

THE EVOLUTION OF SETTLEMENT SYSTEMS IN THE EFAHO RIVER VALLEY,
ANOSY: A PRELIMINARY REPORT ON THE ARCHAEOLOGICAL
RECONNAISSANCES OF 1983-1986

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Survey and excavation in the Efaho river valley of southeastern Madagascar have produced a sequence of four cultural phases dating from the tenth to the nineteenth centuries AD. Early coastal settlements indicate a reliance on fishing and cattle herding, while later ones, concentrated more on river valley terraces, indicate a growing reliance on wet rice cultivation. Settlement patterns also indicate the appearance of a pattern of larger centres and smaller satellite villages during the third of the four phases; the first two phases show no signs of a settlement hierarchy. The report also describes local pottery in detail and refers to the use of imported ceramics for dating purposes.

INTRODUCTION

The southeastern extremity of Madagascar, the region called the Anosy, home of the Tanosy people, is of great importance in the history of Madagascar. It was here during the 17th century AD that Malagasy peoples had their first sustained confrontation with Europeans. As a result, it is from this region that we have our earliest detailed description of a Malagasy society, that richly provided by Etienne de Flacourt in his *Histoire de la grande île de Madagascar* (Flacourt 1661 [1913]). Neither Flacourt nor later chroniclers nor the traditional historians of the Tanosy themselves, however, tell us all we wish to know about the Tanosy of the 17th century and later. Furthermore, none of these sources present more than a scattering of information about the earlier periods, during which time the stratified societies described in the sources must have developed. Only archaeological research can provide a framework for understanding the early history of southeastern Madagascar. This article is a preliminary report on the results of research carried out by the staff of the Musée d'Art et d'Archéologie on the history of human occupation in the valley of the Efaho River. While this study is actually part of a larger ongoing project of research concerning the historical geography of the Anosy, the archaeological work has already produced such a wealth of information that a preliminary statement is warranted.

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THE VALLEY OF THE EFAHO IN GEOGRAPHICAL PERSPECTIVE

The Efafo is a relatively short stream, only 45 kilometres in length, which draws its waters from the southernmost of the mountains forming the high eastern edge of the central plateau of Madagascar (Fig. 1). This range traps rain clouds coming from the east and creates a humid tropical environment. With the mountains so close to the sea, it is not surprising that the Efafo Valley has strongly differentiated micro-environments within its relatively small area.

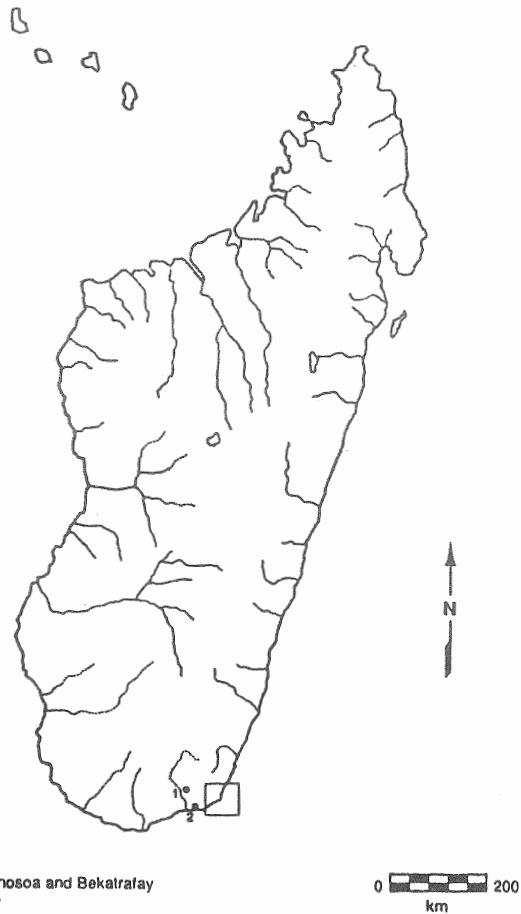


FIGURE 1: MADAGASCAR, SHOWING REGIONS DISCUSSED IN TEXT

The square outlines the area shown in the following maps.

The basin of the Efafo, to the west of Fort Dauphin, is limited on the south by the sea and on the three other sides by mountain ridges which form part of the Anosyan Ranges. The lower valley is eroded into Recent formations of much lower altitude. The Anosyan Ranges, whose summits rise to between 1000 and 2000 meters in elevation, are a part of the most ancient basement of Madagascar, the Androyan System. The dominant

configuration of the relief, oriented NNE-SSW, is created by stratified granites which result from a period of granitization dating between 450 and 500 million years ago. Towards the south, two subsidiary ranges reach almost to the sea near Fort Dauphin and near Lake Ranofotsy. Between these two ranges extends a zone of small laterized hills in which the Efaho has established its course.

The nature and the chronology of the recent formations has been studied by René Battistini (1964). Between Fort Dauphin and Lake Ranofotsy there are about 30 kilometres of dunal ridges of the Flandrian (Late Quaternary) transgression forming long arcs, broken in several places by granitic outliers. These dunal elements (Fort Dauphin, Ehoala, and the area east of Mokala) overlie thick calcareous sandstone formations of the Karimbolian (Middle Quaternary according to Battistini). Behind these dunes are lagoons and, up to five kilometres from the sea, zones of sand resulting from a lagoonal overlay of the Karimbolian (towards the interior) and Flandrian (closer to the dunes) transgressions. Finally, in particular in the lower valley of the Efaho, deeply cut during periods of lower sea level, there are vast marshes, which even now have not been transformed into rice fields.

Annual rainfall at Fort Dauphin averages 1650 mm, concentrated from December to June, but it can vary from 950 to 2900 mm. The mean of maxima for the warmest month, February, is 26.4°C. The mean of minima for the coldest month, July, is 15.9°C (Ratsivalaka-Randriamanga 1989:43-49, 64-65).

At the present time, the humid primary forest still covers the higher slopes and summits of the granitic ridges. In the past, such forest must have reached lower elevations, but the vegetation found on the valley floors by the first human inhabitants is not yet known. The occurrence of woody plants around tombs suggests, however, that these areas were also forested. The dunes, both ancient and modern, sustain a brushy xerophytic vegetation. The shallow waters of the estuary and the inter-dunal basins were probably covered by reeds and sedges, as are those areas not yet converted into irrigated plots for rice production.

The traditional economy of the Efaho Valley is essentially agricultural, though since the beginning of this century the secondary and tertiary sectors related to the growth of the town of Fort Dauphin have furnished new employment for a part of the Tanosy population. The type of cultivation varies according to the availability of water. Riziculture predominates along valleys of the principal streams, especially the Efaho, in marshy depressions fed by springs and on the recent alluvium around the larger estuaries. Though the Tanosy are masters of irrigated rice cultivation, they continue to burn forested areas in order to cultivate and to create pasturage. In spite of the abundance of the numerous perennial streams, agricultural production can diminish by as much as 50% on the average during drought years. The sandy southern part of the Efaho Valley is relatively dry and rice cultivation is only practical in a few areas; elsewhere, manioc, sweet potatoes, maize and ground nuts are grown.

The herding of cattle constitutes another major activity, but the herds are not necessarily exploited to their full economic potential. While cattle herding is found almost

everywhere in the Anosy, the husbanding of goats and pigs is rare. In fact, all Tanosy consider the goat to be taboo and the southern Tanosy also consider the pig to be forbidden. The keeping of such animals serves to identify non-Tanosy immigrants.

There are fishing villages at several localities along the coast. However, the exploitation of marine resources is not intensively pursued because of dangerous currents and sudden storms. Furthermore, Tanosy fisherman use simple dug-out canoes, rather than those with outriggers which would be safer. It is not surprising that fish are more often taken in the bays and estuaries, usually with nets or traps.

PREVIOUS ARCHAEOLOGICAL RESEARCH IN THE REGION

Archaeological reconnaissance in the complete absence of other knowledge is likely to produce meaningless sacks of potsherds. Fortunately, previous small excavations in the southern Anosy area and work in the arid Androy region to the west provide us with some "fixed points" for the archaeological chronology of the region, so that most of our pottery samples can be ascribed to chronological periods and we can construct maps of the settlement distribution during each period.

The first of these small excavations was that of Talaky (Fig. 1), a site on the beaches near the mouth of the Manambovo River, a location over the border in the Androy (Battistini, Vérin, and Rason 1963). Talaky produced a sample of sherds of open basins with lugs, bowls, and a spherical neckless jar with incised decoration, along with iron tools including fishhooks and evidence of fishing and mollusc collecting. A radiocarbon age determination of 840 ± 80 BP (Gak 276) indicates a date of AD 1210 with a 95% probability that the true date was between AD 1020 and 1280 (Stuiver and Becker 1986). The basins are similar to those found at Andranosoa (Fig. 1) and related sites in the northern Androy (Heurtebize and Vérin 1974; Radimilahy 1983; Rasamuel 1984), also dated to the 11th-13th centuries AD. Comparison with these materials allows us to date some of the Efaho ceramics to these centuries.

The second of these excavations was that of Tranovato, a site on an island in the estuary of the Efaho (Fig. 10) (Vérin and Heurtebize 1974). The name of the site, "stone house", comes from a masonry building erected by Portuguese castaways in the 16th century and now maintained as an historical monument by the de Heaulme organization. The evidence of imported Chinese celadon also indicates a 15th century date for layers older than the Portuguese occupation. Layers from both before and during the occupation of the building contain two kinds of local pottery: fine ware bowls with triangles impressed into the outside and both surfaces covered with graphite, and coarse ware neckless jars with combed decoration on the upper body. The graphited bowls have parallels with those of Bekatrafay (Fig. 1) in the Androy (Radimilahy 1983), also associated with celadon. The Efaho Valley sites producing such ceramics can be dated from the 15th to 17th centuries.

THE SURVEY PROGRAM OF 1983-1987

Early in 1983, Heurtebize initiated a detailed study of air photographs of the Efoho Valley with visits to possible sites. We were surprised to learn that even in this land of constant rainfall, traces of polygonal ditch systems were still evident, and Heurtebize began the mapping of such sites. At this time, however, artifacts were not removed from the sites.

In July 1983, the authors surveyed in the Efoho Valley and the Manampanihy Valley to the north. We made a number of surface collections, the most important of which were those from Ehoala (453.4 - 120.4) near Fort Dauphin, a site which has imported Chinese porcelain of the 18th-19th centuries as well as a range of distinct local ceramics. Also, the site of Efangitse (443.5 - 125.3), traditional capital of one of the southern Anosy chiefdoms, produced both the 15th-17th century ceramics of Tranovato and the 18th and 19th century ceramics of Ehoala. Several other kinds of ceramics were found, but though we suspected they might be earlier we had no way of dating them.

During 1984, the study of traces on air photographs continued. It was only in July of 1985 that the program of surface collections could be continued. It was possible to extend coverage to approximately 40% of the lower Efoho Valley and to undertake small excavations on several sites with previously unknown ceramic assemblages. One excavation was the site of Maliovola (443.6 - 126.6), which had ceramics similar to those of Talaky and Andranosoa and therefore presumably dated to the 11th to 13th centuries AD. Similar material was excavated at Mokala (439.5 - 112.5). Another excavation took place at Ambinanibé (450.3 - 117.5), which produced local ceramics with few parallels. Finally, Tsiandrora (445.8 - 119.7) produced stratified deposits with sherds identical to Maliovola in the lowest layer and sherds similar to Ambinanibé, associated with sherds of imported celadons of the 13th to 15th centuries AD in the upper layers. During 1986, survey continued in the northern portion of the valley of the Efoho and on the coast to the north near Ste. Luce. Further soundings were made at the 15th to 17th century centre of Fanjahirambe (443.4 - 132.5). The following year, survey continued and soundings were made at the contemporary centre of Efangitse, and the 18th and 19th century site of Manalobe (437.4 - 129.9). Approximately 90% of the Efoho Valley had been surveyed by the end of 1986 (Fig. 2).

Our survey technique involves walking on foot over as much of the landscape as is possible, checking traces noted on the air photographs, searching for pottery on the ground surface and asking local farmers for information about all such evidences. All sites discovered have been numbered with the Transverse Mercator grid used by the F.T.M. (The Geographical Institute of Madagascar). Those site numbers cited in this report have their east-west coordinate to the nearest tenth of a kilometre first, and their north-south coordinate second. All records and collections are available at the Musée d'Art et d'Archéologie in Antananarivo.

In this study, a "site" is a location with either concentrations of artifacts such as potsherds, or structural remains left by people, or both. The pottery recovered from a single site and thought to be contemporary is termed an assemblage. The sites and



Sites Identified from 1984 - 1987

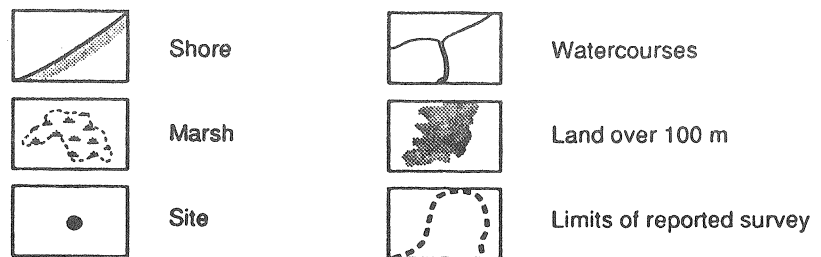


FIGURE 2: ANOSY SITES SURVEYED FROM ALL PHASES

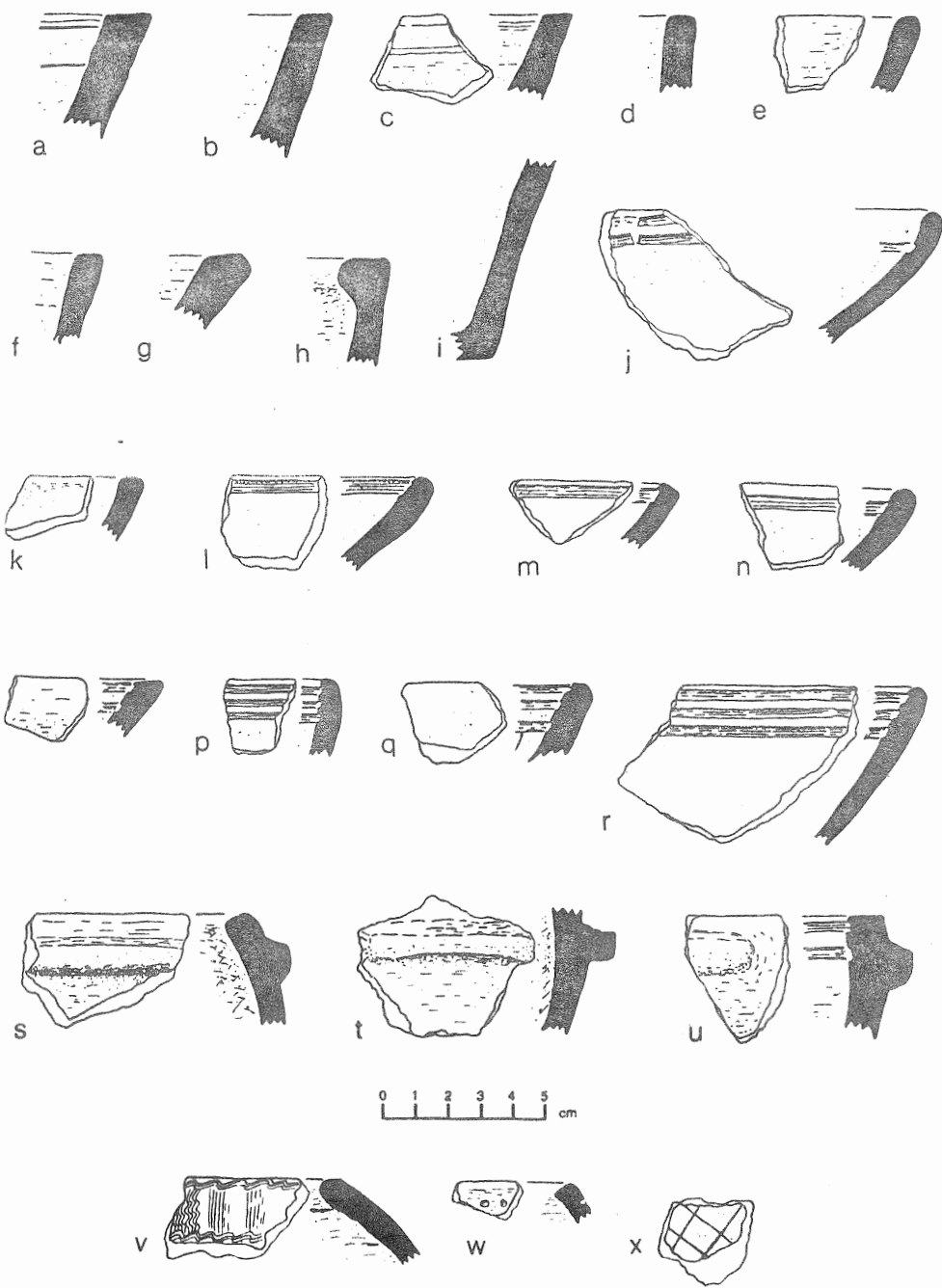


FIGURE 3: CERAMICS OF MALIOVOLA, MOKALA AND TSIANDRORA
(for descriptions see caption list at end of article)

assemblages which are thought to constitute the material remains of a single society define a cultural phase. Evidence of a cultural phase occurs in a certain geographical area, and is thought to have dated to a certain time, though this may not be precisely known at the present time. Thus there can be an Ehoala assemblage from the Ehoala site which is an element in the Ehoala Phase, and there also may be other assemblages in this phase. If a site is occupied periodically or for a long time it is possible to have more than one assemblage from more than one phase on a single site. Phase definitions are working propositions and are subject to redefinition after further fieldwork and analysis.

EARLIER SETTLEMENT SYSTEMS IN THE EFAHO VALLEY

Two well-defined assemblages of locally-made ceramics can be ascribed to periods before the 15th century. The earlier is termed the Maliovola Phase and the later is termed the Ambinanibé Phase.

The Maliovola Phase: Ceramics and Other Technologies

The pottery assemblages recovered from Maliovola, Mokala, and the lowest layer at Tsiandrora (Fig. 3) are virtually identical. All samples have two kinds of clay body, a finer ware and a coarser ware, which were used to produce very different vessel shapes. The finer ware has 5-20% fine to medium sand in its clay body. It was used to manufacture shallow open bowls ranging from 14 to 37 cm in rim diameter. Bowls covered with a red slip have clay bodies fired to a reddish-brown or brown colour (Fig. 3j-n,p,r); those with a graphite coating have clay bodies fired to a brown to dark gray colour (Fig. 3o,q). Some of these bowls lack embellishment other than a slip (Fig. 3k), but most have one (Fig. 3l-n), two (Fig. 3j,o), or three (Fig. 3p-r) broad horizontal channels inside the rim. These channels are neither incised nor excised. Instead, they seem to have been made by pressing grass stems into the still-soft clay, drying the vessel, and covering it with a slip. The stems were then burned away during firing.

The coarse ware has a gritty clay body with 20-45% coarse particles, either rounded sand or angular quartz, mica, feldspar, basalt, hematite, graphite or crushed potsherds. This was most commonly used to make large basins with flat or thickened lips ranging in estimated diameter from 20 to 41 cm (Fig. 3a-h) and with flat bottoms (Fig. 3i). Interior horizontal (Fig. 3a,c) and cross hatch (Fig. 3x) incisions occur on these basins; the former mimics marks on chlorite schist basins, such as those known from areas to the north (Vérin 1975: 831-860). Some rims may be from the covers for such basins (Fig. 3g). Some basins have thickening inside the rim (Fig. 3h). Some have graphite coatings (Fig. 3a,d,h). This ware was also used to make restricted vessels with flat horizontal lugs (Fig. 3s-u). Most lack decoration, but one is channelled (Fig. 3u). Two somewhat finer and more restricted vessels with combing (Fig. 3v) and punctates (Fig. 3w) are similar to a common vessel form of the later Tranovato Phase, defined below. The former is from the surface of Mokala and could be a later stray. The latter was stratigraphically sealed in the excavated hearth at Maliovola.

Though the Maliovola ceramic assemblage has not been reported before, it is similar to that of Andranosoa in both its coarse basins and slightly restricted vessels with lugs and in its fine red-slipped bowls (Radimilahy 1983, Rasamuel 1984: Figs 19-23). It is similar to Talaky in its coarse vessels (Battistini, Vérin, and Rason 1963). We would thus expect a date in the 11th to 13th centuries AD. A single radiocarbon date from deep layers at Tsiandrora, indicating a date of AD 1030 to 1150 (Ly 3912: 950±80 BP) with a 95% probability that the true date was between AD 900 and 1260, supports this expectation. A date from the hearth at Maliovola indicates a date of AD 890 to 940 (SMU 2078: 1140±30 BP) with a 95% probability that the true date was between AD 780 and 980. This is earlier than expected.

All sites have produced iron slag, and on the surface of Mokala there were bits of corroded iron as well. Also at Mokala, we found a sherd of a chlorite schist vessel. Available geological evidence indicates that this vessel must have been transported from elsewhere. The closest known quarry is near Mananjary, about 400 km to the north.

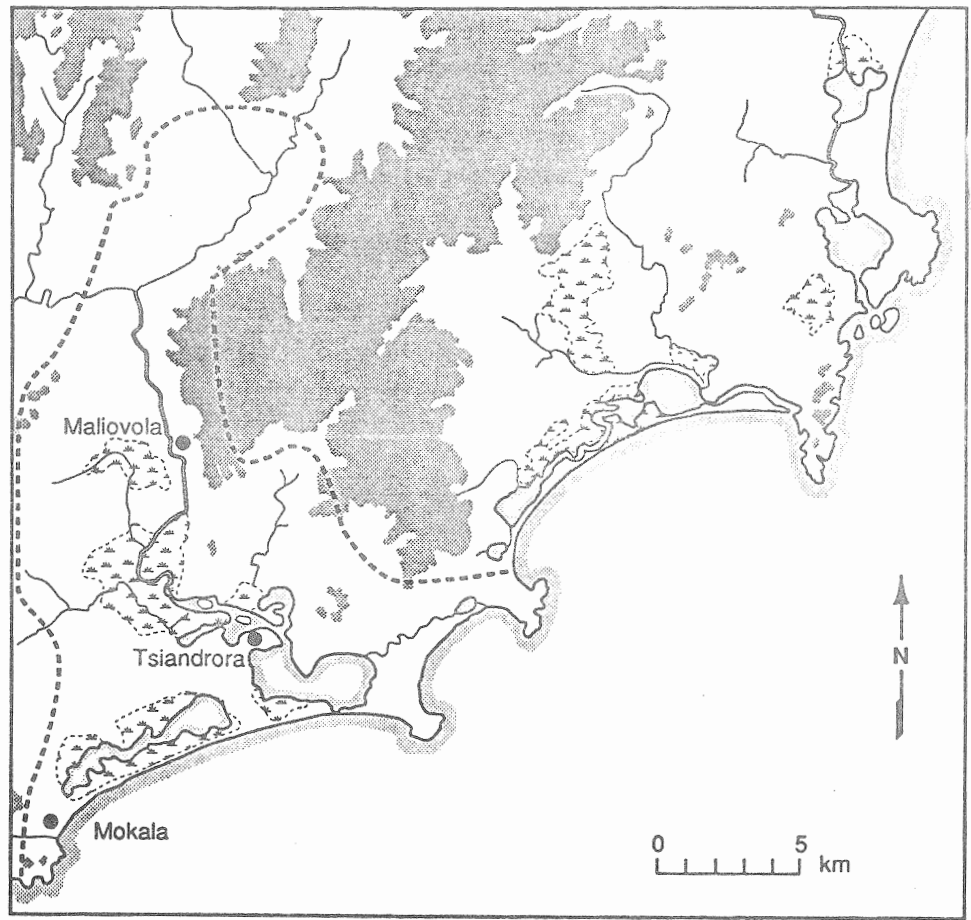
The Maliovola Phase: Subsistence and Settlement

Only three sites in the Efoho Valley proper have produced evidence of this ceramic assemblage. They are, however, very different kinds of sites (Figure 4).

The site of Mokala (439.3 - 112.5) is on low dunes overlooking a small beach surrounded by stretches of rocky shore. It faces southeast toward the open ocean. Behind the site is a spring and small freshwater marsh now used as gardens for tubers and some rice. Shells, bones, potsherds and other traces are scattered along the shore for 300 m and extend at least 50 m back from the rocks, covering an area of about 1.5 ha. The bones are predominantly fish, with some large mammal bones, probably cattle; many are burnt. A flotation sample from a hearth sealed by more recent dune sand revealed only fish bone and wood charcoal. The location of the site and the presence of shells and fish bone indicate that Mokala was primarily a fishing camp. Gardening could never have been an important activity in this location.

The site of Tsiandrora (445.8 - 119.7) is one of a number of sites on consolidated sand dunes between the estuary of Andriambe and the channels of the Efoho itself, about 7 km northwest of Mokala. It is possible to grow manioc and sweet potatoes on the old dunes, and rice can be cultivated on the levees and marshes of the Efoho. The extent of the Maliovola Phase occupation is masked by later midden debris. Two small excavations allowed recovery of strata from 80 to 130 cm below surface with ceramics of the Maliovola Phase, iron slag, shell and some bone.

The site of Maliovola (443.6 - 126.6), in contrast, is in the middle portion of the Efoho Valley, ten kilometres from the sea. It is on the upper terrace, 250 meters east of, and about 8 meters above the present river and 15 meters above sea level. Sweet potatoes and manioc are grown today on the sandy soils of the lower terrace and there are rice paddies in the small tributary valley immediately south and east of the site. The small ridge on which the site is located covers 1.8 hectares. Debris of the modern village, descendant of an 18th and 19th century Ehoala Phase village, hides most traces of the earlier Maliovola



Maliovoia Phase

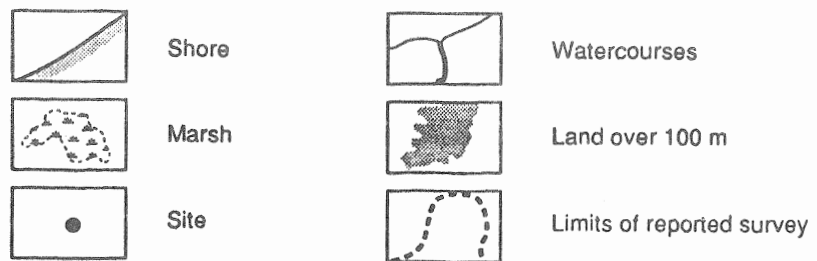


FIGURE 4: SITES OF THE MALIOVOIA PHASE

Phase occupation. Only the excavated hearth area on the far south can definitely be ascribed to this early period. Excavation of the fill of this rectangular hearth, 1.8 by 1.0 by 0.2 m deep, produced not only potsherds but samples for flotation and dating. Unfortunately the soil was too acidic for bone or shell preservation, and though there was much wood charcoal, there were no identifiable carbonized seeds.

Two other small coastal sites of this phase are known outside our survey area. About 16 km to the southwest of the Efafo embouchure is Italy (432.1 - 108.5), in a location similar to that of Mokala. About 40 km to the northeast at the mouth of the Andohafosy River is Ndrenani (476.7 - 149.6), in a location similar to that of Tsiandrora.

The Maliovola Phase represents a society with a relatively low density of settlements, of which five small examples are known to us. Two are well-located to exploit coastal resources, like Talaky to the southwest of the Efafo. Two are well-placed to exploit the estuary. Another is better located for the exploitation of riverine resources, river terrace gardens and marshy stream bottoms. If there was a seasonal movement from the estuary or the interior to the seashore and back, no other types of settlements need be expected. If these were specialized communities which exchanged resources, it is possible that further survey may reveal other, perhaps larger, settlements which mediated this exchange.

The Ambinanibé Phase : Ceramics and Other Technologies

The major assemblages ascribed to this cultural unit, those of Ambinanibé and Tsiandrora, are somewhat different. The ceramics of both are of a relatively coarse ware. Those of Ambinanibé have 15-35% fragments of angular quartz, feldspar or mica in the clay body; those of Tsiandrora usually have 15-30% of rounded sand particles, though a few sherds like those of Ambinanibé were found. This difference in inclusions is likely to be a function of the fact that Ambinanibé is near a rocky headland, while Tsiandrora is on consolidated sand dunes far from any rocky areas. The cross-sections of the sherds reveal clear traces of vessel construction with rings. The firing of this pottery was poorly controlled and colours vary from red to black. Two vessel forms are common. A minority of the vessels are open forms, ranging from small bowls (Fig. 5a-d) to larger basins (Fig. 5e-g), some of which have the lip notching also found in the later Tranovato Phase bowls. A unique local plate rim (Fig. 5x) seems to be a copy of a commonly imported celadon form. A majority of the vessels are restricted jars without necks with diameters varying from 15 to 28 cm (Fig. 5i-v). A few are plain (Fig. 5i,j), but most are decorated. More common at Ambinanibé are those with fine incising in parallel oblique arrays or chevrons, often separated by appliqué strips (Fig. 5k,o,r). More common at Tsiandrora are those with broad incising in parallel vertical or horizontal arrays (Fig. 5l-n,q,t) or triangular motifs (Fig. 5p,u,v). The neckless jars from this site are also typically larger, thinner, and have flattened lips. These shape features could be a result, like the inclusions, of the properties of clays at each site. The differences in proportion of decorative modes, however, must represent different stylistic choices. Either these were two contemporary communities who marked their pottery differently, or the two sites differ slightly in age.

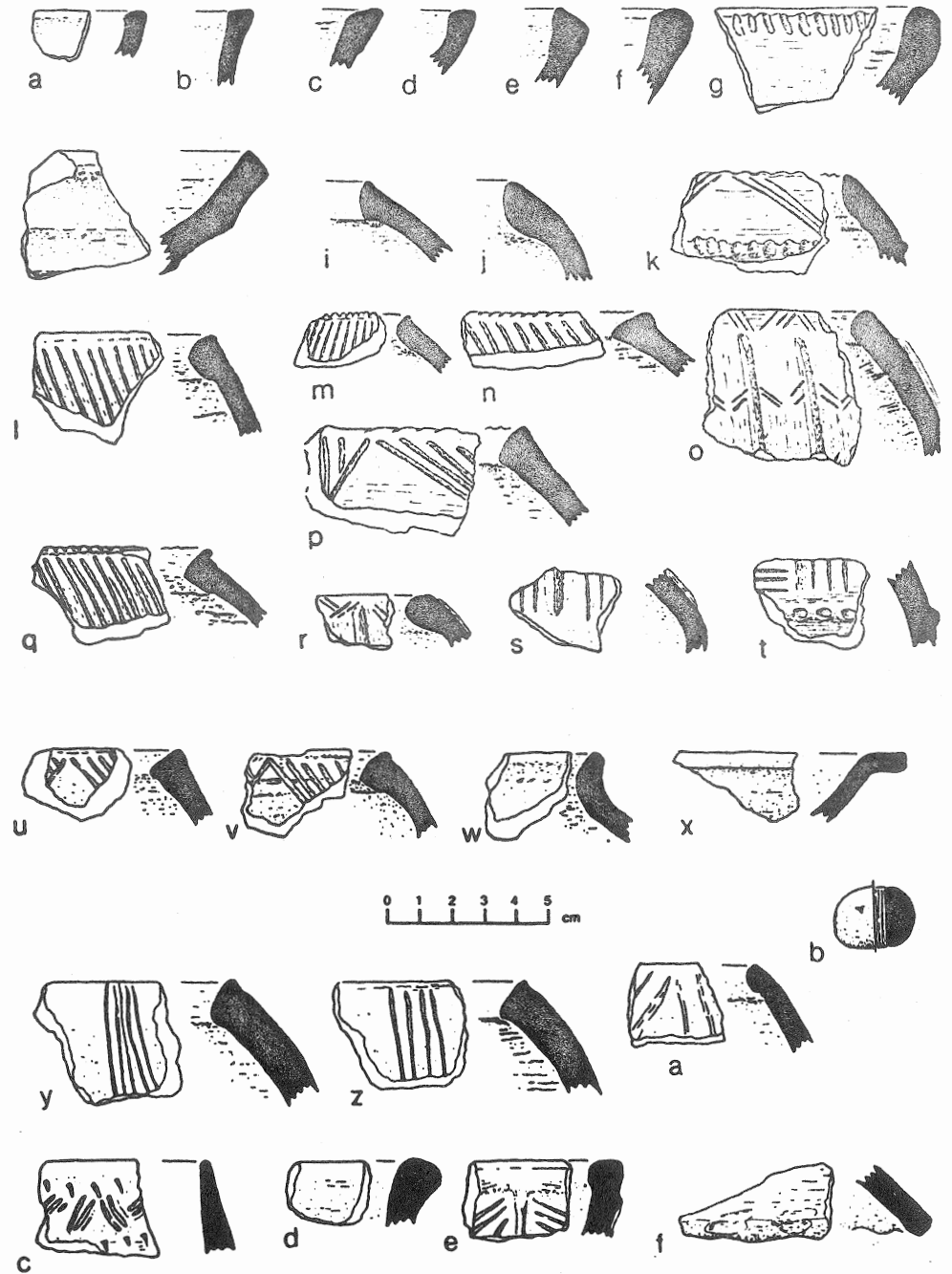


FIGURE 5: CERAMICS OF AMBINANIBÉ
(for descriptions see caption list at end of article)

There is one plain everted jar rim (Fig. 5w). The only graphited rim is from a carinated bowl (Fig. 5h) similar to those of the Tranovato Phase from Ambinanibé. However, this was an isolated piece 150 m west of the main sherd concentration and may not be contemporary with the rest of the Ambinanibé assemblage.

Imported ceramics were found at both sites. Chinese celadons examined by both Pierre Vérin and Audrey MacBain can be dated from the 13th to 15th centuries. One local plate rim (Fig. 5x) may be a copy of a celadon form. A radiocarbon date from Ambinanibé indicates a date of AD 1280 (Ly 3911: 700±100 BP) with a 95% probability that the true date was between AD 1070 and 1420, thus confirming the evidence of the imported items.

In addition to ceramics, a few other items occurred on these sites. Ambinanibé produced a spherical ceramic spindle whorl (Fig. 5b'). Tsiandrora produced iron slag, coral abraders, and cut chlorite-schist fragments. These last must have been imported from the north, as discussed above.

The only previously reported ceramics from Madagascar even vaguely similar to these are in the assemblages from Rezoky and Asambalahy 500 km away in west central Madagascar (Vérin 1972), dated between the 14th and 17th centuries. This does not contradict the dating evidence noted above. One must keep in mind, however, that Flacourt (1661[1913]:XVI/77-81) speaks of culturally distinct "Ondzatsi" (today Onjatsy) fishing communities in the Efafo Valley and it is not impossible that the Ambinanibé assemblages are the ceramics of such communities, in part contemporary with the Tranovato Phase communities discussed below.

The Ambinanibé Phase: Subsistence and Settlement

Only three sites in the survey area have produced this assemblage (Figure 6). Ambinanibé (450.3 - 117.5) is on the sand spit separating the sea from the fresh-water estuary of Andriambe, just east of where the river's flow now breaches the spit. Immediately east of the site, however, the land rises up on to a rocky, dune-covered headland. The present day village has small gardens of manioc, maize, and sweet potatoes on the sandy soil, but the primary occupation is fishing with canoes and traps. The archaeological traces, including marine shells, fishbone, and cattle bone as well as potsherds, covers at least 0.6 ha, but it is likely that parts of the site have been eroded and/or covered by sand dunes. Our examination revealed few deposits not disturbed by recent gardening, but we did retrieve stratified midden deposits from one excavation, with evidence of shell and fishbone. Certainly, this site is well-located to be a fishing camp, exploiting both marine and estuary resources.

Tsiandrora (445.8 - 119.7), as was previously noted, is on the consolidated sand dunes between the estuary of Andriambe and the channels of the Efafo itself, about 6 km westwards of Ambinanibé. It is possible to grow tubers on the old dunes, and rice can be cultivated along the Efafo. The site is marked by a scatter of marine shell and potsherds of Ambinanibé type over about 1.5 ha. The uppermost 80 cm in the excavations produced many ceramics of Ambinanibé type, with only small and weathered sherds of Maliovola



Ambinanibe Phase

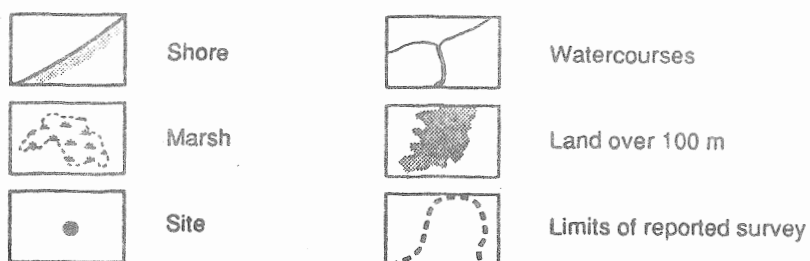


FIGURE 6: SITES OF THE AMBINANIBÉ PHASE

type, and bones, almost exclusively those of cattle. Flotation sampling revealed wood charcoal, but no recognizable carbonized seeds.

One other coastal site is known outside of the area of intensive archaeological survey. It is 24 km to the northeast of the Efoho embouchure at Ambanihampy (465.8 - 127.7).

The north sector of the important later centre of Efangitse (443.5 - 125.3), in the middle Efoho valley, also produced sherds with incised decoration, appliqué, and lip forms of Ambinanibé type (Fig. 5y-a',e'). If this is not a late survival of this ceramic type into Tranovato Phase times (as discussed below), it indicates a limited utilization of the river terraces probably late in Ambinanibé Phase times, similar to that during the earlier Maliovola Phase at the site of Maliovola.

The Ambinanibé Phase represents a society similar in some broad respects to that represented by the earlier Maliovola Phase. There was a relatively low density of relatively small communities. There is no indication of social differentiation. Most known sites are near the estuary of the Efoho; one has direct evidence of more aquatic food procurement, while the other has evidence of more cattle butchering. Given their proximity, it seems unlikely that there would have been seasonal movement of the population between these sites. It is more reasonable to suggest that these were specialized communities which exchanged resources. There was also perhaps limited utilization of the river terraces. It is possible that further survey may reveal other, perhaps larger, communities, mediating such exchange.

LATER SETTLEMENT SYSTEMS IN THE EFAHO VALLEY

Two well-defined assemblages of ceramics were locally made during the 15th to early 19th centuries. Both can be approximately dated on the basis of associations with imported Chinese and European ceramics, though the fine nuances of the evolution from one assemblage to the other, and of chronology, will only be known when further excavations are undertaken.

The Tranovato Phase : Ceramics and Other Technologies

The pottery recovered from the surface of the south part of the site of Efangitse, excluding Ehoala Phase types (see below), and from the site of Fanjahirambe are used to exemplify this phase. Most of the pottery from these sites parallels the excavated examples from Tranovato (Vérin and Heurtebize 1974), which (since it was the first site to be reported) gives its name to the phase. Three wares occur.

Fine ware has 5-20% fine particles of sand, angular quartz, and mica. Vessels of fine ware have body colours ranging from dark brown to very dark gray. The most common vessel shape is a carinated bowl with thickened lip, ranging from 20 to 32 cm in diameter. Usually these have graphited surfaces, sometimes without impressions (Fig. 7e, 8c) but usually with exterior bands or panels with triangular impressions (Fig. 7f,h, 8f,j). Some had ring bases (Fig. 7j). Several such carinated bowls with interior panels with triangular impressions (Fig. 7i, 8l,m), one with graphite inclusions, are perhaps

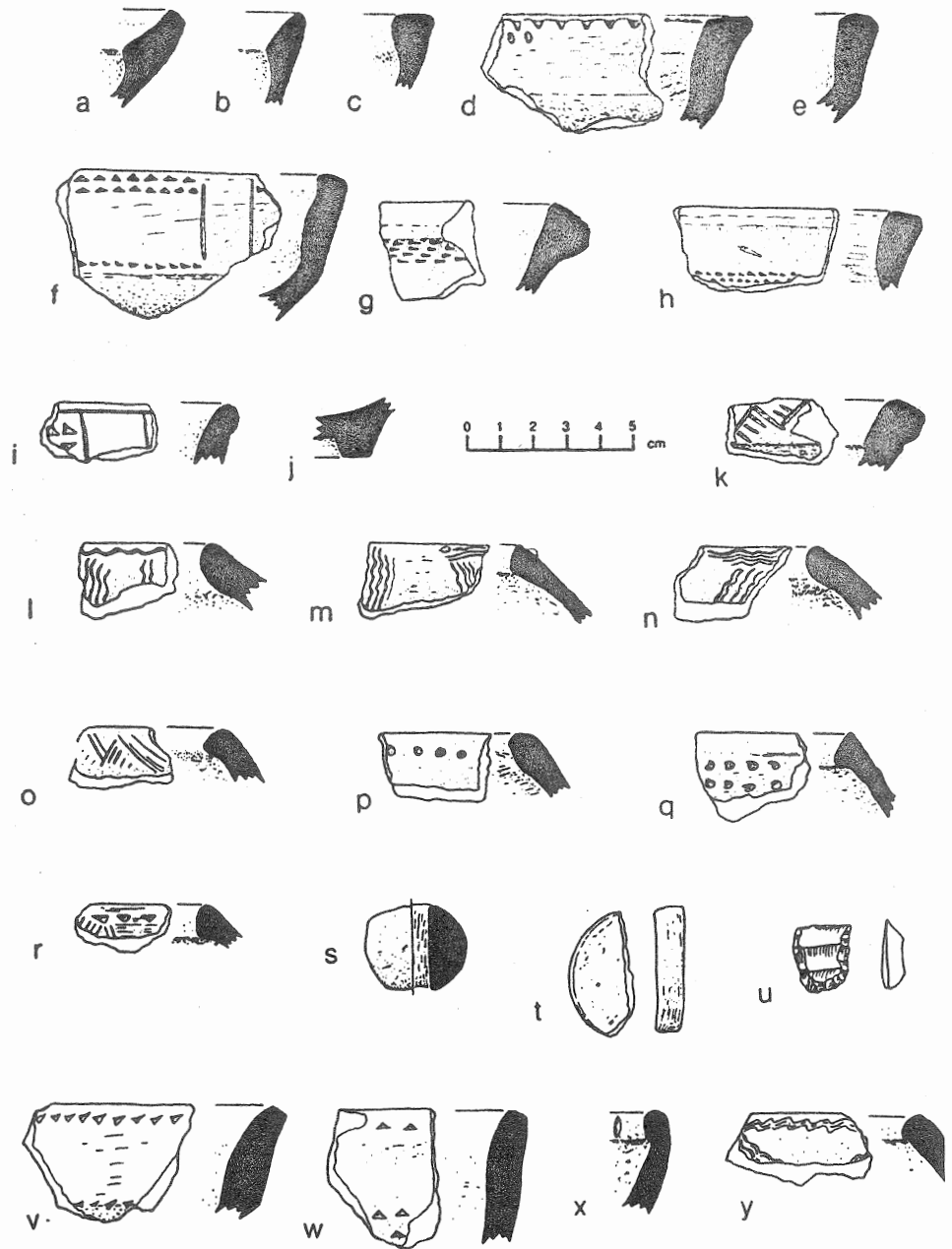


FIGURE 7: CERAMICS OF THE TRANOVATO PHASE FROM EFANGITSE
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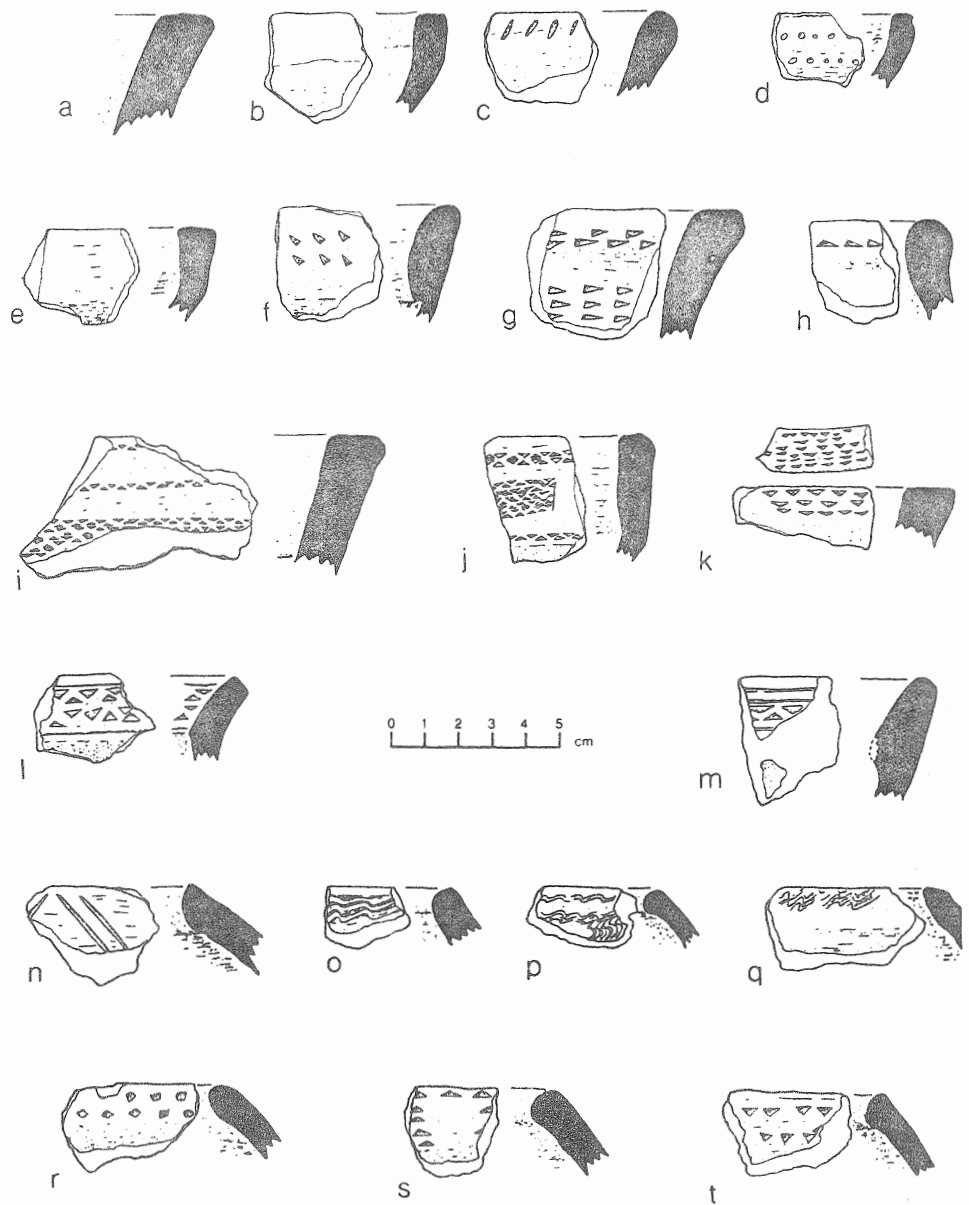


FIGURE 8: CERAMICS OF THE TRANOVATO PHASE FROM FANJAHIRAMBE
(for descriptions see caption list at end of article)

late variants approaching Ehoala Phase types. Also common in fine ware are basins with heavy thickened rims varying from 32 to 48 cm in diameter (Fig. 7h, 8a,g-h,k), many embellished with triangular impressions. Less common are shallow bowls or plates with interior rim thickening like certain celadon bowls (Fig. 7a,b). The few known examples of these plates have no evidence of graphiting or impressions.

Coarse ware has 10-25% coarse angular quartz, coarse to medium sand, or mica. Vessels of this ware have body colours varying from brown to dark gray. The most common vessel shape is a very restricted jar without a neck, varying from 17 to 30 cm in rim diameter. The shoulders are usually decorated with combing, perhaps done with a shell, either horizontal, vertical, or oblique (Fig. 7l-o, 8o-q). Some of these neckless jars, however, have simple punctate designs (Fig. 7p-q, 8r-t), a variant known from earlier Talaky and Maliovola, but not reported from Tranovato itself; these are perhaps early variants. Less common than neckless jars are heavy bowls, some with lip notches (Fig. 7d).

Micaceous ware, with 10-30% coarse mica particles, is uncommon. An undecorated thickened rim bowl (Fig. 7c) and a neckless jar with combing and punctates (Fig. 7r) occur.

Unique in the sample is the rim of a basin with coarse inclusions of an unidentified mineral (Fig. 7k); the rim has both exterior and interior thickening, with a broad-line incised motif on the inner lip.

These local ceramics are associated at both Tranovato and Efangitse with sherds of Ming celadon and blue-and-white porcelain, indicating a date during the 16th to 18th centuries AD. At Fanjahirambe, there were sherds of 17th century Chinese blue-and-white porcelain and of European stonewares and wine bottle fragments as well. Also found at Efangitse were pieces of iron slag, spindle whorls (Fig. 7s), a fragment of potsherd ground into a disc (Fig. 7t), a gunflint and glass beads. Both Efangitse and Tranovato (Vérin and Heurtebize 1974:140) produced the bones of domestic cattle.

Tranovato Phase ceramics have complex relations to those from other parts of Madagascar. On the one hand, the common cooking ware of the phase, the restricted neckless jars with combed designs, had developed on the northeast coast at least by the 13th century (Vérin 1975: Fig. 304-305; Wright and Fanony 1992:41, Fig. 7). Their sudden appearance in the Efoho Valley sustains the tradition related to Flacourt by the Tanosy rulers that their ancestors came from the north. On the other hand, the serving vessels, the bowls and basins with triangular impressions and graphite coatings appear by the 13th century in the central highlands (Rakotovololona 1993), but appear widely elsewhere in Madagascar during the 14th and 15th centuries (Radimilahy 1980; Vérin 1972, Vérin 1975: 311-321, Figs. 97, 103-105). Their widespread diffusion, as well as the widespread occurrence of Far Eastern ceramics, may be attributable to interaction between emerging local élites.

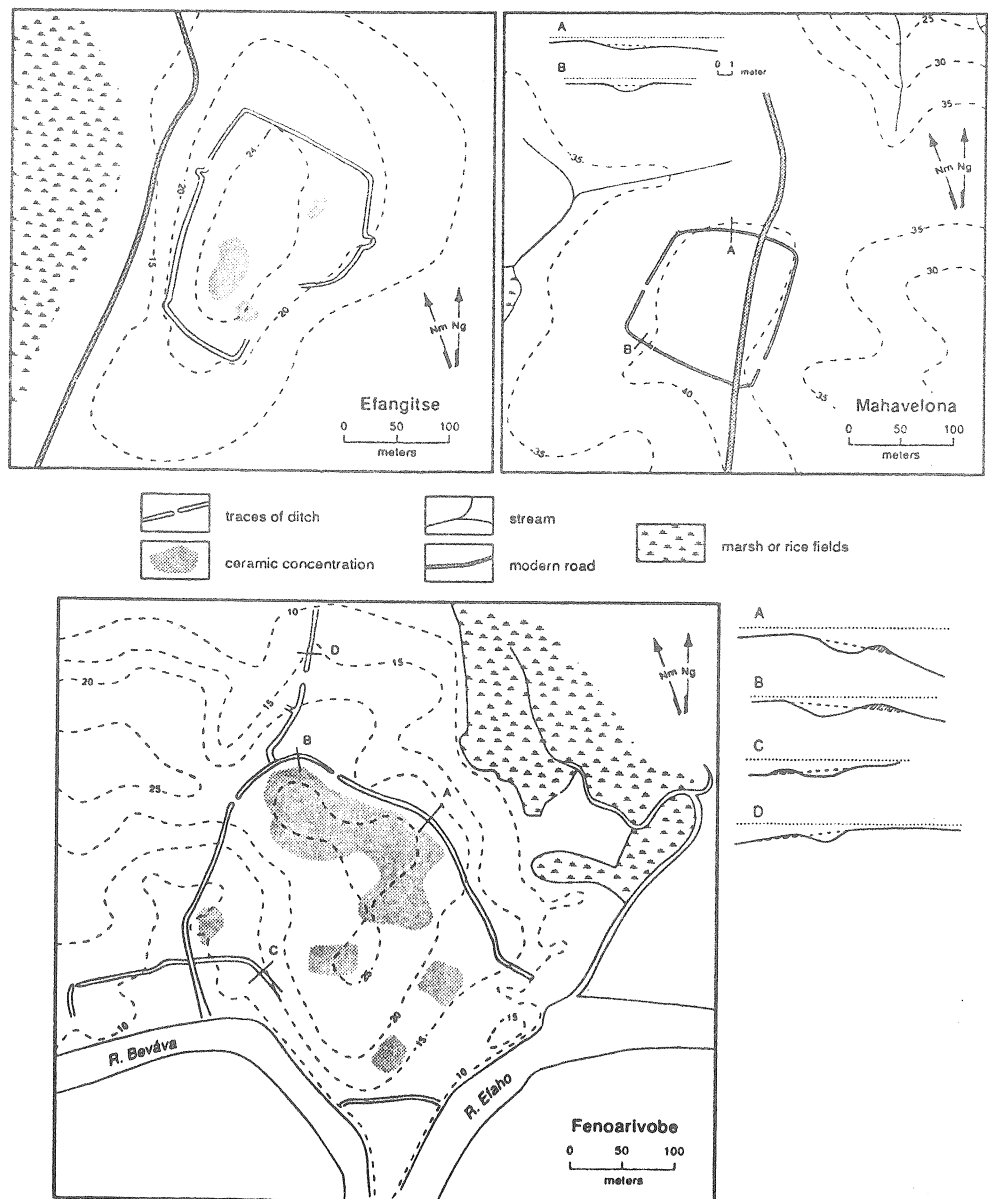
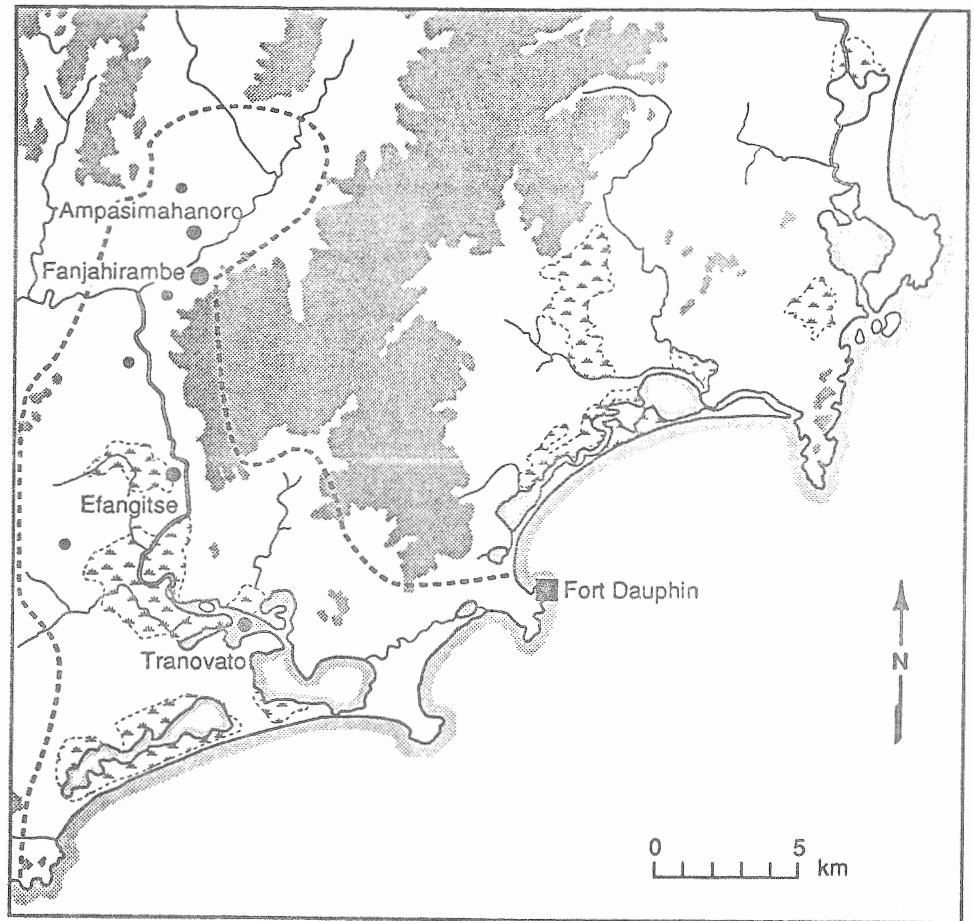


FIGURE 9: SITE PLANS OF THE TRANOVATO AND EHOALA PHASES



Tranovato Phase

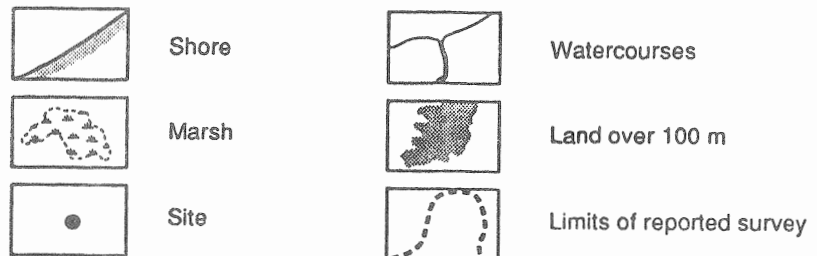


FIGURE 10: SITES OF THE TRANOVATO PHASE

The Tranovato Phase: Subsistence and Settlement

Eight sites have produced ceramics like those of Tranovato (Figs 9, 10). That of Fanjahirambe (443.4 - 132.5) is on a high terrace remnant east of the juncture of the east and west branches of the Efaho at an elevation about 30 m above sea level. Areas of rice paddies occur in tributary valleys near the site. Polygonal ditch traces are visible. If the whole terrace remnant was surrounded with a ditch, it would enclose an area of about 7.5 hectares. Evidence of iron working is widespread. Flacourt's map indicates that this was "Fanshere", capital of the ruler Tsiambany and his son Ramaka, visited and described by Flacourt (1661[1913]: II/25, XX/102, XXV/94-95, XLI/142) and burned by his troops in 1651. Only this major centre and Tranovato itself have the graphited vessels with very finely impressed decorations; other sites have only roughly impressed or plain graphited bowls. The fine examples were perhaps the ceramics of higher ranking families resident at the important centres.

The site of Tranovato itself (445.6 - 120.7) is located on an island in the mouth of the Efaho, about 13 km below Fanjahirambe. Thus, it is naturally protected, and shows no evidence of ditches or other constructions. The river's estuary would have provided many resources. Also, a short distance to the west, north, and south are extensive areas of rice paddy. The island is about five hectares in area, but only the eastern end, an area of no more than three hectares, has much evidence of occupation.

The site of Efangitse (443.5 - 125.3) is on a high terrace remnant west of the Efaho, about eight km downstream from Fanjahirambe at an elevation about 15 m above sea level, and five km upstream from Tranovato. Extensive areas of both rice paddy and river terrace land surround this site. A single ditch encloses a trapezoidal area of 2.7 ha (Fig. 9). The evidences of occupation in the form of potsherds and cattle bones are concentrated in the south part of the site. The evidence of iron working is concentrated on its southwest edge. In the north area are found incised ceramics similar to those of Ambinanibé but simpler (Fig. 5y-a',e'). However, these are closely associated with Tranovato Phase ceramics (Fig. 7v-y). It is likely that this indicates an earlier Ambinanibé occupation, as discussed above, although it is possible that this is an ethnically defined quarter of the Tranovato Phase village, contemporary with the Tranovato Phase material to the south. Only further excavation and absolute dating can decide between the two possibilities.

The site of Ampasimahanoro (443.2 - 133.6) is on a level area north of the Efaho, and only two km north of Fanjahirambe. Smaller areas of rice paddy occur south and east of the site. The single well-preserved polygonal ditch of the site encloses about five hectares. The site does not seem to have been much occupied. A few graphited sherds, combed sherds and neckless jar rims indicate a Tranovato Phase date. Perhaps the limited amount of nearby land good for rice fields prevented Ampasimahanoro from prospering as its builders intended.

The site of Mahavelona (442.7 - 135.9) is a roughly rectangular polygon on the plain north of Ampasimahanoro. It covers only 1.6 hectares and has a very low artifact density (Fig. 9). This is the smallest known fortified Tranovato Phase site in the Efaho Valley itself. Also, we have located several smaller sites with ditches from which we have not yet

recovered sufficient pottery to justify ascription to a phase. It is likely that these are also of the Tranovato Phase.

In addition to the fortified sites, several small sherd concentrations are known (442.4 - 128.5 and 440.9 - 124.5), perhaps hamlet sites or seasonal camps near rice paddies. Finally, on a high forested hill near the pass from the Efaho Valley into the Manimpanihy to the north is the partially fortified site of Vohilava (442.3 - 151.2), covering only 0.3 ha. This may have been a border post, allowing warning of incursions from the north. All of these small sites have only the combed and punctate pots and lack the impressed graphited bowls, perhaps an indication that their occupants were of relatively low rank.

It is clear from the available data that the Tranovato Phase represents a society with a high density of large communities, located to take advantage of land suited for wet rice cultivation. The relatively large unoccupied areas within the outer ditches of some sites may indicate the keeping of cattle herds by the local paramounts. The ditches suggest a perceived need for defense, but they may simply mark the centres of noble authority. Certainly, excavations to establish the date and function of these features are an important priority. Surrounding these larger centres were smaller villages and hamlets, probably the communities of lesser or dependent status. The inhabitants of the larger centres had greater quantities of higher quality, graphite-coated serving vessels and exclusive access to goods imported from East Asia and Europe. Thus, the survey data conforms to the documentary evidence of marked differences in social rank.

The Ehoala Phase: Ceramics and Other Technologies

The graphited rims with interior triangular impressions distinctive of this phase were noted on a number of sites, but it was not until the discovery of Ehoala that the assemblage could be defined. Fenoarivobe, however, was apparently the major centre of this period.

The ceramics of this phase are less varied than those previously discussed. There is one common ware with 20-30% medium angular quartz, sand or mica in the clay body. The bodies vary from reddish brown to dark gray, though the darker colours are rare. There are some small simple bowls (Fig. 11d,r), but the predominant form is a slightly carinated bowl with inner lip thickening, varying from 10 to 38 cm in diameter. These bowls have graphited surfaces. Their inner rims are sometimes plain (Fig. 11a), but usually have triangular impressions either in panels (Fig. 11e-h,o,p) or in bands (Fig. 11b,c,i,m,n), often outlined with incisions. All are graphite coated. Several neckless jars similar to those of earlier phases were found at Fenoarivobe (Fig. 11 q,s,t). One possible large jar rim made of this ware but without graphite (Fig. 11j) was found at Ehoala. One bowl had graphite inclusions and an interior band with triangular impressions (Fig. 11u). One unusual rim probably carved from pure graphite, decorated with precise incisions and depressions (Fig. 11l), is perhaps an import from the north.

The dating of this assemblage is based upon the occurrence of imported Chinese and European ceramics of known age. The east portion of Ehoala had several sherds of small blue-and-white porcelain cups, probably of 18th century date, in association with the

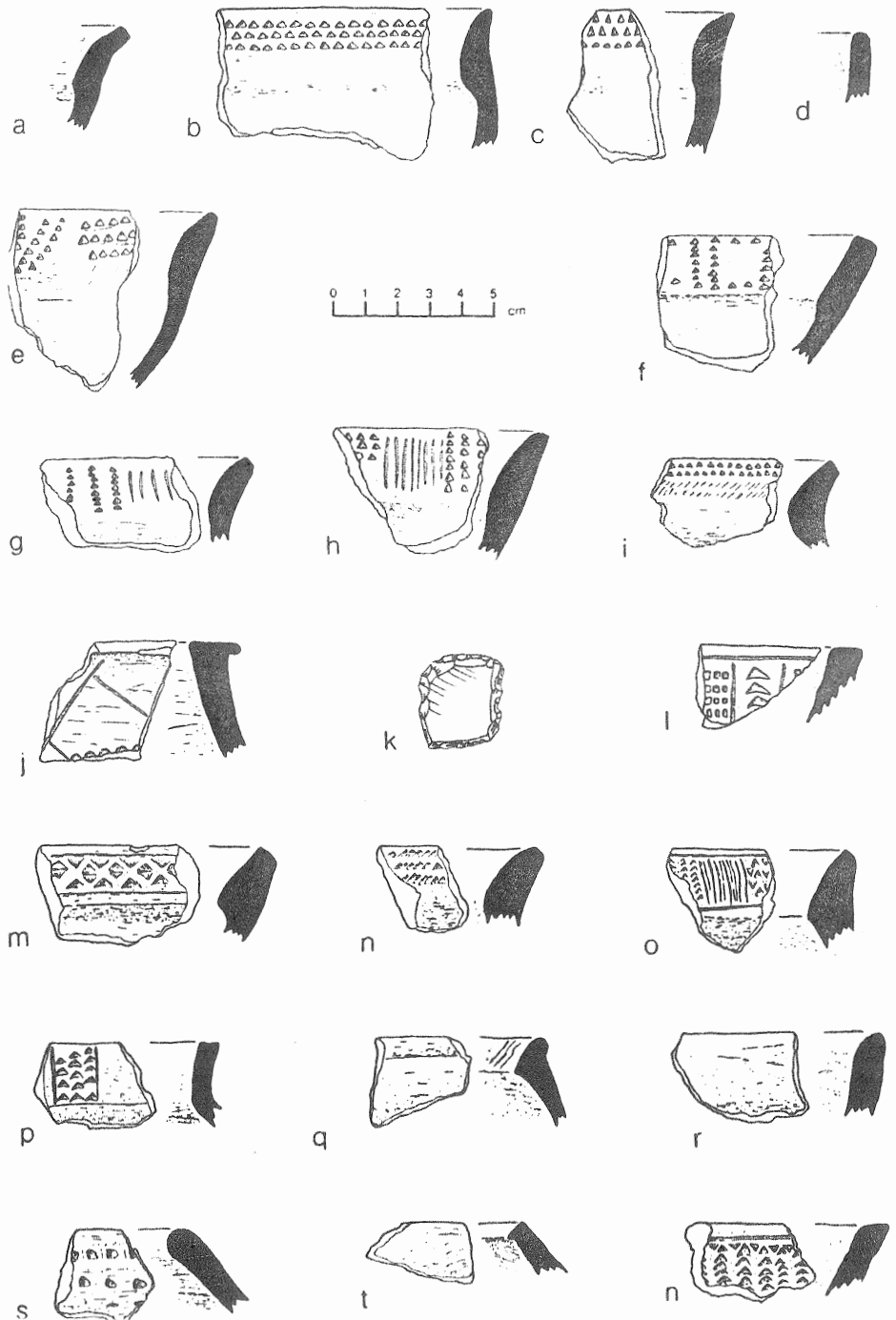


FIGURE 11: CERAMICS OF EHOALA, FENOARIVOBE AND RELATED SITES (EHOALA PHASE)
 (for descriptions see caption list at end of article)

bowls predominantly with the panelled designs. The west portion of Ehoala had a sherd of a blue-and-white porcelain bowl with a pseudo-Arabic script, a decorative motif that is usually early 19th century in the southwestern Indian Ocean, in association predominantly with the bowls with simple bands of triangular impressions. This suggests some stylistic development during Ehoala Phase times. In addition, at Fort Dauphin itself, in a terrace deposit created during the rebuilding of the fort by the Comte de Maundave in the mid-18th century, a typical bowl rim (Fig. 11c) was found in association with a piece of English or German stoneware of 18th century date. At Fenoarivobe, a similar stone ware and a sherd of European tin-glazed ware ("Delft"), no later than early 18th century, were found. Certainly, the Ehoala Phase dates to the 18th and early 19th centuries.

One other artifact found at Ehoala is a gunflint of European flint, much retouched (Fig. 11k). It is likely, since the local ceramic assemblage is composed almost exclusively of bowls, that traditional jar forms had been replaced by iron pots obtained from European traders. However, no iron items were found.

The Ehoala Phase ceramic assemblage can be seen as a development from those of the preceding Tranovato Phase. Similar parallel developments were occurring elsewhere on the East Coast of Madagascar, as exemplified by the Amibtsika Phase of the Antongil area (Wright and Fanony 1992:47-60, Fig.11-13), which supports the documentary evidence of widespread communication along the coast.

The Ehoala Phase: Subsistence and Settlement (Fig. 12)

The site of Ehoala (453.4 - 120.4) is on a sand-pit between a fresh water pond and the bay, only four km westward from Fort Dauphin. At present, it is planted in manioc, but it has only limited possibilities for cultivation. No other sites have been found in this area, and it is possible that Ehoala was a site in some way connected with the fort. The main concentration of Ehoala Phase sites is in the middle of the Efaho Valley. The largest of these communities here was that at Fenoarivobe (442.0 - 132.4), a large ditched settlement of 7.2 hectares at the juncture of the branches of the Efaho (Fig. 9). Notably, the embankments are outside the northeast ditch, limiting their defensive value. Nearby Ifarantsa (442.7 - 131.8) was perhaps a similarly large settlement, but it is obscured by the modern market town. To the west is Manalobe (437.4 - 129.9), a large ditched settlement of 5.3 ha. In addition to these, we have recorded at least 13 hamlets or small villages, varying in size from 0.4 to 1.8 ha. These occur on the terraces on either side of the river, spaced 0.5 to 1.5 from each other, all with access to rice paddies in tributary valleys and to river terraces. No doubt many such small sites remain to be recorded. The overall human density appears to have been as high as during Tranovato Phase times, but there were fewer larger communities and more smaller ones, perhaps indicating a dispersion of political control or a change in military patterns.

A SUMMARY AND DIRECTIONS FOR FUTURE WORK

This article is only an introduction to the regional archaeology of the Anosy. These first observations permit us to make the following points:



Ehoala Phase

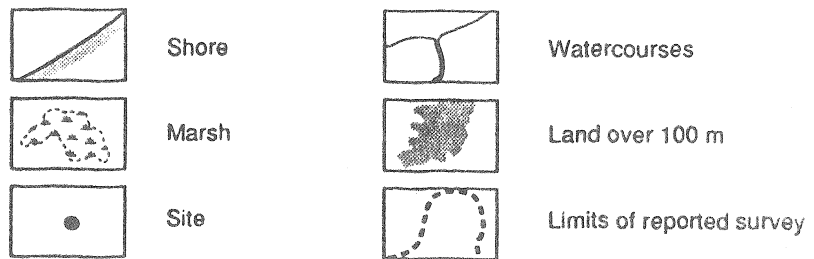


FIGURE 12: SITES OF THE EHOALA PHASE

1. Four cultural phases have been defined and ascribed to the 10th to the 19th centuries on the basis of absolute dating techniques and associations with imported Far Eastern and European ceramics of known date. It is likely that subsequent research will document yet more ancient phases of occupation.
2. The two earlier phases had a few small settlements located near the beaches and estuaries, with evidence of fishing and cattle herding. The two later phases had many settlements of varying size concentrated on river valley terraces well-suited to wet rice cultivation and cattle herding. Archaeological evidence of cattle and documentary reports of both cattle herding and wet rice cultivation confirm the implications of this pattern.
3. The earliest phase had ceramics similar to those from other parts of southern Madagascar. The second phase had ceramics unrelated to its predecessor and with few known parallels. The ceramics of the third phase, the material manifestation of historically known Tanosy people, are also unrelated to those of its predecessor, but show broad similarities to contemporary ceramics, particularly those farther north along the East Coast. The ceramics of the fourth phase, representing recent Tanosy communities, develop from those of the preceding phase, but show evidence of continued interaction with East Coast neighbours. Clearly there is evidence of changing interregional interaction and perhaps indications of the movements of peoples.
4. While the settlement patterns of the first two phases provide no evidence of social or political divisions and hierarchies, the later phases both exhibit a pattern of larger centres and smaller satellite villages and hamlets. The larger centres have earthworks, more high quality craft goods related to food serving, and more imported luxury goods. This settlement pattern is what would be expected given the documentary accounts of a hereditary noble class, powerful chiefs and frequent conflict. Present evidence indicates that this complex social pattern appeared suddenly in the Efaho Valley.

Future work in the Anosy will involve major excavations to answer more precisely the questions posed by the sudden transformation of Tanosy society.

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APPENDIX: DETAILS OF ILLUSTRATED SHERDS

Key to following lists:

Inclusions: fine <0.4 mm, medium 0.4 - 0.8 mm, coarse >8 mm; D: diameter; ST: side thickness in cm; CB: color of body. All pieces are in the 1983 and 1985 collections of the Musée d'Art et d'Archéologie, Antananarivo.

Figure 3: Ceramics of Maliovola (443.6 - 126.6), Mokala (439.3 - 112.5) and Tsiandrora (445.8 - 119.7).

- a. Basin rim with interior incisions (Mokala), 35% coarse sand, D 32, ST 1.25, CB very dark gray (10YR 3/1), graphited surfaces.
- b. Basin rim (Mokala), 40% coarse basalt and feldspar(?) fragments, D 20, ST 1.06, CB red (2.5YR 5/5).
- c. Basin rim (Tsiandrora I-10: -.81), 35% coarse sand, D ?, ST 1.00, CB yellowish brown (10YR 5/4).
- d. Basin rim (Maliovola, hearth: 2), crushed sherd(?) inclusions, D ?, ST 0.93, CB dark gray (10YR 4/1), graphited surfaces.

- e. Basin rim (Tsiandrora I-10: -.81), 30% coarse sand, D c.24, ST 0.75, CB yellowish red (5YR 5/5), graphited interior.
- f. Basin rim (Mokala), 30% angular feldspar, D ?, ST 0.82, CB very dark gray (10YR 3/1).
- g. Basin rim (Maliyovola, hearth: 2), 20% coarse sand and hematite, D 32, ST 1.12, CB light brownish gray (10YR 6/2).
- h. Basin rim (Mokala), 40% mica, graphite fragments, D ?, ST 0.89, CB weak red (2.5YR 5/2), graphited surfaces.
- i. Side of basin (Maliyovola, surface), 5% fine sand, BD ?, ST 0.84, CB reddish brown (5YR 5/5), reddish brown slip (5YR 5/4).
- j. Bowl rim with interior grooves (Maliyovola, surface), 15% fine sand, D c.36, ST 0.71, CB dark reddish brown (2.5YR 3/4), dark red slip (10R 3/6).
- k. Bowl rim (Mokala), 20% medium sand, D c.14, ST 0.64, CB yellowish red (5YR 5/5), reddish brown slip (2.5YR 4/4).
- l. Bowl rim with single interior groove (Mokala), 15% fine sand, D c.21, ST 0.66, CB brown (7.5YR 5/5), reddish brown slip (2.5YR 4/4).
- m. Bowl rim with single interior groove (Maliyovola, hearth: 2), 15% fine sand, D 24, ST 0.64, CB reddish yellow (5YR 6/6), red slip (7.5R 4/5).
- n. Bowl Rim with single interior groove (Mokala), 20% fine sand, D 20, ST 0.75, CB yellowish red (5YR 5/5), red slip (2.5YR 4/6).
- o. Bowl Rim with two interior grooves (Tsiandrora I-10: 110-130), 25% coarse sand, D 32, ST 0.80, CB brown (7.5YR 4/2), graphite on interior.
- p. Bowl rim with three interior grooves (Maliyovola, hearth: 2), 20% medium sand, D 18, ST 0.69, CB reddish brown (5YR 5/4), graphited surfaces.
- q. Bowl rim with three interior grooves (Tsiandrora I-10: - 81), 30% angular quartz and coarse sand, D 37, ST 0.89, CB reddish yellow (10YR 6/5), red slip (10R 4/6).
- r. Bowl rim with three interior grooves (Maliyovola, hearth: 1), 30% angular quartz, coarse sand, D 28, ST 0.69, CB reddish yellow (5YR 6/5), red slip (10R 4/5).
- s. Basin rim with lug (Mokala), 30% angular quartz, feldspar(?), D 30, ST 0.90, CB reddish brown (5YR 5/4), graphited surfaces.
- t. Lug on basin side (Maliyovola), 30% coarse angular quartz, D ?, ST 0.80, CB light reddish brown (5YR 6/3), graphited surfaces.
- u. Basin rim with lug (Tsiandrora I-10: -.81), 40% angular quartz, and coarse sand, D 41, ST 1.08, CB yellowish red (5YR 5/5), graphited surfaces.
- v. Neckless jar rim with exterior combed decoration (Mokala), 10% coarse quartz, D 21, ST 0.88, CB brown (7.5YR 4/4).
- w. Neckless jar rim with exterior punctates (Maliyovola, hearth: 1), 15% medium sand, D ?, ST 0.69, CB brown (10YR 5/3).
- x. Basin sherd with interior incising (Maliyovola, hearth: 1), 15% hematite, fine sand, ST 1.17, CB grayish brown (7.5YR 5/1), interior graphite.

Figure 5: Ceramics of Ambinanibé (450.3 - 117.5), Tsiandrora (445.8 - 119.7) and Efangitse (443.5 - 125.3).

- a. Bowl rim (Tsiandrora), 15% fine sand, D c.25, ST 0.64, CB reddish brown (5YR 4/4), red slip (2.5YR 4/4) with graphited inner lip.
- b. Bowl rim(?) (Tsiandrora I-10: 20-40), 15% medium sand, D c.12, ST 0.61, CB yellowish red (5YR 4/6).
- c. Bowl rim(?) (Tsiandrora), 30% coarse angular quartz, D 12, ST 0.67, CB grayish brown (10YR 5/2).
- d. Bowl rim (Tsiandrora), 15% coarse sand, D 8, ST 0.68, CB reddish brown (5YR 5/5).
- e. Basin rim (Tsiandrora), 30% angular quartz, feldspar, D 30, ST 0.72, CB reddish brown (5YR 4/5).
- f. Basin rim (Ambinanibé), 10% angular feldspar, mica, D 34, CB brown (10YR 5/3).
- g. Basin rim with exterior lip notching (Ambinanibé), 20% angular quartz and red grit, D 36, CB brown (10YR 4/3).
- h. Bowl rim (Ambinanibé) 20% angular quartz and feldspar, D ?, CB reddish brown (5YR 5/5), graphited surface.
- i. Neckless jar rim (Tsiandrora), 20% coarse sand, D 14, ST 0.75, CB reddish brown (5YR 5/5).
- j. Neckless jar rim (Ambinanibé), 30% angular feldspar and quartz, D 20, ST 0.83, CB red (2.5YR 4/5).
- k. Neckless jar rim with fine chevron incising (Ambinanibé), 15% mica, D c.15, CB red (2.5YR 5/6).
- l. Neckless jar rim with broad parallel incising (Tsiandrora I-10: 20-40), 25% angular feldspar and coarse sand D 20, ST 0.60, CB yellowish red (5YR 4/6).
- m. Neckless jar rim with broad parallel incising (Tsiandrora), 20% angular feldspar, D ?, ST 0.55, CB very dark gray (10YR 3/1).
- n. Neckless jar rim with broad parallel incising (Tsiandrora), 20% coarse sand, D 23, ST 0.75, CB dark brown (7.5YR 4/3).
- o. Neckless jar rim with fine chevron incising and appliqué (Ambinanibé), 15% angular quartz and mica, D c.22, CB very dark grayish brown (10YR 3/2).
- p. Neckless jar rim with broad incised motifs (Tsiandrora), 20% coarse sand and angular feldspar, D 28, ST 0.75, CB dark brown (7.5YR 4/3).
- q. Neckless jar rim with broad incised motifs (Tsiandrora J-9: 40-60), 30% coarse sand, D 23, ST 0.69, CB very dark gray (10YR 3/1).
- r. Neckless jar rim with fine chevron incising and appliqué (Tsiandrora), D c.16, ST 0.85, CB red (2.5YR 5/6).
- s. Shoulder of jar with fine incising and appliqué (Tsiandrora), 20% coarse sand, ST 0.77, CB reddish brown (5YR 4/4).
- t. Shoulder of jar with fine incising and appliqué (Ambinanibé), 20% angular quartz and feldspar, ST 0.74, CB reddish brown (5YR 5/4).

- u. Neckless jar rim with broad chevron incising (Tsiandrora J-9: 40-60), 25% coarse sand, D ?, ST 0.68, CB reddish brown (5YR 5/5).
- v. Neckless jar rim with broad chevron incising (Tsiandrora I-10: 40-65), 25% coarse sand, D 21, ST 0.67, CB brown (7.5YR 5/4).
- w. Everted jar rim (Tsiandrora I-10: 40-65), 25% medium sand, D 14, ST 0.81, CB yellowish red (5YR 5/6).
- x. Plate rim (Tsiandrora J-9: 40-60), 30% red grit and medium sand, D ca. 25, ST 0.50, CB reddish brown (5YR 5/4).
- y. Neckless jar rim with fine incising (Efangitse II: 1), 30% fine sand and white particles, D c.31, ST 1.09, CB very dark gray (10YR 3/1).
- z. Neckless jar rim with fine parallel incising (Efangitse II: 1), 20% medium sand, D 32, ST 1.11, CB very dark gray (10YR 3/1).
- a'. Neckless jar rim with fine incising (Efangitse III:1), 15% fine sand and white particles, D ?, ST 0.64, CB dark reddish brown (2.5YR 3/4).
- b'. Spindle whorl (Ambinanibé), no visible inclusions, CB reddish yellow (5YR 6/6).
- c'. Neckless jar rim with broad chevron incising, (Efangitse II: 1), 20% coarse sand, D c.20, ST 0.86, CB dark gray (10YR 4/1).
- d'. Heavy jar or basin rim (Efangitse II: 1), 20% fine sand and white particles, D ?, ST 1.12, CB brown (7.5YR 4/3).
- e'. Rim with broad incising and applique (Efangitse I: 2), 30% coarse sand, D ?, ST 0.91, CB brown (7.5YR 5/5), sherd eroded.
- f'. Top rim(?) with pinched decoration (Tsiandrora I-10: 20-40), 25% angular feldspar and coarse sand, D ?, ST 0.93, CB reddish brown (5YR 4/3).

Figure 7: *Ceramics of Efangitse (443.5 - 125.3).*

- a. Plate rim, 10% fine sand, D ?, CB dark reddish brown (5YR 3/2).
- b. Plate rim, 10% fine sand and mica, D ?, CB very dark gray (10YR 3/1)
- c. Basin rim, 25% mica, D 24, CB very dark gray (10YR 3/2).
- d. Bowl rim, 25% coarse sand, D. 24, ST 1.09, color not recorded.
- e. Bowl rim, 10% fine sand, D 20, CB very dark gray (10YR 3/2), graphited surfaces.
- f. Bowl rim with exterior incisions and impressed triangles, 10% fine sand, D 27, ST 0.92, CB brown (7.5YR 5/5), graphited surfaces.
- g. Bowl rim with exterior impressed triangles, 20% medium sand, D ca. 25, ST 0.66, CB very dark gray (10YR 3/1), graphited surfaces.
- h. Bowl rim with exterior impressed triangles, 10% fine sand, D 32, CB very dark gray (10YR 3/2), graphited surfaces.
- i. Bowl rim with interior incising and impressed triangles, 15% fine sand and mica, D c.26, CB dark grayish brown (10YR 4/2), graphited surfaces.
- j. Ring base, 15% fine sand, base D ?, ST 0.59, CB very dark gray (10YR 3/1), graphited surfaces.

- k. Basin rim with interior broad incising, 15% coarse angular white mineral, D ?, CB very dark gray (10YR 3/1).
- l. Neckless jar rim with exterior combing, 15% coarse sand and mica, D c.30, color not recorded.
- m. Neckless jar rim with exterior combing, 10% medium sand, D 23, CB dark brown (10YR 3/3).
- n. Neckless jar rim with exterior combing, 20% coarse sand, D 18, CB very dark gray (10YR 3/1).
- o. Neckless jar rim with exterior combing, 25% medium sand, D ?, CB brown (10YR 4/3).
- p. Neckless jar rim with exterior punctates, 20% medium sand and angular quartz, D 19, CB very dark gray (5YR 3/1), charred cooking debris on rim.
- q. Neckless jar rim with exterior punctates, 15% medium sand, and angular quartz, D 17, CB dark gray (10YR 4/1), charred cooking debris on rim.
- r. Neckless jar rim with exterior fine incising and punctates, 10% mica, D 20, CB reddish brown (2.5YR 5/4).
- s. Spindle whorl, 15% fine sand, CB dark gray (7.5YR 4/1).
- t. Fragment of worked sherd disc, 15% coarse sand, ST 0.90.
- u. Gunflint: Tan-gray flint.
- v. Bowl rim with exterior impressed triangles, 20% fine sand and white particles, D c.32, ST 1.16, CB very dark grayish brown (10YR 3/2), graphited surfaces.
- w. Bowl rim with exterior impressed triangles (III: 1), 20% fine sand and white particles, D c.30, ST 1.08, CB very dark gray (10YR 3/1), graphited surfaces.
- x. Bowl rim with interior lip notching (III: 1), 30% coarse sand and angular quartz, D c.30, ST 0.80, CB Dark gray (10YR 2/1).
- y. Neckless jar rim with exterior combing (III: 1), 40% coarse sand and angular quartz, D 14, ST 0.90, CB very dark gray (10YR 3/1).

Figure 8: Ceramics of Fanjahirambe (443.4 - 132.5).

- a. Basin rim, 20% Angular quartz and medium sand, D ?, ST 1.39, CB very dark grayish brown (10YR 3/2).
- b. Bowl rim, 20% coarse sand, D c.36, ST 0.81, CB Dark grayish brown (10YR 4/2).
- c. Bowl rim, 20% angular quartz and coarse sand, D 26, ST 1.00, CB dark brown (7.5YR 3/2).
- d. Bowl rim, 10% medium sand, D ?, ST 0.65, CB light brown (7.5YR 6/5).
- e. Bowl rim, 15% coarse sand, D 34, ST 0.64, CB reddish brown (5YR 5/4), graphited surface.
- f. Bowl rim with triangular impressions on exterior, 15% angular quartz and coarse sand, D ?, ST 1.10, CB very dark gray (5YR 3/1), graphited surface.
- g. Basin rim with triangular impressions on exterior, 20% angular feldspar(?) and coarse sand, D c.38, ST 1.37, CB dark grayish brown (10YR 4/2), graphited surface.

- h. Bowl(?) rim with triangular impressions on exterior, 10% medium sand, D ?, ST 1.06, CB very dark gray (10YR 3/1), graphited surface.
- i. Basin rim with triangular impressions on exterior, 15% medium sand, D c.34, ST 1.63, CB reddish brown (5YR 5/4), graphited surface.
- j. Bowl rim with triangular impressions on exterior, 15% Medium sand, D 30, ST 0.90, CB dark reddish gray (5YR 4/2), graphited surface.
- k. Basin rim with triangular impressions on exterior, 15% medium sand, D c.48, ST 1.14, CB reddish brown (5YR 4/4), graphited surface.
- l. Bowl rim with triangular impressions on interior, 20% coarse sand, D ?, ST 0.82, CB dark reddish brown (5YR 3/2), graphited surface.
- m. Bowl rim with triangular impressions on interior, 40% graphite, D c.35, ST 1.15, CB gray (N / 4), graphited surface.
- n. Neckless jar rim with exterior broad incising, 10% medium sand, D c.15, ST 1.06, CB reddish brown (5YR 4/4).
- o. Neckless jar rim with exterior combing, 20% coarse sand, D ?, ST 0.95, CB reddish brown (5YR 5/5).
- p. Neckless jar rim with exterior combing, 15% angular quartz and mica, D 30, ST 0.60, CB reddish brown (5YR 5/5).
- q. Neckless jar rim with exterior combing, 10% medium sand, D 18, ST 0.81, CB reddish brown (5YR 4/4).
- r. Neckless jar rim with exterior punctates, 20% medium sand and mica, D c.16, ST 0.85, CB very dark gray (10YR 3/1).
- s. Neckless jar rim with exterior impressed triangles, 25% angular quartz and medium sand, D 24, ST 1.01, CB light brown (7.5YR 5/4).
- t. Neckless jar rim with exterior impressed triangles, 15% angular quartz, mica and medium sand, D 36, ST 0.90, CB reddish brown (5YR 5/4).

Figure 11: Ceramics of Ehoala (453.4 - 120.4), Fenoarivobe (442.1 - 132.3) and related sites.

- a. Bowl rim (Ehoala west), 25% angular quartz and medium sand, D c.30, CB pinkish gray (7.5YR 6/2), graphited surfaces.
- b. Bowl rim with interior impressed triangles (Ehoala west), 20% angular quartz, D 38, CB dark brown (7.5YR 3/2), graphited surfaces.
- c. Bowl rim with interior impressed triangles (Fort Dauphin, 456.4 - 121.7), 20% coarse sand, D 21, CB very dark gray (10YR 3/1), graphited surfaces.
- d. Bowl rim (Ehoala west), 20% coarse sand, D ?, CB light brown (7.5YR 6/3), graphited surfaces.
- e. Bowl rim with interior impressed triangles (Ehoala west), 20% medium sand, D 28, CB reddish brown (5YR 5/4), graphited surfaces.
- f. Bowl rim with interior impressed triangles (Ehoala east), 20% medium sand and angular quartz, D c.28, CB black (10YR 2/1), graphited surfaces.

- g. Bowl rim with interior incisions and impressed triangles (Ehoala east), 30% medium sand and angular quartz, D 18, CB reddish brown (2.5YR 4/4).
- h. Bowl rim with interior incisions and impressed triangles (Ehoala east), 40% medium sand and angular quartz, D 36, CB very dark grayish brown (10YR 3/2), graphited surface.
- i. Bowl rim with interior impressed triangles (Ehoala west), 30% coarse angular quartz, D24, CB reddish brown (5YR 4/3), graphited surfaces.
- j. Vessel of uncertain form with exterior incisions and punctate (Ehoala east), 30% medium sand and angular quartz, D 27, CB reddish brown (2.5YR 4/5).
- k. Gunflint (Ehoala east), grayish-tan flint.
- l. Bowl rim with interior incisions and impressions (Ehoala east), graphite, D c.26, CB very dark gray (10YR 3/1).
- m. Bowl rim with interior impressed triangles (Fenoarivobe, Area A), 30% coarse angular quartz, D 30, ST 0.81, CB very dark gray (10YR 3/1), graphited surfaces.
- n. Bowl rim with interior impressed triangles (Fenoarivobe, Area D), 5% medium sand, D c.32, ST 1.21, CB brown (7.5YR 5/4), graphited surfaces.
- o. Bowl rim with interior incisions and impressed triangles (Fenoarivobe, Area A), 15% coarse sand, D ?, ST 1.05, CB Dark brown (10YR 3/3), graphited surface.
- p. Bowl rim with interior incisions and impressed triangles (Fenoarivobe, Area A), 10% medium sand and feldspar, D 29 ST 0.79, CB very dark gray (10YR 3/1), graphited surface.
- q. Neckless jar with combing on lip (Fenoarivobe, Area A), 25% angular quartz and medium sand, D 24, ST 0.60, CB black (N/2).
- r. Plain Bowl rim (Fenoarivobe, Area A), 15% mica and medium sand, D 24, ST 0.80, CB brown (7.5YR 4/2).
- s. Neckless jar with exterior punctates (Fenoarivobe, Area D), 10% medium sand, D ?, ST 0.88, CB very dark gray (10YR 3/1).
- t. Neckless jar with combing on lip (Fenoarivobe, Area A), 20% mica, D c.20, ST 0.80, CB brown (7.5YR 4/2).
- u. Bowl rim with interior impressed triangles (Fenoarivobe, Area A), 15% graphite, D c.30, ST 0.79, CB dark gray (N/4), graphited surfaces.