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-Content for Post Graduate Courses

Paper No. : 03 Archaeological Anthropology

Module : 13 Indus valley civilization

Development Team

Principal Investigator	Prof. Anup Kumar Kapoor Department of Anthropology, University of Delhi
Paper Coordinator	Dr. Manoj Kumar Singh Department of Anthropology, University of Delhi
Content Writer	Prof. Mani Babu, Department of Anthropology, Manipur University
Content Reviewer	Prof. Anup Kumar Kapoor Department of Anthropology, University of Delhi

Description of Module	
Subject Name	Anthropology
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Learning Objectives

- To know about Indus valley civilization
- To understand the features of Indus valley civilization
- To understand the town planning and other systems existing during that time
- To know and understand the possible reasons the decline of Indus valley civilization

Introduction:

The Indus Valley or Harappan civilization flourished during Indian's Bronze Age Period (third-second millennium B.C.E.), the first scratch of its evidence dates back in the late 1850s,where British engineers searching for ballast for a railway line in the northwestern India (Pakistan) stumbled upon the remains of the ancient city. The engineers were only interested in the well-fired bricks from the ruins, and they proceeded to quarry the city for that resource. It was not until the early twentieth century that archaeologists appreciated the full significance of this unwitting discovery. The discovery actually begins in March or April 1829 when Charles Masson visited the huge mound adjacent to the modern village of Harappa, near an abandoned course of the Ravi River in the Sahiwal District of the Punjab(Pakistan) (Possehl 1999). Subsequent works follow the archeological research in this valley. Mention may be made of the ventures of eminent persons, like Lieutenant Alexander Burnes (who in 1831 made historic journey upto the Indus River and also visited Harappa in 1833 and was the first man to publish it as an archeological site [Burnes, 1934]), Rai Bahadur Daya Ram Sahani the then Superintendent Archaeologist, Sir John Marshall, D.R. Bhandarkar (who visited Mohenjo-Daro in the winter of 1911-12), Following the excavations at Mohenjo-Daro and Harappa in 1920-21 by Rakhal Das Banerji, Sir John Marshall, Daya Ram Sahni, Madho Sarup Vats, etc the important features of this riverine civilization have been first unveiled.

Since many of its settlements and also of the two important large cities, such as Mohenjo-Daro and Harappa occurred along the valley of the Indus River, the civilization existed during the Bronze Age came to be known as the "Indus Valley Civilization". And the first recognition was made at the site at Harappa (near Montegomery in Pakistan) it also came to be known also as Harappan civilization.

1. Geographical Extension

The spatial extension of the Indus civilization is very vast, covering an area of over 2 million square kilometers radiating from the valley of the Indus. The 1400 plus settlement sites discovered so far are distributed over a very wide geographical area extending in the west is upto Sutkagendor in Baluchistan; Alamgirpur in Merrut District (Uttar Pradesh) in the east; Daimabad (Ahmadnagar District, Maharashtra) in south; and Manda (Akhnoor District, Jammu and Kashmir) in the north, covering an area of almost 1600 km. east – west and 1400 km. north-south. The estimates of area vary according to the point of view of different scholars; Kenoyer (1991) estimated it about 680,000 sq. km., Possehl (1991) estimated it one million sq km, while Agrawal (2009) gave an area of about 1.5 million square kilometres (at its peak). It spread over the present day western parts of India, Pakistan and Afghanistan covering about one-third of the present landmass of the region.

More than 2,500 sites have been listed by Possehl (1999) that were part of the region that marks the spread of the civilization at its peaks. However, most of these sites are small to medium sized and less than 10 sites have an area exceeding 0.5 km^2 (Joshi 2008). Nearly 350 sites are reported to have located along the course of the dried-up Hakra River which is a continuation of the Ghaggar of the Indian Territory. A site count published in 1984 showed about 138 classic Indus civilization sites in Uttar Pradesh, Haryana, Punjab, and Rajasthan. The largest site – Rakhigarhi in Hissar district – is said to be as large as Harappa. The classic Harappan site count in Gujarat in 1984 was 101; 30 in Kutch; 12 in mainland Gujarat, and 59 in Saurastra. Lothal, Surkotada, Padri, Rangpur and Rojdi are among the major excavated sites of this region. S. R. Rao (1991) divides the Harrapan area into six regions, such as –

1. Punjab (type site: Harappa)
2. Rajasthan, Haryana (type site: Kalibangan and Banwali)
3. Bahawalpur (type site: Ganweriwala)
4. Sindh (type site: Mohenjo-Daro)
5. Baluchistan (type site: Kulli, the Harappa phase)
6. Gujarat (type site: Dholavira)

The Indus sites can be classified into a number of categories on the basis of its size, such as, i) small villages (which are upto 10 hectares), ii) larger towns and small cities (10 to 50 hectares), and iii) large cities, like the settlements at Mohenjo-Daro (+250 hectares), Harappa (+150 hectares), Ganawariwala (+80 hectares) and Rakhigarhi (+80 hectares), Kalibangan (+100 hectares), and Dholavira (+100 hectares).

2. Phases of Harappan Civilization

The archaeological works for the last eight decades reveal the gradual developmental phases of the Harappan culture. The whole Indus periods between circa 4000 and 1500 B.C. are recognized to have different phases, such as, Pre-Harappan, Early Harappan, Mature Harappan, and Late Harappan (Kenoyer, 1991). The colonization however took place at different geographical areas. The pre-Harappan stage, which is characterized with settled agricultural life from the earlier nomadic stage, is represented by the remains at eastern Baluchistan. The excavations at Mehrgarh reveal the existence of pre-Harappan culture. Baluchistan, Indus and Ghaggar valleys, Kutch and parts of Saurashtra were

colonized during Early and Mature Harappan times. The mature-Harappan phase is also seen at Kalibangan with its elaborate town planning and urban features, whereas the upper course of the Sutlej along the Siwalik foothills, trans-Yamuna region of Uttar Pradesh and most of Saurastra were colonized during Late or Post-Urban Harappan times. Of these phases, H.D.Sankalia is of the opinion that the mature or Urban or Harappan Proper is meant for the Indian Bronze Age Culture. The Harappan urban phase according to Kenoyer (1991) is related to many of the so-called Pre Harappan cultures and Mughal (1970) proposed the term Early Harappan to characterize the pre- or proto urban phase.

Mature Harappan is the full urban phase as represented at the core urban centers (Dales, 1966; Fairservis, 1967). Possehl (1977) use the term "urban Harappan" in contrast to pre urban and post urban phases, however there is evidence for urban centers and associated infrastructures both before and after the Mature Harappan (Shaffer, 1981; Mughal 1990).

The terms Early Indus and Mature Indus (Allchin and Allchin, 1982) are used to emphasize the pan-Indus character of the culture. Similarly, the "Greater Indus Valley" includes the plains and deltas of the Indus and Ghaggar-Hakra rivers, the eastern Punjab and Rajputana, and the piedmont and submontane regions to the west and north (Mughal, 1970). Late Harappan refers to the final phase having local names for regional cultures, such as Cemetery H culture in Punjab and Jhukar culture in Sindh. Likewise "Post Harappan" or "Post Indus" usually applies to later assemblages such as Gandhara Grave Culture (Stacul, 1989), Painted Grey Ware Culture (Joshi, 1978; Lai, 1985; Mughal, 1984), Northern Black Polished Ware Culture (Roy, 1986), and the Black and Red Ware Cultures of peninsular India (Singh, 1978) etc.

3. Chronology

When the Harappan civilization was first recognized in 1920s the dating was done mainly on the basis of the findings of Harappan seals on Ur and Kish in Mesopotamia. On that basis Marshall suggested that Harappan civilization flourished between 3250 and 2750 B.C. Mortimer Wheeler gives 2500+1700 B.C. as the date of Harappa culture. With the new development in the ^{14}C-dating method, the chronology of this civilization has been assigned, such as, Early Harappan Phase: c. 3500 – 2600 B.C. Mature Harappan Phase: c. 2600 – 1900 B.C. Late Harappan Phase: c. 1900 – 1300 B.C. Integrating the archaeological and carbon-14 dating evidence, D.P. Agarwal came to conclusion that the total time span of the culture should be between 2300 and 1750 B.C. He proposes time spreads of 2350-2000 B.C. for the metropolitan centres and 2200-1700 B.C. for the peripheral sites. G.F. Dales gives the mature Harappan a span of 2154 – 1864 B.C. From the study of the samples of Phase II of Kalibangan, it appears that the beginning of the Harappan culture can be placed at 2200 B.C. at the maximum and

1800-1700 B.C. for the end. At Lothal, another series gives dates between 2080+115 and 1800+140 B.C. years respectively, and a single date from a late level at Mohenjo-Daro gives 1760+ 115 yrs. Thus the available dates suggest that for the peripheral Harappan regions, the maximum spread could be 2200-1700 B.C.

4. General Characters

Indus civilization had a complex and sophisticated features with regional variants however many (Agrawal 2007, Possehl 1999, Wright 2010) are of the opinion that it had a uniform character in its own right. An exhaustive list of Harrapan character delineated by Joshi (2008: 48–49) reveals the myriad distinct characteristics that identify the sites of this civilisation. These include:

1. Characteristic written materials and seals.
2. Beads and other jewellery.
3. Standardized brick sizes in the ratio of 1 x 2 x 4.
4. Planned towns with citadels, platforms and podiums and specific burial patterns.
5. Standardized weights.
6. Black or red painted pottery.
7. Parallel sided blades.
8. Copper and bronze articles.
9. Terracotta toys.
10. Cotton, barley and wheat.

Mayank Vahia and N. Yadav (2011) are of the opinion that sophisticated water management may be added with these above features delineated by Joshi. Possehl (1990) has pointed out a number of Indus characters around 2600 BC. at the time interval of about 100 to 150 years coinciding with a change from Pre-urban to Early Harappan State, such as –

1) Writing on well designed and carefully made seals with high quality animal motifs;

2) Town planning and development of: a) massive brick platforms, b) well-digging, c) drainage system, d) grid plans for city;

3) Appearance of widely used system of weights and measures;

4) Other changes in a wide variety of lifestyle material such as ceramic corpus;

5) New art forms and stylistic growth such as new human and animal figurines;

6) Distinctive Harappan black – on red slip painting style;

7) Core trends of urbanisation such as: a) social stratification, b) apparent emergence of the state and political differentiation, c) craft and career specialisation, d) creation of cities and a new form of social regulation.

5. Harappan Architecture: TOWN PLANNING

Building well-planned cities on riverine plains of Indus signify one of the most important features of this civilization. The development of chief metropolitan centers such as Mohenjodaro and Harappa were and others of secondary important towns like Chanhudaro, Kalibangan, Kot Diji, Lothal, Ropar, Sutka-gender and Sotka-koh are worth mentioning. Uniformity in town planning in terms of the layout of the town, streets, structures, brick-sizes and drains are also significant.

MAJOR HARAPPAN CITIES:-

Some of the major Harappan cities are –

i) **Harrapa (**25Km west-south-west of Montegomery, the district headquarter of the Pakistan Punjab)**,**

ii) **Mohenjo-Daro** (27°19'N and 68°8'E. - located on the right bank of the Indus in Larkana district of Sindh in Pakistan),

iii) **Chanhu-Daro** (26°11‟N and 68°19‟E. - located 20km east of the Indus and 130Km to the south of Mohenjo-daro in Nawabshah district of Sind in Pakistan),

iv) **Balakot** (25°28‟30”N and 66°43‟30”E – in the Las Bela district of Balochistan in Pakistan),

v) **Kalibangan** (29°25'00"N and 74°05'00"E - located along the left bank of the dried-up bed of the river Ghaggar (ancient Sarasavati) in Ganganagar district of Rajasthan),

vi) **Banawali** (29°31‟N, 75°23‟E - located on the bank of ancient Saraswati River in Fatehabad district of Haryana, at about 120Km north-east of Kalibangan and 220Km north-west of Delhi),

vii) **Rakhigarhi** (29°16'N and 76°10'E) - located on the right bank of the dry course of the Drisadavati in the Hissar district of Haryana),

viii) **Balu** (29°40'N and 76°22'E, located at a distance of about 17Km west of the Kaithal and 4Km north of the village Balu),

ix) **Kunal** (29°30‟N and 75°41‟E - in district Fatehabad, Haryana on the bank of dried up course of the Saraswati),

x) **Dholavira** (23°53‟10”N and 70°13‟E in district Kachachh in Gujarat),

xi) **Lothal** ($72^0$14‟25”E and $22^0$31‟25”N - four miles away from Bhurkhi that lies between Rann of combay the Little Rann of Kutch in Gujarat),

xii) **Diamabad** is a deserted village on the left bank of the Pravara River, a tributary of the Godavari River, Maharashtra state),

xiii) **Alamagirpur** ($29^0$00” 00”N and $77^0$22‟00”E, - an easternmost post of the Harappan civilization located in Meerut district of Uttar Pradesh),

xiv) **Sutkagendor** ($25^0$30‟00”N and $62^0$00‟00”E. - located on the extreme eastern edge of the wide Dasht Valley in the Makran on the Iran-Pakistan border),

xv) **Farmana** ($29^0$04‟44”N, $76^0$17‟10”E – located at a distance of about 14Km from Meham, Haryana),

xvi) **Bhirrana (**$29^0$33‟N and $75^0$35‟E - situated at about 220 Km to the northwest of New Delhi on the New Delhi-Fazilka national highway), Bhagwanpura (30°04'N, 76°57'E - situated at a distance of 24km north-east of the District Kurukshetra, Haryana),

One of the significant features of town planning is the grid or rectangular system – both characters can be seen in the layout of citadel and lower town. High rampart wall on broad foundation of mud-work, city gates, and a moat, etc characterizes the citadel. At regular intervals of the city wall are provided with bastions. Arrangement of parallelogram plan is seen at the citadel at Harappa.

5.1 The Planned Cities

The Harappans were great town planners and the overall layout is distinguished by the orientation of streets and buildings, according to the cardinal directions like east-west, and north-south. The Indus cities at different sites were all well-planned having more or less uniformed architectural characters. Each city comprised a series of walled sectors or mounds, oriented in different direction. Mohenjo-Daro, Harappa and Kalibangan have a high rectangular mound on the west and extensive mound to the north, south and the east. But at the sites like Dholavira and Banavali there was only a single walled mound internally divided into three or four walled sectors. The excavations at the Harappan city sites like Mohenjo-Daro, Harappa, Kalibangan, Surkotada show that there were large gateways at various entry points of the city. These gateways are seen even in the inner fortification areas also. At Dholavira a large inscription, possibly a fallen signboard, was found close to the main gateway. The letters of the inscription are the large example of writing ever discovered from any Harappan city, is made from white gypsum paste inlay set into a wooden plank. Ten symbols (each measuring approximately 37cm. high and 25 to 27cm wide) proclaimed some name or title. Mounted above the gateway the signboard would have been visible from a long distance.

Lothal was planned more or less on the same architectural pattern as Harappa and Mohenjo-Daro – where the settlement was divided into various blocks from A to G. The Acropolis occupying the southwestern sector comprises Blocks B, C and D and the Lower Town includes "Blocks A, E, F and G". The fortified wall of Lower Town at Kalibangan had fortificated rough parallelogram plan, the eastern and western walls running due north-south but northern one was slightly deviating from east-west. In south the wall was completely eroded by flood. The east-west extent of the Lower Town was 240m; the north-south length was about 360m (Agarwal 2007). The mud-bricks were used in the construction of fortification wall, but at a few places kiln-fired bricks were also employed.

5.1.1 Streets and Lanes: Another outstanding feature of the Harappan planned cities is the well laid-out streets and side lanes equipped with drains. The broad streets that run at right angles both east-west and north-south, makes the city into many divisions. Their width at Mohenjo-Daro varied from 9 to 34 feet. They intersected at right angles dividing the city into square or rectangular blocks. Each lane has a public well. Lamp-posts at in the streets and lanes at Mohenjo-Daro are unpaved but at Kalibangan the material used for metalling the road surface was terracotta nodules. To avoid damage to the houses in street corners by the sudden turning of the cart, wooden fender posts were provided. Lothal was divided into six blocks, each built on an extensive mud-brick platform of a varying height. Vats recognized several essential elements of city-planning at Harappa, such as the citadel and Lower Town, and the criss-crossing of streets and surface drains. At Mohenjo-Daro, the Lower Town was to the east

of high citadel mound. It consists of low mounds covering over 80 hectares. These mounds are named as DKG-area, VS area, and HR area, etc and they were divided into major blocks by four major north-south streets and four equally wide east-west streets.

At Chanhu-Daro, a characteristic town planning is having the crossing the streets and Lanes one another at right angles, however, the orientation of these was not in the north-south and east-west as per the Harappan practice, but northwest-southeast and northeast and south-west. The width of the main street at Chanhujo-Daro measures 7.5m. Most of the streets were provided with covered drains made of kiln fired bricks. At Lothal the streets were running in cardinal directions and interconnecting various blocks in the Lower Town.

5.1.2 Buildings: Buildings were built on high raised platforms, which come within two main classes – 1) Dwelling houses, and 2) Public building.

- *Dwelling houses* - One of the most recognizable features of Harappa is buildings. The multi-roomed and probably multi-storeyed houses with rooms arranged around courtyards are a common feature of Harappan architecture (Shendge 2003). The size of dwelling house varies from the smallest having not more than two rooms, with large dwelling complex provided with several rooms, kitchen, courtyard, bathroom and possibly an upper storey. The houses at Harappa show uniformity in the construction with raised platforms. Considerable variation in the raw materials used and the style of construction are seen in the Harappan houses. The most common building materials in the alluvial plains, where most settlements are located, were mud-bricks and kiln-fired-bricks, wood and reeds. However, in rocky foothills and on the Islands of Kutch and in Saurashtra, where stone is a commonly available, dressed stone replaced brick. The average size of brick used for houses was 71/2 X 15 X 30 cm. but for the construction of fortification walls the size of the brick was of bigger size namely 10 X 20 X 40 cm. Both sizes of bricks have identical proportions 1: 2: 4, that the width is double the thickness and the length four times, the thickness. The doors and windows were made of wood and mats. The floors of houses were generally hard-packed earth that was often plastered. Bathing areas and drains were made with baked bricks or stone. Some rooms were paved with bricks or fired terracotta cakes. Very few actual roof fragments have been recovered. They were probably made of wooden beams covered with reeds and packed clay. In rare instances timber also seems to have formed a semi-structural frame or lacing for brickwork. Excavations have uncovered many types of houses and public buildings at both large and small settlements. Most of the architecture can be grouped into three categories, with some variations.

At Mohenjo-Daro most of the houses or group of houses had at least one private well and along the streets there were public wells for travelers and the general public. Michael Jansen has calculated that the city may have had over 700 wells (Kenoyer 1998). Chandu-Daro houses consisted of a few rooms, a courtyard, a privy and bath. Brick floors were generally provided in the baths and privies. George F Dales's preliminary excavations (1973-1974) at Balakot site (Lalochistan, Pakistan) revealed: a) buildings made of mud bricks, and kiln fired bricks for a few drains, b) one toilet room having a ceramic bathtub, and c) an ornate floor with intersecting circles on the terracotta tiles, floor of a room has white line plaster with burnt remains of wooden column. The houses at Kalibangan had a courtyard with rooms along its three sides and an entrance on the fourth. The entrance was sufficiently wide, so as to let a bullock-cart in. The cooking was usually done in the open courtyard, to allow free escape to smoke. A well was also sometimes located in the courtyard. Occurrence of oval or rectangular 'fire-places' at different levels was a noteworthy feature of the houses at Kalibangan.

- *Public Buildings* - Some of the buildings of public importance at Indus valley include a great structure, with extra-thick outer walls, near Stupa Mound at Mohenjo-Daro, named as the Collegiate Building which probably housed some high official, the high priest, or a college of priests. A pillared hall, 80 feet square, divided into long corridors interspersed with low benches having even seats may probably have served for a public assembly. In the *DK*- area a big structure 250 feet long was taken to be the palace. A big building in *VS*-area (87` x 64.5`) with neatly paved floors and a room with fine conical pits has been suggested to be a restaurant. A more significant structure seems to be the so-called House AI, in *HR* area. It is 52` x 40` with 4` thick walls. Nearby was found the famous seated image of a bearded man. Mortimer Wheeler identified it with a *temple.* Moreover, another remarkable feature of the citadel mound at Mohenjodaro is the Great Bath. This finely built brick structure measures 12m by 7m, and is nearly 3m deep from the surrounding pavement. It is approached at either end by flights of steps and the floor was constructed of sawn bricks set on edge in gypsum mortar, with a layer of bitumen sandwiched between the inner and outer brick layers. Water was evidently supplied by a large well in an adjacent room, and an outlet from one corner of the bathe led to a high corbelled drain disgorging on the west side of the mound. Surrounding the bath were porticos and sets of rooms, while a stairway led to an upper storey. It has been generally agreed that this bath was linked with some sort of ritual bathing which has been very common in Indian life right from the ancient times till today.

5.1.3 Dockyard: Dockyard (measuring 223 x 35 x 8 m) is an important structure found at Lothal. It is a large structure provided with an inlet channel (12.30 m. wide) in the eastern wall and a spillway. This

enclose inlet channel was connected with the old river-bed of Sabarmati. Most scholars have identified this structure as a dockyard where ships and boats came for loading and unloading of goods. In view of the fact that a large number of seals have been found in a warehouse close to the dockyard, scholars think that Lothal was a major trading centre of the Harappan civilization.

5.1.4 The Great Bath: The Great Bath at Mohenjo-Daro is an important building in the citadel. The first discoverer John Marshall gave the dimension of the central bath to 39 x 23 feet (Marshall 1931: 24). According to V. B. Mainkar (1984: 147) it has a dimension of 11.89 x 7.01 m. with a 2.44 m depth. Kenoyer (1998: 63) offers approximately 12 x 7 m, which is almost same with that of the dimensions given by Jansen (1978, 1997: 227). These measurements come to a quite close with a later measurement by Danino (2008) which yielded an average of 12.1 x 7.1 m. There are ten columns along the length and seven along the width of the colonnade that surrounds the bath (Danino 2008). The brick-paved courtyard is surrounded by verandahs, at the back of which are ranged rooms are arranged on three sides. The water in the tank was supplied by a double ringed well.

Immediately to the west of the Great Bath at Mohenjo-Daro is a group of 27 blocks of brickwork criss-crossed by narrow lanes. Overall it measures 50m. east-west and 27m. north-south. Somewhat similar structures have been found at Harappa, Kalibangan and Lothal. These structures have been identified as *granaries* which were used for storing grains. To the south of granaries at Harappa lay working platforms consisting of the rows of circular brick platforms. During the course of excavation, impression of a large wooden mortar was found placed in the centre of one of these circular brick platforms. Such wooden mortars are used in many parts of the world to remove the husk from the grain.

5.1.5 Drainage system

The Indus people maintain proper drains both in the streets and houses and it signifies their good knowledge of town planning. Both at Harappa and Mohenjo-Daro, below principal streets and lanes were found drains covered with brick or stone. Small drains made of burnt bricks were connected with bathing platforms and latrines of private houses joined the medium-sized drains in the side streets. The Lower Town at Mohenjo-Daro was provided with underground and open drains along the streets to take water outside to the city. Soakage jars were also there after an interval of distance in drains, so that the drains could be kept clean. The main street at Chanhujo-Daro was also provided with covered drains made of kiln fired bricks. A good drainage system at Dholavira site was provided inside the castle - the large sized covered drain, starting at the northern end with cesspool and cascades, passed through the broadways and moved off to the western gateway. To cover the drains large - sized stones were used by them. Sometimes, wooden drains were also used in streets. The use of timber, scooped in a U-shaped manner for drains is noteworthy.

5.2 Harappan Economy

The availability of the fertile Indus alluvium land is an ideal place for agricultural activities yielding high production of cereals and the like. The granaries at some Harappan cities clearly suggest that cereals were produced in such large quantities that not only were all the immediate needs of people duly met with, but there was also enough reserve to face any future emergency. Besides rice, a known favoured grain, wheat and Barley (*Hordeum vulgare*) were also principal cereals. Two varieties of wheat known to the people of Harappa and Mohenjo-Daro are the club wheat (*Triticum compactum*) and the Indian dwarf wheat (*Triticum sphaerococcum*). Varieties of millets (such as *ragi, kodon, sanwa, and jowar*), peas and beans were also cultivated. Remains of rice have been found mainly from Gujarat and Haryana areas. Others crops include dates, varieties of legumes, sesame and mustard. Fragments of cotton cloth found at Mohenjo-Daro and other sites show that cotton was also grown. Cotton has been found at Mehrgarh at least 2000 years before the mature phase of the Civilisation.

The cultivated field excavated at Kalibangan shows crisscross furrow marks indicating that two crops were grown simultaneously. This method is followed even today in the Rajasthan, Harayana and western Uttar Pradesh. For tilling fields, wooden plough with a copper or wooden ploughshare was used. Terracotta models of the plough have been found at Mohenjo-Daro and Banawali. The people domesticated large number of animals and skeletal remains include sheep, goat, bull buffalo, elephant, camel pig, dog and cat. Bones of several animals have been found in excavations. A large number of animal that have been depicted on the seals include sheep, goat, humped bull, buffalo, elephant, etc. Bones of wild animals like spotted deer, *sambhar* deer, hog deer, wild pig, etc. are found which evidently were hunted for food. Several types of birds as well as fishes were also hunted for food. Bones of horses have been reported from Lothal, Surkotada, Kalibangan and several other sites. Terracotta figurines of the horse have been found at Nausharo and Lothal.

Intensive agricultural production and large-scale trade played significant roles in the overall economy of the Indus people. Agricultural produce, industrial raw material, like copper ores, stone, semi precious shells, etc. were traded. Besides the raw material, finished products of metals (pots and pans, weapon, etc), precious and semi precious stones (beads, pendants, amulets etc.) ornaments of gold and silver were also traded to various areas. The occurrences of mature Harappan seals and other artefacts in contemporary Mesopotamian civilization, and some of the Mesopotamian and Egyptian objects in Harappan civilization, and the evidence of Mesopotamian documents, establish that the Harappans had trading relationship with that land.

The evidence from Mohenjo-Daro comprises a variety of finds revealing the existence of specialized groups of potters, builders, brick-makers, seal-cutters, bead-makers, and workers of copper, bronze,

stone, etc. There was movement of goods from one place to another. For land-route trade, cart and cattle were used. The terracotta models of the bullock-carts have been discovered in the excavations. There was also maritime trade. The representation on a seal of a mastless ship indicates that the Harappan people were acquainted with maritime vessels. Harappan seals found at different sites were necessary elements in the mechanism of trade. The seals carry two principal kinds of information, *first* there is an animal often before a manger or standard, and *second* there is an inscription varying from one or two to a dozen or more ideograms. Many of the seals appear to carry numerals as a part of their information.

5.3 Dress and Ornaments

Though no specific cloth specimens are found from any of the Harappan sites, we can get some idea of it through a few statues and figurines. One alabaster statue shows that two garments were worn, - a shawl-like cloth formed the upper garment and the lower garment resembled modern *dhoti*. Female attire did not differ from that of the male. A fragment of woven cloth found at Mohenjo-Daro is of great interest. The existence of woven cloth at Alamgirpur was provided with impressions on a trough.

Ornaments included chiefly necklaces, fillets, armlets, earrings and finger-rings for both sexes. There are also various fashions of hair dressing. It appears that the ladies at Mohenjo-Daro knew the use of collyrium, face paint and other cosmetics. It is interesting to note that Chanhudaro finds indicate the use of objects like lipstick, carbonate of lead and face paint. Making of the precious and semi-precious stone beads and weights is another skill of the people, and long barrel shaped cornelian beads (upto 10cm. long) are the finest examples of craftsmanship. In the Harappan civilization, gold objects occur in the form of beads, pendants, amulets, brooches, and other small ornaments. The Harappan gold is of light colour indicating high silver content.

6. Pottery

The wheel-made pottery technology was quite advanced. Important categories include medium to big storage jars of black-on-red, red, grey, buff and black-and-red (only in Gujarat) colours. Potting clay generally is well levigated, with sand, lime and mica as tempering materials, although not in every case was the clay tempered. Wheel was used possibly foot-wheel in Sind and Punjab and hand-operated wheel elsewhere. The thread marks at the bottom indicate that the wheel rotated both clockwise and anti-clockwise.

Some pots were beautifully painted in black on the bright red surface with many designs. The designs are generally geometric but there are naturalistic patterns in some cases. Paintings are in registers, not usually below the waist of the vessel, but exceptions occur. The incised designs are uncommon. Cord-impressions are found on storage jars or basins. The shapes are diverse, ranging from large storage jars to miniature pots. Some shapes, such as vases with an *S*-profile, goblets with scored middle portion and pointed/incipient bottom, perforated jars, jars with globular profile and narrow bottom, dish-on-stands, etc. are distinctive. There are cases of zoomorphic types too. In Gujarat a distinctive type is the stud-handled bowl. The manufacturing areas of potters have been traced on the surface at Mohenjo-Daro, which seems to indicate a common pattern for other sites as well.

7. Lithic Industry

The Harappans continued to use knives of chert blades also. Some of these have the finest examples known from any early culture. The complex and organized character of the operation behind the manufacture of large chert blades found at many Harrapan sites in the Indus valley and elsewhere. For instance, the study of the assemblage at site 480 identified two working stages in this particular workshop: one connected with the production of blades more than 8 cm long and the other with the reuse of cores abandoned in the earlier operations for the preparation of 'smaller-sized bladelet cores'. In the first case, the estimate is that at least 2000 blades were exported from the site. Another point which emerges is the possibility of using a metal point for pressing blades off the body of cores, along with the usual pressure-flaking technique which does not involve the use of metal points.

Lithic flakes and cores occurred in abundance in most of the houses of Mohenjo-Daro, and in this context it is logical to surmise that at least secondary preparations for specific blade-based tools took place in individual households, including some blade production. Cherts, not brought from the Rorhi hills, were also used at Harappa sites, and in such cases the blades are smaller. There is also proof of the presence of a specialized miniature-blade preparation at Mohenjo-Daro. 'Crested ridge' blades, i.e. the blade-like lengths taken out of a core before regular blades are taken out of them occur too. At Lothal, the excavator's inference is that the 'thousands of parallel-sided blades' found at the site served primarily as domestic pen-knives and sickle-blades.

8. Disposal of Dead

The disposal of their dead was done in three forms - complete burial, fractional burial and postcremation burial. The first involved the burial of the whole body. The second involved the burial of

the bones and skull of the dead. The third involved the collection of the ashes and bones of the dead and burying them. Complete burial and post-cremation burial are found at Mohenjo-Daro. Pot burials sometimes with pairs of skeletons, and Burial pit lined with burnt bricks indicating the use of coffins – were evident at Lothal. At Harappa use of wooden coffins are found. At burials in Harappan sites the dead were generally laid in pits. Sometimes, there were differences in the way the burial pit was made – in some instances; the hollowed-out spaces were lined with bricks. Some graves contain pottery and ornaments, perhaps indicating a belief that these could be used in the afterlife. Jewellery has been found in burials of both men and women. In the cemetery found in Harappa in the mid-1980s, a burial contained ornament consisting of three shell rings, a jasper bead and hundreds of micro beads were found near the skull of a male. In some instances the dead were buried with copper mirrors. But the Harappans did not believe in burying precious things with the dead.

9. Religion

Evidence of Harappan religion can be reconstructed through the seals, the figurines and the stone images discovered in the excavations. The building, from which a few stone sculptures have been unearthed at Mohenjo-Daro, is identified with the temple by some scholars. On the basis of these different sources, John Marshall has tried to propose certain basic elements of the Harappan religion.

While the Mother goddess was the chief female deity as represented in terracotta figurines, the chief male deity was *Pasupati*, (proto-Siva) represented in seals as sitting in a yogic posture with three faces and two horns. He is surrounded by four animals (elephant, tiger, rhino, and buffalo each facing a different direction). John Marshall has a strong contention that the large numbers of standing and seminude female figures of terracotta were popular representations of the Mother Goddess. Besides Mother Goddess, number of worshipping were also known to the people, such as, of horned deity, phallic, animal, tree, fire, and so on. The worship of horned deity is noticed at Mohenjo-Daro, Harappa, Gumla, Kot Diji and Kalibangan, etc. Those found at Mohenjo-Daro and Harappa is noteworthy. John Marshall identified the horned deity with the prototype of the historic Siva, who is said to have shared many of his epithets. Regarding the Phallic Worship some scholars connect the conical and cylindrical stones have been found at Mohenjo-Daro and Harappa them with the cult of Siva, which probably symbolize the *lingas*. The so-called animal worship is furnished by the engravings on seals and sealings evidenced from the sites of Harappa and Mohenjo-Daro. A seal of half-human and half-animal figure has been found at Kalibangan. It is asserted that evidence of tree worship is found in two forms - worship of the tree in its natural form, and the dwelling spirit in a tree and not the tree itself. A most remarkable seal found at Mohenjo-Daro represents the deity between the

branches of a papal tree. Several small brick enclosures at Lothal are suspected to have been used for fire worship.

Disposal of Dead

Burial practices of the Harappans can be assessed with the discoveries of cemeteries around the cities like Mohenjodaro, Harappa, Kalibangan, Lothal and Rupar. At Mohenjodaro, complete burial and post-cremation burial were popular, whereas at Lothal the burial pit was lined with burnt bricks indicating the use of coffins. Wooden coffins were also found at Harappa. The Lothal practice was the pot burials sometimes with pairs of skeletons.

10. **Seals and Script**

Small seals, found in large numbers throughout the ruins, are among the most mysterious of Harappa's artifacts. The seals are carved with pictographs, pictures used to stand for objects, sounds, or ideas. More than two thousand seals have been discovered from different sites. Most commonly made of steatite (soft stone). The technique of cutting and polishing these seals with white luster was a unique invention of the Harappan. The seals, made of cut and intaglioed steatite, are magnificent. These have both **square** (with a carved animal inscription) and **rectangular** (with an inscription only) forms; however, tiny and round seals are common at Harappa site. Many of the seals have a small loop on the back. Perhaps people wore them as charms to keep away evil. The seals may also have been pressed into wax to make a kind of tag.

The majority of the seals have an animal engraved on them with a short inscription. Animals engraved on seals comprise buffalo, bulls, tigers, elephants, rhinoceroses, fish, and crocodiles. However, the script has not been deciphered. It is believed that they used ideograms i.e., a graphic symbol. Seals with single symbols, such as the swastika, the endless knot, the multiple cross, or the grid also occur. The seals showing a powerful man holding two hapless tigers by the throat are of great significance because of their similarity to the Gilgamesh motif of Mesopotamia.

It is suggested that the Harappan script engraved on seals consists of about 375-400 signs and that it was written from right to left. Typical Indus inscriptions are of short character to convey the idea directly. The Indus script may be characterized as pictographic because some signs represent bird, fish and varieties of the human form. The clarity and straight rectilinear character and the extent and variety of its signs preclude the possibility of the script being alphabetic. On the basis of overlapping of the

symbols on the inscribed seals and potsherds found at Kalibangan, B.B.Lal proved that the script was written from right to left.

Many attempts at deciphering the Indus script have been made without a success. When Sir Alexander Cunningham reported the first known Indus seal from Harappa in 1875, he assumed that this unique find was a foreign import. A few years later he supposed that the seal might bear signs of the Brahmi script from its unknown early phase. After Cunningham, many scholars have connected the Indus script with the Brahmi script, which was used in India about 1500 years later. On the basis of the resemblance between the Harappan script and the Sumerian/Elamite – some scholars like L.A.Waddel and Pran Nath are inclined to suggest that this script was imported into India from Western Asia. But G.R. Hunter, D. Diringer and K.N. Dikshit hold the view that the Harappan script developed independently in India. S. R. Rao (1982) maintains that the Indus script is the basis of not only the Brahmi script but also of the Semitic consonantal alphabet, which most scholars derive from the Egyptian hieroglyphs and take as the basis of the Brahmi script. The basic signs according to a survey by the Archaeological Survey of India are about 400 to 417. The calculation of sign frequency is remarkably interesting: one sign occurs over 800 times, six signs over 200 times, 24 signs over 100 times, 46 signs over 800 times, 86 signs over 20 times, and 100 signs over ten times.

11. **End of The Indus Valley Civilization**

What causes the decline or end of the great civilization at Indus valley came is a great research area to the archaeologists. There is no unanimous view pertaining to the cause for the decline of the Harappan culture. Various theories have been postulated. Till now, five major theories or explanations have been proposed, such as, climatic change, foreign invasion, tectonic phenomena, environmental deterioration and hydrological changes, etc.

Climatic change - The hypothesis that the reduction in rainfall was a cause of the decline of the civilization was first mooted by Stein (1931) and Marshall (1931), and was also supported by Stuart Piggott (1950) and Mortimer Wheeler (1953). Gurdip Singh (1971) claimed a causal relationship between increased rainfall and growth of the civilization, and between reduced rainfall and decline of the civilization. His hypothesis is on the basis of the palynological data from salt lakes of Rajasthan.

Foreign invasion - Foreign invasions have been considered another factor in the destruction and decline of the civilization. This theory was first mooted by Mortimer Wheeler in 1947 on the basis of description in the Rigveda of the destruction of fortified cities by Aryan Gods, particularly Indra, presence of fortifications at Harappa, and evidence for the massacre of defenseless citizens at Mohenjo-Daro. It was strongly supported by S. Piggott (1950) and D.H.Gordon (1958). However, this

theory was questioned by G.F. Dales (1964) and R.L. Raikes (1964) who argued that not all the skeletons at Mohenjo-Daro belonged to the last phase; there was no evidence of destruction or burning accompanying the skeletons, and no skeletons were found on the citadel where the real defence of the city should be expected to have taken place.

Tectonic Phenomena - Yet another theory first proposed by M.R.Sahni (1952) ascribes the decline of the civilization due to the recurrent floods in the Indus River. It was later elaborated by R.L.Raikes (1964, 65, 67) and D.F.Dales (1966), but the flood theory has been questioned by H.T.Lambrick (1967) and G.L.Possehl (1967) on the ground that the proponents of the theory have failed a) to establish the Stillwater origin of the silts, b) to produce barrier geomorphic evidence for the tectonic uplift and creation of the natural barrier across the Indus course.

Environmental Deterioration - The theory that excessive exploitation of the natural resources like plants and soils, and inability of the populations to cope with the increasingly frequent inundation of Mohenjodaro by Indus floods was initiated by Wheeler (1959). This theory has also been supported by G.L.Possehl, G.F.Dales (1964) and Fairservis (1967).

Hydrological Changes - The abandonment of Mohenjodaro was caused by the eastward shift of the Indus course and the consequent cessation of inundation of the arable land in the vicinity of the city and loss of productivity (Lambrick 1967). R.L.Raikes (1968) had ascribed the abandonment of the Kalibangan settlement to the eastward diversion of the Yamuna channel. Suraj Bhan (1973) has identified several former courses of the Yamuna west of its present course and located sites on them.