Sampans, Belangs, and Junkos

The Pearling Boats of the Aru Islands

GRAEME HENDERSON and IAN CRAWFORD

Introduction

The slimy tidal flats at Dobu are prime real estate for the boat owners of the Aru Islands in eastern Indonesia (Fig. 2). A congested row of long narrow thatch-roofed wooden houses on stilts fringes the shoreline, reaching out from the land over the shallows. Hundreds of boats of assorted shapes, sizes, and colors are thickly clustered between the houses.

Most conspicuous are the junks (Fig. 1)—10 to 20-meter-long motorized vessels, many of which resemble the Australian pearl-lugging junks. About 50 of these hog the access to the best work platforms around the houses. Tucked in between these and lying on the foreshore away from the busiest area are smaller vessels called behangs and sampans. The behangs, open planked boats with upwasted ends, are generally around 5 meters long; usually there is a whole family on board. The sampans, large dugouts 3 to 6 meters long that generally lack outriggers, are scattered in profusion and often apparent abandonment. It is late September. The sharp clattering of the shipwrights' hammers and axes echoes across the harbor water from sunup to sundown and beyond, as the men complete the outfitting of the pearl-lugging fleet for the coming season.

Pearling in Indonesia

Pearling has been carried out in Indonesian waters from very early times, with local...
ambition of their lives. I myself had hoped rather than expected ever to reach this "Ultima Thule" of the East..." (Wallace 1893:300).

The pace of life at Dobo, the principal town of the Aru Islands, increased during Wallace's stay. Chinese merchants arrived and established temporary bases from which they purchased marine produce brought in by traders from the distant shores of southern New Guinea and northern Australia. "The Aru Islands," wrote Earl in 1897, "are the commercial emporium... of the part of the archipelago in which they are placed." (Beece 1982:10).

**Pearling in Australia**

The Australian pearling industry started in the 1930s, preceding substantial settlement in the north. From an early stage the larger European boat owners saw the advantage of moving their fleets every now and then from one fishing ground to another, crossing state and national boundaries in search of more plentiful shell and less government control. Their movements encouraged trends toward standardization by the highly capitalized operators in the industry, among whom new technology was diffused relatively rapidly. By 1901 such companies had "mother" schooners that could supply their pearling luggers at sea for months at a time.

Smaller, less influential boat owners were inadequately prepared for getting across or around the barriers of geography, advancing technology, and government regulations. The naked divers from the Malukus prahu could not successfully compete with apparatus divers working pearl shell off the north coast of Australia. The smaller Broue (on the northwest coast of Australia) pearlers had diving apparatus on their boats, but many failed to survive in the industry during a period of declining prices after 1910.

**Contact**

One of the largest fleets of luggers operating off the north coast of Australia belonged to James Clarke, a Queensland (Bain 1892:125–126). Clarke began pearling in the 1870s in Torres Strait but soon gained experience working in Indonesia and West Australian waters. He returned to the Aru Islands pearl grounds in about 1889 and operated his fleet with a mother schooner, keeping outside the three-mile limit of territorial waters. At Dobo he formed the Celebes Trading Company, which gave him greater independence. Previously the pearls of this area had been bought from the local Indonesians by Chinese and Arabs, who took them to Makassar, whence they were sent on to Singapore and then to London, Paris, and Amsterdam. Now the Netherlands Indian Government was giving concessions to British firms so shell could be shipped directly to London.

By 1914 the shell beds of the Aru Islands were worked out. Clarke obtained from the Australian Commonwealth Government permission to bring some 30 luggers and their crews to Dobo. The Broue pearlers, facing decreasing prices for their shell and the effects of increased regulation of the industry, saw the arrival of Clarke's boats as an unwarranted invasion by a foreign company with foreign boats and foreign labor. Today it is a commonly held belief among Broue residents that Clarke's Aru Islands Fleet of 1915 had a very substantial influence on the subsequent design of the Broue boats. These Aru boats were said to have had an almost yachtlike appearance, with low freeboard aft, round corner stems, and an open transom, features that were quickly adopted by local builders.

**Description of Aru**

The Aru Islands consist of six main islands separated by narrow channels, which in the absence of a road network are the highways of Aru. Shipping is also protected by a line of small islands and reefs along the eastern shores, and one can travel in sheltered waters. Only on the western shores are the islands exposed to the oceanic swells, and for part of the year these are suppressed by the southeast trade winds. The main commercial center is Dobo, on the west coast, with a population of 9000. The principal shell beds lie on the east coast backcountry (blangkon-tanah).

**The Boats of the Aru**

When the pearling season commences on the Aru Islands, each of the three major boat types—sampans, barges, and junk—owns a role in collecting and transporting shell. When we arrived on the east coast at the beginning of October 1912, we saw sampans collecting shell and then the first of the junkos arriving for the season. We were told that the bellows were used in the same manner for the sampans for shell collecting.

Sampans: The sampans, dugouts of 3 to 6 meters that sometime are carried on outriggers and a sail (and in Dobo even an outboard motor), are a multi-purpose inshore craft. They are employed in fishing, general transport, and shell gathering. Many people could make sampans, and one could be constructed at short notice anywhere on the Aru Islands.

We observed one sampan collecting shell less than a mile from the small island of Adsar. The sampan was equipped with a double outrigger and crowded by five divers who appeared to be in their teens (Fig. 5). In the water the divers wore nothing but a pair of swimming trunks and goggles (Fig. 6). The goggles consisted of two circular pieces of clear plastic (about 3 cm in diameter) set into wood or tortoise-shell sockets to fit around the eyes. The two sockets were held together with wire, and a leather or rubber strap fitted them to the diver's head. Plastic tubes of about 1 millimeter internal diameter pierced the sockets, and led to the diver's mouth. As the diver deceased would blow gently into the tube to ease the pressure of the sockets on his eyes.

Two methods of diving were employed. Most times the divers took a breath while treading water, sank in an upright position with their hands above their heads, spun around while wriggling their hands (repeatedly to help equalize the pressure), and then dived down to the shell. An alternative method was to kick down from the bottom of the sampan. Gr耿e Horsensen swam with them (wearing mask, snorkel, and fins) in about six meters of dirty water for about 20 minutes, during which time they collected about six shells. The shell was small, and was probably destined for the nearby Japanese cultured pearl farm.

Sampans and divers...
8. These small prahu would be dangerous in the open sea, but are ideally suited to the sheltered waters of the Ann Islands.

Two features make the belangs of particular interest to western observers: the rig and the method of construction. Both features recall earlier vessels of Indonesia and are, in a typological sense, archaic, but as the belangs suit the local conditions so well, there can have been little or no advantage in changing. In the long term the future of the belangs may not be good, for modern technology in the form of aluminum or fiber glass boats and outboard motors will probably displace the belangs when the islanders become more affluent, but at present we are looking at a technology that has not changed in the last 400 years. If we could document the remotest past, we might find little change over the last thousand years.

The use of rectangular sails suspended from tripod masts was once common in Indonesia (Fig. 9). Perhaps the most famous type of vessel so rigged was the paduakang of the Bugis, a large vessel of up to 300 tons that carried two tripods, each with several sails. The paduakang was one of the types of vessel that sailed to Australia in the 19th and 20th centuries. It has been replaced by the jimpi, in which some features of the paduakang hull have been retained, but a fore and aft rig has replaced the old rig. According to Haddon and Hornell (Haddon 1920:101–106, 134), it is possible that the vessels depicted in the sculptures at Borobudur (Java), dating from the 9th century, A.D., have tripod masts, but they thought it more likely that the masts were bipedal, the lack of definition in the sculptures precluding a definitive conclusion on this point. When Haddon and Hornell carried out their surveys, the jimpi and tripod mast had been displaced in Java and Samatra but were still common in eastern Indonesia and were to be found in adjacent northwest Borneo (Java at Waigala and more remotely at Waku Island and the Louisiana Archipelago and Massaia area (see illustrations in Paris 1841).

The method of construction used

7 Belang prahu with tripod mast under sail.

8 Belang prahu at anchor. Doke.

9 Rectangular sail on a belang prahu, here used with single mast.

10 Building a belang prahu, Fermi.

The builder then inserts a frame of flexible timber which he ties to the cleats. At this stage, the vessel has a tied frame but no ribs. The hull is ready for sale.

The new owner will want to fit the vessel out to meet his own requirements. Most belangs have a deck consisting of strips of bamboo over a horizontal frame, and they also have an external frame running down each side of the vessel outside the hull. The mast fittings are attached to the deck frame. The horizontal frame, which has several components, is lashed to the frame inside the hull. In some cases, the original hull frame as supplied by the builder is retained. In other cases, the owner removes some or all the hull frame components and replaces them with solid timber ribs which are usually then dowelled to the hull.

Horridge has recently argued that the use of an internal frame lashed to cleats was once common in the southern Moluccas (1981:51–54). He is undoubtedly correct. Antonio Galvao, a Portuguese explorer who visited the Moluccas in 1544, left this remarkable description:

Their boats are made in this fashion: in the middle they are en-galap or en-galap, and at both ends slope upwards. So they can sail forwards as well as backwards. They are neither nailed nor caulked. The keel, the ribs and the fore and aft timbers having been adjusted, they firmly fasten all of them with cords of jannito [sago palm fiber] through holes made in certain places. They leave some bundles or grips on the inside of the boards. Through these they tie them together; so that nothing can be seen from outside. In order to join the planks, they make pegs and in others at regular intervals they bore holes into which the pegs fit (1981:157).

Haddon and Hornell recorded the use of this technological feature in boats called orenbai in Ternate (1938:66–67), and Wallace described the method of construction in use on the boats from the Kai [also Kei; now Ewai] Islands (1860:321–322). Outside this area,
the vessels called Mon in the Bougainville Islands and parts of the Solomon Islands also had a lashed frame although here the strakes were sewn together, not dovetailed as in the belangs.

Most belangs are built at Feni (Fig. 11) and on the west coast of Tumulb Island, although we saw three under construction at Asiah on the east coast, and it is likely that they are built in small numbers throughout the group of islands. Feni, which we visited, clearly was a major center for belangs. Approximately 50 vessels were under construction in a village of 600 people. We were told that there were two types of belang at Feni — those built for sale and those built for local use — but we did not have the time to ask about the differences.

Construction commences with the positioning in the ground of posts which will support the keel. The keel extends to include the bow and stern posts (Fig. 12). The strakes are then added symmetrically, and are held in position with dowels. Large wooden hammers are used to drive the planks together, but the planks are not fixed together quickly. As the planks are driven, they are held by bindings that are tied through the eye cleats. Throughout the process, the old planks are used as models for the new timbers, and old ribs may be tied in to ensure the proper shape to the hull. On completion of the hull it is taken apart again, and when it is reassembled, paperboard is inserted between the planks and the old form-giving ribs are left out. Instead, flexible sticks are lashed in their places, and the hull is then ready for sale. Buyers come to Feni and Kola-Kola, and they order or build for themselves the superstructure that includes the deck, mast fittings, and frames for holding spars and cabins. All of these additional fittings are held in place by a framework that is tied back to the ribs, and therefore a person buying a belang is likely to take out the temporary frames with which it is supplied, and replace them with ribs. Sometimes these ribs are simply tied to the eye cleats, and sometimes they are pegged with dowels.

Purchases are not made entirely with money, for the buyer is expected to provide a feast for the people who build the boat from the place of construction to the sea, and to give a prescribed number of goods including plates, fabrics and iron goods, as well as making a cash payment. We did not witness a sale and launching, but one imagines it as a high point in the lives of the inhabitants. Prices fluctuate; just before and during the pearlimg season they are relatively high, but after the pearlimg season they decline. If there are not too many vessels for sale, the price may be depressed and the builder may be forced to take the boat to other villages in order to sell it. Once a person has purchased a belang and had it fitted out to his own requirements, he is usually reluctant to sell it.

There are strong oral traditions that the Aru Islanders learnt to make belang prahu from the Kai Islanders (see map, Fig. 2). At Tidai in the Kai Islands, Ian Crawford was told in 1971 that belangs were ceremonial prahu, built as long as 20 meters. These prahu were paddled by 20 to 30 men and would have had a cabin and carried a flat of an elaborately carved stem post. These vessels were constructed at the villages of Mun and Uwat on Kai Besar Island.

Alfred Wallace visited the Kai Islands in 1857 on his way to the Aru Islands. The captain of the vessel on which he was traveling stayed several days in Kai to arrange the purchase of two prahu for resale in Aru. At this period Kai produced prahu for adjacent islands including Seram and Goram. Their prahu, wrote Wallace, ‘are all made by that wonderful race of boat-builders, the Ke Islanders, who annually turn out some hundreds of boats, large and small, which can hardly be surpassed for beauty of form and goodness of workmanship’ (1859:34).

He continued: ‘These vessels ... will make long voyages with perfect safety traversing the whole Archipelago from New Guinea to Singapore ... (1859:321). It is possible that Kai-built prahu manned by Goram Islanders venturred to the northern coasts of Australia in the 19th century. Moderate-sized prahu, such as those purchased by the captain of Wallace’s vessel, were used for trade among the islands of Aru. Even canoes were constructed of prahu.

Later in his book, Wallace gave a detailed description of the construction of a Kai prahu (1859:321-322), and the method is exactly that used on Aru at the present day.

The term belang which we are using to designate a particular type of prahu is used more closely on the Aru Islands to categorize any small non-oceangoing prahu which is bigger than a sampan and smaller than a junko (Figs. 13, 14). For instance, at Dobu a small prahu of a type known elsewhere as bandulo was referred to as a belang. It is possible that the term used for a boat also reflects the ethnic origins of its owner, for in the Aru Islands junkos are owned by Chinese merchants, while belangs are owned by the indigenous people. The term belang, of which belang is a variant, apparently has a wide distribution which includes northern Sulawesi and the Moluccas. Haddon and Hornell (1938:72) also traced derivatives in the Philippines (belanggag), Timor (belo and beto), Banks Island (seko-seko), and Fiji (sele-sele).
They used this evidence to support motions of a dispersal of prahu forms from Indonesia to Oceania. While prehistoric dispersals of peoples and technologies from Indonesia to Oceania are well established, this linguistic evidence must be treated with caution. If the term belong can embrace boats of different design at Dobo, it would be rash to conclude that the word was ever restricted to a single type in the past.

The Aru Islands belong is thus the survivor of a major boat form that was once dominant in the Moluccas. Vestiges of this type sailed the whole of the Archipelago and New Guinea coasts, possibly reaching Australia. With the introduction of luggerlike vessels, the old design has been largely abandoned in the Moluccas, except in the Aru Islands and possibly in other relatively remote areas.

Junko: On arriving at Dobo we counted 40 vessels that appeared to fit into the category of junko. The typical junko is a 10- to 20-meter-long plank on frame cable-built vessel, with a counter stern, ketch rig and diesel engine (Fig. 16). Some appeared quite similar to pearl oysters seen at Thursday Island, having three low deck houses with green trim, a foot-operated tiller, a galley in a box on deck, and minimal sleeping accommodations. Only one junko was being built, at Laimagem across the harbor. It was a 24-meter craft (largest in bay of the completed junko in Dobu at that time) and had been under construction for two years. The owner was the richest Chinese merchant in Dobu and was reputed to hold a monopoly over the sail of pearls. He intended using the vessel for trading to Suwara (Java) and for oyster pearl. This craft was being built on western principles, the bolted frame having preceded the planking. The fasteners were made of iron. It was being built with the aid of plans (from Malakars and molds). Plans were being used using tension and oil over an open fire, but the hullbuilders had access to modern electrical appliances—we saw a belt sander being used.

The 24-meter vessel had a cut-off counter stern. The topsides were made of iron wood. Inside it was heavily built; there were 13 by 5-centimeter stringers every 35 centimeters, the frames were all grown, and the floors extended 2 meters each side of the keelson. However, the keelson was just light (10 cm by 20 cm), and there were no hatchways in the stem. The exterior was being fiber glassed. One of the shipwrights said that fiber glass had been introduced to Anibou (see map, Fig. 2) by the Japanese some years ago, but it had only been used in Dobu for about a year. The shipwright had learnt from his father, and made seven or so before starting on larger boats in 1960. He had helped build about three larger boats since then.

The other Dobu shipwrights were maintaining boats rather than building new ones when we visited. After building, junko does not need a re-fit for five years. Then they need broken parts replaced each year.

The majority of the Dobu shipwrights do not usually use plans, relying on molds and building by traditional knowledge. We envied about molds in a boat-building yard, we were shown dozens of them. The 61-year-old shipwright in charge of the 24-meter junko uses plans, and has built a number of junkos in this manner. He also has sets of molds which he keeps for building other boats, but he only uses three molds per boat, whereas the Japanese used to keep molds for the full length of the boat. The shipwright was born on the Aru Islands, but his family originally came from Rendu Island. He has been building at Dobu before World War Two while working for an English firm, which was managed by a Dane named C. A. Mansted, and which employed Japanese master shipwrights. The Japanese had built boats in Dobu using plans. They also looked at pearl oyster boats coiled up in the hold with wire. The shipwright had not yet been re-fit for the coming season. The three deck houses are mounted in a truss, with each upper accommodation, an engine room, and an after hold. The galley was on the deck forward, and the toilet was mounted on a platform built back over the water behind the extreme of the counter. The toilet has been laid athwart the bowsprit to form an extra forward platform.

We took advantage of the low tide each day to measure some of the junkos. The first boat selected was the 13.5-meter Sinar Dobo ("Radiance of Dobu"), built by a shipwright who had come from Malakas. It is said to be the second oldest boat in Dobu, and having been built in the early 1960s. It is of plank-on-frame carved construction, with a cut-off counter and a straight stern. The main-mast and main-mast carried gaff and boom. The diesel engine had not yet been re-fit for the coming season. The three deck houses are mounted in a truss, with each upper accommodation, an engine room, and an after hold. The galley was on the deck forward, and the toilet was mounted on a platform built back over the water behind the extreme of the counter. The toilet has been laid athwart the bowsprit to form an extra forward platform. The Sinar Dobo had grown frames 12 by 12 centimeters, and three stringers 14 by 4 centimeters per side. The keelson was not composite. It was beneath the masts to act as mast steps, but for the rest of the length of the vessel the frames were just bolted down to the keel. Fastenings were used throughout. There were no hatchways, and no hanging knees. The ceiling planking was very light. The second boat measured was the 17.5-meter Flamingo, a junko built at Dobu eight years previously. It carried stringers every half meter up each side, and there was a gap of about half a meter between each of the grown frames. The Flamingo had a shorter stern and longer counter, giving it a more pleasing appearance than the Sinar Dobo. The owner said he had journeyed from Dobu to Suwara, Java—1300 to 1400 miles in 20 days, using sail only. When we saw it, the Flamingo had a three-cylinder Yanmar diesel of 50-horsepower. He estimated the Flamingo's value at three million ruppes (AU$48000, at that time about $US26000).

The Flamingo carries five crew and five divers. Two men looked after the engine, three acted as loaders when divers were below, four were deck hands, one was cook, and one was helmsman. The Flamingo seems pleased about the whole east coast of the Aru Islands, including Kargang Island. It can carry three tons of pearl shell and has bulkheads for wet storage of shell. The owner is interested in the small shell, which are used for the Japanese cultured pearl farms. He is interested in large shell, which he sells in Malakas for export to America, Germany, and Korea.

The house of the Flamingo's owner contained an eight-year-old Japanese compressor for helmet diving. The compressor had a capacity of 10 kilograms per work to 25 fathoms. They stayed down one hour and then spent one hour on the top after a five-minute ascent. If a diver gets sick he goes down again. None of his divers were sick last
season, however. He did not know of any recompression chamber on the Aru Islands.

We visited two other Chinese houses to look at diving equipment. In the first we saw diving helmets, a steel corset, and an upper frock. The neck piece was marked ‘Heinke.’ There were 14- and 28-meter lengths of hose lying about. A second house contained dozens of aquajungs with Dakor demand valves, a Bauer high pressure compressor (for filling aquajungs) with Chinese engine, masks, and diving fins.

The third junko measured was the 20-meter Benjir Mas. It was said to be the oldest junko in Dobo, built in 1935. This vessel had a more rounded stem, and the stern-post was set at a greater angle because the vessel had been initially built without an engine.

It would appear that there are few significant aspects of the construction of the junkos whose origin is to be found in the Aru Islands, or the rest of Indonesia. The ownership, design, and supervision of construction has generally come from outsiders or from local people heavily influenced by outsiders.

Conclusion

When Wallace visited Dobo in the 1850s he left a vivid description of it as an entrepôt, with produce from the lands to the east, including Australia, transshipped and exported to the west. The link between Aru and Australia was provided by the Makassans then. Later, commercial connections were established by the Celebes Trading Company, and the interaction between the two countries was obviously close up to the Second World War.

In studying the shipbuilding traditions of the Aru islanders we see different influences at work. The indigenous traditions produce the sampans. The concept of the belong is locally acknowledged as originating in the Kai Islands. The junkos reflect the complex influences that went into the pearling industry. Today these traditions are being modified or abandoned. Boat designs, especially in the junkos, are being altered to incorporate engines, and in Dobo, aluminum dinghies with outboards will probably soon provide an alternative to sailing. The Aru Islands are destined for change; for example, it was recently announced that 20 trawlers are to be built in Australia for use in the area. Such developments should bring many benefits to the islanders, and older boat-building traditions may well be abandoned. Our survey was of necessity a brief one, and the complex traditions of the area deserve a more exhaustive study while this is still possible.

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Graeme Henderson is a curator in the Western Australian Museum’s Department of Maritime Archaeology, where he is responsible for a colonial period shipwreck management program, and for the curating of a collection of Australian boats. He received his M.A. in History from the University of Western Australia in 1976, specializing in later 19th century Australian shipping.

Ian Crawford studied at Melbourne and London Universities; his doctoral thesis at the latter examined the impact of Indonesian contact on the Aboriginal culture of Kimberley, Western Australia. He is in charge of the Division of Human Studies at the Western Australian Museum.