

Boat-Building Technology of Bengal : An Overview of Literary Evidences

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Abstract

The paper highlights various aspects of the art of boat building technology in Bengal. The sources of valuable information with regard to the maritime activities of Bengal are the ancient texts such as *Padma Purana* or *Mansamancala*, *Chandikavya* and other texts. The description of sea-voyages and merchant vessels in the accounts of several foreign travellers in the early 8th century A.D. gives an insight into boat-building technology during that period. About 115 terracotta motifs of boats can be seen in various temples of Bengal and they are broadly classified into river boats and ocean going vessels. They were known as dinghy, sampan dinghy, topsail river boat, cargo-carrier boat etc. Each of these boats has its unique design for its pertinence to specific purposes and smooth sailing in the river and the adjoining seas. The different parts of these vessels are known as *dara* (helm) or *Patwal*, *malumkastha* (mast), *tala* (hold), *mathakastha* (prow), *Chaighar* (shed), *Patatan* (deck), *dandakarwal* (Oar), *Bansakarwal* or *dhvaji* (bamboo-pole), *fas* (chord), *nangar* (anchor), *Pal* (sail) and *dava* (keel) etc. The old-fashioned boats of Bengal were made of stems of herbaceous plants as rafts or floats of logs tied side by side. The literary evidence shows that the art of boat building in Bengal reached a high degree of perfection in order to cope with the prevailing need of the people in different parts of the country in connection with trade and commerce.

Introduction

The boat building technology is an important aspect of maritime activity. It has made considerable progress during the last 4000 years as is evident from archaeological evidence from the Indus valley sites such as Lothal, Mohenjodaro and Harappa. One of the seals from Harappa depicts a triangular anchor suspended from the bow of a ship. A terracotta amulet from Mohenjo-daro depicts a boat and two *disakakas* (shore finding birds¹). Actual terracotta models of boats have been found at Lothal. Illustration of various classes of boats is given in *Yuktikalpataru* of Bhoja, an eleventh century text². The present paper deals with certain aspects of boat building technology in Bengal.

Maritime activities of Bengal

The ancient sea-ports of Bengal such as Tamralipti, Satgaon and Sonargaon developed maritime connections with Java, Sumatra, and Ceylon. They also traded with ports located in the western coast and Persian Gulf. These seaports lost their importance due to changes in the river course and also to a great extent, due to the deposit of silt - a process which still continues. Tamluk (*Tamralipti*) lost its importance sometime in the 8th century A.D. and its place was taken by *Saptagram* of *Satgaon*³.

The Ajanta paintings depict the landing of Vijaya in Ceylon, with his army and fleet. There was regular sailing of vessels

from the ports of Tamralipti and Palur to Burma, the Malay Peninsula and the East Indies to Indo-China and beyond.

Fa-Hien sailed from Tamralipti for Ceylon in a big merchant vessel. Mukherjee is of the view that the people of Bengal also built ships of the type seen in bas-relief on the temples of Borobudur, Java⁴.

Boat-Building of Bengal

The boats and ships of Bengal have been depicted in the brick temples in the districts of Midnapore, Birbhum, Burdwan and Bankura. The depicted vessels may be classified as rafts, dug-outs and cargo carriers. They are used for rowing, racing, travelling and commercial purposes. These rafts were round hulled, smooth skinned river boats with raised pointed ends, having shallow draft and constructed of planks laid on edge and clamped with metal nails⁵.

The *Chandikavva* of Kavikankana has mentioned about seven kinds of boats of different shapes, size and design of prow, viz. *madhukara* (the best), *quarekhi* (prow resembling head of a lion, *Simhamukhi*), *Ranajava* (Victory in war), *ranabhima* (terrific in war); *mahakava* (the titanic) *sarbadhara* (all container) and *natasata* (amusement hall).

Madhukara, a flagship, was the first to be launched in water. Its deck was filled with earth to give it an appearance of land which give an idea of its use and size. The vessel carried, besides sailors, a carpenter, a blacksmith, foot-soldiers, a steersman, an admiral, a craftsman and a captain for urgent work in the event of necessity.

Ranabhima and *Sarbadhara* may correspond to the *Agramandira* and *Sarvamandira* varieties of boats of *Yuktikalpataru*. The *Tilakmanjari* mentions that all the holes of the boats were caulked before they set sail, and broken planks of the boats were fastened together.

There are various types of boats used in Bengal i.e. in the Ganges. One of them is a one-man passenger *dinghy* (fig. 1). It is unique for its feature and movement in the river. The boatman squats at paddling on the low sharp stem to manoeuvre in the zigzag path of the river. The bow rises sharply to end in a narrow pointed stem about 2 to 2.5 ft higher than the level of the stern. A neat cabin with semicircular roof occupies the space available in the middle of the boats. A tall bamboo mast is generally used to go a considerable distance. The mast is stepped above the cabin and a thin cotton sprit-sail is hoisted high enough to enable the boatman to see ahead as he stands at the stern steering with a long paddle.

All the larger boats, whether small fishing or large rice carrier are built in such a fashion that they can row against the current whenever needed. The stern is made sufficiently high with a view to giving the steersman a clear vision. Usually bow and stern are sharp, the latter greatly raked. These boats are very much like craft painted on the walls of ancient Egyptian tombs or preserved to us in models made for the use of the dead⁶.

As regards the fishing boats, often passenger or cargo *dinghies* (light boat) are converted for the time being. However, they may or may not have a cabin in the middle or towards the bow and not aft as in the little *sampan dinghies* (small light boat) (fig. 2) This type of boat is generally controlled by 3 or 4 men and extensively used during the *hilsa season* (monsoon). It is indeed remarkable to observe a long procession of these boats drifting rapidly down the stream with nets submerged, while another series sailing or rowing upstream with decks burdened with the huge bamboo crescent trap-mouths of their *Sangla* net. There are also some bigger boats wherein the spritsail rig is used. A big squaresail takes place with a *topsail* (*Paltola nauka*) above in many cases (fig. 3) The

mast is always stepped far forward. There are a number of wooden thole-pins in the bows set in the gunwale ready for use with the powerful sweeps usually lying alongside ready for a loss of wind or tide.

The steering paddle is the most remarkable feature of the *cargo carriers* (Malbahī nauka). The shaft is specially long and supported in a grommet from quarter gunwale. The steersman works it from a high platform on the aft roof of the cabin. A short handle bar - a prototype of the tiller - is fixed at right angles into the paddle shaft near the free end in order to give easy leverage. The blade itself is very wide and powerful, but rather short. This form of steering paddle is very much similar to the type of fixed quarter oar used in ancient Egyptian craft. In quite small boats of Bengal, it is never used except in the cargo carriers. Apart from the steering paddle and the balance rudder fitted upon a stern post there was an intermediate form of rudder (fig. 4) often found to be in use. The balanced rudder was almost of the same pattern, but differs in being hug from the quarter and not upon the sternpost.

Among the simplest and old-fashioned boats used in Bengal are those made of tropical herbaceous (betel nut) plant-stem as raft or float of logs tied side by side.

In the *Manasamangal* of Bansidasa and Kavikankan's *Chandikavya* a detailed description of the construction of boats is mentioned. The different parts of a vessel mentioned are *dara* (Hal or helm or rudder) or *Mastul malumkastha* (mast), *tala* (hold), *mathakastha* (Prow), *Chhatghar* (shed) *Patatan* (deck), *dan dnaar* or *dandakarwal* (Oar), *Bansakarwal* or *dhwaji* (bamboo-pole), *fas* (bowstring or chord), *nangar* (anchor), *Pal* (Sail) and *dava* (keel).

Acknowledgement

The authors extend their deep sense of gratitude to Dr. S.R. Rao Adviser, Marine Archaeology Centre for valuable suggestions. They are thankful to Dr. B.N. Desai, Director, NIO, and K.H. Vora, Scientist-in-charge, MAC for their encouragement and keen interest in this work. They also thank S.B. Chitari for his cooperation in drawing the figures.

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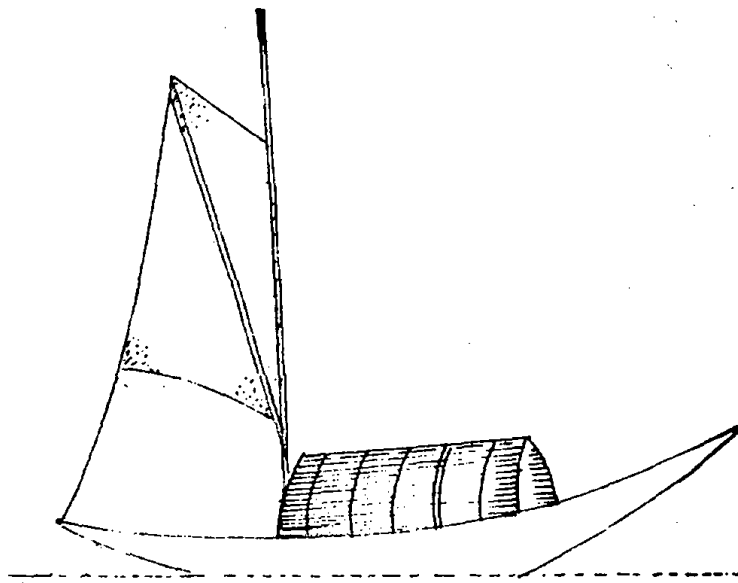


Fig. 1 : Dinghi - A traditional Boat of the Ganges

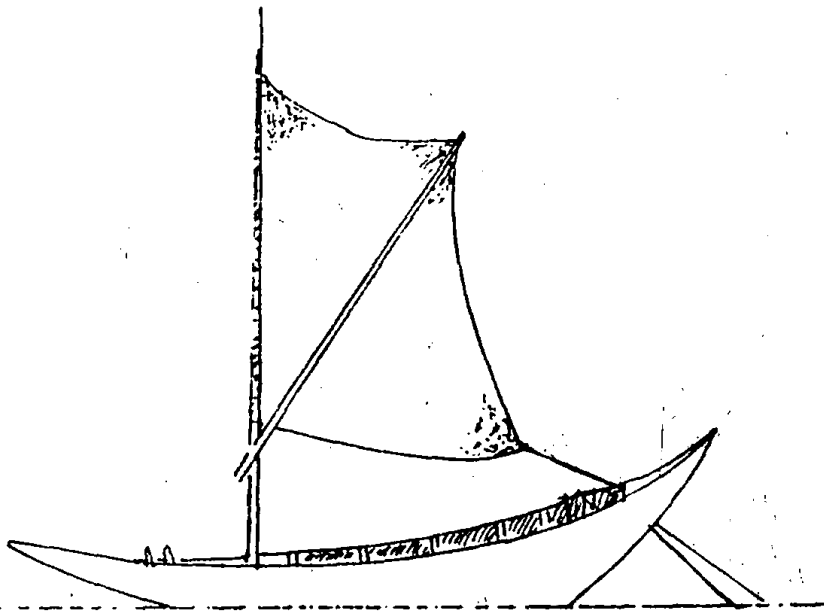


Fig. 2 A : Traditional Fishing Boat of the Ganges

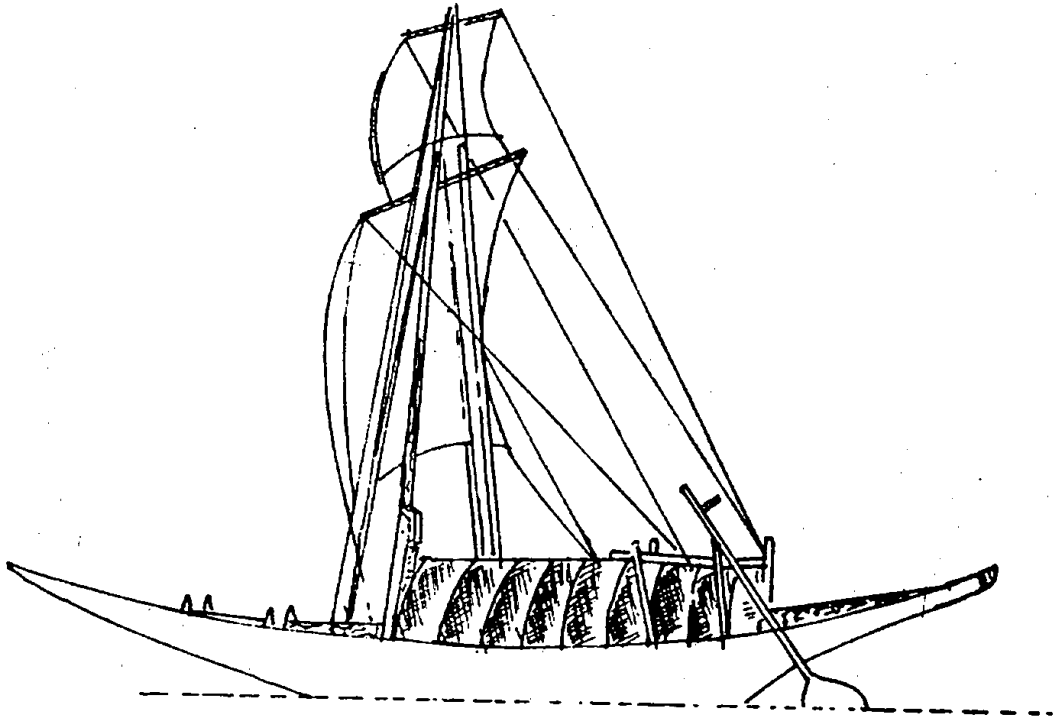


Fig. 3 : Topsail boat of the Ganges

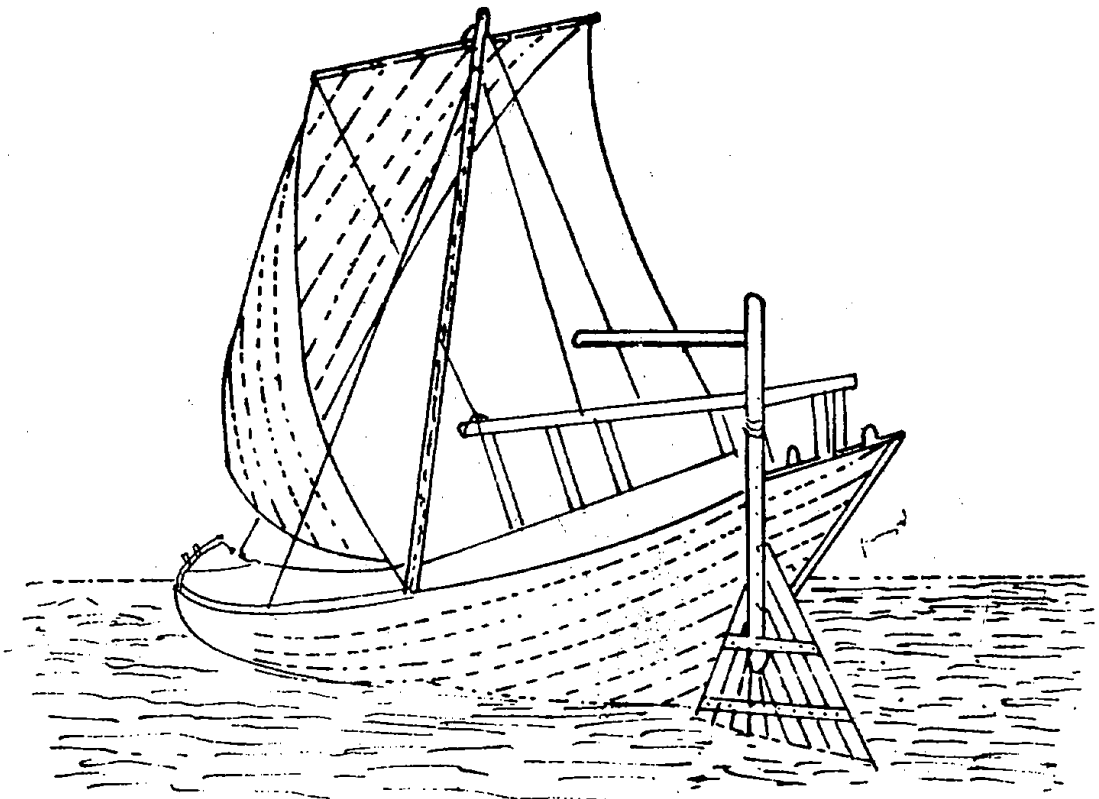


Fig. 4 : Cargo carrier of the Ganges