The Evolution of Settlement Systems in the Bay of Boeny and the Mahavavy River Valley, north-western Madagascar

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Introduction

The Boeny project of 1991-92 studied the area around the Bay of Boeny south-west of modern Majunga in north-western Madagascar. The principal purpose was to provide information on natural environmental changes and changing human land-use settlement patterns during the past two millennia (fig. 1). We term this area ‘Old Boeny’ to distinguish it from the larger region, roughly the modern province of Majunga, called ‘Boina’ since the eighteenth century. Traditional histories and travellers’ accounts tell us that the dry western coasts of Madagascar were the areas with closest relations with Islamised traders from nearby islands and the coast of Africa, and that these areas saw the development of a number of large indigenous polities. These sources, however, provide little data on the long-term changes in the natural environment and in human populations and economic production. Without such data we cannot understand the changes in exchange and political organization documented in the oral and written sources. Only palaeoecological and archaeological research could provide such data. Fortunately, previous archaeological study provided a firm basis for our survey technique, while palaeoecological research throughout Madagascar had prepared us for the special opportunities of the area of Old Boeny.

Environment: geology, biology and cultural geography

On the western side of Madagascar, the land surface slopes gently under the Mozambique Channel. The sediments here are a sequence of offlapping late Mesozoic and Tertiary sedimentary deposits, whose structure and lithology determine many of the resource distributions important to traditional Malagasy communities (Allard et
The interior basement rocks 140 km from the coast are sources of gold and other minerals. The gravels and sandstones of the Triassic and Jurassic, with low relief and with much recent alluvium, are rich grazing lands increasingly used for rice cultivation. To the north-west, the early Cretaceous sandstone cuesta of Ankarafantika, in places capped by basalts, is heavily wooded, good for hunting lemurs and collecting honey. Farther north-west, the middle Cretaceous sands and sandstones have low relief with extensive recent alluviation around the heads of the larger river estuaries such as the Mahajamba, the Betsiboka and the Mahavavy, created by marine transgressions into valleys cut in times of lower sea level. The latest Cretaceous limestones form the cuesta of Berivotra, a high cliff facing south-eastward, constricting these estuaries. Between these cliffs and the coast to the north-west are Eocene limestones and Pliocene sands and gravels, often obscured by Pleistocene and recent sand dunes. The limestones are largely grass-covered, with patches of woodland around depressions and sink-holes, perhaps because karst formation has lowered the water-table in many areas. Hunters and herders in these areas of limestone could obtain water from streams or pools in caves and sinkholes. The gravel hills and dunes of the coasts are covered with a brushy deciduous forest.

The coastal waters, muddy from the many rivers, have little coral, but ten kilometres offshore are extensive reefs rich in seafood.

The region has a relatively dry tropical climate, with marked dry and wet seasons. The mean annual rainfall, around 1160 mm (Nicoll and Langrange 1989, 51), falls primarily during the austral summer between November and April. The mean maximum temperature in November, the hottest month, is about 32°C. The mean minimum temperature during July, the coolest month of the dry winter, is about 18°C (Donque 1975, 415-46). The estuaries have dense stands of mangroves. Gravel hills and old dunes nearer the coast are dominated by *Strychnos spinosa* Lam. (*mokote*) (Cabani et al 1969, 480-81). Forest patches on the calcareous plateaus are dominated by species of *Dalbergia* (*ibid.*, 565-67), *Commiphora* (*ibid.*, 644-45), and *Hildegardia* (*ibid.*, 560-61), with a canopy 10-15 m above ground level (Nicoll and Langrange 1989, 51). However much of the vegetation of this area now is a product of human impact, particularly burning. Many areas have been reduced to grasslands with scattered palms of *Medemia nobilis* Gallerand (*satra*) (Cabani et al 1969, 709-10).

Although the region was previously occupied by groups subject to the Sakalava kingdom, most of the present people of the region are recent immigrants from many parts of Madagascar. Predominant among them are Tandroy, Tanosy and Taisaka from the south. The Tsimihety from the northern highlands also entered the area, continuing their westward expansion. Finally, around the sugar factory town of Namakia, there are Betsileo from the southern highlands, Merina from the central highlands, and Betsimisaraka from the east coast. Though the established residents are termed ‘Sakalava’ by these newcomers to the area, these older residents divide themselves into a number of ethnic groups with differing traditional lifeways and different histories (see below). Among these are the Sanzanyoatsy and Manangadabo, inland peoples fishing and cultivating around the lakes of the Mahavavy alluvium; the Kajemby, a coastal fishing people; the Antalotse, Islamised traders; and the Marambitso, inland cultivators and cattle herders. Intergroup marriage and intervillage movement are frequent, and ethnic self-identification often seems to depend on current lifestyle as much as on ancestry. Regardless of affiliation, most people live in villages of small rectangular pole-frame houses with walls of reed mats, woven
palm or wattle-and-daub. Coastal villages have a few coconut trees, while interior villages have tamarind or baobab trees. Marshy, easily irrigated areas have been turned into rice paddies. The sandy river levées are used for sweet potato gardens. Manioc and maize are cultivated in swidden gardens on the hills and slopes. The young people of the villages herd cattle in harvested fields, in both freshwater and salt marshes, in open grassy areas on the karstic limestone plateaus, and in the stunted spiny forests of the sandy hills. These same areas are further exploited for their wild resources — firewood, reeds, tubers, fruits, tenrecs, birds, etc. Coasta

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**Fig. 1.** Madagascar and the Comoro Islands, showing study area (inset).
villagers fish in the estuaries and in the Mozambique Channel with outrigger canoes. Dried fish are preserved using locally-produced sea salt (Mille 1968) and exchanged. Inland villagers near the lakes take fish with elaborate traps or from dugout canoes without outriggers. Local crafts are rare in the villages nowadays, with ironwork, pottery, cloth, and many other tools being obtained from towns. As we shall show, this pattern of urban specialisation is very ancient in Old Boeny.

**Historical traditions of the Boeny area**

By the mid-eighteenth century, the term ‘Boina’ had come to designate much of Madagascar’s north-west coast, comprising roughly the present province of Majunga, in European accounts. While the established people of this vast region are designated ‘Sakalava’ by their neighbours, they themselves preserve ethnic identities which arose in the periods before they came to be dominated by the Sakalava kings. In the area of the Bay of Boeny, that is the original Boina (from Swahili Bwenti, ‘the place of stones’), the longstanding residents divide themselves into at least four separate categories. More intensive enquiry into local oral traditions will no doubt reveal even more complexity. The four groups locally reported in the area are as follows.

The ‘Sandangoatsy’, who now live primarily as fisherfolk on Lake Kinkony 30 km up the Mahavavy from the sea, were formerly on the coast (Vérin 1975, 222). In 1614, Mariano gives ‘Sarangâo’ as the name of a river entering the Bay of Marambity (Grandidier et al. 1903-1920, III, 616; Vérin 1975, 223). Alfred Grandidier in his unpublished notes (p.1850, quoted in Vérin 1975, 223) indicates that the Sandangoatsy were closely related to the Kajemby. The two seem to be among the earliest known occupants of the area of Old Boeny. The places of burial of the Sandangoatsy have not yet been studied.

The ‘Kajemby’ are fisherfolk who believe that their ancestors came from an island called Mojomy, said to have existed formerly somewhere between the Comoros and Madagascar (Vérin 1975, 249). Tradition says the Kajemby were carried to Madagascar on the backs of whales. The earliest mention of the term ‘Cajembi’ is as a place near the Bay of Marambitso, west of Boeny, by Guillaud (1845, 239-49). The Kajemby bury their dead on the west side of the Bay of Boeny between Ampasy-Boeny and Andamoty (348.0-1140.2)* in accretional linear tombs, with kerbs and standing stones of ‘beach rock’ (Ramilisonina 1970, 179-81). Each added cell has containers placed on its surface, the older containers of local pottery or ‘Karana ware’ made in Maravoay (see below), and the newer containers of plastic.

The ‘Antalatoa’, literally the ‘People of the Sea’, are Muslim coastal traders. They also believe their ancestors came from the sunken island of Mojomy. In the late nineteenth century, A. Jull was told by his Antalatoe guide from the Boeny area that his ancestors were ‘...Arabs who had come from an island near the Comoros. This island sank in a hurricane of wind and rain. The inhabitants sought refuge in

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*All archaeological sites registered with the Musée d’Art et Archeologie in Antananarivo are numbered in accordance with a local transverse metric grid called the ‘Laborde projection’. The first element of the site number is the distance in kilometres east of a line in the Mozambique Channel, west of Madagascar. The second element is the distance in kilometres north of a line in the Indian Ocean south of Madagascar. Laborde’s grid is found on all current topographical maps of Madagascar. All archaeological sites show the grid location, and the site numbers derived from this grid location are written directly on the sherds collected from the archaeological sites.
their boats, and set sail for Madagascar' (Jully 1898, 440; Vérin 1975, 250; 1986, 156-57). In spite of these traditions, the ethnic term does not seem to be attested before the late eighteenth century. The Antalaozse are buried in stone tombs near the sea, for example on the island of Antsoheribory, just east of the town site of the seventeenth and eighteenth centuries (Vérin 1975, 373).

The 'Marambisy', an ethnic term used nowadays by interior villagers, is not attested before the early eighteenth century, when it may appear as 'Maraponi', a toponym for a bay (Vérin 1975, 224). The Marambisy may be a local people who have assumed the identity of their Sakalava conquerors. In spite of their inland location, the Marambisy bring their dead to the shore for burial. There is a major cemetery just north of the modern village of Ampasy-Boeny, a village with both Kajemby and Antalaotse families.

Previous archaeological work

The area of Old Boeny was selected for intensive settlement pattern survey because a solid foundation of stratigraphic knowledge had been created here by the work of Vérin during the 1960s. The excavations at the 'échelle' — that is an informal port with resident merchants but without strong political organization — of Kingany provided copious knowledge of the ceramics and other artefacts of the fourteenth-fifteenth centuries (Vérin 1975, 293-337). The excavations at the port town on the island of Antsoheribory provided equally rich knowledge of the ceramics and artefacts of the sixteenth to eighteenth centuries (Vérin 1975, 341-439). The team of the Musée d'Art et d'Archéologie also examined other sites in the areas of Boeny Aranta and Ampasy Boeny and the island of Nosy Makamby outside the mouth of the Bay of Boeny. The collections made in Vérin's project are available for study in the Musée d'Art et d'Archéologie in Antananarivo, as are those of our survey.

The present programme

This is the report of a combined palaeoecological and archaeological team. We spent 22 to 30 July 1991 and 17 to 22 August 1992 in the Boeny area. The palaeoecological research was led by David Burney of Fordham University's Department of Biological Sciences. Burney, Toussaint Rakotondrazafy of the Service de Paléontologie, Jean-Gervais Rafamanantantsoa of the Centre National de Recherches Industrielles et Technologiques, and Katsumi Matsumoto of Brown University undertook the removal and analysis of pollen cores from lakes and caves in 1991. Helen James of the Department of Vertebrate Zoology of the U.S. National Museum was in charge of palaeontological reconnaissance and sampling in 1991. The archaeological research, both site survey and analysis, was led by Henry Wright of the University of Michigan Museum of Anthropology. During both seasons, oral-traditional enquiries were undertaken by Ramlisonina of the Musée d'Art et d'Archéologie, a member of the earlier research project led by Vérin. William Griffin of the University of Michigan assisted the archaeological work in 1992. In spite of different specialisations, everyone worked together on almost all aspects of the fieldwork, each learning much about the potential contributions and limitations of the work of others.

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Palaeoecology of the Boeny area

The pollen evidence

Our knowledge of past environments in the Boeny area is based on a 503 cm core taken from the middle of Lake Mitsinjo, in the middle Mahavavy River valley. This lake is now no more than two metres deep. This core is comprised of sediment deposited during the last 3500 years (Matsumoto and Burney 1994). Pollen analysis divided the core into three radiocarbon-dated pollen zones (fig. 2).

From about 3500 to 1200 radiocarbon years ago, Zone 1-A, a humic silty clay was deposited. Grass pollen comprises 50 to 60 percent of the terrestrial pollen. The pollen of arboreal species characteristic of the mesic deciduous forests of western Madagascar, particularly Operculicarya and Euphorbia, are relatively common, comprising 10 to 20 percent, and the pollen of Medemia nobilis (sativa), now the ubiquitous survivor in this land of frequent grass fires, is less than 5 percent. This deposit of homogeneous lake sediment, representing a time of relatively stable dry-to-mesic vegetation, is capped by an unconformity representing a drying out of the lake and an erosional interlude of several hundred years.

From about 1000 to 500 radiocarbon years ago, Zone 1-B, primarily peaty fibrous sediment, was deposited. The pollen of woody taxa declines, while that of the grasses rises as high as 85 percent of the terrestrial pollen. The pollen of Nymphaea, a plant which grows in shallow lake waters, is common, indicating that the lake was not restored to its former depth. The decline in the arboreal flora and the decrease of lake depth indicate less precipitation than during the time of Zone 1-A.

From about 500 radiocarbon years ago to the present, Zone 2 was deposited. It consists primarily of peaty fibrous sediment, though with humic clay layers at the top. Grass pollen declines, varying between 40 and 60 percent of the terrestrial pollen. The pollen of species characteristic of the mesic deciduous forests occurs only as traces. That of the endemic fire-resistant palms, Medemia and Hyphaene, increases steadily to a total of more than 20 percent. Euphorbia and Trema increase in abundance, but most other arboreal types appear only as sporadic traces. The decreased occurrence of Nymphaea suggests higher water levels. Percentages of Ambrosia and Urticaceae, which grow in disturbed habitats in western Madagascar, increase dramatically at the beginning of this zone, about 500 years ago. This is followed by a large increase in Compositae pollen, suggesting environmental changes (perhaps associated with soil-disturbing activities such as cultivation or stock-raising, resulting in an increase in weedy, ruderal plants).
At about 40 cm depth ruderals show a brief decline and the pollen of trees increases, suggesting a possible decrease in human disturbance of the landscape about 200 years ago. This could be related to the displacement of the Sakalava royal capital from the Mahavavy valley to the Betsiboka Valley during the eighteenth century. Concentrations of algae indicating eutrophication of the lake occur in the uppermost 20 cm of the core, doubtless a result of the growth of the nearby town of Mitsinjo during the past century.

The core was also analysed for microscopic charcoal particles in pollen slides according to the methods described in Burney (1987a). The results (fig. 3) can be summarised in three zones that correspond to the pollen zones described above. Charcoal values for the lower portion of the core, corresponding to pollen Zone 1-A (dated between 3500 and 1200 radiocarbon years ago), show moderate concentrations of charcoal derived from non-graminoid sources at all levels. This is the column labeled 'other charcoal' on fig. 3, most likely derived from the burning of trees and other broad-leaved plants. Graminoid charcoal (determined from morphological characteristics to be derived from grasses and related plants) is rare except at 440 cm, where it makes up about one-eighth of all charcoal. The charcoal samples from 289 cm, which spans the transition from Zone 1-A to Zone 1-B and lies on the sedimentological hiatus representing the proposed dry phase between about 1200 and 1000 years ago, shows the first high value for graminoid charcoal. Samples from pollen Zone 1-B above this level, inferred to span the period from about 1000 to 500 years ago, show initially high graminoid charcoal concentrations, decreasing later in the period, and increasing values for other types of charcoal. In the last half-millennium, corresponding to pollen Zone 2, both charcoal categories occur at moderate to low levels, though they increase markedly near the modern surface of the profile.

We may infer from these data that in the late Holocene, prior to the earliest published evidence for humans on Madagascar (about 2000 years ago: see MacPhee and Burney 1991), fires were occurring in wooded areas of the region. The generally low graminoid charcoal values during this period suggest few local grass fires (although grasslands must have been present, as grass pollen comprised about half of the associated pollen spectra). Two possible explanations, not mutually exclusive, can be proposed: either the lake was surrounded by forest at this time and the source of the large amounts of grass pollen was farther away, or grasses in the area ordinarily were cropped so short by indigenous herbivores (e.g. *Hippopotamus* and *Geochelone*; Burney 1993) that burning was precluded, a well-documented phenomenon in African savannas.

During the period of earliest known human occupation on Madagascar, the span of the first millennium AD approximately, there may have been an increase in grass fires around Mitsinjo, but dating problems arising from old carbon redepsoition and lag-concentrate effects around the sedimentation hiatus at this time make firm reconstructions inadvisable. Between approximately 1000 and 500 years ago, high charcoal influx is recorded, but grass burning decreases over time and the influx of charcoal from forests and other sources increases. Perhaps this results from increased grazing pressure from livestock. Over the last five hundred years, typically low values of both types of charcoal reflect a reduction in burning. Modern values are once again high, probably a consequence of the establishment and growth of the modern village of Mitsinjo near the lake shore beginning late in the nineteenth century. This sudden increase in charcoal correlates with the rise at this time in the sediments of the skeletons of several types of algae generally associated with cultural
eutrophication, and also correlates with historical records indicating higher population densities around the royal residence and police post at Mitsinjo.

The inferred fire history of this site accords well with other data from pollen and archaeology, suggesting that pastoralism generally preceded agricultural clearance of the Mitsinjo area, the latter occurring as larger settled communities developed.
perhaps only in the last five-hundred years. The overall pattern of the charcoal results from Lake Mitsinjo also conforms to the general trend observable in sites from other areas of Madagascar (e.g. Burney 1987a,b; 1993), showing that charcoal occurs in concentrations ranging from moderate to quite high values at some sites before the evidence of human arrival. This is followed by a strong peak in charcoal at the presumed time of human arrival and for several centuries to a millennium or more afterward, gradually decreasing to moderate values over the last few centuries. However, not all sites show the increase in the present century noted at Lake Mitsinjo.

In brief, the striking implications of the Lake Mitsinjo core for past human use of the Boeny region are: (1) the indications of dry conditions at the end of the first millennium AD and (2), with the return to somewhat wetter conditions, the evidence of increasing impact on the local vegetation, at first by herders and later by cultivators. We now turn to the archaeological evidence for human occupation.

Cultural patterns of the Boeny area

Antetikala phase

Evidence

There are no excavated samples from the area of the Bay of Boeny earlier than the fifteenth century AD. However, there is reasonable evidence of earlier occupations, and at least one earlier cultural phase can be tentatively defined. This phase is based upon the ceramic sample from the site of Antetikala (located near Katsepy on the Bay of Bombetoka, 20 km east of Boeny) and several smaller sites on the Bay of Boeny. These ceramics show clear similarities to those of Mahilaka, a large port on the Bay of Ampasindava 370 km to the north-east.

Ceramics

The ceramics from these small sites have copious inclusions of medium to coarse quartz sand and red or grey grits, which may be either crushed potsherds, termed 'grog', or fragments of shale. These inclusions comprise 20 to 25 percent of the clay body of the roughly spherical or 'hole-mouth' jars. These jars have tapered rims (fig. 4 b,f,n,m) or slightly flattened lips (a,h,j). Lugs (fig. 4 l) and tripod feet similar to those found on carved chlorite-schist vessels on sites farther north (e,o) occur. They may have been appended to such jars. None of the jar rims in our small samples have traces of slips or impressed decoration. The bowls have inclusions comprising 10 to 20 percent of the clay body. These have either rounded lips (g), flattened lips (j) or lips with appliqué strips inside the rim (c,d,k,p). One of the latter has inverted U-shaped arcs impressed on the exterior of the rim (d). Several bowls have traces of red slip.
Chronology

Antetikala ceramics show several parallels to twelfth-fourteenth century ceramics of the port site of Mahilaka, near modern Ambanja.

First, they are technically similar, a majority in both phases having very coarse inclusions.

Second, vessel forms, specifically hole-mouth jars and bowls with interior thickening on the rims, are shared. The use of feet, clay versions of those on chloritiochist vessels, is also similar.

Certain decorative motifs are identical. Specifically, rows of inverted U-shaped impressions on bowl rims (Vérin 1975, fig. 255, second row on left) and red slips occur at Mahilaka.

These parallels suggest a date similar to that of the Mahilaka phase, which is dated by imported ceramics and radiocarbon to between the twelfth and fourteenth centuries AD (Vérin 1975, 1986; Radimilahy 1989).

We also have some local evidence of the date of this assemblage from the fifteenth-century town site of Kingany. Concentrated in the lower layers of Vérin’s excavations in the house of Area II at Kingany were sherds not otherwise common in Kingany phase assemblages, but similar to ceramics of Antetikala and of the twelfth-fourteenth centuries elsewhere in north-western Madagascar and on the Comoros. Specifically, there are the rims of hole-mouth jars. These jars, however, have shell impressions and wavy combing not attested in our Antetikala surface samples (Vérin 1975, fig. 101). A sample of charcoal from this context yielded a calibrated age of AD 1015, with a 95 percent probability that the true date falls between AD 880 and 1210 (GAK 3510: 1050±80 BP) (Vérin 1975, 311; 1986, 165). It is possible that there was an earlier village at Kingany, one too poor to obtain from the Near East the imported ceramics which typify larger sites of the twelfth-fourteenth centuries. Unfortunately, the construction of the fifteenth-century house disturbed these layers, and additional excavation is needed to clarify this possibility.

The karstic sinkhole and cave of Andavambatobe (363.0-1125.7), about 10 km south-east of the Bay of Boeny, provides evidence of the presence of cattle during this period. Palaeontological excavations produced charcoal at a depth of 0.42 m which dated to about AD 1330, with a probability of 95 percent that the true date falls between AD 1260 and 1470 (Beta-55092: 580±100 BP). Below this dated layer at about 0.60 m were the bones of a cow (Bos sp.). This could indicate either cattle herding or the presence of feral cattle during the time of the Antetikala phase. The only artefactual materials from this sounding were three tiny sherds of fine micaceous ware with reddish surface at a depth of 0.20 m. Examination of the area around the caves did not reveal other early cultural traces, but further work is warranted.

Settlement

These coarse thick ceramics are found on two well-defined sites and three disturbed by erosion or considerable later occupation. There are also a few isolated occurrences (fig. 5).

First, at the site of Antetikala (377.8-1145.0) on the west side of the Bay of Bombetoka, just south of modern Katsep (fig. 1), coarse thick sherds (fig. 4 a-e) are scattered over a triangular area roughly 80 metres on a side, on the north extremity of a low beach remnant with what are now salt flats to the west and north and mangroves to the east. Across the mangroves is another beach remnant with a small
Fig. 4. Ceramics of the Antelikala and Kingany phases.
concentration of coarse thick sherds, perhaps marking a canoe landing, and the active recent beach. Although Antetikala is completely deflated, shell concentrations are still visible.

Second, at the site of Sojany Andrafana (355.3-1137.7) on the south side of the Bay of Boeny, coarse thick sherds occur on a small beach remnant, measuring about 70 by 30 metres in what is now a salt flat. Another beach remnant, the active modern beach, and stands of mangroves are to the north. The vessel rims include two from plain incurved or hole-mouth jars (fig. 4 m,n) and one from a shallow bowl with thickening on the interior (p). There is also a fragment of a vessel foot with oval cross-section (o). None of the sherds shows evidence of decoration.

a. Incurved jar rim (Antetikala: 377.8 - 1145.0) 20% medium sand and angular quartz, D 24, T .58, CB light gray (10YR 4/1).

b. Incurved jar rim (Antetikala) 25% coarse sand and red grit, D 7, T 6, CB brown (10YR 5/3).

c. Bowl rim with exterior thickening (Antetikala) 25% red grit, D ca. 40, T 6, CB brown (7.5YR 5/3).

d. Bowl rim with interior thickening (Antetikala) 20% red and grey grit, D ca. 30, T 6, CB light reddish brown (7.5YR 5/3), weak red (10R 4/4) slp.

e. Vessel leg fragment (Antetikala) 70% red and grey grit and coarse sand, CB light red (10YR 5/5).

f. Incurved jar rim (Andamoty: 348.0 - 1146.6) 20% coarse sand and mica, D 7, T 6, CB reddish brown (3YR 5/4).

g. Bowl rim (Andamoty) 10% fine sand and mica, D 7, T 6, CB reddish brown (5YR 4/4) reddish brown (3YR 5/5) slp.

h. Incurved jar rim (Maronono: 358.4 - 1139.6) 15% grey grit, D 14, T .5, CB light reddish brown (5YR 6/5).

i. Incurved jar rim (Maronono) 10% coarse grey grit and medium sand, D ca. 30, T .4, CB reddish yellow (7.5YR 6/5).

j. Basin rim (Maronono) 25% red and grey grits and medium sand, D 33, T 1.15, CB red (2.5YR 5/6).

k. Bowl rim with interior thickening (Maronono) 25% grey grits and coarse sand, D 28, T 7.6, CB red (2.5YR 5/7).

l. Vessel leg (Maronono) 35% coarse sand and red grits, CB reddish brown (2.5YR 5/4).

m. Incurved jar rim (Sojany: 356.2 - 1137.8) 20% coarse sand and grey grit, D 25, T 7.9, CB light reddish brown (2.5YR 6/5).

n. Incurved jar rim (Sojany) 20% coarse sand, graphite, and red grit, D 7, T 7.8, CB light reddish brown (7.5YR 4/2).

o. Vessel leg fragment (Sojany) 25% red and grey grit, CB reddish yellow (5YR 6/6).

p. Bowl rim with interior thickening (Sojany) 25% red and grey grit, D 24, T 5.9, CB light brown (7.5YR 6/3).

q. Carinated vessel rim (Maronono) 15% medium sand, D 34, T 9.5, CB light brown (7.5YR 6/5).

r. Thickened bowl rim (Maronono) 20% medium sand, D 26, T 1.02, CB light brown (7.5YR 4/2).

s. Carinated vessel fragment with triangular impressions (Maronono) 20% coarse sand and angular quartz, BD ca. 38, T 9.8, CB red (2.5YR 5/6).

t. Bowl rim (Ampasy NW: 348.4 - 1138.8) 10% medium sand and mica, D 25, T 8.0, CB reddish brown (5YR 5/5).

u. Thickened bowl rim (Ampasy NW) 10% medium sand and mica, D 21, RT 1.29, CB (10YR 4/2).

v. Thickened bowl rim (Ampasy NW) 10% coarse sand, D 27, RT 1.49, CB dark grey (10YR 3/2).

w. Thickened jar rim with triangular impressions in false chevron design (Ampasy NW) 5% fine sand, D 7, T 1.05, CB brown (10YR 4/4).

x. Top rim with traces of combing (Ampasy NW) 15% fine sand and mica, D ca. 13, T 8.3, CB red (2.5YR 4/6).

(inclusions evaluated visually and listed in order of decreasing proportion; D: exterior rim diameter; T: thickness of shoulder or side; CB: body colour just under outer surface.)
Third, at the site of Andamoty (348.0-1140.6) on the west side of the Bay of Boeny, a small sample of water-worn sherds was found scattered for about 80 metres along the active beach. Most of these are thick sherds of a ware with coarse sand inclusions. The one rim is of a small incurved or hole-mouth jar (fig. 4f). In addition, there is a rim of a bowl of a fine micaceous ware with a reddish slip (g). It is unlikely that well-preserved contexts will be found at badly eroded Andamoty.

Similar coarse thick sherds were found at Maronono (358.4-1139.6) on the east side of the Bay of Boeny (fig. 4 h-i) and at Boeny Aranta Andrefana (350.4-1136.7) on the south side of the Bay, in both cases mixed with later sherds. Both are on beach strands near mangroves and both appear to have covered less than a hectare. Isolated coarse thick sherds occur in the interior near Mitsinjo (340.0-1120.8) and Androhihe (364.5-1130.7) near Andavambatobe.

In sum, the known settlements of the proposed Antetikala Phase, thought to date sometime during the eleventh to fourteenth centuries, are all small hamlet sites close to beaches and mangrove stands. The occurrences of shell indicate use of estuarine resources, but none of the sites is sufficiently preserved to yield other evidence of subsistence. Isolated sherds in interior locations indicate use by herders or hunters. The Bay of Boeny has been sufficiently surveyed for us to be confident that there are no large settlements of this pioneering cultural phase, but we cannot rule out the possibility that the Bay of Bombetoka had such settlements.

![Antetikala Phase Map](image)

**Fig. 5.** Bay of Boeny: sites on Antetikala phase. (See fig. 1 for location.)
Kingany phase

Evidence

Excavations at Kingany during 1967-68 provide us with a comprehensive understanding of the material culture of the late fourteenth and fifteenth centuries. The dating of these samples is based upon the occurrence of ceramics imported from the Near East and Far East, as discussed below.

Ceramics

Local ceramics from Kingany are sandy with 10-20 percent inclusions of angular quartz, sand or mica. Among the open forms are carinated bowls, sometimes with triangular impressions or combing (Vérin 1975, fig. 97, 101, 104, 105); thickened rim bowls, either plain or with triangular impressions (ibid, 103-05); and rare plain ledge rim forms (ibid), perhaps modelled after Far Eastern green-glazed ('celadon') plates. Red ochre coatings occur; graphite coatings are rare. Among the closed forms are incurved or hole-mouth jars, either plain or decorated with triangular or oval imprints (ibid, 103, 104) and everted rim jars, either plain, with triangular imprints, or with appliqué decoration (ibid, 102, 104). Cylindrical vessels with feet and tops are apparently ceramic copies of chlorite-schist vessels (Vérin 1975, fig. 100). Most vessel surfaces are smooth. Combing is rare and coarse on Kingany ceramics, in contrast to those of subsequent phases, while triangular impressions are well done, often creating a 'false chevron' effect (Vérin 1975, 311-21; 1986, 165).

Chronology

The archaeological dating of the main occupation of Kingany depends upon the occurrence of certain Far Eastern green- and white-glazed porcelains and the presence of certain Near Eastern glazed wares and absence of others (Vérin 1975, 326-28; 1986, 167). Though the manufacturing histories of many Far Eastern and some Near Eastern ceramic wares are well known, such information provides only broad chronological limits for occurrences of such wares on Madagascar. Of greater utility is the knowledge of when various wares were traded to communities along the coasts of Africa.

Far Eastern green-glazed wares, particularly the porcelainous ceramics made in south China — often termed 'Longqan celadon' — are a case in point. These appear in shipwrecks of the twelfth century, and similar wares are made even in the present day. However, on the East African coast they do not appear at Kilwa (Chittick 1974, 311) and Manda (Chittick 1984, 70) until about AD 1300. At Kilwa, Longqan ware is replaced by South-east Asian non-porcelaneous green-glazed wares between 1500 and 1550 AD (Chittick 1974, 311). Green-glazed wares of any type are rare in the well-dated sequence of Fort Jesus at Mombasa, which was built in the 1590s (Kirkman 1974: 107, pl 32.6), though Far Eastern blue-and-white porcelain is common. Therefore, the main period of the import of such wares to the south-western Indian Ocean dates between 1300 and 1550. Their frequency in all contexts at Kingany indicates occupation within this range.
The South Arabian ware with red body and black or purple paint on a matt-yellowish glaze — so-called ‘Hadramauti black-on-yellow’ — is conspicuous by its absence. At Gedi it is very common in layer V.2 of the Great Mosque (Kirkman 1954, 96-98), which probably dates between 1250 and 1350 AD. At Kilwa (Chittick 1974, 304) and Manda (Chittick 1984, 81) it appears in the thirteenth century. The excellent stratigraphy and consistent radiocarbon-date series of Shanga also indicate import between 1250 and 1350 AD (Horton, pers. comm.). On Madagascar, it is common at the earlier port of Mahilaka, 370 km to the north-east of Boeny (Vérin 1975, 639). The absence of this ware from Kingany suggests that occupation did not begin before the mid-fourteenth century.

Thus, the presence and absence of various imported wares brackets the main occupation at Kingany (excluding the possible earlier occupation discussed above) between 1350 and 1550 AD.

Settlement

The major settlement of this phase is the town site of Kingany, west of the mouth of the Bay of Boeny, surveyed and tested by Vérin in 1967-68 (1975, 293-337). The main portion of the site covers at least 3.5 hectares spread along 500 m of an older beach about 80 m behind the present beach (fig. 6). There are two discrete areas with concentrations of masonry house foundations, middens, and tombs at the two extremities of the site (Vérin 1975, 294, fig. 84; 1986, 161). Vérin termed the east
area 'Site I', the west area 'Site II', and the south margin 'Site III'. He suspected that most of the houses on the site must have been built of perishable materials. It seems likely that the standing remains of mosques and houses are the durable structures in use at the time the site was finally abandoned, and that the stones of earlier masonry structures would have been reused. Also, some of the tombs could have been built after the site was abandoned, reusing stones from the durable structures.

At Site I, the masonry remains of one house complex and 15 tombs were mapped. The complex had a two-room house, 7.6 by 4.6 m, and an adjacent walled enclosure, 18.1 by 14.1 m in exterior measure. The sole excavations were two soundings in the house complex. Local sherds, fragments of a chlorite-schist footed vessel, celadon sherds, and a stoneware jar from South-east Asia were found (Vérin 1975, 293-303; 1986, 161-62). We recently noted that this jar has been inscribed with a name in Arabic.

At Site II, the masonry remains of two mosques, four houses, some wells and cisterns and 25 tombs were mapped. The mosques were small — 8.8 by 6.0 m and 7.5 by 5.7 m in exterior measure — with simple rounded mihrabs and no surviving evidence of carved coral decorative elements. Open spaces to the east, south and west were bounded by walls. Parts of the mosques were cleared and the entire interior of one house was excavated. This house was 9.25 by 3.25 m in exterior measure and had two rooms. In it were found sherds of local bowls and jars, Far Eastern celadon plates and bowls and white porcelain bowls, Near Eastern monochrome and polychrome bowls, and stoneware jars. Sherds of both chlorite-schist footed vessels

**Fig. 7. Bay of Poe: sites of Kingany phase.**
and tops and ceramic imitations of such vessels were found. Slag in the house fill indicates iron-working in the vicinity of Site II, but only one iron hook, similar to a crochet hook for embroidering, was found. Small decorated spindle whorls indicate the spinning of fibres. A small link of silver chain and some cut-stone pieces, perhaps scale weights, may be direct indications of exchange. Cattle and fish bones are common, and possible sea turtle and dugong remains occur. Marine shell, however, is rare, perhaps because of Islamic proscriptions against the eating of molluscs (Vérin 1975, 303-11; 1986, 162-65).

On a higher older beach ridge to the south is a long wall and three additional tombs, termed Site III. The wall is low and probably served as a territorial boundary for the town or its gardens (perhaps keeping out wild pigs) rather than for defence. One of the tombs has a masonry pillar with octagonal top, 3.35 m tall on its east side. Such pillars occur on the East African coast (Kirkman 1964) and were used on the Comoros to mark the tombs of rulers who had died at the apogee of their power (Damir ben Ali, pers. comm.). This is the only known example on Madagascar. A few sherds of local ceramics and one of celadon were found near these tombs, but it is not known if there was housing in this area (Vérin 1975, 336-37; 1968, 167).

In sum, the evidence of the 1967-68 project shows that Kingany was a small but prosperous town whose leading citizens were Muslim traders with a life-style like that of townspeople on the coast of East Africa. Fishing, herding, gardening, potting, spinning and iron-working were local activities. The existence of several mosques and tomb clusters suggests that there was a demarcation between different segments of the community. The archaeological evidence indicates that Kingany was not occupied after the beginning of the sixteenth century, suggesting that the occupants found its exposed position facing the sea intolerably dangerous in the time of Portuguese ascendancy.

Kingany is probably the un-named Muslim town on the coast of Madagascar burnt by Admiral Tristan de Cunha in May 1506, as described by de Barros (Grandidier et al 1903-1920, l:27-28) and d’Albuquerque (Grandi- dider et al 1903-1920, I:20). These accounts indicate that the town faced the open sea, and Kingany is the only such site of the fifteenth-century known (Vérin 1975, 251-54; 1986, 171-73). The Portuguese descriptions are limited, however, and we know far more about this important community of fifteenth century Boeny from archaeology than from historical documents. There is no known later documentation of this town, which conforms with the archaeological evidence of abandonment.

In contrast to the larger town of Kingany are smaller sites on the shores of the Bay (fig. 7).

North of Ampasy Boeny, one area on the old beach complex cut by the road (348.4-1138.8) has produced heavy sherds, thickened bowl rims, and jar rims with false-chevron decoration (fig. 4 t-x), indicating Kingany phase occupation. There are also some fire-broken rocks and marine shells, but no iron slag. The dimensions of this artefact scatter cannot be precisely estimated because of dense brush, but it is at least 50m in diameter.

The site of Maronono (358.4-1139.6) on the east part of the bay was also occupied by a small settlement. In addition to a range of recent sherds, we recovered coarsely tempered thick body sherds scattered over an area of 280m by 50m on a sandy beach ridge. Heavy thickened bowl rims of coarse sandy fabric (fig. 4 q-s) and a decorated spindle-whorl of a type well known from Kingany indicate occupation during this phase.
Similar small sites were found near Katsepy, 20km east of the Bay of Boeny on the Bay of Bombetoka, to the north (379.2-1147.3) and south (378.5-1146.5) of the modern village.

In sum, the late fourteenth and fifteenth centuries manifest the earliest evidence of town growth and long-range trade from the area of Boeny. Kingany, however, was small, and had relatively few dependent villages. The presence of several small mosques and cemeteries suggests that this ‘échelle’ was socially segmented. The small scale of the town and its subsidiary villages and the lack of an architectural focus for administration in the town make it unlikely that Kingany was the centre of a regional polity.

**Antsoheribory phase**

**Evidence**

Excavations on the island of Antsoheribory during 1966-67 provide a comprehensive understanding of the material culture of the late sixteenth to early eighteenth centuries. The archaeological dating of these samples is based upon the occurrence of ceramics imported from the Near East, Far East and Europe, as discussed below. This archaeological dating is fully supported by a comprehensive set of European travellers’ accounts and maps.

**Ceramics**

The locally manufactured ceramics of Antsoheribory have a clay body with 5-20 percent sand inclusions and brownish colours. The closed forms of this phase are well defined and change little through time. Large plain jars (fig. 9t; Véron 1975; figs. 118, 139) and smaller jars with exterior combing — usually horizontal on the neck and vertical on the body, but sometimes the reverse — both occur (fig. 9 i, j, r, s; Véron 1975; figs. 118,139,143,158). Incising or combing sometimes occurs on the plain jars (fig. 9k; Véron 1975, figs. 158,170). Among the open forms are simple bowls, either plain, graphite-coated, or with incised panels filled with oval or triangular impressions (Véron 1975, fig. 144), plain or combed carinated bowls (fig. 9 l-p; Véron 1975, figs. 140,145), and thickened rim bowls, either plain or graphite-coated (fig. 9 a-e), or with incised panels filled with oval or triangular impressions (Véron 1975; fig. 133,162). Combing on Antsoheribory sherds is heavy but regular, while the impressions are often haphazard.

**Chronology**

The archaeological chronology of the Antsoheribory phase relies upon the occurrence of dated imported ceramics in the stratified deposits excavated at Sites XI, XII, and XIII. Their chronology was broadly established by Véron (1975). Their dating is confirmed by the well-dated and thoroughly published sequence at Fort Jesus in Mombasa (Kirkman 1974).
Of particular concern are seven imported wares:

Far Eastern green-glazed ware, or 'celadon', a major import to earlier Kimgany, is represented by only a few sherds of one of the later South-east Asian variants. Pottery of this general sort was imported to East Africa until the mid-sixteenth century, but it is durable and vessels can continue in use for some time.

Chinese blue-and-white porcelain can be broadly divided into late and transitional Ming variants (c 1580-1670 AD) and early Ch'ing variants predominantly from the reign of the emperor Kang Hsi (c 1670-1730 AD). The many finds of blue-and-white from dated shipwrecks will allow a much more precise dating of pieces from Madagascar, but for the moment we rely on Vérin's broad division at the time of his original study into seventeenth- and eighteenth-century types.

Near Eastern blue-and-white, probably Persian imitations of Chinese porcelains on a white or buff body, appeared in Fort Jesus in the early seventeenth century, was common in the late seventeenth century, and disappeared after about 1725 (Kirkman 1974, 95).

Near Eastern monochrome green-glazed ware with red or buff body, used for hemispherical and ledge-rim bowls imitating celadon forms, is quite common. At Fort Jesus it is not clearly defined, but at Kilwa it has a broad dated span from the fifteenth to eighteenth centuries (Chittick 1974, 304). Until it is better studied, the utility of this ware for absolute chronology is limited.

A fine red or pink ware with moulded, stamped or incised decoration, formed into small vessels, was made near Alentejo, Portugal. At Fort Jesus, Kirkman notes that this is common in early seventeenth-century contexts, but is also found in those of the late seventeenth century (Kirkman 1974, 120, figs. 74: 20, 21; fig. 75: 1, 2).

European stonewares with whitish body and brown salt-glaze were made in the Rhineland from at least the late sixteenth century until the nineteenth, and in Britain from the late seventeenth century until the late eighteenth (Hume 1969, 112-14, 276-285). However, at Fort Jesus, they are found primarily in contexts dating from 1650 to 1730 (Kirkman 1974, 121).

A ware with brickly red body and poorly preserved yellow glaze, typically used to make large heavy jars (Vérin 1975, 429, fig. 175). Vérin recognised this as relatively late at Antsoheribory, but notes a resemblance to earlier yellow-glazed Yemeni wares. At Fort Jesus, it was found in contexts dating from both the seventeenth and the nineteenth centuries (Kirkman 1974, 119-20, fig. 74: 20, 21; fig. 75: 1, 2). The ware is reported from the Mombasa Portuguese shipwreck of 1697, though the vessels are smaller than those illustrated from Antsoheribory (Sassoon 1981, 118-22). Until the redware variants found at Antsoheribory are firmly dated with independent evidence, they are useful primarily for establishing the relationships between the separate excavations on the site.

An internal division of the Antsoheribory phase can be made based on the occurrence of these imported types in two stratified areas — Sites XI and XII — excavated by Vérin.

Site XI with co-occurrence in both upper and lower layers of Portuguese Alentejo wares, Rhenish or English brown salt-glazed stoneware, and Persian blue-and-white, was clearly used for dumping during the seventeenth century. This may have continued into the eighteenth century. The local bowls with graphite coatings and panelled decoration with triangular punctates, found in the lower and middle layers of Site XI, probably characterise the earlier portion of the Antsoheribory phase. Thickened rim bowls are the predominant open form in the lower and middle layers (fig. 9 a-e) and characterise the earlier portion of the Antsoheribory phase; carinated bowls predominate in the upper layers (fig. 9 f-p) and characterise the later portion of the Antsoheribory phase. Jars show little change through time.

The layers of Site XII lack most of the imported types noted above as characteristic of the seventeenth century, and the large series of Far Eastern blue-and-white sherds
is predominantly of the eighteenth century. Only carinated bowls are illustrated for these layers. The scarcity of graphite coatings and frequent use of parallel incising on bowl sherds from these layers of Site XII characterise the later portion of the Antsoheribory phase.

In sum, Antsoheribory phase assemblages are typified by jar sherds with regular horizontal and vertical combing. We cannot characterise sixteenth-century assemblages of the Antsoheribory phase; but seventeenth-century assemblages appear to have more thickened rim bowls with graphite coatings and impressed decoration in incised panels, and fewer carinated bowls. Assemblages of the early eighteenth century appear to have more plain carinated bowls, perhaps with less use of graphite coatings and more use of motifs with parallel incised lines. This tentative chronological subdivision of the local ceramics will be helpful in dating smaller sites with few or no imported ceramics.

Settlement

The major settlement of this phase is the town site of Antsoheribory excavated in 1966-67 by Vérin (1975, 341-439). It is located on a sandy island of about 40 hectares in the south-west corner of the Bay of Boeny (fig. 8). The actual occupation area, with middens, house footings and tombs, covers about 20 hectares (Vérin 1975, 342; fig. 114). He recognised a mosque, two houses, and forty-five tombs built of masonry using primarily pieces of locally available 'beachrock' and coral, with mortar made from burned coral, covered with a fine plaster made from burned shell. Vérin

![Fig. 8. Antsoheribory, site plan (after Vérin 1975). See fig. 11 for location.](image-url)
assigned thirteen site numbers to groups of structures and to midden heaps scattered across the middle of the island. However, he argued that most of the houses on the site must have been of perishable material, located in the level areas between the

Fig. 9. Ceramics of Antsoheribory phase, from Antsoheribory, sondage XI.
numbered sites. Excavations producing evidence important to the archaeological characterisation of this phase were conducted at six ‘sites’, of which three consist of standing structures.

Site I is the sole recognisable mosque (Verin 1975, 343-51; 1986, 291-93). It was larger than those at Kingany — 14.0 by 8.6m in exterior measure — with a simple rectangular mihrab and no surviving evidence of carved coral decorative elements. Parts of the mosque were excavated and in the thin layer of disturbed soil removed from within and around the building were local bowl sherds — either plain, red-slipped, or graphite-coated — and combed jar sherds. There were no sherds of imported pottery. Other than vessel fragments, there were a small lead block, a copper bar, a copper bracelet and a few glass beads.

Site III is a masonry house or storehouse (Verin 1975, 378-81; 1986, 299). This house was 12.3 by 4.0m in exterior measure, with the long axis oriented east-west, and two doors facing the bay to the north. A trench was excavated on the long axis of the single large interior room, with an extension at right angles through the west door. There was an upper layer of dark red soil with gravel and few sherds, perhaps remnants of the mud-covering of a roof of poles and mats. Cultural material was found in a lower layer of dark grey soil, which could be either occupational debris

a. Thickened bowl rim (layer V: 662) 10% medium sand, D 28, T .70, CB reddish brown (5YR 4/4).
b. Thickened bowl rim (layer V: 648) 10% fine sand, D 19, T .59, CB very dark greyish brown (10YR 3/2).
c. Thickened bowl rim (layer V: 658) 10% medium sand, D ca. 48, T .55, CB brown (7.5YR 4/2).
d. Thickened bowl rim (layer V: 647) 15% medium sand, D 16, T .90, CB very dark grey (10YR 3/1).
e. Thickened bowl rim (layer V: 649) 10% medium sand, D 26, T .57, CB very dark grey (10YR 3/1).
f. Flattened bowl rim with punctuates (layer V: 640) 10% medium sand, D 26, T .68, CB dark grey (10YR 4/1).
g. Flattened bowl rim with horizontal combing (layer V: 642) 5% coarse sand, D 24, T .77, CB very dark grey (10YR 3/1).
h. Everted jar rim (layer V) 20% coarse sand, D 15, T .55, CB very dark grey (10YR 3/1).
i. Everted jar rim with vertical body combing (layer V: 630) 15% grey grit, D 14, T .35, CB very dark brown (7.5YR 2/1).
j. Everted jar rim with horizontal neck combing (layer V: 632) 15% grey grit, D 22, T .78, CB dark reddish brown (2.5YR 3/4).
k. Everted jar rim with wavy neck combing (layer V: 634) 10% fine sand and grey grit, D 27, T .74, CB brown (10YR 5/3).
l. Carinated bowl rim with horizontal neck combing (layer I: 69) 20% medium sand, D 28, T .66, CB very dark grey (10YR 3/1).
m. Carinated bowl rim (layer I: 26) 10% fine sand and mica, D 33, T .75, CB very dark grey (10YR 3/1).

n. Carinated bowl rim (layer I: 28) 3% fine sand, D ca. 40, T .73, CB very dark grey (10YR 3/1).
o. Carinated bowl rim (layer I: 27) 10% medium sand, D 34, T .70, CB very dark grey (10YR 3/1).
p. Carinated bowl rim with vertical neck combing (layer I: 80) 5% medium sand, D 32, T .63, CB red (2.5YR 5/6).
q. Bowl rim with horizontal incising (layer I: 67) 10% fine sand, D 18, T .62, CB very dark greyish brown (10YR 3/2).
r. Everted jar rim with vertical body combing (layer I: 72) 15% medium sand, D 19, T .68, CB red (2.5YR 5/8).
s. Everted jar rim with horizontal rim combing and vertical body combing (layer I: 81) 10% medium sand, D 18, T .77, CB brown (7.5YR 5/4).
t. Everted jar rim (layer I: 74) 15% medium sand, D 16, T .86, CB red (2.5YR 4/7).
u. Gun flint (layer I: 16) yellowish chalcedony similar to Mtsinjo source.
on the floor of the house or an earlier midden layer before the house was built, or a
melange of the two. In this layer were sherds of local thickened rim and carinated
bowls — either plain or decorated with punctates in incised zones — and combed

Fig. 10. Ceramics of Antsoheribory phase, small sites.
jars. Also found were sherds of imported Far Eastern blue-and-white porcelain bowls, Near Eastern monochrome green or brown or polychrome bowls, and large jars with a bricky red body and fugitive yellowish slip. Among the artefacts other than vessel fragments are two perforated sherds, a link from a silver chain and 18 small glass beads of many colours. Blue, green, red, yellow and black were noted.

Site IV is a house termed by the archaeologists 'the House of the Sultan' (Vérin 1975, 381-404; 1986, 299-303). This house was 11.6 by 3.6 m in exterior measure,

- Thickened bowl rim (Ampasy Nord: 348.0-1139.9) 15% fine sand and mica, D 32, T. 49, RT 1.44, CB very dark grey (10YR 3/1).
- Thickened bowl rim (Ampasy Nord) 15% medium sand and quartz pebbles, D 28, T. 45, RT 1.30, CB reddish brown (5YR 5/3), trace of graphite coating.
- Thickened bowl rim (Ampasy Nord) 15% medium sand and limestone, D 20, T. 69, RT 1.06, CB very dark grey (10YR 3/1).
- Bowl rim with exterior incising (Ampasy Nord) 10% medium sand and limestone, D 17, T. 80, CB brown (10YR 3/1), trace of graphite.
- Everted jar rim (Ampasy Nord) 5% limestone and fine sand, D 20, T. 58, CB reddish brown (10YR 4/4).
- Bowl rim with exterior triangle impressions (Ampasy Nord) 10% medium sand, D 32, T. 80, CB greyish brown (10YR 5/2), trace of graphite.
- Jar rim with exterior combing (Ampasy Nord) 15% medium sand and angular quartz fragments, D ca. 24, T. 80, CB light red (2.5YR 6/5).
- Possible top rim (Ampasy Nord) 25% coarse sand and red grit, D 20, T. 85, CB reddish yellow (5YR 6/6).
- Thickened bowl rim (Ampasy Centre-ouest: 348.6-1138.4) 15% medium sand, D 28, T. 45, CB reddish brown (5YR 5/4).
- Thickened bowl rim (Ampasy Centre-ouest) 10% medium sand, D ca. 35, T. 40, CB light red (2.5YR 6/5).
- Bowl rim with exterior punctate impressioned zones (Ampasy Centre-ouest) 10% angular quartz and medium sand, D 32, T. 1.13, CB light red (5YR 6/2), trace of graphite.
- Jar sherd with exterior triangle impressioned zones (Ampasy Centre-ouest) 10% medium sand, CB red (2.5YR 5/6).
- Jar rim with exterior punctates (Ampasy Centre-ouest) 10% medium sand, T. 45, CB reddish brown (5YR 5/4).
- Jar rim with exterior combing (Ampasy Centre-ouest) 15% angular quartz fragments and coarse sand, D ca. 21, T. 84, CB (5YR 4/6).
- Vessel rim with exterior combing (Ampasy Centre-ouest) 15% coarse sand and angular quartz fragments, D ?, T. 85, CB (5YR 5/6).
- Thickened bowl rim (Ampasy Centre-nord: 348.5-1138.6) 15% coarse sand, D 42, T. 71, CB red (2.5YR 5/6).
- Thickened bowl rim (Ampasy Centre-nord) 10% medium sand, D 29, T. 55, CB red (2.5YR 6/6), traces of graphite coating.
- Bowl rim with exterior patterned combing (Ampasy Centre-nord) 10% medium sand, D ca. 29, T. 63, CB (5YR 4/5).
- Jar rim with exterior combing (Ampasy Centre-nord) 15% coarse sand, D 22, T. 74, CB reddish brown (5YR 5/4).
- Thickened bowl rim (Ampasy Ouest: 347.8-1138.2) 10% medium sand, D ca. 34, RT. 86, CB red (2.5YR 5/6).
- Jar sherd with parallel incising (Ampasy Ouest) 5% medium sand, T. 71, CB reddish yellow (2.5YR 6/6).
- Jar rim with exterior combing (Ampasy Ouest) 10% fine sand and limestone, D 20, T. 89, CB reddish brown (5YR 5/4).
- Jar rim with exterior combing (Ampasy Ouest) 10% fine sand, D 28, T. 65, CB (2.5YR 5/5).
also with the long axis oriented roughly east-west. There were two rooms, each with a door facing the bay to the north. The entire interior, except for part of the west room occupied by a baobab tree, was completely excavated, as well as the cement-covered court to the north. Cultural material was found in a shallow layer of dark soil, which was certainly both occupational debris on the floor of the house and material in use at the time the house was burned. Close to the door openings were the iron fittings of the doors themselves (Vérin 1975, 385, fig. 136). In the east room were a few utility items, such as a possible iron knife, a mortar or sharpening stone, and hammerstones (Vérin 1975, 403, fig. 153). In the excavated western part of the west room was an arrangement of furnishings. The north-western and south-western corners each had a large imported jar from the Far East (Vérin 1975, 402, fig. 151) and a small imported 'weal-decorated' jar, perhaps from the east coast of Africa (Vérin 1975, 394, fig. 142; Chittick 1974, 327-28, figs. 126, 127). Just inside the door was a brazier or censor (Vérin 1975, 398, fig. 147) with a pipe nearby. Other lamps and pipes were scattered around the room. On the court were sherds of blue-and-white porcelain bowls which must have fallen from the façade of the house, more pipes and lamps, and some polishing stones probably used in making pottery. Throughout the area were sherds of local bowls, predominantly carinated plain forms and plain or combed jars, sherds of imported Far Eastern blue-and-white porcelain bowls — several probably of the late seventeenth century, others of the eighteenth century — Near Eastern monochrome green or grey and polychrome bowls, and unglazed Near Eastern jars similar to the Far Eastern examples found in the corners of the west room. Among the artefacts other than vessel fragments were iron fragments, worked sherds and a ceramic object, perhaps a net weight. Glass beads were rare here.

The other three excavation sites were low mounds of stratified refuse, termed 'tumuli' by the excavator.

Site XI is in the centre of the site, 120 m south of the mosque and 100 m south-west of the masonry building of Site III. There is about 1.8 m of deposit, with alternating layers of dark grey and light grey soil, with lenses of shell in the upper portion. These layers contain a very high density of local combed-jar sherds and plain or graphite-coated bowl sherds (169-260) per cubic metre. There are six-eight imported Far and Near Eastern sherds for every hundred local sherds. Red, yellow and blue beads abound. A ring and a chain fragment of silver, a lead sheet, iron nails, an iron key and an iron knife or spear-blade were found in the middle and upper layers. A gunflint of local chert (fig. 10 u) and a European white clay pipestem were found in the uppermost layer. The limited quantity of imported ceramics suggests this is the debris of relatively poor households. The quantity of metal, however, suggests the opposite.

Site XII is twenty metres west of the building of Site IV. There is about a metre of deposit, composed of alternating and relatively level layers of dark grey soil and shell. As noted earlier in this section, the upper layers here date later than the Antsoheribory phase and have distinctively different combed pottery. The lower layers contain local combed and incised jar fragments and carinated bowl fragments, either plain or with panels with oval punctates. There is a relatively low density of 23 local sherds per cubic metre. The level strata and this low density suggest this is a work area with sheet refuse accumulation, rather than a midden heap. For every hundred local sherds, there are forty sherds of imported ceramics, predominantly of Far Eastern blue-and-white porcelain bowls of eighteenth-century date, but with some Near Eastern blue-and-white or green-glazed bowls. Small red, yellow and
blue glass beads occur. The occurrence of high proportions of imported ceramic types argues that this is the debris of relatively wealthy households.

Site XIII is in the western portion of the site (Vérin 1975, 420-24). Here there is about 1.6m of deposit with alternating layers and lenses of light and dark grey soil with some shell and bone throughout. Also, there is iron-working debris in the upper layers. There are only 42 sherds of local combed jars and plain or graphite bowls per cubic metre. There are only five imported sherds, predominantly of bowls of Near Eastern blue-and-white and other glazes, for each hundred local sherds, but quantities of red, green, blue and yellow glass beads. The absence of elaborately decorated local wares, the rarity of imports and absence of metal items together indicate that this is the debris of relatively poor households.

In sum, the archaeological evidence indicates that the large town on the island of Antsoheribory was extensively occupied in the seventeenth and early eighteenth centuries. There is direct evidence of the eating of fish and cattle, potting and iron-working. The long, narrow rooms of the masonry houses contrast with the rectangular rooms of those at earlier Kingany. A relatively large mosque, one able to hold up to a hundred adults at prayer, is by the sea in the north-central part of the site. Five groups of masonry tombs are scattered around the town. Wealthier households, some of whom built masonry houses, lived in the north-central area of the site, close to the mosque. Poorer households lived on the west end of the site, and there is evidence of iron-working in that area. However, much of the site has not been investigated.

The evidence of oral tradition and written accounts provides an interesting counterpoint to a description of the town based upon archaeology. A local oral tradition was related by Tombo, the Antaloatse guide of Jully, late in the nineteenth century. He said that 'the town of Boina has been founded by the Antaloatra... The sultan went to Boina. They had many boats, they traded and they were rich. They made a great town with fortifications' (Jully 1898, 441; also cf. Guillian 1845, 360-61).

The first documentary mention of the site is probably that of Dos Santos, writing in 1609, who records that Don Jorge de Menezes destroyed a town in the area in 1587 in revenge for the murder of a priest (Grandidier et al 1903, 157-58; Vérin 1975, 255). Belrose-Huygheues (1984, 183) argues that this town can only be Boeny. Dos Santos listed the products of the area as follows: 'There is much rice, maize, beans and a species of savory and nourishing herb...many lemons...much sugarcane...much ginger...much wild game which the locals hunt...One finds mines for iron and copper... It is said that there are mines for silver...There is excellent fish...' (Belrose-Huygheues 1984, 179). Santos reports, however, that the principal exports of the Arabs were '...amber [probably copal] and many slaves...' (Belrose-Huygheues 1984, 181). Antsoheribory is probably the site of the town of 'Boeny' described in 1611 by the Franciscan Gaspar de San Bernardino, shipwrecked three leagues from the town in 1606, as having '...a king of 3000 subjects, all Moors.' who were enemies of the people of the mainland (Belrose-Huygheues 1982, 75). It is also certainly 'Boene' or 'Mazalagem', visited several times between 1613 and 1619 by the Jesuit Luis Mariano. Mariano purchased several houses and negotiated with its ruler, Samano, and his advisers (Grandidier et al 1903, 303-11, 326; Vérin 1975, 257-66; 1986, 183-87). He described a town of six to seven thousand people, entirely Muslim, albeit not zealous, with a mosque (Grandidier et al 1903, 14; Vérin 1975, 262; 1986, 188-89). He noted that the language of Malindi, presumably Swahili, was spoken along this coast, but that Malagasy was spoken in the interior (Grandidier et al 1903, 21-22; Vérin 1975, 263; 1986, 189). Mariano was probably drawing on his experience in Boeny when he listed the items which could be traded in the area:
slaves of both sexes, especially children..., cattle, rice in abundance, a little maize
[or perhaps sorghum or millet], much flour made from arrow-root, green or dried
bananas... tortoises, ebony..., cloth, raffia, honey and beeswax, goats, sheep, and
poultry, all in exchange for piastres... or little chains of silver..., also fine or coarse
fabrics, glass beads..., bars of tin (sic), and... bangles of brass' (Grandidier et al 1903,
655-56; Véron 1975, 286; 1986, 191). In 1616 Father Cardoso de Pina remarked that
from Lamu, Pate and Mombasa boats go almost every year to Mazalagem' (Grandidier et al 1903,
213; Véron 1975, 237; 1986, 193), and in 1619 Mariano
actually saw two boats of Pate at anchor in the Bay of Boeny (Grandidier et al 1903,
305; Véron 1975, 270; 1986, 194). During the seventeenth and eighteenth centuries,
Boeny was more commonly known as 'New Masselage', spelled in a variety of
ways, in contrast to 'Old Masselage' on the Bay of Mahajamba to the north. A
Portuguese force from Mozambique, comprising 170 men under Roque Borges,
attacked Samamo at 'Massalagem' in 1635, but the strong fortifications and great
numbers of defenders forced them to retreat, having burned a few houses and killed
a few people (Noguiera 1971; Véron 1975, 260; 1986, 188). The anonymous account
of the visit of the English ship 'Frances' in 1640 (Ellis 1979, 155-57) describes the
Bay in detail and mentions that the town had six-thousand inhabitants and annually
received caravans from the 'Hoves', people of the highlands, with '...10,000 cattle
and 2 or 3000 slaves...' which they sold in turn to the Portuguese. A description
of the town at its height is provided by the 1674 account of Du Bois, cited by Leclerc:
'We went on to New Macelage, also on the same island, where live Arabs who have
a king whose court is magnificent and who has a good number of soldiers.... They
say that they have lived here for 200 years.... These Arabs have a beautiful town
where there are several mosques and superb tombs, cisterns and houses, all built of
stones' (Leclerc 1887, 40; quoted by Véron 1975, 273; 1986, 284). In 1676, the
town, estimated to have 1500 houses, was again attacked by the Portuguese. In 1686
it was reported to have been burned and deserted as a result of attacks by the Sakalava,
but by 1699 Dutch captains found that the trade of guns for slaves was flourishing
under Sakalava suzerainty (Armstrong 1984, 214-15). The decline of the town is
well documented by a series of late seventeenth- and early eighteenth-century maps
(Véron 1975, 246, fig. 75). In 1667, Dupes Eberhard shows dense housing on the
island without representations of trees. In 1683, Chevreuil shows scattered houses,
palms and other trees. In 1689, Van Keulen shows only a few houses on the island,
with a larger village shown on the west side of the bay near what is now Ampasy
Boeny. In 1732, d’Hermite showed no houses on the island, the major villages
being on the south side of the bay near what is now Boeny Aranta. These maps
generally sustain the archaeological evidence discussed above.

Some contrasts between the written accounts and the archaeological evidence of
this town merit discussion. In contradistinction to the report of Du Bois, only a few
buildings were of masonry. Even a dense packing of small houses of vegetal material
does not exceed 250 people per hectare (cf. Breslar 1980), and the maximum for a
settlement of 20 hectares would thus be five thousand people; the larger numbers
reported by some sources are unlikely. The Véron team found no evidence of the
reported fortifications, though we cannot rule out the existence of stockades of wooden
posts. Only a fraction of the thousand or so adult males would fit into the masonry
mosque, so either there were other mosques of perishable material, or many
townpeople were not practising Muslims. All these differences can be explained as
understandable exaggerations of European soldiers and priests, seeking to make their
adversaries appear stronger and more orthodox than they might have been. However,
all point to avenues of archaeological investigation which must be pursued in the future at Antsoheribory.

In contrast to the town on the island of Antsoheribory, a number of smaller sites of this phase are known (fig. 11).

To the north of Ampasy Boeny, on an area on the old beach complex, is a scatter of sherds in a clearing in dense brush 40 m in diameter (348.0-1139.9). Here we found both hemispherical bowls — one with rough incising (fig. 10 d) and one with incised oblique panels with small irregular triangular impressions (fig. 10 f) — and heavy thickened rim bowls (fig. 10 a-c), half of which have traces of graphite coating. The bowls indicate a date before 1700 AD. There are also jars and covers with horizontal combing (fig. 10 g,h) and a plain jar (fig. 10 e). The rim of a seventeenth-century Chinese blue-and-white porcelain plate confirms the dating based on local bowls.

Just west of Ampasy Boeny, also on the old beach complex (348.6-1138.4), is an extensive scatter of sherds at least 120 m in diameter. Here were both a simple bowl with incised oblique panels with small irregular triangular impressions and traces of graphite coating (fig. 10 k) and thickened rim bowls (fig. 10 i, j). There are also jar rims with vertical and horizontal combing (fig. 10 n, o), a jar rim with punctates (fig. 10 m) and a jar sherd with punctates (fig. 10 l). This is similar to the assemblage previously described, and is probably relatively early in the Antsoheribory phase.

Fig. 11. Bay of Boeny: sites of Antsoheribory phase.
Just north-west of Ampasy Boeny, north of the site described above on the same beach complex, is another extensive scatter of sherds at least 90 m in diameter (348.5-1138.6). Here we found both a simple bowl with combing (fig. 10 r) and thickened rim bowls (fig. 10 p.q), one with a graphite coating. Also, there were jars with horizontal combing (fig. 10 s). This site is also probably relatively early in the Antsoheribory phase.

West of Ampasy Boeny on an interior beach complex is another sherd scatter, at least 120 m in diameter (347.8-1138.2). Here were a plain bowl rim (fig. 10 t), a horizontally combed bowl rim (fig. 10 v), a horizontally combed jar rim (fig. 11 w) and an incised sherd (fig. 10 u). The last may indicate occupation relatively late within the Antsoheribory phase, but the sample is too small to be certain.

Similar heavily combed sherds were found in brief examinations of three other sites around the Bay of Boeny. Maronono Est (358.5-1139.6) on the east side, Mata'mimbro (354.2-1140.7) on the north side, and in the water off Sojany Atsinana (356.2-1137.8). Future survey will doubtless document small Antsoheribory phase settlements in these places and others.

West of the town of Mitsinjo, on a ridge overlooking Lake Mitsinjo, are several small rectangular tombs of drystone construction (ca.337.6-1118.0). We noted here sherds of heavily combed jars, probably offerings left during Antsoheribory phase times. Survey in this area was limited; doubtless more sites will be found in the future.

During the late sixteenth to early eighteenth centuries, the major town of the Bay of Boeny, relocated on a defensible island, increased at least five-fold in area, doubtless profiting from increased long-range trade. The town of Boeny or New Masselagem was substantial. There were a number of dependent villages at good canoe landings around the bay, but there is no evidence of subsidiary small towns (fig. 11). The presence of a central mosque and wealthier residential quarter suggests that this ‘échelle’ was more centralised than was the smaller, earlier one at Kingany. The existence of several discrete cemetery areas, however, suggests that the elite was socially segmented. The most substantial residence, termed the ‘House of the Sultan’, is quite small, suggesting limited wealth. Mariano’s account of the need of the early seventeenth-century ruler, Samamo, to consult with relatives and advisers before making any decisions implies limited political power (cf. Vérin 1992, 68-69). Though we know of contemporary sites in the interior, we know nothing about their relation to the town.

**Aranta phase**

**Evidence**

The ceramics characteristic of this phase were first recognised by Vérin on the surface of the modern village of Boeny Aranta. Because of their similarity to ceramics recently made by the Vezo, the nomadic fisherfolk of the south-west coast, he suggested they were a product of the Antavelo, a related fishing group reported in the Boina area (Vérin 1975, 338). We tentatively propose the term ‘Aranta phase’ as an ethnically neutral term for the archaeological remains of communities in the area of Bay of Boeny succeeding those of the Antsoheribory phase. One excavation on Antsoheribory, termed Site XII, also produced these ceramics in its uppermost layer. The archaeological dating of these samples is based upon the occurrence of ceramics imported from the Far East and Europe as discussed below. The archaeological dating
is supported by European travellers' accounts and maps. Clearly, without excavation we cannot have a comprehensive understanding of the material culture of the late eighteenth to early nineteenth centuries, but enough is known to recognise sites found during our survey (fig. 12).

Ceramics

Local ceramics from Boeny Aranta and other sites have small quantities, up to ten percent, of fine to medium sand inclusions. About one third of the sherds exhibit careful combing, often with wavy combing or incising above horizontal or vertical combing (fig. 13 h,i). Véria has termed this 'Vezo-Antavelo ware' (1975: 207,426) and suggested a southerly origin. Bowls, both plain (fig. 13 d,l,n) and combed (g-i), and jars, again both plain (fig. 13 c) and combed (a,k,m), occur. Graphite coatings are frequent on the inside of jar necks and on the surfaces of bowls. Some examples of fine triangle impressions (b,e) and fine cross-hatch incising (f,j) occur on bowls and jars. Another ceramic type made in the region, but wheel-thrown and decorated with black paint in an Indian tradition, is the red-slipped 'Karana ware'.

Fig. 12. Bay of Boeny: sites of Aranta phase.
Fig. 13. Ceramics of Aranta phase.
Chronology

The sample excavated at Boeny Aranta has eighteenth-century blue-and-white porcelains and lacks characteristic nineteenth-century European types and Karana ware, indicating an eighteenth-century date. The surface of Boeny Aranta produced definite nineteenth-century Chinese blue-and-white porcelain sherds as well as various European white wares of the late nineteenth century. A date between 1750 and 1900 for this Aranta phase seems judicious.

Settlement

We have not found the remains of an urban settlement of this phase in the area of the Bay of Boeny, nor are there travellers’ accounts of large settlements here in the late...
eighteenth and nineteenth centuries. The inhabitants of the ‘échelles’ had moved to the Bay of Bombetoka, the estuary of the Betsiboka River, to Kandrany and later to Majunga (Vérin 1975, 469-510), and to the Bay of Marabitsy to Andoka (Vérin 1975, 220-42).

There were, however, a number of village sites (fig. 12).

At the modern village on the beach at Boeny Aranta, ceramics are scattered over an area at least 800 m long and 120 m wide (350.2-1136.9) (fig. 12). Iron slag occurs at its eastern extremity. Rims of plain simple bowls (fig. 13 d, l, n), bowls with fine triangle impressions (fig. 13 c), bowls with fine wavy combing (h) or incising (i) over horizontal combing, and jars with fine combing (a, b, k, m) or incising (j) were found. eighteenth- and nineteenth-century Chinese blue-and-white porcelain and European white-glazed wares were also recovered. Similar ceramics are found on the beach of the modern village of Ampasy Boeny, so there must have been a similar village site there, now much damaged by the waves.

Just west of Boeny Aranta at Antafiakely (349.3-1136.1) on a sand-spit east of the estuary of Matsoborimtsiriny is a scatter of fine combed sherds 180 by 40 m. One sherd of eighteenth-century Chinese blue-and-white porcelain was found. A shrine here marks the traditional residence or ‘doany’ of the Sakalava ruler Andriamtoarivo, of the early nineteenth century.

There was some occupation in the north-western area of Antsoheribory. From the uppermost half-metre of the excavation at Site XII are a few jar rim and body sherds with fine cross-incising over combing, wavy combing, multiple parallel incising, and plain carinated bowls (Vérin 1975: 416-20, fig. 164). Such sherds are found in the north-west part of the site in the flat areas between the ‘tumuli’, indicating a low density occupation over about four hectares.

Some fine combed sherds indicating Aranta phase occupation were found at the small sites of Maronono Atsinana (358.5-1139.6) on the east side, Mata’imotro (354.2-1140.7) on the north side, and Sojany Atsinana (356.2-1137.8) on the south side of the Bay of Boeny.

In the middle Mahavavy Valley, the limestone cuesta on which the town of Mitsinjo is situated has a complex of Aranta phase sites. At the south-west edge of Mitsinjo (357.9-1138.6), a modern path has cut into a midden deposit with a small sample of fine combed sherds, including one with incising over fine horizontal combing. North-east of Mitsinjo is Ampasimbahiny (340.7-1211.1), a site with similar ceramics covering at least 1.5 hectares. Between these two habitation areas in the area of the modern town occupied by government buildings (340.0-1120.8) are isolated sherds and flakes and cores of local jasper, apparently the debitage of gunflint manufacture.

The Aranta phase is certainly of the period of Merina ascendancy, but it probably developed during the preceding phase of Sakalava rule, which began before 1740. Since the main trading activities had moved to the Majunga area, the Bay of Boeny was no longer a centre for trading activities, but there were still villages and hamlets around the shores of the Bay.

A twentieth-century addendum

Through the present century, villages have continued to shift their locations around the shores of the Bay of Boeny, and local ceramics and imported items are still being discarded on such recent sites. South-west of the modern village of Ampasy Boeny
on the south extremity of the old beach complex is a sherd scatter at least 150 by 100 m in extent (348.9-1137.6). This can be dated to the early twentieth century by the occurrence of late examples of European Willow ware and Floral wares, enamelled metal bowls, and flashlight batteries. Bowls of local ceramics are not represented at all in our collection. The predominant form is a small plain jar made on a ware with sand and angular quartz inclusions (fig. 13 p-t). In this ware is also the rim of a basin with finger impressions on the lip (13 o). Similar vessels are sold nowadays in the Analaky market of Antananarivo for use as flowerpots, but their place of manufacture has not been determined. In addition, there are large jars of the red-slipped wheel-made Karana ware, still made by Sunni Muslim potters of Gujerati origin in Marovoay (fig. 13 u,v). Such jars are placed next to the Kajemby tombs located north of Ampasy Boeny.

Environmental and cultural development in Old Boeny

It may be tempting to view the human use of the Bay of Boeny as a continuum of cultural development from a few littoral villages to a small trading town to a large trading town with dependent villages, and finally to dissolution back into littoral villages. This would do violence to both the historical and the archaeological records. It appears that the small town of Kingany was abandoned in the early sixteenth century, and we have no definite evidence of further occupation around the bay until the early seventeenth century. The town of Antsoheribory was settled in part by people with somewhat different traditions of domestic architecture whom oral tradition brings from the north. This town was abandoned early in the eighteenth century, and population shifted northward to the Bay of Bombetoka. Ceramic parallels also suggest that some Aranta phase occupants of Boeny were also immigrants, perhaps from the south.

In spite of these seeming discontinuities, there are lessons to be learned from our consideration of the environmental and cultural evidence.

First, regarding the environment, we have noted that the increase in species such as Medemia nobilis shows deforestation and increase of the burning of pasturage during the past one thousand years, and the increase in the pollen of crop weeds shows increased cultivation during the past five hundred years. One may be tempted to conclude that the increase of population density directly causes environmental damage. However, the situation is more complex. It is not the case that environmental damage is correlated with the size of urban centres. Even though the centre of Boeny was abandoned, the proportion of the pollen of fire-resistant palms and the weeds of cultivated fields increased as villages continued to proliferate.

Second, regarding the crafts, the concentration of specialists such as iron-workers in the central towns is a geographical pattern going back at least to the fifteenth century. There is iron slag only on the major settlements of Kingany, Antsoheribory, and Boeny Aranta. Since smithing would require charcoal, as would the production of coral cement, one might expect this to contribute to environmental damage. However, adequate supplies of charcoal could have been produced from the fast-growing mangrove forests. This tradition of north-west coast craft centralisation contrasts with the east coast tradition of iron-working activity dispersed in almost every village and hamlet (Wright and Fanony 1992). The explanation of this difference is a problem for future research.
Thirdly, these Islamised coastal towns were not particularly large or centralised, and they seem to lack smaller satellite towns. Their contemporary neighbours in the interior appear to have been very dispersed. While they clearly provided exotic luxury goods and, later in history, guns to inland peoples, they seem unlikely to have provided political models.

Preserving historical sites in the Boeny area

Our survey has shown that Kingany and Antsoheribory have suffered in the three decades since the work of the 1960s. If they are to survive, both as loci for future research and as historical sites to enlighten and inspire visitors, they must have a greater degree of protection. The cutting of the brush for fuel should be controlled so that plants in the walls and surrounding smaller bushes are removed, but the ruins continue to be shaded. The burning of the coral and mortar to make new cement must be stopped. Specialists in the consolidation of coral-rag architecture should be consulted to plan restoration of buildings in danger of collapse. At Kingany, protection of the site could be planned in conjunction with protection of the nearby forest and its lemurs.

References


