

# Maritime ethnography and ancient river faring in the Indus Valley

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## Abstract:

The article delves into the intricate relationship between material culture and seafaring traditions within the ancient Harappan society, focusing on how these practices shaped economic and social interactions. It situates the research within a broader context of ancient trade routes and maritime exchanges, aiming to illuminate the complexities of human adaptation to marine environments. Utilizing a multifaceted approach, the research integrates archaeological evidence, ethnoarchaeological methods, and sociological frameworks to unearth insights into ancient boat-making traditions and their relevance in maritime trade. The methods employed include a thorough examination of archaeological sites, analysis of historical artifacts, and comparison with contemporary maritime practices observed in ethnographic studies. This comprehensive review uncovers a significant continuity in boat construction techniques, materials utilized, and design variations that have persisted over centuries. The findings reveal that the diverse array of boat models, alongside seal engravings depicting vessels, showcases the advanced understanding of navigation and trade that existed within Harappan civilization. In conclusion, the research posits that a deeper appreciation of maritime ethnography can lead to a richer understanding of ancient trade systems and cultural interchange. It advocates for further interdisciplinary exploration into the maritime aspects of ancient societies, underscoring the need for transportation studies to be integrated as vital components in the narrative of historical human endeavors and societal evolution. Through this lens, the study not only contributes to ethnoarchaeological discourse but also emphasizes the critical role of maritime activities in shaping the dynamics of ancient civilizations.

**Keywords:** Maritime Archaeology, Ethnography, Indus Valley Civilization, Harappan Civilization, Boat Building Traditions, Maritime Trade, Ethnoarchaeology, Archaeological Interpretation

## 1. Introduction

The term “INDUS CIVILISATION” refers to the Bronze age civilisation of the Indus valley. It was initially investigated by Sir John Marshall, Ernest Mackay and Madho Sarup Vats in the early twentieth century. Almost 700 sites were identified which reflected different phases of the civilisation. The civilisation was renamed as Harappan Civilisation as it extended beyond Indus River (Rao,1991). This essay aims to study the use of maritime ethnography to help understand ancient river faring in the Indus Valley Civilisation, specifically it is about river vessels and their efficiency during this period. The Indus Civilization spanned almost

two millennia from 3200 to 1300 BC and is known for its technological advancement, architectural uniformity and long-distance trading contacts (Rao 1979). The civilisation flourished in the alluvial plains of the Indus River system, roughly extending north-south from the Saurashtra region in India to the Pakistan-Iranian border and from west to east from the mountain ranges of Baluchistan to Ganga- Yamuna Doab (Ray et al. 1999).

Harappan period archaeologists are limited in their research due to the lack of literary records. We are yet to find much about social, religious and economic life in the Indus Valley, unlike those similar people in Egypt and Mesopotamia (Khan et al. 2013). There is also the issue of its undeciphered script resulting in what inscriptions that exist not being read and interpreted. The limited scale of academic study is also due to the argument that the information that we would get from these records would be meagre due to the short length of the inscriptions (Ratnagar 2006). Another limiting factor is that few sites have been intensively excavated and many of those sites that have been are not extensively published. In part research is also hampered due to current geographical boundaries as the area covers and joins two major countries in Indian subcontinent i.e. Pakistan and India. Moreover, partition has embroiled the civilisation in politics making research a tough proposition. There is discontinuity and continuity among cultural package making dating and analysis a very difficult job (Pastner et al. 1985). There are certain patterns that do repeat. However, most of the time archaeologists have to depend upon technological and artistic similarities to group the assemblage together. Due to the above reasons, it is beneficial to look at the cultural sequence of the Harappan civilisation whose cultural sequence can be divided into three periods based on the pottery assemblage (Lal 1998):

1. Early Harappan Phase: Third millennium BC
2. Mature Harappan Phase: 2600-2000 BC
3. Late Harappan Phase: post 1900 BC

The geographical area encompassed by the Indus civilisation was twice the size of that controlled by even the Sumerian city states or Dynastic Egypt and the mechanisms of control and integration appear to be significantly different (Kenoyer 1994a). Nevertheless, like Egypt and Mesopotamia River navigation forms a strong backbone for the Harappan civilisation. The Indus River flows from Himalayan mountains down towards the plains finally ending in the Arabian sea. Trade on the river was an important part of Harappan society, which is reflected in the control of the state over it.

## **2. Materials and Methods**

Archaeology, anthropology, and ethnography are combined in this multidisciplinary research to examine the Indus Valley Civilization's maritime customs. Ethnographic study serves as a bridge to comprehend ancient maritime societies by documenting modern maritime practices in the Indus Valley region. The research also uses archaeological data to reconstruct the Harappan civilization's marine activities, such as excavated items, seals, potsherds, and boat models. Further information on the marine customs of the area is also obtained by consulting historical documents and traveller testimonies, like those of Marco Polo. The goal of this study is to create a more thorough knowledge of the marine features of the Indus Valley Civilization by integrating these several lines of evidence. Ethnography is used by maritime archaeologists to document the remaining maritime traditions in the contemporary world. These have the potential to provide a link to enable a better understanding of ancient

maritime cultures. Ethnography investigations involves full recording of a nautical culture in its own geographical and social context and preserves these endangered traditions for future generations. It can be used as one of the sources in the interpretation of excavated material. It makes the archaeologist aware of a range of solutions to general problems such as are those found in house building, boatbuilding and so on as there is only meagre ancient material to rely upon (Marshall 1931; Mackay 1938,1943; Vats 1940). The early excavators of Harappan sites made ethnographic observations of traditional crafts and trade mechanisms. Ethnoarchaeological studies of crafts, such as pottery manufacture, indicate the mechanisms for indirect control (Kenoyer et al. 1991; Vidale et al. 1992). The evidence of the maritime culture of the civilisation is unfortunately lacking and so the use of ethnography may help to go some way to augmenting the gaps in our knowledge. It is often remarked that the prehistory of India and Pakistan is Indus valley centered (Wheeler 1968). The Indus plain in Sind is a relatively narrow east-west strip about 200 km wide contained by the Thar desert on the east and Kirthar range on the west. The flood plains provided grazing sites and agriculture flourished. These plains were highly productive even without irrigation system. Resources provided by the Indus River were central to the spread and increase in population as it increased agricultural productivity (Allchin, B. 1996). The Indus system primarily consists of two rivers, the Indus and the Hakra-Wahinda (modern day Nara) along with its tributaries. They flow through Sind, Rajasthan, Punjab and Haryana (Lambrick 1964). The river Indus reaches Arabian sea in the west and the river Nara in Sindh reaches the Great Rann of Kutchh in the east (Flam 1986). Both of these rivers, have left marks of their old channels providing a unique outlook to the river system in previous periods. These rivers collectively have collectively been called the Mihran of Sind (Possehl, G.L. 1982). The Hakra system is now mainly dried up except in the upper part. The Indus, on the contrary, is an aggrading river making deep S shaped curves as it meanders across its flood plain, adding to cultivable land. Both of these rivers had a dendritic network. The setting of Indus valley civilisation includes the highlands and plateaus of Baluchistan in the west, and the mountains of North Pakistan, India and Afghanistan to the northwest. The region had a complementary ecosystem that supported the population. The spectrum of climate and scenery is vast for it goes from sandy tracts to lush green forest. The climate is a tropical one with occurrence of annual rainfall, high humidity, high temperatures and winds. Local thunderstorms occur in the months of April and May. The area in the present day is characterised as “semi-arid” with insufficient rainfall for the crops (Ratnagar 2006). However, palynological studies suggest that weather today is harsher than it was in 2500 BC meaning that the environment could have been more fertile offering the potential for more productive agriculture than the present-day thorny bush cultivation.

Two major conditions affecting the settlements of the civilisation were:

1. the behavior of the river irrigating and covering a large floodplain;
2. the navigability of the river which permitted transport for external as well as internal trade.

The key pieces of land chosen for habitation were those that afforded portage from the sea or were navigable from one river to the other. Within the area where the civilisation was situated the majority of the sites lie on the plains of the river Indus and its tributaries or on the now dry course of the Hakra and Ghaggar river. Our initial impression of the civilisation is of a sophisticated and highly complex society based on cultural uniformity. This uniformity is reflected in town planning for the basic layouts of the settlements show a regular orientation.

This consists of two distinct elements: a “citadel” or mud brick podium/mound along with “lower city” consisting of probably residential areas. This uniformity also extends towards building techniques, such as the use of mud bricks, and while variations are seen in the size of dwellings their basic construction remained the same.

### 3. Results

#### *Five clay models of boats*

Five clay models of boats complete with mast, sail and rigging have been discovered (Fig 1a, 1b and 1c). We also have evidence of a boat impression on a seal (Fig 2a, 2b and 2c) and another on a baked amulet (McGrail 2004). The boat on the seal represents reed lashed bundled rafts with a superstructure and twin steering oars. The superstructure also appears to be made out of reeds. Another interesting aspect in this is the placement of steersman whose head is missing. He is seated at a rudder on steering oar. A potsherd from Mohenjo-Daro (Fig 3a, 3b and 3c) shows the placement of steersman, however, he is found seated in the opposite direction. This might be signifying the return journey of the boat. Some representations have super structures while in others it is missing. This could probably be representing either the levels of boats based on economic conditions or even different kinds of boat technology present in those times. The boat model from Lothal represents a square sterned vessel with a sharp bow. There is a perforation on the bow. This has been interpreted as a fitting for rigging. Perforation on the upper edge of the hull is said to be an oar rest. The model also has socket at the base of the boat which suggests that sails were used. Mohenjodaro also boasts of a picture of sailing ship which is scratched on a pot sherd (Fig 4). It is very similar in shape and structure to the one on the Mohenjodaro tablet. It appears suitable for docking on steep river banks. Another vessel is found on an unfired steatite seal which shows a flat-bottomed boat. It appears to be plank built boat along with twin oars and superstructure. Lothal has 5 models of boats, one of which is completely intact. This has a keel and fairly high prow enabling it to turn with the direction of the wind. Apart from this there are three blind holes which could have been sockets for mast, sail riggings and the fulcrum of the steering oar. The boat has a flat base. Another example of a different type of boat can be identified from another model. Though damaged it has curved stern and prow similar to Egyptian boats from Garzean period. In this model the keel is pointed and has a raised margin. A hole is found a little way from the center which may have been for the mast. The other three models are highly damaged. They have a flat base with an unpointed keel and no hole for the mast. There is also a “multi oared” boat painted on potsherds from Lothal. The size of the boat is questionable, however, based on dockyard that has been identified at Lothal Rao suggests that Harappan boats could take a load as much as 60 ton (Rao 1979). This leads to the logical deduction that the size of these boats was very much like the modern boats of the region.

#### *Evidence of boat models*

The evidence, however, is largely pictorial or boat models which provide little secure information regarding the technical and social aspect of them. The trade contacts of the civilisation have been seen from the prism of land-based economies with sea transport being negated. The information regarding the vessels and the maritime aspect surrounding them has been missing from the scholarly research.

#### *Study of Ethno-archaeology*

Ethno-archaeology is the study of material culture in its systemic context for the purpose of acquiring information useful in archeological investigations (Agorsah, 1990). A

reconstruction of the human past based on living structures combines the theoretical and methodological aspects of both ethnographic and archaeological data (Stiles, 1977) with ethnoarchaeology providing a bridge to the past filling in the gaps in our limited archaeological evidence. However, ethnoarchaeology comes with its own set of issues, particularly those related to the appropriateness or weakness of analogy and differences in the interpretation of data. Nevertheless, this should not limit our research but make us aware of the need to be careful about the analogies that we use. The main aim of the ethnoarchaeology has been to document the relationship between the ongoing material and cultural aspects in a society with a view to reconstructing their past behavior (Gould et al. 1978). I personally believe it is intermixing of not just ethnography but also anthropology and sociological techniques with archaeological practicality.

### *Ethnography and reconstruction- A new Shift*

Ethnography and reconstruction help us to obtain a more complete picture of ancient seafaring societies, such as the case of the activities of the Roskilde Viking Ship Museum (Vinner et al. 2013). Maritime ethnography can also help in the interpretation of the excavated material, particularly that related to boatbuilding and boat use (McGrail 2004). The problem here is the imposition of cross-cultural analogies – just because an ethnographically recorded seafaring society did things in a particular way does not mean that ancient mariners did things in the same way and for the same reasons. This can be dealt if the environmental, technological and economic conditions are recreated. So, in short ethnoarchaeology is a research strategy that links material culture with culture in its archaeological context along with providing new interpretations and concept (Roychoudhury et al. 2006). The ethnography of seafaring has its own set of problems as the discourse is generally linear and devoid of context. This is because seafaring is studied in isolation and not in context of land (Simpson 2009). Marine Ethnography can help us understand questions such as boat making traditions and the social aspect of marine communities. It is difficult to analyze modern society without the advancement in communities (Ray 2003).

### *Maritime Ethnography*

How then can we use maritime ethnography to help us develop a deeper understanding of ship and boat use in ancient Harappan society? For this we can turn to the traditions of the contemporary Indus valley in northern India and Pakistan. Marine ethnography here, however, has to depend upon colonial constructs (Pastner et al. 1985), nevertheless, the region has strong boat making and fishing traditions. The marine anthropological research in the sub-continent has mainly been in the south region, which is due to the fact that along with normal anthropological difficulties of informant hostility, withdrawal and barriers to fieldwork, we also find regional politics making the situation worse. In Pakistan in particular, ethnography is seen as an aid of governmental politics and used primarily to facilitate administration (Pastner et al. 1985). Marine ethnography in the region does not gain much attention due to a lack of governmental support, alongside other factors like political, religious and the crisis in funding, which hinders academic development. This area constantly faces the threat of the destruction of sites and the movement away from traditional maritime activities and occupations leaving them undocumented for the future.

Boats and Boatmen in the region have followed a clear and distinctive evolutionary path. The rural population greatly depends on the river system. In 1971 roughly 1 million people were involved in jobs related to boats (Greenhill 1971) and the dependency on local crafts to

support river faring go hand in hand in the region. The culture has strong roots that venerate rivers, which are generally considered to be feminine. The river shanties sung in the region are generally about travel to unknown lands with storms taking over and singing the praise of river (Greenhill 1971). The myths and stories generally revolve around attesting the power of the oceans, mystery and hidden treasures. The region's social and religious fabric is based on riverine trade (Simpson 2009). The ports in this area have religious meaning particularly for the Muslim community. Since the medieval era it has been the departure point for pilgrims to Mecca. It is interesting to note that even though trade was a rich occupation it was looked down upon both in Hindu and Muslim traditions. In India and Pakistan, caste plays an important role and is something that needs to be upheld at all times. The transmission of knowledge is mostly oral where the training in the hereditary profession begins at an early stage. The extent to which this system would have existed in the pre-modern period, for which there is a clear lack of evidence, is unclear. For example, although river faring and its occupations were defined by caste, there is a lack of evidence for this in the literature (Ray 2003).

The ethnographical study undertaken by William Belcher for a village in Baluchistan throws light on many interesting social aspects of the community (Ray et al. 1999). The village draws most of its income from marine related activities and boat making is an important task that is well respected and is given much importance in the village community. Fishing is also another aspect of the community, which is still strong and is a mainly hereditary craft, which exploits both inshore and near shore environments. There were specific social rules for the division of the catch. An interesting feature of the fishing boats is their capability to house a whole family on a boat because of the extensive journeys they have to undertake.

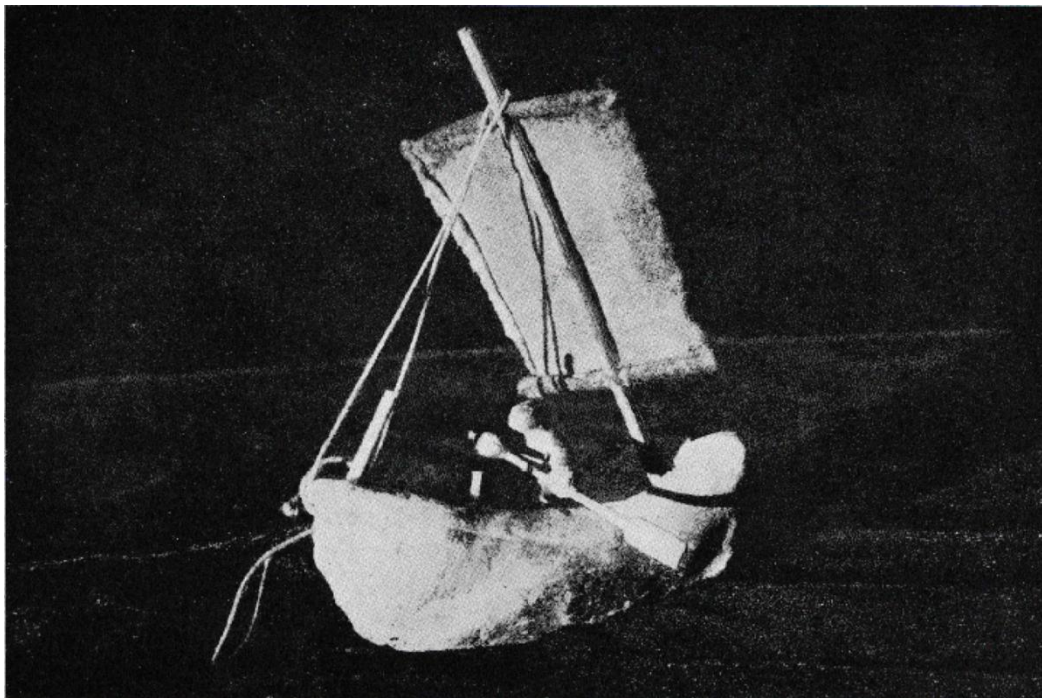
Drawing upon the ethnographic evidence, the image on the Mohenjodaro seal (Fig 2a, 2b and 2c) could easily be a family travelling down the river and trading. As the family is represented on a seal it could be possible that it is an important merchant house. The archaeological evidence we have about social aspect of Indus boatmen is very limited. Marine ethnographical study of the region can act as important tool to enhance the study of the social aspect of these maritime communities.

### *Pre-Historic Boats*

The continent boasts a multitude of sailing boats and hence a clear distinction needs to be made between sea boats and river boats. The former are deeper drafted, stronger, and better fitted to face the open sea. They had a square sail on the foremast and a high pointed sail on the mizzen. Riverboats were gracefully shaped, with a pointed stern higher out of the water than the pointed bow, with the helmsman sitting high up at the steering oar in the stern (Greenhill 1971). Hornell argued that plank-built boats were reminiscent of prehistoric boats (Hornell 1905) and classified them as:

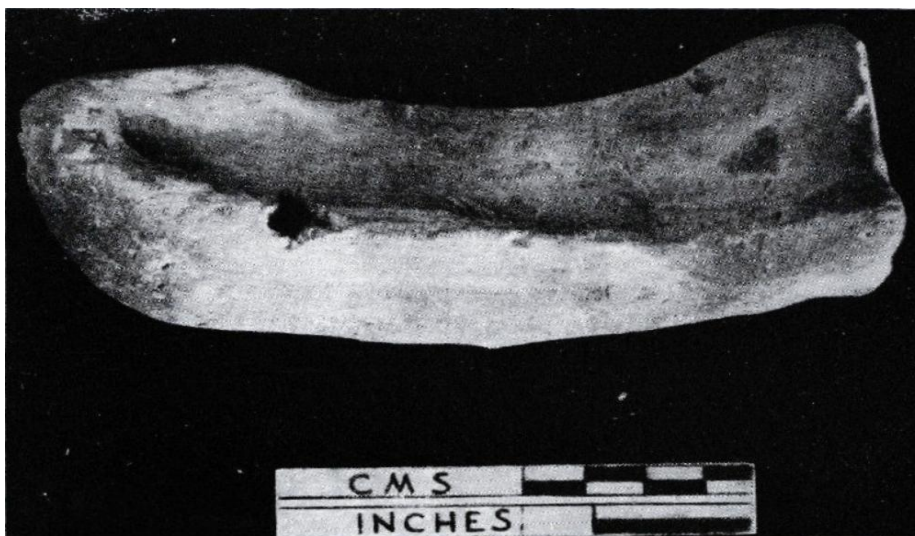
- Dinghies – these were passenger or fishing boats that tend to have a narrow stern almost 2-2.4 feet higher than normal level. The boatman squats on the stern steering the craft. The stern was kept high to give a clear picture to the steersman. These might also have a cabin depending upon the function of the boat.
- Rowing and racing skiffs – these boats are propelled by number of rowers or paddlers and are known for their speed.

- Large Fishing boats – These boats are flat bottomed and do not require a sail. They are beamy double-ended light boats and require two boatmen to handle the direction of the craft.
- Travelling houseboats and ceremonial barges or Badjra – These are used for longer journeys and had special provisions for cooking. They are made on the lines of large dinghies. The cabins in the boat depended upon the level of luxury of the craft along with its size. These ranged from full cabins to a light framework of bamboo covered with mats. The mats were hinged with ropes and could easily be removed dependent upon the weather. The size of the houseboat varied from around 30 to 50 feet in length, 8 to 16 feet in breadth and 4 to 6 feet deep.
- Cargo carriers – as the name suggests, these boats were used to transport goods. The mast used was easily foldable and set on a on platform (Hornell 1905).



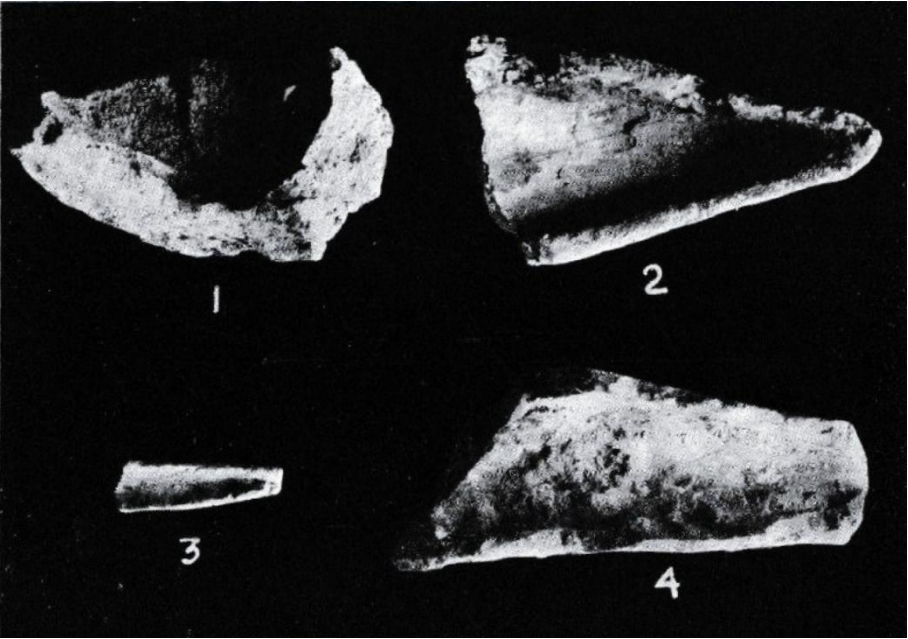
## ILLUSTRATIONS

(a)





(b)



(c)

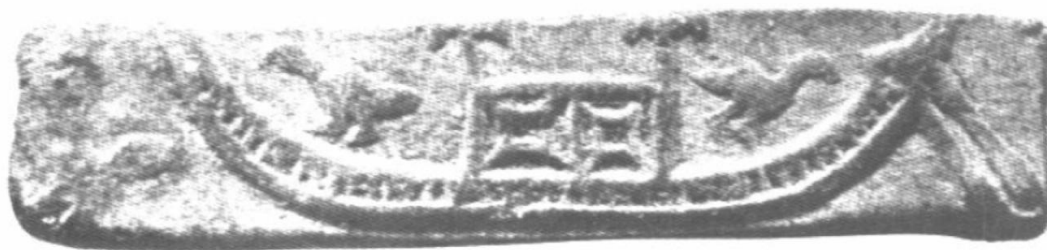
**Figure 1** (a) The complete ship model from lothal. The sail and oar are reconstructed. (Rao 1979) (b) The

model without the reconstruction. (Rao 1979) (c) The broken boat models found at Lothal. (Rao 1979)





(a)



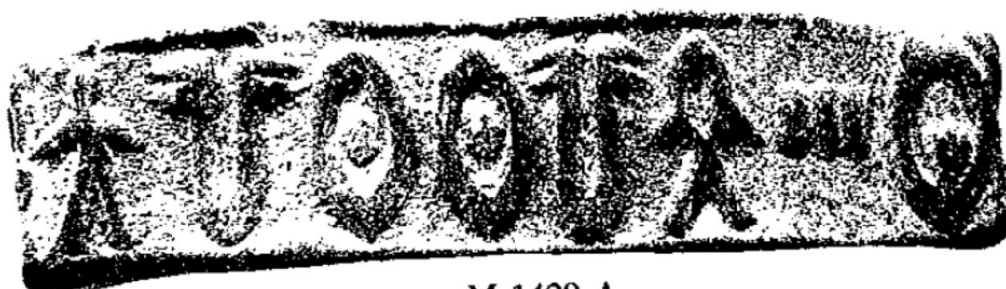
(b)

M-1429 B



M-1429 B

(c)



M-1429 A

(d)



(e)

M-1429 C



**Figure 2** (a) it is coloured picture of three sided molded terracotta tablet from Mohenjodaro (Kenoyer 1998) (b) & (c) Picture of the same tablet in different lightening. (d) & (e) Different sides of the tablet (Joshi et al. 1987)

(a)

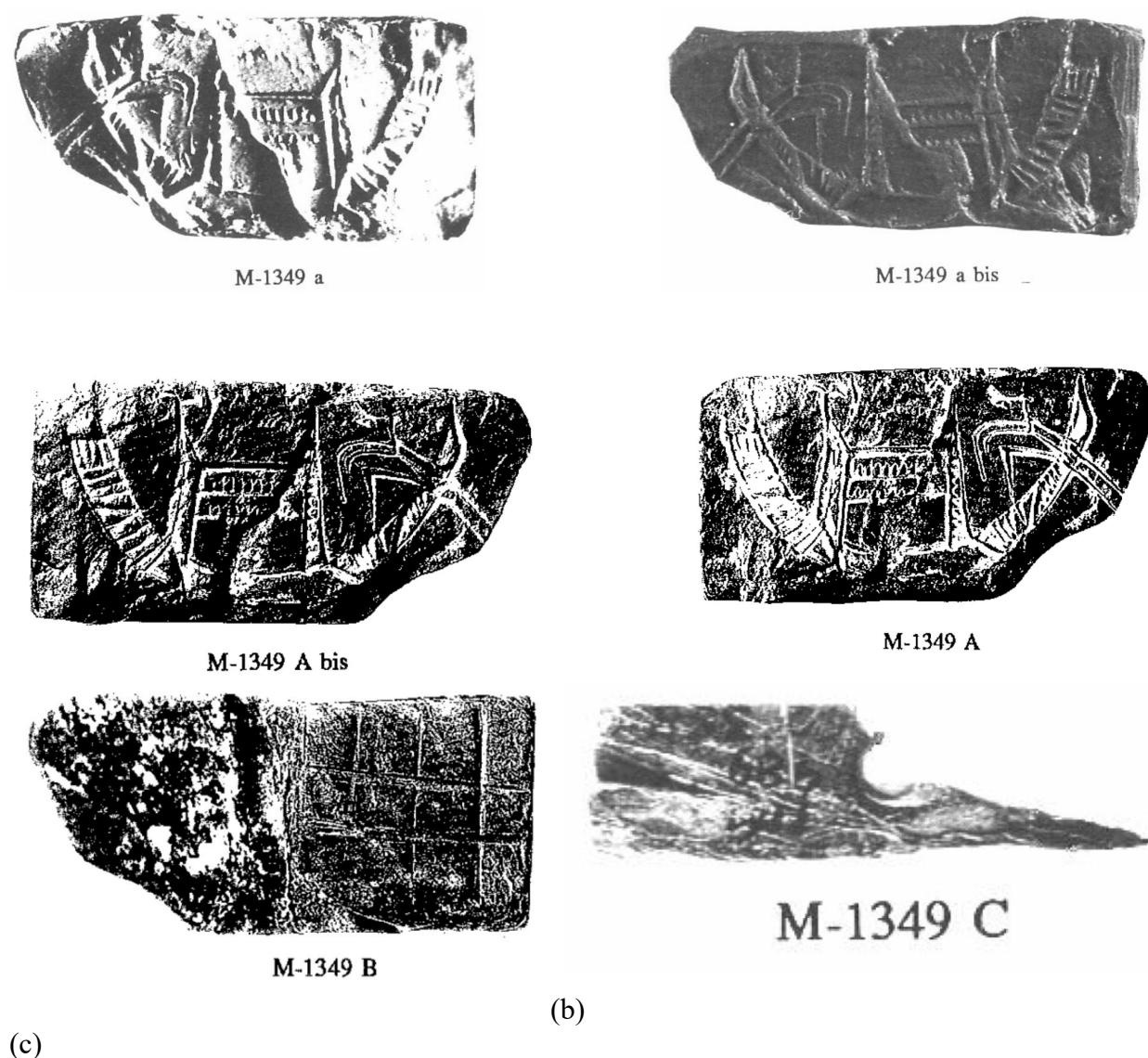


Figure 3 (a) Drawing of reed boat shown on a Mohenjo-daro seal (Ratnagar 2004) (b) Actual seal in different lightening and photo conditions. (Joshi et al. 1987) (c) Other side pictures of the seal. (Joshi et al.1987)

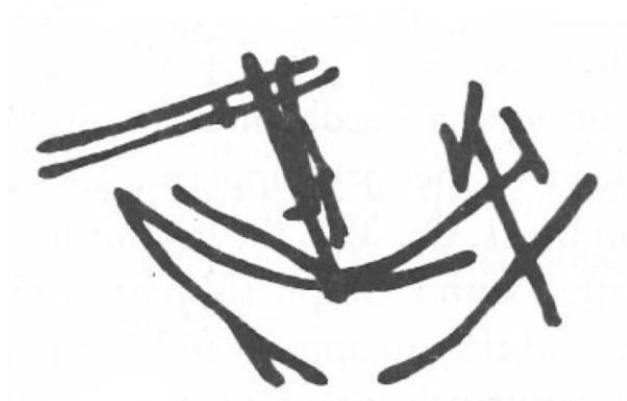


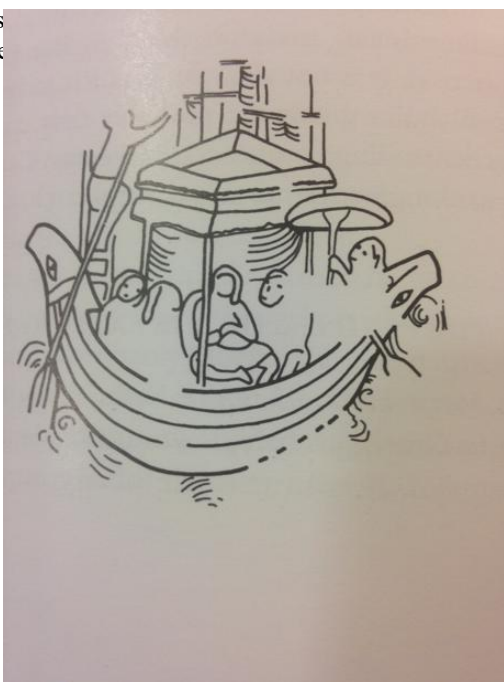
Figure 4 Drawing of Graffiti on Mohenjodaro Pot sherd (Ratnagar 2004)



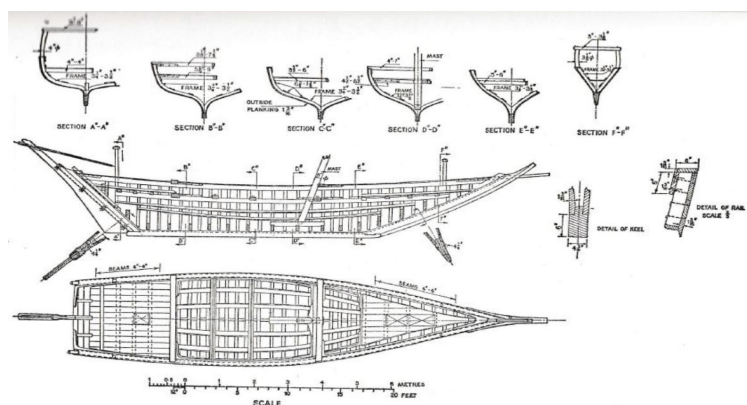
**Figure 5** A modern day fishing boat in Pakistan with a stretched bow and stern (Greenhill 1971)



**Figure 6** Hora with a high stern (Greenhill 1971)



**Figure 7** Modern day boats at Gujarat coast  
(Rao 1979)



**Figure 8** Construction drawing of Bheddi (Greenhill 1971)



**Figure 9** Wall painting in Cave 1 at Ajanta (McGrail 2004)



**Figure 10** Almost finished planking of hora. It is shell without the frames inserted for strengthening. (Greenhill 1971)

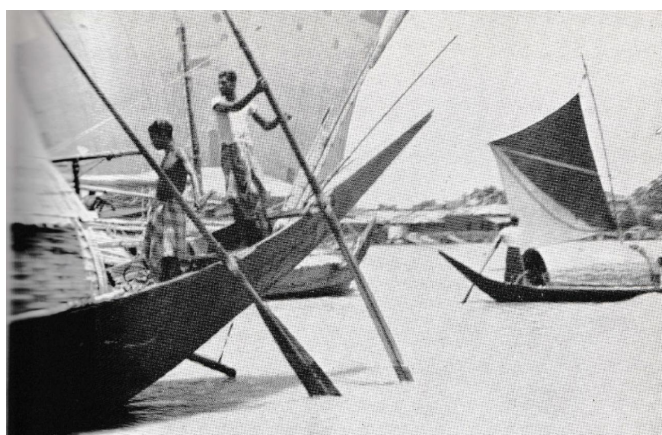
**Figure 11** A good example of oars and boatsmen steering the boat. (Greenhill 1971)

4.

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## Discussion

modern times dinghies have be known as Kotias or (Fig 5, 6,and 7). The are divided into Bheddi and The Bheddi is a short-keeled with a long overhanging and a sloping stern (Fig8). Although these boats operated mainly on riverine they were also seaworthy (Greenhill 1971). had a box-like



superstructure very similar to that seen on the Mohenjodaro tablet or seal. It was not only used as a storage space but also had a brick hearth for cooking. The sail was made of cotton, which was generally hand-woven. The shell of planks was built first and then the frames were inserted to hold the shape of the boat. The planks are joined at the edge and the frames are sewn and fastened with galvanized iron spikes, driven through the planking and frames and clenched. The frames were usually laid alternately and produced a vessel whose shape was very similar to the one presented on the Mohenjodaro tablet. According to the fishermen, the earlier ones were fastened using wooden pins between planks and treenails and sewn together with coir rope (Greenhill 1971). A similar construction style could easily also have been employed during the Harappan period. We have examples not only from the subcontinent but also at Hormuz, as seen by Marco Polo, justifying the validity of the use wooden pins to join the planks together (Ratnagar 2006). However, the presence of coir stills remains is debatable, as no coir remains have been found at Harappan sites.

The modern boats had a flat bottom and a high stern and prow (Fig 6). The flat bottom is also clearly noticeable in the models found at Lothal (Fig 1a,1b and1c). This was useful for sailing in shallow tidal waters, which is a characteristic feature of Bahrain or Dilmun. From the construction point of view, a flat bottom was easy to build, cost effective and had the ability to travel fast. The structures imprinted on the seal (Fig 3a, 3b, and 3c) and potsherd (Fig 4) from Mohenjodaro appear to be suitable for halting at steep river banks because of their high prow and stern. This could have been a necessary feature for Mesopotamian River ports. We are aware of links between Mesopotamia and Harappa. The Mesopotamian economy was not based on maritime trade which means that this trade could have been largely undertaken by Harappan sailors (Ratnagar 2006). River sailing would have been easier due to the long distances that had to be covered. Also, the placement of sites like Mohenjodaro, Harappa and Lothal show the importance for river routes. It could also have been possible that for some part of the year the sites could have remained cut off from land routes (Kumar 2012). This preference of sea and river over land was only possible if they were confident sailors. The ethnographical studies also show that majority of the trade was undertaken in the monsoon period.

The usefulness of vessel designs can be gauged from the fact that even today boats that are very similar to Dingies can still be found. They are used for more local and rural forms of transport now. The boat structure was optimized for travelling in shifting sandbars and slow-moving waters of the Indus (Kenoyer 1998). The trading period could have been from May to June, depending upon the monsoon winds. Ratnagar finds a similarity between the Lothal boats and Padav that were used on western coast of India (Ratnagar 2006). The structure and design of Padav and boats found in Lothal, however, are different, with the former being narrower and longer.

Even though the boats appear to be made of bundles of reeds, they could also be made of planks (Fig 3a,3b and 3c). What appears to be reeds joining could also be the clinker kind planking of hull. This was done in modern times. It is also reflected on the square seal from Mohenjodaro where there appear to be vertical posts at the stem and stern. This could very well be the lashing of wooden planks. The use of reeds is not impossible because the site of Nageswar was in close proximity to lakes which had a ready supply of reeds (Ratnagar 2006). Even in modern times we see reed boats sailing on lake Nal near Lothal, where the boat models were found. This is not to say that wood was hard to find in the Indus delta for

mangrove wood would have been plentiful. Today the wood comes from different regions as far afield as Burma and it is a possibility that a similar trade in wood also existed in ancient times. Bamboo wood, which is ideal for masts and sail yards, is easily available in the region. Moreover, the Harappan boats clearly appear in their structure to be plank-built. The planks joined by mortises with wooden tenons or dowels, a construction form that is prevalent today. These types of boats are resistant to winds on the stormy Arabian sea and were also easily repairable.

It is interesting to note that boat models found at Lothal are flat bottomed, unlike those at Mohenjodaro, which is perhaps reflected in the modern distinction between Bhart and Bheddi. The construction techniques were similar and the differentiation in the shape of the hull was due to the different routes these boats had to take. Perhaps this can also be postulated for the boats of Lothal and Mohenjodaro? This would suggest that Mohenjodaro was the main hub for exchange. Trading is a question that remains to be seen in greater detail. The seaworthiness of these boats is justified. Similar boats are also represented in the Ajanta Caves, perhaps demonstrating the evolution of the Indus valley craft (Fig 9). The time period of these caves is fifth century. At a later period, we also find descriptions by Santo Stephano of voyages undertaken in similar boats from Aden to Calicut (Lewis 1973).

Mortimer Wheeler has questioned whether sea travel was undertaken in the Harappan civilisation as the evidence is confined to seals, potsherds, graffiti and terracotta models (Wheeler 1968). Yet for this time period we have to work with limited information and supplement it with indirect evidence that show trading contacts. It is surely not merely a coincidence that all the major sites lie on riverine routes or near to the sea. At a more global level, the Gulf of Kutch, coast of Oman or Makran coast all lie near a water body. Riverine routes allowed easy access to raw material, which in turn is seen in the uniformity of craft production in these areas. Allchin states that ethnoarchaeology is like “living traditions in continuum” (Allchin et al. 1994). Archaeologists should not treat ancient objects just as discovery. Modern time period can provide us information about ancient objects as seen in the case of Indus boats. I would like to postulate that the Indus civilisation had a river-based economy much more than we tend to believe. The trade links, especially with Mesopotamia, can be found in multiple examples. I would argue that if cultural continuities are accepted for other parts of the civilisation that deal with technology and architecture, the same can also be extended to boat building which is a very conservative craft. While the evidence for boats in the Harappan civilisation is limited, ethno-archaeology provides us with a unique opportunity to study vessels where we can see a clear continuity in boat making traditions. We see clear evolution of dhingies, which are known through changed names, through the centuries, while their structure and building technique largely remain the same. It can be further postulated that similar sorts of vessels were in use during the Harappan civilisation. The evidence in the form of graffiti, seals and boat models clearly show a link between the two. Ethnoarchaeology also allows us to postulate ideas about the social conditions at the time. To understand the patterns of transport more research towards resources and the mechanism of exchange is necessary. This research needs to be undertaken both in an archaeological and anthropological sense. Transportation is a complete area of research; it should not be seen as fringe part of the larger context of trade.

## 5. Conclusions

Trade and exchange systems were developed and the placement of the major settlements lead us to believe that the riverine transport was extensively used. There was differentiation in access to natural resources which is reflected in archaeological evidence. Internal trade was standardized as reflected in beads and pottery. External trade was the major factor for rise of urban centers. There is evidence of trade contacts with all regions adjacent to the Indus Valley(Dales1962,68,71).

Trade would have been important for maintaining the elaborate social structure and standard of living in the Harappan civilisation. Trade would have provided wealth that could have led to establishment of social hierarchy.

Harappan seals were necessary elements in the mechanism of trade and were used to mark goods. They were also important symbols for the dissemination of information and for this reason they become one of the most important source of information. They provide information about the trade or exchange that would have been carried out.

Trade raises the question of transport. There are certain apprehensions regarding trade between the Harappan civilisation and other contemporary civilizations (Pastner et al. 1985). This is because of a lack of recognition of invisible trade based on common goods rather than luxury items. It could also be possible that trade was done in consumable items, such as agricultural products Due to a lack of proper research the archaeological evidence is limited. However historical texts talk about the importance of trade. Also, we need to make a clear distinction between trade and shipping. It can very well be possible that Harappans acted like shippers rather than traders. It is also very important that we place every society and culture in a bigger context of understanding about riverine life, including cargo carrying, trading, fishing and the exploitation of marine resources. Each of them are elements of maritime activities, with trade being just one aspect of it.

Previous studies largely concentrate upon the unifying aspect of the archaeological evidence (or rather made-up unifying “Hindu” aspect of it) as part of a nationalistic discourse. Moreover, if we look at the research conducted by Dilip Chakrabarti on various objects found at different sites the mechanism of trade is appears to be very much settled (Chakrabarti 1990). Here the importance of land routes is stressed and the use of the rivers and seas is marginalized in the discussion. This is unfortunate and potentially misleading if we look at the contacts with maritime powers, for example, we have a royal inscription from Mesopotamia (Sargon of Akkad) recording the docking of ships from “meluhha” (Ratnagar 2006). These boats are supposed to be of specific kinds of vessels that were easily distinguishable.

## References

1. Agorsah, E. Kofi.1990. “Ethnoarchaeology: The Search for a Self-Corrective Approach to the Study of Past Human Behaviour”. *The African Archaeological Review* 8: 189–208.
2. Allchin, B. 1996. *The rise of civilization in India and Pakistan South Asian ed.* New Delhi: Cambridge University Press.

3. Allchin, B., 1994. Symposium on the Ethnoarchaeology of South Asia : Cambridge, E. *Living traditions : studies in the ethnoarchaeology of South Asia*. Oxford: Oxbow Books ; New Delhi.
4. Chakrabarti, D.K. 1990. *The external trade of Indus civilization*. Munshiram Manoharlal Publishers. Gould, R.A., & School of American Research. 1978. *Explorations in ethnoarchaeology* 1st ed. Albuquerque: University of New Mexico Press.
5. Greenhill, B. 1971. *Boats and boatmen of Pakistan*. Newton Abbot: David & Charles.
6. Kenoyer, J. M. 1993. Excavations on Mound E, Harappa: a systematic approach to the study of Indus urbanism. *South Asian Archaeology*, 1991:165-94.
7. Kenoyer, J. M. 1994a. *The Harappan state: was it or wasn't it?* In *From Sumer to Meluhha: Contributions to the Archaeology of South and West Asia in Memory of George F. Dales, Jr.* (ed. J.M. Kenoyer). Madison: Department of Anthropology and Prehistory Press.
8. Kenoyer, J. M. 1994b. Faience from the Indus Valley Civilization. *Ornament*, 17(3): 36-9, 95. Kenoyer, J. M. 1995a. Ideology and legitimation in the Indus state as revealed through symbolic objects. *Pakistan Archaeologists Forum* 4(1&2): 87-131.
9. Kenoyer, J. M. 1995b. Interaction systems, specialized crafts and culture change: the Indus Valley tradition and the Indo-Gangetic tradition in South Asia. *The Indo-Aryans in Ancient South Asia :Language, Material Culture and Ethnicity*: 213-57 (ed. G. Erdosy). Berlin: W. De Gruyter.
10. Kenoyer, J. M. 1997. Early city-states in South Asia: comparing the Harappan Phase and the Early Historic Period. *The Archaeology of City-States: Cross Cultural Approaches*: 51-70 (eds D. L. Nichols and T. H. Charlton). Washington, DC: Smithsonian Institution Press.
11. Kenoyer, J. M. and Vidale, M. 1992. A new look at stone drills of the Indus Valley Tradition. *Materials Issues in Art and Archaeology*, III: 495-518 (eds P. Vandiver, J. R. Druzick, G. S. Wheeler and I. Freestone). Pittsburgh: Materials Research Society.
12. Kenoyer, J.M. 1998. *Ancient cities of the Indus Valley civilization*. Karachi ; Oxford: Oxford University Press ; Islamabad.
13. Khan, A., & Lemmen, C. 2013. Bricks and urbanism in the Indus Valley rise and decline. Cambridge; Cambridge University Press.
14. Kumar, A. 2012. *Harappan culture problems and issues*. Delhi: New Bhartiya Book Corporation. Lal, B.B. 1998. *India 1947-1997: New Light on the Indus Civilization*. New Delhi: Aryan Books International.
15. Lewis, A. 1973. Maritime Skills in the Indian Ocean 1368-1500. *Journal of the Economic and Social History of the Orient*, 16(2/3): 238–264.
16. Mackay, E. J. H. 1938. *Further Excavations at Mohenjodaro*. New Delhi: Government of India.
17. Mackay, E. J. H. 1943. *Chanhu-Daro Excavations 1935-36*. New Haven, CN: American Oriental Society.
18. Marshall, Sir J. 1931. *Mohenjo-daro and the Indus Civilization*. London: A. Probsthain.
19. McGrail, S. 2004. *Boats of the world : from the Stone Age to medieval times*. Oxford: Oxford University Press.
20. Mookerji, R. 1912. *Indian shipping : a history of the sea-borne trade and maritime activity of the Indians from the earliest times*. Bombay ; London: Longmans, Green and Co.

21. National Seminar on "Ethnoarchaeology in India: Methodologies, P. 2006. *Past and present : ethnoarchaeology in India*. New Delhi: Pragati Publications in collaboration with Centre for Archaeological Studies and Training, Eastern India.
22. Pastner, S., & Flam, L. 1985. *Anthropology in Pakistan : recent socio-cultural and archaeological perspectives* 1st ed. Karachi: Indus Publications.
23. Possehl, G.L. 1982. *Harappan civilization: a contemporary perspective*. Warminster, England: Aris & Phillips in cooperation with American Institute of Indian Studies.
24. Rao, S.R. (Shikaripur R.) 1991. *Dawn and devolution of the Indus civilization*. New Delhi: Aditya Prakashan.
25. Rao, S.R. 1979. *Lothal : a Harappan port town (1955-62)*. New Delhi: Archaeological Survey of India. Ratnagar, S. 2006. *Trading encounters : from the Euphrates to the Indus in the Bronze Age*. Delhi ; Oxford: Oxford University Press.
26. Ratnagar, S. 2006. *Understanding Harappa : civilization in the greater Indus valley* 2nd ed. New Delhi: Tulika.
27. Ray, H.P. 2003. *The archaeology of seafaring in ancient South Asia*. Cambridge: Cambridge University Press.
28. Ray, H.P., & Indian Council of Historical Research. 1999. *Archaeology of seafaring : the Indian Ocean in the ancient period*. Delhi: Pragati Publications.
29. Simpson, E. 2009. *Muslim society and the western Indian Ocean : the seafarers of Kachchh*. London: Routledge.
30. Stiles, Daniel. Ethnoarchaeology: A Discussion of Methods and Applications. *Man* 12.1 (1977): 87–103. Vats, M. S. 1940. *Excavations at Harappa*. Delhi: Government of India Press.
31. Vinner, M., Nielsen, S., Karrasch, W., Smith, D., & McCall, D. 2013. *Boats of the Viking Ship Museum*. Roskilde; The Viking Ship Museum.
32. Wheeler, M. 1968. *The Indus civilization* 3rd ed. Cambridge: Cambridge University Press.