

Hollowing out the canoe: a reflection of the society

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Abstract

The dugout canoe is an important element in a lot of maritime societies all over the world. It's not only a small boat made by hollowing a tree with particular characteristics, but it is the reflection of the society in which the canoe was made. A canoe represents the interaction of ideology, tradition, economics and purpose, as well as environment and material resources. Mexico is no exception; the canoe was the best aquatic transport in pre-Hispanic communities, both for coastal and inland waters. So, the canoe can bring us a lot of archaeological information about pre-Hispanic cultures, its traditions and its environment.

It is impossible to access the social explanation of the canoe if we are not able to describe it formally. So, a registration strategy will give us the possibility to store data for a social explanation of the boat. In addition, using this strategy, it is possible to accumulate general and specific data from which it can be proposed a typology of dugout vessels. This research is a step forward of a typology proposal for dugout canoes in Mexico, which aims to grow as more canoes are found, both in archaeological contexts and inside public and private institutions, museums and private collections.

Key words: Americas, dugout, ethnography, methodology, Mexico, nautical

Introduction

The presence of water bodies as part of the ancestors life, made them to develop ways to take advantage of these resources. They needed a transport that allowed them to travel through the water. In most of the maritime communities, the canoe was the aquatic transport by excellence, for both, coastal and inland waters. This is the case in many of the pre-Hispanic communities in Mexico. Usage of the dugout canoe, the one made by hollowing out a single wooden trunk, has great importance in pre-Hispanic societies, as it is reflected on written and pictorial sources of information, as well as the preservation of several specimens found in actual communities. Therefore, the canoe could provide us with much archaeological information about pre-Hispanic cultures, as well as of their traditions and environments.

How can the canoe be the reflection of the society in which it was built?

The dugout canoe is an important element for maritime societies all over the world. It's not only a small boat made by hollowing a tree with particular characteristics, but it is the reflection of the society in which the canoe was made.

For this, Adams (2001) mentioned that the manufacturing process observed in each canoe, reflects the complex social activity around this. The boats can be seen as a manifestation of the maritime needs and aspirations of society, this is achieved by considering the characteristics that represents the interaction of ideology, tradition, economics, purpose, environment and material resources, which are reflected in the shape, structure, appearance and use of each vessel.

- In terms of *ideology* and *tradition*, Adams notes that on the boat you can see a set of ideas about what ships mean for society, the importance they have and how they should be designed and constructed. That's why they have their own characteristics in terms of the design parameters and the ways in which they carry out various aspects of construction. In this work, despite failing to fully understand the tradition of a canoe, due to the scarce archaeological information about dugout canoes in Mexico, it can be observed similarities and differences in the physical properties of these vessels, which helps us to infer periods and

geographic regions in which the canoes were built. It is like this how we can identify "types" of boats and with these, building traditions.

- The *economy*, understood in terms of manpower and wealth can be reflected in the construction of vessels, both in size and materials used, and specific characteristics of the boat. These features have a close relationship with the material resources and with the purpose.
- The *purpose*, understood as the function of the boat, is also observable in the physical characteristics of the vessel. The canoe has multiple functions in the indigenous life: transportation (of people, goods, materials, and ideas), resource exploitation (hunting and fishing), ceremonies, rituals and military confrontations.
- Regarding the *environment* for which the boat is manufactured, it is reflected in the dimensional characteristics of the vessel, as if a boat is built for lakes or protected coasts, you will not need the same properties of stability and robustness that you need for a boat built for open water. Similarly, the canoe has architectural features which are defined by the place for navigation.
- Finally, *material resources*, both natural and manufactured. This means that the available resources in part determine the size of the vessels, and also provide properties relating to the buoyancy and shipload capacity. That is how the material resources maintain their close relationship with the purpose of the boat. Similarly, manufactured material resources (such as tools) define some specific manufacturing features of the canoe; it is another feature that can provide us with information about timing and place of construction.

It is impossible to access the social explanation of the canoe if we are not able to describe it formally. So, a registration strategy will give us the possibility to store data for social explanation of the boat. In addition, registration under this strategy, it is possible the accumulation of general and specific data, from which it can be proposed a typology of dugout vessels.

How to approach the canoe?

There are some specific problems in Mexican archaeology which has resulted in an underdeveloped study of the canoes. A common problem has been to consider the canoe as a perishable material, and other important issue has been the inability to

recognize the different objects frequently found in archaeological contexts. Because of this, it is very difficult to study the dugout canoe from an archaeological approach.

While the lack of specific studies can be explained from the apparent absence of materials in archaeological contexts, there are different strategies with which to have a closer knowledge about the manufacture of canoes of indigenous tradition and with this, try to give a social explanation around the canoe. In addition to the ethnography and the study of written sources, you can use the direct study of dugout canoes located in museums, institutions and private collections, from which to obtain information about their manufacturing. Also, with this strategy, a classification can be developed based on the specific construction elements of each canoe, generating increasingly complex types. This is why apart of this strategy, a recording methodology which allows us to formally describe the canoe and recognize both their manufacturing characteristics, including structural elements, and the way it was manufactured, is proposed.

This methodology is divided into four stages:

A) The first is to fill a description and identification form of each canoe. These forms were made in the context of the methodology proposal described here. The information recorded in the files is as follows:

- Identification canoe information.
- Type of vessel.
- Traditional Name.
- Information on who performs the registration
- Registered date.
- Identification of photographs and drawings.
- Location (institution or individual custody, responsible and place of origin)
- General measures (Length, Width and Depth)
- Building materials.
- General method of construction.
- Number of stems.

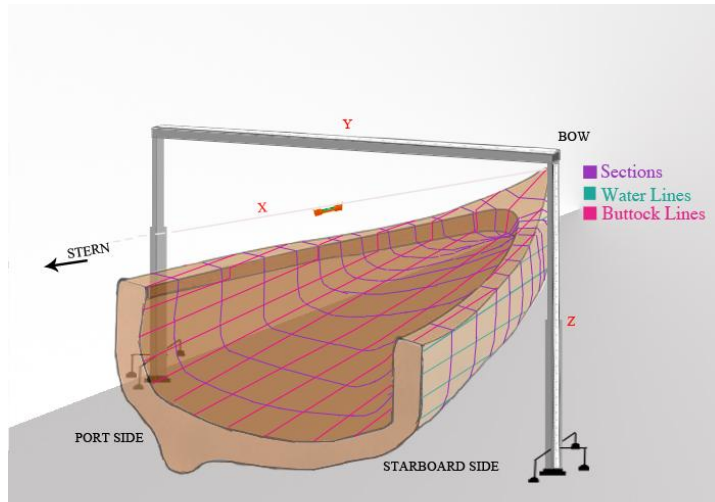


Fig. 1 Axes for the Topographic survey, based on the Anderson's lines. Author: Luz Cervantes

- Nailing.
- Diameter of the wick stick (sail propulsion)
- Evidence of manufacture.
- Evidence of construction elements.
- Evidence of propulsion.
- Decoration.
- Repairs.
- State of preservation.
- General Sketch.

B) The second step is to make a record as detailed as topographical surveys. That is, sampling point is done from calculated measurements from three axes (X, Y and Z), which, together, make a three-dimensional model of the canoe. The distribution of these axes is based on survey lines of Anderson (1988): *Water lines*, which are horizontally distributed along the canoe, parallel to the water or flotation line; *Buttock lines*, which are distributed vertically along the canoe, parallel to the major axis, and *Sections* which intersect the canoe perpendicular to the major axis or length. (Fig. 1) This data is stored in registration forms to have a good control and management.

C) The third step is to perform a specific photographic record, with which the previous information will be complemented. For the photographic record the following strategy is proposed. It is important to place a scale, the orientation of the canoe relative to the bow or the stern and an identification chalkboard. Obviously, if the boat is into an excavation context, in addition to the guidance on the bow and stern, it must be indicate the orientation from north. The scale is needed to show the size of the canoe. The orientation fits to better locate the features described in relation to the archived images. And the board is the best resource for material identification; here it is included information of where the canoe is located, the date on which it was registered, the person who registered, and identification number of the piece.

The strategy for the photographic record consists in how to take the photos. This has been done in two phases. The first consists in photographs of general views, which is to archive the shape and size of the boat. The second includes specific detail views to note building elements, decorations, manufacturing marks and repairs, if they exist. For the first phase of the photographic record, the following photographs are proposed (Fig. 2):

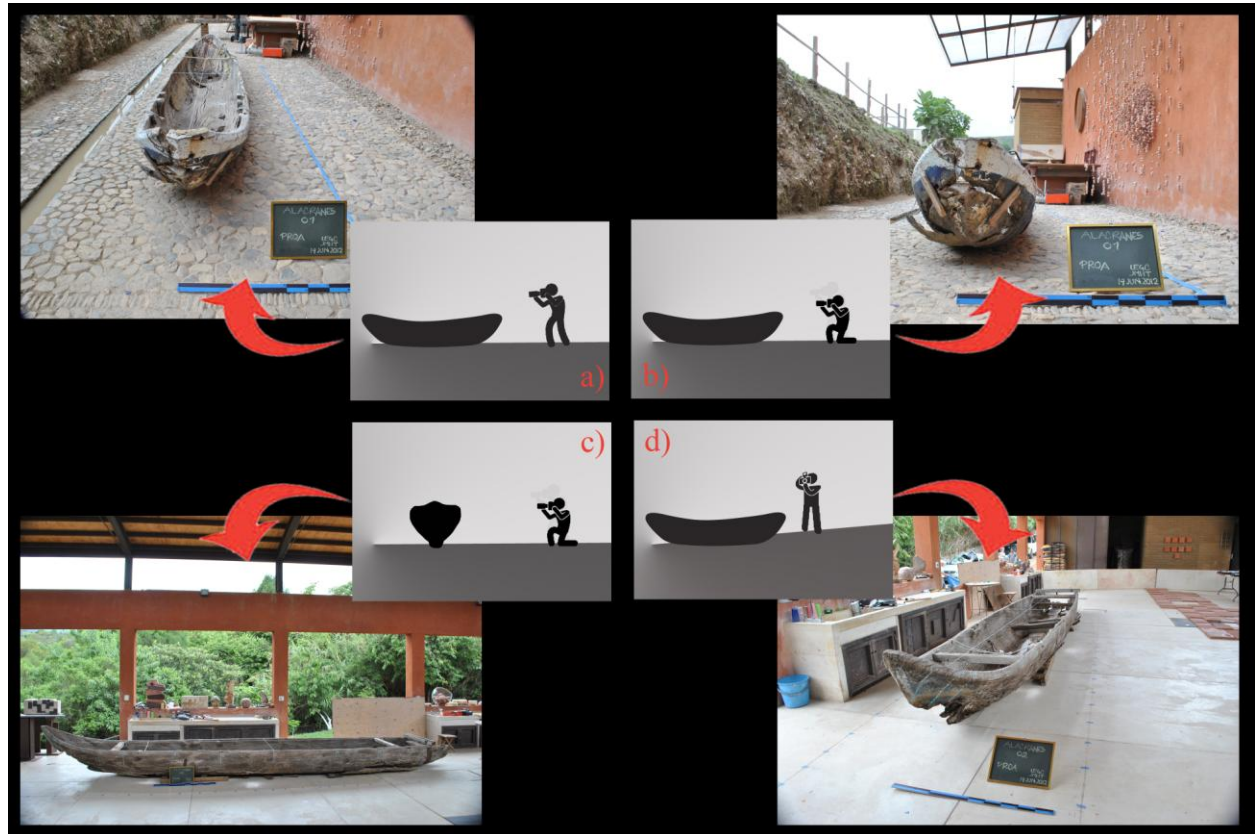


Fig.2 General views for photographic record. Author: Luz Cervantes

- A photograph taken in front of the bow and stern, respectively, from which the entire rim line is observed, it is taken at the height of a standing person. If the canoe is larger, and the rim cannot be observed, shall be taken from above, with the help of a ladder or bank.
- A totally front photograph, where observe only the bow or stern and bands perspective. This will be taken at the height of a person kneeling or squatting. If the canoe is larger, shall be taken with the person standing.

- A side view photograph of port and starboard, where canoe maximum length can be observed. This photo is usually taken kneeling or squatting, to appreciate the canoe in full.
- A photograph taken in an isometric perspective, usually from the bow, loaded into one of the bands. The purpose of this view is to perceive the construction details of bow and stern height relative to the length and width of the canoe.

The second phase consists of photographs of details (Fig. 3), it is important to portray all possible elements of construction, use and repairs. These photographs must be taken with a scale and in a macro mode, so can be appreciated the most possible characteristics.



Fig. 3 Photographs of details. Author: Luz Cervantes

D) The fourth step of the methodology is to make a registration survey on a technical drawing. The purpose is to provide sufficient information to facilitate analysis, help design and develop possible future reconstruction and maintenance of the vessel.

The drawing must contain a representation in plan, profile and the body of the boat. The drawing should be clearly indicated by its size dimensions, the scale must be indicated, it should contain a record field (identification, date and name of the artist) and the three projections are needed to provide more information about the canoe (Fig. 4).

For drawings of boats is proposed the scale 1:10, because at this it can be possible to appreciate the details of the vessel, and a very large format and unwieldy paper is not required.

With these drawings, in addition to fact charts and specific pictures, it is possible to make a comparison between canoes belonging to the recorded simple and propose different types of boats.

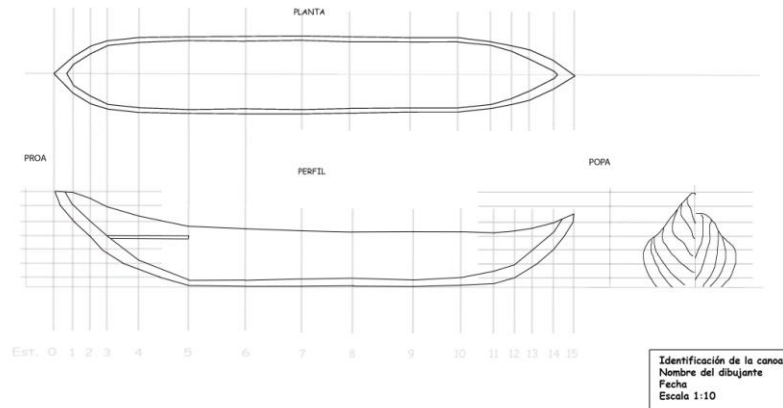


Fig. 4 Example of drawing. Author: Luz Cervantes

A preview of the type proposed for the dugout boats in Mexico, which aims to grow as found more evidence is found, both in archaeological excavations, and public and private institutions, museums and private collections is presented in Fig. 5.

This typology is completely open to be improved or modified, as pre-Hispanic navigation studies within archaeology, will increase.

What is happening with the canoes in Mexico?

After this analysis of dugout canoes of indigenous tradition, it is necessary to talk about this "apparent" absence of canoes as archaeological material in Mexico. For this, two dilemmas arise: the first of them leads us to ask if there really is an absence of any archaeological material belonging to canoes in Mexico. If this were the case, why is there a record of canoes with the same characteristics in other parts of the world? And why are there archaeological features of the same material of the canoes (wood) in many regions of the country? The second, focusing in the term *archaeological material*, are there no canoes as archaeological material in Mexico? If this were the case, all the canoes no longer used that have been abandoned in the mangroves, in shipyards, in museums, in public institutions and in many more places should be taken into account. Michael Schiffer considers that every element at the end of its life, assuming that is not reused, becomes waste so it changes from its systemic context (use) to an

Type	Photo
Aguzada chica	
Aguzada grande	
Maya	
Lacandón	
Robusto	
San Juan	
Pescador Pátzcuaro	
Pasajeros Pátzcuaro	

Fig. 5 Typology. Author: Luz Cervantes

archaeological context (non-use). So, I believe that these “unused” canoes have not been studied from an archaeological perspective because they have not being “found” in archaeological underground contexts, and they have been discarded and not included as archaeological material.

Conclusions

As mentioned at the beginning of this work, archaeology in Mexico has been focused on investigations of other aspects, such as the monumental sites, and has been ignored small aspects, but these are of great importance to past societies. One of these aspects that archaeology has left aside is the water transport in and out of the country's land. The canoe in Mexico is considered as the “transport by excellence” because the water in its various forms, was distributed throughout the country and in the case of rivers, connects together large regions.

Thus, here is reflected the importance of vessels in prehispanic Mexico, therefore the registration of these at an archaeological level, requires the necessary specialization to understand this importance.

That’s how, this work it aims to raise awareness among Hispanic culture researchers in Mexico to the relevance of studying indigenous tradition on canoe construction and use. At the same time, it tries to demonstrate that there are methodological tools which help

us to get closer to objects and materials that unfortunately in Mexico have been understudied due to their scarce presence in archaeological excavations.

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Biography

Luz Elena G. Cervantes is an archaeologist who graduated from the *Escuela Nacional de Antropología e Historia* in Mexico and she's member of the *Nautical Archaeology Society*. She has taken some courses in maritime archaeology and she has dedicated her studies to pre-Hispanic navigation, specifically of water transport. She is making a dugout canoes compilation, in order to form a complete typology of canoes in Mexico.