

# ECOLOGY AND ARCHAEOLOGY OF WESTERN INDIA

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## 2:7 Harappan and Post-Harappan Settlement-patterns in Saurashtra

The transplantation of Harappan cultural elements from their original habitat in Sind to Saurashtra has been a topic of lively discussions among the scholars. A number of theories have been put forward by them to account for the movement of the Harappans between these two regions which have certain basic similarities. Broadly speaking, Sind and Saurashtra form, to some extent, an ecologically contiguous unit, yet there are certain glaring differences which should not be lost sight of. It has been observed that when one talks of migrations from Sind to Saurashtra, it is with an implicit belief that all the Harappans came either from Mohenjo-daro or the riverine areas of the Indus valley proper. However, as is well known, the Harappan site-scatter in Sind and Baluchistan was far flung enough to make the Harappans, say in Makran, exploit a microenvironment that is different from the one obtaining in the valley of the Indus. It is, therefore, fallacious to believe that the Harappans in Sind were adapted to a particular type of environment and when they entered Kutch and Saurashtra they were confronted with a set of environmental variables that were not in general agreement with the background from which they were coming.

In Saurashtra, generally the Harappans had settled in the valleys of the major rivers of the region. This, however, need not mislead one to assume that the Harappans avoided exploiting other areas of Saurashtra. In fact quite a number of sites have been found in the interior and one exactly on the margins of the Rann of Kutch. This only goes to indicate that the Harappans were adept at exploiting various ecological and environmental conditions and culturally and technologically they had developed some sort of flexibility that could well overcome the contingencies of the situations as they arose.

### SETTLEMENT-PATTERNS IN SAURASHTRA

The chief determinants of settlement-patterns in Saurashtra both in the Harappan and the post-Harappan contexts appear to be soil and water (Possehl, 1974, p. 15; Chitalwala, 1974, p. 5). This is understandable in view of the fact that the Harappans were an agricultural people with a specific socio-economic base that had at least in

Sind and the Punjab served as the principal strand in the fabric of a sophisticated and civilized existence. The Harappans were more attached to land than even the early farming communities. They were required to produce a surplus that went into the complex societal order which, besides being urban, was extensive in the sense that it had an unrestricted sway irrespective of environmental and ecological variations (Leshnik, 1973, p. 83). The focal points of site locations in Saurashtra are the banks of rivers like the Bhadar, the Ghelo and the Kalubhar. It is also interesting to note that the valley of the Bhadar represents the most fertile tract of land in the whole of Saurashtra and some of the larger sites like Rangpur, Rojdi and Atkot are situated within its confines. The black-cotton soil with its moisture-retaining quality seems to have influenced the Harappan and post-Harappan site location. Apart from its minimum water requirement, it can be ploughed with simplest implements like the wooden hoe or even a digging-stick as was pointed out by Dhavalikar and Possehl in the context of the early farming communities of western India (Dhavalikar and Possehl, 1974, p. 44). It is, therefore, fair to assume that the black soils of Saurashtra could hardly have stood in the way of Harappan and post-Harappan agricultural endeavour.

Apart from river valleys, some of the late Harappan and post-Harappan sites are located on or near rocky outcrops. Such a selection might have been to some extent due to the considerations of defence or the necessity of observing the game over long distances from such vantage points (Chitalwala, 1974). Restricted supply of cultivable soil in the interior parts of Saurashtra is one of the factors alluded to in this context by Possehl (Possehl, 1974, p. 77).

Site loci are not always subject to purely organic factors like the physiography and environment. There are other constraining factors like trade and communications that often present themselves when vital decisions regarding the location of a settlement are to be taken. The late Harappan site of Hajnali in the Morvi taluka of the Rajkot district is a small mound with a height of some 10 m. of occupational debris, while the site itself is hardly 60 m. across. The thick occupational accumulation in relation to its small size is somewhat perplexing. However, its location close to the Gulf of Kutch and the Little Rann of Kutch provides some clues as to its situation in the area which is today quite drought prone and agriculturally discouraging. The site appears to be a transit camp for those travelling overland from Kutch to Saurashtra. It might also have served as some sort of *entrepot* for the ships coming from the Gulf of Kutch towards the Saurashtra coast. In this context it is important to remember that the problem of site selection was not subject only to environmental and ecological considerations, but to functional requirements like communications.

The close overlapping of the Harappan and post-Harappan settlements indicates a common approach to the selection of site loci. However, it is important to note that the post-Harappan site distribution is sporadic and the tendency of the smaller segments to budd off from parental settlement had not taken place constraining the carrying capacity of the environment beyond its threshold. The post-Harappan site scatter, being far from dense, is indicative of absence of high population density in any particular area. This fact permits the conclusion that the 'social fabric of the post-Harappan people was rather weak and the political order not of hegemonic nature as the economic

conditions were geared more to meet the bare subsistence requirements than to gain any surplus' (Chitalwala, 1974).

#### PATTERNS OF LAND USE

As has already been pointed out, the Harappan and late-Harappan sites are strung out along the banks of the rivers. This, however, is more true in the case of the latter and their linear distribution along the course of the rivers implies an intensive pattern of land use (Possehl, 1974, p. 200; Pandya, 1974, Pl. II). Commenting on the exploitative potentiality of an area in relation to subsistence requirements of the Mount Carmel caves, Vita-Finzi (1970, p. 7) says '....farther the area is from the site, the less is likely to be exploited and the less rewarding is its exploitation.' There are quite a few sites like Rojadi with small and secondary settlements near their vicinity. This would imply that the areas of subsistence activity of closely spaced units of settlements might well have overlapped, underlining a complex land distribution system. Nucleated settlements like Rojadi and Lothal might be indicative of a particular type of land use pattern. Haggett (1971, p. 60) has suggested that the farms operated from nucleated settlements are fragmented. Probably the village is nucleated because the farmsteads are built round it so as to be nearest to the village from all sides.

In the Indus valley wheat was grown during the Harappan times and it probably suggests that carbohydrates had an important place in the dietary habits of the people. In Saurashtra though evidence of wheat is lacking, it is difficult to imagine that the Harappans had ceased to grow it in view of the fact that the initial Harappan settlements were located in the vicinity of the Nal depressions which is an important wheat growing area (Possehl, 1974, pp. 167-168). The occurrence of rice *Oryza sp.* (Kajale, 1974, p. 62) at Lothal and Rangpur points to the fact that the Harappans were making full use of the carrying capacity of their environment and that rice was an important item of their diet, next only to wheat. The cropping of rice, however, engages more area of land than wheat (Stamp, 1958, p. 6). Therefore, it can be suggested that it was grown only to supplement the diet of which wheat formed the chief item.

In the post-Harappan period a shift in the cropping pattern is noticeable with the cultivation of *bajari* (*Pennisetum typhoides* Stapf. and Habb.). The grain was reported from Rangpur (Rao, 1962 & 63, pp. 168-169). It appears to be a post-Harappan introduction involving dry-farming and a change from *rabi* to *kharif* cultivation. The resultant advantage as shown by Leshnik was that it 'led to an increase in production per unit of land' due to two harvests (Leshnik, 1973, p. 72) and to some extent this explains the proliferation of late Harappan sites in Saurashtra from 18 in period IIA to 120 in period IIB-C (Possehl, 1974, pp. 177-178). Possehl has also drawn attention to the fact that the subsistence requirements of the late Harappans were far below the carrying capacity of the environment (Possehl, 1974, pp. 153-154). The Harappan and late Harappan agricultural activities were confined to the areas nearest to the settlements and as most of these were close to the banks of the rivers, they offered ideal conditions for agricultural purposes. The banks of some of the rivers also grow grasses like *Dichanthium annulatum* and *Cenchrus ciliaris* which provide excellent forage to the

### ECOLOGICAL SETTING

In this section of the paper a tentative attempt has been made to reconstruct as far as possible the ecological setting of Harappan and post-Harappan times on the basis of meagre data that are available. To begin with, it will be worthwhile to consider animal species that have so far been found from various sites, though no attempt would be made to enumerate each one of them, since literature is already available on them.

Among the animal species from the Harappan and late Harappan sites, the existence of *Rhinoceros unicornis* is quite interesting. A shoulder blade of that animal had been found from the mesolithic site of Langhanaj (Sankalia, 1974, p. 257). Lothal also yielded the remains of rhino and, according to Bhole Nath, its existence was an indicator of climatic changes that have taken place since the Harappan times as the habitat of rhino consists of marshy land and mixed forests (Nath, 1968, p. 6). The find of the remains of that animal from the late Harappan site of Khanpur in the northern part of the Rajkot district would show that the rhino had quite an extensive distribution and that the river banks with tall grasses and wet conditions supported its existence. As a result, it probably remained close to the river banks and did not penetrate the scrub forests of the interior (Zeuner, 1963). Zeuner did not think that the existence of rhino would indicate any appreciable change in the climate or even a marshy habitat. However, it is difficult to subscribe to the view that the landscape has remained quite the same since the Harappan and post-Harappan times. The strips of grass that ran along the banks of the rivers supported animal life like the rhino and possibly the wild pig. The boar has been reported from Khanpur and the animal is capable of inhabiting a variety of environments (Chitalwala and Thomas, 1974). At present it is found in Kutch and often ravages cultivated fields. Therefore, the scrub forest that covered the interior of Saurashtra had a wild life of boar, different species of deer like the gazelle (reported from Khanpur and Somnath) and *sambhar* and *nilgai* both reported from Lothal (Thomas, 1974, pp. 198-201; Nath, 1968, p. 6). As far as the forest cover is concerned, and if the remains of *Acacia*, *Tamarix* and *Albizia* reported from Rangpur are any indication, a xerophytic vegetation was present on the scene as it is today (Rao, 1962 & 63, pp. 173-174).

To summarize, the grassy and forested strips along the banks of rivers served as the habitat of such animals as the rhino and boar. Beyond this zone were the shrubby jungles harbouring such animals as the gazelle, *nilgai*, *sambhar*, jackal and mongoose. From Surkotada, remains of the boar, fox, hare and duck have been reportedly found (Chakravarty, 1974). Both Kutch and Saurashtra are rich in bird life and even today a variety of birds including ducks and cranes and the flamingoes migrate to breed during the winter. Therefore, it is apparent that the timing and the intensity of seasons have more or less remained stable and there is hardly any ground to suppose that the climate was wetter to any appreciable degree than what it is today. Ducks generally visit river banks and swim in the stagnant pools of water that are leftovers from the monsoon season.

Somewhat away from the zone of wild animals and scrub jungles were the human settlements with cleared areas of agricultural land and domesticated animals like the cattle, sheep and goat. These human depredations on land and forests might have to

some extent modified the behaviour of some of the animals. The deer were probably keeping clear of human contact and remained confined to jungles, whereas animals like the boar were entering fields to feast on standing crops. All the animals except *nilgai* still roam the countryside albeit in reduced numbers. The biotic interference by man has made the landscape comparatively more barren than what it was during the Harappan times.

Among the domestic animals, cattle, sheep and goat have been reported from almost all the sites. From the large number of bones of these animals, it would seem that they formed an important component of the Harappan economy and the people used to supplement their diet with meat and milk derived from these animals. It is possible as in the case of the early farming communities in western India that the Harappan and post-Harappan farmers grew fodder on separate pieces of land (Dhavalikar and Possehl, 1974, p. 45). Possehl has postulated that the Harappans initially settled in the vicinity of the Nal depression as it abounded in grass and because those Harappans were pastoralists (Possehl, 1974, p. 183).

### CONCLUSIONS

From the foregoing it would seem that the Harappan intrusion into Saurashtra had far-reaching consequences. First, it opened up the country for habitation on a level that was more or less on par with the civilized existence in the Indus valley proper. Secondly, the question of adaptation to a new environment did not possibly pose a big problem as the Harappans were closely attached to the land and its products. The black-cotton soil which could easily and economically be tilled, more than compensated for the loss of Indus alluvium. Compared to Sind, apart from the river Indus, Saurashtra is more verdant and less dry. Ecologically too the Harappans did not find themselves in an uncongenial atmosphere, and could engage in economic activities of highly specialized kind as is evident from the industrial base of the town of Lothal. The specific socio-economic forces generated by such a dispensation of life must have, beyond all doubts, left an impress on the gamut of Harappan existence in Saurashtra.

The post-Harappan period was the period of proliferation of settlements. The increase in the number of sites was five-fold and the site distribution became rather more extensive than was the case with the earlier phase. This might have been in part due to the adoption of a system of dry farming involving cultivation of such crops as *bajra*. The two-crop cycle — *rabi* and *kharif* — augmented the supply of food that led to an increase in population and "budding off" of the settlements.

The ecological setting during the Harappan and post-Harappan periods was not essentially different from what it is today. However, the extent of forest cover was greater and the ecological balance stable enough to allow the survival of different species of animals including the rhinoceros. With the progressive increase in the human encroachment upon land, flora and consequently fauna suffered the loss of their natural habitat, dwindled in numbers, and then ceased to survive.

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