

# The dugout canoe from São Tomé and Príncipe; The results of an archaeo-anthropological mission

Joana Baço – Gonçalo Correia Lopes

**Abstract:** The aim of this article is to present the findings of a research mission carried out in February 2020. The authors gathered evidence of the construction of wooden dugout canoes on the islands of São Tomé and Príncipe, with the goal of documenting and comprehending their manufacturing process, from the felling of the tree to their use on the water. This study analyses a very important element of the cultural tradition of an archipelago that is struggling to survive due to environmental problems, lack of interest from younger generations, and the introduction of fiberglass, a more durable and safer material.

**Keywords:** shipbuilding, maritime community, ethnoarchaeology, West Africa, Gulf of Guinea

## 1. Introduction

The conception of this paper began with a research trip carried out in February 2020 as part of the project *CON-CHA: The construction of early modern global cities and oceanic networks in the Atlantic: An approach via Ocean's Cultural Heritage*, a staff exchange project funded by the European Community, based on CHAM - Centre for the Humanities, Portugal, and a satellite project of the UNESCO Chair of Ocean's Cultural Heritage at the NOVA University of Lisbon.

The main objective of the archaeological mission was to assess the scientific potential of São Tomé and Príncipe's archaeological heritage, especially its maritime heritage. To date, no archaeological work has been carried out in the country and no articles have been published on the subject in the last 50 years, except for the very recent article published in *World Archaeology* (Mitchell, Lunn-Rockliffe 2021). The authors have tried to develop the study of the canoes of São Tomé and to document and understand their manufacturing process, from the felling of the tree to their use on the water.

This article is about the experiences and observations the authors made during this mission, with the main objective of drawing attention to the daily life of communities living on the border between land and sea, where the beach is a fluid scenario and different ecosystems of people, animals, flora, canoes, tools, and necessities meet. It is in this context that this study appears: an analytical and comparative look at a forgotten island reality that struggles daily to survive and thrive.

## 2. Historical and geographical background

The archipelago of São Tomé and Príncipe lies in the Gulf of Guinea in the Atlantic Ocean, south of the equator (Fig. 1). The archipelago is of volcanic origin and consists of two main islands, São Tomé and the Príncipe, but also of several small islets. Its location below the equator line leads to two different climatic zones during the year. Between October and May is the time of heavy rainfall, violent thunderstorms, and high temperatures. Between June and September, we have what is known as *gravana*, characterised by dry weather and almost no rainfall (Frade, Correia da Costa 1956: 31–33).

As with other islands in the Gulf of Guinea, the natural wealth of the archipelago lies in its vegetation cover, true ‘lush gardens’ created by the abundant rainfall and the hydrographic network. In fact, São Tomé and Príncipe has one of the densest and most biodiverse forests in the world and was designated a World Biosphere Reserve in 2012 by UNESCO<sup>1</sup>.

The island of São Tomé was discovered in December 1470 and Príncipe in January 1471. However, there are some authors who claim that the island of São Tomé was already inhabited when the Portuguese arrived (Santo 1979). The truth is that no evidence has been found on either São Tomé or Príncipe that points in this direction. If there was contact before the arrival of the Portuguese, no traces are known to date (Ambrósio 1984: 7). Settlement began in the 1480s, in a process very similar to that on the islands of Madeira, Azores and Cape Verde (Tenreiro 1961: 651). Over the years, the islands were cultivated with different agricultural crops (Brásio 1954). First it was sugar in the early 16<sup>th</sup> century, a result of the growing demand in Europe. Then coffee at the end of the 18<sup>th</sup> century and cocoa at the beginning of the 19<sup>th</sup> century (Agência Geral do Ultramar 1964: 21; Henriques 2000: 26). The society formed by Portuguese, foreigners, slaves, and freedmen went through different scenarios of socio-political tensions and rebellions (Seibert 2015: 110–111; Caldeira 2016: 18). The plantations were sites of constant tension between subjugates and subjugated. A few decades after the widely known Cadbury slavery case (Mateus 2018: 213–222), an episode occurred that led to the 1953 massacre of Batepá, a terrible day in the history of this land, caused by the Portuguese authorities (Rodrigues 2018: 30; Castaño 2012: 35). From this misfortune came the seeds of São Tomé and Príncipe’s independence, which was achieved in 1975.



**Fig. 1** Geographic location of the islands of São Tomé and Príncipe in the Gulf of Guinea (from Google Earth Pro; January 8, 2021)

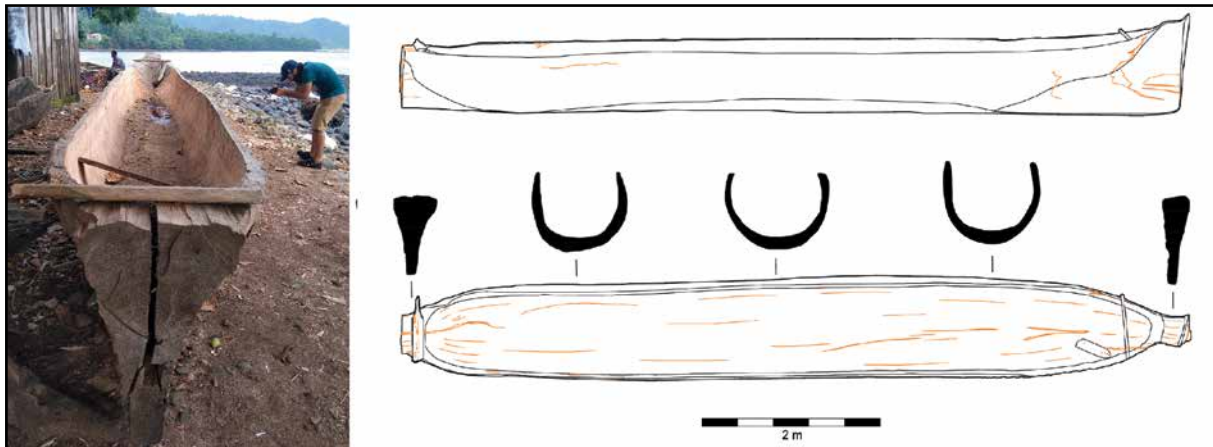
### 3. The archaeo-anthropological mission – Canoes

Any type of boat requires the combination of two factors: first, it must be able to float in all the circumstances in which it is to sail; second, it must move efficiently and in a controlled manner, either by human power, by paddles, or by the wind via sails (Muckelroy 1978: 216).

<sup>1</sup> For more information, please consult <https://en.unesco.org/biosphere/africa/island-of-principe>

Traditional canoes are not simply utilitarian objects; they shape the physical and cultural landscape of São Tomé and Príncipe and are present in various aspects of daily life. They are beings that accompany several lives and are assigned to different tasks. This statement is based on our direct observation and understanding, and examples such as those presented in Fig. 5 document this reality well. In São Tomé and Príncipe, as in many other parts of the world, fishing communities are often isolated and reserved. It can be challenging to gain insight into their way of life. Thus, the contact with the two fishing communities the authors dealt with was only possible through personal contacts, the type of data collected in this study. Our work in relation to this reality was to record several examples of traditional canoes. Maritime archaeology has found in ethnography the appropriate methodology to approach contemporary communities, their crafts, and their activities. This symbiosis arose from the need to record traditions, lifestyles and vessels that are fast disappearing.

During the mission, data collection was done through informal interviews where the authors talked to local fishermen and boat builders. The authors were able to observe the start of a canoe cutting operation in Quimpo and record two canoes: one in Porto Alegre and another in Santo António. The recording was done in three phases: identification and selection of the canoe to be recorded, securing permission and access to the canoe, and the recording itself, which consisted mainly of photogrammetry, detailed photography, and direct measurements. Post-processing of the photogrammetry and drawing was done using Agisoft Photoscan/Metashape and AutoCAD software (Fig. 2). The archaeographic record process of the canoes involved the use of a camera, a scale, and an articulated meter. During the informal interviews, we uniquely take fieldnotes. The process of constructing a canoe, as described below, was based on direct observations and a few interviews.



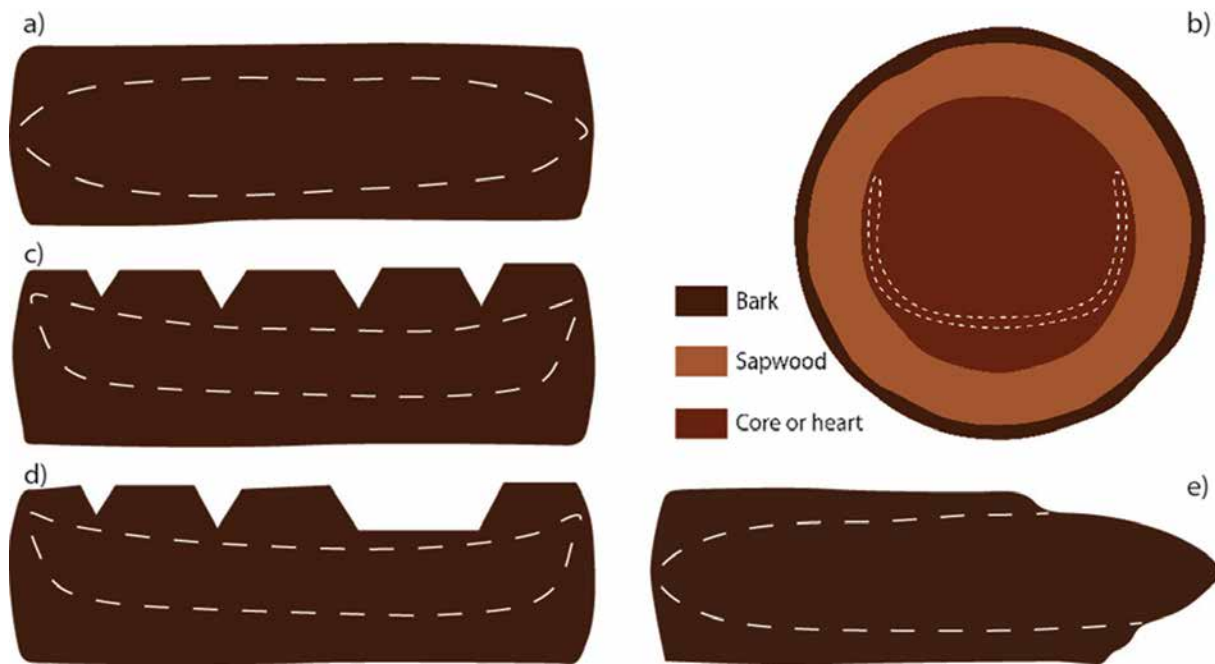
**Fig. 2** On the left, photogrammetric record of the dugout canoe in Porto Alegre; On the right, the vectorial draw and sections of the same canoe after all the processing (photo: J. Baço)

The process of constructing a Santomean canoe begins with the selection of the tree to be used, which is always planned according to the lunar cycle, the best time being three days before or after the new moon. Before felling, the tree must be well studied: its girth, the position of the trunk and branches, the environment into which the tree will fall and the best route for transport. To cut down the tree, they first make a cut on the side of the tree where it is to fall, and another smaller cut on the opposite side, providing instability. After a few more small cuts, the tree finally gives way. Most of the time the transformation is done on the spot, but occasionally the branches and some unnecessary parts are cut off and the clean trunk is transported<sup>2</sup>.

The carving is done in three phases (Fig. 3). First, the outline of the canoe is marked on the trunk with an axe (a). The canoes are carved so that their base is in line with the middle area of the trunk to avoid reaching the sapwood (b). Usually, the stern is at the base of the trunk and the bow at the top to take advantage of the morphology of the tree. In the past, several cuts were made with the axe in the trunk until the sapwood was reached, and then the remaining parts were chopped between the cuts (c) and (d). Currently, the outer parts are cut with a chainsaw and then the rest of the trunk with an axe (e). In the second phase, the remaining protrusions are removed, and the overall shape of the canoe is checked with a double bow or stern plate. In the third and final phase, the hull is dug out or hollowed out as the canoe continues to be shaped. As they approach the ends, they smooth the surfaces. At the same time, they check the thickness of the entire canoe, which should be about two fingers thick. The most common tools used in this process are machete, axe, hoe, plane, chisel, drill and nowadays also the chainsaw for larger cuts<sup>3</sup>.

<sup>2</sup> Personal information of Hélder, the only canoe builder in Porto Alegre (South of São Tomé Island).

<sup>3</sup> Personal information of Lúcio, a canoe builder from Quimpo.



**Fig. 3** Sequence of carving (adapted from Fuquen 2014)

The final touches are made in the villages. This stage is about reducing the thickness of the hull, especially on the outside, and smoothing it. It should be noted that the bottom should always be thicker than the sides, as wear and tear is greater both in the water and on land when towing. The bow is usually higher and tapered and the stern lower and wider. It can also be tapered or cut off, creating a sort of small straight stern plate. This change is more recent and is closely related to the introduction of outboard motors in the 1970s. Finally, the boats are launched, which is always a cause for celebration and ends in a big party with music, dances, and palm wine (Lima 1968–75: 171).

Repairs are made because the canoes naturally wear out over time or because they have suffered an accident. There are different types of repairs, but the most common are wooden moulds with tar reinforcement, the use of air chambers or tyre remnants, filling cracks with tar and some metal patches fixed with iron nails, or, nowadays, the use of pieces of plastic, small fibreglass sheets and white glue.

In Sao Tome and Principe, there are three standardised sizes of canoes: the smaller ones are 3 to 4 m long, the medium ones 8 to 10 m, and the largest canoes can be up to 15 m long. On average, however, they are 3.50 to 12 m long, 90 cm wide and 35 to 45 cm deep. In smaller canoes, the crew consists of a single person, maximum two. The larger canoes can be manned by up to eight people.

A first approach to identifying the tree species is to match the native creole or Portuguese name, the English translation and then the species. This is just an exercise based on observation and similarities: *Ocá*, Samauma, *ceiba pentandra guineensis*; *Acácia*, Acacia, *albizzia molucana*; *Fruta-pão*, Bread fruit tree *artocarpus incisa*; *Gôgô*, african crabwood, *carapa procera*; *Cedro Cheiroso*, Cedar, *cedrela odorata*; *Amoreira*, mulberry tree, *chlorophora excelsa*; *Jaqueira*, jackfruit, *artocarpus heterophyllus*.

The species of wood most commonly used locally for building canoes are samauma, acacia, breadfruit tree, african crabwood, cedar tree and mulberry. The trunks of samauma, the most commonly used wood, can grow up to 25 m high and allow the construction of up to four canoes. But even though it is the most commonly used wood, the canoes start to break after two or three years and have to be replaced with new ones.

There is no distinction between river, mangrove, or sea canoes, as they are versatile enough to operate in any of the water environments. The tasks that canoes perform range from fishing near or far from the coast, both during the day and at night, to transporting goods and even people. The lifespan of a river, sea or mangrove canoe is about two to three years, but if the wood is good, harvested at the right time and built with skill, it can be used for 12 or even 15 years. A canoe that travels mainly in salt water has a shorter lifespan as it is worn down by the combination of salt and sun.

Today, many Santomean fishermen use an outboard motor as a means of propulsion. However, as the purchase of an engine and its maintenance are very expensive for the economic circumstances of Santomean fishermen, there are still many who continue to use paddles. Some canoes even stretch sails made from burlap recycled from flour sacks, or nowadays from plastic bags. In Príncipe, there are problems in obtaining and maintaining engines and electrical parts, as these must be bought on the second-hand market in Nigeria or Angola. There is also a shortage of fuel on the island, which affects both fishermen and shipping authorities and endangers the safety and well-being of all.

#### 4. The archaeo-anthropological mission – Communities and traditions

The canoes are a fundamental element in the life of the Santomeans, and many of the activities carried on are only possible through their use. Fishing, for which the use of a canoe is essential, generates the income of more than half the population, while the other half is divided between agriculture, the gathering of fruit and vegetables, and livestock breeding. Even those who pursue another type of activity also fish. There is a saying in the islands: “Every Santomean is a fisherman.”

Canoes are acquired in different ways: they can be bought, with all costs paid to the builder, or favours can be exchanged with the builder and the people he has to hire. The price can also be negotiated depending on the work the acquirer can do. Several people can also get together to buy a canoe and form a kind of cooperative, which then develops into a fishing society and shares the costs and profits. These cooperatives also take responsibility for families who lose their livelihoods for any reason.

The division of labour is clearly defined. The construction and repair of canoes is done exclusively by men. Fishing is almost exclusively done by men, at least the part that takes place at sea, and there are only very sporadic cases where women participate in the work. For example, some women have skills that can help the crew, such as being healers. As a rule, no woman goes out to sea alone, only in exceptional cases, such as when a husband is physically or mentally disabled and his wife gets permission from the community chief to take his place in the canoe. However, when the fish comes ashore, the women play a crucial role because they prepare, transport, and sell the fish. They are also the ones who put the fish to dry in the dryers built by the men (Fig. 4) and clean and preserve the fish.



Fig. 4 Fish dryer registered on the Island of Príncipe (photo: G. Lopes)

#### 5. Final remarks

In some parts of the world, where dugouts are still used today, the construction process differs in small details, depending on the region (Smith 1970: 515; Muckelroy 1978: 127). Santomean canoes fulfil their many purposes in serving the communities, and some find new uses even when they have reached the end of their life at sea, either as a bench, a flower bed, a storage place, or simply as decorative objects in resort gardens (Fig. 5). In any case, they continue to shape the physical and cultural Santomean landscape.



**Fig. 5** Different reutilizations of the Santomean dugout canoes (photos: G. Lopes and J. Baço)

The construction logic of Santomean dugouts has not changed significantly since the 16<sup>th</sup> century. This is indicated by contemporary written and iconographic sources for the Gulf of Guinea region (Smith 1970: 520; Sheves 1991: 49–50). Of course, there are minor technical changes, such as the use of new tools and mechanised means of transport.

Another change is the number of canoes built today, far fewer than in the past. This decline is related to the ecological concerns of the government and also of the population about the sustainability of the Santomean ecosystem. In Príncipe, for example, there is a forest management policy where only people with certain professions are allowed to fell trees (e.g. carpenters and canoe builders). If they do so, they have to plant four trees for every one they cut down. At the same time, it is becoming increasingly difficult to find good quality raw material near the villages because the forests have been over-cut for decades. Therefore, today one has to go further and further into the dense forest, which few want to do. At the same time, boats made of fibreglass have been introduced, which are more robust, durable and cheaper, and have gradually replaced the dugout canoes. And finally, the younger Santomeans seem to have lost interest in learning the techniques of this type of construction, either because they are looking for a job in another economic sector or because it is a knowledge that is considered obsolete. Of the three builders the authors spoke to, only one is passing on his knowledge. On the other hand, the fibreglass boat building workshop is very active and young people are employed.

As soon as it is possible, the authors want to return to São Tomé and Príncipe with several goals in mind: To participate in the construction of a canoe; to participate in a traditional fishing day on the sea and in the river or in the mangroves; to strengthen the relationships started in 2020 with the fishing communities through the aforementioned points, in order to deepen the knowledge of the mysticism and symbolism inherent in the entity of canoe and used by them; and to hand over all the data collected to these communities so that they preserve it, value it, and maintain their traditions.

## Acknowledgments

We want to thank all the people that made this mission possible, namely Andreia Pinho Alves, Elísio Neto, Hilton Barros, Jorge Carvalho do Rio, Jovêncio, Abdulai, Hélder, Lúcio, José Assunção, Cláudio Cique, Manuel Mesol Tomé Lopes, Branca Moriés and Luís Sousa Martins.

## References

- Agência Geral do Ultramar 1964. *S. Tomé e Príncipe: pequena monografia*. Lisboa, Agência Geral do Ultramar.
- Ambrósio, A. 1984. *Subsídios para a História de São Tomé e Príncipe*. Lisboa, Livros Horizonte.
- Brásio, A. P. 1954. *Monumenta Missionária Africana*. Volumes I-IV. Lisboa, Agência-Geral do Ultramar.
- Caldeira, A. M. 2016. A guerra do mato. Resistência à escravatura e repressão dos fugitivos na ilha de São Tomé e Príncipe (séculos XVI-XVIII). *Povos e Culturas* 20. Lisboa, Universidade católica Portuguesa: 125–144.
- Castaño, I. F. A. de 2012. *São Tomé e Príncipe: Cultura(s)/Património(s)/Museu(s)*, MA Thesis. Lisboa, Universidade NOVA de Lisboa, Faculdade de Ciências Sociais e Humanas.
- Castro Henriques, I. de 2000. *São Tomé e Príncipe: a invenção de uma sociedade*. Lisboa, Vega Editora.
- Lima, F. C. P. de 1968-75. *Arte popular em Portugal: Ilhas Adjacentes e o Ultramar*. Lisboa, Editorial Verbo.
- Frade, F., Costa, F. C. 1956. Investigações sobre os peixes de superfície e a pesca nas ilhas de São Tomé e do Príncipe. In *Conférence Internationale des Africanistas Occidentais, 6ª sessão, São Tomé. Comunicações: Zoologia e biologia animal, 4º vol.* São Tomé, CCTA: 152–175.
- Fuquen Gomez, C. 2014. *Logboats of Coquí. An ethnographic approach to maritime material culture*. PhD Dissertation. Southampton, University of Southampton, Faculty of Humanities, Department of Archaeology, Centre for Maritime Archaeology.
- Mateus, R. M. M. 2018. Uma controvérsia Luso-Britânica: o caso do cacau de São Tomé. In *Revista de estudos Anglo-Portugueses – Journal of Anglo-Portuguese Studies* 27: 199–228.
- Mitchell, P., Lunn-Rockliffe, S. 2021. Here be dragons: the untapped archaeological potential of São Tomé and Príncipe. *World Archaeology* 53.2: 255–272. doi: 10.1080/00438243.2021.2002716
- Muckelroy, K. 1978. *Maritime Archaeology*. Cambridge, Cambridge University.
- Rodrigues, I. N. 2018. Descolonizar a fantasmagoria. Uma reflexão a partir do Massacre de 1953 em São Tomé e Príncipe. *Revista Crítica de Ciências Sociais* 115: 29–50.
- Santo, C. E. 1979. *Contribuições para a história de São Tomé e Príncipe*. Lisboa, Edições Colibri.
- Seibert, G. 2015. Colonialismo em São Tomé e Príncipe: hierarquização, classificação e segregação da vida social. *Anuário Antropológico* 2. Brasília, Programa de Pós-Graduação em Antropologia Social da Universidade de Brasília: 99–120.
- Sheves, G. T. 1991. *The Ghanaian Dug-Out Canoe and the Canoe Carving Industry in Ghana. Programme for Integrated Development of Artisanal Fisheries in West Africa – IDAF*. Danida/Norway, Food and Agriculture Organization of the United Nations (FAO).
- Smith, R. 1970. The Canoe in West African History. *The Journal of African History* 11.4: 515–533.
- Tenreiro, F. 1961. *A Ilha de São Tomé*. Lisboa, Junta de Investigações do Ultramar.