Chapter 1

INTRODUCTION
INTRODUCTION

The focus of my dissertation will be on terracotta artifacts, what often come under the category of ‘small finds’. Clay being perhaps the most commonly and easily available raw material, it is no surprise to find that burnt clay or terracotta was used to make a varied range of artifacts. All too often, one finds that the primary focus among scholars who study terracotta artifacts has been on the human and animal figurines as these also come under the purview of what can be called ‘art’ objects. It is the other artifacts used for more mundane purposes that are often neglected from any serious study. Human and animal figurines because of their stylistic attributes are also considered as chronological markers, allowing one to study their change, typologically, over time. Forms may also change due to ritual reasons, such as the introduction of new deities. However, the forms of many of the other more common artifacts used on a day-to-day basis often do not change over time, as their forms are primarily determined by functional reasons other than the aesthetic or ritual.

The popularity of terracotta lies not just in its easy availability. It also lies in its easy workability and the fact that certain forms are best made in such a material. A challenge also rests on assessing the kinds of artifacts made out of terracotta in the early centuries of the first millennium A.D. The question arises whether the same kinds of objects could be made in other materials. Were several terracotta objects imitations of artifacts made out of more valuable materials, as was the case in the Harappan civilization or were completely different types of artifacts made out of terracotta as compared to other materials? Was there a huge expenditure of skill in making these artifacts or were they technologically relatively easy to produce?
**Chronological ambit of study**

The textual and archaeological evidence indicate that urbanism was at its zenith in the early centuries of the first millennium A.D. Several factors accounted for an urban explosion in India in this period, which was utilized by the Kushana rulers. Prasad (1984: 5-11) summarized several of the factors that led to the development of urban centres in the last few centuries of the Christian era and contributed to the climax of urbanism in the first millennium A.D.

The first factor was the use of iron in agriculture, because iron was easy to use for the clearance of jungles for agricultural purpose and deep ploughing for cultivation. Thus, new techniques enabled the peasants to bring under cultivation more lands, grow a variety of crops and produce a surplus which could be consumed by the inhabitants of town as well as used for the commercial exchange. The second factor was that of craft. The *Jatakas* mention 500 to 1000 crafts, among which was working with terracotta. A need for exchange of goods required large scale production and also markets. Trade was largely confined to luxury goods, and also enabled the mobility of labor and led to the establishment of numerous markets which later assumed the character of urban centers. The other important factor was coins, which played a vital role in trade. Another factor which seems to have greatly helped in commercial growth was writing as it facilitated the recording of transactions, profits and losses which worked as guidelines for further commercial transactions. Apart from these, the break-up of the old tribal units and the emergence of the first territorial states led to the growth of urban centres in the 6th century B.C. Social changes in the post-Vedic period also created a favorable atmosphere for the growth of towns. The old *varna* system changed simultaneously with the changes in the economic set-up. The rise of heterodox sects, particularly Buddhism and Jainism, also created a congenial atmosphere for the development of towns during this period. Important factors influencing
the growth of urbanization were the opening up of a number of trade routes in the wake of the movement of Alexander's army from Greece to India. The Mauryan period witnessed the further growth of urban centres and saw the expansion of economy with state control over agriculture, forest, mines, metallurgy, trade, artisans as well as arts and crafts.

In the early first millennium A.D., Prasad (1984: 10) saw the process of urbanization as deepening further due to political stability brought about by the Kushanas, with the opening of new commercial routes, expansion of foreign and inland trade and supported by the issue of a large number of metal coins and saw an increased knowledge of arts and crafts. The Brhat Kalpa Bhasya, gives a list of twenty five states with their capitals in the early centuries A.D. It is well known that the capitals of these states were important cities. Other literary texts indicate the extent to which urbanism had come to exert influence on the material life of the people during the early first millennium A.D. According to the Milindapanho, the Lalitavistara, the Buddhacharita and the Sundarananda of Asvaghosa present an image of city life as one of comfort and luxury, where trade and industry flourished, education was imparted, religious processions and discourses took place, and where people belonged to different professions.

Prasad (1984: 66-94) also wrote about the architectural features of the Kushana period, as an important characteristic of urbanization. Towns were planned in a manner, where the defence of cities, comfort of residents and the beautification of settlements were the main guiding principles of the architect. Geographical factors played an important part in the location of towns. It was considered that a town should have a good geographical situation or a strong natural frontier – water, forest, hill or desert, which could serve to defend the city. According to Manu and Kautilya, out of forts situated near water, mountain, desert or forest, Kautilya preferred river or mountain forts, while Manu favoured hill forts. The city commands natural defences but additional
measures were taken to ensure its safety. For example, one can note the strong fortifications at Taxila. The city of Mathura was also surrounded by a wall nearly 20 feet thick and more than 50 feet high which was backed by a substantial earthen rampart. Kausambi was also fortified and the entire fortification measured 21,170 feet, with the height of the rampart varying between 30 and 40 feet. Prasad (1984: 76) surmised that only the capital cities Sirkap, Sirsukh, Mathura, Sravasti, Kausambi, Vaisali and Patliputra were fortified. But neither literary nor archaeological records mention evidence of fortification of any town. However, at Indor Khera, we seem to have found evidence of fortification.

Another important feature of architecture was the structures, which in the early first millennium A.D., included residential and religious buildings, roads, streets, drainage system, tanks, gardens and orchards. Bricks of various dimensions were used in construction in northern India. In north-western India roofs were flat and covered with clay and the use of tiles in northern India seems to have been common. Religious structures suggest the prominence of Buddhism. The important religious structure discovered at Sirkap was an apsidal temple situated in a rectangular courtyard. This courtyard was supported by a platform, access to which was by two flights of steps from the main sheet. There were two lines of chambers which were used for the dwelling purpose of the monks. The temple was built on a raised plinth in the middle of the courtyard and comprised a rectangular nave with a porch in front and a circular apse in rear. In the middle of the apse, possible there was a stupa. Besides, a large number of stupas and shrines were excavated at Taxila, e.g., Dharmrajika Stupa, the Kunala Stupa, and the temples at Mohra Moradu, Jandial and Bhamala. Mathura also was an important religious centre.

Thus, the historical information indicates that urbanism was at its peak in the first few centuries A.D. The period that I am dealing with in my research is of the early first millennium A.D., which archaeologically is often called as
the ‘Sunga-Kushana’ period. Archaeologically, this period has been identified on the basis of ceramics, small artifacts and structural evidence which also incidentally suggest an urban situation. Let us first see how the archaeological evidence for this period has been perceived from site lists given in *Indian Archaeology: A Review* (henceforth IAR).


However, other brief excavation reports of sites mention a greater range of artifacts that are markers of this period. These reports are on the excavations at Noh, in Bharatpur district of Rajasthan (IAR 1964-65: 38); and from Uttar Pradesh, excavation at Sonkh in Mathura district (IAR 1966-67: 41-42; IAR 1970-71: 39-40), Piprahawa Ganwaria in Basti District (IAR 1976-77: 50-52), Atranjikhera in Etah District (IAR 1979-80: 75-76), Sringaverapura in Allahabad district (IAR 1984-85: 85-86). From these sites, several artifacts like terracotta male and female figurines with celebrated coiffures, jewelry, animal figurines like horse and bull (including in one case humped bull showed the trident symbol over it), toy-carts, pottery stamps, terracotta rings, terracotta,
terracotta sealings, beads, rectangular flat tablets, balls, bangles, discs with notched design, wheels, gamesman, toys, anvils/dabbers were found.

There is also a tendency to equate bricks of certain dimensions with the ‘Sunga-Kushana’ period. Thus, in the excavations at Hulaskhera, in Lucknow district (IAR 1980-81: 72), structures were identified as belonging to the Kushana period because of the brick size.

**Spatial ambit of study**

I will be specifically studying three sites in the upper Ganga plains, Indor Khera, Hastinapura and Sonkh as part of my research. Apart from their common location in the upper Ganga valley (see fig. 1), what also holds them together is that they are multicultural sites. However, there are significant differences between them too. In order to undertake a comparative study of these sites, it is important to first put forward what we know about these sites.

**Indor Khera**

The site of Indor Khera (28°14’57" N, 78°12’48" E) is located in Tehsil Debai, District Bulandshahr, Uttar Pradesh, on the right bank of the eastern branch of the Chhoiya Nadi, also called Nim Nadi. Indor Khera lies between the rivers, Kalinadi and Ganga. The site is located 0.5 km off the Aligarh-Anoopshahr road and is about 10 km from the Ganges river. The mound measures 285 m (North South) x 428 m (East- West) with a maximum height of 17 m, with the present day village of Indor extending over the entire eastern north western and south eastern portion of the mound and the adjacent area.

According to the excavators (Menon et. al. 2008), Indor Khera had a number of small mounds, ranging from around 0.1 – 0.6 ha with height of 1-2 m. Some of these small mounds lay on the other side of the river Chhoiya, but all the mounds were to the north and west of Indor Khera. These mounds lay in a radius of about 500–600 m from the edge of the Indor Khera mound.
Fig. 1: Location of Sites in the Upper Ganga Plains
The trial trenches at the site were taken in May June 2006 by opening two 4 x 4 m trenches (A1 and A2) at about the 196 m contour line on the southern edge of the mound. Another trench A3 had a size of 4 x 2 m, which was reopened in May – June 2007 when it was also extended into a 4 x 4 m trench. A3 was about 100 m east of A1 and A2 and was at a lower level than the other two trenches. A1 and A2 were excavated up to 2 m and 1.5 m respectively, A3 was dug up to natural soil at 5 in the North West quadrant, in 2007. A1 and A2 belong to Period III which is basically from 600 CE – 1200 / 1200 CE. A3 belongs to the 200 BCE – 300 CE that is, Period II and also forms a part of my research.

According to Menon et al (2008), the trench A3 was laid at about the 193 m contour line. The spot was chosen for two reasons: the remains of the fortification in the southern part of the mound went up to the height of about 194m. There was also the likelihood of a gully in this vicinity being an ancient gateway, and A3 is just off this and about 10-15 m within the line of the fortification. In 2007, A3 was reopened, and natural soil was reached at 5.86 m in the north western quadrant. To confirm the latter, the quadrant was further excavated down till 6.20 m. At the same time the trench was extended to include the southern quadrant, giving a cutting area of 4 x 4 m.

Full-scale excavations began at the site of Indor Khera in the season of 2006-07 in the north-western part of the mound. The gridding of the site was undertaken to facilitate the laying out of trenches for full – fledged excavation. As the area under the present village was not going to be excavated, only the unoccupied part of the site was gridded on a 10 x 10 m grid. In the 2006-07 season the grid method was used for excavation. After this in the following seasons the Harris Matrix method was used. In the grid, the northernmost point on the north–south reference line was G 0. This also marked the southern limit of the present day village in this part of the mound. Each square was labeled from the west in rows of 10 x 10 m as A, B, C and to forth. The squares to the
west of the north-south reference line were labeled as A1, A2, A3, A4 and so forth. Those squares to the east of the reference line were labeled as ZA1, ZA2 and so forth. Each 10 x 10 m square was sub-divided into four trenches of 5 x 5 m, with a cutting area of 4 x 4 m each. For example, the 10 x 10 m square B1 had four 5 x 5 m trenches labeled as B1a, B1b, B1c and B1d. B1a, thus, was the north-west sub-square and the others followed in a clockwise direction. (Menon and Varma 2010: 193).

According to Menon and Varma (ibid) in total, the following squares and sub-squares were excavated in this area in the three seasons: A1c, A1d, A2c, B1a, B1b, B1c, B1d, B2b, B2c, C1a, C1b, C1c, C1d, C2b, C2c, D1a, D1b, D1d, D2b, D2c, ZB1a and ZB1d. The reason why in some places only parts of sub-squares could be opened was due to the encircling ridge or the edge of the mound.

The deposits in these trenches have been dated on the basis of pottery and coins. From the lower levels tiny sherds of ware with a black slip or polish were found. From the upper levels, were found red ware of ‘Sunga-Kushana’ type and stamped potsherds were found from most of the trenches as well as terracotta stamps used for decorating pottery.

Coins were also found and out of a total of eleven copper coins recovered, three are clearly datable to the Kushan period. Three are unreadable and a square punch marked coins was also found. From square B1b was recovered a coin of Huvishka. From trench C2a were found three coins, out of which one was well preserved. This is a coin of Vima Kadphises, showing the king on obverse standing with his head turned to his right, offering with his right hand to an altar and on the reverse is a figure of a bull. From the same trench (C2a) was found another Kushana coin with king on obverse with part of a Greek legend still visible. The copper punch marked coin was found in trench B1c (Menon and Varma 2010: 195). On the basis of artifacts and pottery three period have been identified at Indor Khera and are dated as under:
Period I – 1200 BCE – 200 BCE

Period II – 200 BCE – 600 CE?

Period III – 600 CE – 1200/1300 CE?

The excavations of 2008-09 and 2009-10 were essentially horizontal in nature. My research mainly deals with the material of Period II but what has been excavated does go back to two centuries before the Christian era. It will be concentrating on the material for the early centuries of the first millennium C.E.

The excavations gave sufficient indication that crafts such as pottery and terracotta production, as well as bone working, were undertaken in the northwestern part of Indor Khera. Pottery and terracotta production was found in the form of tools such as, anvils, pivot stone, pottery stamps, bone paints and also firing areas. Unfinished artifacts comprised largely unbaked artefacts like pottery, animal and human figurines, whorls, beads, discs, toys, wheels, and miniature vessels. Several hundreds of clay and terracotta lumps indicate the initial stages of making artifacts. The evidence for bone working showed that primarily tools such as points, probably used for incising decoration on pottery and terracotta objects, were being made.

It also appears that production was taking place within houses of which four were found in various seasons. A house was found in C1 square, another in the B1 square, one house in D1 and D2 squares while to the west, a full house was uncovered in trenches D1a, D1d, D2b and D2c. These houses were constructed of burnt bricks of dimensions of 36 – 38 x 23 x 5 – 6 cm.

**HASTINAPURA**

Hastinapura is located on 29°9' N; 78°3' E in Mawana tehsil of Meerut district in Uttar Pradesh. This site was excavated by B.B. Lal who suggested...
that the importance of this site lay in texts like the Mahabharata, Puranas, as well as Jaina and Buddhist sources which referred to Hastinapura as the capital of the Kaurava kings. During exploration, a fine grey ware with designs in black pigment was found in the lower levels of the mound. The Northern Black polished Ware (NBPW) was also found.

The mound of Hastinapura had a height of nearly 18.288 m and from the mound can be seen the river Ganga flowing about 1.6 km away on the eastern side. The Ganga here is called Budhi Ganga or the old Ganga. In ancient time it would have flowed much closer to the mound. The mound is divided into two separate parts due to erosion. Thus, a rain gully has divided the mound in the southern and northern parts. The northern mound is locally known as Ulta Khera. It is further sub-divided by a rain gully running from east to west with the northern sub-division larger between the two. It has a medieval structure on top and a very recent built Jaina shrine. The southern sub-division is bounded on the south by a 3–4 m high wall made of Lakhori bricks.

The primary significance of the excavations at Hastinapura were that the stratigraphic position showed the Painted Grey Ware with relation to other known ceramic industries of the early historical period. Lal classified the strata on the mound into five periods, all of which were characterized by their typical ceramic industries and other object like terracotta figurine, metal tools, and so forth.

These five periods are the following –

(i) Period I : Pre – 1200 B.C.
(ii) Period II : Circa 1100 to circa 800 B.C.
(iii) Period III : Early 6th to Early 3rd C. B.C.
(iv) Period IV : Early 2nd C.B.C. to the end of the end of the 3rd C.A.D.
(v) Period V : Late eleventh to early fifteen century A.D.
Period I (Pre-1200 B.C.) was represented by a deposit of brown clay which differed from 30 to 45 cm in thickness and at places due to later period pits it is entirely absent. The soil was very hard to dig. It occasionally contained rolled fragments of a ware which was called the Ochre Coloured Ware (OCP). From Period I, no structures or antiquities were found. The few artifacts that were found there are copper objects, comprising celts, harpoons and anthropomorphic figures. The settlement was rather scattered in Period I. The site was deserted by the inhabitants of this period well before the arrival of their successors, since there was no cultural overlap between the two.

Period II (circa 1100 to circa 800 B.C.) was represented by the Painted Grey Ware (PGW), which had a very fine fabric. The color of the PGW differed from ashy to dark grey, the grayness of the color resulting from reducing conditions in the kiln. This ware had the most common type as bowls, dishes with straight or convex sides and with round or sagger base. Mostly artifacts were wheel-made and very limited number was hand-made. The pots have painted design usually in black pigment but sometimes instead in chocolate or reddish brown. Owing to the small area that was excavated, no detailed plans of the houses were found in Period II. Brick sizes are unknown. The houses were made of reeds which were plastered over with mud mixed with rice husk.

The inhabitants of Hastinapura used copper in Period II which was the chief metal because arrow heads, a nail parer, a borer, antimony rod and other objects were also found. No iron object was found, although in the uppermost levels of the same period lumps of iron ore and slags were found. Terracotta objects were found in Period II, which included animal figurines, pendants and stamps. All figurines were broken and were of the horse and bull. A whet-stone of state, beads made of agate, jasper and carnelian, a variety of bone objects, a reel shaped object, weight, fragmentary bangles, several needles, like painted tools style used for writing were found. After this period, there is a break in
stratigraphy as seen by a silt deposit, suggestive of a flood deposit (Lai 1954-55: 14, 24: Figure 3).

The next occupation, Period III, is marked by NBPW, which has been called as the deluxe ware of this period. People also used plain grey and red wares. The grey ware was much coarser and thicker in section than that used in Period II. Burnt bricks were used on a large scale for constructing houses. Trapezoidal bricks were used for circular structures like barns and capping of ring well. Mud-bricks and even mud clods were also employed between the burnt bricks. Among the burnt brick three sizes were prevalent: 17½ x 10 x 2¾ in; 14½ x 9 x 2½ in; 12 x 9 x 6 x 2¾ in. Drains were made of burnt bricks and each house had its own arrangement for drainage. Several long jars were placed vertically one above the other in a deep pit. After a deep pit the bottom of every jar was perforated; thus, water could pass freely downwards. Several rings well were also found (Lal 1954-55: 15).

In this period, the regular use of iron was observed for the first time, the most important which included a socketed arrowhead, a chisel and a sickle blade. The important feature of this Period III was the existence of coinage. Punch marked coins, both in copper and silver, as well as an uninscribed cast coin of copper were used as currency. Other artifacts were also found like clay-modeled animal figurines, which included elephants as the most favorite animal of this period. Terracotta objects found in this period included a rectangular fresh rubber, a disc with rosette design on one side and swastika on the other side, beads, bangle and rings.

Again after a gap between Period III and IV, the site was reoccupied. The cultural equipment of Period IV was in marked contrast to that of the preceding period. The pottery was primarily red ware, with the main shapes being bowls with incurved rims, spouted basins, button knobbed lids and ink-pot lids and bottle-necked sprinklers. The important feature of the pottery of this period was the use of stamped and incised decorations. The motifs include
swastika, triratna, fish, leaves, flowers, loops, circles, and other geometric combinations.

In Period IV, houses were made of burnt brick of sizes 37 x 23 x 6 cm. For flooring, however, thicker and squarer bricks were used, the dimensions being about 28 x 28 x 19 cm.

Copper objects of Period IV included antimony rods, pins, stoppers, and a small sized bell. Iron objects included nails with a variety of heads, but also important were an axe-adze, a sickle, a bell and a pan with lug handles. Terracotta figurines, both hand-modeled and moulded were found. Other terracotta objects of this period included drills, reels, spindle-whorls, wheels, a toy-cart, and votive-tanks (Lai 1954-55: 19).

Again after a long gap between Period IV and V the site was reoccupied. A fresh settlement was established at Hastinapura towards the end of the eleventh century. The pottery was different from that of the previous period. The pottery was made of coarse to medium-grained clay, was wheel-made by and had a dull red color. Decoration was done with incised stamped and applied patterns which included wavy lines, loops scrolls, chequers, leaves, creepers, and so forth.

According to Lal (1954-55: 20), iron objects in this period revealed a great variety of forms. The nails were notable for the forms of their heads; other types included tanged arrow and spear-heads, knife blades, hoes, borers, awls, chains, staple and door rings. Terracotta objects of this period included anvils/dabbers, stamps, spindle whorls and net sinkers. Stone figurines were also found at Hastinapura. Glass bangles were found in large numbers.

**SONKHK**

The site of Sonkh (27°24' N; 77°30' E), is located in Mathura district of Uttar Pradesh. The site consists of a plateau which was at least 200,000 sq m
but is now diminished to a large extent. An area of the old mound, about 320 x 280 m, that is, about 90,000 sq m is still surrounded by fields in the west, north, and east. In the south, the plateau is dominated by an elevation rising from seven to eight m above the average level area of the site. The site represented in its upper levels fortifications built one above the other. In the eastern slope, near to the south-east tower is a depression, washed out by the rains and used nowadays as a path up to the top of the mound. In the last phase of the citadel, this breach is connected with the construction of a new entrance gate. At Sonkh (Hartel 1993: 14), the ground survey and the trial trenches represented that the mound of the Sonkh is a multi-layered site.

The whole area was gridded with the basis of division being 100 m. The grid started at the southwestern corner, by numerals 1- 8 in a south- north direction and by letter A-G in the west-east direction. The grid system was devised by dividing the 100 m eastwards in 20 m and using the Roman numerals I - V, in west-east direction. In the beginning the total area under excavation was about 50 x 48 m, i.e. about 2400 sq m, reaching in its largest extension in the course of excavation to an area of about 4800 sq m, not including the site of the apsidal temple No. 2. The site is a multicultural site, with eight periods from PGW to the Mughal period. These periods are the following:-

According to the stratigraphy, Period I containing PGW as well as black and red ware sherds could be sub-divided into four levels numbered 40 - 37. In all the trenches where these wares were encountered they rested right on the natural soil. According to Hartel (1993: 85), the PGW levels are not older than c. 800 B.C. at Sonkh.

Period II was from levels 36 to 29. The presence of PGW and BRW sherds ceases in level 36 and the first sherd of the NBPW was found. Mauryan terracotta figurines and uninscribed cast coins as well as silver punch marked coins have been recovered from these levels. Level 32-30 belongs to the Sunga
period. Important finds are the coins, consisting of uninscribed die-struck ones showing a lion before Indradhiraj, a symbol and punch marked copper and silver coins, as well as terracotta objects. A complete absence of the free-standing grey terracotta female figurines found in previous layers was noted.

Period III started from level 28 to 25 where the pottery of this period was almost the same as in Period II. Between the levels 28 to 25, Mitra coins were found mixed up. According to the excavator (Hartel 1993: 85) in the time of Mitra rulers, the circulating coins used to lose their validity with the death of the ruler. Mitra coins also appeared in the level 24, the first Kshatrapa level.

Period IV level 24 and 23 belong to the time of the Kshatrapas of Mathura. The earliest Kshatrapa coins are recovered near level 25. The shape of the pottery, as found in level 26 and 25, was replaced by a new type of pottery, where the first example of stamped ‘Kushana’ pottery appears. Numerous figurines of a particular type of mother goddess were found. Seals impression bearing the name Anangabala in two scripts i.e., in Brahmi and Kharosti were found.

Period V, with levels 22 to 16, belongs to the ‘Kushana’ time. This was documented in the overwhelming mass of stamped ‘Kushana’ pottery accompanied by a diverse find of terracotta objects especially figurines, stone seals, metal images and a good number of stamps with names incised in Kushana Brahmi. A crossbar from a stone railing was found in the filling material of level 19. An inscription belongs to the time of Maharaja Kanishka.

After a preliminary examination of these sites one can note a few important points. As far as excavation is concerned, in India, the main method used is the grid or box method developed by Mortimer Wheeler, and still largely used by universities and the Archaeological Survey of India. Sonkh, which was excavated by the Germans under the direction of Hartel of the Museum of Art, Berlin, was also excavated in levels through a grid framework.
Hastinapura excavated by B.B. Lal of the Archaeological Survey of India was obviously dug by the same method of trenches leaving unexcavated baulks. This method was used at Indor Khera too, for the first season of 2006-07, after which the excavation shifted to the Harris Matrix method. This method was considered as more accurate in comparison to the grid method. In the Harris Matrix method, the stratigraphy of each and every artifact and feature can be related to each other which is not possible in the grid method. The context of artifacts and features in the centre of the trench cannot be understood by studying the sections which is the principle behind the grid method.

As mentioned earlier, one of the main reasons for comparing these three sites was because they are all multicultural in nature. But there is another reason. For all three sites, there are excavation reports that allow a comparison to be fruitfully made. For too many excavated sites, there are hardly any reports other than the brief notes in *Indian Archaeology: A Review*. Hence, it was possible to undertake the above comparison.

We also find that on comparing the early centuries of the first millennium A.D. at all three sites, artifacts of numerous different raw materials were found. From Sonkh (Hartel 1993: 88-244) the terracotta artifacts included human figurines, discs, wheels, toy carts, stamps, reels, anvils, votive tank and bangles. From Hastinapur (Lal 1954-55: 83) were found human and animal figurines, votive tank, toy cart, wheels, discs, spindle-whorls, skin-rubbers, reels, gamesman, ball, bangle, amulet and pendants. From Indor Khera were found anvils, sealings, human figurines, animal/bird figurines, spindle whorls, lumps, discs, miniature vessels, rolls, marbles, bead, reels, toy carts, pendant, wheels, bangles, tops, rings, pottery stamps, ball, cake, toy lid, mould, pellet, skin rubber, tile, button, worked sherds as well as several unidentified objects.

As far as stone is concerned, from Sonkh were found querns, short pestle or dabbers (rounded end), dabber (conical in shape), dabber with constricted neck, stone, ball and a conical stone object with perforation. From
Hastinapura, pestle, casket lid with floral design, casket lid with incised design, casket lid with a knob-handle, lid and rotary quern were found, while from Indor Khera, stone beads, knob of lid, pestles, pebble, and a few unidentified objects were found.

Bone objects were found at all the sites. From Hastinapura, these included bone bangle, awl and mirror-handle were found, while from Sonkh, were found styli, undecorated hair pin and conical shaped hair pin. Indor Khera bone objects included bangle, pendant and points. Shell objects included bangle decorated with horizontally incised lines from Sonkh, and beads, unidentified objects and cowries as well as piece of shell from Indor Khera.

Iron objects were found at all these sites. From Sonkh were found arrow head, arrow head with three edges, triangular socketed arrow head, barbed spearhead with socket, fragment of a knife, sickle, long strap, clamp, angular hook, tube, part of a snaffle bit, fragment of a ladle, rattle bell, ear pendant and foot ring. From Hastinapura, iron objects included nails with rounded and square sections, miniature bell, adze, fragment of pan, tube and sickle blade. From Indor Khera, axe head, knife, hooks and unidentified objects were found. Copper objects included fragment of bangle, plano-convex ring, ring with flat section and copper coins from Sonkh. From Hastinapura were found antimony rod, miniature bell, stopper, pin and copper coins and from Indor Khera, copper coins, antimony rods, rings and bangles. Spiral lead objects were found at Indor Khera.

The variety of raw materials and types of artifacts found at all three sites indicates that the three settlements were urban in nature. This is also indicated by finds of coins and sealings. From Sonkh, coins of Kushana kings and one of Virasena were found (Hartel 1993: 314). From Hastinapura were found Mathura coins, Yaudheya coins, Kushana coins and an imitation copper coin of Vasudeva (Lal 1954: 103-104). From Indor Khera as noted earlier, Kushana copper coins were recovered. Seals were found from all three sites.
Sonkh seven seals were found, from Hastinapura two seals and from Indor Khera, ten.

**Outline of the chapters:**

In Chapter II, I will be dealing with the technique of making terracotta artifacts. Pottery and artifacts are largely made using the same methods of clay procurement, processing and preparation but some differences were there as artifacts were often partly wheel-made and partly by hand. In this chapter, I have primarily studied present day techniques for pottery and terracotta production through which one can try to understand the ancient terracotta craft. The connection between technique and tools and between technology and social factors allows us to explore the economic consequences of technological innovation. The information from modern-day potters allows one to understand ancient production, particularly at a site like Indor Khera from where plenty of evidence for ceramic and terracotta production was found. Tools such as terracotta anvils and pottery stamps, bone engravers, socket stones, stone polishers were found. Facilities for firing were also found as well as debitage such as lumps, rolls and pellets of clay and terracotta, unbaked artifacts and wasters or over vitrified material. Thus, a wide variety of archaeological evidence indicates the production of economics and terracotta artifacts at Indor Khera.

In Chapter 3, I will be presenting the result of my study regarding the terracotta artifacts of Indor Khera. As mentioned earlier, I have studied terracotta artifacts rather than human and animal figurines. There terracotta artifacts comprise, discs, wheels, reels, tops, marbles, gamesman, pendants, pottery stamps, dabbers/anvils, miniature vessels and several unidentified objects.

The methodology I have followed required the study of all the terracotta artifacts of the early first millennium A.D. that were first separated into
different artifact categories. Thus, for example, all terracotta wheels from Indor Khera belonging to the early first millennium A.D. were taken out of the entire assemblage of artifacts, analyzed and documented. The documentation adopted the method of studying each wheel, measuring its dimensions, and weighing it and describing it. This was entered in pre-printed small finds documentation forms, so that all the information for each artifact would be standardized. This strategy was followed then for other artefact categories. The entire documentation done by me of terracotta artifacts from Indor Khera, is presented in the form of appendices at the end of the dissertation.

It was also considered important to compare the Indor Khera material with those from other sites in the upper Ganga plains, such as Sonkh and Hastinapura. Even though the Sonkh report (Hartel 1993) has much more detailed documentation as compared to that of Hastinapura (Lal 1954-55), these are the only two sites in the upper Ganga plains for which any kind of report exists. The Indor Khera terracotta artifacts were then compared to those found from Sonkh and Hastinapura. The intention behind such an exercise is to evaluate the extent of uniformity of artifact categories across sites in the upper Ganga plains in the early first millennium A.D. The fourth chapter is the concluding chapter in which the basic finds of my dissertation will be put forward.