ANCIENT DWARKA : STUDY BASED ON RECENT UNDERWATER ARCHAEOLOGICAL INVESTIGATIONS

by

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Summary

Dwarka, one of the best-studied underwater sites in India, has commanded much attraction, also because the site is considered as one of the four *Dhamas* (sacred place for pilgrimage) of the Hindu religion. According to ancient Sanskrit literature, the Lord Krishna founded the holy city of Dwarka, which subsequently got submerged under sea. Marine archaeological explorations off Dwarka have brought to light a large number of stone structures, which are semicircular, rectangular and square in shape in water depth ranging from inter tidal zone to 6 m. They are randomly scattered over a vast area. Besides these structures, a large number of varieties of stone anchors have been noticed along the structures as well as beyond 6 m water depth. These findings suggest that Dwarka was one of the most busy port centres during the past on the west coast of India. The comparative study of surrounding sites indicates that the date of the structures of Dwarka may be between Historical period and late medieval period. The paper reviews the earlier hypothesis about the identification and dating of these structures in light of new evidences from the recent underwater explorations.

Introduction

DWARKA, one of the most important religious place / pilgrim centre for Hindus, has also attracted tourists from all over the world, primarily, due to its fabulous architectural planning of the temple The town has association with Lord Krishna who is believed to be the founder of this town by reclaiming 12 *yojana* land from the sea [1]. During its heyday, Dwarka was a city of beautiful gardens, deep moats, several ponds and palaces [1], but it is believed to have submerged just after the death of Lord Krishna [2]. Dwarka is headquarter of the Okhamandal taluka in Jamnagar District and is situated in the extreme west coast of the Saurashtra peninsula on the Arabian Sea (Figure 1). Gomati creek is flowing on the southern side of Dwarka which is traditionally supposed to take its origin from the village of Bhavda, about 10 km to the eastward, is known as *Mul-Gomti* (original Gomati).

Dwarka has been the attraction for historians since the beginning of the 20th century. The ancient town Dwarka has been described as

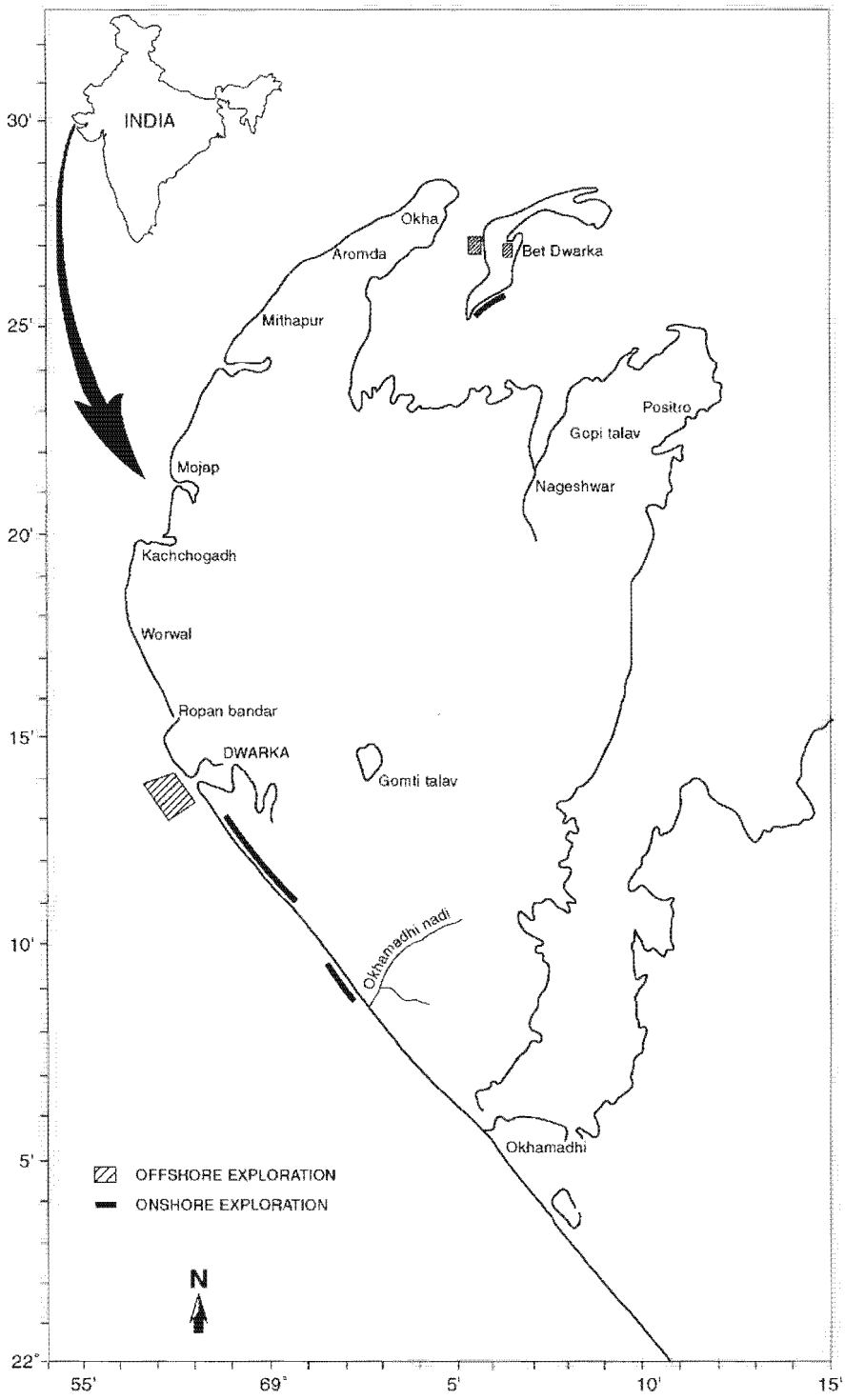

Fig.1: Dwarka is headquarter of the Okhamandal taluka in Jamnagar District and is situated in the extreme west coast of the Saurashtra peninsula on the Arabian Sea.

Baraca by the writer of the Periplus of Erythrean Sea [8]. Dwarka is situated at the mouth of the gulf, presently known as the Gulf of Kachchh. In the Periplus, the Gulf is called *Barake* and is described as of very dangerous navigation. In Ptolemy, *Barake* is the name of an island in the Gulf [9]. Controversy surrounds every aspect of Dwarka of the Mahabharata period, right from its location, findings, age etc. Several literary references have been cited to confirm or dispute the location Dwarka of the Mahabharata period. Pargiter [3] was first to suggest that Dwarka was located near the Raivataka mountain and elsewhere also he has mentioned that the city was constructed on the remains of Kusasthali [4]. Pusalkar [5 & 6] accepted that modern Dwarka was the original Dwarka of the Mahabharata period. The earliest epigraphical reference about Dwarka came from Palitana copper plate datable to the 6th century AD. Sankalia [7] has strongly argued in favour of modern Dwarka as the original Dwarka of the Mahabharata period.

Dwarka was the first site in India where marine archaeological exploration commenced and investigations continued for almost two decades. The paper deals with the results of marine archaeological explorations undertaken by the Marine Archaeology Centre of the National Institute of Oceanography, Goa, between 1997 and 2001. Though several papers have been published on the findings off Dwarka on various aspects from time to time, the primary objective of this presentation is to appraise comprehensively the earlier observations and to assess the nature and the interpretation of structures and their dates.

Methodology

THE PRIMARY data were collected by the underwater visual survey mainly through SCUBA diving system. The artefacts like stone structures and anchors were located and a marker buoy was tied to each finding for detailed measurements and recording. Thereafter, important structures were cleaned manually by weeding out vegetation and brushing off sediment particles. At selected locations airlift operations were undertaken to expose the buried artefacts. Positions of each important object were obtained using Global Positioning System and compass reading was taken. Findings were also documented by underwater drawings as well as still and video camera.

Results

THE FINDINGS off Dwarka include structures lying underwater and stone anchors of varying sizes in different types such as triangular, prismatic and ring stone. The results of inter-tidal zone, near shore zone and relatively deeper area have been discussed here.

In the course of onshore exploration the formation of sand dune was noticed on the mouth of river Okhamadi and it is understood that the river was navigable about 2000 years BP. However, no archaeological objects were noticed around this area confirming this.

During field season of 2000-2001 four stone structures of circular in shape have been noticed in inter-tidal zone of Dwarka (Figure 2). These are similar to those found offshore Dwarka earlier. They are lying adjacent to the mouth of the Gomati creek. A large number of rectangular blocks were also noticed in this area. The diameter of one structure is about 2 m. A single-holed conical stone object is lying well above the high water line south of Dwarka. Seven stone anchors were noticed at a depth of 0.5 m to 1 m during low tide. Three of them are triangular and others are grapnel type. All the anchors are made out of limestone. One of the grapnel anchors is the heaviest among the stone anchors so far found in Dwarka area. It has two rectangular holes at lower side and an upper circular hole.

Fig.2: During field season of 2000-2001 four stone structures of circular in shape have been noticed in inter-tidal zone of Dwarka.

Findings from offshore Dwarka

The extensive diving operations have been undertaken in depths ranging from inter-tidal zone to 25 m waters in about 1 km^2 off Dwarka between 1997 and 2001. On the basis of archaeological findings entire area has been divided into 2 locations (Figure 3). The brief description of the findings is given below. For the purpose of convenience underwater structures are discussed first followed by stone anchors.

Location A

THE STRUCTURES: The site is lying opposite to the mouth of Gomati creek, about 200 m offshore and southern side of the transit line of Dwarkadhish (Figure 4) and Samudranarayan temples. The water depth ranges between 3 m and 5 m. The seabed is comprised of natural beach rock formation, which is covered with densely grown vegetation/ seaweeds. Thick deposition of sand also noticed in the small channels. A large number of scattered stone blocks were noticed and many of them are found partially buried in sediments. Several semicircular structures were noticed and a few of them are fully scattered. The blocks of semicircular structures are L-shaped (Figure 5) and provision for dowels and a few of them have cementing material, which have bounded them till date. These structures have 2 - 3 courses with a 60 - 80 cm height. The average size of one block of semicircular structure is 95 X 55 X 25 cms.

Besides semicircular blocks a large number of rectangular blocks have been noticed in this area (Figure 6). They are scattered in large area and do not form any kind of regular form/ shape at present. However, semicircular structures near these blocks indicate that they are part of the same structures. The rectangular blocks have various size and important ones are 120X60X16 cm, 115X50X17 cm, 110X50X18 cm, 85X48X16 cm and 45X30X15 cm. These blocks are lying on rocky seabed and a few of them are buried in sand. Northern side of this zone a channel was noticed in which a few structures were noticed. The exposed portion of these blocks is covered with thickly grown seaweeds and a pinkish layer of marine growth. The important findings may be included a rectangular stone block bearing *Gujarati* script which may not be very old.

Stone Anchors: From this area 13 stone anchors were noticed during last three years only, besides those found earlier. They are lying near to the scattered blocks. Among them 3 triangular, 7 grapnel and 3 ring stone anchors have been reported. These are of various sizes. All of them are made of limestone. Triangular anchors have upper circular hole and lower two holes are square and have even thickness. Similarly, grapnel type anchors have a circular upper hole and lower two holes on either side are rectangular. Three ring stones are significant in this area as these were also reported earlier in water depths beyond 8 m in Somnath and in Dwarka waters. Vegetation growth has been noticed over the anchors.

Location B
The stone anchors:

1) THE AREA is located westward of the location A in the transit line of Dwarkadhish and Samudranarayan temples. Water depth ranges from 5 to 8 m. During the season 2000-2001, it was first time that we noticed such a large number of stone anchors, from this site; as during previous explorations this area was found to covered with sand. The seabed in this area is comprised of rock outcrops and a few sandy patches covered with thick vegetation.

Total 34 stone anchors lying randomly in this area were recorded. They are of various type and sizes. A few anchors are partially buried in sediment however majority of them are lying exposed over rocky seabed. Every

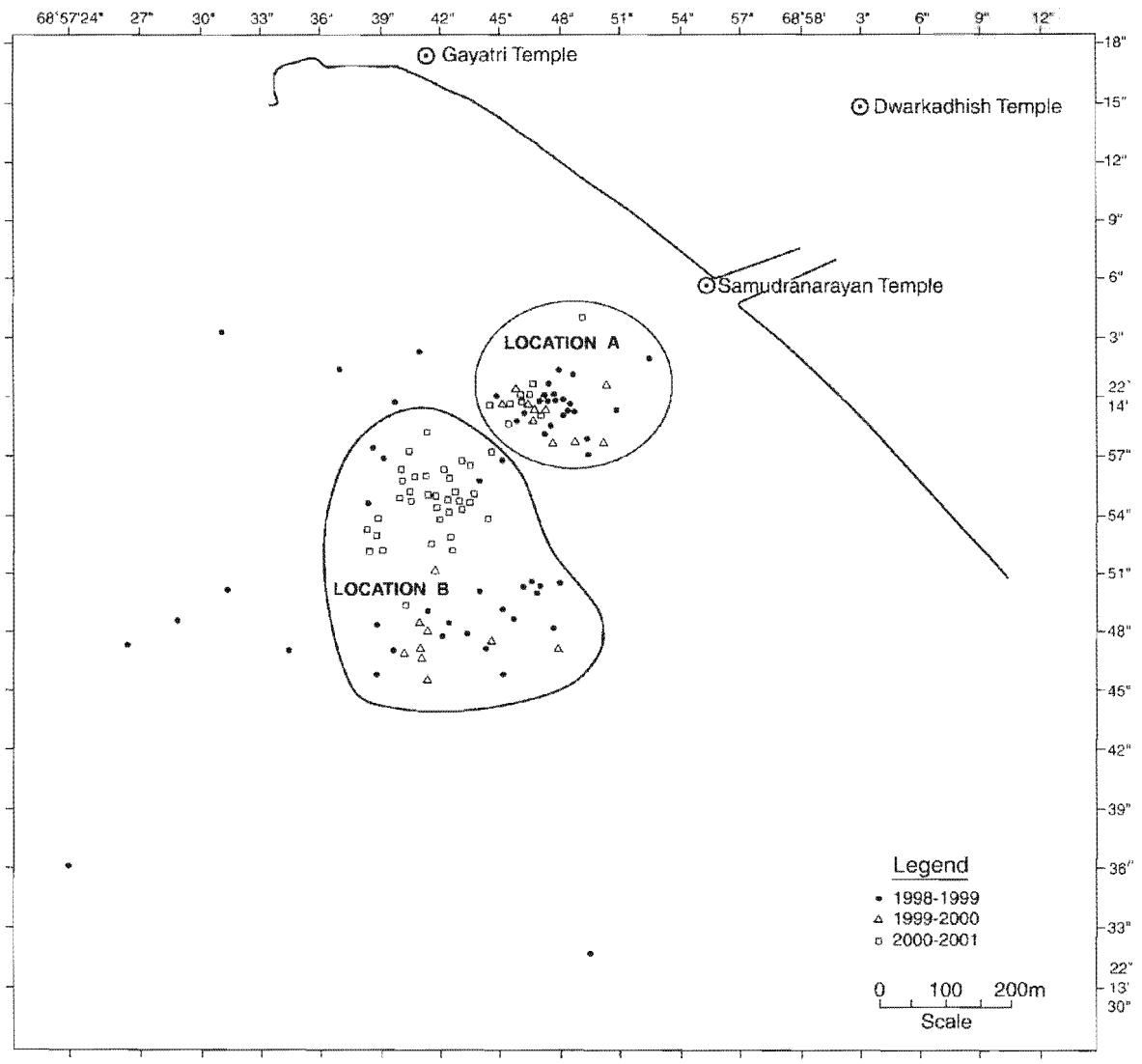

Fig.3: On the basis of archaeological findings entire area has been divided into two locations.

Fig.4: Samudranarayan temples.

Fig.5: The blocks of semicircular structures are L-shaped.

Fig.6: Besides semicircular blocks a large number of rectangular blocks have been noticed in this area.

exposed anchor has a thin layer of pinkish marine growth. Among them 7 triangular, 5 grapnel and 12 ring stone anchors are reported. One of the biggest triangular stone anchor (Figure 7) has been reported from this area (estimated weight is 496 kgs) and so far this size of the anchor has not been found from any where in India. Similarly, two grapnel anchors of 2.3 m in length have been reported from this zone, which are perhaps the heaviest anchors found in Dwarka waters (Figure 8). All the triangular and 13 grapnel types of anchors are made of limestone while 2 grapnel anchors are made out of basalt.

TWELVE RING stone anchors of different shape and sizes are lying in this area. In general, ring stone anchor is hemispheric with a circular axial hole in the center (Figure 9), variation include flat topped with or without a rough and porous surface. They are mostly made of limestone.

2). The area falls on the southern side of the transit line of Dwarkadhish and Samudranarayan temples. The water depth ranges between 8 and 16 m. The seabed here is comprised of random rock boulders and a ledge running parallel to shore and in southern side, a deep channel filled with sand. Airlifting in the channel revealed the deposition of sand, clay, rubbles and rock bed. In this area very less marine growth was observed while anchors were covered with a thin layer of grayish marine growth. A large number of anchors were reported from this zone and they are lying exposed on rocky bed, trapped in between rocks and sometime partially buried in sand. Total 28 stone anchors of different types and sizes are reported which include 20 grapnel type and 8 triangular type. All of them are made of limestone except one grapnel anchor made of basalt rock. The most interesting point about one triangular anchor is the presence of a rectangular hole on upper side which is unique and not reported so far, however it's upper circular hole is broken. The anchor is made of fine-grained limestone with even thickness. Another triangular anchor have additional circular hole in the center (Figure 10), which is also a new phenomena and not reported earlier from here. However, recently similar kinds of anchors have been reported from Bet Dwarka waters. Besides above two types anchor, 4 ring stone anchors were also reported from this zone. Two were lying exposed on the seabed while other two were partially buried in sediment in the channel area and were exposed by using airlift. One ring stone is made of basalt while other three are of limestone.

3). The area is situated on the northern side of the Dwarkadhish and Samudranarayan temple transit line. Water depth ranges from 3 to 8 m. The sea bed here is comprised of rock outcrops and sand accumulations in channels. At times anchors have been seen trapped in the rock outcrops. Six stone anchors of different types have been reported from this part. All of them are made of limestone. Among them two are triangular type and one of them is broken upper side. Three grapnel type anchors are intact however one of them have been integrated with rock bed and other one is lying in channel which was partially buried in sand. The lone ring stone anchor was noticed extreme northern side towards the lighthouse. This is small in size compared to the ring stones of zone 2 and 3. The area is overgrown with seaweeds and other marine growth.

Discussions

EXTENSIVE explorations in a large area of Dwarka brought to light a number of structures and stone anchors between inter-tidal zone and 16 m water depth. These include semicircular structures, rectangular and square blocks, different types of anchors and single holed stone objects. A brief discussion on the importance of the findings is given below.

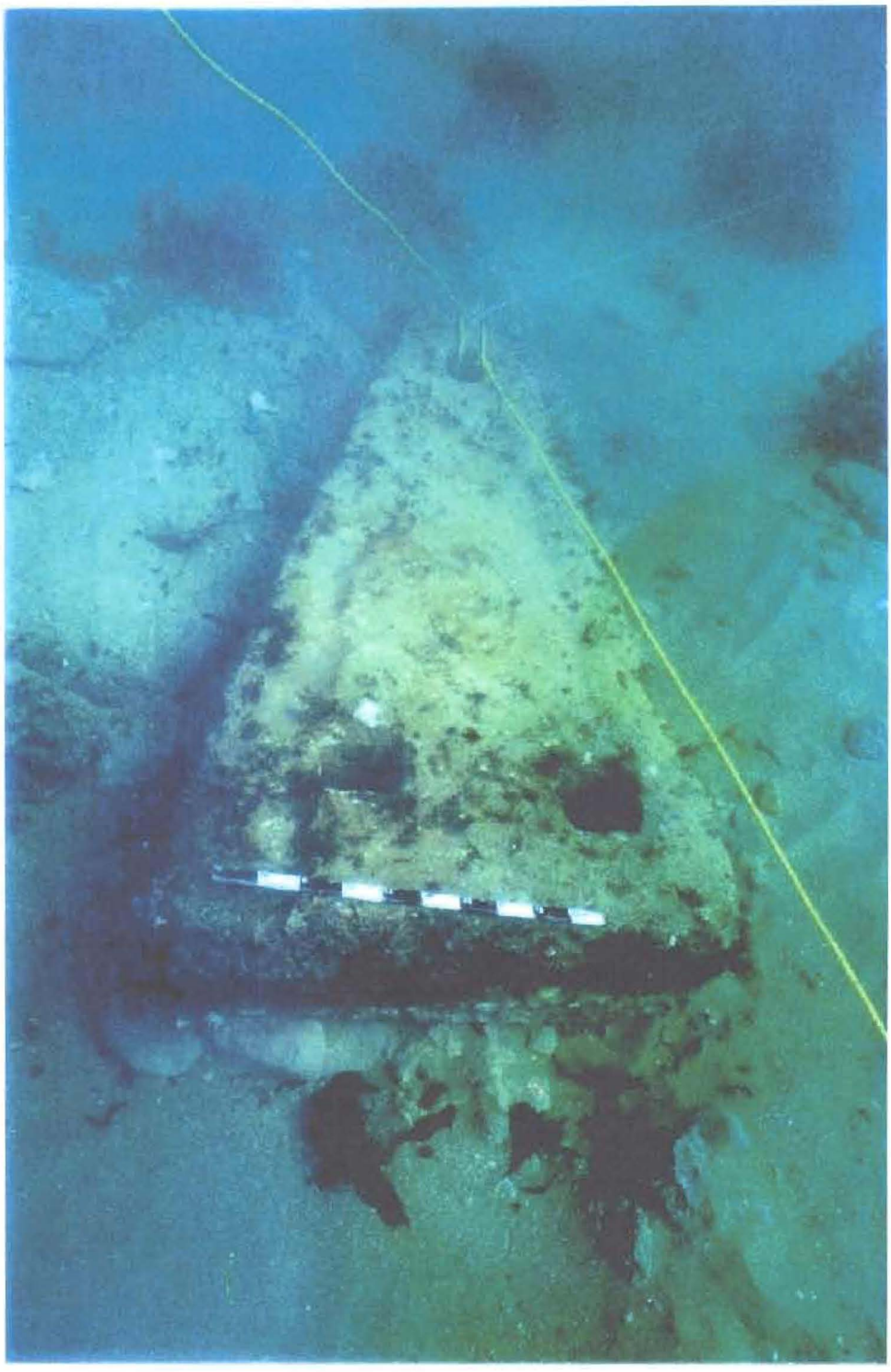

Fig.7: One of the biggest triangular stone anchor.

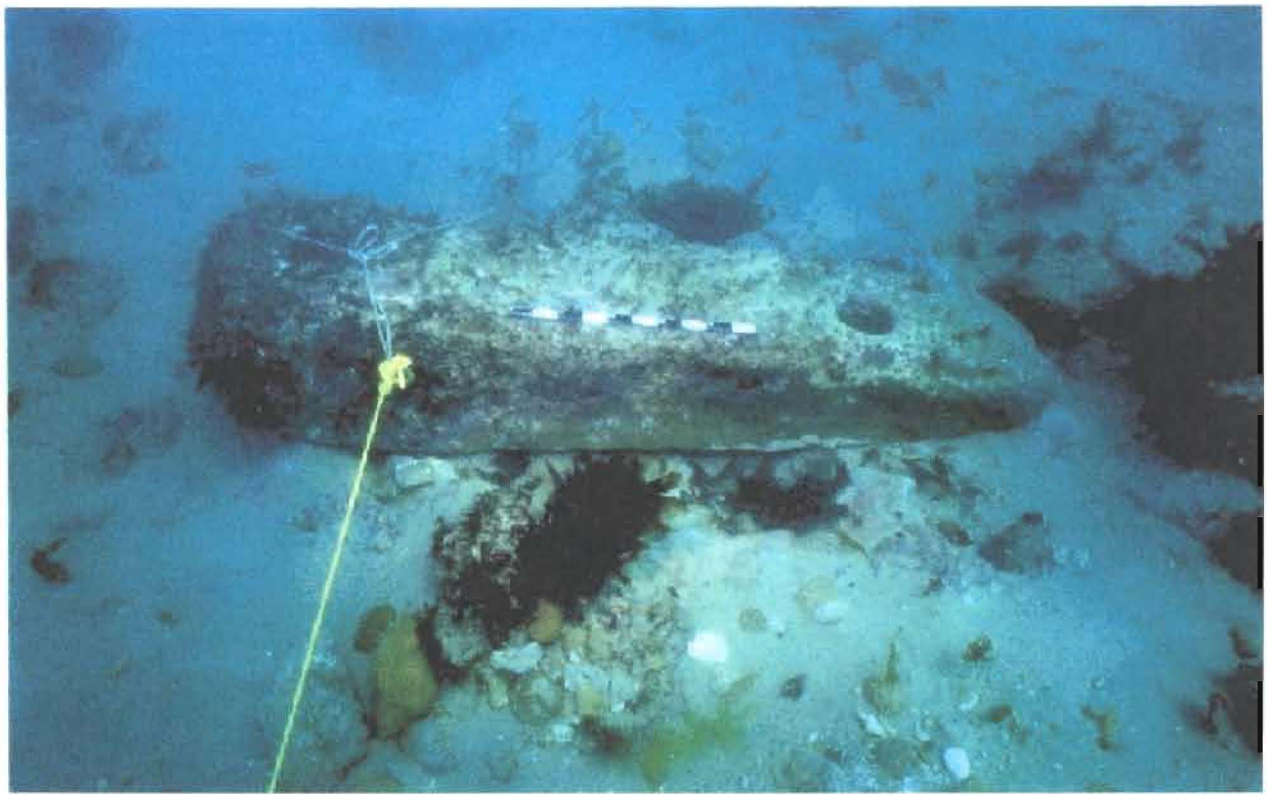

Fig.8: A grapnel anchor has been reported from this zone, which is perhaps the heaviest anchor found in Dwarka waters.

Fig.9: In general, a ring stone anchor is hemispheric with a circular axial hole in the center.

Fig.10: Another triangular anchor have additional circular hole in the center.

Structures

Submerged stone structures have been noticed opposite to mouth of the Gomati creek between inter-tidal zone and 6 m water depths. The structures are lying in a vast area (225 X 275 m) and they are fully scattered. They include semicircular structures and dressed blocks of different sizes.

Semicircular and Circular structures

OFTEN THE structures are lying scattered. Some of them are intact on an average of 2 to 3 courses. The blocks used for these structures are similar to those found in inter tidal zones of Dwarka and Rupen *Bandar* (about 2 km north of Dwarka) [11]. However, the circular type structures from inter-tidal zone of Dwarka suggest that the offshore structures may also be circular in shape earlier and later they collapsed and remnant form is semicircular one. The study of inter-tidal zone structure suggests that dressed blocks were used outer side and centre was filled with irregular blocks with binding material. The position of the structures in inter-tidal indicate their linear alignment, however, offshore structures are disturbed and difficult to comment on their alignment.
It has been suggested that these structures could be the bastions of some fortified structure of a habitational site [12 & 13]. However, it is important to note that the basic requirement for a habitational site such as pottery, coins, seal or any other day to day use items has not been recovered so far from the offshore structures even after extensive airlifting in the vicinity. Interestingly, a large number of similar kinds of structures have been observed near Rupen *bundar*-a site adjoining to Dwarka. They are part of a recent jetty, which is now collapsed and lying submerged in the sea and gets exposed during low tide. The presence of stone anchors along with these structures in Dwarka waters suggest that may be during earlier period, boats were used to anchor here and it was a very busy port on the Gujarat coast. These structures in that case, might have served as the pillar of a jetty.

Dressed stone structures

Along with circular and semicircular structures, a large number of dressed stone blocks are observed off Dwarka. They are of various sizes but thickness is same. These structures are identified as remnant of fortification wall [12, 13, 14]. Similar kind of dressed blocks have been noticed in Rupen *bundar* as well, which forms the structure between two pillars. As mentioned earlier, there is no evidence of any habitation from Dwarka. As suggested above, if semicircular structures were the part of pillars of a jetty, then these dressed blocks could be the part of super structure.

Dwarka, being situated on the open sea coast, is prone to storms and coastal erosion. The examples from other coastal sites of ancient period suggest that generally ancient ports were situated in sheltered places such as close to the islands, bank of creeks and backwaters.

Probable date

THESE STRUCTURES have been variously dated from protohistoric period [12 & 13] to historical period [15] but juxtaposing findings off Dwarka with those from Bet Dwarka - a site 30 km away without giving any conclusive argument. Bet Dwarka have well defined evidence of protohistoric settlement [16]. On comparison of structures from both sites one finds that the structures of Dwarka comprises of very fine dressed stone blocks and binding material seems to be of lime mortar while the stone blocks used for Bet Dwarka structures on land and inter-tidal zone are not dressed properly and binding material used is clay mortar further, bastion has not been observed in Bet Dwarka Island. Therefore, the evidence from Bet Dwarka Island cannot be used to compare

with Dwarka structures and both have to be considered on merit independently.

The study of the protohistoric settlements in India suggests that the bastions have been generally provided only in very important cities and not in each and every town or village. One of the most important site of Harappan period at Lothal does not have a single bastion on it's defense of the fortification wall [17]. Similarly, at Nageswar another Harappan site does not even have any fortification and bastions [18]. On the other hand Dholavira (authors visited the site), Surkotada [19], Kuntasi [20], Bagsra (first author visited the site) and number of other important Harappan sites have square or rectangular bastions. Interestingly, in Dwarka bastions are circular in shape. The circular bastions came into existence only in 11^{th}-12^{th} century AD in India. The discovery of rectangular stone block with *Gujarati* script from offshore Dwarka suggests that these structures are of the late Medieval Period.

THE FINDINGS and dates of Dwarka have evoked keen curiosity in the scientific community. At times methodology has been severely criticized by several scholars. L.B. Kenny [10] opines, "Unless archaeology, an auxiliary science of history, is used scientifically, along with literary sources, the excavations of Dwarka would continue to be a pseudo-scientific as they appear to be today. History is interpretation based on human reasoning, not on emotion". In light of such strong criticisms regarding the validity of date of these structures found in submerged Dwarka, there is an urgent need for continuing the excavation on scientific lines to arrive at logical solution.

Stone anchors

The out standing discovery of Dwarka exploration is a large number of stone anchors of different types and sizes. Anchors are the fundamental requirement of navigation as every ship need to be anchored in the sea. The primitive method of anchoring a small boat and craft in the sea might have been of a simple stone tied with rope to a hole and throw it in the sea. Subsequently with some experience in navigation and requirement, based on usage and experience and also availability of material, the shape and size of these anchors must have evolved.

MORE THAN 120 stone anchors of different varieties have been noticed in Dwarka waters. They are made of limestone, basalt, sand stone and laterite. These are lying between inter-tidal zone up to water depth of 16m [21]. Broadly, these anchors can be divided into the following three groups.

i) Composite type

Most of the 'composite' anchors are made out of locally available calcareous rock, limestone. The nearest source of this rock is at Dhangadra in the Okhamandal area. The anchors generally have a smooth and even surface. They usually have a upper circular hole and lower two holes are either circular or rectangular/square. Upper hole is referred as rope hole and lower ones as fluke hole. In case of the anchors in Dwarka, the upper hole generally does not have any rope marks except a few, which suggest that upper hole will have wooden log with circular section and both side of equal length and rope would be tide with this wooden log. This will have two advantages i) whatever way anchor falls on the sea bed the upper portion of the anchor would not be touching seabed due to wooden log, which will increase grip of lower wooden flukes on the seabed. ii) there will be less chances of trapping of the anchor in the rock since one side is always above the seabed. Raban [22] has suggested that the composite anchors from the Indian Ocean Countries might be having metal flukes in lower holes; however, in the present case none of anchor holes had any metallic fluke.

Though wooden flukes were also not found, however, it is possible that wooden parts would have floated away after breaking or disintegrated with time. A 17th century shipwreck in Goa waters does not have a single piece of wood in Goa waters while the stone anchors are much older. A few anchors from Mediterranean Sea have the remains of wooden fluke dating back to 14th century AD. However, it should be remembered that Indian waters, being in tropical conditions with high productivity could cause deterioration of wood much faster than the Mediterranean Sea.

ii) Grapnel type

THE INTRODUCTION of larger boats for long voyages across the sea, necessitated the invention of a new type of stone anchor (different from traditionally composite type) which can hold the boat firmly in the sea. Generally, grapnel anchors are long, heavy, and made of fine raw materials compared to composite anchors of Mediterranean Sea. Grapnel anchors are confined to the trade routes and ports visited by Arab traders around the Indian Ocean. Therefore, the credit to introduce grapnel stone anchor goes to the courageous Arab traders. The anchors have been modelled in such a way that gripping in sandy and rocky seabed is excellent and while lifting it will come out even from a small passage. Often grapnel anchors are very strong and will not be easily broken while lifting or throwing in the sea. Another quality of this anchor is that it occupies space on board as compared to other types. On several occasion grapnel anchors were reused as mooring stones. Perhaps all these qualities led to the extensive use of this kind of anchors along the Indian Ocean. This is evident from the discovery of a large number of grapnel anchors from Dwarka, Vijayadurg and Sindhudurg area on the Indian coast [23].

Honor Frost [24] terms these anchors as 'Arabic' and 'Grapnel type'. However Kapitan [25] has recently argued, that "anchor shanks with rectangular cross section cannot belong to grapnels. Shaft of four-armed grapnels is square or round". His arguments may be valid when we compare with modern iron grapnel type however, the idea of introduction of these anchors in place of composite type suggest that some where the thoughts on grapnel type was hidden and even the function of these anchors could be like grapnel type. Further Kapitan suggested that "the use of these anchors as stone shanks and they were not so much applied as ships anchors to be cast from on board, but served as mooring anchors." However, recent discoveries from Dwarka and Bet Dwarka do not confirm his hypothesis as out of total 80 anchors only 2 anchors have a length more than 2 m and a maximum estimated weight less than 600 kgs while a majority of anchors are between 1m to 1.5 m long and have an estimated weight between 100 to 250 kgs which can be lifted easily by 3-4 crewmen. From Dwarka only two anchors can serve as mooring and rest of the anchors (individually) cannot hold big boats like Arab Dhows. However, a few anchors might have served as mooring stones on jetties as they lack upper circular hole and their upper section is circular which indicate that boats would have been tied with them but certainly they can not serve as moorings in seabed due to their less weight. Kapitan's [25] another argument that around the Indian Ocean there are no safe harbour and they need an anchoring point and these anchors served as mooring anchors is also not on firm footing as a number of places where these anchors are reported have safe harbour like Bet Dwarka and Vijaydurg on the west coast of India. However, there are instance where these anchors have been reused as mooring stones on jetty and dockyard at Vijaydurg and Sindhudurg. One may be surprised to note that these anchors were also used as lintel stone in Vijaydurg fort but that was not the original function of these anchors.

iii) Ring-stone type

RING-STONE TYPE anchors are third variety found in the Dwarka waters. Twenty-five anchors of this type were found and these lie scattered from inter-tidal zone to 16m water depths. An important characteristic of the ring-stone anchor is its circular shape, with an axial hole. Often, the base of ring-stone is flat and top is semi circular rising to a certain height. Most of the ring-stone anchors remain exposed on the seabed; however, a few are partially buried in the sediments. Up to a depth of 8 m, the exposed portion of ring-stones is covered with marine growth such as seaweeds. Beyond this depth they are covered with a thin layer of greyish marine growth. They are normally found lying in vertical position, tilted and flat positions are not uncommon. A few ring-stones also have the evidence of chisel marks on their surface, around the hole and on the flat bottom side. There have been various suggestions on the uses of these ring-stones such as doorjamb [13] and fish net weight however, recently Gaur et al. [26-27] have conclusively proved that these were used as anchors for boat and also originated at Saurashtra coast therefore they have been termed as Saurashtra anchors.

Probable date of the anchors

The dating of stone anchors is very complex in the absence of any archaeological association and markings. A few anchors with marking have been reported from the Mediterranean [28]. In the absence of direct evidence the stone anchors have to be dated by comparing them with anchors of similar shape and size elsewhere as was done previously by Honor Frost [29]. Such dated anchors fall within a large range of archaeological time, between 2500 BC and AD 1400 in the Mediterranean. In India the earliest anchors have been reported from Lothal and Kuntasi and were dated to the Harappan phase [17 & 20]. The present anchors are entirely differently in shape and size compared with those from Lothal and Kuntasi. Therefore, the anchors of Dwarka, are not to be associated with the Harappan or the Late Harappan Phase.

Onshore explorations on the Maharashtra coast brought to light stone anchors at Vijaydurg [30], Sindhdurg [31] and in Goa waters [32]. In Vijaydurg 8 grapnel type anchors used as lintels in the parapet wall of the fort during Maratha period have been identified. This suggests that these anchors were in use prior to the Maratha Period. Further, mooring stones have been identified on the unused dockyard located on the Vaghotan riverbank. Archaeologically these ports are dated earlier than the Christian era. Honor Frost [33] terms grapnel anchors as Arabic and Proto Grapnel. Raban [34] believes that if these anchors were fundamentally made for safer anchorage in a coral bottom typical of the Indian Ocean, then they were not necessarily confined to Arab boats of modelled by Arab influence. Parallels to this type of anchor have been found in the Red Sea on the Lone Mushroom wreck [34]. A similar type of grapnel anchor is reported from Kilwa Kisiwani and Mogadishu on the East African coast [35]. Whitehouse's [36] excavations at Siraf on the Persian Gulf have yielded two fragmentary stone shanks of a similar nature, which he compares with a complete specimen found by the villagers at the same place. According to his dating these stratified fragments are not later than the 8^{th} century.

THERE ARE several references about anchors in Arabia stories of 10^{th} -12^{th} centuries related to navigation, which refer to sometime very heavy anchors [37]. Therefore, it seems an obvious assumption that they were stone anchors and also very heavy ones. They might have been grapnel type anchors. When a ship was overloaded, anchors were dropped at a known place and on the return voyage they were picked up again. In the process they were losing

anchors and these are often found underwater today.

From the above mentioned examples the dates of the stone anchors from the Okhamandal area may not be earlier than the historical period but not later than the 14th century AD. To achieve a firm dating anchor will need to be found associated with other archaeological material; for instance, shipwrecks or a dated context on land.

Conclusions

THE CONCENTRATION of the dressed stone blocks and structures are observed only at one location opposite to Gomati river mouth, and at no other locations in the area. It is therefore inferred that the constructional activity was limited only to this area and the port town (jetty) was not covering the large area. Anchors found beyond these structures suggest that the boats were anchored away from these construction sites.

Based on extensive, systematic underwater scanning of the area and specially absence of any pottery or other artefact even after airlift operations / underwater excavation at several places during last few years, present exploration do not suggest that they belong to some habitation site, they rather appear to be the remains of a jetty.

The studies of surrounding archaeological sites indicate that the submerged structure may not be as old as suggested earlier. . However, the date of these structures may be still a matter of debate. A stone block with Gujarati script, found from the area indicates a later date for the stone structures. Recent discoveries of stone anchors from all over the coasts of Indian Ocean suggest that Dwarka anchors may be related to Indo-Arab trade between 8th century and 15th century AD. However the date of stone anchors is subject to revision in the light of their association with some archaeological sites.

A large number of stone anchors from Dwarka waters indicate that Dwarka was one of the most active ports in the past.

Explorations and excavations in Okhamandal area have brought to light two protohistoric (Harappan Period) sites at Nageshwar and Bet Dwarka so far and few historical period sites such as at Dwarka, Bet Dwarka, Dhrasanbel, Positra and Pindara. Other modern villages probably came into existence during medieval period. The findings suggest that Okhamandal area attracted the seafarers and settlers from the very beginning of the civilization in India and continued till today, perhaps due to the richness of the varieties of shells, fishes, conducive climate and safe harbour.

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