Chapter 19

# The Nonagricultural Chiefdoms of Marajó Island

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## INTRODUCTION

The study of the pre-Columbian occupation on Marajó Island dates back to the beginnings of archaeology as a field of inquiry in Brazil during the late nineteenth century. Elaborate funerary vessels, together with other exquisite pottery objects excavated from Marajoara cemetery mounds soon filled museums in Rio de Janeiro and Belém, while short notes and articles published in important journals attracted worldwide attention to the unexpected traits of "civilization" just discovered in the tropics. For decades to come, the origins of the people who built the 10- to 12 m-high earthen mounds and the meanings of the decorative designs on their pottery were a matter of speculation.

During the first half of the twentieth century, scientists, journalists, and non-professional archaeologists visited and excavated the mounds located in the seasonally inundated savannas, disturbing them so much that some were turned into piles of broken sherds mixed with the sediment that had been used for mound construction. A site distribution map published by Helen Palmatary in 1950 indicated the existence of some thirty mounds or mound groups dispersed over an area of roughly 20,000 $km^2$, leaving open the possibility that many more were yet to be found. Although funerary practices and mound features were described similarly for all locations and the ceramics were all taken as belonging to the same tradition, the excavators noticed both horizontal and vertical variation in the archaeological record; pottery sub-styles varied across the region and burial practices changed through time (Figure 19.1).

A change in research objectives and methodology took place with the arrival of Betty Meggers and Clifford Evans, who carried out the first regional survey on Marajó Island during the late 1940s, providing a comprehensive account of Marajoara culture and previous occupations. Based on ceramic attributes, Meggers and Evans (1957) defined five different archaeological phases for Marajó Island alone. With the exception of the

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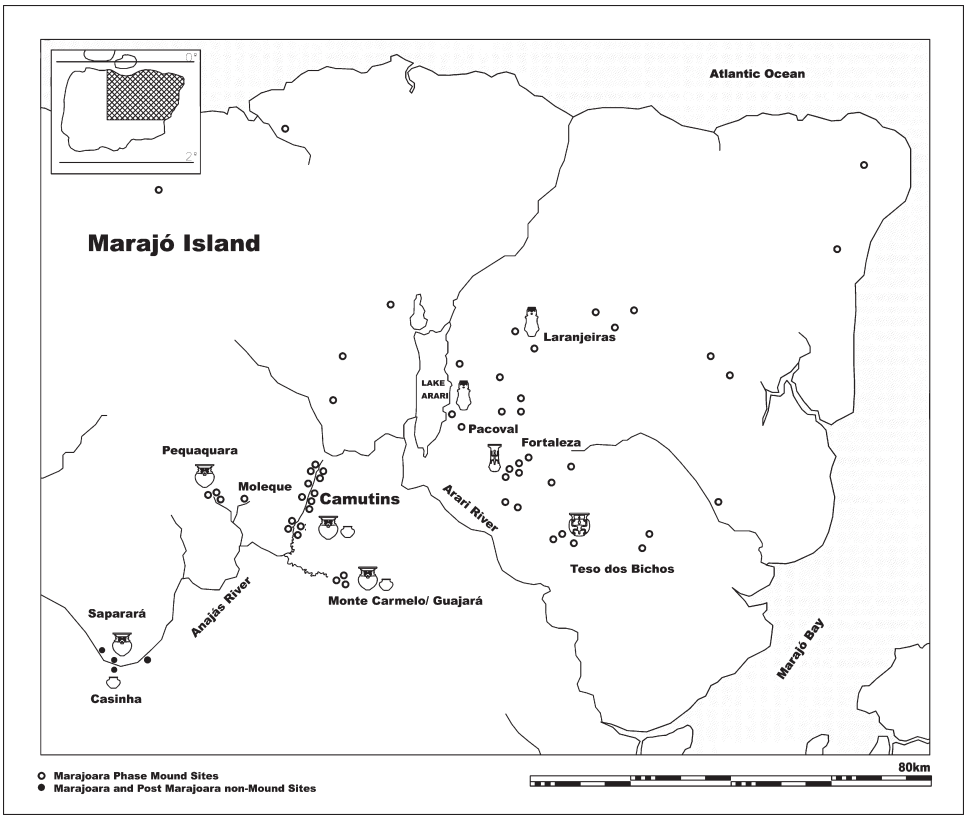


**Figure 19.1.** Distribution of Marajoara phase sites and pottery styles. (Denise Schaan)

Marajoara Phase, which is the fourth one, the others were called "tropical forest phases," after Steward (1948).

Meggers and Evans demonstrated that for each cemetery mound there were several habitation mounds. Assuming that ecology would limit cultural evolution, Meggers and Evans suggested that Marajoara populations had migrated from western South America, where they found similar traits of social complexity (Meggers 1954; Meggers and Evans 1957: fig. 148). They explained that mound building, necessary for survival in a seasonally flooded environment, was a cultural trait brought with the settlers.

In the 1980s, Anna Roosevelt challenged Meggers and Evans' interpretations through her investigation of two cemetery mounds, one located in the southeastern savannas, and another at the Anajás River headwaters (see Figure 19.1). She demonstrated that these mounds contained not only burials but also abundant domestic structures, indicating that they were used for habitation, feasting, and funerary rituals. Based on radiocarbon dates from her research and previous investigations (Meggers and Danon 1988; Simões and Figueiredo 1965), Roosevelt (1991) established that the Marajoara Phase lasted from AD 400 to 1350. Analyses of microfaunal and macrobotanical remains indicated that the diet was based on "annual cropping of seed crops, plant collection, and intensive seasonal fishing," a diet "supplemented by tree fruits and seeds and occasional game" (Roosevelt 1991: 26, 405). Roosevelt (1999) also stated that Marajoara mounds were administratively

and economically independent, organized in a "heterarchical" system. This explanation of the complex traits exhibited by Marajoara society contrasted with the one offered by Betty Meggers.

Meggers maintained that the Marajoara people were intrusive; given the assumed ecological limitations, autochthonous development of social complexity would have been unlikely, if not impossible. Meggers (2001) explained the long duration of the Marajoara Phase by the ability of those populations to adapt to the local ecology, exploiting the region's abundant wild resources, especially palm starch. Meggers' migration hypothesis, however, implies a "cultural decline" through time, which has not been clearly demonstrated. In fact, while there are signs of a collapse in the regional political economy after AD 1100, expansion characterizes the period from AD 700 to 1000 (Schaan 2004). Moreover, there is a clear continuity in material culture between previous occupations by small scale, autonomous villages and the mound-building societies; there is also some evolution in settlement patterns through time, indicating that the advent of Marajoara culture was a result of a long-term process of cultural change.

Roosevelt (1999) argued that only a heterarchical mode of social organization could explain functional similarities between mounds, based on her understanding that all the known mounds were part of a single settlement system. The absence of political centralization, in her view, was due to a generalized subsistence economy, which lacked the necessary surplus to finance social complexity. Nevertheless, I see a problem of scale of analysis in Roosevelt's view of the lack of a political center, since groups of ceremonial mounds associated with several smaller habitation mounds probably represent distinct settlement systems, some small chiefdoms of perhaps 1000 to 3000 inhabitants each.

Although Meggers and Roosevelt express different ideas on how to interpret the cultural development on Marajó Island, both explanations stem from the same assumption: that only intensive farming could support the emergence of regional, centralized, and hierarchical social systems. In the light of the restricted agricultural potential of the savanna soils and the absence of any evidence for intensive planting of seed crops, archaeological evidence for social stratification and in situ development of social complexity were overlooked by these researchers. However, a different picture emerges when the island's particular ecology is considered, and the archaeological record is revisited.

## MOVING EARTH TO MANAGE WATER

A panel written by Giovanni Gallo, in O Museu do Marajó, states: "On Marajó it is not the national president, nor the governor, that reigns. Here, there is an absolute and total dictatorship: water. It is water that offers the means of subsistence and impedes life; it conditions health, work, everything, without raising its voice in a disloyal, ruthless way. The seasons of the year have but one name: water, mud, drought. It is the dictatorship of water."

Marajó Island, 49,606 $km^2$ in area, is the largest and easternmost island in an archipelago that lies at the mouth of the Amazon River. The enormous amount of nutrient-laden sediment carried by this powerful river and deposited on the western portion of Marajó and on several smaller islands (covered with terra firme forest, floodplain forest, and flooded forests) annually renews the soil, allowing relatively productive agriculture (Figure 19.2). In contrast, the eastern part of Marajó Island has a greatly reduced rate of sedimentation and does not benefit from the Amazon River sediments and their nutrients. The low savannas here are characterized by heavy clay and impermeable soils and are covered with grass and shrubs.

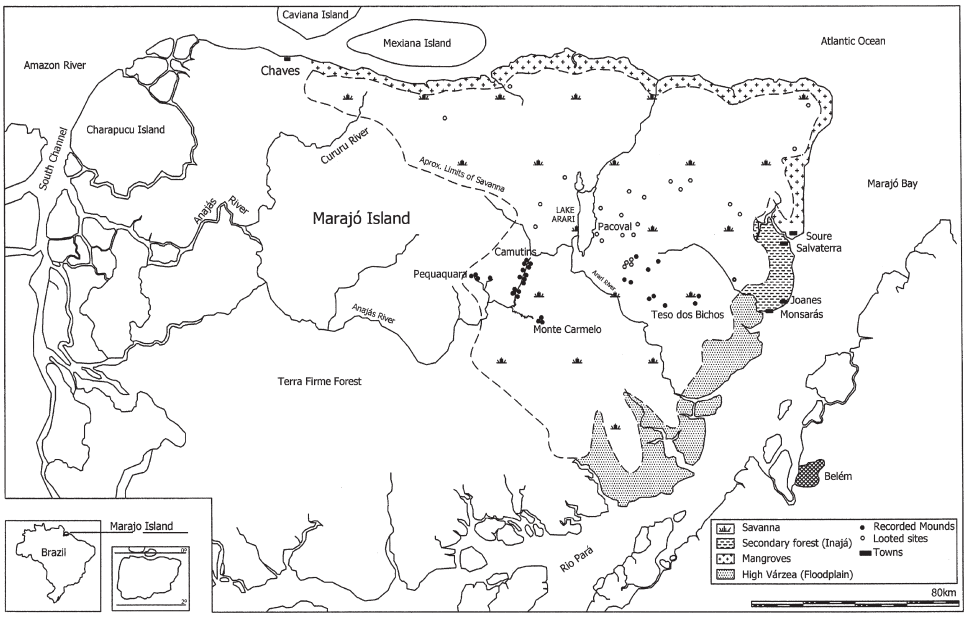


**Figure 19.2.** Vegetation patterns, sites, and towns on northeastern Marajó Island. (Denise Schaan)

The climate is characterized by a rainy season that runs from January until June. Virtually all of the annual precipitation (2,800–3,600 mm) falls during these six months making the rivers on Marajó Island seasonal. The drainage system is handicapped by the virtually flat topography and impermanent nature of most of the rivers. Moreover, several portions of the island lie below sea level. The savannas of Marajó can be compared (as Ackermann 1963 has suggested) to a flat plate with rising edges; it holds 1–2 m of rain water in 70% of its area for half of the year. The archaeological mounds are among the few patches of land that remain dry and visible in this shallow body of water.

The dry season is first felt in early July, but it is August that marks a transitional month when the waters have receded enough to expose most of the land, now covered with mud. From September to December, trade winds help to dry the soil and also carry away the rain clouds making precipitation virtually absent during these summer months. The heavy clay soils bake and crack under the equatorial sun, forming the so-called terroadas – an uneven, desiccated terrain covered with sparse grass. As the season advances, the grass turns brown and burns from natural and human induced fires.

The present economy is based on cattle and buffalo ranching, as well as the exploitation of natural resources such as timber and palms. Fishing is the second most important economic activity, especially on the savannas and along the eastern coast, where floating meadows and mangroves provide important food resources for fish populations (Smith 2002). Agricultural productivity is limited by nutrient-poor, impermeable soils, and an imperfect drainage system (OEA 1974; Sioli 1984; Sombroek 1966). Agriculture has been unsuccessful even in the area of transition between the savannas and forest (Murrieta, Dufour and Siqueira 1999) or along the coast, where it is limited to small-scale cultivation of pineapple and manioc.

Changes in the availability of resources, work schedules, and ease of movement caused by the seasonal floods and droughts have amazed both natural scientists and novelists dedicated to understanding and reporting on the native way of life on the largest island of the estuary. Archaeologists, however, have not paid enough attention to the immense limitations imposed by ecology to subsistence choices and settlement locations, and particularly the stimulus that ecology has provided to the development of landscape management practices during pre-Columbian times.

During the dry season, when small streams cease to flow and small lakes dry up, ranchers dam rivers and excavate ponds (the so-called rampas) to retain water for livestock. At the end of the rainy season, fishermen who live along the main rivers travel to the headwaters, where dams and enclosures (corrals) retain fish that spawn in the flooded savannas during the rainy season and head back to the main rivers when the waters recede. All over the savannas, large amounts of fish are trapped in deeper bodies of water and small impermanent streams. Fish are then mass harvested for weeks to come, providing plenty for local consumption and sale. The exceptional fish productivity of Marajó's savanna lakes and rivers has been reported since early colonial times, when the island supplied the recently founded city of Belém, located just across the bay, with tons of fish, turtles, turtle butter, and other products (Furtado, Lima, Albuquerque, and Castro 2002). Archaeologists have not considered the fact that the archaeological sites are located exactly in areas of high fish productivity, and that earthen mounds were only part of a wider range of earthworks designed to manage aquatic fauna.

It should be acknowledged, however, that previous research has occasionally referred to unusual landscape features, such as excavations next to the mounds, or to the fact that some mounds were partially built inside the adjacent river (Derby 1879; Roosevelt 1991: 31,168; Simões and Figueiredo 1964). It was not realized, however, that such excavations were ancient ponds, and that earthen structures connected to mounds were remains of prehistoric dams.

Visiting the upper Anajás River in the dry season, one will observe a huge shallow lake formed right in front of the Monte Carmelo and Guajará mounds. That lake provides abundant fish for regional consumption and sale thanks to a dam that is annually rebuilt adjacent to the mounds. Such practices, facilitated by local ecology, are very common elsewhere in the savannas. There is mounting evidence that they were first employed during pre-Columbian times.

## THE CAMUTINS CHIEFDOM

The Camutins site is the largest known mound group, extending for about 10 km along the Igarapé dos Camutins, a right tributary of the upper Anajás River. A survey by Meggers and Evans (1957) located 20 mounds there in 1949 and Hilbert (1952) recorded another 17 mounds two years later.

The configuration of the mounds along the stream is consistent with the configuration of a single settlement, a politically autonomous polity whose influence extended over a large region analogous with the Anajás River basin (see Figure 19.1). I decided to study the Camutins site because I thought it would be a good model for beginning to understand one of the island's complex societies. The goal of the project was to investigate the spatial distribution of mounds, cultural features, earthworks, and artifacts related to domestic and ceremonial activities, in order to answer questions on mound function, the relation-

ship between mounds, access to resources, social hierarchies, craft specialization, and ceremonial life. To accomplish this goal, all of the mounds and other landscape features were identified and mapped. Artifact remains were recovered from the mound's surface. Major excavations were conducted on two of the largest mounds (M-1 and M-17), which I believed constituted the ceremonial and political center. The following sections of this chapter offer a picture of the Camutins chiefdom that emerged from this four-year project.

## A Hierarchical Settlement System

The study along the Camutins River started by mapping the mounds and other landscape features that were missed in early research conducted during the flood season. Surveys carried out in different months of the year (March, July, September, November) were critical in providing information on seasonal landscape changes due to fluctuations in water levels, which was important for understanding changes in resource availability, mobility, and transportation. Moreover, visits during the dry period allowed the identification of areas adjacent to mounds that had been excavated to furnish silt for the earthworks. Precolumbian populations likely chose to settle along this right tributary of the upper Anajás River for ecological reasons. The Camutins headwaters are located in the seasonally inundated "campos" in the center of the island, an area known as a natural fish nursery. Moreover, the Camutins' relatively narrow and shallow canal allows for easy damming and management, as current practices have demonstrated.

The research was able to show that the Camutins River was inhabited from at least AD 500. It is suspected that the initial colonization started in the lower course of the river. Like other rivers on the island, the Camutins ceases to flow during the peak summer months, but the Anajás River tides replenish the lower course twice daily. It is possible to envision that the first management strategies would have included dams and removable fences to retain aquatic life in the lower river course. Initially, this practice could have arisen through cooperation between several families. Even today, natives seasonally move to the headwaters to fish, then locally consume or sell their harvest. Cooperation between several men is needed to build fences, place fishnets, and transport fish. In order to increase productivity, these simple techniques would have been complemented by the excavation of river-linked lakes or pools. As the population increased, the middle and upper river courses would also be occupied.

By ca. AD 700, a complete system of hydraulic control and management of aquatic resources was in place in the lower Camutins River associated with a ceremonial and political nucleus comprised of four mounds (M-1, M-16, M-17, M-18) (Figure 19.3), the most impressive of which, M-1, attained a height of approximately 9 m at its top platform. The mounds were built by the accretion of silt obtained during lake excavation. Regular maintenance of the aquatic system produced additional sediment that was eventually added to the top of the mounds, helping to build platforms at different levels, while increasing their area and height (Figure 19.4).

Although mound height was a function of fishpond excavation, such monumental constructions likely had symbolic significance as statements of power and prestige. They demonstrated the ability to organize labor and control critical resources. Moreover, the fact that the largest ceremonial mounds were located next to the major lakes indicates a correlation between ceremonial stage and control over strategic resources (e.g., fish and water) (Figure 19.5). Ethnographic data have indicated that areas with higher productivity along rivers are commonly associated with high rank people in hierarchical societies. Amerindians living along the upper Uaupés River, for example, recall that their ancestors arrived in a

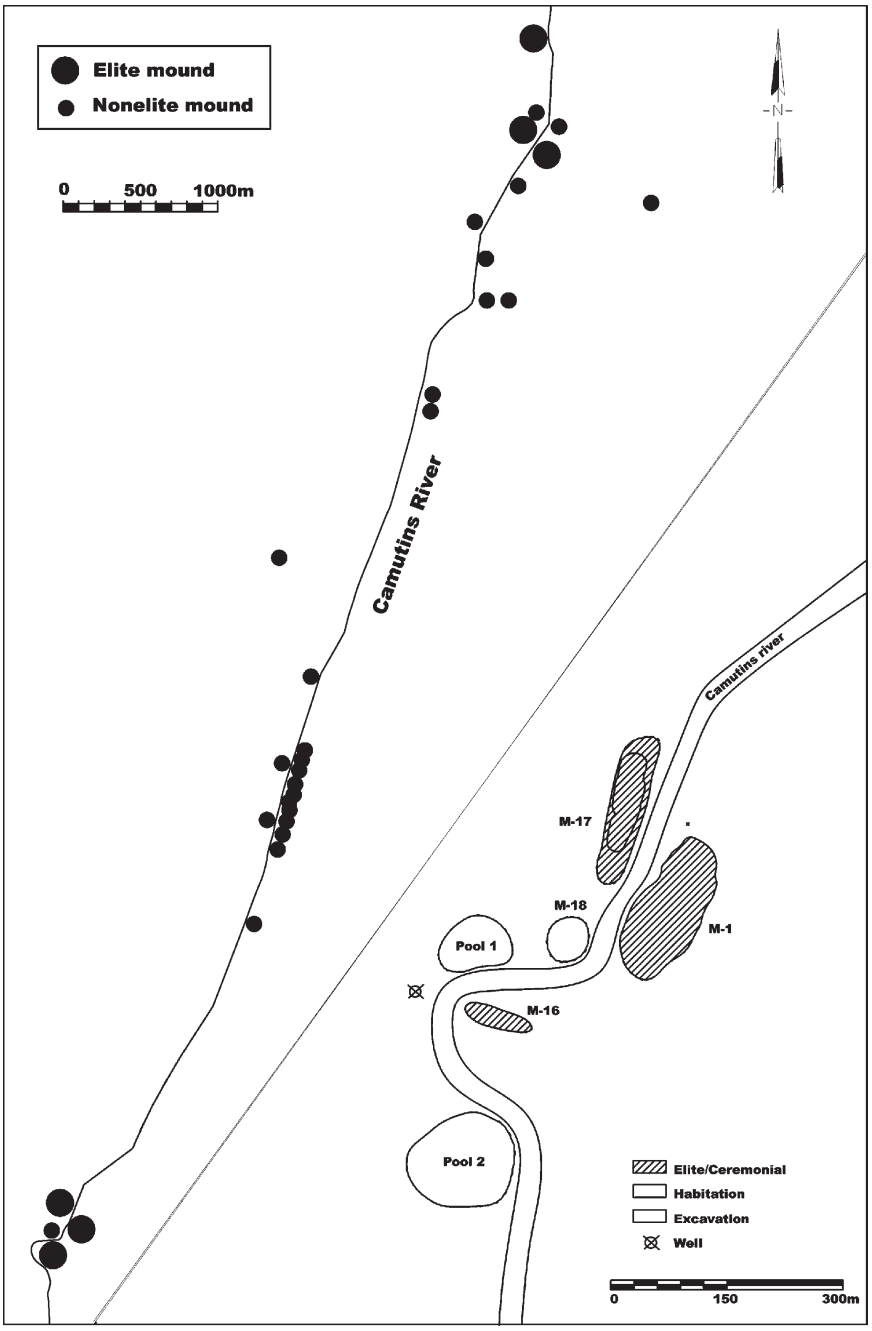


**Figure 19.3.** Upper left: Distribution of mounds along the Camutins River. Lower right: The ceremonial core, at the lower river course. (Denise Schaan)

large snake canoe, in which they were placed according to rank order, being the same order preserved in settling along the river (Chernela 1997).

As far as earthmoving activities are concerned, excavation of the pools and consequent mound construction would require a considerable effort at the onset, while routine


**Figure 19.4.** The stratigraphy of M-17 shows the superimposition of occupational surfaces and silt deposited during lake excavation. (Denise Schaan)

maintenance would be seasonal and would have required less mobilization of labor. It is estimated that a small number of people (perhaps fifty) could have built the system over the course of three to ten years.

Three kilometers upriver, in the middle Camutins, fifteen habitation mounds of various sizes were inhabited by populations that probably worked at building the dams, ponds, and mounds. They were most likely dedicated to subsistence activities related to fishing, collecting and probably some small-scale cultivation. A last group of three ceremonial and twelve habitation mounds was located along the upper course of the river. In this group, the

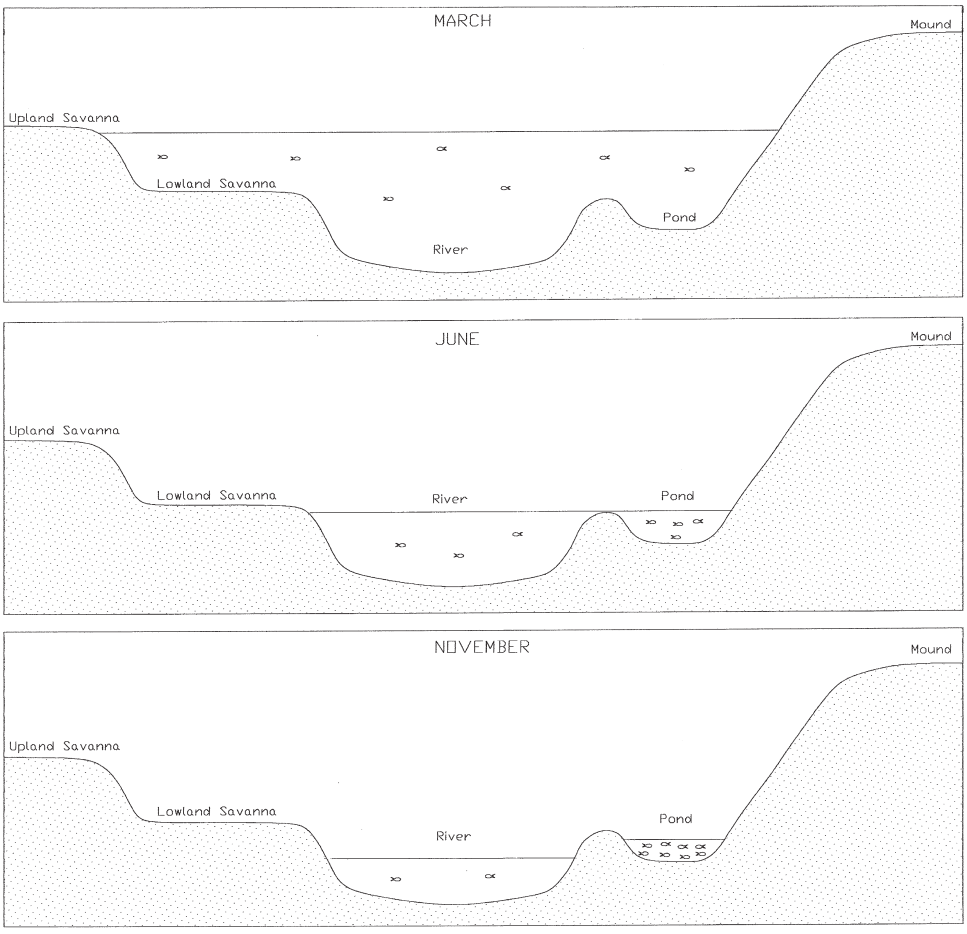


**Figure 19.5.** Model of hydraulic management, showing water levels at different seasons of the year. (Denise Schaan)

ceremonial mounds enclosed the settlement, suggesting a defensive strategy. These elite mounds contained material culture similar to M-1 and M-17, but lacked major earthworks (Figure 19.6).

The excavations did not produce data allowing for a direct assessment of population figures for the whole settlement system. However, the available area at the mound's top platform would allow for only one or two long houses (following ethnographic patterns), providing an estimate of a maximum population of 2,000 people for the entire Camutins chiefdom (Schaan 2004: 170–72).

## Political Economy

Stanish (2004) proposes that an intensified economy that could support chiefly emergence could have arisen based on cooperation instead of competition. As productivity increased, some individuals or families had the opportunity of establishing differential access to the

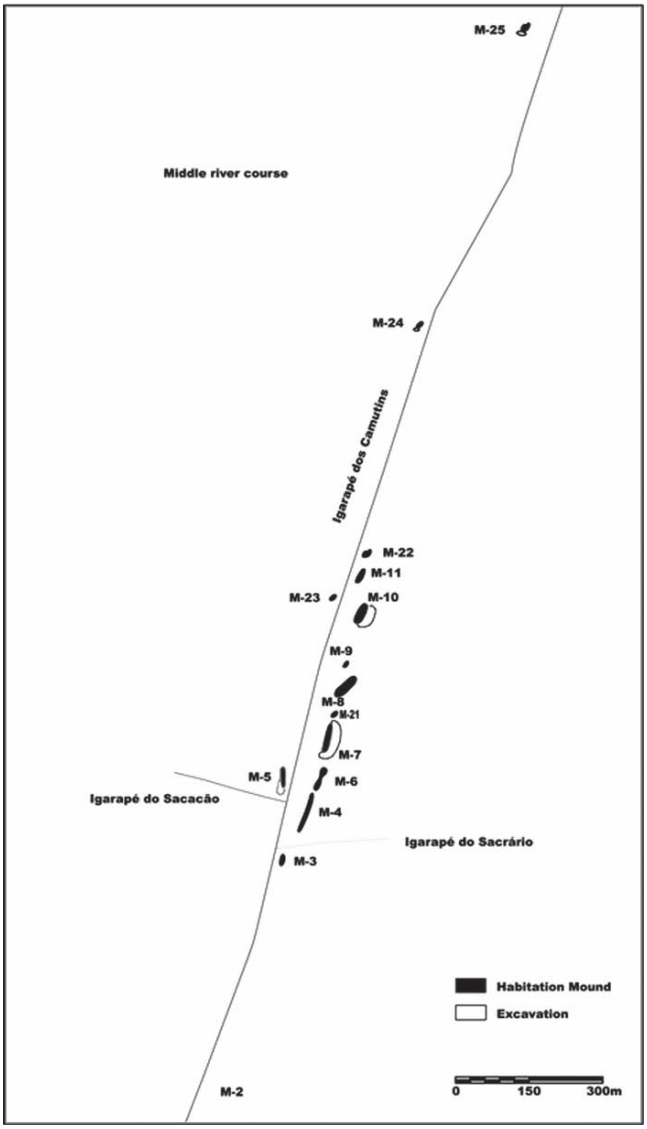


**Figure 19.6.** Distribution of mounds at the: a. Middle river course; b. upper river course. (Denise Schaan)

means of production and/or the products themselves (Gilman 1991). This differential access would create the economic basis for social stratification (Fried 1967:52).

The Camutins case is also illustrative of the association between resource concentration and the exercise of its control through ritual. Feasting, ancestor worship, and female rites took place mainly on the two larger mounds, M-1 and M-17, located on opposite sides of the lower river course, next to the main fishponds. M-16, located south of M-1, was also an elite mound, but probably played a secondary role (M-16 was intensively excavated by the land owner, who reportedly found only six funerary urns of similar size, shape and iconography).

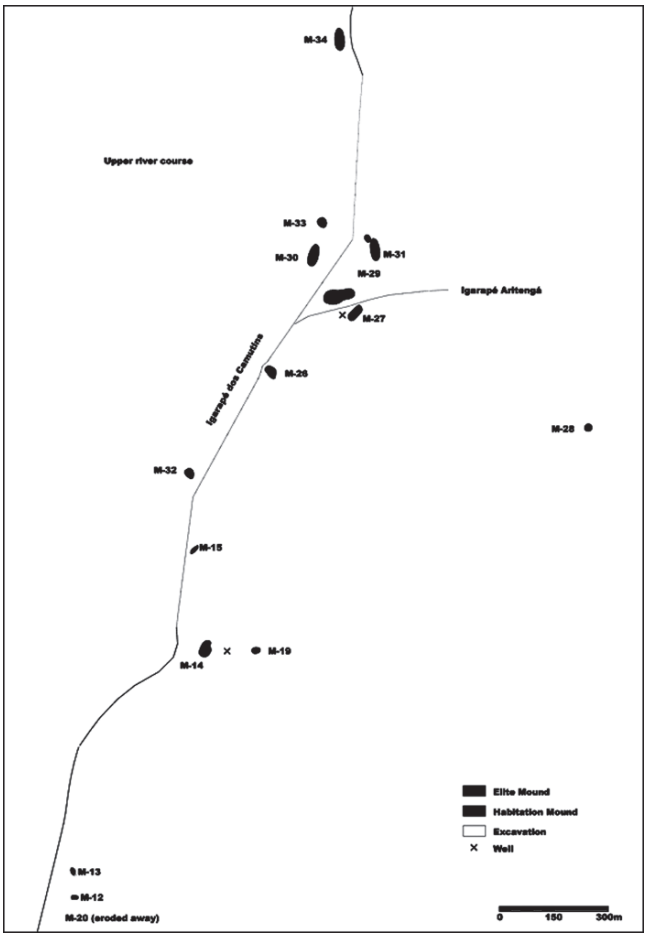


**Figure 19.6.** continued

Household features were found in both M-1 and M-17, confirming that these mounds, once called "cemetery mounds" by Meggers and Evans (1957), were in fact inhabited, as Roosevelt had already verified in her research at Teso dos Bichos and Guajará mounds (Bevan and Roosevelt 2003; Roosevelt 1991). In particular, the excavations at M-17 (M-1 was found largely looted) demonstrated that the elite were living next to their ancestors (Figure 19.7). Twenty-four funerary urns, associated with pottery vessels and other objects, including clay stoves, were discovered in a discrete 25 $m^2$ sector excavated to a depth of 2.2 m.

Some vessels contained primary and secondary burials of single individuals (Sheila Mendonça did a preliminary analysis of the human remains, described in Schaan 2004: 241–248) together with a small number of non-perishable items such as ceramic tangas (female pubic coverings), small globular vessels, plates, and stone axes (in two burials). One of the oldest urns was a primary interment of a ten-year-old child, placed together with a stone axe and a stone bead necklace around the neck; there are no rocks on the island. Although the vessel was undecorated, the presence of long-distance exchange items (the stone objects) with a young child is indicative of high status and hereditary rank.

**Figure 19.7.** Funerary vessels excavated from top platform of M-17. (Denise Schaan)

The burials span a 400-year period and display noticeable changes in mortuary practices through time, going from primary burial in large ceramic vessels to secondary burial in both large and small vessels. The most recurring urn type in M-17 was a red-on-white painted vessel, displaying curvilinear and geometric designs, associated with the major part of the sequence from AD 700 to 900 (Figure 19.8). These vessels share the common feature of snake skin patterns in a band just below the neck or rim. Structurally similar designs are recurrent on virtually all Marajoara ceremonial artifacts indicating the importance of an ancestral snake in Marajoara sacred symbolism.

Given the absence of any outstanding burial among all of those investigated, and considering similarities in vessel iconography and grave goods, it can be concluded that all individuals belonged to the same rank order, as if a kin group was in power. The proximity between elite residence, elite burials, ceremonial theater, and critical resources speaks to the symbolic control that the elite exercised over the means to sustain life, probably justifying their differential access to resources as a function of their close relation to ancestors.

The abundance of pottery related to feasting and food preparation, together with some artifacts associated with the consumption of tobacco and hallucinogenic beverages attest to the importance of ritual and ceremonial exchange in the political economy (Figure 19.9). Feasts were likely to have been an opportunity for celebrating cooperation, as well as promoting exchange and integration (Chernela 1997; Dietler and Hayden 2001). Time and resources invested in funerary paraphernalia also indicate that ancestor worship was a means to promote social cohesion and to show the elite's acquaintance with the supernatural world, a strategy commonly used to justify privileged access to limited resources.

Craft production is also an aspect of the political economy. Abundant workshop waste indicated that ceremonial and domestic pottery was produced in both M-1 and M-17.

**Figure 19.8.** A number of funerary vessels from M-17 show similar decorative patterns. (Drawings by Tayane Gama).

In M-17, children's pottery toys and the presence of tanga sherds together with remains of pottery production suggest that ceramics were produced in household contexts. Differences in the style and shape of vessels between M-1 and M-17 also indicate local variation resulting from localized production. Due to climatic conditions pottery production was restricted to the summer months. The data points to a kin-based seasonal ceramic production for self-consumption, inconsistent with most definitions of specialized pottery production (see, e.g., Costin 1991:4). Elite members are likely to have spent time and resources fulfilling

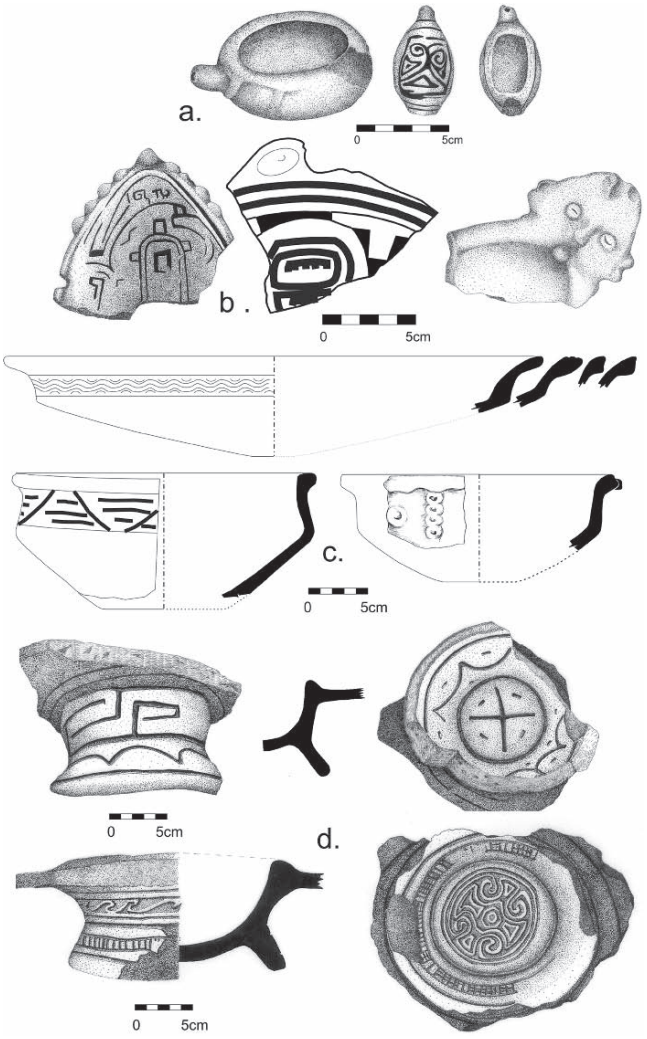


**Figure 19.9.** Ceramics for feasting at M-17. a. Snuffers; b. Small, exotic decorated plates; c. Serving vessels; d. Platter-bowls. (Denise Schaan)

the requirements of a highly valuable and socially important activity by obtaining the necessary skills to produce the ceremonial pottery.

## Gender Iconography and Female Rites

Marajoara iconography is characterized by a massive representation of females on funerary vessels and figurines, stimulating a scholarly debate on female social and political roles in the society. Features such as breasts, pubic triangles and, occasionally, the uterus (sometimes pregnant) appear together with heads, faces, arms, and legs, giving shape to several pottery objects. Anthropomorphic funerary urns almost always represent females whose body parts are zoomorphic (for instance, owl or scorpion eyes, snake-arms, vulture

head-shoulders, etc.). The ritual construction of social and individual identities through body painting and scarification are represented by painted and incised designs.

Some female figurines have phallic shapes, thus combining female and male characteristics in a single object (Figure 19.10). A number of these objects seem to have functioned as rattles, since they are hollow and contain loose pebbles that produce noise when shaken. Yet the most notable characteristic of these figurines is their impressive variability in shape, size, and decoration, which suggests that they might have represented individuals. In a study of figurines from a museum collection, a recurring pattern of breakage at the neck was observed. It seems that these objects were ritually broken after being used (Schaan 2001a, b). One possible explanation is that figurines were shamanic tools, used during curing rites (DeBoer 1998). At the Camutins site, fragmented figurines were recovered from all elite mounds, attesting to their widespread use, regardless of the differences in mound size and location.

Marajoara iconography also displays a degree of variation in decorative motifs and techniques of decoration that probably conveyed information on social identity, ownership, and social boundaries. Personal objects such as tangas, for example, vary in size and decoration, probably due to social status differences among women.

Red-on-white designs on tangas, for example, are believed to have represented social identities (Schaan 2001b). It is possible that these tangas were used by girls

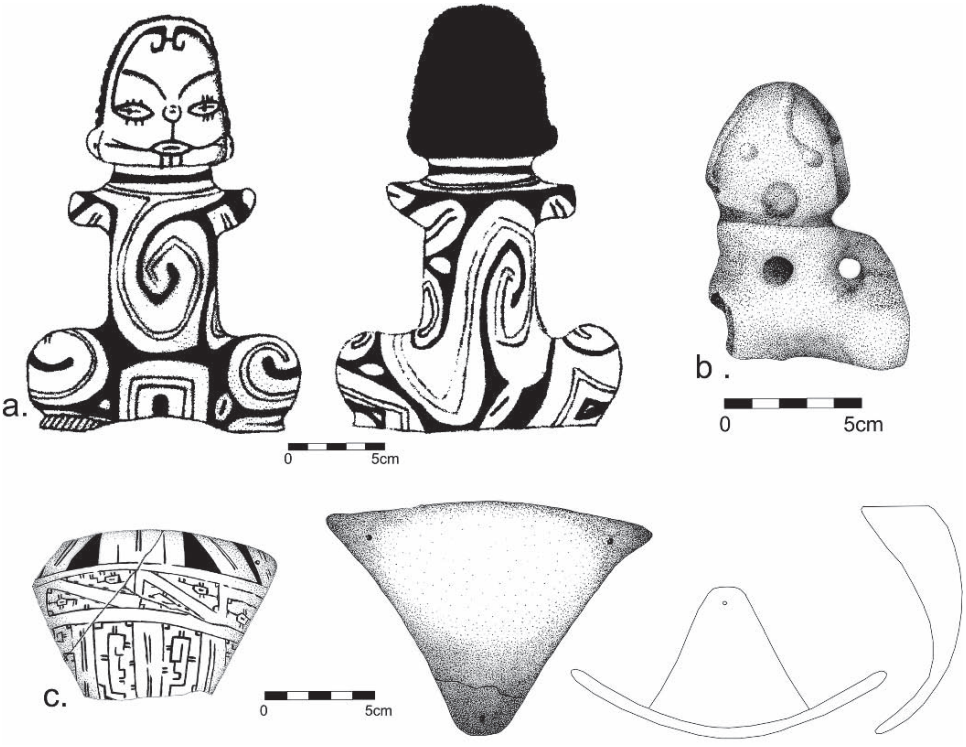


**Figure 19.10.** Marajoara culture figurines and tangas. a. Female figurine from Marajó Island (No.T220, Museu Paraense EmÌlio Goeldi, drawing by Julice Pimentel); b. Sexless figurine from M-1, Camutins site; c. Tangas from M-17, Camutins site. (Denise Schaan)

during initiation rites, while the more common (and usually larger) red tangas were used by the elder female population. The virtual absence of tangas in elite mounds other than M-1 and M-17 reinforces the idea that special rituals were carried out only in these two mounds. It also suggests, together with the abundant female iconography always escorted by recurrent snakeskin patterns, a close relationship between females, snakes, and ancestors.

## CONCLUSION

Although not common, there are examples of chiefly societies that evolved on the basis of a foraging economy, especially through the exploitation of abundant aquatic resources (Arnold 2001; Erickson 2000; Goggin and Sturtevant 1964, quoted by Carneiro 1981: 49; Moseley 1975, but cf. Haas and Creamer 2004 and Pozorski and Pozorski in Chapter 31 of this volume; Widmer 1988). In such societies rulers may control the facilities that allow intensification, requiring the population to work in building and maintaining the facilities (such as fish weirs, boats, and drying and storage places) in exchange for food and protection (Johnson and Earle 2000: 262–263). With the ability to produce surplus to sustain the ruling elite, the chiefs also guarantee their followers the security of having food supplies year round due to storage facilities and technology. This arrangement may be especially attractive in places where wild resources are seasonally abundant requiring both management and storage capabilities.

As Widmer (1988: 280–281) has pointed out, the intensive exploitation of aquatic resources, usually seen as a foraging economy, actually follows the logic of agricultural systems. Aquatic resources are not only renewable, they can be managed in order to assure reproduction and availability. Indeed, in areas where aquatic resources are highly productive, agricultural intensification is dispensable (Carneiro ms.). Therefore, investment of time and resources in order to intensify fishing may not be a matter of lack of choice, but rather of cost-benefit reasoning.

At the Camutins site, the intensification of fishing enabled populations to rely on a stable protein resource, promote population growth, and develop complex sociopolitical institutions. It is likely that traditional kin groups claimed rights over the administration of the aquaculture systems, which probably first started as cooperative units, promoting intensification with little labor investment (see Stanish 2004). This dominance was justified by means of a religious system in which ancestor worship and access to long-distance exchange networks played important roles. It is predicted that the existence of similar ecological conditions at the headwaters of several rivers that drain the savanna grasslands enabled the development of similar social formations across the island, providing a model that awaits further testing. It is possible that other mound groups, not yet studied, will reveal several competitive chiefdoms or social formations with different levels of complexity. Preliminary data indicate the absence of a supra-regional political center, which suggests a system of alliances between chiefdoms that is compatible with peer-polity interaction models (Renfrew 1986; Roosevelt 1999; Schaan 1997).

Practices for the maximization of food production, such as river damming and fishing in temporary lakes and creeks that fill with aquatic life at the end of the flood season have often been reported among Amazonian peoples. The abundance of aquatic resources described in early chronicles and in colonial documents, both along the Amazonian floodplains and in the estuary (Marajó Island included), have encouraged scholars to consider

that the protein obtained from aquatic fauna was critical in promoting sedentary life and cultural developments in the region (Carneiro 1995, ms.). However, a bias that considers foraging as an unreliable economic enterprise has prevented scholars from adequately interpreting the archaeological record.

The enduring "agricultural chiefdoms" paradigm is ironic considering indigenous cosmologies that "privilege social and symbolic interactions with the animal world," as Viveiros de Castro (1996:194) has pointed out. That paradigm just does not fit the archaeological evidence in Amazonia. Earthworks have been identified in several locations across Amazonia such as the central Amazon (Neves and Petersen in press) and the Upper Xingu (Heckenberger 2005) and, despite the fact that many of them are located next to lakes and streams, scholars have not correlated them to intensified fishing economies that would provide the necessary surplus for the emergence of complex sociopolitical systems. Mass fish harvesting is common in several locations in Amazonia today, especially in lakes and rivers affected by tides and seasonal water levels. Many of these locations were formerly inhabited by populations known for their elaborate pottery industries. For example, in the lakes that border the Trombetas River (where there are sites related to the Incised-Punctated Tradition; see Hilbert and Hilbert 1980) net fishing at the end of the rainy season is highly productive, suggesting that intensive fishing was also important there in pre-colonial times.

Increased attention to earthworks related to aquatic resource management would benefit our understanding of pre-Columbian complex societies in Amazonia. Practices that are presently common among indigenous and caboclo (mixed Brazilian Indian and European or African ancestry) populations most certainly originated in pre-Columbian times and may be a key to understanding the particular sociopolitical features that differentiate Amazonian complex societies from everything else we have seen on the continent.

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