The coast of the east Indian state of Orissa has been home to intense maritime activity for centuries. Its coastal and estuarine waters have been used to transport hinterland grain and salt via ports in river mouths and lagoons, and traditional fishing-based maritime commerce still flourishes. While traditional boat-building has declined since the colonial era, Orissa remains one of the world's richest areas for traditional boats, including the carvel-built chhoat and salti, the non-reverse clinker-built danga, and the catamaran, whose structure was a sophisticated solution to navigating deep waters and aggressive surf.

The wisdom of 'tied logs': traditional boats of India's Orissa coast during the colonial era

Ganeswar Nayak

While the availability of materials, tradition of boat-building craftsmanship, and culture in general all influenced the design and structure of boats of the Orissa coast, climate, the precise purpose for which a boat was needed, and geography played more important roles. Indeed, the relationship between boat design and coastline geography was crucial. Geographic characteristics of a coastal region's waters could be as unique as the boat designed to operate there. Each coastal region became known for its own type of fishing boat, built according to a design hundreds of years old.

The evolution of boat design on the Orissa coast was determined mainly by the continental shelf. Orissa's southern coastline has a narrow shelf, only 40 kilometres wide, resulting in an aggressive surf that pounds its wide sandy beaches and, further north, river mouths that are silted and inaccessible from the sea. Orissa's northern coastline, however, is defined by the much wider Bengal shelf, its gradual slope providing shallower waters and a greater tidal range. Therefore, boats that could withstand aggressive surf operated along the southern coast, while the extended tidal shelf of the northern coast allowed the use of displacement craft in estuarine and coastal waters.

The estuaries in the north provided landing facilities and shelter for plank-built displacement boats such as the chhoat, patia, botali and donga, which could not be operated from the open surf-beaten beaches in the south. There, the raft-like type of catamaran called the 'teppa' came into use because it was able to cross heavy surf and land on the beach. Since the catamaran was easily assembled and disassembled it could be carried up the beach to where it was protected from breakers and could dry out.

Fishermen's ethnic and cultural background was linked to the kinds of boats they built. The catamaran became the predominant watercraft of the Telgu fishermen in southern Orissa (the Ganjam coast), whereas the Oriyas and Bengalis of northern Orissa became known for using displacement crafts.

A millennium of the same structural design

Watercraft innovation is possible when it satisfies the demands of all the above influences. Independent of physical geography, innovation in boat structure is an interplay between cultural tradition and economic imperatives. For instance, installing a false keel or rudder on a traditional boat might be induced by the new economic environment of marine fishing, but such additions do not change the existing traditional boat structure. Even today, the fibre-made motorised watercraft that operates off the Puri coast is a replica of the teppa catamaran.

In order to gain acceptance among a society's fishermen true innovation in boat structure or shape must be sanctioned by relevant cultural practices and belief. In other words, it must be in harmony with long established cultural tradition. This was why there was no innovation in the catamaran's structure, which satisfied locals for hundreds of years.
So how and why did such an extraordinary form come into existence? And, more important, what were the factors that led to such remarkable continuity over several hundred years? The evolution of the catamaran boat-building tradition of Orissa might provide an explanation.

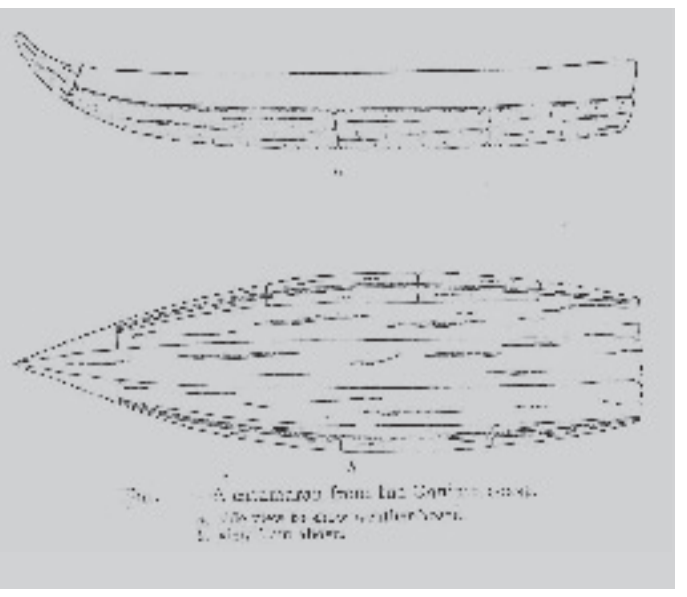
'Tied logs': the catamaran

The paravas, a Tamil Nadu fishing community, were the first known users of the log raft called the catamaran – derived from the Tamil Kathu Maran, 'tied logs'. In the fifth century the Tamil Chola Dynasty used them to invade parts of Southeast Asia. Up until the British colonial period, the surf-beaten sandy coastline that runs all the way from Tanjore, near India's southern tip, to Orissa hardly ever saw any sail other than the brown triangle of this specialised seagoing raft. It's still used today, though in a different form, by fishermen of southern Orissa, where traditional catamarans ply the coastal waters from Konark to Ganjam.

In general, during the British colonial period, two distinct types of traditional catamaran existed: the finer and more elaborate model was found in the south, on the Coromandel coast from Cape Calimere to the Krishna and Godavari delta; the other was more primitive and less efficient and found north of the Krishna and Godavari delta.

The former, Coromandel model, was the catamaran at its most advanced state of development. Since a catamaran was essentially a log raft, an obvious inference was that it must be inherently clumsy in form, but this was by no means the case with the Coromandel catamaran, which possessed considerable elegance and beautiful lines. The Tamil Nadu coast fishermen produced a design with more variations, adapted for different methods of fishing, but the general type consisted of a variable number of precisely shaped logs tied together and accessorised with pieces such as bow stems and rowing-rails.

The more primitive and simpler type of catamaran was employed almost uniquely by the Telugu fishermen north of the Krishna and Godavari deltas. In Orissa, for example, on the shore of Ganjam District, it consisted of five logs joined to form a sharp point at the fore end, which was accessorised with two stem pieces that gave it a Tamil-style beak-shaped bow. The aft log ends were perfectly aligned, thus the craft's stern was abruptly truncated. Instead of being lashed together with rope, the logs were permanently pegged together; the craft's comparatively small size allowed the crew to carry it up the beach without separating the logs. The three middle logs were usually the only boat-length pieces used, while the two exterior 'logs' were actually comprised of shorter logs carved and joined end to end to form two long, slightly concave pieces that were pegged to either side of the three middle logs. An equally concave 'weatherboard' was attached to the top of each of these exterior pieces to form the sides of the boat, which protected the crew and gear; the fore end of each weatherboard butted up against the aft end of the stem piece on its own side of the bow.



Source: Hornell, J. 1920. 'The Origin and Ethnological Significance of Indian Boat Design'. Memoirs of the Asiatic Society of Bengal 7-3.

The teppu: an intermediate catamaran

A variation of these two general types came into being further south, on the coast of Vizagapatnam: a catamaran of larger size and superior timber and workmanship. Called 'teppu' in Telugu, the hull consisted of two halves lashed together fore and aft, each comprised of a long log with a washboard sown onto its outer edge and a beak piece pegged onto its fore end. When landing the rope lashings were untied and the two halves parted for easy carriage. The largest of these 'intermediate' catamarans included a long middle log and two shorter side logs held together by means of fore and aft lashings; when unlashed the catamaran separated into three pieces. A pointed but loose and not pegged on bow piece was also attached to the middle log, and a small, loose rudder hung aft between the outer log ends. Typically, two men operated this craft, but it was possible for one highly skilled, dextrous man to do it. Its main advantage was being able to pass through surf to the beach, and its main purpose was transporting cargo to and from ships anchored off the coast. For balance during the monsoon, a small outrigger was attached by means of two poles, and a bamboo mast was erected with a mat or cotton sail. When the sail's tack and sheet were released, the sail fell alongside fore and aft; its light weight made it easily manageable.

Additionally, two or more catamarans could be joined to provide a wider platform in order to transport more materials or undertake a longer journey. Called a chapa (meaning 'float' in Oriya) in southern Orissa, it's still operated during the Chandan Yatra or Sandal festivals to commemorate the representations of Radha and Krishna. In northern Orissa the chapa is known as 'pui pulia' and is capable of carrying considerable loads.

Today traditional boat-building is in decline, but the design of the catamaran lives on. The Orissa coast demonstrates its unique importance: bigger, 'better' or technologically advanced boats cannot perform in such waters. Observing the catamaran in the context of the enormous range of boats found on this stretch of India's east coast, one sees primitive man's earliest conception of gratifying his ambition for a life afloat, a design to enable him to steal across a river or estuary in pursuit of or in flight from his enemy, and one wonders at this ancient design's staying power.

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