

## Marine Archaeological Exploration on the Western Coast, Gulf of Khambhat

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### Abstract

Recent exploration along the eastern Saurashtra coast yielded a large number of stone anchors from Gogha, Hatab and Gopnath indicating active maritime activity in the past. The anchors were mostly of the Indo-Arab type and were triangular/ composite in nature. These anchors get exposed during low tide and are submerged under 5 to 8 m water during high tide. A stone anchor from Hathab similar to those found in Chinese waters is made on laterite. These explorations yielded a large quantity of glazed ware from Gogha suggesting that the Indo-Arab type of stone anchors, may be placed within a time bracket ranging from the 9th and the 14th century A.D.

### Introduction

The Gulf of Khambhat along the eastern Saurashtra Coast has preserved evidence of the oldest civilization in the subcontinent (Fig. 1). The famous Harappan port town at Lothal is situated at the head of the Gulf of Khambhat (Rao 1979). Other prominent Harappan sites include Padri (Shinde 1992) and Hanuman-no-Timbo (Ghosh 1989) in the estuaries of the river Shetrunji at the entrance of the Gulf. Budhel, another small Harappan site, is situated close to Bhavnagar on a seasonal river which enters the Gulf from the east. Sites of the historical period have been discovered at Vallabhi on the west coast and Hathab on the southwest coast of the Gulf. This region has been vividly described in the *Periplus of the Erythrean Sea* dating back to the 1st century A.D. (Schoff 1912). The *Vishnu Purana* mentions a tidal range of 510 angulas (about 10 m) that closely matches the present-day tides in the Gulf of Khambhat (Pannikar and Srinivas 1971).

Exploration in this area yielded a large number of stone anchors at Gogha, Hatab, and Gopnath. These are similar to those reported from the western coast of the Saurashtra, particularly at Dwarka (Gaur et al. 2001), Bet Dwarka (Sundaresh et al. 2004), Miyani, Visawada (Gaur et al. 2007) and Somnath (Gaur et al. 2002). The stone anchors can be used to discover anchoring points in the past, and the size of ships and boats. A large quantity of glazed ware was collected from the inter tidal zone of Gogha along with stone anchors. The date of this glazed ware may range between the 10th and the 14th century A.D. This paper discusses results of marine archaeological research in the Gulf of Khambhat, and discusses role of tides in past maritime activities.

### Results of Exploration

Exploration along the western coast of the Gulf of Khambhat led to the discovery of several artefacts at Gogha, Hathab, and Sultanpur. Ancient remains of jetties were noticed at Bhavnagar and Sultanpur.

### Gogha

The town of Gogha is located on the mid-western coast of the Gulf of Khambhat in the Bhavnagar district of Gujarat. A famous Gujarati proverb *Lankani lari ane Ghoghono var* (Bride of Lanka and groom of Ghogha) hints at direct overseas relations between Gogha and Sri Lanka (Chaukasi 1989: 634). The presence of ancient Jaina temples at Gogha dating back to the 10-11th centuries A.D., suggest that this was a religious centre. The earliest Arabic inscription from Gogha dates to 1170 A.D. (Oza 1885). During the British period ships of up to 1500 tonnes were loaded here (Habib 1982).

The exploration at Gogha was undertaken during low tide and discoveries were photographed and drawn. A large number of stone anchors were recorded between 100 and 200 m from the high water line (Table 1). The majority of anchors belong to the Indo-Arab type (Fig. 2). Nearly 40% are broken. Interestingly, fresh surfaces of broken parts suggests that breakage took place during the manufacturing stage and not during the process of anchoring. A composite anchor made of limestone is another noteworthy find from the site (Fig. 3). A few unfinished anchors (Fig. 4) were also found from Gogha and Hathab. However, these anchors are submerged in 5 to 7 m water depth during high tide. Thus, it indicates that large boats were anchored at this point during high tide. The author of the *Periplus of the Erythrean Sea* also records that during low tide, boats rest on the seabed.

Exploration in the inter-tidal zone has also yielded several sherds (Table 2) of glazed ware in the vicinity of

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Table I: Details of stone anchors from Gogha

Type of Anchor	Raw Material	Length	Upper Section	Lower Section	Upper Hole	Lower Holes
Grapnel	Basalt	188	22/23	30/35	8	10x15, 10x15
Grapnel	Basalt?	140	40/35	50/35	-	18x15, 18x15
Grapnel	-	220	60/50	70/65	-	30x22, 30x22
Grapnel	-	155	30/25	40/35	-	22x15, 22x15
Grapnel	-	175	28/28	40/40	8	-
Grapnel	-	55	38/30	30	-	-
Grapnel	-	63	-	35	-	15x10
Grapnel	-	190	25/25	40/35	5	15x10, 12x10
Grapnel	-	205	30/25	35/35	-	10x12, 10x12
Grapnel	-	110	25	35	12	-
Grapnel	-	105	30	36	-	-
Grapnel	-	78	34	38/35	-	12x12, 12x12
Grapnel	Limestone	80	74 width	100 width	9, 10	10x10, 10x10
Grapnel	Basalt	250	40/40	30/35	-	25x22, 25x22

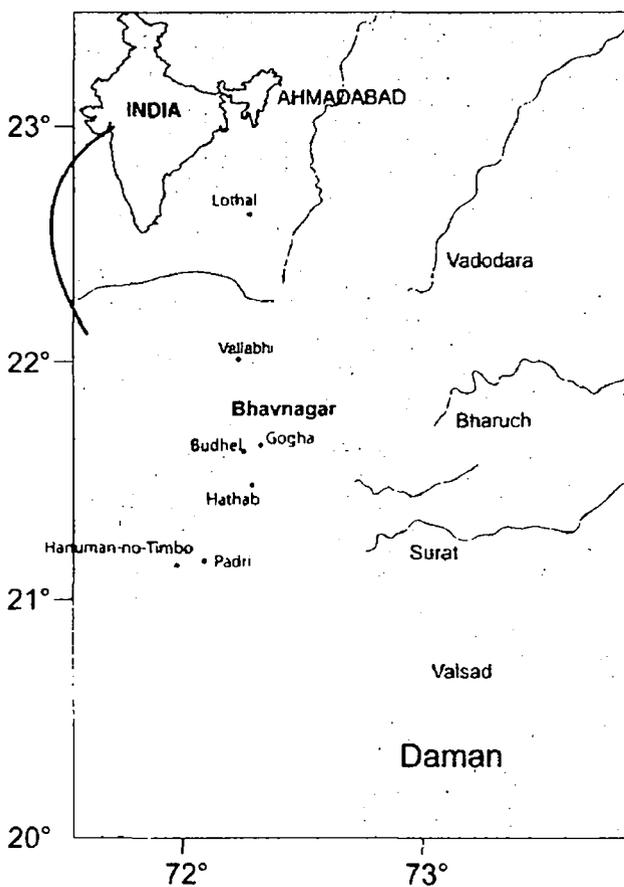


Fig. 1: Important archaeological sites along the Gulf of Khambhat

stone anchors. These include a jar with glazing on the interior and upper half portion on the exterior. The rest of the sherds are glazed only on the interior (Fig. 5). There are three main type of glazed ware, i.e. green, blue and

brown. These are similar to the Islamic glazed ware found from various parts of the country (Mohammad 1985; Bhan, 2006)

**Hathab**

Hathab, an Early Historic site finds mention as Astacampa in the Periplus of the Erythrean Sea (Schoff 1912). On-shore excavations yielded many antiquities of the historical period and evidence of maritime contact with the West. It is located about 1 km in hinterland. The inter-tidal zone of the site was visited during the lowest low tide and findings were documented. These include two anchors similar to those of the Indo-Arab type, and one anchor with a wide groove around the middle of the anchor. This is very similar to those reported from Japan and China (Fig. 6).

**Budhel**

Budhel, a late Harappan site is situated about 20 km southwest of Bhavnagar. The site is partially covered with a Muslim graveyard and a part is under cultivation. A small seasonal stream flows close to the mound and merges with the Gulf of Khambhat near Gogha.

**Hanuman-no-Timbo**

The Harappan site of Hanuman-no-Timbo is situated on an estuary of the river Shetrunji near Sultanpur in Talaja taluka. A modern road divides the site into two. On the western side the mound is higher than that on the eastern side. The site extends approximately over an area of 0.5 x 1 km. The low lying area surrounding the site may be a tidal palaco- channel (3rd millennium B.C.). A large quantity of pottery including perforated jars, and painted pottery were noticed during the exploration. It was interesting to note that fishing boats can approach the site during high tide (Fig. 7). Thus the site seems to have been an ancient port town of the Harappan period.

Table 2: Pottery recovered from the inter-tidal zone of Gogha

Shape	Type of glaze	Remarks
Plate	Green glazed	Internally glazed and corrugated profile
Plate	Blue glazed	Pitted surface and coarse fabric
Plate	Blue glazed	Internally glazed and corrugated profile
Bowl	Green glazed	Externally wavy lines below the rim. Medium fabric
Basin	Cream slip	Externally seriation marks are noticeable
Basin	Black ware	Small sized vessel. It is ill fired
Jar	Cream slipped	Well fired and medium fabric
Jar	Grey ware	Externally treated with black slip
Surahi	Buff ware	Externally decorated with incised designs
Bowl	Chinese ware	Ring-footed base. Designs on both sides
Basin	Grey ware	Externally treated with black colour
Dish	Blue glazed	Ring-footed base.
Bowl	Blue glazed	It has a pedestal base
Bowl	Blue glazed	Ring-footed base. Growth of barnacles noticed
Bowl	Green glazed	Ring-footed base and has a corrugated profile
Dish	Blue glazed	Ring-footed base and has pitted surface
Bowl	Blue glazed	Pedestal base and has a corrugated profile
Dish	Brown glazed	Ring-footed base and has a corrugate profile



Fig. 2: Indo-Arab type of anchor from Gogha



Fig. 3: Composite type of anchor from Gogha

The remains of a jetty were noticed at the mouth of the river Shetrunji near the village Sultanpur. This was primarily a wooden jetty (Fig. 8) now abandoned due to emergence of other ports in the vicinity. As per information received from local residents the jetty was built about 100 years ago and was abandoned in the early 1970s.

### Gopnath

Gopnath serves as the entry point to the Gulf of Khambhat. The coast is marked with high cliffs, and rocky and sandy beaches. Being close to the Gulf, the tidal range is very high and a large area gets exposed during low tide. A large number of broken sculptures were noticed in the inter-tidal zone. An Indo-Arab type of stone anchor (Fig. 9) was

reported at the lowest water line lying about 2 km offshore. It is exposed during low tide on the new moon day. It is complete (length 2.2 m) and made of hard basaltic rock. It has two lower square holes and upper hole is circular in shape.

### Vallabhipur

Vallabhi, one of most famous Universities of ancient India, is situated on a seasonal stream. The river must have been a tidal creek in the past. The ancient site is located on the banks of the Vallabhi river. The present shoreline is about 4 km away from Vallabhipur. According to local tradition, boats could reach the site until a few decades ago, but it is completely silted at present. Local information indicates

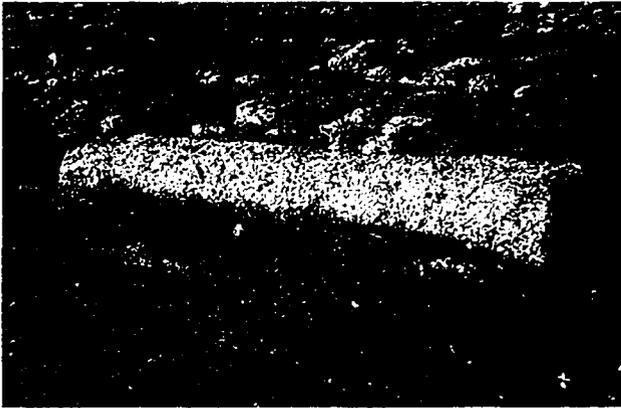


Fig. 4: Unfinished anchor from Gogha



Fig. 5: Glazed ware Jar from Gogha



Fig. 7: Fishing boat in the estuary of the river Shetrunji near Hanuman-no-Timbo



Fig. 6: Chinese type stone anchor from Hathab

that two anchors lay near the present bus stand but were recently shifted to the Taluka office. These two artefacts are channel marker buoys and made of iron (Fig. 10). No information is available on their use and age. However, our observations suggest that these are of the British period and used as channel indicators. Their discovery at Vallabhipur indicates that during the British period ships/boats sailed up to Vallabhipur, and later the river got silted.

#### Discussion and Conclusions

The Gulf of Khambhat is famous for a high tidal range which is the second highest in the world with a maximum rise of 11 m on full and new moon days. There is a reference in the Vishnu Purana about the rise of sea level during full moon time up to a height of about 10 m (510 Angulas). The author of the Periplus of the Erythrean Sea has described the tidal range in the Gulf and difficulties in navigation.

The discovery of a large number of stone anchors from Gogha suggests that it was an important port town during the medieval period. The majority of anchors belong to the Indo-Arab types, dated between the 8th and the 14th century A.D. along the Saurashtra coast (Gaur et al. 2005). Interestingly, for the first time Islamic glazed ware has been collected from the vicinity of the anchors. Gogha was a famous boat building centre during the Mughal Period (Habib 1982). Located at a strategic point on the western coast of the Gulf, Gogha was attacked and captured several times by local rulers such as the Gohel Rajputs. With the emergence of Bhavnagar in the early 19th century, Gogha lost its importance as a major port in the Gulf of Khambhat.

One of the anchors found at Hathab, made on laterite is for the first time from Indian waters. It has a shallow and wide groove on all four faces of the block. It is very similar to those reported from Chinese, Japanese and Korean waters (Yang 1990; Qin Zhang 1989) datable to the 12-14th century A.D. This is the first direct evidence of Indo-Chinese trade during the early medieval period.

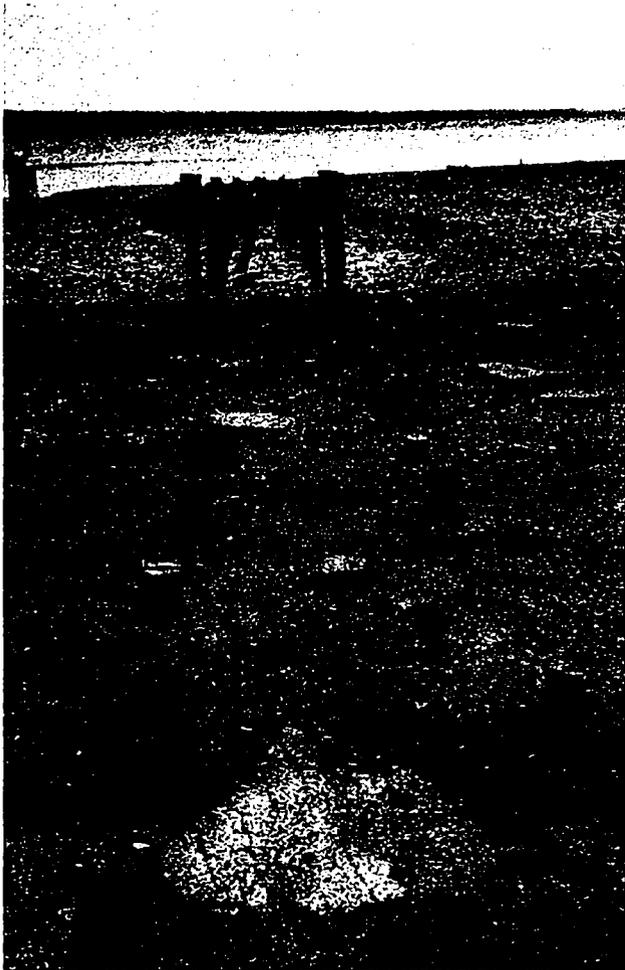


Fig. 8 Remains of a wooden jetty near Sultanpur, Talaja, Bhavnagar



Fig. 10: British Period Channel marker buoys at Vallabhi

Coastal archaeological explorations along the western coast of the Gulf of Khambhat yielded remains beginning from the Harappan times onwards. Budhel and Hanuman-no-Timbo are important Harappan sites situated along the Gulf and Vallabhi and Hathab are noteworthy sites of the historical period. Gogha was the most important port during the medieval period. The tidal range was perhaps the major attraction for a continuous settlement, which facilitates movement of boats without much energy.

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Fig. 9 Indo-Arab type anchor noticed off Gopnath

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