CHAPTER 3

SHIPS IN ART
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India has exceptionally rich art heritage but the depiction of ships and boats is rare in comparison to other popular themes in Indian art. The scholars have searched and found a number of ships in ancient Indian art in the form of sculptures, bas-reliefs, paintings, terracotta models, seals, sealing, engravings, coins etc. The study of ships in ancient Indian art provides a lot of information about ancient ships, their development, building technology and also their uses. The study of these ships and boats in ancient art provide a continuous history of shipping in India from Mesolithic period to the historic period (Tripathi, 1997).

These representations of boats and ships in the Indian art are widely spread in time and space. In time these representation of ships and boats are spread from prehistoric period to the recent past. They are also spread in a large area from Uttar Pradesh in the north to Tamil Nadu in the south and Assam in the east to Gujarat in the west. The ancient Indian art traditions did not confined to India alone but also
spread as far as South East Asia. Scholars consider a number of ships represented in the bas-reliefs on the famous stupa at Borobudur in Java as Indian ships. These representations noticed at different ancient places of India are in different art media.

Studies by the archaeologists and maritime historians have resulted in discovery of a large number of ships in ancient Indian art. For any systematic study collection of relevant data is a must. In order to trace the beginning and evolution of Indian shipping and shipbuilding technology through the ages, the researcher has tried to document and study these ancient ships and boats depicted in ancient Indian art. Some of the ships datable from Mesolithic period to 10th century A.D. are given in Annexure – I.

In the absence of sufficient archaeological evidence it is very difficult to reconstruct the accurate picture of ancient ships. These depictions were also studied and referred time to time but the value of ships in art is not fully estimated in the discussions on Indian seafaring. There is a need for a scientific and techno-analytical study of these representations to reconstruct long maritime history of India.
With the help of archaeological evidences, literary references and the study of these ancient representations attempts are made to understand the ancient shipping and shipbuilding technology. A systematic study of these representations from marine archaeological point of view may generate considerable information about the ships and boats of ancient India.

These representations whether sculpture or painting or seal or a coin can be chronologically determined. Besides date these representations are often nearer to reality if not stereotyped. Visual art help in studying a ship in detail, its hull, super structure, steering gear, type, building technique, capacity and so on. The artist has to depict many of these details whatever his purpose may be, unlike literature where only relevant part is described (Tripathi, 1997). Thus ancient Indian art is not less important to know the types of ships and the methods of construction of ancient Indian vessels.

Study of these representations is very important and useful. It is also more useful and reliable than many other evidences for many reasons. For example certain descriptions in ancient literature may indicate towards the existence of some ship by referring their names but such references fails to give any idea about their shape, size or
construction etc. With any, even sketchy, representation of ancient ship one can presume the design of the hull or some details about the ships of that period and their construction. These representations in art can deliver a volume of information, which would be more than the several pages of any text.

Archaeological explorations and excavation conducted in India have not yielded any ancient boat or ship, so far. Some structures unearthed in archaeological excavations have been identified as evidence of maritime activities during the ancient period. The descriptions in the literature further need to be supported by other kinds of evidence. The evidence derived from ancient Indian art, though meager in comparison with the available literary evidences, may throw light on ancient Indian shipping. Some of these representations of ships and boats in the ancient Indian art, which were studied during the present research, are furnished in the table –3.1.

There are many types of ships and boats depicted in many art forms such as terracotta models, bas-reliefs, terracotta seals, sealing and plaques, paintings on pots and walls, bas-reliefs, sculptural panels, representation on the coins etc. Some of the depictions exhibit the
actual picture of the ships of those days while the other representations in the art have their own limitations. In certain cases it is difficult to visualize complete picture of these ship of ancient times. Most of these forms were not created to record the technical details but to depict some episode or the story connected with a ship. These depictions are not to the scale and framed according to the need of the narrative.

PRE HISTORIC PERIOD

Maritime history of India can be traced back to prehistoric period. Keeping the similarities in the typology of Stone Age tools scholars had suggested, earlier, that India had contacts with African continent during the pre-historic period. The hypothesis was based merely on the typological similarities in artifacts. Besides, typological similarities more evidences are needed to put forward the bilateral maritime contacts between Africa and Indian subcontinent.

Although we have not found archaeological evidence to suggest maritime skills of prehistoric people but the study of some of the tribes in Andaman and Nicobar islands leaves no doubt that they migrated to these islands from Africa during the Stone Age. Any
migration to these islands, which are separated from the mainland by a vast stretch of sea, is not possible without seaworthy boats. These tribes still largely depend on the sea for their survival and follow their age-old boat building traditions.

There are some other direct and indirect evidence to suggest the beginning of boat building during the Stone Age and evolution of shipping and seafaring since prehistoric period. Mesolithic paintings (Fig. 1-10) in the pre-historic rock shelters evident that the cave men had started building and using the boats. The representations of ships and boats in Indian art are the only source to learn about these most ancient boats and ships. However such representations are very few.

Systematic study of prehistoric art has emerged as a major source of information of the period in which hunter-gatherer man lived in natural caves and rock shelters and painted a variety of scenes on their ceilings and walls he inhabited. Purpose of creating these paintings is still a matter of great debate and not certainly known, but undoubtedly of great help to learn a lot about the life, various activities, material culture, etc. of stone age man. Earliest prehistoric paintings are dated to upper Paleolithic period but surviving
representations of this period are rare. Rock paintings of the Mesolithic period are found in great number and variety style and colours. A variety of scenes are found depicted in rock shelters and caves. They include hunting scenes, animals, human figurines, geometric designs, various symbols and signs, hand prints and also boats.

Recent researches in prehistoric rock art particularly paintings have provided useful evidence to study evolution of shipping and shipbuilding technology. The earliest representations of boats are found in Stone Age rock-shelters. A number of boats painted at Gojara (Fig. 1-2), Kowar Khoh (Fig. 3-5) and Kerwa Ghat (Fig. 6-10) are dated to Mesolithic period by the rock-art specialists on the basis of their style etc. (Neumayer, 1993:297).

These boats are simple and small. They are probably used in small ponds and may be in small streams and rivers as well. The boats were rowed with the help of oar or a long pole. The main purpose of these crafts seems to be used for fishing (Fig. 1,3,4,9) and turtle hunting (Fig. 8,10). The shapes of these boats suggest that they are not primitive rafts but carefully made boats (Fig. 6,10).
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<td>75</td>
<td>Molcornem (Goa)</td>
<td>Hero Stone</td>
<td>Sculpture</td>
<td>12th century A.D.</td>
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<td>Goa Museum (Goa)</td>
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<td>78</td>
<td>Konark (Orissa)</td>
<td>Sun Temple</td>
<td>Sculpture</td>
<td>12th-13th century A.D.</td>
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<td>79</td>
<td>Konark (Orissa)</td>
<td>Sun Temple</td>
<td>Sculpture</td>
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<td>81</td>
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<td>Sun Temple</td>
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<td>82</td>
<td>Konark (Orissa)</td>
<td>Sun Temple</td>
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<td>83</td>
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<td>Sun Temple</td>
<td>Sculpture</td>
<td>13th century A.D.</td>
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<td>84</td>
<td>Konark (Orissa)</td>
<td>Sun Temple</td>
<td>Sculpture</td>
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<td>85</td>
<td>Delwara (Rajasthan)</td>
<td>Jain Temple</td>
<td>Sculpture</td>
<td>13th century A.D.</td>
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<td>86</td>
<td>Delwara (Rajasthan)</td>
<td>Jain Temple</td>
<td>Sculpture</td>
<td>13th century A.D.</td>
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<td>87</td>
<td>Delwara (Rajasthan)</td>
<td>Jain Temple</td>
<td>Sculpture</td>
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<td>88</td>
<td>Chamardi (Gujarat)</td>
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Stem and stern are pointed and well shaped. Their stability is very interesting. Here it is difficult to say whether they are reed boats or the wooden boats. However some of the boats seem to have outrigger (Fig. 7,9,10) for preventing them to capsize in rough waters. Whatever the material they were made of, these boats represented in rock-shelters are among the earliest representations of boats in India. Scooping huge wooden logs is definitely a difficult task that too for the people who are known for using tiny tools made of stone. Here one has to be very careful in either dating a craft or interpreting it (Tripathi, 1997).

Boats depicted in rock art are of various shapes as well as sizes. The shapes of these boats leave no doubt that they are the boat and not the rafts. Pointed stem and stern and broad amidships suggest careful construction. The upward stem and stern also indicate the improvement in the building technology, which must be the result of their long experience in the water.

These boats were propelled by both poles (Fig. 2,3,6) as well as with oars (Fig. 4,5). The uses of different gears also indicate their use in different conditions and depths. The pole can only be used in the shallow water where the bottom can be touched. The oars might
have been used in shallow as well as in deeper waters. With the development in boat design the oars provided better steering and propulsion of the boat.

Their relative size can be very well determined by the number of persons they are carrying (Fig. 10), the navigational aids or the other objects kept in these boats or associated paintings. Other than these representations of boats in prehistoric rock-shelters there are no other direct or material evidence to substantiate the maritime activities in India during pre-historic times.

The shapes of these prehistoric boats suggest that either they were made of carefully tied bundles of the reed or scooped logs. The dugout technique is practiced by the primitive tribes. The paintings have been dated to Mesolithic period. There have been some discussions about the date of these paintings. Some scholars believed that scooping huge tree trunks would not have been possible with microliths. But the technique used by the tribes of Andaman and Nicobar provide a very good example of such boat construction.
Till very recently these tribes constructed their boat by using stone implements only. A log is first selected for the construction of dugout canoe. Then a layer of mud is applied on the scooped portion of the log. This area covered with mud is then subjected to controlled firing. Due to the layer of mud wood does not catch fire but the heat burn that area and turn in dry. The burnt portion is then easily scooped out with the help of a sharp stone. The process is repeated several times till the desired area is scooped out and the desired shape is achieved.

Since the above said boats are depicted in the prehistoric rock-shelters of the bygone age, one could assess their date based on the stylistic grounds. These boats may be earliest representation of their kind and thus have a very important place in the history of ancient Indian shipping. These paintings of Mesolithic period depict well-designed and fairly developed boat with good buoyancy and stability. It can be inferred easily that achieving these designs, stability, buoyancy and propulsion must have taken a long time. Therefore the boat building in India seems to have definitely started in Upper Palaeolithic period if not earlier.
HARAPPAN PERIOD

Maritime activities of Harappans are well known. Ample archaeological evidence in the form of foreign objects unearthed in excavations in India and Harappan objects excavated in other countries have indicated the navigational skills of the Harappan mariners. They were the builders of large ships, which sailed to distance lands. Harappans had developed an effective system of water transport. The Indus and its tributaries and the long coastline provided all the necessary facilities for the development of shipping.

The maritime activities of the Harappans extended up to Mesopotamia through the Persian Gulf. The earliest reference of the intercourse between the Indus valley and Mesopotamia is probably found in the cuneiform inscriptions of the Hittite kings. The Harappans also had intimate intercourse with Sumer and Elam during 3rd millennium B.C. The findings of Indian teak in the ruins of Ur confirm that commerce by sea between India and Babylon must have been carried on as early as 3000 B.C. This conclusion is strengthened by the fact that a beam of Indian cedar was found in the palace of Nebuchadnezzar.
A variety of archaeological evidences are available to suggest maritime activities of the Harappans. Some of the structures unearthed in excavation also support the advanced maritime activities. Besides, finding of various objects of Indian origin in distant lands and foreign objects on Indian sites are other evidence of the trade relations and contacts between the ancient civilizations.

The different products have been discovered at Mohen-jo-daro (3000-2500 B.C.). Many of them were brought from distant lands. The gold used by the Harappans probably came from the gold mines in south India and would have been transported by sea. Harappa, Mohen-jo-daro, Lothal and Kachchha have also yielded representations of certain types of ships. Out of the five representations at least two were certainly sailing vessels though the probability of other three also cannot be ruled out. They also had superstructure, which clearly suggest their use for long distance voyages.

Mohen-jo-daro

Ernest Mackay observes that boat-building must also be included among the crafts of the people whose chief interest was trade.
Harappans had established their cities close to the large navigable rivers. There are three representations of boats from Mohen-jo-daro. A steatite seal, terracotta emulate and a ship design engraved on a potsherd.

One graffito on a potsherd shows a ship with mast. This ship has upturned prow and a high mast with yard. The graffito represents first sailing ship without any doubt (Fig. 11). Besides, it has the figure of a steersman. This type of boat or ship was not only suitable for river traffic but also for sea voyage.

A reed boat is depicted on a rectangular steatite seal (Fig. 12) found at Mohen-jo-daro. The depiction is not very fine rather crude and casual. Mackay has described the boat in his excavation report (Mackay, 1938:340-341, 656-657). He has rightly pointed out that the way the vessel is portrayed on this seal it is apparently not the work of an experienced seal-cutter. It is boldly but roughly cut with a triangular burin.

The depiction of the boat suggests that perhaps it was made of reeds. It has sharply upturned stem and stern and was steered by
long steering oars. One end of the boat has projected sticks or fronds. Tress strokes over much of the length of a boat indicate the tying of the reeds (Ratnagar, 1981). The cabin at the middle also appears to be made of reeds. On either end of it is fastened a standard. Some scholars identify these poles as masts. The mast may possibly be a tripod and one or two yards are shown. A steersman is shown seated at stern. The head of this steersman is missing. The seal-cutter here was not at all sure of his figure and placed it well above the seat.

The motif is although roughly sketched but not a stereotype one. It has features, which conforms to the typical archaic representations of boats. Similar types of boat are found on Early Minoan seals, on the Pre-dynastic pottery at Egypt and on the cylinder seal of Sumer.

The best representation of a Harappan ship is found on a terracotta amulet (Fig. 13) from Mohen-jo-daro. This terracotta amulet represents another type of reed boat. This boat had a flat bottom with raked stern and prow and there are two steering oars at the stern. At the middle of the boat there is a cabin. On the either ends of the ship one sea bird is depicted. These birds are called dishakak and were used by the sailors to find the land (Chandra M, 1977).
The ship does not show masts clearly but again two standards on the either ends of the central cabin are shown. Mackay points out that certain markings on the hull of the vessel suggested that it was made of reeds bound together, a method of shipbuilding, which was used, for quite large boats in ancient Egypt. In the absence of mast and sails and prominent appearance of steering oar it was classified by the scholars as row boat which are probably confined only to near shore waters and rivers. Experimental archaeology has proved that the reed ships were quite strong and seaworthy, which could undertake long sea voyages (Heyerdahl, 1980).

Harappa

A seal representing a ship was reported from Harappa (Joshi and Parpola, 1987:190). The seal was first published by Vats (1940 l.318, 341, II, Pl. XC. 223) without any description. This Harappan ship represented on the seal (Fig. 14) was well developed and might have been used for overseas trade as it is furnished with a big sail hoisted high near the raked prow. Some sort of super structure is visible amidships from which two oars are paddled out. An anchor is hanging down from the stern (Konishi, 1985). The representation on the seal is very crude and it is difficult to make out various parts of the ship. Ships have played a very important role in the trading
communities of the Harappans but their representations, except one, are always very crude and sketchy.

Lothal

Five terracotta objects and a painting on potsherd found at Lothal were identified as ships. Rao (1973; 1979: 225-26; 1985: 505) has identified three types of ships. Two of these objects are intact whereas three others are fragmentary. Among the three varieties identified by Rao, two varieties had sails and other three were without any provision for fixing the sails. A painting on a potsherd is also interpreted as depicting a boat having at least 36 pairs of oars.

Analytical study of these five terracotta models (Fig. 15) found at Lothal suggests that three of them cannot be interpreted as boat or ship. One fragment appears like a flat bottom small boat that might have been used in the nearby river (Tripathi, 1997). Another one may also be identified as a boat.

One of the complete specimens (Fig. 16) having a sharp keel, pointed prow and a high flat stern is most widely referred and
described. It has three blind holes, the one at the aft was used for fixing the mast and the other one at fore for securing the ropes of the sail (Fig. 17). The third one at lee had a post, which supported an oar. The description of this ship given by the excavator closely resembles with medieval galley and not to ancient ships. Study of the ancient ships suggests that the ancient ships had no flat stern (Fig. 18). It was only after the invention of the rudder that the design of the stern changed considerably. It makes a through examination of these boat models necessary.

The model, which has been most commonly described in most of the publication, does not appear to be a ship or boat unless it is kept horizontally to look like a boat. But this object (Acc. No. 17) can not stand the way it is depicted in all the pictures and drawings of the ship being this side pointed. Actually what is described as flat stern is the base of this object. If it is kept on the base it stands vertically (Fig. 19).

This object has three holes, one near the base, second through the top and the third small blind hole at the side. First two holes are in a line and if a stick is passed through the top hole it straight go to another hole near the base. These two holes were made before
firing as clearly visible from the lines caused by inserting a stick in the wet mud before firing. The hole near the base was suggested as mast hole. If a stick is put in this hole it remains almost parallel to the object on which no sail can be put. There is another shallow cavity within the hole. If a stick is inserted in this cavity it remains perpendicular to the object and appears like a mast of the ship. This cavity is not only shallow but also was made after firing. The smooth and ground surface of this shallow cavity leaves no doubt that this cavity was created with the help of some hard object after the object was fired. The small blind hole at lee was also made similarly by grinding with some hard pointed object. Otherwise also no stay or shrouds can be tied to this blind hole.

In the other model (Fig. 20) the stem and stern are both curved high (Acc. No. 2766). It is 11 cm long, 4.5 cm wide and 2.6 cm high with flat bottom and shows a peculiar design. Both the ends are narrow and blunt whereas the middle portion is very broad and unlike a boat, however it may be considered as a toy boat. The bottom also has a hole (Fig. 21), which the excavator suggested was meant for fixing the mast.
All three other objects are fragmentary and there is no provision for fixing the mast. Among these two are with flat base and third one is a crude lump of terracotta.

The 4.8 cm in long object with a pointed end was also identified as boat (Acc. No. 399). This artefact is nothing but a burnt piece of clay (Fig. 22) having one end pointed. From no where, this lump of terracotta (Fig. 23), either appears or can be identified as a boat.

Another 10 cm long and 4.6 cm wide object has a flat bottom and 2.6 cm broad open end (Acc. No. 1894). It seems like a broken fragment from a channel spouted vessel (Fig. 24) rather than a boat. No boat with such wide and open ends (Fig. 25) can be used in the water, neither in the sea nor in the river.

Among these five boat like objects one model (Acc. No. 400) appears like a broken part of a small terracotta boat (Fig. 26). It is 8.8 cm long and 4.5 cm wide with flat bottom, pointed end and slightly raised sides (Fig. 27). This kind of flat bottom boats might have been used in rivers.
A motif painted on a potsherd found at Lothal has also been identified as a multi-oared boat (Fig. 28). Rao (1973) compared it with the multi-oared boats of the late Garzean period painted on Egyptian Jars. The painting is like many other decorations found on the Harappan pottery. The vertical strokes originating from the curved line were mistaken as oars. There is no clear indication to relate the motif to water or to interpret the curved line as the hull of the ship.

Identification of a boat is not very easy as there were a number of other 'boat shaped' object in use. Any object or representation looking like a boat cannot be called a boat unless and until it has sufficient reasons to say so. Association of some other supporting evidences is a must for an acceptable interpretation. (Tripathi, 1997)

Kachchh

The fieldwork carried out by the researcher brought to light one unknown ship representation from Kachchh region. A rectangular steatite seal depicting a ship with an inscription in Harappan script was found in Kachchh. Unfortunately the original seal is not available now. There is only a copy prepared by the discoverer.
This evidence provides very valuable information about Harappan ships.

The seal depicting a long boat with two lines of Harappan script (Fig. 29) is unique for various regions. It is for the first time that an inscribed seal with a ship representation is found. The depiction of the ship on the seal is also unconventional. In all earlier representations the ships is represented on the longer axis of the seal or emulate leaving no space at the top. But in this case the ship is carved on the shorter axis therefore leaving enough space at the top.

The ship has high hull with two standards at the middle (Fig. 30). In all other earlier representations such standards were attached to the either ends of the central cabin. The free standing standards clearly suggest that the ship had masts and was a sea going vessel. The height of these masts is also very significant. In earlier depictions there was always a debate about the provisions of the masts. Due to the composition of those representations it was felt that the masts could not be carved due to limitation of the space available. But in this case there is enough space available above the ship but the height of the masts is very low. It seems they used short masts and
perhaps single sail on them. The height of the mast might have also been restricted due to the construction material, the reed. Two steering oars were shown at the stern.

Study of Harappan ships is not new and the ships depicted on seals, amulet, potsherd etc. have been discussed time to time. Most of the scholars have agreed that the Harappan ships were made of reed bundles (Fig. 31), though some believe Harappans were making wooden ships. Tigris expedition in a ship made of reed bundles in the fashion of ancient Harappan ship depicted on a seal has proved the sea-worthiness of the reed ships. (Heyerdahl, 1980)

There are a good number of ships representations during the Harappan period. Representations found on the Harappan seal, terracotta tablet and a graffito on a potsherd from Mohen-jo-daro a seal from Harappa, terracotta boat model from Lothal and a seal from Kachchh are the direct evidence of shipping and shipbuilding activities of Harappans. Most of these representations are very crude. There is no doubt about the art skills of Harappans but one always wonders why they depicted such an important object so crudely or casually? Scholars have tried to visualize Harappan ships
and their navigational skills but it still requires a through scientific study.

**CHALCOLITHIC**

**Ambari**

Discovery of some terracotta boats in Guwahati from the slopes of the hill in the university campus have provided some very interesting evidence of ancient boats. These terracotta boats were 13 feet 6 inches long and 3 feet 6 inches athwart. The sides of the boat were 6 inches thick and they were filled with ancient pottery. The one boat that was fully exposed was lying in north south directions where as two other, which were partially exposed were lying in east west direction.

H.D. Sankalia (1981:1-5) has suggested a transitional phase between the pre-historic and the historic period in Assam. This phase is tentatively dated around circa 2500 B.C. He designated this phase as the "Boat Culture" and compares it with the Boat cultures of Egypt, England and Norway.
This discovery is unique and only of its kind. It is very difficult to state anything certainly about the use of such boats. But it may be mentioned here that Panini refers a kind of boat that was called Kumbha. Scholars have suggested that it may be some kind of big earthenware which might have been used to cross the shallow rivers. The terracotta boats found at Ambari also might have been used in the said manner.

Inamgaon

Excavations at Inamgaon (Maharashtra) have yielded archaeological evidence suggesting riverine trade and navigation. Three phases of distinct Chalcolithic cultures i.e. Malwa, Early Jorwe, and Late Jorwe are noticed at the site. Evidences of existence of boats (Fig. 32) are found in these cultural phases. Excavation yielded spouted vessel (Fig. 33) of red ware, which are painted with boat design (Dhavalikar, 1983). These pots painted with boat design were reported from the Burial No.132 (Malwa culture), burial No.49 (Early Jorwe culture) and Burial No.200 (Late Jorwe culture) (Dhavalikar et al, 1988). The chronology of the site is firmly determined with the help of 38 C¹⁴ dates. The Malwa culture phase is dated between circa 1600 - 1400 B.C. (Fig. 34-35), the Early Jorwe culture circa 1400 - 1000 B.C. (Fig. 36) and late Jorwe
culture circa 1000 - 700 B.C. (Fig. 37-38). Apart from these boat like designs found on the burial pots a jetty has also been unearthed at Inamgaon (Deo, 1982; Dhavalikar et al, 1988).

Spouted vessels of Malwa and Jorwe ware, found in the excavation at Daimabad and Inamgaon show boat motif painted on the either side of the spout. All of these boats depicted on the pots resemble one another. These paintings are interpreted as riverine boats as the ancient site is situated on the bank of the river. These boats are crescent shaped with raised stem and stern. A pair of oars is depicted at one end. Scholars have suggested that they might have been log boats. Each pot is painted with two such motifs one each on either side of the spout (Fig. 32). In some of the later designs one additional line was drawn making the number of oars three at one end. Here again one has to be very careful to interpret such representations.

A systematic study demonstrated how a design with three straight lines developed gradually and turned out like boats with oars. Study by the researcher suggested that the boat motif on the spouted vessels was developed through a long process. The motif painted on the vessels unearthed at Inamgaon perfectly look like the boat but
the similar representations on the pots from Daimabad demonstrate how the straight lines became curved and finally took the shape of a boat (Sali, 1986:297-300). At Inamgaon, this motif takes the complete shape of boat on the Jorwe ware, succeeding to the phase V of Malwa ware when the short vertical lines are detached from the longer vertical lines traditionally drawn on the either side of the spout. Calling these boat shaped motif as boat will perhaps always remain a point of debate among the scholars. (Tripathi, 1997)

NEOLITHIC

Not much is known of the period between mid-second millennium BC to mid-first millennium BC. Representations of boats during the Neolithic period are extremely rare. Two representations, dated to this period, come from Tamil Nadu.

Karimaya Kavundanpatti

Rock-paintings at Karimaya Kavundanpatti (Tripathi, 1997:81-82) and Kilvalai, dated to 1000 and 700 B.C. respectively depict boats. Like the other boats in rock-paintings they might have been used in pond and rivers for fishing and transport. These representations are
very sketchy (Fig. 39) and do not provide much detail about the construction of the boat.

**Kilvalai**

The painting in the rock shelter at Kilvalai however demonstrates that the boat constructed during this period had good carrying capacity and the stability (Tripathi, 1997:83-84). The prow of this boat is well shaped. The boat painted with four men standing in the boat is very interesting. All of them are holding the hand of the other and standing straight with ease (Fig. 40). It demonstrates the good stability achieved through the developed design of the boat. The long pole depicted between the first and second men indicates that it was used in shallow waters.

**EARLY HISTORICAL PREIOD**

After the Chalcolithic period there are very few evidences. During early historical period we again find several archaeological evidences including a good number of boats represented in various mediums of art. The earliest representations during the early historical period are seen on some of the silver punch marked coins.
A motif on the silver punch marked coins has been identified as boat. It has crescent shaped hull with a small superstructure at the stern. These coins are dated to 6th-5th century B.C. by the numismatists.

From 2nd century BC onwards we find a number of boats depicted in the sculptural panels on the Buddhist stupas of Bharhut, Sanchi and Amaravati, on the coins of the Satavahanas and in the rock-cut caves at Kanheri. These representations were engraved with great care and skills. The boats in bas-reliefs are although small but important because of the detailed information they reveal. Here it can be said with certainty that the boats were made of wooden planks joined together with the help of dowels. There were small rowing boats without any super-structure as well as sea going ships. (Tripathi, 1997)

Bharhut

A medallion on the railing of Bharhut stupa depicts a scene of calamity (Fig. 41) at the sea (Schlingloff, 1988). This scene depicts two boats at the sea with three men on each boat (Fig. 42.a). A huge fish with open mouth is swallowong one of the boats with its
crew. The sea monster looks like a stylized crocodile with rows of serrated teeth. The scene is a very curious one. Stunned by this calamity the crews of the other boat have stopped even the rowing of boat (Fig. 42.b) and anticipate the similar fate (Cunningham, 1962:124).

There is another scene carved on the railing of the stupa of Bharhut, which depict a small canoe in the pond. Alike the earlier depiction this boat is also manned by three sailors. Two of them are standing while the third one is sitting in the boat and engaged in some work. One of the standing men is shown propelling the boat with a long pole. Numerous lotus leaves and propulsion of the boat by a pole leaves no doubt that the boat is being used in the shallow water of a pond.

Sanchi

Two boats are carved on the pillars of eastern and western toranas of the Sanchi stupa (Marshall and Foucher, 1982: pl. LXV, LI). One of them is a small river boat and the other one is a sea going ship.
The eastern face of the southern pillar of the eastern gateway has a richly carved and a significant boat scene (Fig. 43). Although this is a small boat but is carved in great detail. The boat is depicted with two men with an ascetic, who is sitting in the middle of the boat. Both the men are seated at the stem and stern end are rowing the boat with the help of an oars and a long pole (Fig. 44).

The boat has raised stem and the stern posts, which are upturned and raked (Fig. 45). It is made of wooden planks and is carvel built (Fig. 46.a). The method employed in fastening of the planks of the boat is the most significant features of this boat (Fig. 46.b). The planks are notched on their edges to prevent their sliding, and they are fastened together by wooden dowels. Most of the scholars have identified these dowels as stitches and have classified it as a sewn plank boat. The oars are shaped somewhat like large spoons. The oars have a long handle with a flat piece of wood at the end to hold the water (Fig. 46.b). It is a small canoe that is used in the rivers and shallow water bodies. The use of long pole also indicates its use in shallow waters. Construction and use of such canoes in the rivers and ponds can be seen even today.
The other boat, carved on the southern face of the northern pillar of the western gateway (Fig. 47), is of special type (vishesha) and not of regular use (Tripathi, 1997). It is a big seagoing ship with wooden superstructure. The prow of the boat is decorated with Sardula head. Similarly the stern is designed as upturned fish tail. With these decorations the sailing ship appears like a giant animal floating on the water. In the middle of the boat there is an open mandapa. An empty seat is shown in the mandapa along with a chauri bearer and a person holding a parasol over it (Fig. 47). Presently the lower portion of the boat has been damaged and is preserved in the archaeological museum. An earlier drawing shows the complete boat with curvilinear bottom (Fig. 48).

It may be considered a madhyamandira type boat. The decorations, parasol and chauri on board also suggest it a Royal ship. The size and construction of the ship suggest that such ships might have been used for overseas trade and transport.

Amaravati

A ship is also carved in a relief panel on a pillar at Amaravati stupa, a famous monument of Satavahana period. The ship is being
propelled by one man with an oar. At the middle of the boat is a cabin or a pillared mandapa in which sacred relics of Lord Buddha are placed on a throne below which the sacred feet are also seen. A priest with his hands joined in anjali mudra is worshipping the relics. Another man with a crown on his head is shown behind him. Except the oarsman holding a spoon shaped oar and waves below the ship it does not looks like a sailing ship (Fig. 49). The bottom of the ship appears to be flat.

It is a crowded scene thus not much details can be noticed. Unlike the Sanchi boats it is not carved so clearly however it can be compared with the bigger boat at Sanchi. Fergusson has described the relief in detail, which depicts relics of Buddha coming from Sri Lanka (Fergusson, 1971:188, pl.68).

During this period Indian ships had become stronger, bigger and more durable. The Sanchi and Amaravati sculptures depict these ships used during the period. They are of the madhyamandira type with the prow crowned by a winged gryphon and the stern by the tail of a fish. The Bharhut examples are older than the Sanchi but the construction of the boats is exactly the same. Similar boats and the
same type of oars are still in use. These bas-reliefs present good example of unchanged boat building tradition in India.

Alagankulam

The excavation conducted at Alagankulam, district Ramnad yielded many inscribed sherds (Kasinathan, 1996). Based on the four C$^{14}$ dates, the site it is dated to 2$^{nd}$ Century B.C. (Kasinathan, 1996a). Two potsherds unearthed in the excavation were engraved with ships on them.

One of the potsherd found at site AGM 7 depict a ship in full sail (Fig. 50). It is one of the good representations of a sailing ship found so far. The fore portion is broken and missing and the sherd depict only stern portion of the vessel. The ship is shown with a mast, which is supported by stays, sail and two paddles. The stern is raised high.

Some scholars have identified the vessel depicted on the potsherd with Vattai, a popular marine craft used for coastal traffic and fishing
on Tamil Nadu coast. It is datable to 1st century B.C / A.D. Some other scholars have suggested it a Roman ship visiting Indian ports.

Arikamedu

Excavations at Arikamedu unearthed several well preserved organic remain. Among the wooden remains a model of boat (Fig. 51) was also found (Wheeler et al., 1944). The wooden piece was scooped like dugout canoe and its ends were also shaped and made pointed. Since it was found from the levels below the water line it was well preserved. The wood found in the excavation was popularly used for making the boats.

Kanheri

Three ships have been found depicted in the caves at Kanheri. A large litany of Avalokiteswara carved behind the stupa in cave number 2 at Kanheri represents a ship. The fore part of the ship is carved at right. No mast or any other navigational instrument is shown. The traders, two men, on board of ship are offering prayers to god to rescue the. This ship is datable to 2nd century A.D. (Mookerji, 1912). In another similar asthabahaya scenes two ships
are shown. Due to the rough nature of the rock the representation is not very clear and much damaged. These ships depicted at Kanheri are stereotyped and give not many details except that the boats were in use for trade during the period (Tripathi, 1997).

**Satavahana coins**

The naval tradition, which the Mauryas had built up, was kept alive in at least some of the kingdoms. The age of the Kushanas in the north and the Andhras in the south witnessed equal development of the trade and intercourse of India with the rest of the world. These maritime activities are apparent from foreign writings and numismatic evidences (Fig. 52).

The seafaring on the Coromandal coast is indicated by the Andhra coins having a ship motif on the reverse. Satavahana kings Pulamavi and Gautamiputra Yajna Sri Satakarni issued ship type coins between 88 and 191 A.D. On the reverse of these coins are seen beautiful ships with masts (Fig. 53). Ship representations on the Satavahana coins show sailing ships with masts (Chandra M, 1977).
These Andhra-Satavahana coins of 1st-2nd century A.D. provide some good representations of contemporary ships. These ships having one or two masts were sea-going trading vessels of large size and high tonnage (Fig. 54). Being depicted on small coins not many details can be made out. However, corrosion of metal has also reduced some of the finer details, which might have been drawn when the coins were minted, it is possible to discern certain characteristics of the boats used during that period (Tripathi, 1997). Several stay and back stays, steering oars and flag on the stem post can be seen on these coins. The deck was straight and the oars were used to steer the ship. The masts, each with a cross-tree at the top, were supported with stays.

**Bangarh**

A terracotta seal found at Bangarh, West Bengal depict a ship motif. This seal (Acc. No. 1035) presently kept in the Asutosh Museum, Kolkata measures 4.1 cm in diameter. The vessel depicted on this seal is shown carrying grains (Fig. 55). The legend on the seal ‘a vessel containing corn’ (Sarma, 1991) leaves no doubt that it was a ship engaged in trade. It has flat bottom and the stem and stern posts are highly raised and turned outwards. The representation is very small and not very clear.
Chandraketugarh

Excavations at famous archaeological site Chandraketugarh have yielded a large number of terracotta seals. A number of terracotta seals and sealing found here also depict ships of different types (Fig. 56-58). Some of these representations are very interesting not only for the study of ships but also to study maritime trade as the variety of commodities transported on ships are also depicted on these seals.

One of these seals depicts a ship with mast. These boat and ships were mainly used to transport grains. Depictions of corns support their uses for transporting grains. Many of these seals are also inscribed. The legend on a seal reads the journey in three directions by one Yasoda who has earned wealth by selling food.

Another seal shows a ship having single mast. Kharoshti-Bramhi legend on the seal makes it clear that these ships were the trading vessels engaged in trade and earned the wealth for their owners (Sarma, 1991). One of the ships shows transportation of horses in a ship.
HISTORICAL PERIOD

During the historical period a number of ships and boats are noticed on the religious monuments. Depiction of Jataka stories on Buddhist monuments and stories from epics, Ramayana and Mahabharata becomes popular themes for the artists. The scene of Ram crossing river Ganga in a boat with Laxman and Sita is the most popular and has been found depicted at several places.

Alagankulam

Another potsherd found at Alagankulam in the excavation is engraved with a ship on it (IAR-1997-98). The ship has a high single mast with two booms and sails tied to them. The stem is upturned and high. Three oars are shown at stern (Fig. 59). The decoration of the ship suggests that the ship had a number of sails. It is dated to 4th – 5th century A.D.

Basarah

A terracotta seal found at Basarah depicts a long boat with high prow. The vertical lines drawn on either side suggest some kind of
super structure at the middle of the boat. It seems to be a madhyamandira type boat. A long pole or the shaft of an oar towards the stem seems to be the steering device. Since its other end is under the water the shape of the blade can not be seen. Amidships is a sort of platform on which stands a goddess (Marshall, 1917:129-130) identified as Goddess Lakshmi (Fig. 60). The depiction on the seal is not very clear. The seal is assignable to Gupta period.

Ajanta

Some of the best representations of ancient Indian ships are found in the world famous paintings in the caves of Ajanta. These paintings depicting various Jataka stories also show some ships and boats. Paintings are tastefully drawn and provide good information about the contemporary maritime activities (Dhavalikar, 1999: 107-113). Though the episodes narrate stories of very early period but the representations must have been influenced by the existing crafts.

The ships are found in the paintings in Cave No.1, 2 and 17 and sculptures in cave No. 26. They depict variety of ships and boat, which include sea going sailing ships, pleasure boats, naval ship as well as small canoes. The various activities depicted here are
transportations of army, a ship loaded with cargo, a shipwreck, a
pleasure ride, retrieval of corals from the deep sea, etc. A ship with
three masts and in full sails is one of the best and most detailed
representations of a sailing ship in Indian art. (Tripathi, 1997)

Details of construction and the degree of reality in these
representations are higher than others. Besides artist's skills it can
also be attributed to the medium of art. The role of the medium as
well as the requirement of the composition in depicting the ship,
particularly its details is clearly demonstrated at Ajanta where some
stereotyped boats without any detail are carved on the rock at the
same time beautiful ships with great details are drawn in the murals.

The Ajanta murals depict various types of boats. There is an
agra mandira type boat with three masts and sails. There is also a
madhyamandira type pleasure boat. The types of ships and boats
depicted at Ajanta correspond to the descriptions given in the
Yuktikalpataru. Some scholars have doubted about the origin of
these ships. According to them the triangular sails shown in Cave
No. 2 at Ajanta, datable to circa 5th – 6th century A.D., may not be of
Indian origin. A scholar has identified a ship painted in Cave No.2
with an old Indonesian fighting boat (Joshi, 1988:19).
A ship is painted in cave No. 1. The episode depicting the ship was identified by Mookerji (1912), Moti Chandra (1977) as Mahajanaka Jataka panel. This identification was based on the documentation of John Griffiths (1983.17). Lately, Schlingloff (1976) identified this episode as Kalyakarin’s adventures.

The boat is painted with eyes at stem and stern and has a pillared cabin at the middle (Fig 61). The stem and stern are projected and the hull is curvilinear and resembles the crescent shape. Kalyanakarin wearing a crown on his head is sitting in the pavilion with his brother Papakarin. An attendant is holding an umbrella. The boat is manned by two sailors, one with an oar at the stem and another standing on a ladder and steering the vessel with a long oar at the stern (Tripathi, 1997: 110-112). The upper portion of the painting is not clear and only some traces are seen. Schlingloff (1976) has suggested that the boat had three masts and same number of sails. This is a royal pleasure boat and based on the position of the cabin can be called madhyamandira type of boat.

To the left of this scene a ship is shown sinking into the waves. Much of the ship has gone underwater and only one end is visible above the water. The parallel running lines suggest the planking of
the ship. The crew of the ill-fated ship has jumped into the water and struggling to survive. To the right of the sinking ship a drowning man is stretching out his arms for help. At the top of this there is another drowning man with outstretched arms above the stern of the sinking ship. This victim is the only one present to be receiving help, for his right wrist is being grasped by a hand above him.

An episode from *Purna-Avadana Jataka* is painted in cave No. 2. The story includes a ship with three mast with rectangular or oblong sails (Fig. 62). The boat was described by Griffiths (1983:17, pl.34) in detail.

The ship has three masts with similar rectangular sails (Fig. 63). Bowsprit and a jib sail are also shown. It is sailing in the sea as suggested by the jib, which is filled with wind. The oblique position of the fore mast is seems to be due to the composition of the painting. Two small platforms project fore and aft and a small canopy and two steering oars are shown at the stern. Towards the stern a low cabin is located. Stem and the stern are pointed and end in a rounded head. Under the awning are kept a number of jars (Tripathi, 1997: 113-115). Steering oars are fitted in sockets and eye is painted on the bows. The sea is represented with various kinds of fish.
The detail with which the ship is drawn is appreciable. However the representation is not very correct from nautical point of view but it gives a good deal of information. It seems the artist either has seen or heard about a sailing ship and was familiar with water crafts.

Painting in Cave No. 17 represents the episode of landing of prince Vijaya at Sri Lanka. This painting shows two ships (Fig. 64). The hull of these ships is like a basket decorated with *makara mukha* (Griffiths, 1983:pl. 72-73). These ships are devoid of any super structure and are shown carrying the army of Prince Vijaya mounted on elephants and horses (Fig. 65). From their construction it appears that they were large cargo vessels with enough open space for loading the cargo, like a barge. The wide and heavy gunwale line and the broad frame inside also support their use as cargo vessels. These ships were propelled with oars (Fig. 66). Two oars with long shaft and long and wide blades are shown at starboard side (Tripathi, 1997: 119-124).

There is another mural in Cave No. 17 showing two boats. The boats represented here are small vessels with three masts (Fig. 67). The fresco showing the boat is much damaged. Two men holding ropes suggest some sort of diving in the sea. The wreckage of a
boat by the striking of the boat against a coral reef can be made out. Some men may be seen in the wrecked boats. The hull of the ship resembles a bowl or a basket. The bottom is slightly curvilinear (Schlingloff, 1976; Tripathi, 1997:125-128). They were keel-lee boats suitable to use in lagoons and near coral reef. In one of the boat there are two men. One of them holds in his hands a box tied with string. The box evidently contains the jewels (ratna), which they have retrieved from the sea (ratnakara).

The scene was misinterpreted earlier (Yazdani, 1933). It depicts the retrieval of corals from the depths of the Ocean. The coral growth is shown at the bottom of the water. A monster, painted red, has swallowed one arm of a man who has fallen into the sea and seems to be entangled in weeds. Another monster is chasing a man who has also fallen into the sea. The depictions of monsters suggest the dangers involved in the job. The scene paints the real dangers involved in retrieving the corals. Some large fishes, like sharks which are found around coral reefs in the Indian Ocean, are shown around the boat (Tripathi, 1997:125-128).
Besides these paintings which are referred by several scholars there are also three more boats represented in sculptures. These boats were noticed and studied by the researcher during his fieldwork.

The first boat is a stereo typed boat depicted in an *ashtabhaya* scene in cave number 4 (Fig. 68). The fore part of the boat is carved in a litany of Avalokiteswara. The hull is curvilinear and not many details are shown. Two sailors onboard are shown praying to the Avalokiteshvara with folded hands (Tripathi, 1997: 116-118).

The second litany of Avalokiteshvara in carved in cave number 26. The fore part of the ship is carved. Two traders are shown seated in the boat. The hull is curvilinear and not many details are shown (Tripathi, 1997: 129-130).

There is another litany of Avalokiteshvara in the same cave. The lower portion of this relief has been damaged and the boat is not very clear. With the comparison with two other similar depictions one can presume this scene also would have depicted a boat with traders praying to lord Avalokiteswara to rescue their ship (Tripathi, 1997: 131-132)
Ahichchhatra

A terracotta plaque from Ahichchhatra, displayed in the National Museum, New Delhi (Acc. No. 62.245) depicts the vehicle of the Sun god as a boat. The seven colours of the rays of the sun (rashmi) are shown as seven female figures in the boat. The upper half of these feminine figures is like human but the lower half is like a fish. A wheel with spokes is carved amidships. The entire composition reminds the popular depiction of the chariot of Sun god with seven horses representing the seven colours in the light.

The boat depicted on the plaque can be identified as a plank built boat. The prow is slightly raised-upward. The stem-post raising high turns inwards like a hook. A strong gunwale line is clearly visible. Smooth finish of the hull suggests it a carvel built boat. The size and shape of the boat suggest that it was used in the rivers and lakes. The terracotta plaque is datable to 5th century A.D.

Pallava coins

Pallavas were the great sea power on the Corromandel coast. They sent voyages to Sri Lanka and other countries across the sea. The
Rajasimha and Nandivarman Pallava of Kanchi issued the coins having ship motif on their reverse. These copper coins, 2 cm in diameter, consist of bull on the obverse and the ship having two masts on the reverse. The silver coin of the same shape and size has bull on the obverse and ship with two masts on the reverse. There is no legend on any of these coins. Finding of these coins in South East Asia, at Khuan Luck pot of Thailand leaves no doubt that the Pallavas had maritime trade and contacts with these countries.

Ships represented on Pallava Coins throw light on the contemporary ships. The ships with two masts (Fig. 69) closely resembles with the ships represented on the Satavahana Coins. The stem and the stern of these ships are upturned and raked. At the stern end a pair of steering oars is depicted. These representations of ships on Pallava coins suggest that not many changes had occurred in the shipbuilding techniques over the centuries.

The ships on the Andhra and Pallava coins seem to be similar to the Masula boats which still survive in southern India. They also resemble with modern Dhoni. Such comparative study of ancient ships in Indian art with the surviving traditional crafts may provide valuable information about their shape, size and carrying capacity.
We also know about their seaworthiness and moreover it helps to understand the antiquity of the traditional boats.

Apahsad

A temple dedicated to Vishnu was built by Konadevi, the queen of Aditya Sena, of Late Gupta dynasty at Apahsad. The plinth portion of the brick temple datable to the close of the 7th century A.D. was decorated with stucco figures representing the story of the Ramayana. These scenes depict two river crafts, a plank built boat and a raft (Sinha, 1979:117,134,150-153).

The stucco representing the episode of Ram, crossing the river Ganga depicts a boat. In a niche Ram, Sita, Laxman and Kevart are shown standing in a small boat. Kevart is shown standing at the aft and holding a steering oar. The oar is very wide and looks like a rudder. All of them are facing to fore. The stem is comparatively higher where as the stern is not depicted. The deep horizontal lines on the hull suggest the planking. The boat can be compared with similar crafts used in river Ganga for fishing and ferrying.
Another episode carved in a niche depicts a raft. It is made of thick wooden logs. The logs are tied at both the ends with the help of thick rope. The raft is being used by two men. Such rafts might have been used to cross the rivers (Swami, 1997:97-98).

Aurangabad

There is a good representation of a ship with sails in the cave No 7 at Aurangabad (Fig. 70). It can be dated to 7th Century. It is one of the best representations of a sailing ship in sculptural art (Tripathi, 1997: 142-143).

The bow is upturned and the stern comparatively low. At the rear end it has a long and wide steering oar. The two masts of the ship are supported by stays. A sail is shown filled with wind on the fore mast. The ends of the thwarts coming out from the sides are also shown. Despite the hard rock on which the ship is carved the artist has tried to show the details as well as the depth. The litany of Avlokiteswara is carved in bas-relief but artist has successfully tried to give greater depth by carving the prow away from the rock.
Ellora

Hindu as well as Buddhist rock-cut monuments at Ellora depict four ships in sculptural art. Three of them carved in the litany of Avalokiteswara and Tara are stereotyped and do not give much details. One of the boats is carved in the Ramayana panel in famous rock-cut Kailash temple.

The first ship is carved in cave No. 3. It is a small litany of Avalokiteswara carved in bas-relief. Due to the erosion of the rock the entire lower portion of this litany has been damaged and only the traces of the fore part of a trading vessel with two sailors onboard can be made out (Fig. 71). It is datable to 7th century A.D. (Tripathi, 1997:133-134).

Another ship is carved in cave No. 4. It is a small relief showing the fore part of a trading vessel. Two sailors are shown on the ship praying to the god for rescuing their ship. Due to the water action of much of the lower portion of this litany has been eroded. The relief is datable to 7th century A.D. (Tripathi, 1997:135-137).
The third ship is carved in cave No. 9. It is a stereotyped representation of a trading vessel in the litany of Tara. The representation is important for two reasons. One, it is the only ship, in this region, carved in the litany of Tara. Second, the ship is carved at a great height unlike other ship which is generally carved at the ground level or maximum to the eye level. Due to the weathering of the rock much of the relief has been eroded. It is datable to 7th – 8th century A.D. (Tripathi, 1997:138-139).

The fourth representation is found on the famous monolithic temple. The panel depicts the popular theme of Ram crossing the river Ganga. Ram, Laxman and Sita are seated in the boat along with Kevart. It is a small rowing boat used in the river. It is datable to 8th century A.D. (Tripathi, 1997:140-141). Due to constant exposure and weathering of the rock finer details of these reliefs have been lost. But their depiction shows the continuity and popularity of ships in the society.

Ratnagiri

A ship with a single mast is depicted in a sculpture found at Ratnagiri, Orissa. The litany of Tara (Fig. 72) carved on a sandstone
slab is presently housed in the courtyard of a Buddhist monastery. The lowermost panel at her right shows a ship jumping on the waves. The stem of the ship has risen dangerously and the ship is about to sink. The mast amidships is secured with stay and backstay (Fig. 73). Three sailors onboard are shown offering prayers to goddess Tara to rescue their ship. A steering oar is carved at the stern. It is datable to 8th century A.D. (Tripathi, 1997:144-145).

Aihole

Durga temple at Aihole is decorated with Ramayana scenes at its Adhisthana. A panel shows the famous episode of Ram crossing the river Ganga with Sita and Laxman. This scene carved in bass relief represents a river-boat. The boat is simple without much detail. The hull of the boat is crescent shaped but quite high. The stem and the stern are upturned. Ram, Laxman and Sita are seated in the boat along with the Kevart. No mast, sail or oar is shown. The boat can be classified as riverine craft. It is datable to 8th century A.D. (Tripathi, 1997:146-147).
Pachmarhi

Pachmarhi is situated in Satpura hill range in Madhya Pradesh. Depiction of a boat in the main rock-shelter of Jamboodveep was noticed by Jagdeesh Gupta (1967:491). Due to its uniqueness, even Gupta hesitatingly placed it as a boat and it was not referred by any archaeologist further in the line of maritime history. The painting clearly gives an impression of a boat and the location of the shelter near the water flow further strengthened the fact.

This boat is painted with ochre coloured bold lines (Gupta 1967: 503) in out lined natural style of rock paintings (Fig. 74). The three dimensional effect of this boat clearly indicates the proportional length, breadth, and height of the boat. Stem post is little projected out and almost round in shape which looks like head of an animal as painted in silhouetted abstract style of rock paintings. Stern is curved and bow is wide enough. Bottom of the boat is flat which suggests it could have been used in river and in shallow waters. Stern is flare and seems to have motif of the head of a fierce animal, long snout suggests probably the makara, like the stem of Ajanta boats (Mookerji, 1912:44; Schlingloff, 1988:390).
It's a massive built as suggested in bold lines and the flare stern and the height of the boat shows probably it is constructed and not dug out. Planking of the boat was in all probability secured by coir or some such fibrous material in order to give added depth, which increases the carrying capacity of the boat (Tripathi, 1995:71-73). Some of the features and shape of the boat are similar with some other historical boats.

Curved stem, flare stern with decoration and projection on the heads, flat bottom, broad enough and height, are some of the features of Pachmarhi boat, which can be seen since Harappan times. Hence the relative dating is not viable in all the occasions. For instance Sanchi and Bharhut boats of c. 2nd century BC. are very close in shape and design, at the same time wall painting of Toulouse of 14th century AD is also almost similar to these boats (Schlingloff, 1988: 389, fig. 1-3). While comparing rock-paintings with other paintings, sculptures and models one must remember the environment in which these paintings were executed. Rock paintings were painted with the natural pigments on a rough rocky surface. But others are better art works. On stylistic ground it can be dated to 9th – 10th century A.D. (Tripathi, 1997:148-149).
Bhubneshwar

A stone slab preserved in the state museum, Bhubneshwar shows two ships (Fig. 75). The ship is long and its fore part is visible. An elephant is carved at the stem and there are five men onboard. Among these, the man second from the last is rowing the ship with a long oar. The man at the center appears to be the king or the owner of the ship. He is resting on a cushion and another man is sitting in front of him.

Prow of another similar ship is carved at the right side. An elephant is visible on this ship. The panel is datable to 9th – 10th century A.D.

Depiction of elephants on Orissan ships is very interesting. Probably they depict elephant trade and their transport through these ships.

However the period of present research was limited to the 10th century A.D. but next two-three centuries mark some of the important technological advancements and changes in shipbuilding techniques. Some of the representations in Indian art are the testimony of them. The evolution traced so far would not have reached some logical conclusion without incorporating these significant developments like the introduction of rudder. Therefore
some of the representations from next three centuries are also included in the present study.

Old Goa

An inscribed slab found in Old Goa is carved with a bas-relief depicting a naval battle. The inscription of a chief of King Jayakeshi of Goa Kadamba family is dated to 1054 A.D. (El, XXXVII: 284-ff; Chidanandamurthy, 1979).

Eksar

Four hero stones in village Eksar, near Mumbai are carved with naval ships. Although they are damaged extensively but represent some very good examples of ancient ships datable to 11th-12th century A.D. Some of these hero stones are also inscribed but not legible now.

A 10 feet high and 3 feet wide hero stone is decorated with four bends of carving. The lowest band shows five ships (Fig. 76). These high packed vessels with masts are navel ships. They are manned
with archers and shown advancing for battle. At the end is the chief's ship. The second bend also depicts four ships. These ships are perhaps the part of the fleet shown in the lowest bend.

Another hero stone of the same dimensions is decorated with eight bands of carving. The upper portion of this hero stone has been damaged. The lowest bend of this hero stone depicts eleven ships. The ships are more or less same as depicted in the earlier referred hero stone. They are also shown advancing to meet a ship crowded with troops armed with spears and shields. In the second bend five vessels are shown advancing from the left to meet a galley which is approaching from the right (Fig. 78). The fleet of ships seems to disabled the galley as its crew is depicted throwing themselves into the sea. One line inscription on this stone is datable to eleventh or twelfth century A.D. In the third bend are shown nine ships of a fleet on their way back.

Another hero stone, six feet high and three feet wide, is decorated with four bends of carving. In the lowest bend six ships with masts and oars are shown. A ship with a poop is the chief's ship. A parasol on that also suggests the same. The second bend depicts a naval battle. Six ships from the left and three ships from the right are...
shown advancing towards the center (Fig. 79) These advancing ships meet at the center where the sailors onboard are depicted falling into the water under distress. Over the central ship heavenly damsels float bringing garlands for the warriors (Gaz. Bombay.XIV, 1882:57-59).

In another hero stone of comparatively smaller size (4'x15"x6") there are only two bends of sculptures. In the lower panel a naval battle is depicted. Those who die in the battle are shown in the heaven in the upper panel (Chandra M, 1977).

The ships represented in these hero stones are more or less are of same type but vary in size. They are having mast, secured with stays, but at the same time 9 to 12 oars are shown at one side. Showing the oars in a ship having mast is very interesting. During the normal course these ships might be using sails. We are aware that, during that period, the rigging was not so effective that a ship could be moved to any direction quickly, by changing the sails. During the naval battle a ship needs to be moved fast with precision. Use of the sail can give fast speed under favourable winds but during the war the desired maneuverability was not possible with the
sails and rigging. Therefore the oars were used during the naval battle to move the ships swiftly and safely.

The oars are represented passing through the holes located below the gunwale. In some of the ships a row of rower's heads is visible whereas in some others the rowers are not visible. This suggests that the ships had multiple decks. The lower deck was utilized by the rowers for rowing the ship whereas and the upper deck was used by the warriors to launch an attack.

**Tirubuvanai**

A boat representation is found in a Vishnu Temple at Tirubuvanai, Pondicherry (Deloche, 1996). The boat carved in the temple depicts the popular episode from *Ramayana*. Ram, Laxman and Sita are shown crossing the river Ganga in a boat with Kevart. It is a small river craft having a little raised and up turned prow. A line running horizontally from fore to aft mark the gunwale line.
Tirumangalam

A ship carved in Shiva temple at Tirumangalam, district Tiruchirapalli, Tamil Nadu (Deloche, 1996) is datable to 11th century A.D. It has upturned stem and stern. The shape of the boat resembles with Vattai, which are used on the Tamil Nadu coast. High waves depicted below the boat indicate that it is a seagoing vessel.

Some good representations of boats and ships are found in Orissa. The boats depicted in stone sculptures found at Puri, Bhubneswara and Konark are of similar type. These boats with very high pointed prow were quite big in size but were rowing boats. Some time a cabin at the middle and elephants etc. are also shown loaded on the board. (Tripathi, 1997)

Goa

A number of hero stones carved with naval battle scenes have been found in Goa. These hero stones depict a variety of ships and boats. Some of these scenes are very important from maritime history's point of view.
A hero stone found at S. Lourence shows three ships engaged in the battle (Fig. 79). The hull of the ships is crescent shaped with number of arrow like oars. The warriors are having swords and shields and are in war. The hull is stylized but the numbers of oars suggest them to be long ships (Fig. 80).

Another hero stone show three ships engaged in the naval battle (Fig. 81). The one at the center is shown complete where as other two are shown partially. It has raised platform amidships, high poop-deck and long rudder. It seems to be a big ship as a number of oars and oarsmen are shown rowing the ship (Fig. 82).

A hero stone found at Molcornem, Quepem is very interesting. It depicts a ship on wheels (Fig. 83). The ship with pointed stem and high poop has a long rudder. It is tastefully decorated. Four oars are shown at port. The wheels shown below the hull attracted the attention of many scholars. Some suggested that it was an amphibian ship which could be pulled on shore and transported through road to any where. Some scholars have identified it with launching of the ship (Fig. 84). The decorations on the hull also suggest that it was recently built ship in very good condition. The
warrior shown onboard holds a long spear. One helmsman is shown at aft.

Another hero stone found at Molcornem, Quepem depict a battle ship with an archer seated on the deck (Fig. 85). The stem is projected and pointed. Some superstructure is seen at poop. The ship is although small bur important as it has a rudder. The ship is datable to 12th century A.D.

Puri

An Orissan boat is depicted in the sculptural panel on Jagannatha temple at Puri (Fig. 86). It is a Royal barge with a cabin in at the middle of the ship. Based on the position of the cabin it can be called *madhyamandira* type of boat. The scholars have assigned different dates to this sculpture. Some date it to 12th Century A.D. keeping its type and similarities with other boats where as some other scholars have dated it to the 15th century A.D. on the basis of the later date of the monument. The representation is included in the present study because of its earlier date suggested by some of the scholars.
The Royal barge is propelled by a number of oarsmen. The ship is quite large and oarsmen are pulling the oars with all their might. The prow is highly raised whereas the stem is flat. The gunwale is tastefully decorated. The parallel lines running along the hull suggest it a clinker built boat. The oars are long but light. The shaft of the oars is too long and the blades are comparatively very small.

The ship has a cabin amidships. It has vaulted roof resting on decorated pillars. A rope or chain hangs from the ceiling and grasped by the master of the vessel to stead him on the rolling waters. Such ropes are hung even today in the modern ships on the bridge near captain's seat. Pillars are carved like standing female figures. At the center of the cabin is a high platform on which the king is seated.

His attendants are standing at the aft. One of them is holding a parasol. The helmsman is standing at the stem with a long steering oar. Mookerji (1912:35-36) admires the beauty of the cabin and the simplicity of its design. He also opines that the rocking-seat which is probably meant to be effective against sea sickness.
Konark

A stone slab carved with a ship in bas-relief is preserved in the Indian Museum, Kolkata (Fig. 87). The slab is said to be found from Sun temple at Konark. It depicts a ship similar to one carved on the Jagannatha temple at Puri. It too has highly raised stem, low and flat stern, and a cabin at amidships. There are nine men and an elephant on board. Four oarsmen seated at port side are shown rowing the ship with long oars. A man with parasol stands at the stem.

The king is shown seated in the cabin with a bow in his right hand. His elephant is also carved standing on the quarter deck. The royal insignia like parasol, elephant and the king seated in the cabin suggest it is a royal ship. The number of oarsmen pulling the ship and the elephant on the quarterdeck clearly suggests the size and the carrying capacity of the ship. With the bow in the hand of the king it appears that such ship might have also been used for naval battles.

Six ships with Martanda Bhairava dancing over them (Fig. 88) are carved on the sikhara of the mandapa of the famous Sun temple at
Konark  These ships, datable to 13th century A.D., are unique of their kind. All the six ships are more or less similar in shape as well as size (Fig. 89-94). The pro is highly raised where as the stem is low and featureless. The Martanda Bhairava is shown dancing on all these ships (Fig. 88). The ships carved from all the sides are the only free standing sculptures of ships in Indian art. However they are crudely carved and are stereotyped. Each ship is rowed by one sailor who is pulling the oar and faces to stern. The helmsman is carved seated at the stern facing to the stem. Till 13th century all the boats and ships, depicted in Orissan art were steered by oars (Tripathi, 1997:160-172)

Delwara

Famous Jain temples at Delwara, Mount Abu have six ships represented on the ceiling of Luna Vasah (Fig. 95-96). The temple is dated to 1231A.D. The ships carved in the white marble have a thick central mast supported by stays. There are a number of sailors onboard. They are big sailing ships with several decks and high tonnage. The hull is well shaped and high with railing all along (Tripathi, 1997:157-159). These representations show multi-decked ships. All these ships are however of same type, but important to study and reconstruct the maritime history of India. Two other ships
Chamardi

Two ships of historical period have been found painted in a rock shelter near village Chamardi in district Bhavnagar of Gujarat (Sonawane, 1996:11-14; 1997:47-49). The details of the ships painted here exhibit the acquaintance of the painter with the sailing crafts. He had good knowledge of the boats, their parts and navigation. There are two ships, both having single mast and Latin sail. Anchors are shown hanging from the prow which looks like a cross. Attention was paid to draw various parts in detail. One of the ships is having a rudder and also helmsman at the stern. A warrior holding a shield and sword is also shown standing at the prow. The bigger vessel is having high upturned stem and stern. A flag is flying at the stern post. A long and narrow triangular flag is also depicted on the mast head. The mast is supported with stay, back stay and shrouds (Fig. 98)

The other ship is smaller in size (Fig. 99). It also has a single mast supported with stay and back stay. A Latin sail is unfurled on the
mast. A triangular flag is flying at the mast head. A cross shaped anchor is hanging at the prow but unlike bigger ship rudder is not depicted. A warrior holding a shield and a sword is shown at the stem and helmsman holding helm is depicted at stern. These ships have all the features of sea going vessels and might have been used in maritime trade with western countries (Neumayer, 1992).

The painting is unique for several reasons. It is the only rock painting which exhibits the sailing ships and a ship with a rudder (Fig. 100). This depiction of a ship with rudder marks a great technological advancement. All the ships and boats noticed in the Indian art till 12th century A.D. were steered with steering oars. Introduction of the rudder is a very important change, which is recorded in this rock painting, the reason this representation was included in the study being even little late in date.

Borobudur

Besides the representations of ships and boats in Indian sculpture and painting, there are a few interesting representations of Indian ships in the sculptures of Borobudur in Java. The bas-reliefs at Borobudur present a very important and interesting series of sailing
ships and boat, which are identified as Indian ships. Most of these reliefs show ships in full sail. The form of these ships with outriggers closely resembles with traditional ships on Indian coast. Mookerji (1912) considers the outrigger ships and boats represented at Borobudur as of Indian origin. Schoof (1979) identify them as Gujarat ships. Krom opines that the outrigger ships of Borobudur are originally Javan ships. Moti Chandra also accepts this view.

The above mentioned descriptions of the ships demonstrate that the ancient Indian art provides useful evidences which can be corroborate with other archaeological and the literary sources. Study of these representations is useful as these representations can be chronologically determined and therefore help in studying a ship in detail, to know the types of ships and the methods of construction.

Study of ships in art is also not free from difficulties. Tradition, stereotypes distort the representation. Insufficient factual knowledge, composition according to availability of space, medium of art, purpose of depiction etc. are also some of the factors, which hindered realistic representation in visual art.
Since no scale or the method was followed it is difficult to recreate the complete picture of the ancient ship by studying a single representation. Pictorial evidences are sometimes very reliable but in some cases they are just the experience or imagination of the sculptor and may be largely hypothetical. Sculptor or painters knowledge about these different types of ships is also very important. An artist, unless he has been a seaman himself, seldom knows what he is trying to draw when depicting a ship. He may not understand the purpose of the gear he sees and draw so leaves out many things of importance and exaggerates many others to suit his composition or to make his picture more attractive and effective. He removes many essential elements and adds some other. He tends to shorten all drawings of the hulls of vessels and to accentuate all curves. Many pictures of ships, therefore, look very unrealistic and imaginative.

The medium of art is also a very important factor in the study of ancient art. Use of different mediums may create a vast difference in the depiction of ships by a same artist at same place and at the same time. A clear difference can be seen in the representation of ships in the sculptures and the paintings of the same period.
This effect of the medium on the representation is very clear at Ajanta, which is the only place that provides a number of ship representations in two different mediums – bas-reliefs carved on the rock surface and the paintings drawn on the walls of the caves.

Those ships, which are carved on the rock surface, are small, stereotyped without much detail. The purpose of these depictions is only to show a ship. Where as those painted on the walls are the beautiful drawings of ships with great details. They not only show the various parts of the ship but also various navigational instruments and the life on board. These depictions are meticulously drawn with minute details such as plank joins, fittings, direction of the wind, cargo on board and so on (Tripathi, 1997: 110-133).

These representations whether sculpture or painting is often nearer to reality. Before studying a ship and its detail one has to consider several aspects to determine the authenticity of the information provided by any representation. The medium of the art, episode narrated, purpose of depiction, etc. are important in studying a ship and generate information. Data generated by the study of visual art need to be corroborated with other archaeological and literary evidences. Systematic analytic study of ships in ancient Indian art
thus is very important and useful and provides a volume of useful information about the evolution of ancient Indian shipping and shipbuilding technology.