some of them were found inside the feature beneath and between the human bone material. This could suggest that the pottery sherds could be related to the feature. Human bone material was visible immediately at the level surface. Most of them were damaged and in fragile condition. Probably the damaging of the bones and spreading of the pottery sherds was caused, as was the case in feature 7, by erosion processes and working activities (clearing of the vegetation) on the present surface.
The feature was partially excavated until the second level. No complete bones have been recovered so far. The first level of this feature contained fragments of the occipital, right orbita, right pars petrosa, left tibia, left humerus and left and right femur. All were in positions that suggest no articulated parts are present. At the second level it appeared that the left radius and ulna were in upright position in the southwestern area of the feature. They did not support against the wall of the burial pit. Both right and left humeri were positioned beside eachother on the medial side, the distal ends pointed more or less to the south. The proximal ends are missing. Fragments of the right ulna and radius were positioned below fragments of the left femur in the notherneast area of the feature. The central area of the feature contained almost no human bone material, all human bone material appeared to be concentrated near the walls of the burial pit. Between the bone material several sherds were present that belong to the same vessel as the sherds that were found in the first level of the feature. The small size of the feature, the

position of the human bones and the absence of articulated human bones suggest a secundairy burial containing only fragments of the larger bones of the arm, leg and cranium. So far, no double bone parts were found indicating only one individual was placed in this burial pit. No suggestions about the orientation and posture of the body can be made because the bones were not in their original position. The anterior-posterior diameter of the femori (right 27,5 cm., left 27,8 cm.) suggests a fullgrown, adult skeletal age (20 years or older). The small and fragile proportions of humeri and tibiae fragments however suggest the bones could belong to an unadult. Fusion of the distal epiphysis of the humerus indicates the skeleton belongs to an individual at least older than 14 years. There are no characteristics present among the bone material to determine sexe and no pathological bone changes are noticed.

In the close surrounding of this burial a rectangular shell plaque was found, presumable made from *Strombus gigas* (fig.38). It measured 3.8 x 3.5 x 1.3 cm. It is possible that it belonged to the burial pit of feature 18. Identical artefacts have been reported (some also in a mortuary gift context) from the Golden Rock site (burial 11) (Versteeg & Schinklel, 1991:108), Vieques (Chanlatte-Baik, 1980) and Guadeloupe (Clerc, 1974). In the case of the Golden Rock plaque it was dated between AD 625 and AD 775.

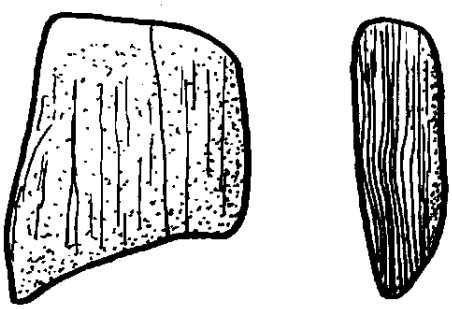

Fig.38 shell plaque, possible from the burial pit of feature 8 (scale 1:1)

FEATURE 10

The contour of this feature was difficult to distinguish from the surrounding area at the surface of the unit level. A concentration of recent plant roots more or less distinguished the feature from the surrounding soil. At the second and third level, about 5-10 centimetres below the surface a more obvious difference could be made. An oval shaped, dark greyish-brown clayish-sand deposit was distinguished from the yellow-brown sandish-clay surrounding. The maximum diameter east-west was 45 centimetres and north-south 35 centimetres. Shell material and some pottery sherds from the midden were present in the fill. About 15 centimetres below the surface raw, natural stones appeared. They were positioned following the contours of feature in such a manner a circular shape was created. The stones are between five to ten centimetres in diameter and placed on top of the yellow-brown sandish-clay deposit. The circular-shaped feature now had a diameter of 25 centimetres.

From the surface on human bone material could be distinguished. The proximal endings of two right femori and the distal ending of a left femur were visible (fig.39).

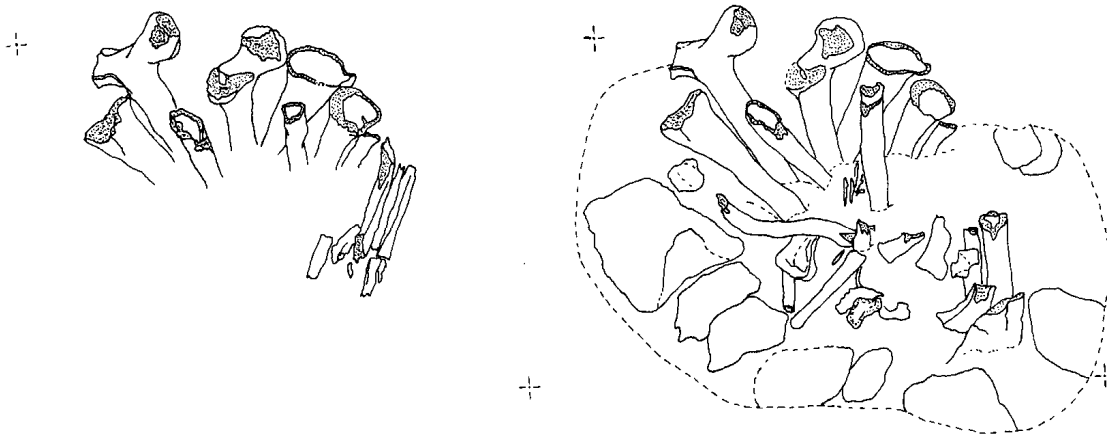

Fig.39 burial / feature 10 left: level 1, right: level2

They were positioned in upright positions and supporting to the northern wall of the feature. About five centimetres below the surface, west of the first femur and supporting against the northwestern wall of the feature a left tibia was positioned, standing upright with the proximal end pointing upwards. To the east of the central femur another left femur was found standing upright with the distal end placed upward. Next to it, supporting on the east side, a left tibia was standing upright with the distal end upright. A right tibia in the same position was positioned to the east side next to it. Central to the south of this group a right humerus was found standing upright with the proximal end upwards. Still in the first level, about 15 centimetre below surface, horizontally positioned human bones were visible in the southern area of the feature. Fragments of a right ulna, left radius and left humerus were distinguished. The second level showed a diversity in fragments. Parts of claviculae, fibulae, costae, pelvis, maxilla, sacrum, vertebrae, radiï and ulnae were present.
Underneath, in the third level, 25 centimetres below surface, cranial and pelvic fragments appeared. The fourth level contained large parts of a left scapula, occipital bone and the complete right half of a mandibula. In the fifth and final level containing human bone material the femori, who already were visible on the surface, end. A second premolar, fitting to the mandibula which was found in the level above, is found among these bones.
After the removal of the femori a cluster consisting of a left ulna, left radius and right and left fibula appeared in upright position and supported on the north wall of the feature. The feature was completely excavated and measured about 75 centimetres from the bottom to the surface and resembled the shape of a posthole (fig.39). Beneath the human bones the feature extended another 29 centimetres with a decreasing diameter. A light grey deposit, containing almost no midden material, appeared between the last bone fragments and the bottom of the feature. This suggests that the human bones were placed after the former posthole was partially filled up with midden material.
The disarticulated and unnatural position of the human bone material indicates a secondary burial. The right clavicula, right radius, left radius, left femur, right femur, right tibia and right fibula are present twice. The double presence of certain human bone material indicates that the remains of at least two individuals were placed in this posthole.

Morphological sex determination of the pelvis is only possible on two traits. The sulcus pre-auricularis and greater sciatic notch show clear female characteristics. The morphological sex determination of the mandible and occipital bone show male characteristics.
It is not unlikely that both belong to the same individual. Determinations of mandibulas in general tend to give more male results.
For the skeletal age determination three indicators ate noticed. Dental wear of the molars in the mandible resembling an skeletal age over 45 years, exocranial closure of the lamboid suture indicate an skeletal age younger than 69 years and the symphyseal face of the pubis suggest a skeletal age between 50 and 70. It is not certain the three indicators originate from the same individual, although they agree more or less in the results. Both individuals however are of adult skeletal age. The fusing of the medial end of the claviculae indicates this.
None of the long bones are complete in such a way that measurements can be taken to calculate stature.
Pathological bone changes are noticed on the four present tibiae. All show periostial bone reaction. In one case the bone marrow is involved as well. This could indicate an osteomyelitis although no cloaca is present. On a left patella strong formation of enthesopaties are found.

FEATURE 16

On the surface of the trenches first level the contours of feature 16 were irregular in shape and seemed to intersect feature 24. The dark grey sandish clay of feature 16 distinguished from the dark greyish brown clayish sand from feature 24. Five centimetres below surface it appeared that both features belonged to the same feature resulting in an oval shaped contour measuring 95 centimetres from north to south and 45 centimetres from west to east. At this level the colour and texture of the deposits of both features were the same consisting of dark greyish brown clayish sand. In discussing the contents the feature will be referred to as feature 16. Some midden material, shell, pottery sherds and stones are present in the fill of this completely excavated feature.
Immediately at the level surface parts of the parietal and frontal bone of the cranium were visible. The cranium was resting on the condyli occipitalis facing slightly downwards in northeastern direction (fig.40). On the bottom of the feature the individual was positioned in a semi-flexed posture, orientated south to north. The right arm was raised toward the head and the left arm was folded over the chest resting on the right elbow. A part of the occipital bone, the left scapula, costae of the left side, the left pevis and left foot supported on the wall of the burial pit in the south and west area.
In the northeastern part the wall of the burial pit gave support to the right knee joint so that the femur, tibia and fibula were still in a semi-upright position. The left knee joint seems to have collapsed eastwards to the bottom of the pit. The distal end of the left femur was found beneath the midshaft of the right femur. Both proximal and distal ends of the left tibia and fibula were not articulated.

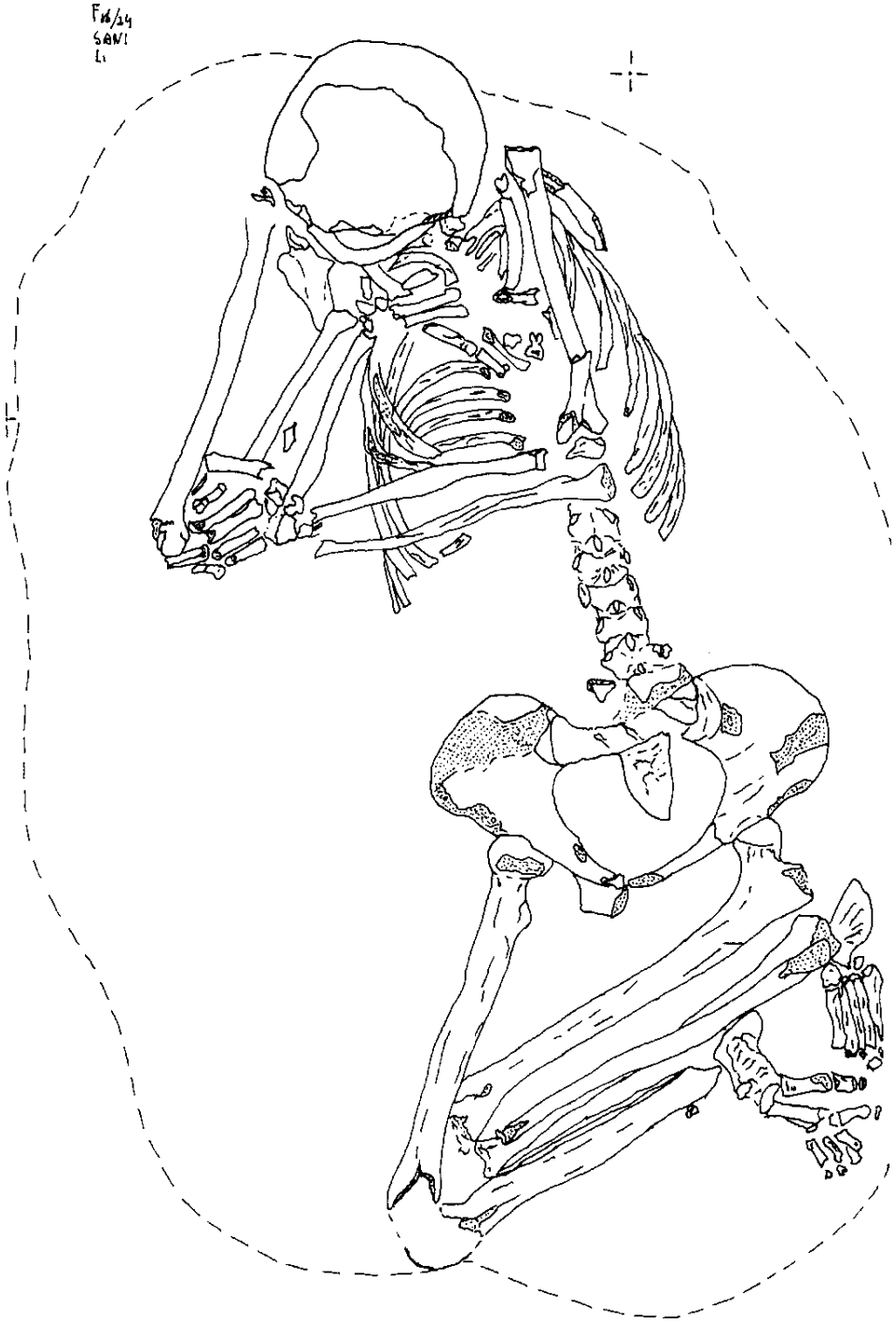

Fig.40 burial / feature 16

Fig.40 burial / feature 16 (scale rod 25cm)

Disarticulated bone parts were also found in the left and right elbow joints and the right wrist. The complete torso seems to have slipped slightly more to the south, leaving the right scapula positioned next to the first costae instead of beneath them. The disarticulation of these joints indicate that, after decomposition of the soft tissue that hold them articulated, some space was available in the burial pit for the bones to leave their original position. This does not necessarily mean the burial pit was left open until decomposition of the soft tissue. For instance, it can not be excluded that the volume of the body created the space for the elbow and wrist joints to disarticulate. Because the right knee joint supported against the wall of the pit, possibly slowing down the process of sedimentation directly underneath and so creating a space for the left knee joint to fall into it and disarticulate. Furthermore most of the smaller bones of the feet and the hand were found articulated, indicating that there was no space to move from their original position. No proof was found that individual bones were taken out of the burial pit in Amerindian times. The position of the human bones and completeness of the skeleton indicate a primary burial.

Both the pelvis and the cranium show distinct female characteristics. For the pelvis four traits could be determined, on the skull eight, giving an indication for the reliability of the morphological sexe determination.

All the epiphysis of the postcranial skeleton are fused, suggesting an adult age. The wear of the teeth and molars can not be determined because all elements are lost antemortem. This can be an indication the skeletal age is older than 45 years, although it can not be excluded the individual suffered from a (dental) disease in which it lost all dental elements at an earlier age. However ectocranial obliteration of the coronal and sagittal sutures suggest a skeletal age over 70 years. No long bones are complete, excluding the possibility to take measurements that can be used to calculate stature.
Pathological bone deformations are found on the vertebrae of the thoracal and lumbal region. A porotic bone structure appears in the vertebral bodies, indicating osteoporosis, a common pathological condition found for female individuals of mature age. Formation of osteophytes is found around the rim of the vertebral body. This indicates a reaction to the degeneration of the cartilage of the intervertebral disc. Also a common pathological condition found among mature individuals of both sexes.

FEATURE 17

The presence of this feature was noticed during the construction of a hole to be used as water reservoir. About 25 centimetres below surface the frontal and parietal area of a human cranium were found. An excavation pit called Small Unit 4 (SU4) measuring one by two meters, running from the back of the cranium towards the west, was created in such a manner the whole skeleton could be excavated. No contours could be distinguished that outlined the feature at this level. The northwestern area however contained a remarkably high density of shell material from a midden. The soil surrounding the cranium consists of very dark grey, clayish sand (anthrosol), including midden material like shell, pottery sherds, animal bones and stones. At the same level as the frontal and parietal parts of the cranium, approximately 50 centimetres to the west, a loose proximal tibia epiphysis appeared. If the epiphysis originates from the same individual as the cranium, the skeletal age would be less than 20 years. It is therefor possible the cranium belongs to an unadult. Because the feature is situated in the less threatened area of the site, it was decided not to excavate the feature any further yet.
Emphasis was given to the features threatened by erosion processes on top of the hill, which were examined in Trench 2 and Large Unit 1.

FEATURE 18

The feature (feature 18) that contained the human bone material is intersected by another feature (feature 20) in the southeastern area. The intersecting feature has a circular outline, with a diameter of 30 centimetres, contained dark brownish grey, clayish sand including some midden material with a low density of shell material. This feature (feature 20) was interpreted as a tree root disturbance. Feature 18 contained yellowish-grey to brown clayish sand also including midden material but with a higher density of shell fragments. It had an oval shape and measured 130 centimetres from northeast to southwest and 85 centimetres from nortwest to southeast.
The first level containing human bone material starts immediately at the first level surface of Trench 2. Several disarticulated fragments appeared (fig.41). In the northwest area, 20 centimetres east of the west wall of the burial pit, the second cervical vertebra and right clavicula were visible in a disarticulated position. The clavicula was positioned with the inferior side upwards. About ten centimetres to the east fragments of at least three costae appeared disarticulted. Positioned to the south of these are the third and fourth cervical vertebrae, still articulated with eachother but not in reference to the other parts of the spinal column. In the central area of the feature a left patella, resting on the anterior side, was present. To the south a fragment of a mandibula was found, showing post mortem loss of the first molar. The southwest area showed a randomly positioned concentration of disarticulated human bone fragments.

Fig. 41 burial / feature 18, level 2 (scale rod 25cm)

Present are fragments of right and left metacarpalia, metatarsalia, cuneiformia, phalangen and a left calcaneus. The concentration is abruptly bordered by the profile of the section of feature 20. Originally the concentration would have expanded more to the southeast. Loose phalangen, metatarslia and a left talus were present in the feature fill of feature 20.The second level of the feature showed more articulated skeletal parts. On the bottom of the feature the spinal column was, resting on the posterior side, in articulated position from the fifth cervical vertebra until the fourth lumbal vertebra. The fifth lumbal vertebrae was positioned only two centimetres southwest of the fourth, also resting on the posterior side. The orientation of the body can be deduced from this position running northeast to southwest. Both scapulae were resting on the posterior side to the east and west of the thoracal vertebrae. The left arm was raised towards the head. Although the shoulder, elbow and wrist joints are more or less articulated. Some space was present between the particular joint surfaces. The right humerus was positioned in a 90° degree angle with the spinal column. The proximal end articulated with the scapula, the distal end was positioned slightly upwards, supporting against the northwest wall of the burial pit, as was the proximal end of the right ulna. The distal end of the ulna was positioned in a northeastern direction towards the head. On the bottom, beneath the right humerus in a 90° degree angle, perpendicular to the spinal column the right radius was positioned. To the northeast of the right scapula and proximal humerus three metacarpalia, two phalangen and six dental elements were found, spread out over the bottom of the burial pit. The cranium, sternum, left clavicula and some costae were missing. In the southwestern location of the feature the right calcaneus, talus and cuboideum were visible and found articulated. The naviculare was present but in disarticulated position. About ten centimetres to the west the right patella was resting on the anterior side on the bottom of the pit.

No sacrum, pelvis, femori, tibae and fibula were present. The maximum distance between the fifth lumabal vertebra and the southwest wall of the feature measured 55 centimetres. Not enough space was available in order to position the individual in an extended posture, suggesting a flexed or semiflexed posture. The feature was completely excavated and all human bone material was removed.
The articulated position of spinal column, left arm and some bones from the right foot indicate a primary burial. The presence of dental elements on the bottom of the pit and the position of the right radius, suggests that some space was present at the time of decomposition of the soft tissue. The spinal column however was in articulated position, suggesting that enough support was present to prevent the bone material from changing from their original position. It is presumable that some time after deposition of the individual the cranium was taken out of the burial pit. During the activity of removing the cranium, a fragment of the mandibula, the right clavicula, a metacarpal and the second, third an fourth cervical vertebrea were displaced and ended up in the first level of the burial fill. This indicates that at the time of removal of the cranium the burial pit was filled with a five centimetre thick deposits in the southwest area. The intruding of the root, represented by feature 20 caused some disturbance of this burial. Another suggestion is that this feature (feature 20) represents a hole that was dug in orther to remove bone material from the pit. During this occasion the sacrum, pelvis, femori, tibiae and fibula could have been removed from the grave. Both patella were present, however suggesting that only the larger bones were removed from this burial. Because fragments of the mandibula and a metacarpale were found positioned among the left patella and metatarsalia, it is possible that the removal of the cranium and the construction of feature 20 occurred simultaneously.
Because the pelvis and skull were lacking, no morphological sex determination is possible. The vertical epiphyseal diameter of the right humerus measures 4,29 centimetres, indicating a possible female sex.
The human bone material provide some indications to determine the skeletal age. Fusion of the medial end of the right clavicula suggest an adult age, at least older than 20 years. The attrition of the incisors of the mandibula indicate an age, roughly estimated, between 20 and 30 years. However, the teeth were probably not heavily used because the calculus formation found on them is considerable. This could result in an underestimation of the skeletal age based on attrition of the incisors. The sternal ends of some costae show considerable progressive changes, suggesting a skeletal age at least over 50 years.
Calculation of the standard living height is not possible because the femori and tibiae are absent. The lengths of the humerus and radius show no reliable correlation with the standing living height.
Pathological bone changes are found on the thoracal and lumbal vertebral. The formation of osteophytes around the margins of the vertebral bodies indicates a reaction to degeneration of the intervertebral disc. Entesopaties, indicating ossification of tendon and ligament insertions, are visible on the anterior side of the left and right patella and the posterior side of the left and right calcaneus. Both bone deformations are commonly found in human skeletal remains of individuals who are aged over 50 years. A Palo Seco style flanged lip was found under the right shoulderbone (fig.42).

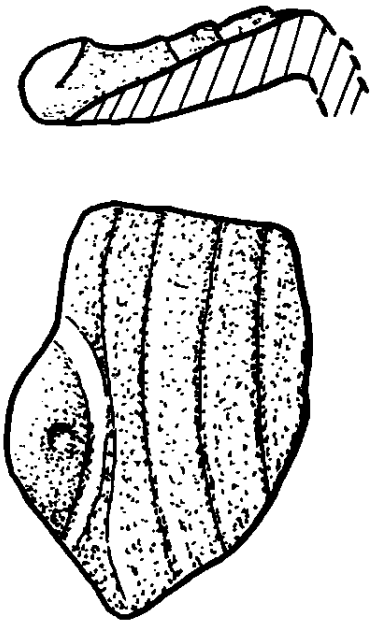

Fig.42 Palo Seco sherd from the burial pit of feature 18 (scale 1:1)

FEATURE 32

A distinct contour of the feature was not visible at level 1 of the unit. The bottom part of a midden area is present at this location, resulting in a large irregular shaped deposition, containing pottery sherds, animal bones, charcoal, stones and an abundance of shell material. Erosion of the surface and recent working activity (clearing of the vegetation) could have been responsible for the disturbance of the topsoil. This causes a poor visibility of the features. Approximately five centimetres below the surface, in the first level, a distinction between the feature and the surrounding could be made. The feature is oval shaped with a maximal length of 90 centimes and a maximum with of 55 centimetres. It is filled with material from the midden and consists of dark, brown-grey clayish sand. The feature is orientated southwest to northeast. A description of the posture of the skeleton was not completely possible. The feature appeared to be disturbed and many human bones are missing.

The bones, which were present, seem to be in disarticulated position. Only parts of the left arm articulate and appeared to be raised up towards the head. The joints between the humerus, scapula and clavicula articulate, the ulna and radius disarticulate slightly on the distal end, both proximal ends were disturbed. The carpalia and metacarpalia were visible next to and beneath the ulna and radius in disarticulated position. A fragment of the midshaft of the right humerus was visible in the southeast area, possibly in original position. Positioned parallel, about 15 centimetres to the northwest was the right ulna. The proximal end of the right radius was positioned on top of the ulna, the distal end orientated towards the south, creating an 45° degree angle between eachother. In between, and perpendicular to the humerus and ulna, the right clavicula was found resting on the anterior side. Fragments of a damaged mandibula appeared in the central part of the southwest area of the burial pit. The right angulus mandibula rested on the shaft of the right ulna. In the central area of the pit, the right half of the pelvis was present. The posterior side of the fossa iliaca was resting against a stone, the acetabulum faced the east wall of the pit. In the northeast area, about 15 centimetres south of the north wall of the pit the right

patella appeared resting on the anterior side. The second level showed the articulated fragments of four costae of the right side. The complete scapula and some carpalia and metacarpalia of the left side were visible, positioned on two stones. The central area of the pit, beneath the right half of the pelvis, also contained some larger stones.
No indications were found that the femori, tibiae and fibula were present, although the feature was not completely excavated. The total length of the feature and the position of the right half of the pelvis and right patella suggest no extended posture is possible. An original flexed or semi-flexed posture is the most probable. Considering the shape and orientation of the feature the skeleton is most likely orientated southwest to northeast. The absence of some of the larger bones and the articulated and disarticulated position of the human bones indicate a primary burial, disturbed after decomposition of the soft tissue. Space in the burial pit was available for the carpalia and metacarpalia to disarticulate after the decomposition of the soft tissue.
Although fragments of the pelvis were present, no distinct morphological sex characteristics could be discovered. A fragment of the manibula provided two traits to be determined, which suggest a male sex. Morphological sex traits of the mandibula however often tend to be more male, giving the result a less reliable status.
Fusion of the medial ends of the claviculae suggests an adult skeletal age over 20 years. Considerable ante mortem tooth loss of dental elements in the mandibular supports this suggestion. Other skeletal age characteristics, that would specify this result, were not found.
The human bone remains are incomplete and in a fragile condition. No bone could be measured to calculate stature. Beside an abces in the right half of the mandibula, no pathological bone changes are found.

FEATURE 67

At the surface no obvious feature contour could be distinguished. This feature is situated in the same dark, brown-grey (anthrosol) midden area as feature 32. The top level was disturbed by erosion processes and recent clearing of the vegetation. In the second level, about six centimetres below the surface of level 1, a feature contour was visible. The feature contained midden material, including a high density of shell fragments, and grey-brown, clayish sand. The surrounding soil consists of yellow-brown clayish sand and contained lesser to no midden material. The feature is oval shaped, measuring a maximum length of 85 centimetres and a maximum width of 55 centimetres.
Immediately at the level human bone appeared. The mandible was present, including some of the dental elements, in the eastern area of the pit. It was not in original anatomical position. Next to the mandibula, on the southeast, both patella were visible. The right one resting on the posterior side, the left one on the anterior side. Both were in disarticulated position.
In the west area of the feature the right half of the pelvis was present, resting flat on the posterior side of the fossa iliaca, and does not articulate. Next to the pelvic half, to the south, a left calcaneus appeared, while on the northeast a left talus and the fifth lumbal vertebra, resting on the superior side, is visible. All are not in their original anatomical position. In the central area a fragment of the sacrum was present. Articulated fragments of carpalia and phalangen, possibly from the right hand, are resting against the sacrum fragment.
In the second level more human bones were found in their original anatomical position. The northwest area showed the articulating phalangen, metatarsalia and tarsalia of the right foot, of the left foot only the metatasalia and some phalangen were still present. The central area of burial pit contained, like in the first level, the metacarpalia and phalangen of both the right and left hands. Only few of them articulated with eachother. The distal end of the left humerus and proximal ends of the left ulna and radius articulated and appeared close to the south wall of the pit. The distal ends of the ulna and radius were disarticulated and orientated towards the north, the humerus was resting on the medial side. In the southeast only fragments of the left scapula and clavicula were visible. The proximal half of the humerus was absent but two stones

appeared at the location were it should have rested. About 15 centimetres more to the north the right shoulder was present in articulated position, the distal end of the right humerus orientated more or less to the north. Next to it, on the north side, the proximal end of the right fibula appeared, resting on lateral side. The distal end orientated towards the northwest. In the southeast area of the pit dental elements, from both the mandibula and maxilla were present, randomly spread over the bottom of the pit next to the cervical part of the spinal column. The costae, thoracal and fragments of the lumbal vertebrae seemed to be in their original anatomical position.
Although the feature is not completely excavated it appeared the cranium, right and left femori and tibiae, the left fibula and pelvic half and the right ulna and radius are absent. The position of the mandibula on top the right proximal fibula and distal humerus, and the presence of dental elements on the bottom of the feature, suggest space was present during and after decomposition of the soft tissue. The presence of the articulated bones of the feet, hands and spinal column indicate a primary burial. Disturbance of the feature occurred during the removal of the cranium and most of the larger bones from the legs. The remarkable disarticulated position of the fifth lumbal vertebra, eight centimeters north of the sacrum and the right pelvis half, above the left metatarsalia and phalangen, is probably due to this occasion. Some disturbance of the top level of the feature is caused by surface erosion and recent clearing of the vegetation.
The direction of the spinal column suggest the orientation of the skeleton is southeast to northwest. Position of both of the humeriï, left ulna and radius, the carpalia and metacarpalia indicate that the arms are crossed on the pelvis. The presence and position of the right fibula indicate an original flexed position of the legs when reconstructed.
Morphological sex determination is possible on six traits of the pelvis. The result indicates a male sex.
A total of three indicators of the skeletal age could be determined. The dental eruption suggests a average skeletal age between 12 and 18 years, based upon the retained position of the left and right third molars in the mandibula. Eruption of the third molar has a great variability among individuals and is therefor less reliable in determining the individuals age. Dental attrition on the molars shows slight traces of wear, suggesting a average skeletal age of approximately 18 year. All the four erupted molars however contain carious lesions on the occlusal surface. The irritation and pain resulting from this state can influence the wear pattern. A more reliable result is given by the fusing state of the tuber ischiadicum and the fused status of the crista iliaca. They indicate an average skeletal age between 21 and 24 years.
Not one of the present bones of the arms and legs are complete. Measurements to calculate stature are not possible.
Beside the carious lesions in the molars of the mandibula, no pathological bone changes are found.

4.1 Discussion on burials

All together three of the burials were completely excavated (features 10, 16 and 18) and five features are partially excavated (features 7, 8, 17, 32 and 67). An oval burial pit shape dominated in variable size.

Position and orientation
The position of the arm differs. Mainly they are placed over the chest, on the pelvis or towards the head. Position of the legs for the adults were flexed or semi flexed. One unadult has a tightly flexed position of the legs. No significant differences were found in the orientation of the skeletons.

Age and gender

The human remains from the features belong to at least six adults (features 10, 16, 18, 32 and 67), one possible adult (feature 8), one unadult (feature 7) and one possible unadult. Morphological sex determination was possible for six individuals. One of the individuals in feature 10 and the individual in feature 16 show female characteristics. The individual in feature 67 has male traits. The other individual in feature 10 and the one in feature 32 are possible males. Finally the individual in feature 18 is possibly a female.

Pathology

Pathological bone changes are noticed in six individuals. The spine of the individual buried in feature 18 show bone reactions in the facetjoints and around the margins of the vertebral bodies indicating osteoarthritis an osteophytosis. Entesopaties are found on the calcaneus and patella. This could suggest an early stage in development of DISH. The, for this diagnosis, required ankylosing vertebral bodies however are missing. Bone reactions found on the surface and marrow of a right tibia suggest an osteomyelitis of one individual buried in feature 10. Remarkably all (four) tibiae of both individuals in this feature show periostitis on the surface of the bone. The individual in feature 16 shows the development of osteophyts and osteoporotic bone changes. An abces is present in the mandibula of the individual in feature 32 and multiple carious lesions are appearing in the molars of the individual in feature 67.

Burial treatment

The presence or absence, and the (dis) articulated position of human bones suggest that five features (features 7, 16, 18, 32 and 67) contain primary burials and two (features 8 and 10) contain secondary burials. The untouched features and one of the partially excavated features (feature 17), show no indications so far to discuss this subject. One of the features (also a posthole) containing the remains of a secondary burial (feature 10) indicates that at least two individuals were placed here. In this former posthole several disarticulated large bones of the arms and legs were positioned vertically, in an almost upright direction.
In the features (features 18, 32 and 67) that show obvious removal of bones there appears to be a preference for the larger bones. In all three features the cranium, femori and tibiae are missing.

Conclusion

The results show diversity in the ways that an individual can be buried. Both primary and secondary burials occur. The use of a posthole for a secondary burial is indicated by the presence of disarticulated human bone remains representing, at least, two individuals in feature 10. Several features intersect with the burials, giving them no unique status but indicating they are part of a dynamic environment. Also bone material has been taken out of the sometimes still open burial pits.
Often the larger bones such as the cranium, femur and tibia are involved. However it can not be excluded if recent cleaning of the vegetation from the surface damaged the features considerable.
The burials contain the remains of adult men, women and an unadult. This suggests no specific burial location (in the examined area) for any of these groups. The demographic data derived from these individuals is too little in order to extrapolate for the purpose of population comparisons.
However, in general, the results so far seem not to differ from other burials found in the Caribbean.

Chapter 5 Interpretations and Conclusions

The fieldwork program of 2001 revealed that at the selected location at the plateau a habitation location is present. It consisted of a central *plaza* area surrounded by small houses. This *plaza* measured some 20 meters in width and was at least 22 meters in length (fig.30). The end of the length side of the *plaza* was not found. An anthrosol layer of some 20-30 cm in thickness characterized the habitation floor.
In this *plaza* area five stone axes where found of which four are made from a metamorphic stone material, which is exotic to the Manzanilla 1 region.
All ceramic material that was found in the layers, corresponding with the habitation of the plateau, indicate that this settlement was inhabited at least during the Late Palo Seco period and the beginning of the Arauquinoid ceramic style period. Hence, a date between AD 350 and 750 for the habitation period of this residential location can be contributed. The midden deposit and livingfloor that were excavated in SU1 (figure 30) during the fieldwork of 1997 presented radiocarbon dates between AD 406 – 892 (Dorst, 2000:66). This livingfloor and burial in Small Unit 1 most likely belonged to the same village configuration that is now recovered during the fieldwork of 2001. The upper levels (livingfloor and burial) in this unit revealed a more specific date between AD 688 and 892 (Dorst, 2000:66).
One possible house structure was found on the northern edge of this habitation spot on the plateau. It was oval-shaped and measured 9 x 6 meters. A cluster of (at least) 14 burials surrounds this structure. The hole of the centre post of this structure was used as a secondary burial pit for two individuals after abandonment of the house. This structure can be dated in the final phase of the Late Palo Seco and beginning of the Arauquinoid ceramic style, between AD 600 and 700. One burial was found inside the house. This burial is supposable of an older date than the house structure because large Late Palo Seco (AD 350-650) style flanged lips were found in this burial pit. Furthermore, this burial had been partly cleared, the *cranium, pelvis* and long bones of the legs where removed. Among many Amerindian groups the belief exist that human remains and the spirit can be harmful for the living for some period. In order to stop a spirit to do harm to the living sometimes measurements are taken to prevent this. At the Saladoid and Post-Saladoid site of Anse ⟨ l◊ Gourde (Guadeloupe) this can be observed in the form of covering the whole body of the deceased with a large ceramic bowl or just the face (Delpuech, Hofman, Hoogland)[8]. However, this was only done in some cases, possibly these where persons who suffered from some kind of decease. By treating these remains this way, the spirit is ritually “killed”.
In the case of the burial that was found in this house the same explanation can be suggested. By removing leg bones and *cranium* the spirit that belonged to these remains can be regarded as harmless.

At least three more house areas can be expected within this habitation location. One is marked by a cluster of burials opposite the recovered house. These are the burials in SU1 (found in 1997), the burial in SU4 and a burial that was detected during the augertesting. The radiocarbon date, which was obtained in 1997, suggest a date for this cluster between AD 600 and 700.

[8] Rapport de Fouille programmee 1996, 1997. Direction r⌠gionale des Affaires culturelles de Guadeloupe, Service r⌠gional de l’ Arch⌠ologie & Leiden University, the Netherlands.

The other supposed house areas are represented by the posthole in SU5 (possible date AD 600-700) and the features in Trench 1, which mark the end of the *plaza*. The later (possible) structure can be dated in the Late Palo Seco period (AD350-650).

Concluding can be stated that at the researched location a habitation location is present. It consists of a central *plaza* area, which is surrounded by small houses. Whether these structures are contemporary is not certain at this stage. Midden depositions were most likely situated behind and between the houses. Burials (both primary and secondary) are located in very close distance of the houses. They appear to have been buried mainly outside the houses, but closely encircling it. The presence of stone axes of foreign material at the *plaza* area can be regarded as prestige objects and could indicate some form of social stratigraphy within this community. Also the secondary burial of two individuals in the hole of the centre post of the reconstructed house structure could demonstrate this.

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