Chapter 7

Results and Discussion
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This chapter reviews the results of the study of the settlement features undertaken at Jaidak (Pithad) in the Jodiya taluka of the Jamnagar District, in comparison with other Harappan sites, particularly in Saurashtra. An attempt has been made to delineate and discuss several features of the Sorath Harappan sites as well as the differences and similarities in several aspects with that of the Classical Harappan sites, both in Gujarat and those in the Sindh and Punjab region. With regard to this an attempt has been made to evaluate the position of Jaidak (Pithad) as a Sorath Harappan site in the cultural chronology. Analyses of the material assemblage together with architectural features at Jaidak (Pithad) on a comparative basis have brought forth several general similarities and subtle differences between the Classical Harappan and the Sorath Harappan sites. These similarities and differences have been described under several heads in the following sections.

7.1 Comparative Analyses of the Artifactual Assemblage

The outcome of the present analysis of pottery validates and also presents certain facts in relation to the characteristics of the Sorath Harappan ceramic assemblage. It is already an accepted fact that the Sorath Harappan pottery is marked by the absence of typical Classical Harappan shapes such as the 'S' profile jars, goblet, beaker, tea cup with a perforated handle, perforated jars, etc. (Possehl and Herman 1990). On the other hand it may be pointed out that certain shapes dominating the Sorath pottery assemblage are altogether absent in the Classical Harappan assemblage. Thus the predominance of bowls, hemispherical in shape in the early phases, followed by the straight sided and concave sided ones in the later phases marks an important feature of the Sorath Harappan pottery. Besides, the stud- handled bowls and the lamps (appearing in the late phase or Rojdi C phase), both occurring in the red ware, are peculiar to the Harappan sites in
Saurashtra. However, perforated jar sherds, conspicuous by their small number are evidently present in upper levels of the Sorath Harappan occupation.

Judging from the published material of other sites and analysis of the pottery from Jaidak, it is quite clear that the Classical Harappans restricted themselves to the production of fine wares, with only very few coarse ware varieties. The Sorath Harappan potters, on the other hand, produced both fine and coarse variety of wares in almost equal numbers and with equivalent efficiency. The coarse wares were deliberately made to serve mainly utilitarian purposes of cooking and/or storage, and these were in many cases slipped and/or burnished with incised decorations. In this context mention may be made of the observation of Koiso (1994) that there was a trend at Kuntasi and at Rojdi showing an increase in the number of large variety of storage jars, both in fine and coarse wares in the later phases. A similar trend may also be noticed at Jaidak where there is marked increase in the number of the large variety of pots/jars, especially with angular rims, with or without corrugations in the coarse wares and jars with a sort of flanged rim, wide mouth, a long neck and bulbous body in the fine wares.

Yet another observation of Koiso (1994) can be supported from the present analysis that majority of the Sorath Harappan pottery are applied with slip on the surface(s), exterior and/or interior. Contrastingly this practice was not common for e.g. at Mohenjo Daro (Dales and Kenoyer 1986), where only a minority of the vessels are slipped. But it is interesting to note that the Classical Harappan sites in Gujarat do not come under the latter category, and therefore such a feature is confined to the Harappan sites in Sindh proper. As far as the painting repertoire on pottery is concerned, a difference in the trend of the motifs executed is noticeable. The potter/painter at the Classical Harappan sites exhibited their artistic skill while painting the pots. Varied representations of the flora and fauna in imaginative combinations; many a times demonstrating themes or even common fables are observed. Geometric motifs were used in various compositions to produce a complex design. On the other hand, the Sorath Harappan potter/painter is found to restrict themselves to execute simple geometric
motifs. The designs are mostly observed to be simple compositions of linear and circular motifs. The well-known fish-scale, or peacocks motifs etc. are conspicuous by their absence in the design repertoire of the Sorath Harappan pottery painting (Panjwani and Bratati in press). Only a single example of a sherd with the representation of a stylized bull is reported from Jaidak.

Yet another trend observed in the pottery-making technology is worth mentioning here. The structural phases at Jaidak show a declining tendency in Period IIB. This is a clear indication of slack in the economy of the settlement. But, it is interesting to note that even such a situation did not affect the pottery manufacturing activities at the site. Broadly speaking, hardly any change in the shape, quality of the fabric, or application of slip, and even firing techniques perhaps, is observed in the whole assemblage of pottery. Koiso (1994) observed a similar trend at Kuntasi. The published report of Rojdi also demonstrates a more or less same tendency in the ceramic assemblage (Herman 1989; Possehl and Herman 1990). Thus it may be stated that the Sorath Harappan potters followed some sort of standardization in their manufacturing techniques which is based on “practical experience and cultural traditions” (Dales and Kenoyer 1986).

Graffiti at the Classical Harappan sites mainly exhibits the use of characters from the Harappan script, in the pre-firing as well as the post-firing marks. Besides some abstract linear scratching are noticed in the graffiti from the Classical Harappan sites in Gujarat, for e.g. at Lothal. On the other hand graffiti reported from the Sorath Harappan sites never show the presence of characters from the Harappan script. Writing is altogether absent in these sites, except for only one example from Rojdi. The Department of Archaeology of the Government of Bombay, under P. P. Pandya, during the first excavations at Rojdi found a fragmentary convex-sided bowl with four Harappan characters (IAR 1957-58). This is a unique example from a Sorath Harappan site. It is significant in the sense it denotes the influence of contact and interaction of the Sorath Harappans with the Classical Harappans. The post-firing graffiti include abstract
markings of linear nature mainly, while the pre-firing marks are mostly nail incisions made on the pots when its surface was still not very hard.

Possehl and Raval (1989) had already stated while defining “Sorath Harappan” based on the evidence from Rojdi excavation, that it is represented by a rather simple material inventory, characterized by the absence of several Classical Harappan “markers” and very little writing. A detailed study of the material inventory in the light of fresh data from Jaidak and comparative analyses with the published material from other Sorath Harappan and Classical Harappan sites have brought forth several important traits showing similarities and differences between the two. Rojdi and Kuntasi are reported with the presence of certain “type-fossils” of the Mature/Urban Phase of the Classical Harappan, such as the stone weights. At Rojdi only one etched carnelian bead is reported. At Kuntasi in the Mature/Urban phase several objects typical of the Classical Harappan viz. a faience seal, long cylindrical carnelian beads, terracotta toy cart-frames, wheel with painted spokes were found. A few copper objects bearing some similarity to the Classical Harappan examples such as the spearhead, daggers, axes, blades were also reported from Rojdi and Kuntasi. But such objects are conspicuously absent at Jaidak. The presence of the Classical Harappan objects, significantly in very few numbers, in the artifact assemblage at the Sorath Harappan sites of Rojdi and Kuntasi once again indicates the interaction between the two. These objects must have entered the sites as objects in exchange for other goods that were abundantly available in the area. It is interesting to note that these objects which form an integral part of the material assemblage of the Mature/Urban Phase were not found in the Post-Urban phase at the Classical Harappans sites. This fact testifies to the contemporaneity of the Sorath and the Classical Harappan cultures. However at the Sorath Harappan sites the carnelian beads and copper objects continue to occur, which are different from those of the Classical Harappan examples.

Generally speaking, the Sorath Harappan material inventory shows a dearth or complete absence of such Classical Harappan specimens. On the other hand, the Sorath Harappan material assemblage may be characterized by the presence of a good number of
terracotta objects, such as terracotta discs, spindle whorls, ear studs and beads in various sizes. Besides, the presence of a few carnelian, faience, steatite, and shell beads and other shell objects as well as a few copper objects, including ornaments cannot be dismissed altogether. It may be noted here that among the terracotta figurines, bull is the only animal that is reported. No other animal or bird is found to be represented in terracotta, unlike the Classical Harappan sites, occurring both in Gujarat and the Sindh and Punjab regions. It is also interesting to note that Mother Goddess figurines are also not reported from the Sorath Harappan sites. The typical (Classical Harappan) mother goddess figurines found at Mohenjodaro and Harappa are altogether absent in all the Harappan sites in Gujarat and Rajasthan (Dhavalikar 1996). This trend can thus be best explained by pointing to the regional trends executed at the sites located outside the main domain of Harappa culture.

Another feature that may be noted is the use of limited varieties of raw materials for the production of different objects at the Sorath Harappan sites. The lithic materials mainly consisted of chert, agate, chalcedony, jasper, quartz, etc. which were in most cases locally available or obtained from neighboring resource zones. Also highly priced materials much favoured by the Classical Harappans are not reported to have been used, for e.g. turquoise, gold, lapis lazuli, etc. Although lapis lazuli is reported from Kuntasi (Dhavalikar et. al. 1996), its presence has been explained in a different context. While, at Harappa alone roughly 40 distinct kinds of rocks and minerals are identified in the artifact assemblage (Law 2008). This very fact is a testament to the rich and varied geologic resources available across northwestern South Asia. In order to obtain such extensively spread resources, the development of social and economic interaction networks between the different ecological zones and resource areas and the avenues through which these resources could be distributed need a well-controlled and well-regulated administrative infrastructure. Besides, the technological capabilities for transportation of such materials from remote locations need to be well developed. These necessary preconditions were, perhaps lacking at the Sorath Harappan settlements, which may be accounted to their small site-size and a sort of semi-urbanized economy dependent partially on agriculture and partially on pastoralism. It is quite evident from
the nature of the Sorath Harappan settlements that they lack the general preconditions for urbanism and those for the rise of state-level society as pointed out by Kenoyer (1991a; Law 2008). The nature of trade/exchange network of the Sorath Harappan sites has been dealt in detail in later sections of this chapter.

7.2 Comparative Analyses of Architectural Features

Recently, while analyzing the architectural features of the Sorath Harappan sites, taking Jaidak as a case study, Ajithprasad (2008) has illustrated several marked differences, yet displaying a general similarity in plan and layout with that of the Classical Harappan sites. An overall observation of the basic features of the Harappan architecture in Gujarat reveals that there is little difference in building materials used by the Classical Harappans and the Sorath Harappans. Stones as well as mud-bricks were used by both for their construction, as for e.g. at Dholavira (Bisht 1994). However, it may be pointed out that mud-brick structures are more popular in Classical Harappan; while stone gained priority as building material in the Sorath Harappan for e.g. at Rojdi (Possehl and Raval 1989), Kuntasi (Dhavalikar et. al. 1996) and even at Jaidak. The choice of building material although must have been influenced by its local availability.

Another feature indicating distinction in construction of the two may be noticed in the thickness of the fortification wall. The Classical Harappan fortification walls were massive constructions. For instance, at Dholavira the wall around the citadel is about 18m thick (Bisht 1991, 1994). Even smaller sites like Surkotada (Joshi 1990) in Kachchh and Bagasra (Sonawane et. al. 2004) in the Rajkot district, they measure 7m and 7.75m respectively. Contrastingly, at the sites of Rojdi, Jaidak (Pithad) or Kuntasi, in spite of their many times larger size than Surkotada or Bagasra, have fortification walls measuring merely 2 to 3m thick, on an average. On the other hand, it is interesting to note that the structures within the fortification do not show varying thicknesses of the wall in both Classical and Sorath Harappan. The thickness of the walls of the internal structures generally varies from 40cm to 1.20m irrespective of their Classical or Sorath Harappan affiliation.
The third striking feature that has been reported from the Sorath Harappan settlements of Rojdi and Kuntasi is the presence of polygonal and/or curvilinear structures. These have been interpreted as structural adaptation for keeping household...
herds at Rojdi (Possehl and Raval 1989) (Figure 7.1 & 7.2) or used as a shrine complex at Kuntasi (Dhavalikar et al. 1996) (Figure 7.3). A similar circular structure is also reported from Jaidak constructed in the late phase (Period IIB) (Figure 7.4). The structure is located in the south-western corner and was constructed over the main fortification wall. The purpose or use of the structure however could not be identified. A curvilinear structure similar to Rojdi is also reported from the rural Classical Harappan site of Nagwada in the Surendranagar district (Figure 7.5). The structure is reported from the uppermost layers at the site, probably indicating a diffusion of functional feature further north of Saurashtra into north Gujarat in the closing years of the third millennium BCE.
Figure 7.4 Circular structure from the top most levels at Jaidak (Pithad)

(Ajithprasad 2008). At Dholavira, in the last phase (Phase VII) of occupation circular or curvilinear structures with an oblong antechamber are found. And it is not without significance that the Sorath Harappan elements predominate in this phase at Dholavira (Figure 7.6). Thus it is clear that the Sorath Harappan settlements incorporated such constructions within their architectural tradition quite easily. Or probably the curvilinear structures could in fact have been an integral part of the Sorath Harappan architectural scheme. On the other hand such structures do not seem to be the norm in the Classical Harappan sites.
Successive structural phases of the Mature Harappan period at Nagwada. [after Hegde et al 1988]

Figure 7.5 Curvilinear structures from the topmost levels at Nagwada

Figure 7.6 Apsidal/curvilinear structure at Dholavira, Phase VII
On further analysis of the building style and the material used for construction, several aspects that escaped the attention of the Sorath Harappans can be illustrated. It has already been stated that stone was preferred as the building material at these sites. On a closer look it becomes quite apparent that there lacked an efficient workmanship in their use. The stones were used as amorphous blocks in the construction, rather than making attempt to dress and cut them into square or rectangular blocks or slabs. At Kuntasi however, since during construction phases of Period I, the stones used were roughly hewn into flattish slabs, but no such attempt was made at the sites of Rojdi or Jaidak. This gave the walls and other structures a rather rugged and uneven appearance. On the other hand, the stone structures exposed at the Classical Harappan sites of Bagasra (Sonawane et. al. 2004) or Dholavira (Bisht 1991, 1994) belonging to the later phases of occupation, appear to be of far better constructional and aesthetic quality. The stones used for construction were cut into slabs that gave a perfect finish and even appearance to the structures. The alignment and perfection attained by the use of standardized bricks was more or less maintained even after the building material was replaced by stone. This definitely points to the skill and efficient workmanship of the ‘architects and engineers’ of the Classical Harappan. Not only the aesthetic side of the construction, but the dressing of the stones aided in perfect bonding of the walls, which in turn added to the strength and durability of the structures. This is one of the reasons for the better preservation of architectural features at the Classical Harappan sites. The Sorath Harappans built large fortified settlements entirely out of stone but lacked the engineering skill and even foresight of the Classical Harappans. Moreover the uneven shape of the stone blocks contributed to a weak bond of the structures and is one of the reasons they succumbed to the agents of weathering eventually, besides other factors.

Yet another fact regarding the nature of the architectural construction at the Sorath Harappan sites is visible in the Post-Urban phase. This is the period of economic decline and disintegration, which becomes prominent in the architecture. No or least attempt is made to make new constructions. The new structures built are of poor quality and flimsy in nature. Moreover, the settlement shifts to one particular area of the mound as evidenced at Rojdi and Kuntasi. The degenerating economy is not so well reflected in
any other sphere of cultural material, especially pottery, since there is no significant change in either the quality and quantity of pottery or other artifacts. On the other hand at the Classical Harappan sites for e.g. Bagasra or Dholavira the existing structures of the early phases were repaired using the stone slabs in the later phases. Besides at Dholavira there appears the construction of circular or curvilinear structures with an oblong antechamber, which are evident of the declining life ways of the people in general. However at the Classical Harappan sites the material inventory also suffers degeneration in the Post-Urban phase.

In addition to the above mentioned features, detailed analysis of the town planning at Jaidak, exhibits perhaps a lack of attention by the Sorath Harappans in the following areas. Although structural features at Jaidak were not completely exposed, the large scale excavations at Rojdi (Possehl and Raval 1989) and Kuntasi (Dhavalikar et. al.1996) have revealed the absence of any defined pattern in planning and layout of the streets. Even the drainage mechanism at these sites was not paid the meticulous attention, as observed at Harappa (Vats 1940), Mohenjodaro (Dales and Kenoyer 1986) in Sindh or at Lothal (Rao 1985), Dholavira (Bisht 1991, 1994), etc. in Gujarat.

Another sphere that was less attended to is the water management and storage mechanisms. Tanks, wells and reservoirs are a regular feature at the Classical Harappan sites for e.g. Harappa, Mohenjodaro, Lothal, Dholavira, Sürkotada, etc. While presence of such systems to regulate the supply of water is not encountered at the Sorath Harappan sites of Rojdi, Rangpur, or Jaidak etc. At Kuntasi however, a well has been reported from Period I (Phase B), but the presence of potable water in it cannot attested to. The reason behind this, perhaps, was that almost all these Harappan sites are located on the banks or meanders of perennial and semi-perennial rivers, which in fact never gave rise to the need to store water specially. Moreover in the Saurashtra region the crops grown are mainly the draught resistant millets, which require little artificial irrigation. In regions where summer crops were the norm, i.e. Gujarat, large scale irrigation may have been largely absent, with dependence on rainfall instead (Fuller and Madella 2002). Yet, it is the
dearth of evidence which inhibits us to throw sufficient light on the mechanism by which the river water was brought and utilized for domestic as well as agricultural purposes. Possehl (1994) has observed that in Saurashtra, in the present times, well and canal irrigation are the widely utilized facilities. Also in the survey region around Jaidak canals drawn from the Aji and the Demi rivers have been observed. Many of the wells in Saurashtra are simply dug on top of a relatively high point than the surrounding topography and the water is drawn to the surface and directly down hill to the fields (Possehl 1994). Although the present scenario of the irrigation mechanism indicates several adaptations to increase the agricultural productivity, one does not come across evidence of any similar innovative methods in the Sorath Harappan context. Therefore wells or tanks do not seem to be the norm in the architectural manifestations at any of these sites.

7.3 Jaidak (Pithad) as a Sorath Harappan Settlement

The excavations at the Sorath Harappan site of Jaidak (Pithad) amply brings into focus the role of this quite large settlement in the life and economy of the Harappans in Saurashtra. Although the site was not excavated on a large scale, careful digging carried out in the two consecutive seasons (2005-'06 and 2006-'07) was worthwhile. The materials collected and structures exposed are well enough to draw a clear picture of the nature of settlement at Jaidak. The structural complex unearthed at the site is indeed impressive and of monumental quality. Jaidak, in terms of its sheer size and spread (about 11 ha) is one of the largest Harappan sites in Saurashtra. It is almost as large as or slightly larger than even the Classical Harappan settlement of Lothal and much larger than Surkotada in Kachchh and Bagasra in Rajkot district.

The location of Jaidak on the north-western fringe of Saurashtra is quite a strategic one, not only in terms of access to several resource locations, but also its proximity to Kachchh and the numerous Classical Harappan sites located there. Kachchh has been described as the connecting link between Sindh and Saurashtra and has been centre of activities with the presence of a number of Harappan sites (Sonawane 2004).
The choice of the area on the banks of the river Aji, by the Harappans at Jaidak is definitely not without reason. This can be easily inferred by the availability of the resources to meet the basic needs of settled life. Firstly, the building material, the large blocks of dyke rocks, are found to be extensively exposed in the Aji river in the vicinity of the site all along the channel. The Aji has a wide and deep channel as it flows past the site. The bed rocks are therefore exposed in good length and can be easily quarried and transported to the location of the settlement at Jaidak. Secondly, the river banks of the Aji are extremely fertile, rich in alluvium soil. Thus as is evident from the present situation, a variety of crops, both food and cash can be grown favorably in the area with little irrigation. Moreover, the river itself provided the inhabitants with freshwater turtles, fishes, and molluscs, evidence of which are present in the faunal assemblage. The marine shells also represented in the assemblage, perhaps had been washed in from the sea during the floods in the Aji. Also, another possibility may be mentioned of their being acquired while collecting shells from the Gulf of Kachchh, which is only about 30km upstream. A survey of the surrounding region revealed the presence of fairly large areas under pastoral cover which provided the grazing grounds for cattle, sheep and goat. The grasslands and acacia forest covers present must have provided a suitable habitat for the wild animals, including the gazelle, black buck, hare, etc. which were perhaps hunted for food.

Thirdly, the banks of the river Aji also provide the clay for pottery and other terracotta objects. Besides, the sources for red clay, used as a coloring agent in painting is also available within a distance 20km east of Jaidak near the present town of Morvi. A survey of the present potters in the neighboring villages of Jasapar and Latipar as well as in the Pithad village revealed the information regarding the sources of the clay. Thus it may be inferred that the fine quality clay from the nearest sources was easily accessible to the potters at Jaidak in the Harappan times as well. Another type of soil, that gave the dark brown color, had, however its source only in Kachchh. The paintings on the pottery from Jaidak are mainly executed in this color which in all probability must have been brought from a similar source in the Kachchh. This hints at an interaction with the Harappan sites in Kachchh who in all probability had better access to these resources.
Many of the semi precious stones used for making tools, beads, etc. also have their source in the adjoining areas of the site. The trap rocks and the gravel conglomerate exposed in the sections cut by the Aji and its numerous tributaries and streams revealed the scatter of chalcedony nodules in the river bed. Also nodules of quartz and quartzite are noticed in the vicinity of the site as well as near the site/village of Jodhpur (Jhala). Law (2008) has carried out extensive surveys in Gujarat in order to locate the sources of different raw materials used at Harappa. According to him, Jamnagar and Rajkot districts have rich reserves of agate, moss agate, chalcedony and jasper. This was also observed during the survey carried out for the present study. Agate, moss agate, and chalcedony (mentioned above) have their resources in the trap rock outcrops at several places near the villages of Khijadiya, Latipar, Jivapar, Badanpur, Khakhra, Veratia, etc. Jasper however has its source near the Khokhari village. Most of these resource areas in the villages are located within a distance of 20km from the site of Jaidak and therefore the Harappans did not have much trouble in acquiring these raw materials. Nor any major transportation mechanism was required to bring them to the site for processing. This area can be, therefore, aptly referred to as the catchment area of the site.

Besides the above mentioned raw materials, another stone that was widely used at Jaidak is chert. Law (2008) does not mention any source of chert being present in Gujarat. He also categorizes chert into few types on the basis of their color primarily, for e.g. black-gray, black-brown, black, purplish, brown or gray and the tan-gray rohri chert. He refers to the red and green colored ones as agate/jasper. On the other hand we have categorized the red, green, translucent/opaque white colored stones having bands as agate/jasper, and the rest being referred to as chert (Ajithprasad pers. comm.). At Jaidak, rohri chert is conspicuously absent, while numerous flakes and nodules of the black-brown, black, brown or gray, and purplish colored chert (following Law’s classification) have been found. Therefore even if we follow Law, taking the red and green stones as agate/jasper, there are ample resources of both the type of semi precious stones in the surrounding regions of Jaidak. The nearest source of the black-brown chert is in northwestern Rajasthan, while all the other varieties are found mainly in Sindh.
Northern Rajasthan was well settled from Mature Harappan through Post-Urban times (Possehl 1990). An internal trade also existed between the Chalcolithic communities of northern Rajasthan, Gujarat and Malwa (Deshpande and Shinde 2005). Thus it is not impossible that chert was obtained from Rajasthan in exchange for other objects. But questions rise regarding the trade/exchange connection between Jaidak and the sites in Sindh, Baluchistan or Punjab. There is so far no evidence, either direct or indirect to support the above. Nor the possibility of transport mechanism being present at Jaidak to obtain these raw materials seems feasible. Since transport of goods over such long distances need a well administered regulatory mechanism supported by a strong economy. The only probability therefore remains of an indirect exchange network with that of the Classical Harappan sites in Kachchh or with that of the other Classical Harappan sites in Saurashtra viz. Bagasra and Lothal, which were craft production centers.

Another evidence to show that Jaidak had contacts with the neighboring Harappan sites is the presence of variegated jasper at the site. It has been suggested that one of the sources of this raw material in Saurashtra was the Deccan Trap formation in Jamnagar district (Gazetter of India 1970). Variegated jasper was a prized item and the fact that this particular raw material was found stockpiled at Bagasra (Sonawane et. al. 2004; Bhan et. al. 2005), a Classical Harappan site located 50km northeast of Jaidak, clearly indicated its importance in the context of Harappan trade. Although the assemblage at Jaidak is found to contain several flakes and nodule pieces which were exclusively used for bead production such as variegated jasper, amazonite etc., only one sample of a large thick disc shaped jasper bead with incomplete perforation at the centre was reported in 1992 (IAR 1991-92) from the south eastern extension of the site known as Jaidak II. Except this there is no evidence to show any substantial bead-making activity being carried out at the site. The assemblage also does not incorporate much of tiny chips, or bead rough outs or lithic drill points/drill-bits, etc. which are generally associated with stone bead production.
Similar is the case of carnelian, of which only a few finished beads have been found. This again shows that carnelian beads were not made at the site but have been brought in from other sites, perhaps in exchange of other items. The item most in demand seems to be variegated jasper. The agate deposits have already been mentioned to be present in the surrounding areas of Jaidak. Besides, the agate used for producing carnelian has enormous source in the beds of small rivers near Ratanpur village in the Bharuch district and along the banks of the Narmada river near the town Rajpipla (Sahni 1948). Both these source areas are quite distant from Jaidak and the satellite settlements in its neighbourhood. Thus there seems to be a possibility that the people of Jaidak obtained the raw material from the resource area, more accessible to them, and transported after an initial sorting or chipping to other sites like Bagasra, where they hoarded it for further processing. It is therefore quite possible that the large volume of lithic flakes and nodules found at the site actually are the remnants of the preliminary process of checking and selection carried out at Jaidak (UGC-SAP Report 2006-07).

The shell beads actually recovered from the site outnumber the stone beads, but there is no evidence what so ever to suggest that these were produced at the site. Besides, there are objects shaped out of the shell collumella as well as isolated fragments of both T. pyrum and C. ramosus are reported from some of the trenches. Again, these do not suggest any kind of local production of these items. It is particularly surprising that, in spite of being so close to the Arabian Sea and the Gulf of Kachchh, the site did not indulge in to the production of shell item. In contrast to this the vigorous shell working sites of the Classical Harappan at Nageshwar (Hegde et. al. 1990) about 80km northwest and Bagasra (Sonawane et. al. 2004) about 50km northeast of Jaidak (Pithad). These two were the main centres of Harappan shell craft along the Saurashtra coast of the Gulf of Kachchh, apart from Lothal close to the Gulf of Khambat. It appears the inhabitants at Jaidak either did not have the know-how or the necessary infrastructure to produce and trade the shell items. Many of the Sorath Harappan sites such as Rojdi, Kuntasi, etc. too betray this fact. Ironically it is only at the Classical Harappan sites one comes across extensive shell working. The Sorath Harappans it appears did not indulge much in shell production, but were more familiar with finished ornament that they received from their
Classical Harappan counterparts. However, the two enigmatic herring bow or bobbin-shaped objects, found one each from the two seasons of excavation, must have been given the specific shape at the site itself, to serve a particular purpose which is not easy to identify. There are also one or two polished and rounded collumella portions perhaps in the preliminary stage of making the bobbin-shaped objects. Objects similar in shape are not reported either from the Sorath Harappan or from any of the Classical Harappan sites, and hence are peculiar to Jaidak.

Contrary to the general dearth of evidence for major craft activities at Jaidak, copper working has some substantial proof of being carried out at the site. Circular kilns found in the southern end of the site inside the fortification wall are smaller and not associated with ash. But the entire area is very much mixed with ash and vitrified nodules of clay and kiln fragments showing high intensity fire. It is not sure if these circular structures were indeed used as pottery kilns or for baking some other items. It is also interesting to note that two crucible like thick clay containers with a broad bottom tapering to a constricted circular top are found at the centre of one of these circular kilns. It appears that these two are not in their *in situ* position and were probably inverted for removing the mould attached to it. Although these crucibles are filled with dark ash and charcoal there is no indication of metal sticking on its walls as is expected if it was used for melting copper. In fact crucible fragments with copper still sticking on to them are found in the trenches in the southeastern corner within the fortification wall as well as in one of the trenches on the western side. Large heaps of heavily backed clay or kiln fragments are also found adjacent to one of the southeastern corner trench as these over burnt, stone-like hard-burnt kiln materials were used for filling the fortification wall instead of stone blocks. It is therefore quite sure that copper working was certainly carried out at the site with much vigour, although the wealth of copper artifacts reported from the site may not reflect the actual intensity of the craft production.

Copper working activity has also been reported from Kuntasi. It is interesting to note that similar double spiral ring found at Kuntasi is also reported from Jaidak. It is
difficult to ascertain the whether they were made at any one place or produced simultaneously at both the sites. However the former assumption seems to be closer. Khetri belt in northern Rajasthan and Ambaji in northern Gujarat are considered to be one of the main sources of copper for the Harappans (Agrawal 2000; Agrawala 1984; Allchin and Allchin 1982; Asthana 1993; Chakrabarti and Lahiri 1996; Dhavalikar 1997; Kenoyer and Miller 1999; Pascoe 1931; Sana Ullah 1940). The Harappans who were an enterprising community must have exploited the local resources in Gujarat. In this context mention may be made of the occurrence of copper ore in the Amreli district (Dhavalikar et. al. 1996). Several other localities in Gujarat which extends from the Sabarkantha and Banaskantha districts; the Panchmahals and Baroda districts; and the native occurrences in the Deccan Trap area of the Jamnagar, Bulsar (or Valsad) and Rajkot districts have been reported to contain copper deposits (Raghunandan et. al. 1981). It may be pointed out that for the Harappans at Jaidak obtaining copper from the surrounding region in the Jamnagar and Rajkot districts appears to be the most feasible source. Therefore such large reserves of copper in Gujarat perhaps also attracted the Harappans from the Sindh and Punjab region to explore and later settle in these areas which provided a number of other raw materials besides copper.

Internal trade links with northern Rajasthan have already been mentioned above. Harappan contact with North Gujarat chalcolithic communities especially is evidenced at Loteshwar and other sites where introduction of Harappan technology and use typical Harappan material has been observed (Ajithprasad 2002). Moreover the presence of non-Harappan ceramic types in Surkotada IB (Joshi 1972) levels as well as at Lothal along with the Harappan wares and the Micaceous Red Ware (Rao 1985) probably suggest the interactive sphere with north Gujarat which continued even in the Rangpur IIB, IIC and rarely with Rangpur III sites.

The interaction has a long history behind which begins with the hunter-gatherers in North Gujarat as evidenced from the site of Langhnaj. Langhnaj (Sankalia 1965) is a microlithic camp-site of the hunter/gatherers. It was proposed by Possehl (1976, 1980)
that there existed an interaction between the hunter/gatherer community of Langhnaj and the chalcolithic community at Lothal. This was based on the presence of a copper knife along with Harappan steatite disc-beads and black-and-red ware pottery. The calibrated date from Langhnaj perfectly falls in line with the occupation at Lothal (Rao 1985), which is a production center for copper and beads. Further a close phenotype resemblance between the skeletal remains of both Langhnaj and Lothal (Possehl and Kennedy 1979; Kennedy et. al. 1984) are worth mentioning. Thus from the above data it may be proposed that the not only the chalcolithic communities of the North Gujarat Plains but also the hunter/gatherer communities, who lived on the periphery of the Harappan settlements played a significant role in the internal exchange network for the Sorath Harappans. They acted as agents for bringing in raw materials to these sites in exchange for finished manufactures and agricultural produce (Possehl 1976; 1980).

Pottery production at Jaidak is also indicated by a number of kilns unearthed in the trenches in the western half of the citadel and also probably in the southern portion. A kiln in one of the trenches is plastered with fine clay, showing evidence that a part of the clay wall was projecting over ground. In fact this kiln show successive repair and reuse as multiple layers of the clay used to plaster the kiln wall could be easily identified in the remains. Quite often, within and adjacent to the kiln in these trenches, are found several kiln wasters along with vitrified, over-fired and partly deformed sherds. One of the kilns in the western half was associated with a stone structure that probably would have been a potters place. There is also evidence showing the presence of storage vessels of the potters in this particular area. Beside these another circular kiln was found, which revealed a large 60cm long and 28cm broad charred wooden log. This partly burnt log has some sort of beveling on one side and is about 3cm thick. Several burnt pieces of bone are also found from this circular kiln. Besides a few miniature pots in red ware are found invariably from all the kilns in this western area. It is difficult to ascertain that whether the log was burnt intentionally or was the result of an accidental activity. Whatever may be the case, it did not undergo complete burning due to some external factor.
In order to establish a fairly clear picture of the economic status of Jaidak, it is necessary to review the comparative analysis of the entire data-set from the site with that of the other Sorath Harappan settlements in Saurashtra, for e.g. Rojdi and Kuntasi in the Rajkot district, Babarkot and Orio Timbo in the Bhavnagar district. The chronologies of all these sites, except Orio Timbo are definitely comparable. The earliest Harappan occupation levels at Rojdi and Kuntasi are contemporary to the Mature/Urban Harappan datable to c. 2500/2400 B.C. While at Babarkot the occupation at the site begins around c.2200 B.C., i.e. with the Sorath Harappan. On the other hand Orio Timbo belongs to the post-urban phase showing affinity with Rangpur III. At Jaidak the situation is slightly different. The first inhabitants of the site were the Mesolithic people, although their occupation is reported only from the south-eastern extension of the site, called Jaidak II (IAR 1991-92) and few microliths were reported from mound (Jaidak I) in one of the trenches. This is followed by a gap, after which the main mound is found to be occupied continuously by the Sorath Harappans from c. 2200 B.C. - c. 1700 B. C. The site was partly occupied after a long gap again in the medieval period.

The structural remains unearthed at all these sites reveal that the settlement at Jaidak is the largest both in terms of its size and spread. Other features typical of the Sorath Harappan include the preference to stone as building material, average thickness of the fortification wall being 3m and the presence of polygonal or circular structures. The entire site of Jaidak was occupied during both the phases of Period II, unlike Rojdi and Kuntasi, where the people shifted to another part of the mound in the later phases. This is quite significant because occupation of the entire mound means the residence of a relatively large population. Therefore the sustenance of such a large population definitely required ample resources and a stable economy. Contrary to this, the unimpressive material inventory from the site does not indicate any major production of crafts being carried out at the site. The only exception is the pottery assemblage which is of extremely fine quality.
The nature of the Harappan settlement at Jaidak may be described mainly as an agriculture based society also practising pastoralism and supported by small scale internal trade contacts with neighboring Harappan sites. The site certainly seems to be a normal residential settlement as many small hearths and pits filled with charcoal and wood ashes have been found which were perhaps associated with structures used for domestic activity. Other hearths are associated with craft activities showing evidence of high intensity fire. The areas of workshop were found in the western, southern and eastern portions of the citadel within the fortification wall. The reason for this was perhaps the nearness to the source of water, i.e. the Aji, from the western and southern areas.

These features may be compared with the other sites. At Kuntasi there is no evidence for residence of families but it is stated that the inhabitants were only the artisans with common kitchen and is regarded as an industrial centre and a port (Dhavalikar et al 1996). But there were segregated areas on the mound identified as different workshops of copper, shell, etc. Moreover the river Jhinjhoda, on whose meander the site is located has brackish water and there is no other source of potable water to support a flourishing agriculture. Rojdi and Babarkot, on the other hand, were, like Jaidak residential settlements of agricultural societies with pastoral activities. At Rojdi (Possehl and Raval 1989) the river Bhadar is the source of potable water, and there is evidence showing common grain storage and threshing areas. Also there are storage areas and querns in individual houses. Craft activity however seems limited only to pottery making. Babarkot (Possehl 1994) also is an agricultural settlement with a residential population which is evident from the presence of areas divided into rooms. Here too, there is no evidence of any major craft production other than pottery. Another feature that may be mentioned here is that the fortification wall around all the sites of Rojdi, Jaidak, Babarkot and Kuntasi was constructed not only to protect against the floods in the adjoining rivers, but also preventing trespass of both humans and animals from outside into the settlement. At Kuntasi structures referred to as garrisoned posts near the gates perhaps indicates the measures taken to protect the gates in case of external threat.
The bank of the Aji river on which Jaidak is located is highly fertile supporting in all probability a surplus agricultural productivity. The large size of the settlement and the fairly large resident population however, could not be supported only by agriculture. As mentioned in the foregoing sections Jaidak played a major role in the procurement and distribution of certain raw materials from its accessible resources. These include variegated jasper, agate, chalcedony, etc. which have their resources in the neighboring areas of Jaidak. These materials were transported to the sites such as Bagasra, or even Kuntasi after initial sorting or even chipping in exchange for other finished items of shell, carnelian, etc. or possibly raw materials like chert and copper ore. It may be inferred from the large areas under cultivation during the present times that there is the possibility of a surplus agricultural production. These areas, if not all were under cultivation during the Harappan times, and the fertile black soil could have produced enough for supporting the population at Jaidak as well as providing surplus to exchange for other items of use. There was of course no demand for highly priced materials like lapis lazuli or gold, which is unknown in the Sorath Harappan context. Thus on the basis of the above analysis, it may be stated that Jaidak possessed a fairly sound economic condition at least as compared to Babarkot. On these terms, the site may be placed parallel with Rojdi, which is although much smaller than Jaidak in size, the material inventory definitely supports of it as having a stable economy.

Kuntasi has been described by its excavators as a “Harappan port” and an industrial centre obtaining food-grains from local cultivators in the surrounding area (Dhavalikar et. al 1996). Thus in the Mature/Urban phase with Harappan trade being in full swing Kuntasi enjoyed a flourishing economy, while towards the Late/Post-Urban Harappan phases the economic activity received a setback. This might have affected in turn to some extent the other dependent sites like Jaidak who perhaps supplied raw materials to the sites like Kuntasi or Bagasra or Lothal, and Dholavira. The Period IIA at Jaidak, contemporary to the Mature/Urban Harappan Phase, displays a flourishing economy while we come across a decadent stage in Period IIB or the Post-Urban phase, but this is manifested well only in terms of structural construction. The entire site.
continued to be occupied, exhibiting little change either in the quality or quantity of pottery and other artifacts; since it was supported by a strong agricultural productivity and herding of the animals along with the production of a few craft items. It is therefore obvious that the sites such as Jaidak, Rojdi and Kuntasi were well integrated in the network of the Urban Harappan economic production and quite naturally the economic fortunes of the Harappans were also reflected in these sites (Ajithprasad 2008).

The palaeobotanical remains from the above sites (Rojdi, Kuntasi, Babarkot and Orio Timbo) confirm to the presence of millets from the earliest levels. The study indicates the predominance of three main varieties of millets: *Eluesine sp.* (finger millet or *ragi*), *Setaria sp.* (Italian/foxtail millet) and *Pancium sp.* (little/hog/common millet). Besides, there are other varieties such as *Echinochloa sp.* (sawa millet), *Sorghum sp.* (large millet or *jowar*) and *Pennisetum typhides* (Pearl millet or *bajra*) that appeared at a later period, around c. 2000-1900 BCE (Weber 1998; Reddy 2003). Study of the botanical remains from Jaidak is in its preliminary stage and not ready for any conclusive evidence. Hence an interpolation of the data from the other Sorath Harappan sites and the present-day cropping pattern will aid in providing meaningful information. The climate was not very different from the present in Saurashtra with similar periodic draughts (Weber 1991). The millets are drought-resistant, require little tending with minimal crop management and therefore are best suited to the semi-arid conditions of Saurashtra. Wheat and barley are absent in almost all the sites except at Kuntasi, which are mainly winter crops and require lot of water. These crops together with rice are highly unsuitable for cultivation in the uncertain climate of Saurashtra. Not only that these crops are also a source of fodder for the cattle sheep, goat, etc. the herding animals kept at the site. The millets however have limited nutritional value and must have been supplemented by obtaining other food sources from hunting and fishing. Besides agriculture a part of the subsistence system for these communities depended upon herding of animals, especially cattle.

Agriculture played a dominant role in shaping the economy of a settlement. In this regard the evolution of millet cultivation in Gujarat, more particularly in Saurashtra (for the present study) has been one of continuous debate amongst scholars. The Greater
Indus Valley is not a homogeneous area and several microclimates and ecotones are present (Fuller and Madella 2002). When agriculture is discussed, the great regional differences must be acknowledged (Vishnu-Mittre 1982). Thus in the third millennium BC, when winter crops were the norm in the core areas of the Harappan civilization, the regions east of the main Indus and Ghaggar-Hakra valleys, kharif or summer crops, including millets were already in use (Fuller and Madella 2002). In Gujarat the presence of small millets are reported from Rojdi A (c.2500-2200 B.C.) onwards. The presence of wheat and barley are documented in Gujarat, for e.g. from the site of Kuntasi but their cultivation as principal crops is questioned. Rice husks are present in Rangpur (Ghosh and Lal 1963) and Lothal (Rao and Lal 1985), either used as binding material in mud plaster or surviving as impressions on sherds (Saraswat 1992). The millets continued in use into the Post-Urban phase at Orio Timbo (Rissman, 1985; Reddy 1991). Thus from the above data it is clear that a system of double-cropping, i.e. both kharif and rabi was developed in Saurashtra in the third millennium BCE. Besides, agricultural patterns perhaps have a considerable influence on the food habits of the community which is consequently reflected in the vessels that are used for cooking as well as serving. Thus it can be argued that the predominance of bowls in the Sorath Harappan assemblage therefore is a reflection of this basic diversification in food preparation and its in-take (Ajithprasad 2008).

Meadow refers to this development as the result of two agricultural revolutions, of which ‘....the first involved the establishment in the 6th millennium of the farming complex based principally on rabi (winter sown, spring harvested) crops of wheat and barley and on certain domestic bovids, including zebu, cattle, sheep and goats. The second saw the addition by the early 2nd millennium of kharif (summer sown, fall harvested) cereals, including sorghum, various millets and rice along with new domestic animals including the camel, horse and donkey’ (Meadow 1989). He further states that this revolution could have facilitated the migration of Harappan agriculturists into areas where the new crops could be exploited, such as peninsular India (Meadow 1989, 1996, 1998). The concept of ‘revolution’ and the shifts have also been explained by the core-periphery models (Kenoyer 1991a, 1995, 1998; Lamberg-Karlovsky 1989) which were
aided by the environmental changes. There may have been a certain agricultural conservatism inherent in the bureaucratic urban system of the Harappan Civilization which resisted the adoption of new crops in the core areas (Fuller and Madella 2002), while the periphery may have offered ideal setting for innovations in agriculture and a new urban process.

At Surkotada, millets are reported from the late levels (Vishnu-Mittre and Savithri 1982), while from the site of Pirak, in the Kachi plain, the millets date to around 1600 B.C. (Constantini 1981). The dates from Pirak indicate that millets appeared only in the second millennium, 700 or 800 years after it had been developed in Gujarat. But there is evidence from Rojdi that millets were already in use in c. 2500 B.C. at the site. Possehl (1986) put forward the hypothesis that the millets (finger millet/ragi, pearl millet/bajra, and sorghum/jowar) are of Africa origin, became available through Harappan long-distance trade by the end of third millennium BC and played a crucial role in establishment of agriculture in peninsular India. But the evidence shows that these African millets were incorporated into a pre-existing agricultural system and played no crucial role in the settlement of the Indian peninsula (Fuller and Madella 2002). Weber (1998) and Meadow (1998) have suggested that the African millets appear to be adopted into a region where there is evidence for indigenous millets already present and evidence from the Deccan further suggests that the first cultivation was entirely dependent on indigenous pulses and millets and could have provided a pre-existing monsoonal cropping system (Fuller et al. n.d.). Thus it is unlikely that it was the Harappans who came to Gujarat in around c. 2500 B.C. authored the new cropping pattern, unaware of the intricacies of the climatic fluctuations in this region. The onus of this evolution lies on the regional Chalcolithic communities of Gujarat, who were more familiar with the local environment, the fluctuations of the monsoon and the soil types, to have evolved the summer cropping, i.e. cultivation of the drought-resistant millets after centuries of trial and error (Sonawane 2004). The Harappans simply must have adapted this cropping strategy into their subsistence regime.
In Saurashtra the records mention the presence of the earliest food producing economy at Somnath or Prabhas Patan (Possehl and Dhavalikar 1992). The earliest occupation at Prabhas goes back to 3000 B.C. and has two ceramic traditions one of which shows an affinity with the pottery from greater Indus Valley and Baluchistan (Possehl and Raval 1989). The Period II (2000-1700 B.C.) is marked by a set of ceramic assemblage called the Prabhas ware. The Prabhas pottery has the typical hemispherical bowl common with that of the Sorath Harappan assemblage although the clay fabric and surface treatment are different. The Prabhas ware has a fairly wide distribution in Saurashtra and is reported from many sites including Rojdi. The presence of a Non-Harappan ceramic tradition contemporary to the Harappan culture in Saurashtra prior to the Harappan occupation in the region is very intriguing. Scholars like Possehl and Ajithprasad therefore have hinted at a link between the origins of the Sorath Harappan in Saurashtra with that of the Pre-Prabhas. This still remains a mere proposition and needs a deeper research to provide a solid basis to it. However, few points may be put forward in favour of it. Since Pre-Prabhas implies the earliest chalcolithic communities in Gujarat, a line of development of the Sorath Harappans has been attempted to trace from it. Most important is the agricultural evolution of the double cropping strategy which in all probability could have developed indigenously in Gujarat and not introduced by other chalcolithic communities coming from outside. Thus the chronological priority for this innovation remains in Gujarat, not on the Kachi Plain where events seem to have lagged behind the “core area” for these changes by several centuries (Possehl 1992).

7.4 Decline and Disintegration of the Sorath Harappan Settlements

The picture emerging out of the present study is that two categories of settlements existed during the Mature Harappan phase in Gujarat. The first is represented by the Classical Harappan sites at Dholavira, Surkotada in Kachchh and Bagasra, Lothal in Saurashtra, etc. exhibiting all the grandeur of the Harappan Civilization with large sized fortified settlements, massive brick architecture, elaborate material inventory and a flourishing economy mainly based on external trade contacts. The second category of sites are mainly concentrated in Saurashtra, called the Sorath Harappan at Rojdi, Kuntasi,
Rangpur, Jaidak, etc. These settlements are also fortified and are of fairly large size, having stone built architecture, a less elaborate material inventory with an agro-pastoral economy based on millet cultivation and participating in an internal trade. The economic interaction between these sites has been discussed in detail in the foregoing sections. The number of sites shows an increase during the Mature/Urban Phase, i.e. both during Rojdi A and B phases. While we come across a tendency of decline in the site counts in the Post-Urban or Rojdi C phase. Not only that there is also a fall in the average area occupied by a site and they appear to be ephemeral in nature. Most of these sites in Saurashtra come to an end after the Rojdi C phase. Only a few appear to continue into the Lustrous Red Ware or Rangpur III phase. These definitely indicate a change in the system of settlement, subsistence and the socio-cultural process.

In Gujarat both the categories of Mature Harappan phase settlements depended at least in a part for their subsistence on animal husbandry, mainly of cattle. The second category of sites or the Sorath Harappan sedentary agriculture was supplemented by pastoralism, due to the drought prone climatic conditions in Saurashtra and therefore had taken up the cultivation of millets. Reddy (1994) suggests that the cultivation of millets provided both animal fodder and grains for human use. It is suggestive of the fact that animal husbandry was given much importance at these settlements. Pastoral activities seem to have increased substantially during the Late Harappan Phase (Bhan 1989; 1994). This was the result of the combined effect of the increasing aridity and hydrological changes that were taking place between c.1900-1700 B.C. (Shaffer and Lichenstein 1989) and the gradual breakdown of the Harappan cultural framework. The Post-Urban phase in Gujarat after 1700 B.C. is marked by the Lustrous Red Ware which is the final period of Harappan tradition in Gujarat. Most of the Post-Urban sites in Gujarat have been interpreted as small-scale rural villages. Settlements unearthed at Ratanpura (Bhan 1989), Zekhada (Mehta 1982), Kanewal (Mehta et. al 1980) in north Gujarat, Vagad (Sonawane and Mehta 1985) and Nesadi (Mehta 1984) in Saurashtra have revealed the remnants of circular huts, while Orio Timbo in Saurashtra shows no association of the Rangpur III occupation at the site with any architectural remains. Towards the close of the Post-Urban phase with the disintegration of the large agricultural settlements, a trend of partial re-
emphasis on herding over cultivation had become the trend of some of the settled population (Rissman 1985). A proliferation of these pastoral encampments all over Gujarat signifies the movement of the groups in search of suitable habitat both for the herd and the herders. Thus the areas that seemed to have provided an excellent breeding ground for the animals, providing grasslands rich in minerals and salts, and water were occupied seasonally by these moving groups of pastoralists.

The transition from Rangpur III phase to the next period in Gujarat in not known from any of the sites without an intermittent gap. The Lustrous Red Ware show limited distribution in other sites in Saurashtra but its presence is encountered although in small amounts in sites of Ahar, in Rajasthan (Sankalia, Deo, Ansari 1969), Navadatoli in Madhya Pradesh (Sankalia, Deo, Ansari 1971), and Chandoli in Maharashtra (Deo and Ansari 1965).

The cultural tradition in Gujarat possessed a long sequence both preceding and succeeding the Harappan Civilization, changing significantly overtime and varying across the length and breadth of the state. Gujarat has been the hub of Harappan activity, located beyond the core urban centers in Sindh and Punjab, showing individuality in the regional styles and thereby assuming a place of importance within the Harappan cultural ethos. The Harappan tradition represents a great unifying trend spread over a large area, while giving way to the regional moorings, with different degrees of interaction producing varied manifestations. Thus one such manifestation is the Sorath Harappan in Saurashtra, the southern peripheral zone of the Harappan domain.