
UNIT 5 ORIGINS OF AGRICULTURE, ANIMAL DOMESTICATION, CRAFT PRODUCTION TO URBANISATION (CASE OF THE HARAPPAN CIVILIZATION)

Structure

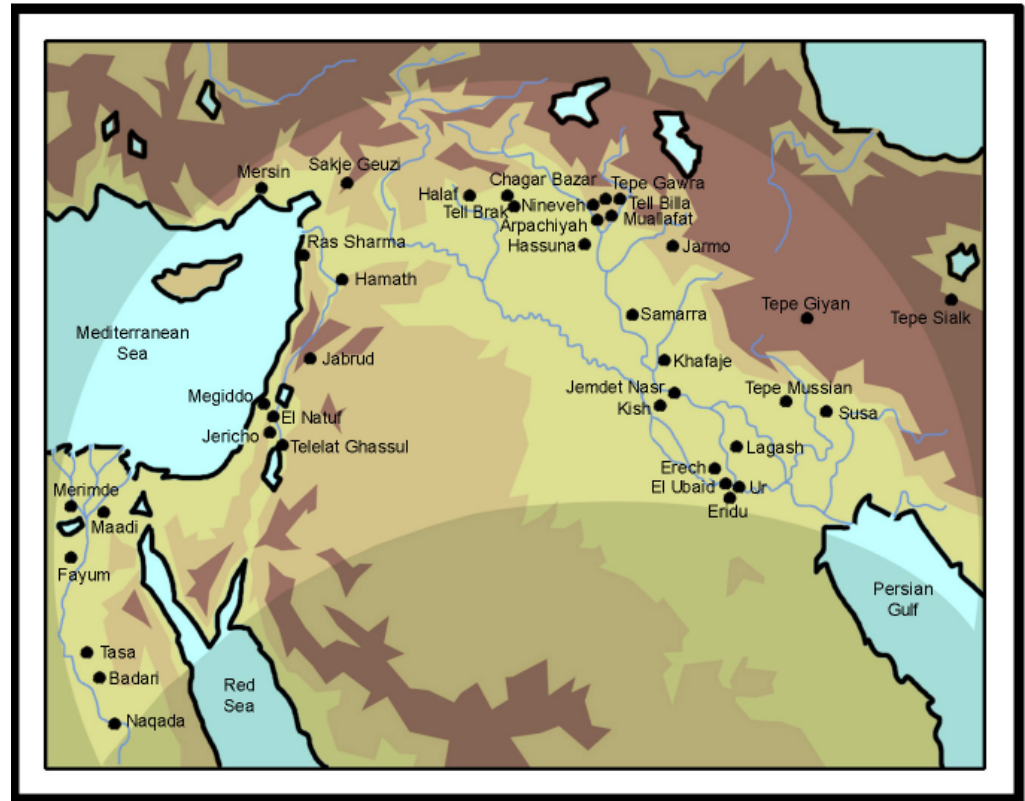
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5.1 INTRODUCTION

The transition from foraging to farming is one of the turning points in human history. The seasonally mobile life of hunter-gatherers, who obtained their food from wild plants and animals, was replaced by the settled life of farmers, who cultivated crops and raised domesticated livestock. This shift from nomadic to sedentary life led to the growth of population and village settlement, the development of crafts such as pottery and metallurgy, and eventually to centralised city states and urbanization.

Our knowledge about the beginning of food production is derived from excavation reports. At the time of the beginning of food production our ancestors did not know reading and writing. So, we have to draw conclusions on the basis of archaeological remains found in ancient sites. The earliest evidence for the beginning of food production comes from the western 'Fertile Crescent' (largely covering modern Iraq), principally from the 'core area' of the southern Levant and the middle Euphrates Valley. Here remains of

domesticated cereals (barley, einkorn wheat and emmer wheat), pulses (lentil, pea and chickpea) and flax have been recovered. These sites have been radiocarbon-dated between approximately 10,000 and 8500BC. By this period domesticated goats and sheep also appear.



**Map 1 : Fertile Crescent (After: Hermann Kinder and Werner Hilgemann,
The Penguin Atlas of World History, London, 1998, Volume I, p. 16**

5.2 BEGINNING OF FOOD PRODUCTION: FEATURES

When archaeologists talk about the beginning of food production they refer to four associated features. Cooking and storing wheat and barley presents a new kind of problem. While meat can be roasted directly on fire, cereals will be lost in ash if they are not cooked in a utensil. Thus utensils which could withstand the high temperature of oven were required for cooking wheat and barley. Metal was unknown. *Earthen pots baked in fire* were the earliest utensils for cooking food. Wheat and barley were ground for making bread. Querns and pestles were used for grinding wheat and barley. Regular grinding created a smooth polished surface on the stone tools. Thus, the beginning of food production is associated with the *use of polished stone tools*. The beginning of food production coincided with the *domestication of goats and sheep* too. Although cultivation began earlier, in the Indian subcontinent most of the early agricultural communities used small quantities of copper tools. That is why they are referred to as chalcolithic communities meaning thereby that they used stone tools along with a few copper tools.

5.3 WHY DID PEOPLE TAKE UP CULTIVATION?

One of the great questions of prehistory is why, about 12,000 years ago, some people adopted an agricultural way of life. The most convincing explanation is that the environmental changes that followed the last ice age between *c* 9000 and *c* 8000 BC, caused hunter-gatherers in Iraq, Palestine and Turkey, to shift to foods derived from grasses and legumes (beans) that were the progenitors of the cereal and pulse crops.

Regular harvesting and sowing of these plants led to selection of the domesticated forms, which proved more productive. The beginning of food production coincided with an equally revolutionary change—*livestock raising*. The domestication of animals represented a radically new way of life. In the hunting gathering society animals were killed and consumed immediately. Now animals were reared to act as walking larders that could be used in times of scarcity. Food production and animal domestication represented a changed outlook for food quest. It represented a planning not for a day but for a season – for the long term. When food production and animal domestication combined as a mode of life it amounted to a revolution. This new agricultural economy expanded at the expense of the old foraging way of life. (for details see Blocks 1&2 of MHI-01)

5.4 EARLIEST FARMING GROUPS IN THE INDIAN SUBCONTINENT

The causes of the origin of agriculture in India are not clear to us. Mehrgarh near the Bolan Pass in Baluchistan is the earliest agricultural settlement in the Indian sub continent. Beginning around 7000 BC as a camping site, this settlement saw a gradual shift from dependence on wild game to domesticated food crops and animals. However, we have no evidence for gradual, local transitions to agriculture. Instead, the domesticated cereals and pulses appear suddenly. That is why scholars believe that the knowledge of agriculture spread to India from neighbouring Iran where it had been imported from Iraq. Plants and animals domesticated by the villagers in Mehrgarh are less at home in monsoon India with its summer rainfall than in the uplands of western Asia and Afghanistan with its wet winters. The knowledge of agriculture could spread to other areas through the actual migration of people, through trade and inter community marriages. From the north western India the idea of cultivation gradually spread to other parts of the subcontinent. Many communities took up agriculture and many did not. It depended on the needs and perceptions of the group. If some areas had abundant wild resources, foragers would not take up agriculture even if they knew about it.

The hunting gathering communities experimented with various kinds of locally available edible grasses. Some of these grasses became the staple diet of the succeeding agricultural communities. In the Indus region the primary cereal was wheat/ barley. They also domesticated sheep, goat, cattle and buffalo. The Ganga valley subsistence pattern centred around the cultivation of rice. Their domestic animals were the same. The farmers supplemented their food by fish, game, wild plants and honey. The modern day food habits of the people in the Ganga and the Indus plains reflect the decisions made by our ancestors in the prehistoric past.

The cities of Harappa emerged in the Indus region. Later on the Ganga valley witnessed the emergence of cities in the sixth century BC. We shall follow the developments in the Indus region because it is connected with the first urbanization in the Indian past.

5.4.1 Mehrgarh: the Earliest Farming Village in the Indian Subcontinent

The earliest evidence for agriculture in the Indian subcontinent comes not from the fertile river valleys of Indus or the Ganga. Rather it comes from the dry, windswept hilly regions of Baluchistan. The site of Mehrgarh is located in the Kachi plains on the bank of the Bolan river. The river water forms an inland delta in this area. The Bolan valley has been one of the important routes linking the Indus plains with the mountainous terrain of Baluchistan. Pastoral nomads, traders and invaders have used this route from prehistoric

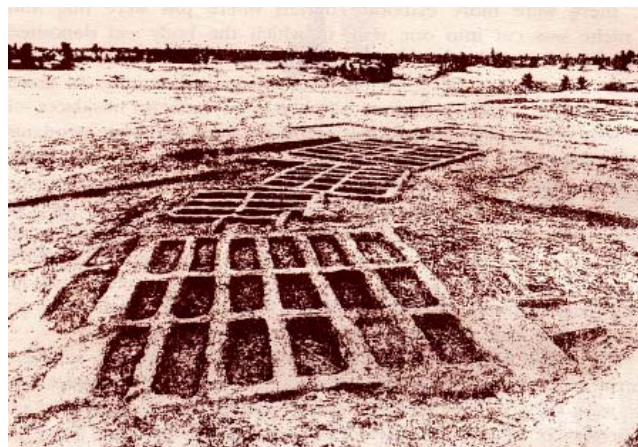
times. Even now, pastoral nomadic communities come down from the hills and use the pastures of this area in the winter season. No wonder the settlement of Mehrgarh began its history as a camping site around 7000 BC. Probably the community of pastoralists had learnt about farming from other mobile communities in the Afghanistan - Baluchistan area. The food of the people at Mehrgarh consisted primarily of wild game supplemented by small quantities of domesticated cereals and animals. Over a period of a thousand years the inhabitants shifted from a reliance on wild animals to barley, wheat, sheep, goats and cattle.

**Mehrgarh, the Beginnings of Agriculture
(Initial Agrarian Subsistence in Piedmont Zone)**

BC	Mehrgarh Period	
7000	???	
6500	IA	Pre-ceramic Neolithic
6000		
5500	IB, C	Period of silt and floods
5000	IIA, B	Period of construction, chaff-tempered ware, granaries
	IIC	
4500		
4000	III	Painted pottery, female terracotta, figurines, granaries
3500	IV-V	
3000	VI	
2200	VII	

A chronological representation of Mehrgarh : Raymond & Bridget Allchin, *Origins of a Civilization*, Viking 1997, p. 126 [After Jarrige (1984), Lechevallier (1984), Lechevallier & Quivron (1985)]

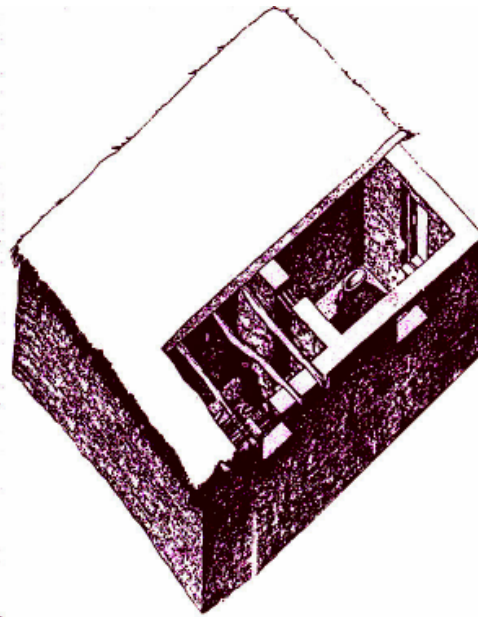
The earliest inhabitants did not use pottery or copper tools. An irregular scatter of mud brick houses separated by refuse dumps made up the first village. However, even the earliest inhabitants were using azure blue lapis lazuli, blue-green turquoise and white marine shells. These objects had been obtained from distant places. Marine shells could be obtained from the Makran coast only. Lapis lazuli is found either in the steep mountainous region of Badakshan or the dry desert of Chagai. Similarly, Turquoise came from Kyzyl kum beyond the river Oxus. It shows that even the earliest agriculturists were connected with networks of exchange extending from the Arabian sea to Central Asia (see Map 3 for early points of contacts).



Mehrgarh site, showing the excavated area, period, IIA Raymond & Bridget Allchin, *Origins of a Civilization*, Viking 1997, p. 132

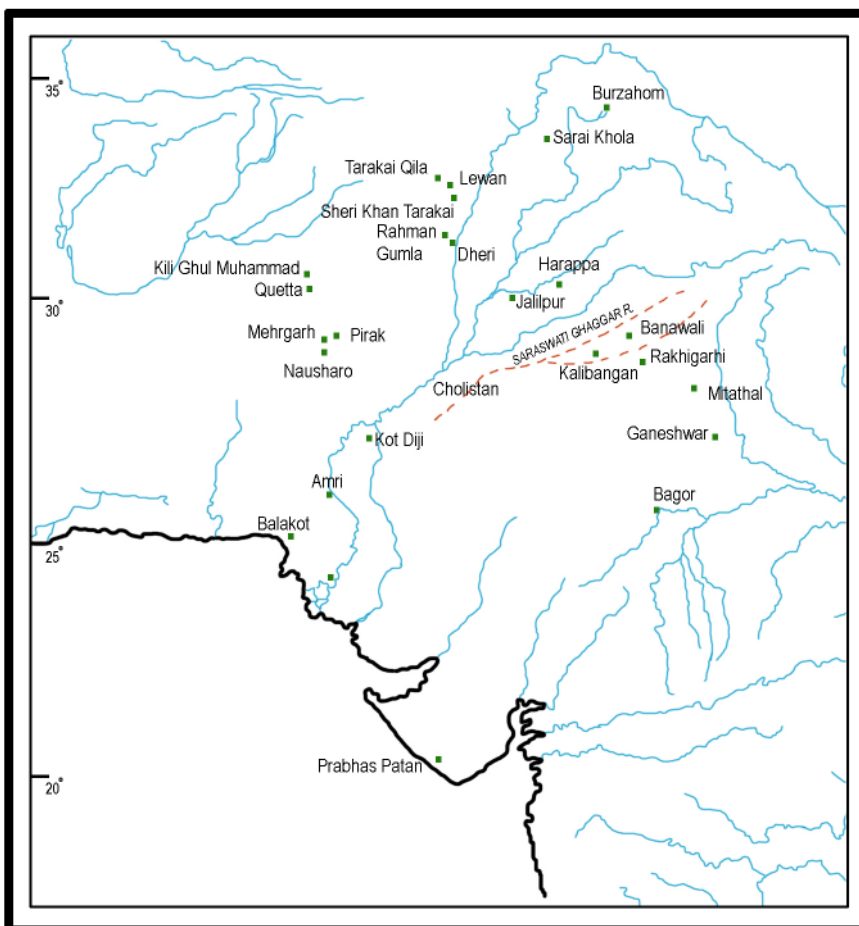
By about 5500 BC the settlement was transformed. People built mud brick houses having cubicles that could have been used for the storage of grains. They built retaining walls on terraces. They began to set roofs on rectangular section rafters. The first coarse pottery also appeared in this period. The already existing list of precious stones was augmented by the white and black steatite, red-orange carnelian and banded agate.

Isometric reconstruction of ‘House E’ showing the use of rafters for support, Mehrgarh, Period I (After Irfan Habib, *Prehistory*, Delhi, p.51



5.4.2 Expansion of the Agricultural Communities

By the fifth millennium BC many agricultural villages, large and small, had been founded in Baluchistan. Villages like Kile Gul Mohammed and Kalat in the Quetta valley and Mundigak near Kandahar in Afghanistan came into existence. Settlements like Sarai Khola near Taxila and Sheri Khan Tarakai south of Bannu also date to this period. By the fourth millennium BC the settlement of Balakot came into existence. Located on the Makran coast (near Karachi), this settlement might have been the source of sea shells found in contemporary agricultural settlements.



Map 2 : Early Harappan Sites (After : Raymond & Bridget Allchin, *Origins of a Civilization*, Viking, 1997, p. 124)

Around 4000 BC Mehrgarh had grown into a settlement of about 50 hectares. Apart from the continuance of the earlier tradition of building houses and granaries this period saw some developments. People in Mehrgarh began using copper on a significant scale.

To this period also date the finds of a large number of female terracotta figurines. There are evidences for mass production of pottery with the introduction of the potter's wheel. The painted decoration on this pottery has been regarded as the hallmark of the pottery of the agricultural communities of Baluchistan. It seems that agricultural communities were colonizing new areas.

5.4.3 Agriculture Spreads to the Indus Plains

It was in the second half of the fourth millennium BC that the agricultural system developed in the piedmont zone was successfully transplanted into the plains of the Indus river system. The site of Amri shows typical borrowings from Baluchistan. About forty sites have been reported on the plains of the now dry bed of the Hakra river (Map 3).

The colonization of the Indus plains by the agriculturists was a major step in the development of agricultural communities. The flood plains would have been more densely forested with swamps and wild animals posing challenges to human communities. Once these areas were colonized the food yields would dramatically improve. Also waterways were the most efficient modes of transport in the ancient world. So settlements along the river bank became efficient nodes of communication radiating and receiving influences on a more organized scale than had been possible earlier. Thus the shift to river valleys was an important stage in the expansion of agriculture.

5.4.4 Consequences of Agriculture

The origin of agriculture is related to the birth of village. Hunter-gatherers moved their homes according to the seasonal migration of animals and availability of fruits and roots. Unlike hunting gathering, agriculture requires that the farmer stay in one place for a long period. He has to sow seeds, he has to water the plants and he has to protect the saplings from birds and animals. Only after four to six months are the plants ready for harvesting. This means that unlike hunting-gathering, agriculture encourages settling down in one place. That is why the large scale emergence of villages dates to the coming of agriculture.

Coming of agriculture is also related to the emergence of long term patterns of cooperation. Hunting-gathering groups need cooperation for organizing hunt. Once the hunt is over and game has been shared the group ceases to exist. The basic unit of social organization of most hunting and gathering groups is the band, a small- scale nomadic group of fifteen to fifty people related by kinship. Rather than living in uniformly sized groups throughout the year, band societies tend to spend part of the year dispersed into small foraging units and another part of the year aggregated into much larger units. This pattern of dispersal and aggregation is related to the seasonal availability of food and game in different areas. Kinship ties are loose and people of one group easily move to another group. On the other hand agriculturists need cooperation from sowing to harvesting. Unlike a typical hunting expedition which might last a day or a week, agriculturists have to cooperate in the production process lasting at least four months. While agriculturists are waiting for the crops to grow, they survive on the food produced by farmers in the previous season. So, there is a need for cooperation among food producing groups across the year. No wonder agricultural societies are characterized by large kinship networks which is the institutional frame for long term cooperation among the farmers.

Settled agricultural populations tend to expand both numerically and territorially. Population growth is higher among sedentary communities. Crops provided farmers with more dependable supplies of grain based weaning foods such as gruel and porridge, as well as milk, once the goats and sheep began to be milked. The average interval between births would have been reduced, leading to increase in population. Also agricultural activities like harvesting and sowing can be done by children too, whereas hunting requires full grown adults. The possibility of early induction into the production process creates desire for more children.

The coming of agriculture meant that crops could be sown in areas where they did not grow naturally. Thus, there was an artificial extension of the production niche. While hunter-gatherers depended on nature to provide them food, agriculturists actively created new landscapes of cultivated crops. Thus, cultivators colonized many new areas uninhabited in the earlier period. They removed unwanted vegetation to plant food producing crops. This led to cutting down of forests. The domesticated plants required greater tending and care compared to the wild varieties. They needed water more regularly. So, the beginning of food production coincided with the development of irrigation. Agriculture also led to an increase in the carrying capacity of land. Various calculations suggest that a hunter-gather would need roughly four square kilometers of land to feed himself in a year's time. A very small chunk of land could support large number of agriculturists.

5.5 THE EARLY HARAPPAN PERIOD

The period beginning around 3200 BC saw some significant changes in the Indus region. The cumulative impact of the expansion of agriculture is visible in this period. Cultivators living in the same village for hundreds of years developed a better understanding of land, soil and cropping pattern of the area. Areas having similar weather and soil would produce similar crops. These villagers were in touch with each other through trade and intermarriage. There are evidences for regular interaction among the village communities. Shared pottery traditions in large areas have also been reported. That is why some scholars call it the period of the emergence of regional traditions.

A Chronological of Span of the Pre-Harappan and Harappan Settlements

Earliest Occupation (Ravi culture)	3300-2800 BC
Early Harappan (Kot Dijian culture)	2800-2600 BC
Mature Harappan (three phases)	2600-1900 BC
Transition between Mature and Late Harappan	1900-1800 BC
Late Harappan	1800 BC onwards

Shereen Ratnagar, *Understanding Harappa*, New Delhi, 2001, p. 5

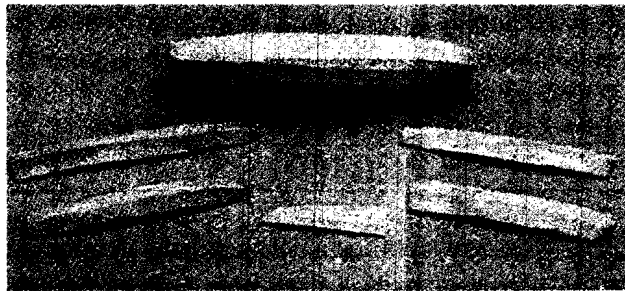
The village communities in southern Baluchistan and the Quetta valley show the use of similar kinds of painted pottery having naturalistic decorations showing humped bull and Pipal leaf motifs. Mundigak in Afghanistan, Damb Sadaat in the Quetta valley and Rana Ghundai show the use of similar types of terracotta figurines. Settlements like Anjira, Togau, Nindowari and Balakot have been reported from central and southern Baluchistan. They had trade links with towns in the Persian Gulf. In the Baluchistan area the number of settlements increased fourfold.

5.5.1 The Indus Region

Dramatic changes were taking place in the settlements of the Indus plains. Over a period of time the Indus area emerged as the focal point of future developments. We shall review some of these developments.

Developments in the Piedmont Zone

In the piedmont region Mehrgarh continued to show impressive developments in the early third millennium BC. The settlement of Rahman Dheri near the Gomal pass shows evidence of planned oblong settlement and presence of many kinds of semi-precious stones. In the Bannu area the settlement of Tarkai Qila too has yielded evidence of a large variety of grains. The finds of wheat, barley, lentil, peas, sesamum, linseed together with the bones of domesticated sheep, goat and cattle, indicate that the food production base of the Harappans had emerged by this period. In a settlement nearby called Lewan the inhabitants seem to have specialized in the production of stone tools. In a world where people had just been introduced to copper, most of the activities were carried out

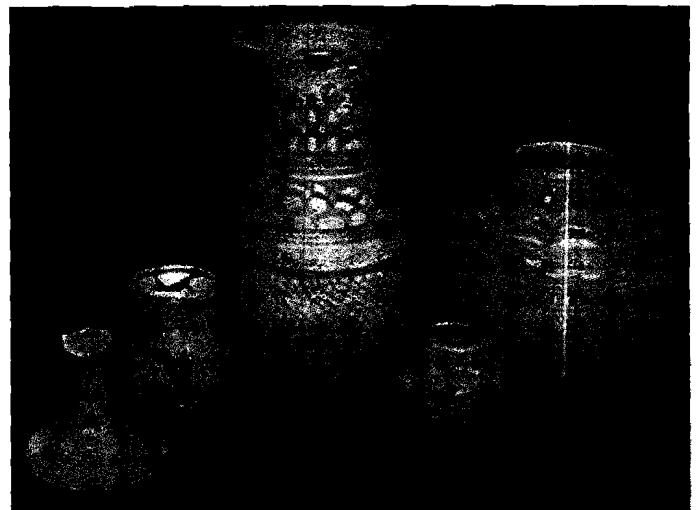


Chert Blades and Core : Shereen Ratnagar,
Understanding Harappa, New Delhi, 2001, p. 64

with stone tools. Some areas had good quality stone quarries. People in these areas were exploiting this resource not only for the use of the local community but also for exchanging it with the merchandise of areas far away.

5.5.2 The Lower Indus Plain

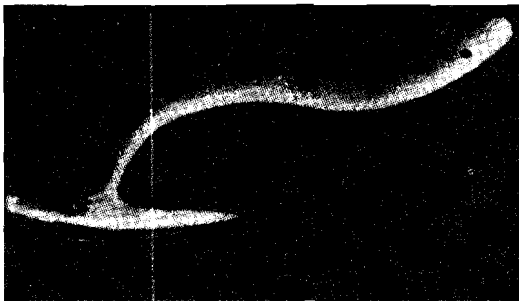
In the lower Indus plain Amri emerged with a distinct tradition. People built houses of stone and brick. They painted motifs like the humped Indian bull on their pots – a tradition which continued into the mature Harappan phase too. These people shared some characteristics with the roughly contemporary settlements like Dholavira and Surkotda in Gujarat. Opposite Mohenjodaro on the left bank of the Indus was located the settlement of Kot Diji. The most interesting find in this settlement is the wheel thrown pottery having decorations of plain bands of dark brownish paint. This kind of pottery has been reported from such far flung settlements as Kalibangan in north Rajasthan, Mehrgarh in Baluchistan, and along the entire stretch of the river Indus where pre- Harappan villages have been found. This sharing of the pottery tradition is related to greater communication among the agricultural communities.



Painted Pottery, Harappa : Jonathan Mark Kenoyer,
Ancient Indus Tour : Around the Indus in 90 Slides

In the period 3300–2600 BC the subsistence base of an agricultural society had taken shape. This base drives the economic life of people of this area even in the modern times. Wheat, barley, linseed, peas, lentil, sesamum, dates and grapes were being cultivated. Sheep, goat, humped cattle and buffalo were the domesticated animals. It is in Kalibangan (Rajasthan) that we come across the dramatic evidence of a ploughed field. The cross furrows suggest that two kinds of crops were grown in the field. This proof of intensive cultivation was the reason why the Ghaggar-Hakra basin was the most densely populated area in this period.

The Kalibangan evidence and that of the contemporary Sothi-Siswal (in northern Rajasthan, Punjab and Haryana) culture indicates the use of copper on an appreciable scale. Settlements like Mehrgarh and Rehman Dheri attest to a modest use of copper–bronze. It was used for making bangles, awls and chisels. Unlike the subsequent urban phase the technique of their production was quite primitive. Metal objects were produced by cold hammering and open mould casting. Gold and silver were rarely used.



A plough from Banawali, Haryana (After R.S. Bisht, reproduced from Irfan Habib, *The Indus Civilization*, Delhi, 2002, p.24)



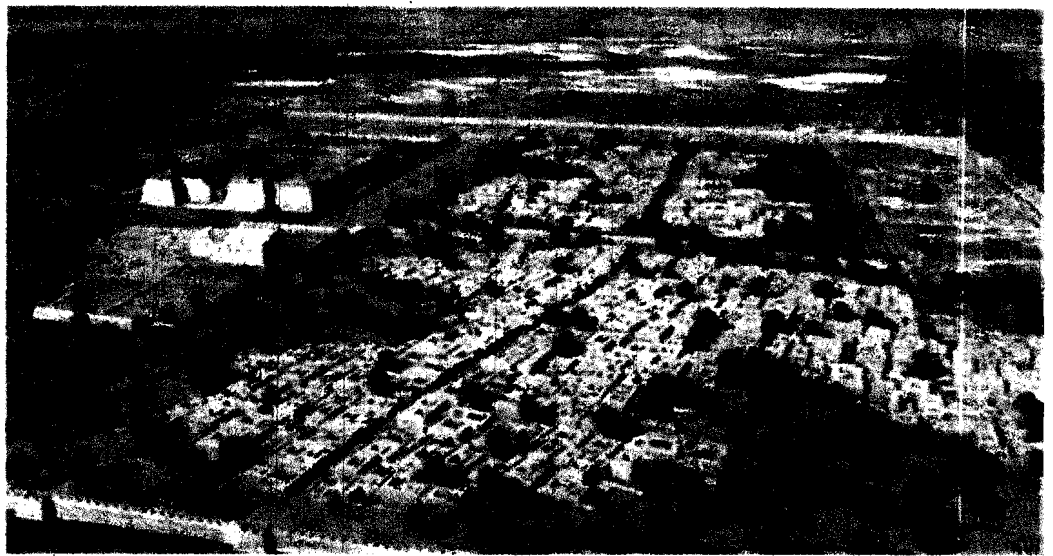
Ploughed field, Kalibangan (After *Indian Archaeology – A Review*, 1971, p.96)

5.5.4 Planning of Settlements

The most dramatic developments were visible in the sphere of planning of settlements. There are evidences for the building of fortification in settlements like Kalibangan, Rahman Dheri, Kot Diji and Banawali. Fortification serves two purposes. Citadels are meant to



Harappan Settlements: Mohanjodaro Shereen Ratnagar, *Understanding Harappa*, New Delhi, 2001 p. 19



Computer Graphic Reconstruction of Dholavira Settlements (After R. S. Bisht, *Indus Civilization*; Computer Graphics by: Osamu Ishizawa, Yasuyo Iwata and Nobuyuki Matsuda)

exclude outsiders and the underprivileged. They indicate that communities inside the citadel had something to protect. Thus citadels are clues to socio-political hierarchy. It helps the powerful to control activities inside the fortification. It also helps them keep an eye on the outsiders. If traders bring goods from places faraway they can collect their share for allowing them access to potential buyers inside the fortification. At Kalibangan there is evidence for standardized norm of brick production and brick laying.

The finds of toy carts indicates that bullock carts were part of the existing technology of transport. Seals were in use in sites like Mehrgarh and Rahman Dheri. Seals are used for sealing merchandise in interpersonal trade. However, many early people of West Asia are known to have used seals for securing doors of houses. So, we are not very sure about the use of these seals.

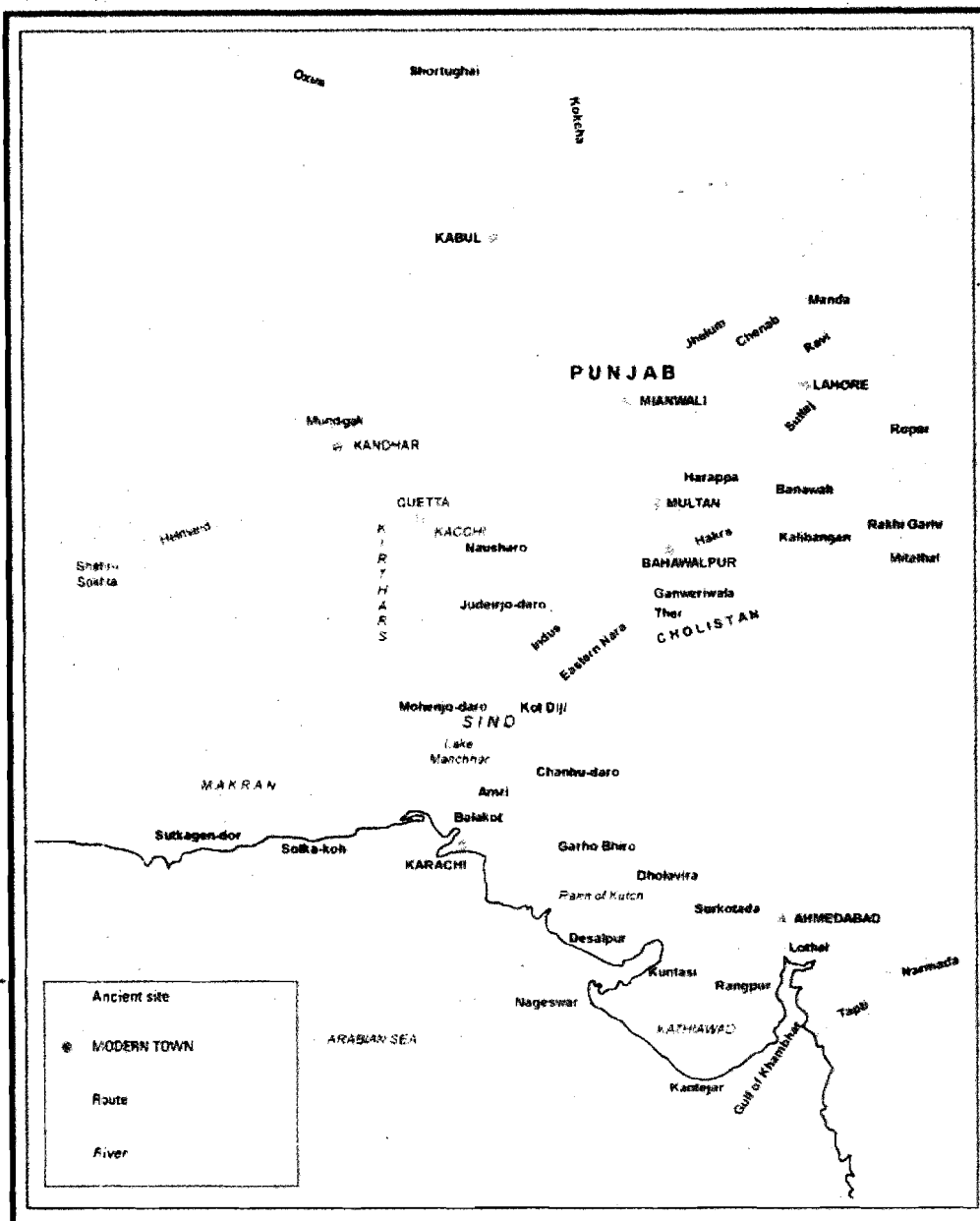
By the beginning of the third millennium BC the Indus region had made significant strides in the field of agriculture (cultivation of many crops), transportation (boats and bullock carts), metallurgy (use of metals on a modest scale), and town planning .

5.6 EMERGENCE OF CITIES

- The coming of the city represents a major transformation in the history of humankind. While the agricultural revolution changed the relationship between humans and nature, the urban revolution transformed the relationship among humans. We shall tentatively identify some of the processes involved in this transformation. In the subsequent section we shall describe the economic structures that emerged in the wake of this great transformation.

5.6.1 Population Increase and Shift

The urban phase is known as the 'Mature Harappan' among the archaeologists. The archaeological evidence suggests that emergence of the city was accompanied by considerable population shift as well as population increase. This is clear from the study of the settlement pattern in the Ghaggar-Hakra basin. Very few purely agricultural settlements of the pre-urban period survived into the urban phase. On the Hakra plains out of thirty seven sites only three continued to be inhabited in the urban phase. The emergence of city also coincided with an increase in the number of settlements. Apart from the three sites which survived from the early Harappan period, eighty new mature



Map 3 : Mature Harappan Sites (After Shereen Ratnagar, *Understanding Harappa*, New Delhi, 2001, p. 22)

Harappan settlements came into existence in this period. If we were to put together the occupied area of the early Harappan settlements in the Ghaggar-Hakra basin it will add up to 210 hectares. In the mature Harappan phase on the other hand the total occupied area was 450 hectares. This indicates a population increase.

5.6.2 Warlike Conditions

The coming of city also saw an increase in the number of violent conflicts among communities. In settlements located as far apart as Nausharo and Kot Diji we have evidence of the burning down of settlements towards the end of the early Harappan period. Buildings of the new urban phase lie right on top of the layer of ash. Kalibangan also shows evidence of burning. Not all the fires would have been caused by accident. Some of them are likely to have been the results of conflicts. This impression is buttressed by the fact that in settlements like Kalibangan the burning of the old settlement is followed by the building of a township where the mature Harappan pattern of town planning and fortification is in evidence. Those who destroyed the town followed different principles of planning.

5.6.3 Increase in the Size of Settlements

The size of some of the settlements of the Harappan civilization dwarfs the settlements of the pre-urban phase. While the largest settlements of the pre-urban phase would range between twenty to fifty hectares, an urban settlement like Mohenjodaro covered an area of 150 hectares. It is a well known fact that cultivators prefer to live near their fields. If the population of a village grows, a correspondingly larger area would be required for cultivation. The fields of some families would be located at a greater distance necessitating time consuming journeying to and from the field. In such a situation cultivators bud off from their villages and set up a village close to the field. Therefore, if a settlement is large, its size needs to be explained by factors other than food production.

5.7 THE HARAPPAN CIVILIZATION

When we refer to a settlement as a part of the Harappan civilization we are suggesting that it shares certain features with larger settlements like Harappa and Mohenjodaro. These shared features range from a thick red pottery and large bricks having the size ratio of 4:2:1, to a range of weights and measures. It also includes use of a script, seals, steatite disc beads, long barrel shaped carnelian beads, bronze razors with two curved blades and barbed fish hooks. There are also other common features.

5.7.1 Location of Settlements

Location of the Harappan settlements gives us clues about the Harappan economy. Although most of the Harappan settlements are located in the fertile plains of the Indus system, a large number of them are located in settlements skirting arid deserts (Sutkagen-dor on the Makran coast bordering Iran) and steppe terrain (Shortughai in Badakshan). These places were settled with the diverse needs of the Harappan elite in mind. For example Shortughai was settled with the intention of extracting lapis lazuli and panning gold from a river nearby. The settlement of Balakot on the Makran coast and Nageswar in Gujarat were centers for making bangles out of Shankh shells. These bangles have been found in most of the Harappan settlements and they were in demand in Mesopotamia too. Sutkagen-dor was meant to be a port for ships going to the Persian Gulf. The location of Harappan settlements indicates that they were performing a variety of functions. While most of the sites would be agricultural and pastoralist villages, there were other kinds of settlements meant for extracting semi-precious stones, factory sites at Rohri in Sind for making stone tools and coastal settlements for trading and extracting sea shells. There seems to have been regional and local specialization in crafts. This specialization required coordination by a power structure.

It has been shown by some scholars that the coming of the Harappan urbanism signified a distinct shift in trade routes. Communications down the Bolan route to Kandahar ceased. Pre Harappan settlements like Mehrgarh, Mundigak and Shahr-I-Sokhta were in contact with each other. In the urban phase the Harappans do not show any contact with these settlements. The Harappan elite obtained its supply of precious objects like lapis lazuli by founding its own settlements in places like Shortughai.

5.7.2 Hierarchy of Settlements

Harappan settlements ranged in size from 150 hectares to less than a hectare. The majority of sites were around six hectares or less. Each geographical region had its own hierarchy of settlements. For example in the Cholistan area in the Ghaggar-Hakra basin the site of Ganweriwala is the same size as Harappa (150 hectares) while 8 sites are 10 to 50

hectares, 20 sites are 5 to 10 hectares and 44 are between 1 to 5 hectares. Probably the mid sized settlements acted as nodes in the local economy. They supplied metals and precious stones needed in the villages. These middle level settlements in turn were dependent on the larger settlements for rare precious metals obtained from distant places.

It is believed that Mohenjodaro had a population of 35000. Villages do not house such large populations. If such a large number of people lived in one place it has to be explained by additional functions like administration, religious activities, trade and crafts production. The elite of the city appropriated and exploited the resources of areas near and far. These activities offset the disadvantages of congregating in a small space. In fact hierarchy in site size indicated domination and control of the smaller sites by the larger sites. This is substantiated by the finds of rare luxury items like gold, silver, turquoise and lapis lazuli in larger settlements like Mohenjodaro and Harappa. Also the evidence for the presence of a large number of craftsmen in these settlements indicates that they had clustered in a small area. These non-food producers depended on the agricultural produce of the villagers of the surrounding areas. The presence of granaries in cities like Harappa, Mohenjodaro and Lothal indicate that grains were procured from villages and stored in the city. Cities are units of settlement which dominate villages with their economic, political or religious power.

Finds at Harappan settlements indicate that it was a society controlled by a small elite. This is proved by the presence of large exclusive buildings, expensive imported items which were the preserve of a few and the well regulated planning of many of the settlements. These divisions between rich and poor, rulers and the ruled are possible in state societies only. This was a state which was actively involved in the economy. The uniformity in brick size, pottery and bronze tools can be attributed to the mobilization of skilled craftsmen across the entire area of the Harappan civilization. Besides it was the political unification achieved by the Harappan elite that made it possible for small communities in Nageshwar to produce shell bangles for faraway centres like Mohenjodaro. Similarly, stone weights manufactured at Chanhudaro were in use in Mohenjodaro. Evidences at Lothal suggest that goods brought from distant areas were stored possibly for shipment. All this shows that these urban centres had been assimilated in a larger trans-regional economic system. That state was actively involved in the economy is proved by the uniform system of weights, seals and writing. Precious objects available at great distance needed a rich and powerful elite to mobilize personnel to procure them. The Harappan state seems to have intervened in managing the distribution and procurement of such objects from distant areas.

5.7.3 Agriculture and Pastoralism in the Harappan Civilization

Villages in the Harappan civilization show the same diversity as the urban settlements. This is because they are located in divergent ecological zones. The technologies used in agricultural production seem to have been already in place in the 'early Harappan period'. As mentioned earlier, the use of plough would have increased agricultural production. They also made wells and practiced lift irrigation. In Shortughai has been reported the find of a canal. Possibly such canals were built in other settlements too. Probably, the real innovation of the Harappans was the use of a variety of food crops. They grew wheat, barley, grams, lentil, linseed and mustard as winter crop and Bajra, Ragi, Jowar, sesamum and cotton as summer crop. Among the domesticated animals oxen drew plough and carts while cows provided milk. While sheep provided wool and meat, goats were used for their meat.

Pastoral nomadism must have been an important ingredient of the economy. They tended

herds of sheep, goat and cattle. The manure provided by these animals is critical to agricultural productivity even in modern times. In many cases in Harappan world where droughts and blight could wipe out agricultural production, pastoral nomadism was a useful form of adaptation. However, we have limited information about these communities. Harappans also consumed fish and wild game whose bones have been reported from some of the settlements.

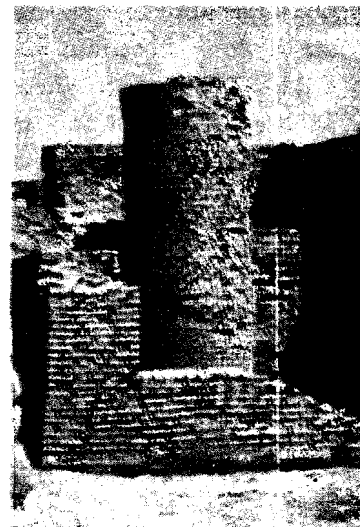
5.7.4 Town Planning

Planned streets and drains with planned housing complexes in places like Mohenjodaro, Harappa and many other settlements reveal an important fact. These towns did not grow organically from the pre-existing villages. Pre conceived housing pattern indicates that these cities were planned and built first and residents moved in later. This indicates that the economy had moved beyond the realm of individual households. Decisions about the location and



**Corbelled Drain, Harappa
(After Kenoyer)**

building of a household were not taken by the head of the family but by a superior authority ruling over the city. There were some innovations in building tradition. Large pillared halls, clerestory courtyards and thick walled two storied structures were innovations of the mature Harappan



**Well, Mohenjodaro
(After Kenoyer)**

period. At Dholavira in Gujarat we find innovations in the extensive use of stone as a building material.

The cities and buildings of Harappa indicate that there were people who lived in large houses. Some of them bathed in exclusive swimming pools (the Great Bath). There were others who lived in small barracks. One can say with certainty that those who lived in larger houses belonged to the richer groups whereas those living in the barracks might have been part of a servile class of labourers. In other words the Harappan urbanism shows the emergence of a class society hierarchically divided between rich and poor and dominant and dominated.

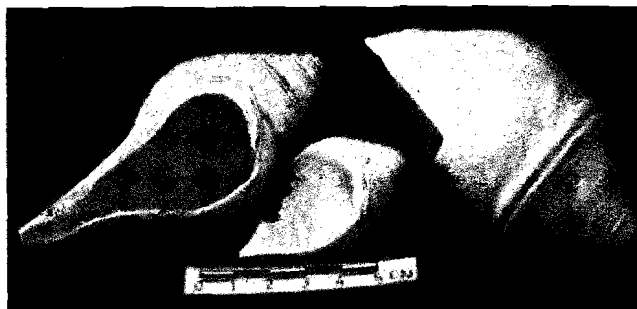
5.7.5 Craft Specialisation

One of the important features of urbanism is believed to be craft specialization. It is believed that in the pre urban societies every member of the group performed agricultural or hunting gathering activities. In the spare time individuals pursued their hobbies. They made beautiful stone tools or wove basket. Some times these crafts persons bartered their produce with other people in the village. In exceptional circumstances they could stop producing food altogether. Normally these were activities in addition to food production. The coming of city coincided with the emergence of a group of crafts persons who met a part of their needs by buying and selling things in the market. They were generally patronized by the rich and powerful of their society. These powerful people needed craft products like precious stones and jewelry to enhance their status. These

powerful people would procure precious stones from distant places which in turn would be worked by the crafts persons. As a result many of the crafts persons stopped producing food for themselves. Since crafts persons do not grow their own food, specialization means that specialists exchange their wares with others for obtaining raw material and food.

There are evidences for the presence of craft specialization in many Harappan cities. For example shell was frequently used as a material for making bangles, cups etc. Shell

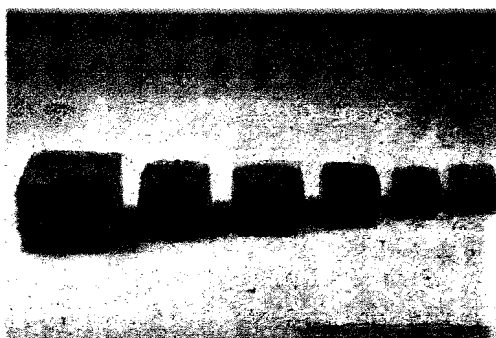
was obtained from the sea. It was procured from the sea and cut into various shapes. This can be inferred from the heaps of waste shell pieces with half finished ones at settlements like Nageswar and Balakot. Considering the small size of these settlements and the large output of shell objects, it is obvious that these objects were



Libation Vessels, Mohenjodaro (After Kenoyer)

not for the immediate consumption of the community. This fact is further buttressed by the fact that shell objects have been reported from Harappan settlements as far apart as Harappa and Shortughai. One can say that the producers of shell objects were craft specialists participating in an exchange network extending from Gujarat to Badakshan in Afghanistan. Shankh shells have been reported from Mesopotamian settlements too. This means that these crafts persons were participating in long distance trade beyond the boundaries of the Harappan civilization.

Harappan settlements have yielded evidence for various other kinds of craft activities. The widespread use of long chert blades produced in Rohri hills in Sind again is the pointer to a trans-regional economy which is producing objects of everyday utility in centralised locations. Chert blades produced in the Rohri hills have been found in settlements as far apart as Balakot and Shortughai. Copper- bronze tools have



Weights, Harappa (After Kenoyer)

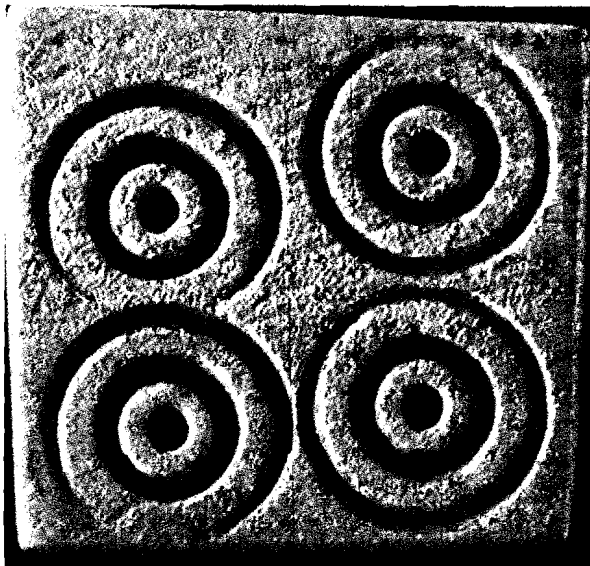
been reported from a large number of Harappan settlements. At Chanhudaro have been reported evidences for the manufacture of stone weights, seals, shell bangles, steatite and carnelian beads.



Seals, Mohenjodaro (After Kenoyer)

We can conclude that urban crafts persons were producing for exchange. It presupposes a demand for such goods. In settlements like Mohenjodaro have been reported workshops for making beads of

carnelian and lapis lazuli. This means that an elite had emerged which funneled raw materials from distant Central Asia and peninsular India to urban workshops. The range of products seems to suggest that the craft persons were producing goods for the common people as well as the rich. Even very small Harappan settlements like Allahdino have



Steatite Button Seal, Harappa (After Kenoyer)

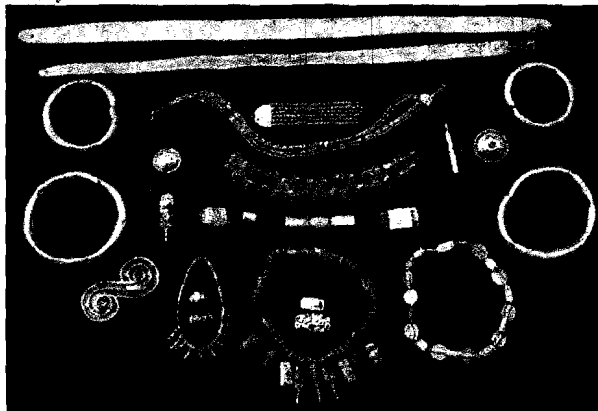
bangles, awls and chisels. However, it was a rare commodity. In the urban phase copper/bronze artifacts have been reported from most of the settlements. In addition to the items of the pre urban phase these include fish-hooks, axes, dagger, swords, mirrors, large vessels and adzes. Gold and silver too have been reported from many settlements. Silver

yielded high status objects like lapis lazuli or seals and sealings. This suggests a very high degree of integration of the local economies in the inter-regional economy.

The coming of Harappan urbanism showed an increase in the scale and skills of craft production. The earlier method of cold hammering or open mould casting for metals was replaced by two-piece moulds and or lost wax casting. In the pre urban phase settlements like Mehrgarh have yielded evidence for the use of copper. They used it for making



Steatite Beads, Harappa (After Kenoyer)



Gold and Precious Stone Jewellery, Mohenjodaro (After Kenoyer)

vases, bangles and seals have been reported from Harappa and Mohenjodaro. Gold beads, hair ornaments, gold wire and pendants have been reported from many sites.

The new developments in metallurgy helped the Harappans shape better stone tools, beads and ornaments. Long barrel shaped carnelian beads with holes drilled in them were perhaps possible with bronze drills only. Shankh shells were cut with

bronze saws to make bangles, ladles and cups. Ivory, lapis lazuli and numerous other stones were used for making beads, seals, bangles, combs and numerous other luxury objects



Beads, Harappa (After Kenoyer)

The pre-historic settlement of Mehrgarh showed evidence for procuring precious stones from lands faraway. The emergence of Harappan urbanism witnessed a regulation and reorganization of the trade routes. For example a Harappan settlement was consciously planted in Shortughai in the vicinity of lapis lazuli producing area of northern Afghanistan. Similarly, settlements like Sutkagendor in the dry inhospitable Makran sea coast seems to have been founded to provide anchorage to ships sailing from the Harappan ports dotting the coastal areas of Gujarat and Sindh. Even the location of Harappa can be better understood as a place where trade routes from the upper Indus plains, the North West Frontier highlands and Rajasthan converged. So, the merchants and rulers of Harappa could control the supplies of precious stones like lapis lazuli or jade coming through the North West Frontier route. Similarly, the logs of Deodar wood used as ceilings beams of many houses in Harappa could float down the Ravi river from the upper reaches of the Himalayas.

Harappans had trade linkages with the contemporary Mesopotamian cities. Scholars believe that the Mesopotamians knew the Harappan civilization by the name of Meluhha. Mesopotamian kings proudly proclaim that ships from Meluhha brought ivory, gold, carnelian and lapis lazuli to their cities. Such references are supported by the finding of seals bearing Harappan script in Mesopotamia. Harappan shankh shells and carnelian beads have been found in royal graves of Mesopotamia. In the Harappan port city of Lothal in Gujarat the discovery of a dockyard is an important indicator of the long distance trade of the Harappans. Seals found in the Harappan settlements were definitely used for trade because many sealings have been discovered which were used over packed merchandise at Lothal. At Lothal have been found seals of Persian Gulf origin too.

The coming of city implied some radical changes. City was the setting for craft specialization because the urban elite generated the demand for these items. This elite also procured raw material needed by the crafts persons. Cities also created economies linking diverse areas spread over millions of square kilometers. Cities displayed the glories of urban art and architecture. They were also the scene of exploitation of masses – a vertical division of society between rich and poor. The concentration of the productive forces meant that the goods and services previously enjoyed by all in relatively egalitarian self subsistent communities could be greatly multiplied but not shared by all.

5.7.7 Decline of the Harappan Cities

Harappan cities enjoyed the greatest period of prosperity between 2200 BC to 2000 BC. Then decline set in. Cities like Mohenjodaro, Harappa and Kalibangan witnessed a gradual decline in urban planning and construction of the houses. Houses made of old dilapidated bricks encroached upon roads and streets. The 'Great bath' fell in disuse. By about 1850 BC settlements like Mohenjodaro and Harappa were abandoned. Important features of the Harappan civilization like script, weights, pottery and grand architectural style disappeared altogether. Scholars are not clear about the causes of the end of this civilization. The subsequent period saw the expansion of agricultural communities in various parts of the Indian subcontinent. It took another 1200 years for cities to emerge again.

5.8 SUMMARY

The transition of foraging cultures to sedentary life occurred initially in one part of the Indian subcontinent as early as the seventh millennium BC and in the subcontinent in general by the third-second millennium BC. The beginning of food production coincided with domestication of animals and the beginning of the use of pottery. The earliest farming group in Indian subcontinent was that in Mehrgarh. By the fifth millennium BC there emerged many agricultural villages in the Baluchistan region. By 3300 BC one sees the emergence of regional traditions. There occurred dramatic changes in the agricultural techniques. For the first time we find evidences of ploughed fields; settlements with fortifications; and the emergence of rudimentary form of cities. Mature Harappan period was truly an urban phase. Harappan settlements were characterized a hierarchy of site size as well as habitations. There were people who lived in large houses while others were housed in barracks. Urbanization brought noticeable specialization in craft production and long distance trade. This urbanism ended around 1800 BC. Scholars are not sure about the causes of the decline of the Harappan civilization.

5.9 GLOSSARY

Ice Age

Ice Ages refer to periods when large parts of the globe were covered with ice sheets (glaciers). During the last 2 million years over 20 glacial advances and retreats have occurred. The Pleistocene period corresponds with the last Great Ice age.

Levant

The term refers to an area roughly bound by the Mediterranean Sea in the west and the Zagros Mountains in the east. The area stretched from Suez to the Taurus Mountains, including present-day Israel, Lebanon, western Jordan, the Sinai in Egypt, and parts of Syria. It became the center of many important events, particularly the Crusades.

Lost Wax Casting

It is a method of producing metal sculptures. At first a mould is created from an original sculpture, wax is poured into the mould. The wax impression is encased inside and out with refined clay. Once the clay sets, the wax impression is fired in a kiln; the wax melts out of the clay mold, and is "lost." The void created by the melted wax in the clay mold is then filled with molten brass (or any other desired metal) which is identical to the wax impression it replaced. The clay mould surrounding and inside the sculpture is delicately removed, revealing the cast sculpture. gris (green-gray) or bronze

luster. This labour intensive method of lost wax casting has been widely practiced by the Harappans and the Egyptians to produce unique sculptures.

Piedmont Zone

The piedmont zone, built up by the coalescence of alluvial fan deposits. Owing to high permeability, this zone hardly retains any water and hence forms a high recharge zone with relatively deeper groundwater level. Typical landforms in this zone include gravel deposits (*bhabar*) and plains (*tarai*).

5.10 EXERCISES

- 1) Visit a nearby village and list the differences between city and villages.
- 2) Take a journey to some potters' village or house/s. Find out the techniques used by them.
- 3) List the chief characteristic features of Harappan cities. Compare them with the modern city structures and town planning.
- 4) Buy a map of Indian Subcontinent and try to map put the places related with pre-Harrappan, and Harrappan sites. Try to locate the movement of the early settlers.
- 5) Visit nearby museum. Locate the items available in the museum related to Neolithic, Mesolithic, and Chalcolithic cultures.
- 6) Find out how excavations are conducted. List items of interests there.
- 7) On a map locate the early agricultural settlements. Do you see any change in the settlement pattern when cities emerged?

5.11 SUGGESTED READINGS

Bridget and Raymond Allchin, *The Rise of Civilization in India and Pakistan*, Indian edn., New Delhi, 1983. (For the beginning of agriculture it is the most useful general reading.)

Bridget and Raymond Allchin, *Origins of a Civilization*, Penguin Viking, Delhi, 1997. (This book by the same authors is more up to date.)

Gregory L. Possehl, *Indus Age : The Beginnings*, New Delhi, 1999. (It is useful for the beginnings of urbanism. It covers such themes as the geographical setting, plant and animal history. For the urban period.)

Gregory L. Possehl (ed.), *Ancient Cities of the Indus*, Vikas, Delhi, 1979. (It is a useful collection of articles on the Harappan civilization. Apart from handling many other themes it attempts to put together papers on anthropological theory and long distance trade.)

Shereen Ratnagar, *Understanding Harappa Civilization in the Greater Indus Valley*, Tulika, Delhi, 2001. (It tries to understand the emergence and end of the Harappan civilization in the context of bronze age.)

J. Kenoyer, *Ancient Cities of the Indus Valley Civilization*, Oxford University Press, Delhi, 1998. (It is a well written description of the Harappan cities.)