

# EARLY FARMING COMMUNITIES OF GUJARAT, INDIA

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## ABSTRACT

*Unlike the fertile tracts of the Indus Valley, none of the rivers in Gujarat lend themselves to irrigation using ancient technology. Agriculture here is entirely dependent on dry farming techniques. As a result, alternative subsistence strategies were adapted by the Harappans and allied Chalcolithic communities to suit environmental settings. In order to compensate for scarcity and to minimize the risk of periodic rainfall fluctuation, one can hypothesize an extensive land use pattern which took advantage of total available subsistence potential. The wide range of site locations not only highlights the adaptive skills of the enterprising Harappans but also throws light on how the regional Chalcolithic cultures engaged in agricultural and pastoral subsistence activities.*

## THE ENVIRONMENTAL SETTING

Physiographically, Gujarat constitutes three distinct zones: Kutch, the Saurashtra peninsula or Kathiawad, and mainland Gujarat. The mainland of Gujarat is further conventionally subdivided into northern and southern segments by the Mahi river. The region between Mount Abu and the Mahi River forms the arid zone of north Gujarat, while the region between the Mahi and Damanganga rivers forms the fertile alluvial tracts of south Gujarat.

Kutch is a vast-desert like expanse of mixed soils dotted with low hills which break the monotony of the landscape. Inland, Kutch is bordered by desolate salt flats known as Ranns - the Great and the Little. The Ranns of Kutch were originally shallow bays connected to the sea. These bays have been gradually filled with silt and sand carried down from the minor rivers of the adjacent highlands of Rajasthan and the western Nara of Sind (Roy and Mehr 1977).

The peninsula of Saurashtra (Kathiawad) forms a rocky tableland fringed by coastal plains. A major portion of Saurashtra is occupied by Deccan lava flows. The central

part is made up of an undulating plain broken by hills and considerably dissected by various rivers (Bhadar, Kalubhar, Sukhbhadar and Bhogavo) flowing in all directions. Saurashtra has vast tracts of rich black cotton soil derived from weathered basalt, known for their moisture retaining capacities.

North Gujarat is a semiarid, sandy plain, dotted with fossil sand dunes and attendant blowouts. The region extends in the north up to the southern Rajputana and gradually merges into the alluvial plains of Saurashtra towards the west, and central Gujarat further south. The region is drained by the rivers Banas, Saraswati, Rupen, Sabarmati and their tributaries, which are fed by monsoon rains. Except for the Sabarmati, which flows into the Gulf of Cambay, the rest disappear into the Little Rann of Kutch. None of these rivers, except the Sabarmati, are perennial so they are ill-suited for irrigation.

South Gujarat extends south towards Maharashtra and is bounded by the Satpura and Sahyadri Ranges. The Gulf of Cambay (Khambhat) and the Arabian Sea form its western boundary. It is an alluvial plain developed by the Tapi, Narmada and Mahi rivers, known for its fertile black cotton soil. However, the *Bhal* and *Bhalbaru* region of the Gulf of Cambay, occupying a strategic position between Saurashtra and north and South Gujarat, is characterized by sandy and silty soils, with brackish subsoil water. Present-day cultivators generally avoid this region due to its susceptibility to flooding during monsoons. However, this tract has given rise to rich pastoral grasslands (Bhan 1989:129).

Gujarat lies in the transitional zone between the monsoon climate of Konkan (coastal region of Maharashtra) in the south and the arid region of Rajasthan in the north. Climatic conditions vary greatly and Gujarat can be divided into three major climatic zones. Kutch and the western part of north Gujarat, along the eastern margin of the Little Rann of Kutch and the northern fringes of Saurashtra, form an arid zone. The entire south of Gujarat has a sub-humid climate where annual rainfall ranges from 600 to 1500 mm, gradually

decreasing from south to north. It has a relatively good vegetation cover and tropical dry forests can be seen in the hills near Godhra, Vadodara and Bharuch. The rest of Gujarat experiences a semi-arid climate with an annual rainfall ranging between 600 and 800mm.

Although irrigation has been introduced in some regions recently, the agriculture of Gujarat is characterized by dry farming. Even now, eighty five percent of its agriculture is still rain fed. The majority of crop production occurs during the monsoon season and the harvest is in the autumn (*kharif* crops). The black cotton soil (locally known as *Goradu* and *Bhata*, representing older and younger alluvium, respectively) is labour-reducing. It swells with water during the monsoon season and later develops deep cracks as the dry season continues (Rissman 1985: 164). Even today, in most parts of Gujarat, hoeing with blade harrows is practiced as a substitute to ploughing. Annual ploughing to destroy weeds is not necessary because only one crop is grown each year (Patel 1977:39).

The subsistence crops of Gujarat are dominated by millets - *bajra* (pearl millet; *Pennisetum typhoides*) and *jowar* (sorghum; *Sorghum bicolor*). Pearl millet is cultivated under more acreage than any other crops (Patel 1977:47). It is the mainstay of the semi-arid and arid regions of Gujarat because it has a short maturation period of 85-90 days, the shortest among the common cereals. It is drought resistant and also provides much-needed fodder for cattle (Patel 1977:62). Sorghum replaces pearl millet in south Gujarat as the most popular food grain. It is a sturdy crop of deep and heavy soils and can be raised either in the summer (*kharif*) or the winter (*rabi*) season. Again, like pearl millet, it is an excellent fodder for cattle.

The major food grain produced in the *rabi* season is wheat. Its production is restricted due to a dependence upon irrigation. However, it can also be grown without irrigation in the low-lying saline strips of land which border the Gulf of Cambay, and in the *Bhal* tracts (Patel 1977:98). The *Bhal* and *Bhalbaru* tracts are waterlogged during the monsoon and wheat can be planted in October. The residual humidity in the alluvial black cotton soil is sufficient to permit the maturation of this crop, even with no further moisture input (Rissman 1985:63). The cultivation of rice is confined to restricted areas of the Gulf of Cambay.

The saline wastelands of the region in general, and the western portion of north Gujarat covering the estuaries of the Rupen, Saraswati and Banas rivers in particular, favour excellent growth of many species of wild grasses. These are available immediately after the first monsoon showers and are exploited by the present day pastoral communities of Gujarat for feeding their cattle (Bhan 1994:73). Gujarat is an important source for the famous *kankrej* breed of cattle, and sheep, goat, camels and buffaloes are also kept. Nomadic

or semi-nomadic pastoral communities such as the *Rabari*, *Bharvad* and *Charan* make their living primarily out of breeding and/or herding of these animals. These communities are found distributed in pockets in Kutch, Saurashtra and north Gujarat, as these regions have stretches of open wastelands locally known as *Padthar* in which a variety of grasses and other shrubs grow to support pastoral activities.

## THE ARCHAEOLOGY OF GUJARAT: MESOLITHIC AND AFTER

About 400 Mesolithic sites have been reported from Gujarat. The people who made and used microlithic tools (blades, lunates, triangles, scrapers and other hafted composite implements) were hunters and gatherers who were present prior to the domestication of plants and animals. Important evidence from the sites of Loteshwar (Bhan 1994:74), Ratanpura, Kanewal and Tarsang (Sonawane 1996) indicates that some of these people managed herds of sheep and/or goat, and perhaps cattle, which complemented and added to the food resources they obtained by hunting and gathering. This is in conformity with the parallel evidence obtained from other northwest Indian Mesolithic sites such as Bagor (Misra 1973:72) and Adamgarh (Joshi 1978:83). There are indirect indications of the use of either wild seeds, or perhaps some rudimentary cultivation, in the form of grinding stones found at some sites. Even after the emergence of the earliest farming and stock raising Chalcolithic communities, microlith-using folk continued to live in Gujarat. A study of their material remains suggests a close interaction between Mesolithic and Chalcolithic communities, resulting in a symbiotic interdependence (Possehl 1976, 1980:67-80; Sonawane 1996).

## THE PRE/EARLY HARAPPAN PHASE

Until recently it was assumed that the earliest settled agricultural communities in Gujarat were associated with the Mature/Urban Harappan phase (c.2550-2000 BC) (Figure 1). Recent excavations carried out at Loteshwar (Bhan 1994:77) in north Gujarat, Padri (Shinde 1992) in Saurashtra and Dholavira (Bisht 1997) in Kutch, and the re-analysis of older archaeological data from Prabhas Patan, Lothal and Surkotada, has suggested that prior to the coming of the Harappans Gujarat was already inhabited by regional non-Harappan Chalcolithic communities (Figure 2). Calibrated radiocarbon dates for this cultural phase from Loteshwar, Padri and Prabhas Patan go back to the second half of the fourth and the beginning of the third millennium BC, making them more than half a millennium earlier than any Harappan immigrants. In this regard it is worth noting that Kutch, north Gujarat and Saurashtra have revealed sites of a pre-urban

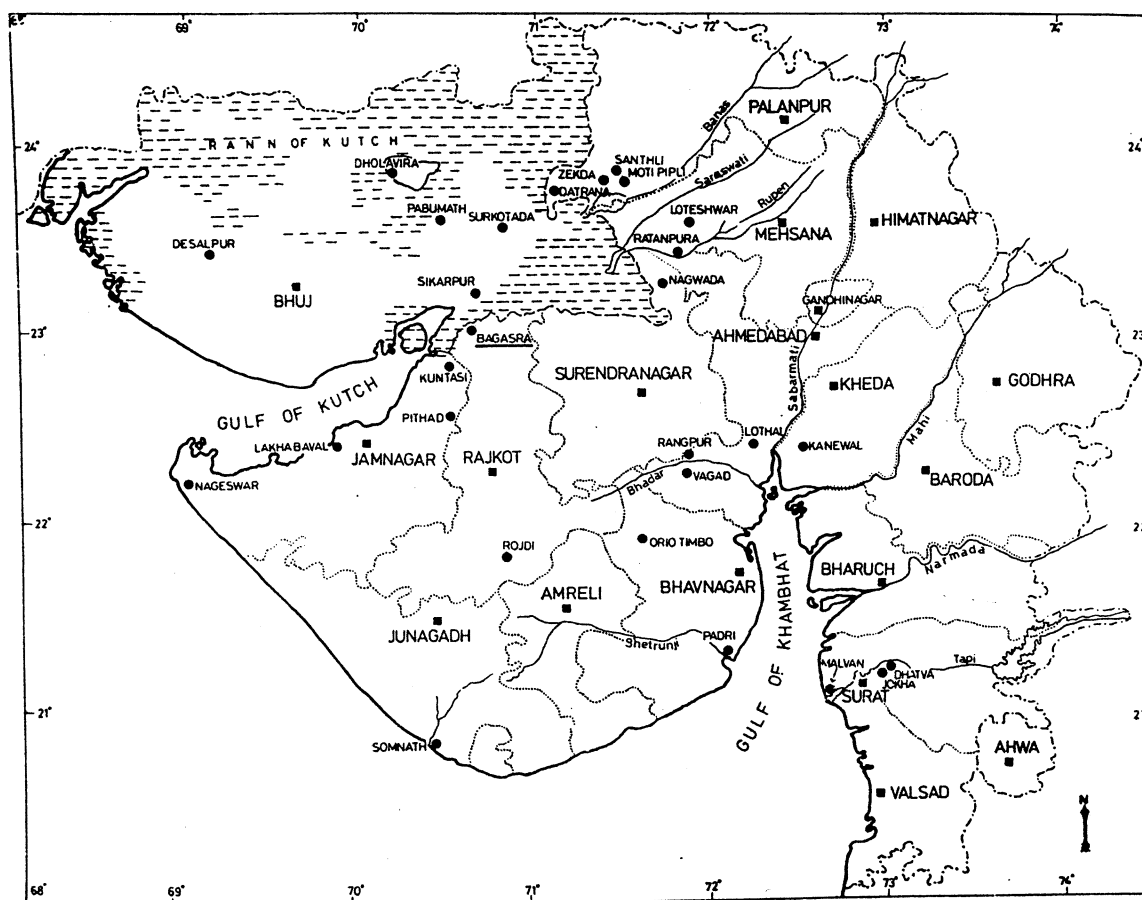


Figure 1: Map of Gujarat showing major excavated Harappan sites (circles).

phase with regional Chalcolithic traditions involving non-Harappan pottery types such as Anarta ware (Ajithprasad and Sonawane 1993), Padri ware (Shinde and Kar 1992), Pre-Prabhas ware (Dhavalikar and Possehl 1992), micaceous red ware (Rao 1985:393; Herman and Krishnan 1994), and black and red ware (Rao 1979:24). Critical reviews of this Pre/Early Harappan phase of Gujarat are available in Sonawane and Ajithprasad (1994:132) and Bhan (1994:77).

From the archaeological data it is apparent that there is considerable cultural diversity in the early levels of most of the sites mentioned above. But apart from pottery and a few other material remains, very little is known about the origin and development of these early village farming communities. However, they played a vital role in the regional manifestations of the Harappan culture and refute earlier claims for a mass migration of Harappans into this region during the Mature/Urban phase.

Equally important evidence regarding the early penetration of Harappans in north Gujarat has been brought forth recently from Nagwada and Santhli. The pottery found with the extended inhumations and in symbolic pot burials does not show similarities with the Mature Harappan pottery, but rather

resembles the vessel forms recovered from Pre-Harappan levels at Kot Diji (Khan 1965), Amri (Casal 1964) and Balakot (Dales 1974). Analogous pottery types have been reported from secondary fractional and pot burials in the cemetery at Surkotada. These too are comparable with Pre-Harappan burials in Sind and Baluchistan (Joshi 1990; Possehl 1997). Stratigraphically, the burials at Nagwada occur below the Mature/Urban Harappan levels (Hegde *et al.* 1988:20). Apart from three symbolic pot burials and two extended inhumation burials at Nagwada, the most significant discovery is that of a double burial at Santhli, where two adults were interred together in the same pit. All these burials were laid in an east-west orientation with their heads to the east. However, no distinct habitation deposits are reported from these sites (Sonawane and Ajithprasad 1994:136).

However, Moti Pipli, another site in the same region, showed a substantial habitation deposit containing a similar type of pottery, but without burials (Majumdar and Sonawane 1996). Further explorations in the same area of north Gujarat have revealed six more sites of this category. At Kot Diji and other sites like Amri and Balakot, from where

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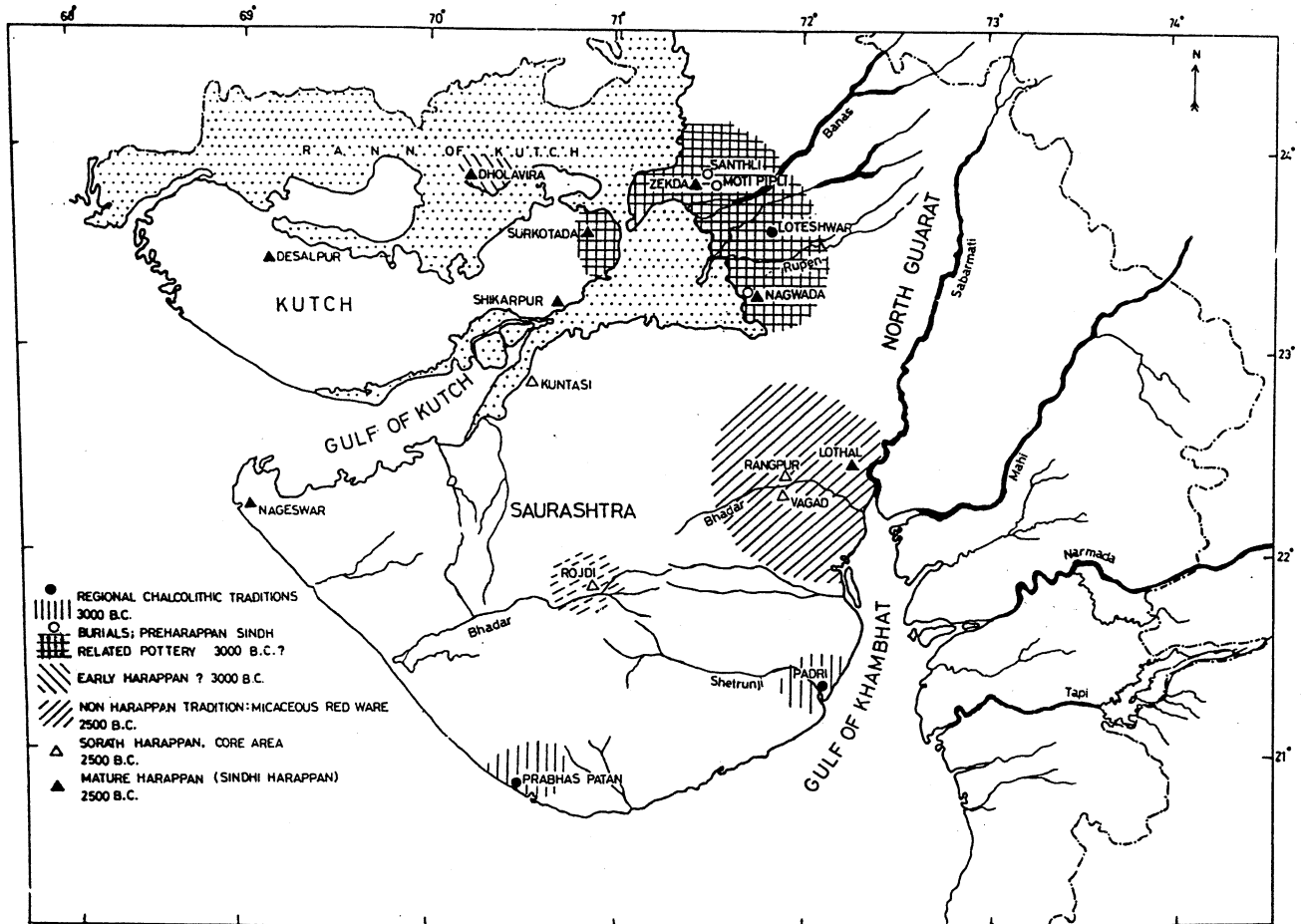


Figure 2: Map of Gujarat showing concentration of regional Chalcolithic and Harappan Culture sites.

analogous pottery is reported, the Pre-Harappan occupation has been dated from the second half of the fourth to the first half of the third millennium BC (Possehl 1993). Elements of Pre-Harappan culture of Sind and Baluchistan extended southwards as far as north Gujarat at a time when this region was already inhabited by indigenous Chalcolithic communities.

Impressive evidence of an early non-Harappan or Pre-Harappan occupation has been brought to light from the recent excavations at Dholavira. A 60-70 cm thick deposit at the bottom of the total 12 m habitation sequence belongs to a Pre/Early Harappan phase beneath a typical Mature/Urban Harappan occupation (Bisht 1991:76). Most pottery of this early phase is a wheel-made red ware of light or pinkish tones treated with a variety of slips, or decorated with incised horizontal grooves. There are examples of red slip, casual smearing with a dull brown pigment, a thick-coated buff paste or a thinly applied white paint. A white colour was often used as a background for simple decorative patterns in black. Little is known about forms, but deep dishes and jars have been reported. Some of the above features of

surface decoration are comparable with the Anarta ware found in north Gujarat on the one hand, and the burial pottery recovered from Nagwada related sites in the same region on the other. They show generic similarities with the Amri, Nal and Kot Diji complexes (Dhavalikar and Possehl 1992:77; Sonawane and Ajithprasad 1994:134).

## THE MATURE/URBAN HARAPPAN PHASE

Recent advances have drastically changed earlier interpretations about the Mature/Urban Harappan phase in Gujarat. Possehl and Raval (1989) claimed that regionality existed during the Harappan after a systematic analysis of the excavated material from Rojdi. Although some classical Harappan traits are found at Rojdi, the ceramic assemblage has nothing in common with Mature/Urban Harappan pottery as represented in Kutch and Sind. However, new radiocarbon determinations indicate that the early levels at Rojdi were contemporaneous with the Mature/Urban Harappan. As a result, two distinct categories of settlement can be identified in Gujarat: (1) sites with classical Harappan traits, and (2)

sites with regional manifestations of the Harappan, proposed by Possehl to belong to the Sindhi and Sorath Harappan domains respectively (1992:129).

In this context, it is imperative to note that in more than five hundred sites in Gujarat with different degrees of Harappan and non-Harappan affiliation, settlements representing the Mature/Urban phase (Sindhi Harappan) are few and far between. Out of 25 settlements in this category, 15 are situated in Kutch and the rest are sparsely distributed in other parts of the region. Location-wise, these sites can be broadly categorized as coastal settlements, situated either on the seacoast or on the margins of the Ranns, which are hypothesized as originally forming an arm of the Arabian Sea. From the site distribution pattern it appears that these sites are more frequent in the eastern parts of Kutch than in the coastal area of Saurashtra, including the eastern margins of the Rann of Kutch. The discoveries of Lothal, Nageswar, Padri, Kuntasi and Bagasra in Saurashtra; Nagwada and Zekhada in north Gujarat; and Dholavira, Shikarpur, Surkotada and Pabumath in Kutch, all located on the coast or along the margins of the Ranns, amply demonstrates that these settlements were engaged in specialized craft production as industrial/manufacturing centers, or served as trading-cum-administrative centers, or both. Their locations clearly demonstrate that they were settled mainly for trade and access to raw materials required by the Harappan urban centers.

Almost all these sites are associated with the manufacture of specialized items of semi-precious stone, steatite, faience, chank shell, ivory and copper for the purpose of trade. Regional centers like Lothal and Dholavira definitely acted as trading and administrative stations, demonstrating the dependence of the central Indus urban centers on the outlying resource regions of Gujarat. Some of the settlements in Kutch, like Surkotada and Pabumath, acted as garrison defence outposts in order to control the resources located further south and east. It is worth noting that quite a few of these sites were strongly fortified.

Sites representing the Sorath Harappan regional manifestations are more frequent in central Saurashtra. Although their precise number is not known they certainly outnumber here the Sindhi Harappan sites. Considering the recent radiocarbon dates of Rojdi A and B and Vagad IA, all the reported sites of Rangpur phases IIA and IIB in Saurashtra now fall in the time bracket of the Mature/Urban Harappan phase. But in the archaeological literature, sites related to Rangpur IIB and IIC are generally grouped together, although culturally the two phases are not alike. Long ago, Misra (1965:45) argued that Rangpur IIB is a part of Rangpur IIA, a view supported by Herman (1997:191). Rojdi A and B are correlated with Rangpur IIA and IIB as Mature/Urban Harappan, so logically Rojdi C

and Rangpur IIC must be Post-Urban. However, unless good cultural and chronological markers are recovered, the precise number of sites in each period will remain unknown. Hence caution has to be exercised in periodization of the Harappan in Gujarat (Bhan 1989:235, 1992:181; Possehl 1992).

From the aforesaid data, it is quite clear that the southward expansion of the Mature/Urban Harappan into Gujarat was marked by an accelerating process of acquiring natural resources by colonizing selective ecological regions, a process driven by the requirements of trade rather than political domination (Sonawane 1992:169), similar to the establishment of the initial European colonies in India during the 17th century. Prior to the arrival of the Harappans, Gujarat was already inhabited by local/indigenous Chalcolithic communities with whom the immigrant Harappans interacted. Non-Harappan elements often predominate over Harappan, as seen in the ceramic assemblages recovered from the earliest levels at Lothal (Rao 1979:28) and Nagwada IB (Sonawane 1994-95:5).

Some excavated sites, such as Desalpur, Surkotada, Pabumath, Shikarpur and Dholavira in Kutch; Lothal and Bagasra in Saurashtra; and Nagwada in north Gujarat have most of the diagnostic elements of the classic Indus Civilization in terms of pottery, copper tools, architecture with standard-sized bricks, stone cubical weights, seals and sealings with script, etched carnelian beads, long parallel-sided chert blades of Rohri origin, and terracotta triangular cakes. On the other hand, sites such as Nageswar, Kuntasi, Padri, Rangpur in Saurashtra, and Zekhada in north Gujarat, do not possess all these markers of Urban Harappan. While the Rojdi A and B occupations fall within the Urban phase, the material inventory is also quite different in detail from that of Mature Harappan sites in Kutch and Sindh (Possehl 1992:129).

Since the focal theme of this paper is related to the early farming communities of Gujarat it is pertinent to review now the Harappan period palaeobotanical evidence obtained from this region. Recent detailed information is available from Rojdi (Weber and Vishnu-Mittre 1989:177), Kuntasi (Kajale 1996:285) and Sikarpur (Saraswat 1992:528) for this cultural phase. In the absence of craft activities or industrial production, agriculture with herding seems to have been the mainstay of the subsistence system of the Sorath Harappans. Three plants are especially important in this regard; pearl millet, sorghum and finger millet (*ragi*; *Eleusine coracana*). At Rojdi, finger millet forms the most important plant right from the beginning of the settlement (Weber and Vishnu-Mittre 1989). Other plants, sharing the same hardy features with finger millet, such as foxtail and broomcorn millet (*Setaria italica* and *Panicum miliaceum* respectively), are also present in Rojdi A (c.2500-2200 BC). These plants are drought resistant, need little care, and do well in the uncertain

climate of Saurashtra. Barley was also recovered from Rojdi A. Finger millet continued to be a significant cultivar during Rojdi B (c.2200-2000 BC), but in this phase there was also a significant increase in the presence of *Chenopodium album*, a wild (possibly tended) plant (Weber and Vishnu-Mittre 1989) harvested in the spring, prior to the monsoon. Though the presences of wheat and barley are documented in Gujarat, unlike in Sind and Punjab their success as principal cereals has been questioned. Rice husks are present in Rangpur and Lothal, either used as binding material in mud plaster or surviving as impressions on sherds (Saraswat 1992:528). The millets continued in use into the post-Urban phase at Oriyo Timbo (Rissman 1985; Reddy 1991:80).

From the aforesaid data it is clear that the system of double cropping, i.e. *kharif* and *rabi* or monsoon and winter crops, was developed in Saurashtra as early as 2500 BC, at the beginning of the Urban Harappan phase in Gujarat. This development perhaps reflected a reaction to the presence of recurrent risk (Possehl 1992:135). Meadow refers to this development as the result of two agricultural revolutions, of which

The first involved the establishment in the sixth 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 second 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 (1989:61).

Surprisingly, most of the above elements were in fact part of the third millennium BC subsistence system in Gujarat. Domestic animal presences include horse from Surkotada, Lothal, Kuntasi and Shikarpur; camel from Surkotada, Zekhada, Pabumath and Rojdi; and onager from Surkotada, Shikarpur, Kuntasi and Rojdi (Thomas and Joglekar 1994:185). Moreover, the chronological priority for these developments of a summer cropping regime lie in Gujarat and not on the Kachi plain, where events seem to have lagged behind Gujarat for seven or eight centuries.

#### THE POST-URBAN HARAPPAN PHASE

There is no abrupt end to the Mature/Urban phase, and continuity into the Post-Urban phase is recognised in the occupations of Lothal B, Rangpur IIC and III, Rojdi C, Kuntasi II (Dhavalikar *et al.* 1996), Padri IIIB (Shinde 1992), Prabhas Patan II and III (Dhavalikar 1995:27), Vagad IB and IC (Sonawane and Mehta 1985) and Dholavira stage VI and VII (Bisht 1997:117). The excavations at Kanewal (Mehta *et al.* 1980), Nesadi (Mehta 1984), Ratanpura (Sonawane 1994-95) and Oriyo Timbo (Rissman and Chitalwala 1990) have also demonstrated the existence of this Post-Urban Harappan phase.

Among the distinctive features of the Post-Urban Harappan settlements in Gujarat, the first and foremost is the general economic decline in material culture and a gradual process of de-urbanization. Since the prosperity of the Urban Harappan settlements was dependent on trade, they suffered a decline as soon as trade began to dwindle at the opening of the second millennium BC. Nageswar, Nagwada and Surkotada reveal such adverse effects. A shift towards increased aridity is also regarded as another factor behind this change.

Although certain forms like the "Indus goblets", beakers and S-shaped jars almost disappear in the Post-Urban Harappan, other characteristic ceramics, including the perforated jar, continue with slight changes in shape and decoration. However, fabrics become coarser and linear patterns in painted design became common in contrast to the diagnostic Mature Harappan naturalistic decoration. Lustrous red ware, characterized by a polished red slip, was introduced in the upper levels of Rangpur IIC and became the prominent ceramic type during Rangpur III. The white-painted black and red ware also became more conspicuous. Prabhas ware, distinct from the lustrous red ware, was treated with a pinkish or orange wash with purple or dark brown painted designs, mostly set in panels. Graffiti on pottery, some resembling signs of the Harappan script, also occur, reminding us of continuity from the earlier tradition. Although the classical reserved slipware totally disappeared, a crude imitation lingered at a few sites.

The Urban to Post-Urban transformation is not reflected in ceramics alone. Among other artifacts, the chert imported from the Sukar Rohri hills of Sindh in Pakistan to make long blades was no longer available. Smaller blades of locally available chert and chalcedony were substituted. Perhaps for the same reason, the cubical chert/agate weights so diagnostic of the Urban phase no longer occur and were replaced by truncated spherical weights of sandstone and similar material. Although terracotta beads become common, semi-precious stone beads and shell objects diminished in quantity. The absence of steatite beads, in spite of local availability of the raw material in certain regions, again reflects on the restricted movements of people. Terracotta triangular cakes and stamp seals with only inscriptions, devoid of the usual animal or other figurative depictions, occur occasionally. The overall decline in the material culture of this phase is also reflected in the frequency of metal objects.

A deterioration in urban settlement patterns is also very explicit. The acropolis, warehouse and dockyard at Lothal were abandoned. Even house floors were now paved with brickbats collected from earlier constructions. At Dholavira, during phases VI and VII, the one-time city shrank to a small settlement confined to the citadel and southern margin of

the middle town, which was delimited by a wall of an entirely different workmanship. As in Lothal, there was no control over planning of the settlement. Circular residential structures built without the use of bricks also suggest adverse economic conditions. Stone structural remains found at Rojdi and Kuntasi, and mud constructions at Prabhas Patan and Padri, reflects an overall decline in the planning of these settlements. Archaeological data witness clear signs of shrinkage in the sizes of settlements.

Settlements with non-durable architectural features comprising simple round huts with wattle-and-daub walls occur at Kanewal, Vagad, Ratanpura and Nesadi. These sites have been interpreted as small rural village or dry season pastoral camps. In this context, it is interesting to note that Flannery (1972) and Binford (1990) have both suggested that round huts generally associate with seasonal occupation. It can be inferred that there was a considerable component of semi-nomadism during the Post-Urban Harappan times (Varma 1991).

Intensive surveys carried out by Chitalwala (1979), Momin (1979), Possehl (1980), Bhan (1886) and by the team of archaeologists from M.S. University of Baroda (Ajithprasad and Sonawane 1993), particularly in Saurashtra and the western part of north Gujarat, reveal that most sites occupied during Rangpur period IIB (Urban phase) continued in use during period IIC (Post-Urban phase). However, there was a marked decline in the number of settlements occupied during Rangpur period III, characterised by the lustrous red ware (Bhan 1992). The recently discovered sites in north Gujarat offer a good example of a dispersed type of settlement pattern, in contrast to the linear-dendritic pattern in Saurashtra. The latter was mostly controlled by river systems, whereas in north Gujarat it was based on the locations of relict sand dunes associated with inter-dunal ponds. While the majority of the Saurashtra sites were based on an agrarian economy, those of western Gujarat favoured pastoral activities, evidenced by thin cultural deposits and large frequencies of animal bones (Bhan 1992:175; Sonawane 1994-95:8). An important feature of these western Gujarat settlements is that there are small clusters of two or three sites and the average distance between two such clusters is not more than 10 km.

The migration of present-day pastoralists from Saurashtra and Kutch to north Gujarat is a well-known phenomenon (Bhan 1994:84). These pastoralists, particularly the *Bharvad*, *Rabari* and *Charan* communities, visit these northern areas during seasons when sufficient fodder is available. They return to the same region repeatedly, establishing short-term camps. This pattern of migration would account for the thin patchy habitation debris. On the other hand, only ten sites of this Post-Urban phase have been reported from Kutch so

far. It seems, after having served as a corridor during the Urban/Mature phase, most of the sites in Kutch were abandoned, most probably because of its inhospitable terrain and climate. Except for Dholavira, the Kutch Post-Urban sites are not located over Mature Harappan predecessors.

As already noted, there is believed to have been a gradual shift in the subsistence strategy from farming to herding towards the closing centuries of this phase (Varma 1991). This brought the Gujarat populations into contact with the neighbouring Chalcolithic communities of the Banas Valley and Malwa. Such contacts can be observed at Jokha (Mehta and Chowdhary 1971), Dhatva (Mehta and Chowdhary 1975) and Ratanpura (Bhan 1989:231; Sonawane 1994-95:9). The presence of lustrous red ware in Navdatoli phase III and Ahar IC also supports this assumption.

Considering the chronological position of Rojdi C and the absence of urban elements after c.1900 BC, it is clear that Rojdi C and Rangpur IIC mark the beginning of the Post-Urban Harappan phase in Gujarat. Radiocarbon determinations date the whole phase to 1900-1400 BC (Table 1).

#### CONCLUDING REMARKS

Between the fourth and second millennia BC in Gujarat there existed a mosaic of different adaptations such as hunting and gathering, pastoralism, agriculture and various specialized craft production strategies. Hence we see not only regional diversity in the manifestations of the Harappan culture in Gujarat, but also the capacity of the Harappans to mobilize different subsistence systems by integrating them into their economic structure. In addition, the integration of the Harappan culture with indigenous counterparts offers an interesting situation in terms of the processes of cultural transformation. Regional diversity is now an accepted phenomenon of the Harappan, for which the role of the regional Chalcolithic traditions can be held responsible. Moreover, fresh data brought to light from recent studies have revealed that some of the non-Harappan indigenous settled communities emerged on the scene more than half a millennium prior to the beginning of Mature/Urban Harappan phase in Gujarat. However, in spite of the considerable overall advancement in Harappan studies, the information pertaining to the exploitation of plants for sustenance in this region is still inadequately addressed.

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Table 1: Radiocarbon Dates from Important Sites Under Review

Site	Number	5568 BP	5730 BC	Calibrated	Cultural Period
Loteswar	PRL 1564	4460 $\pm$ 110 BP	2510 $\pm$ 110 BC	2921 BC	Pd. II - Anarta Tradition
Loteswar	PRL 1565	5050 $\pm$ 110 BP	3100 $\pm$ 110 BC	3698 BC	Pd. II - Anarta Tradition
Padri	PRL 1785	4390 $\pm$ 90 BP	4520 $\pm$ 90 BC	3048 BC	Pd. I - Padri Ware
Padri	PRL 1787	4820 $\pm$ 100 BP	4960 $\pm$ 100 BC	3680 BC	Pd. I - Padri Ware
Prabhas Patan	PRL 90	4240 $\pm$ 110 BP	2415 $\pm$ 115 BC	2892 BC	Pd. I - Pre Prabhas
Prabhas Patan	TF 1287	4280 $\pm$ 105 BP	2460 $\pm$ 110 BC	2911 BC	Pd. I - Pre Prabhas
Rojdi	PRL 1284	3810 $\pm$ 100 BP	1960 $\pm$ 105 BC	2283 BC	Pd. A - Sorath Harappan
Rojdi	PRL 1093	3920 $\pm$ 110 BP	2090 $\pm$ 115 BC	2462 BC	Pd. A - Sorath Harappan
Rojdi	PRL 1085	4020 $\pm$ 110 BP	2190 $\pm$ 115 BC	2573 BC	Pd. A - Sorath Harappan
Rojdi	PRL 1091	4150 $\pm$ 110 BP	2325 $\pm$ 115 BC	2867, 2699 BC	Pd. A - Sorath Harappan
Rojdi	PRL 1282	3470 $\pm$ 140 BP	1620 $\pm$ 145 BC	1866, 1772 BC	Pd. B - Sorath Harappan
Rojdi	PRL 1088	3370 $\pm$ 120 BP	1935 $\pm$ 125 BC	2198, 2149 BC	Pd. B - Sorath Harappan
Rojdi	TF 200	3810 $\pm$ 110 BP	1975 $\pm$ 115 BC	2283 BC	Pd. B - Sorath Harappan
Lothal	TF 27	3840 $\pm$ 110 BP	2005 $\pm$ 115 BC	2315 BC	Pd. A - Urban Harappan
Lothal	TF 22	3845 $\pm$ 110 BP	2010 $\pm$ 115 BC	2328 BC	Pd. A - Urban Harappan
Lothal	TF 136	3915 $\pm$ 130 BP	2808 $\pm$ 135 BC	2461 BC	Pd. A - Urban Harappan
Lothal	TF 19	3650 $\pm$ 135 BP	1810 $\pm$ 140 BC	2034 BC	Pd. B - Post-Urban Harappan
Kuntasi	PRL 1371	3650 $\pm$ 140 BP	1810 $\pm$ 145 BC	2014 BC	Pd. I - Urban Harappan
Kuntasi	PRL 1370	3710 $\pm$ 160 BP	1870 $\pm$ 165 BC	2135, 2050 BC	Pd. I - Urban Harappan
Kuntasi	BS 567	3870 $\pm$ 90 BP	2035 $\pm$ 95 BC	2451, 2356 BC	Pd. I - Urban Harappan
Nagwada	A 4555	3700 $\pm$ 80 BP	1860 $\pm$ 80 BC	2133, 2067 BC	Pd. IB - Urban Harappan
Vagad	BS 752	3625 $\pm$ 100 BP	1780 $\pm$ 105 BC	2170 BC	Pd. IA - Urban Harappan
Vagad	BS 751	2320 $\pm$ 100 B.P	1470 $\pm$ 105 BC	1755 BC	Pd. IB - Post-Urban Harappan
Ahar	TF 32	3400 $\pm$ 105 BP	1550 $\pm$ 110 BC	1733-1697 BC	Pd. IC - Banas Chalcolithic
Navdatoli	P 204	3449 $\pm$ 127 BP	1600 $\pm$ 130 BC	1749 BC	Phase III - Malwa Chalcolithic

## REFERENCES

- Ajithprasad, P. and V.H. Sonawane. 1993. Harappa Culture in North Gujarat: a regional paradigm. Paper presented at the Conference on *The Harappans in Gujarat: Problems and Prospects*. Pune: Deccan College.
- Bhan, K.K. 1986. Recent explorations in the Jamnagar District of Saurashtra. *Man and Environment* 10:1-21.
- Bhan, K.K. 1989. Late Harappan settlements of Western India, with specific reference to Gujarat. In J.M. Kenoyer (ed.), *Old Problems and New Perspectives in the Archaeology of South Asia*, pp. 219-43. Madison: University of Wisconsin, *Wisconsin Archaeological Reports* 2.
- Bhan, K.K. 1992. Late Harappan Gujarat. *The Eastern Anthropologist* 45(1-2):173-92.
- Bhan, K.K. 1994. Cultural Development of the Prehistoric Period in North Gujarat with Reference to Western India. *South Asian Studies* 10:71-90.
- Binford, L.R. 1990. Mobility, housing and environment: a comparative study. *Journal of Anthropological Archaeology* 46:119-52.
- Bisht, R.S. 1991. Dholavira: A new horizon of the Indus Civilization. *Puratattva* 20:71-82.
- Bisht, R.S. 1997. Dholavira excavations: 1990-94. In J.P. Joshi (ed.), *Facets of Indian Civilization: Recent Perspectives*, pp. 107-20. New Delhi: Aryan Books International.
- Casal, J.M. 1964. *Fouilles D'Amri*. Publication de la Commission des Fouilles Archaeologique, Fouilles de Pakistan.
- Chitalwala, Y.M. 1979. Harappan and Post-Harappan settlement patterns in the Rajkot District of Saurashtra. In D.P. Agrawal and D.K. Chakrabarti (eds), *Essays in Indian Proto-History*, pp. 113-21. Delhi: B.R. Publishing Corporation.
- Dales, G.F. 1974. Excavations at Balakot, Pakistan 1973. *Journal of Field Archaeology* 1:3-22.
- Dhavalikar, M.K. 1995. *Cultural Imperialism: Indus Civilization in Western India*. New Delhi: Books and Books.
- Dhavalikar, M.K. and G.L. Possehl. 1992. The Pre-Harappan Period at Prabhas Patan and the Pre-Harappan Phase in Gujarat. *Man and Environment* 17(1):72-8.
- Dhavalikar, M.K., M.R. Raval and Y.M. Chitalwala, 1996. *Kuntasi: A Harappan Emporium on West Coast*. Pune: Deccan College.
- Flannery, K.V. 1972. The origin of the village as a settlement type in Meso-America and the Near East. In R. Tringham and G.W. Dimbleby (eds.), *Man, Settlement and Urbanism*, pp. 23-53. London: Duckworth.



- Hegde, K.T.M., V.H. Sonawane, D.R. Shah, K.K. Bhan, P. Ajithprasad, K. Krishnan and S. Prathapachandran. 1988. Excavations at Nagwada - 1986-87: A Preliminary report. *Man and Environment* 12:55-65.
- Herman, C.F. 1997. The Rangpur sequence of 'Harappan' Gujarat (India): a re-assessment. In R. Allchin and B. Allchin (eds), *South Asian Archaeology 1995*, Volume I, pp. 187-98. New Delhi: Oxford and IBH.
- Herman, C.F. and K. Krishnan. 1994. Micaceous Red Ware: a Gujarat proto-historic cultural complex or just ceramic? In A. Parpola and P. Koskikallio (eds), *South Asian Archaeology 1993*, Vol. I, pp. 225-43. Helsinki: Suomalainen Tiedakatemia.
- Joshi, J.P. 1990. Excavations at Surkotada 1971-72 and exploration in Kutch. *Memoirs of the Archaeological Survey of India* 87:363-71.
- Joshi, R.V. 1978. *Stone Age Culture of Central India*. Poona: Deccan College.
- Kajale, M.D. 1996. Plant Remains. In M.K. Dhavalikar, M.R. Raval and Y.M. (eds), *Chitalwala, Kuntasi: A Harappan Emporium on West Coast*. Pune: Deccan College.
- Khan, F.A. 1965. Excavations at Kot Diji. *Pakistan Archaeology* 2:11-85.
- Majumdar, A. and V.H. Sonawane. 1996-97. Pre-Harappan burial pottery from Moti Pipli: a new dimension in the cultural assemblage of North Gujarat. *Pragdhara* 7:11-7.
- Meadow, R. 1989. Continuity and change in the agriculture of the Greater Indus Valley: the palaeobotanical and zoo-archaeological evidence. In J.M. Kenoyer (ed.), *Old Problems and New Perspectives in the Archaeology of South Asia*, pp. 61-74. Madison: University of Wisconsin, *Wisconsin Archaeological Report* 2.
- Mehta, R.N. 1984. Valabhi - a station of Harappan cattle-breeders. In B.B. Lal and S.P. Gupta (eds), *Frontiers of the Indus Civilization*, pp. 227-30. Delhi: Books and Books.
- Mehta, R.N., K.N. Momin and D.R. Shah. 1980. *Excavation at Kanewal*. Baroda: Maharaja Sayajirao University, *Archaeology Series* No. 11.
- Mehta, R.N. and S.N. Chowdhary. 1971. *Excavation at Jokha*. Baroda: Maharaja Sayajirao University *Archaeology Series* No. 11.
- Mehta, R.N. and S.N. Chowdhary. 1975. *Excavation at Dhatva*. Baroda: Maharaja Sayajirao University, *Archaeology Series* No. 12.
- Misra, V.N. 1965. Book review: Ancient India, *Bulletin of the Archaeological Survey of India* No. 18-19 (1962-62). *Eastern Anthropologist* 18(1):44-52.
- Misra, V.N. 1973. Bagor: A late Mesolithic settlement in North-West India. *World Archaeology* 5(1):92-110.
- Momin, K.N. 1979. *Archaeology of Kheda District (Gujarat) Up to 1500 A.D.* PhD Dissertation. Baroda: M.S. University of Baroda.
- Patel, G. 1977. *Gujarat's Agriculture*. Ahmedabad: Overseas Book Traders.
- Possehl, G.L. 1976. Lothal: a gateway settlement of Harappan Civilization. In K.A.R. Kennedy and G.L. Possehl (eds), *Ecological Background of South Asian Prehistory*, pp. 115-31. Ithaca: Cornell University South Asian Program.
- Possehl, G.L. 1980. *Indus Civilization in Saurashtra*. New Delhi: B.R. Publication.
- Possehl, G.L. 1992. The Harappan Civilization in Gujarat: the Sorath and Sindhi Harappans. *The Eastern Anthropologist* 1-2:117-54.
- Possehl, G.L. 1993. The Harappan Civilization: a contemporary perspective. In G.L. Possehl (ed.), *Harappan Civilization: A Recent Perspective*, pp. 15-28. New Delhi: Oxford and IBH.
- Possehl, G.L. 1997. The date of the Surkotada cemetery: a reassessment in the light of recent archaeological work in Gujarat. In J.P. Joshi (ed.), *Facets of Indian Civilization: Recent Perspectives*, pp. 81-7. New Delhi: Aryan Books International.
- Possehl, G.L. and M.H. Raval. 1989. *Harappan Civilization and Rojdi*. New Delhi: Oxford and IBH.
- Rao, S.R. 1979. Lothal: A Harappan Port Town 1955-62. *Memoirs of the Archaeological Survey of India* 78 (I).
- Rao, S.R. 1985. Lothal: A Harappan Port Town 1955-62. *Memoirs of the Archaeological Survey of India* 78 (II).
- Reddy, S.N. 1991. Archaeobotanical investigation at Oriyo Timbo (1989-90): a post-urban site in Gujarat. *Man and Environment* 16(1):73-83.
- Rissman, P.C. 1985. *Migratory Pastoralism in Western India in the Second Millennium BC: The Evidence from Oriyo Timbo (Chiroda)*. PhD dissertation, University of Pennsylvania, Philadelphia.
- Rissman, P.C. and Y.M. Chitalwala. 1990. *Harappan Civilization and Oriyo Timbo*. New Delhi: Oxford and IBH.
- Roy, B. and Mehr, S.S. 1977. Geomorphology of the Rann of Kutch and climatic changes. In D.P. Agrawal and B.M. Pande (eds), *Ecology and Archaeology of Western India*, pp. 195-200. Delhi: Concept Publishing Co.
- Saraswat, K.S. 1992. Archaeobotanical remains in ancient cultural and socio-economical dynamics of the Indian Subcontinent. *Palaeobotanist* 40:514-45.
- Shinde, V.S. 1992. Padri and the Indus Civilization. *South Asian Studies* 8:55-66.
- Shinde, V.S. and S.B. Kar. 1992. Padri Ware: A new painted ceramic found in the Harappan levels at Padri in Gujarat. *Man and Environment* 17(2):105-10.
- Sonawane, V.H. 1992. Fresh light on the specialized crafts of the Harappans in Gujarat. *The Eastern Anthropologist* 45(1-2): 155-72.
- Sonawane, V.H. 1994-95. Harappan settlements of Rupen Estuary, Gujarat. *Pragdhara* 5:1-11.
- Sonawane, V.H. 1996. Mesolithic Culture of Gujarat. Paper presented at the National Seminar on *The Mesolithic in India*. Allahabad University, Allahabad.

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- Sonawane, V.H. and P. Ajithprasad. 1994. Harappa Culture and Gujarat. *Man and Environment* 19(1-2):129-39.
- Sonawane, V.H. and R.N. Mehta. 1985. Vagad - a rural Harappan settlement in Gujarat. *Man and Environment* 9:38-44.
- Thomas, P.K. and Joglekar, P.P. 1994. Holocene faunal studies in India. *Man and Environment* 19(1-2):179-203.
- Varma, S. 1991. Villages abandoned: the case for mobile pastoralism in Post Harappan Gujarat. New Delhi: Sage Publication, *Studies in History* (New Series), 7(2):279-300
- Weber, S.A. and Vishnu-Mittre 1989. Palaeobotanical research at Rojdi. In G.L. Possehl and M.H. Raval, *Harappan Civilization at Rojdi*, pp. 117-81. New Delhi: Oxford and IBH.