CHAPTER I

The Harappan Economy

Before we focus on Harappan craft production we must consider its place in the economy as a whole. Production in simple/early economies largely consists of subsistence procurement activities, such as agriculture, pastoralism, fishing and hunting, and the manufacturing sector. Archaeologically, this would translate into the raw materials utilized, tools used, the by-products of producing activities and the final products. This would imply that in a study of the economy of a particular culture, we must focus on what goods were produced and the techniques utilized. However what is much more significant is one of the factors of production, viz. labour. The forms in which labour was organized and diversified into different producing activities is generally of crucial importance. The question of the utilization and organization of labour will be addressed through this thesis. Here, in this chapter, the archaeological evidence pertaining to the Harappan economy and a preliminary discussion on organization will be delineated.

We can assume that agricultural activity was the mainstay of the economy. The basic inputs in agriculture are soil, seed, water, labour, and tools. In view of the vast area covered by the Harappan culture we may be
constrained to look into the problem region-wise. Moreover, though the entire region of the Harappan culture comprises of a semi-arid zone, there are niches where natural inputs of production and cropping patterns may have differed. Geographically the Sind area comprises of a number of subregions, such as the Western and the Eastern plains, the mountain areas with the Kirthar and the Kohistan, and the desert areas of the Thar and the Pat or the Kachhi, and the Delta (Spate & Learmonth 1984 [1967]: 504). In Gujarat, the Kutch region was separate from the Gujarat mainland and from Kathiawar. Thus the attempt will be made to study Harappan sites from the viewpoint of the local environment, rather than to take the entire northwestern portion of the subcontinent as a single undifferentiated zone.

Soils and Land Use Zones

Near the Indus in Sind is a stiff clay or rich loam called kacho resulting from recent inundations (Lambrick 1964: 16), and as the land receded from the limit of the inundations the soil became light and sandy. The inundations result in a deposit of a white, clayey surface, generally with a depth of 0.6-0.9 m succeeded by fine sand (Postans 1843: 81-83). According to Leshnik (1973: 73), land use zones in Sind and the Punjab are of four categories. First, are the cultivated areas,
parallel to and close to rivers called "bet" land; second are cultivated areas further away from rivers-called kadir, they are low lying areas; third are uplands for grazing and cultivation of rain-fed crops (barani); and fourth are depressions and marshes. Of these, only the first two zones are in the plains of the Indus river. The third category of the uplands will be discussed separately. The fourth category of depressions and marshes are largely in the delta country; as also Lake Manchhar; alkaline depressions or dhandas are found along the eastern bank of the Eastern Nara which fill up with water when heavy floods on the Indus send water down the Nara. Then when the flow stops, water fills up in the dhandas and is retained for some weeks even when the Nara dries up. These dhandas, some occurring singly, some in clusters of thirty to forty, are rich sources of fish and fertile soil for rabi crops (Selections from the Records of the Bombay Government 1857: 39, 41, 66).

The banks of the Indus have the most fertile soil as this is the area immediately affected by the inundations. The fertility of soils nearest the river is exemplified by the dense growths of natural vegetation evident here. According to Aitken (1907: 40) forests largely followed the course of the Indus all through Sind; inland forests also exist in the northern districts of Sukkur and Upper Sind Frontier. Prior to the British conquest, forest
growth covered all the land where the flood water reached. Timber was cut and settlements were made which resulted in the separation of wooded areas into blocks, some of which were reserved by the Mirs or local potentates for hunting areas; these form the nucleus of the presently existing forests. The fertility of riverain areas is clear when a month or two after subsidence, the alluvium shows quick regeneration of tamarisk which if not washed away in the next floods will become a dense growth of low bushes in a year's time (Lambrick 1964: 17).

Obviously soil is not as extensive a resource in the Kirthar hill region as it is in the Lower Indus basin. Soils in the Kirthar are poorly homogenized, shallow in depth and are present in narrow occurrences (Flam 1981: 150). As compared to water, soils are a limiting factor here. Where springs occur, fields have to be cleared of stone for cultivation and soil fertility can be quickly lost with intensive cropping patterns. In these areas, most Harappan sites are located in broadish plains rather than in the narrow valleys of the major streams that cut across the ranges of the mountains. Such sites are Ghazi Shah, Karchat, Bachani, Shahjokotiro, Damb Buthi, and Gorandi.

Mohenjodaro was not located on the active flood plain but was situated close to the meander flood plain (Fairservis 1978: 81). Harappa was situated on an area of
high ground called the Dhaya Ridge near an old branch of the Ravi, now a depression called a Sukhrawa. The settlement was away from the reach of destructive floods and was close to fertile cultivable land. Even now, the region between the Dhaya Ridge and the second Sukhrawa near Harappa is composed of good quality soil with available sweet water and a dense forest of *Tamarix orientalis* in the near vicinity (Fagan 1900: 3). Suratgarh district in which Kalibangan is located has good soils composed of light loams which are highly fertile with irrigation. For the whole of the then Bikaner district (in the early 20th century [Erskine 1909: 343]) the growing of *rabi* crops is primarily confined to the Suratgarh tahsil. This fertility now augmented by modern canals must in ancient times have been accentuated by the waters of the Ghaggar river.

Harappan sites in Kutch and Saurashtra can next be considered. In Kutch the few 'islands' in the Rann such as Khadir, did support Harappan sites such as the large settlement of Dholavira. The soil of the *hets* is the same as that of the Rann, but is free from salt (Frere 1870: 186). The softness of the sandy soil allows plant roots to penetrate deep in search of water. According to soil maps (Singh 1990: 885), the Harappan sites of Desalpur, Surkotada and Pabumath are located on or near limited stretches of alluvial sandy soils. In Saurashtra,
possibilities for agriculture are far richer. The major soil type is the black cotton soil derived from the Deccan Trap. However it does not appear that these soils were utilized in the Harappan period. Nageshwar near Dwarka probably exploited alluvial sandy soils, while the major Harappan site, Lothal, probably made use of alluvial sandy loams.

**Irrigation:**

The importance of water in agriculture cannot be stated enough. The best of soils can be rendered infertile with lack of water. In the case of cultivation in the Punjab and Sind, the issue of water is all important as it is the annual inundation floods which result in the deposition of rich alluvium on which crops are grown. The mode of agriculture, on inundation lands (*sailaba* cultivation) is simple but gives enormous benefits. The flood saturates the land and leaves a heavy deposit of rich silt. With the receding of the river the farmer sows his crops. In modern times, the river floods fulfilled two purposes:–

a) to deposit enough rich alluvium for crops to be planted; and

b) with the help of canals and channels, the flood waters were diverted for use in irrigating the crops.
Regarding the diversion of flood waters for irrigation, it should be stated that we are left with no visual evidence of canals or channels dating to such early times in the Indus region. Aerial photographs too have not shown such evidence. It would appear probable that canals if once existing were obliterated through redeposition in the following centuries, especially since canals were never dug deep enough to draw off water from the river except during inundations. A river has to rise many feet before its water can run into the canals. During the winter the river waters are not sufficiently high to enter them (Report on Administration in Punjaub Territories: 1854-56: 39), unlike the hot period when Himalayan snow melt and rain in the lower ranges increases the discharge of the Indus by as much as 20-40 times the winter flows (Lambrick 1964: 18).

However, it would seem that the region of the Indus river was geographically not suited for canal construction. The British were the first to construct canals on a wide scale and their efforts were not always successful. The reason for this lies in the changeable character of the river where it keeps shifting its bed. Thus often the building of canals was rendered ineffective when the river itself moved away. According to Fairservis (1979: 81) existing remains in the Indus valley reveal none of the characteristic settlement patterns had there
been a dependence on canal irrigation (other than short irrigation canals).

We have evidence for canal irrigation from Eastern Bactria. Working with the hypothesis that artificial irrigation would have to be found given the semi arid climate in the area, Gardin (1984: 317-19) indicated that the Shortughai sites came into existence when a major canal was built to bring water to the area. The existence of the canal was confirmed in diggings and its date to the Harappan period through the find of Harappan sherds in a series of three superimposed ditches. It appears however that the water was supplied not from the Amu Darya but by the Kokcha now 25 kms away (Francfort 1984: 306). It is still unclear if the knowledge of digging extensive canals was a local phenomenon or one brought from the Indus valley, but it is clear that we have no archaeological remnants of canals in the Indus region.

Very often old natural channels are utilized for diverting flood waters kept open by annual clearance of silt. The numerous natural creeks and inlets leading off from the main river could have been used. These dry beds which lie above the level of the river are filled during floods. The water spills over the banks of these arms of the river and floods adjacent low lying land (Leshnik 1973: 75). Apart from natural channels in modern times, numerous artificial canals are taken recourse to. These
often lead off from the natural channels to adjacent or low-lying land. The problem with channels and artificial canals or chhars is that they often require lifting devices to raise water from the channels on to the fields. It would be difficult to obtain evidence of lifting devices since these were usually made of non-durable materials, so we have to rely on other evidence. Leshnik (1973: 69) mentions a scratching on a potsherd which could represent a shaduf or beam lift.

In modern times, wells are often used in a supplementary capacity to the inundations and the scarce rainfall. Sometimes in the flood plain if saturation has not been enough it may be needed to work the well if one is nearby (Fagan 1900: 123). In areas close to the river, wells are usually temporary in nature being little more than hollows and are seldom lined. In areas further from the river, the role of wells is more important and hence their construction is more permanent in nature. In tracts in the Montgomery district, wells are used as the sole means of irrigation, though wells assisted by canals are more common (Fagan 1900: 118-20). According to the Bahawalpur Gazetteer (1904: 241) wells helped neither by floods or by canals can irrigate upto 15 bighas only while wells in inundation areas with ploughing and sowing done with the help of floods can irrigate upto 40 bighas and wells in canal irrigated areas (with ploughing and sowing
done with the aid of canal water) irrigate upto 30 bighas.

In Kutch, lift irrigation by the leather bag technique was practised over a large area (Campbell 1880: 11). In Gujarat, the major means of irrigation is by wells (Dikshit 1970: 78-80).

Instead of a major river, settlements in the Kirthar and Kohistan regions relied on a number of hill streams or nais which were rain-and spring-fed and generally ran in an east-west direction from the numerous ranges of hills most of them having a steeper eastern slope than on the west.

Harappan hill sites in the uplands are situated in open plains or at entrances to narrow valleys. Water in the Kirthar and Kohistan regions comes from three sources-1. rainfall and runoff; 2. ground water; and 3. springs. The runoff from the mountains often results in a volume of water difficult to control. Crops grown in these areas are largely dependent on rain (barani cultivation). The major stream here is the Gaj Nai. In the Sind Kohistan region streams are more ephemeral in nature but here also seasonally there is a massive discharge of water. Here also springs which are perennial feed the major nais such as Naing and Maliri. Some Harappan sites are located on such springs such as Naing and at Taung, about a hundred metres to the west of the mound is the head of a spring.
called the Ratan Shah. At both places, remains of *wangs* or conduits from the nearby spring have been found. At one time the conduits probably carried spring water to the prehistoric sites (Lambrick 1944: 66).

The cluster of settlements in the Karachi district appear to be exploiting two main sources of water. One is the only perennial river in this region, the Hab, and the other is the vast underground reservoir of the Malir River. An interesting method of irrigation was possibly employed at Allahdino on the Malir River. Fairervis (1982: 110) has suggested that Harappan wells were deliberately kept small in diameter (one well measures c. 60-80 cm), so that water would not only rise higher but would overflow as an artesian well. The central well is located at the highest part of the site and any runoff from that well could be channelled through earth-cut ditches or stone channels wherever required, on account of the slope of the surrounding site.

**Labour Requirements and Agricultural Techniques**

The question can come up for discussion whether the Harappans utilized the river banks for cultivation. The advantages of river bank areas are a) the fertility of the soil—here it is at its richest; b) the organization involved in diversion of water is absent. On the other hand the major disadvantage would be the destructive
capacities of the summer inundations and the clearing of the dense forest growth which is richest on the river bank. For cultivation to be carried out in areas not immediately adjacent to the river the advantages would be that forest growth would be scantier. However more labour would be required- a) more effort needed for construction and maintenance of canals, even short ones; b) more labour needed for construction and maintenance of wells, probably more needed in these areas. However if a large number of natural spillways and inlets were utilized the labour involved would have been less concentrating on maintenance, that is periodic removal of silt from the channels.

As regards labour required for cultivation in Harappan times, we have very little information. We are on surer ground where small settlements such as those located in the Kirthar are concerned as the size of the settlements indicates an independent self-sufficient cultivation strategy. These settlements utilized local resources and were separated by the hill streams. The question of larger settlements such as Mohenjodaro and Harappa brings the issue of labour requirements into prominence. First we must note that physically we have no archaeological evidence of any Harappan villages or smaller settlements in the immediate vicinity of Mohenjodaro. Second the large population indicated by the
size of the settlement must have been economically and socially differentiated to a certain degree to bring out dichotomies between farming and non-farming segments of the population. In view of the significance of agriculture for these Bronze Age times it is likely that the ratio of the farming to the non-farming must have been very large.

Labour requirements for clearing fields of natural vegetation may not have been excessive. We do not have direct archaeological evidence for actual agricultural processes employed. Agricultural practices on low-lying lands would have been simple. It appears that on the fertile alluvium not too much effort is required for agriculture. When ploughing, only a very slight portion of the surface is disturbed and always after the soil is well saturated, and seeds are sown (Postans 1843: 86). From some accounts, it seems that practically no effort is required, that the soil almost sowed itself. Lambrick (1937: 16) indicates sailaba cultivation as an operation necessitating no labour beyond clearance of jungle, often perfunctory and sowing the moist deposit after a perfunctory ploughing. In fact where inundations are extensive, tillage is not employed. Seeds are thrown on the earth after secession of the waters, and the spring crops, especially wheat, are "luxuriant". No attention is paid to manuring or assisting the soil in any part of Sind.
Modern *kharif* cultivation practices are described by Lambrick (1964: 76). A suitable piece of land is surrounded with an earth embankment, leaving an opening, through which water is admitted as soon as the first rise in the Indus occurs. The opening is blocked, the land ploughed and the seeds sown. While the inundation is in progress, the 'bund' is kept secure and water let in only when required.

Labour requirements for irrigation must also have been required. Low-lying areas would not require many waterings after sowing but other lands would have required supplementary waterings from the well or other means. A strong case for lift irrigation has been made by Ratnagar (1986a), and it does appear likely that Harappan agriculture must have had to make use of such means, as cultivation carried out in areas removed from the river banks would require labour for getting water onto the fields and for digging the wells themselves, many of which had to be dug afresh each season and rare ones which lasted 2-3 years.

Another point the farmers would have had to take cognizance of, was keeping cultivable land periodically fallow. Even in Sind, where there are excellent soils, land can yield a good winter harvest for only a limited
number of years after which it must be kept fallow. Fallowing is here practised one year in four, or two in five, and if ignored or delayed could have serious repercussions (Ratnagar 1986 b). Lands under lift irrigation are fallowed for longer periods than lands watered by flow while inundated lands are often worked continuously for a number of years (Aitken 1907: 241), as the inundations periodically replenish the needed minerals in the soil.

We have scarce information about tools used for agricultural purposes. Most of the tools must have been made of wood and the absence of the use of metal for agricultural implements is remarkable. Only fish hooks (comprising another subsistence strategy) were made of copper/bronze. For clearing the forests, the purely copper axes would have been inadequate and bronze perhaps not much more effective. Few stone axes have been found at Harappa (Vats 1940: 359). Perhaps fire was resorted to for clearance operations.

The Harappan people appear to have known the plough from evidence such as the ploughed field uncovered at Kalibangan of the Early Harappan period (Lal 1970-71), the ploughed field in the Harappan settlement of Shortughai (Francfort 1984: 303) and from the terracotta model of a plough discovered at Banawali (Bisht 1987: 150). Terracotta plough models have also been recovered from
Mature Harappan sites in the Cholistan region (Hughal 1982: Pl. 7.8). Other evidence is scanty, such as a hoe like tool found at Khajur in the Amrian period (Flam 1981: 338). The numerous chert blades found from almost every Harappan site were probably hafted in wood to function as sickles. Cattle were used probably as an important source of energy, particularly for ploughing. Cattle would have been used in devices to lift water from the river onto the fields.

Harappan Crops

Palaeobotanical evidence from excavations of Harappan sites has given us some information on the crops that were grown then. In modern contexts wheat (*Triticum sphaerococcum*, *T. compactum*, *T. aestivum*) is a favoured crop in the Indus region. On lands irrigated by wells the fields nearest the wells were planted with wheat (Leshnik 1973: 75). Wheat could be grown as a rabi or winter crop. Extensively grown on sailabi lands—inundated lands—wheat would have been sown at the end of inundation i.e. September/October and reaped in March/April. Wheat grown on well-irrigated lands during the cold and dry period requires more waterings than wheat grown on sailabi lands. Fentress (1985: 365) mentions that the area around Mohenjodaro has now two periods of crop growing—one during the monsoon with water from snow-fed floods and in winter when
dbands (depressions) retain water from Kirthar nais in January and February. Wheat has been noted from Mohenjodaro (Marshall 1931: 586), Nausharo (Costantini 1991: 323), Harappa (Vats 1940: 466), Chanhudaro (Mackay 1943: 31, 250), Banawali (Vishnu-Mittre & Savithri 1982: 206), Allahdino (Fairservis 1982: 111) and Kalibangan (Lal 1979: 89).

Barley (Hordeum vulgare) is also a rabi crop and like wheat is found at a number of Harappan sites-Mohenjodaro (Marshall 1931: 586), Nausharo (Costantini 1991) Harappa (Vats 1940: 466), Chanhudaro (Mackay 1943: 250), Kalibangan (Lal 1979: 89), Allahdino (Fairservis 1982: 111), Banawali (Bisht 1978: 87), and at Balakot, where barley has also been found in the Balakotian (pre-Harappan) period (Dales 1979: 257). Being a hardier grain than wheat, barley is grown in areas too dry or too saline to carry a good wheat crop; barley is tolerant of drought and frost and has a shorter growing season (Vishnu-Mittre & Savithri 1982: 216).

On the evidence of rice (Oryza sativa) husks found in imprints on clay lumps at Lothal (Rao 1985: 678), it was debated that perhaps this crop was grown at Lothal. However, it is not clear whether the husks belonged to wild or cultivated varieties. At Rangpur too, rice impressions were reported. No evidence of cultivation of rice has come to light from the Indus and the Punjab areas.
of Harappan times. Present cultivation of rice in Sind is primarily due to the modern canal irrigation system.

That cotton (Gossypium arboreum) was grown in Harappan times appears probable from actual remnants of cotton cloth found at Mohenjodaro, as mentioned in Chapter III. Charred cotton seeds were recovered from Mehrgarh (Jarrige 1981: 89), but none have yet been revealed at any Harappan site. Cotton is a \textit{kharif} crop as it does not mature in the winter due to the possibility of frost. Cotton requires three or four pickings from November until February (Aitken 1907: 233). Traces of bast fibres have been found at Mohenjodaro (Mackay 1938: 593-94). Flax, a type of bast fibre was found at Shortughai where a ploughed field was found covered with flax seeds (Francfort 1984: 303).

Other \textit{kharif} crops grown in the Harappan period were sesame (\textit{Sesamum indicum}), melons and peas (\textit{Pisum arvense}); peas could be a \textit{rabi} crop too. Field peas have been recovered from Kalibangan (Vishnu-Mittre & Savithri 1982: 213), Harappa (Vats 1940: 467) and Chanhu-daro (Mackay 1943: 250). From Nausharo (Costantini 1981), Balakot (Dales 1979: 257) and Allahdino (Fairservis 1982: 111), the fruit of a legume was revealed. Sesame was reported from Lothal (Rao 1985: 678-79) and Harappa (Vats 1940: 467). Chickpea (\textit{Cicer arietinum}) was found at Kalibangan.
(Vishnu-Mittre & Savithri 1982: 213) and finger millet or ragi (*Eleusine coracana*) from Surkotada (Vishnu-Mittre & Savithri 1982: 214). At Surkotada were also found millet grains of *Setaria* species (Vishnu-Mittre & Savithri 1982: 214); a very hardy crop. Seeds of a millet probably *Setaria italica*, were recovered at Lothal (Rao 1985: 678-79). Seeds probably belonging to *Brassica juncea* were found at Chanhuadaro (Mackay 1943: 250).

Evidence of the cultivation or collection of fruits is not lacking. Fruits of the *Zizyphus* species appear to have been eaten. In areas of Sind and Montgomery district, *Zizyphus* is one of the commonly met species. Melon seeds were found at Harappa (Vats 1940: 467). Indirect evidence in the form of a lemon leaf shaped pendant, two polychrome earthen vases in the shape of a pomegranate and a coconut, and a representation of a lotus fruit in faience, may indicate consumption of these fruits. Carbonized date seeds were recovered from Mohenjodaro (Marshall 1931: 585) date stones from Nausharo (Costantini 1991) and from Harappa, two faience sealings in the shape of such seeds (Vats 1940: 467).

The archaeobotanical record has also revealed the presence of wild species. At Surkotada, 93% of seeds recovered belonged to wild plants (Vishnu-Mittre & Savithri 1982: 214) and recent excavations at Harappa (Dales & Kenoyer 1989: 27) also brought to light many wild
Cropping Patterns

The question of cropping patterns comes up here for discussion. Archaeological evidence will not indicate whether the Harappans produced more than one major food crop a year or not. Wheat and barley as staples are both rabi crops. Cotton is a kharif crop but it is not a food crop. Sesame and melons are kharif crops, but must have been secondary foods. In modern times, rice is an important kharif crop, but we have no evidence of rice cultivation in Sind and the Punjab in the Harappan period. This pattern would indicate that Harappan agricultural production was markedly seasonal, depending on a winter cycle, and the Harappan farmer practically took off from agricultural work the rest of the year. However the cultivation of cotton would require a long growing cycle.

Mixed cropping is clearly revealed by the remains of a ploughed field discovered in the Early Harappan levels at Kalibangan. In modern times, mixed cropping of cereals like wheat and barley is resorted to in Punjab, Haryana and Uttar Pradesh as a precaution against weather hazards so that in any event, the hardier barley will definitely yield.
Archaeozoological Evidence

The exploitation of cultivated plants did not provide the sole source of nourishment for the Harappan people. The number of bones recovered in excavations indicate the significance of faunal species for consumption. The Harappan sites for which we have archaeozoological evidence are Mohenjodaro (Sewell & Guha 1931), Harappa (Prashad 1936), Chanhudaro (Mackay 1943: 246-50), Lothal (Bholanath & Sreenivas Rao 1985: 636-48), Balakot (Meadow 1979: 287-313), Rangpur (Rao 1962-63: 153) and Allahdino (Fairservis 1973: 101; Fairservis 1982: 111). At all these sites, a number of bones of a wide range of wild species is noted, along with domesticated faunal species. Statistical analyses of wild to domesticated species have not been done in most cases. Hence, the extent to which hunting as a subsistence strategy was resorted to is not clear. At Allahdino however Meadow (1979: 291) indicates that the bulk of meat in both Balakotian and Mature Harappan periods came from large mammals i.e., cattle. It also appears that the proportion of smaller mammals such as sheep, goat and gazelle increased in the Mature Harappan period from the Balakotian occupation.

Fish also supplemented the Harappan diet, as noted by the recovery of fish bones from various sites. At Mohenjodaro, fish species recovered were Rita rita, Wallago and Arius species (Sewell & Guha 1931: 664). The
species *Pomadasys hasta* predominated at Balakot (Meadow 1979: 297) and at Harappa, bones of *Rita rita* and *Carp* species were recovered (Prashad 1936). The Indus river is a rich source of fish resources. The Manchhar Lake too was exploited for fishing, on the banks of which even now a number of fishing communities live. That this area may have been a locus of settlement in ancient times gains credence from the finds of prehistoric sites in the vicinity of the lake, some of which are now low mounds often submerged by the waters (Majumdar 1934).

From some sites we have recovered evidence of the use of molluscs for nourishment. A list has been compiled by Durante (1979: 317-19) of such species—*Terebralia palustris*, *Rostellaria curvirostris*, various species of *Arcidae* and *Ostreidae*, *Callista umbonella* and *Callista casta*. The last mentioned was also used for craft working, but in a limited way. According to Meadow (1979: 296), *Terebralia palustris* appears to have only been exploited for food and has been recovered in large quantities. Complete specimens are rare and no evidence has been found of their use in craft activities. Some shell artifacts are in fresh condition and suggest the intentional collection of live molluscs—probably the gastropods were smashed to obtain the meat (Kenoyer 1984a: 156-57).
What is particularly interesting about the recovery of faunal material from Balakot is that in the earlier or Balakotian period, very little shell or molluscs were recovered [98.5% of bones were animal bone, 1.5% shell, no fish bones (Meadow 1979: 289)], whereas in the following Harappan period, fish contributed significantly to the diet and it is suggested that marine resources could have contributed up to about half of the dietary intake from faunal sources with the major portion coming from fish. In modern times too, fish is a regular item of food in villages on the Makran sea coast and in riverine tracts such as in Lower Sind (Andrus & Mohammed 1958: 29).

**Pastoralism**

Economic strategies must also have included pastoralism. All Harappan sites have revealed bones of cattle, sheep and goats; from some sites in large numbers. But separate from the livestock probably maintained by the Harappan farmers, it is conceivable to imagine the existence of a specialist group, that of nomadic pastoralists. According to Possehl (1979: 547) a look at the map of Harappan sites would reveal a number of interstices in the Harappan settlement pattern; an example is the dearth of Harappan settlements to the west of Harappa. It was proposed that pastoral nomads or other mobile occupational specialists filled these interstices.
Fairservis (1986: 47) argues that as cattle require good grazing land all the year round, their requirements would eventually come into competition with those of the agriculturists. Regular sources of water and availability of land would be a bone of contention. As cultivation expands into areas of natural pasture, decisions would have to be made to cultivate fodder crops for the cattle or herd them to other suitable pasture areas. Thus in the winter period herds would have to be maintained by fodder production and in the summer would be herded to the cooler highlands with more abundant grazing potential. This would appear to indicate more a pattern of transhumance than true pastoral nomadism.

The entire northwestern portion of the subcontinent reveals seasonal movements of pastoralists in search of pasture. These are evident between Baluchistan and Sind and also between Sind and Kutch. A 13-to 15-cm rainfall in Kutch "covers the desert with a carpet of deep rich grass" which attracts graziers from Sind and Rajasthan (Frere 1870: 203). Lambrick (1964: 8) mentions that the Thar grasses are far superior to those of the Sind plains and that large herds are driven into the desert specifically for fattening. The entire region of the Harappan culture was an area where pastoralism was eminently viable. Even the Bikaner district in whose northern portion Kalibangan is located, is indicated as a
vast pasture ground (Erskine 1909: 345). In the Punjab area, there is vast pasturage for the numerous numbers of sheep, goats, camels and bovine cattle (Report on the Administration of the Punjab Territories 1854-56: 15).

Non-subsistence Economy

So far we have been looking at the subsistence economy. There is yet another facet of the economy which concentrates on the production of material not directly related to subsistence, that is, the production of craft goods. The produce of such activities forms the bulk of our archaeological evidence. Noting the number of crafts for which we have evidence in the Harappan culture (see Table I.1 below), we shall have to attempt some preliminary classification of them. If we use material as the distinguishing factor, we would have a large number of crafts. Among non-durable materials, we would have fibres like threads, reeds and skins, of which we have only cotton cloth as archaeological evidence. We know from the recovery of tools and actual cotton material that spinning and weaving must have been undertaken. That dyeing must also have been done is inferred from the evidence of facilities thought to have been dyeing vats found at Mohenjodaro and Lothal.
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<td>11</td>
<td>Steatite cutting</td>
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<td>12</td>
<td>Ivory working</td>
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<td>13</td>
<td>Making of etched carnelian beads</td>
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<tr>
<td>14</td>
<td>Stoneware bangle production</td>
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Durable materials obviously form the bulk of our evidence. These mostly consist of baked clay, bone, shell, ivory, stone, minerals and metals. The utilization of varied categories of raw materials is attested from the material evidence from Harappan sites. The Sind and Punjab plains are particularly deficient in mineral sources, steatite and copper. Many crafts are found located at centres from where sources of raw materials are quite distant. Most required raw materials for Harappan crafts are located in areas outside the Harappan occupied area while sources of other materials such as shell and chert fall within the Harappan region. A number of materials such as carnelian and copper have various source areas from where they could have been obtained. In contrast, a few materials such as lapis lazuli and shell have limited occurrences in nature and few doubts exist about their source areas. Bulky and heavy raw materials
(for example shell and metal) are also noted as having been worked in Harappan settlements. Some initial processing of bulky materials may have been done at source areas to reduce transport costs. What must be noted here is that materials brought from distant sources must have required some mechanisms for obtaining them. The attention paid to this aspect - the procurement of raw materials - by the Harappans must have been of no little significance.

**Tools for Craft Production**

We know far more about craft working tools than we know about tools used in agricultural production. For crafts such as spinning and weaving, we have the evidence of a number of spindle whorls made from different materials found from a number of sites. For dyeing of cloth, vats would be the only facility required of which we seem to have evidence. For pottery production we do not have absolute evidence like the presence of a wheel which in all probability was made of wood. The only tools recovered for potting would appear to be dabbers. A number of kilns have also been recovered at Harappan sites.

Tools for other crafts are made out of various materials such as stone, bone and ivory and metal. Stone was used to produce most household objects such as querns,
mortars, cutting implements, and scrapers. Apart from these products, stone was used to make tools used in further production. Stone hammers could have been used for metallurgical operations: for breaking up the ore, for cold hammering, for forming metal utensils, stone moulds along with clay examples for casting metal objects; hammerstones, drills and hone for bead making; and grinding stones for shell working.

Tools of bone and ivory comprise awls and engravers used largely for seal carving, and needles for sewing.

Tools of metal could have been used for a number of craft processes, but in various cases, stone would also have sufficed. In the Harappan culture, metal tools comprise saws which could have been used for shell cutting or for cutting stone nodules for beads or steatite for seals; bead tools probably used in the production of steatite micro-beads; awls used for drilling beads or for incising designs on steatite seals or shell objects; chisels for wood working or for seal carving.

Clay could also have been used for some tools and accessories, such as crucibles for holding molten metal; moulds for casting metal objects; for the core in the cire perdue technique of casting metal objects; and for moulding faience objects.
Heating facilities are required for various processes in separate crafts. Agate nodules and beads in various stages of completion need to be heated to achieve the red of carnelians; metallic ore has to be smelted prior to the production of metal objects; heat is needed for the casting of metal objects; steatite seals and beads need to be heated to harden the material and to cement the slip on the objects; and finally, heat is necessary for the moulding of faience objects. A number of Harappan kilns have been found, but the purpose for which they were built is not easily decipherable, due to the lack of associated material.

Studying the typology of tools used for Harappan craft activities, it becomes apparent that Harappan craftsmen used a standardized inventory of tools. Though not connected with craft production, the use of long chert blades attested at several Harappan sites is a clear example of a conformity in use patterns over the large area covered by the Harappan culture or in this particular case, an interesting example of the movement of a utilitarian artifact type several distantly located settlements.

Stone drills used to perforate beads are of two types, both of which are found at major bead making centres. One type are the flanged or unflanged variety.
made of chert or flint and the other is of phtanite. Stone hones for grinding beads are typologically similar from different sites such as Mohenjodaro, Harappa and Chanhudaro. Metal tools such as chisels and awls are of a standard design. It is also interesting that the specialized metal bead tools used for steatite microbead production are identical from the two major bead making centres, Chanhudaro and Lothal, though the former site revealed a greater number of such tools. Harappan metal chisels, awls and engravers of metal, bone and ivory are all standardized artifacts.

Labour Requirements

a) Specialists

In consideration of labour requirements for craft producing activities, it is relevant whether a portion of the Harappan population spent most or all of its time in the production of non subsistence goods. In this is embodied the concept of a specialist as one who obtained the whole or the major portion of his livelihood from the pursuit of a single occupation. Archaeologically it is not easy to distinguish between a craftsman and a farmer. Even in modern times, we often find craftsmen groups who own fields which are worked by themselves or their family members. Many are seasonal labourers working their craft at suitable times and devoting their primary attention to
agriculture. Some crafts would perforce have had to be worked on a seasonal basis due to environmental factors. This aspect will be dealt with in Chapter II.

b) Technology as a Factor in Labour Utilization

In view of the labour and technological sophistication involved in the working of various crafts such as faience production, bead making, shell working, it may be difficult to imagine that knowledge as involved in such production would have been available to all. Various crafts comprise a number of intermeshing processes some of which require individual skills. In the present day, the craftsmen at Cambay who shape or flake beads are different from the bead drillers and those who grind and polish beads (Trivedi 1964). Observations of iron smelting in the beginning of the 19th century in Canara note the division of the labour force for separate tasks such as mining of ore; transport of ore to the smelting site; for working the bellows; for hammering; and for looking after the forging furnace (Buchanan 1807: 361-62). Modern reanalyses of ancient faience production (Wulff et al 1968; Lucas 1948; Noble 1969) envisage numerous complicated stages through which the production of faience passes and it is then possible to think of a number of workers each assigned to a specific task relating to collection of raw material, processing of the materials, and further manufacturing processes of forming objects,
and of firing and finishing them.

Where the technology involved in the production of various artifact categories was sophisticated and where few production centres were involved for the Harappan culture as a whole, it could be feasible to think in terms of a dichotomy between farmers and craftsmen. However for a number of other crafts, the members of the population must have combined farming with craft production. In that case we must make a note of adjustments in the scheduling of various activities, so as to optimally combine them. Crafts would probably not have been engaged in during peak periods of requirement of labour for agricultural operations, such as during the sowing and harvesting periods. Noting the probability of technological simplicity where agricultural operations were concerned, it is apparent that the preparation of fields may not have taken much time. Post-sowing waterings from the wells however, would have required much time and effort.

Scheduling of various sowing and harvesting operations would mean that a major chunk of time would be given over to agricultural operations around September-October-November, when wheat and barley would be sown and cotton would be first picked. Prior to this period, the Sind area would witness the period of inundations on the Indus roughly from May till the end of September [the
Inundations commence in March but are felt effectively in lower Sind only in mid-May (Postans 1843: 119). In this period, the transportation of goods and raw materials up and down the Indus would be made more difficult.

Rabi crops would be harvested around March/April while kharif crops would be sown around May/June. The final calendars for the Sind, the Punjab and Kutch would be:

**Fig 1: Crop Calendar for Sind**

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--- COTTON HARVESTING ----

--- PICKINGS WHEAT ----

--- BARLEY ----

--- IRRIGATION ----

--- INDUS INUNDATIONS ----

--- LIFT ----

--- RAINS ----

**Fig 2: Crop Calendar for the Punjab**

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--- LIFT IRRIGATION ---

--- HARVESTING WHEAT ---

--- CUTTING BARLEY ---

--- SOWING SESAME ---

--- SOWING BARLEY ---

--- CUTTING SESAME ---

--- RAINS ---

--- RAINS ---

--- RAINS ---
The production of staple crops would obviously require most attention, due to fears of its failure. The busiest periods for agricultural operations would then be from September to November and March - April. The coming of the rains may not put too extended a halt on craft operations, in view of the scarcity of rains in the concerned areas. However operations requiring heating facilities may have been halted. If lift irrigation was employed by Harappan farmers, then most of the fair-weather period between rabi sowing and harvesting would have been occupied in watering the fields. This would leave no time for craft activities in Sind and Punjab. However, in Kutch, the limited evidence we have to date is only of the cultivation of millet which from Fig. 3 would point to the period from November to May being free for the craft production. The issue concerning the proportions of populations engaged in separate activities in different settlements will be resolved through this thesis.

The inventory of artifacts produced by Harappan craftsmen comprise two main categories, one consisting of household goods, tools and implements and the other of
ornaments, decorative and recreational artifacts. Artifacts in the first category were further subdivided into tools used for various activities and tools used for further production, including agricultural production and craft production.

Production Processes

Actual production processes for various crafts obviously differ as we shall see in Chapter III. Some crafts indicate highly specialized production techniques. Within bead making, there are a number of stages through which the raw material must pass before its transformation and moreover, these differ according to different shapes, types and materials of beads, such as cylindrical stone beads, wafer steatite beads or segmented faience beads. Shell bangle manufacture is a complex process, differing within itself according to the raw material used and on the other hand differing from ladle manufacture not only in the species of shell used but also in production processes. In the production of faience objects, the very variety of objects, and their decoration necessitate differing and elaborate production processes.

Distribution

In agricultural production, we do not know how the crop yields were divided among the population. Agriculture
would have been the mainstay of the economy, but it is not immediately apparent from the archaeological record whether there were a group of people who were entirely divorced from subsistence procurement activities. What is clearer is that there was probably considerable socioeconomic differentiation between the inhabitants of Harappan cities. The morphology of some settlements shows a 'citadel-lower town' dichotomy which could imply some segregation by status or function. Some Harappan settlements have revealed granaries or warehouses which suggest some amount of public storage of a portion of the total produce. The distribution of manufactured products is easier to discern than that of agricultural products. Where production centres are few, the question of the distribution of manufactured products becomes even more interesting.

A considerable measure of differential consumption is perceived where distribution of manufactured products are concerned. A few settlements out of the total number of Harappan settlements reveal a greater variety of artifacts in excavations. This difference is apparent for all those crafts which produce a varied inventory of artifacts from a few raw materials. Crafts such as pottery making and stone tool production would have had a wide distribution and broad consumption pattern. Other crafts are such that they could not have been practised at each and every settlement. Crafts such as seal cutting and faience
production have in fact been noted at only a few sites. Reasons for the limited loci would be proximity to sources of raw materials, but also various other reasons. Looking at the artifactual evidence, the consumption of shell bangles appears to have been greater than that of ivory. Regarding shell itself, shell bangles are found in greater quantities than shell ladles or inlay, and may have been produced in larger quantities. Among faience objects, cylindrical beads were made and used more than the miniature jars.

We have various clues for the possibility that consumption was not uniform. It seems that not all inhabitants of Harappan sites could afford objects such as etched carnelian beads, in view of the number of examples found imitating the stone beads in clay. The same is also true for the faience spindle whorls whose rarity indicates that they were used by few while terracotta spindle whorls were for more general demand. A large number of stone bead types may have been imitated in terracotta, suggesting that some stones could not be afforded by all. For copper/bronze metallurgy, we are not able to distinguish clear contrasts in use patterns. There are few substitutes for metal tools in other materials; hence they may have had a wider distribution. Copper/bronze utensils had a smaller distribution as pottery would have been a much cheaper and a easily available alternative.
Objects of metals such as gold and silver also had a very limited distribution across Harappan sites.

Harappan manufactures were not only meant for consumption by the Harappans themselves. In archaeological contexts, finds of a particular region or culture in another have been termed as the result of trade. However, this is applicable only in certain cases. The context or the mechanisms through which objects are found in another culture will determine whether the movement of artifacts took place through trade or other means such as gift exchanges or reciprocal offerings in return for raw materials or through state-organized expeditions.

**Internal Networks**

Internal networks or exchanges within the Harappan culture must have existed. In the first place, we know that a number of required raw materials were available in areas peripheral to the Harappan culture and where materials were available within the Harappan region, their production areas were not necessarily contiguous, thus necessitating some means for the transportation of raw materials. Not only this, where production centres are few and loci of finished artifacts are numerous, then too, networks for the distribution of finished artifacts must be assumed. In some areas, Harappan communities were
settled at the source regions of raw materials, in an effort to procure desired materials; examples are of Nageshwar and Shortughai.

At the local level, we can consider exchange possibilities between farmers and craftsmen and between pastoralists and settled populations of Harappan settlements. Distinctions between farmers and craftsmen are not easily ascertained, as noted earlier. Craftsmen utilizing locally available materials such as cotton yarn, reeds, clay, chert and bone need not have been solely craftsmen but were probably primarily agriculturists. On the other hand, craftsmen working at seemingly specialized tasks also could have maintained fields of their own to supplement their income. Contact between pastoralists and settled populations must have been one of symbiosis. The archaeological record does not explicate what the relations between the two groups of people were and what goods were exchanged. Milk products, meat and leather may have been more desired by settled populations than wool, and they must have given grain in exchange.

**External Contacts**

It is impossible to imagine that the Harappans did not come into contact with outsiders, in view of the area covered by the Harappan culture and the requirements of
various materials, most of which were not available within Harappan boundaries. Immediately to the West, the Harappans would have been in contact with people of the Kulli culture in view of the spatial proximity between the two cultures, similarities in material artifacts and the location of the Kulli region in between the settlements of the Harappans in Sind and the Makran. Kulli culture sites, termed as Complex A sites in the Las Bela region, revealed Harappan type artifacts, like terracotta cakes, clay cart pieces and perforated wares (Fairservis 1971: 203). Niai Buthi II also revealed perforated wares (Fairservis 1971: 193). Two typically Harappan seals with the unicorn motif were found at Nindowari (Casal 1966: 16). According to Possehl (1986) the Kulli culture was a "highland aspect of the Indus civilization" and specialized in supplying the Harappans with animals and needed raw materials found in their territories.

In the extreme northeastern limit of the Harappan region, near Manda, the Harappans must have come into contact with other cultures. Possibilities of contact with the Neolithic culture of Burzahom have been considered. The evidence consists of 950 beads of agate and carnelian found in a wheel-made red ware pot, painted with a horned figure recalling a similar design from Kot Diji (Agrawal 1971: 103). Towards the southeast, it has been considered that the Harappans may have come into
Contact with people of the Harappan culture. Two necklaces, composed of beads of semi-precious stones recall Mohenjodaro examples; the beads are made of carnelian, agate, crystal, jasper, quartz, malachite and shell. Moreover, 40,000 steatite micro beads were found in a pot (Dhavalikar 1970: 91) suggesting they were carefully hoarded and were probably non-local in origin.

Another example of contact with outsiders is furnished by the discovery of the Ganeshwar-Jodhpura culture. This culture is speculated to have comprised a settled, local population who perfected their copper technology and supplied ingots and finished goods to a number of Harappan settlements (Agrawal & Kumar 1982: 128). The proximity of Ganeshwar to the Khetri copper mines could be significant.

Contact with people of the South Indian Neolithic culture was considered on the basis of the evidence of argentiferous gold found at Harappan sites; this area is seen as a possible source of gold for the Harappan people. At a few Southern Neolithic sites, steatite disc beads have been found, which are a type-fossil of the Harappan culture. In most cases, beads are found dispersed at Neolithic sites and not concentrated and hoarded as at Burzahom and Kayatha. At most Neolithic sites, steatite disc beads are few in number, but at Veerapuram in the Krishna Valley a large number of such beads were found in the Neolithic period with very few examples in later
periods. Out of a total of 291 steatite beads, 221 were found in Period I, the Neolithic phase at the site. Out of these 119 were disc beads of a tiny size, 60 of small size, and 40 of large size (Sastri et al 1984: 117). The occurrence of steatite paste disc beads at Southern Neolithic sites was termed as evidence of export and trade contact (Allchin 1960: 126).

Long-Distance Trade

Long-distance trade or exchange relationships are testified from different areas. In the first place, we must note the presence of Indus material from the site of Altyn Depe in Southern Turkmenia. The goods associated with the burial of a woman revealed a square-sectioned ivory stick engraved with circles (Masson 1988: 43), such as have been amply discovered at Mohenjodaro. Two etched carnelian beads were found separately associated with two burials. Etched carnelian beads and beads of agate, paste and carnelian were found in another burial (Masson 1988: 51). A seal of proto-Indian type was found at Altyn Depe (Masson 1988: Pl. XXII, Ia) and in a room, a flat white seal decorated with the swastika motif (Masson 1988: 68). Ring-shaped ivory beads, flat chips of ivory and four rectangular sticks of ivory with concentric rings on three sides and an ornament on the fourth were also found (Masson 1988: 93) of which only the sticks resemble
Harappan specimens. Similarities in ceramics and metallic objects and terracotta toy cart models also suggest direct or indirect contact with the Harappan culture (Masson 1988: 93, 68).

Long-distance trade with Mesopotamia is attested on evidence of a literary and archaeological nature. Identification of the Meluhha of the Mesopotamian texts with the Indus region would indicate the movement of goods such as timbers, copper, gold dust, ivory, lapis lazuli and carnelian to the Mesopotamian cities. Textual records attest the movement of such goods, but archaeologically, other materials are also found, such as etched carnelian beads, steatite containers (Ratnagar 1981: 78), shankh shell and long barrel-cylinder carnelian beads (Chakrabarti 1982). In the context of this thesis, the transfer of Harappan manufactured goods is more significant than that of raw materials. The movement of traders and goods appears to be attested by the finds of Harappan seals at Mesopotamian sites (Gadd 1932) and a Harappan weight found at Ur (Ratnagar 1981: 185-86).

Contacts with areas between the Indus region and Mesopotamia were probable on account of their situation. The names of two regions, Dilmun and Magan are mentioned in Mesopotamian literary contexts. Some material evidence points to contacts between the Indus valley and Dilmun (probably the region of Bahrain and Failaka Island) as
Dilmun probably served as an entrepot for the trade being carried out in the Persian gulf. Bibby (1958) noted similarities between seals discovered in Bahrain with those described by Gadd (1932), and hypothesized that since the seals were foreign to both Mesopotamia and the Indus region, they could have been made in a third region, that is, Dilmun. This hypothesis gained credence with the large numbers of such seals termed as 'Persian Gulf seals' from Ras al Qala'a, Barbar and Failaka. A Persian Gulf seal was also found at Lothal (Rao 1963a) suggesting contacts between the two areas. Some of the Persian Gulf seals have reverse bosses almost identical to that of Harappan stamp seals, while others have smaller bosses with three grooves and centre-pointed circles as decoration. Nagaraja Rao (1969: 219-20) found similarities between a bronze figure found in the Barbar temple in Bahrain and the handle of a mirror found at Mehi, a Kulli culture site. He suggested the Bahrain figure was also intended for a mirror handle. Weights found in Bahrain (Bibby 1966: 92; Bibby 1970: 184) though mostly of local materials are manufactured according to a standard which approximates to the Harappan standard. No conformance with Mesopotamian weights was noted. This piece of evidence is of considerable significance, concerning contacts between the Harappan culture and the land of Dilmun. Other evidence could be the presence of
carnelian at Ras al Qala'a (Bibby 1970: 184) and more clearly, the presence of identical seal motifs such as the radiating animal heads motif noted in a seal from the Barbar temple in Bahrain and one found at Mohenjodaro (Joshi & Parpola 1987: 101). The pottery recovered at Umm an-Nar suggested some Kulli influences or contacts with the Umm an-Nar culture (Thorvildsen 1962: Fig. 23).

Mechanisms for Distribution and Exchange

Boats would have been required for external trade which have been mentioned in Mesopotamian records. These boats could have sailed from the mouths of the Indus and/or from the Makran Harappan sites. We have no evidence for Harappan ports in the delta region. The sea route could have been used by Lothal and Kathiawari Harappan sites to bring raw materials and manufactured goods to Harappan and external markets.

The Indus river being the artery of Sind must have been utilized for transporting materials and goods up and downstream. The Indus is navigable all through its length, but navigation in the delta is difficult and dangerous due to the velocity and force with which the Indus discharges its contents of mud and silt (Burnes 1973 [1835]: 39). The current makes it easier to navigate down the river than up against its flow. In some sections of the Indus river, such as between Hyderabad and Sehwan, the
river can be navigated upstream only by dragging the boat against the stream hence involving extra labour. During the inundation period, the main stream of the Indus becomes dangerous to traverse and though the distance is almost double, many travellers prefer the Western Nara; this stream is used to reach Sukkur from Sehwan (Postans 1843: 130-31).

Land routes would have been significant for connecting the different parts of the Harappan area. Transport of goods would have been largely with the use of pack animals but we are unsure as to the animals used for such purposes. In modern times, camels and donkeys are so utilized. Bones of both these animals have been found in excavations, but are scarce. Possibly pack oxen could have been used for this purpose. We know the cart was a means of transportation for the Harappans in view of the ubiquity of terracotta models of carts and cart wheels from Harappan sites, but this was a means of transport for largely short or medium distances and rarely for long distances (Ratnagar 1981: 177). A number of land routes between Baluchistan and Sind are well used by modern pastoralists. From Sind, the Baran or Hab rivers could be followed or the various Kirthar passes used; the Bolan pass led to the Quetta region and the Mula pass to Kalat (Ratnagar 1981: 59). Movement between Sind and Kutch was widely undertaken by pastoralists in search of pasture.
From Kutch there are three main routes: one from Nalia to Luna at the west end of Banni and thence to Rahim-ka-Bazar near Ali Bandar on the Kori river; second from Samrasar north across the middle of Banni to Balliari in the Thar; and third, north from the island of Bela to Nagar (Campbell 1880: 14, 120).

The Significance of Weights and Seals

So far, in the preceding discussion on agricultural and non-agricultural production, requirements of labour are understood in the context of an essential input in production activities. However, to integrate various facets of the economy into a viable, working system, some kind of a directional authority is necessary. This is especially so when one remembers the area covered by the Harappan culture. Some hints of the existence of this authority have been indirectly mentioned earlier. The requirements of a large number of raw materials whose source areas lay outside the Harappan boundaries would have necessitated the organizing of exchange and trading networks and enabling the safe transportation of materials and goods. Manufactured products produced at a few centres must also have been taken to other Harappan settlements through the internal networks of the Harappans. Two categories of artifacts give evidence of an overall authority in the Harappan culture. These are the weights and the seals. The significance of Harappan
weights lies primarily in their adhering to a common standard over the entire breadth of the Harappan area. This common standard implies a uniform system of mensuration over the entire Harappan area. The production of Harappan weights signifies a supervisory authority responsible for and certifying the accuracy of these objects. It is likely that various goods were exchanged or traded using these weights. The discovery of a number of tiny weights could indicate that precious materials were weighed against them. The large number of weights found associated with beads and bead making debris in the centre of Mound II at Chanhudaro (Room 215) could indicate that manufactured artifacts such as beads would also have been weighed.

Harappan seals are another artifact category with specialized functions. The majority of Harappan seals are the square steatite stamp seals depicting an animal motif and an inscription. Seals served as identity markers for administrative and trade purposes. That the impressions of seals were used to authenticate the contents of containers is evident from the finds of numerous sealings on clay tags showing on the reverse imprints of cords, reeds and packing materials. The best example is of the Lothal warehouse where a group of 65 sealings showing impressions of packing material on the reverse were found. Pots have also been found stamped with seals near the rim.
Seals, as weights, are a measure of the provision of guarantee of authenticity and accuracy, given by an authority which had the means and the power to enforce control. The finds of Harappan seals and weight standards in a pan-Harappan context suggests significant involvement of the Harappan authorities in a trade far beyond their own boundaries.

The integrating element in the economy between the agricultural and non-agricultural activities is illustrated through the character of the major urban settlements in the Harappan culture. That agricultural produce was stored and distributed on a large scale is probable from the evidence of large structures such as granaries or warehouses at three settlements. The availability of agricultural produce to support the work of non-food producers will be one of the major means of differentiating between the members of separate communities. In this chapter, we have given an overview of the Harappan economy, to illustrate the background against which a detailed study of Harappan craft production and its role in the economy will be highlighted.