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Early Cities: New Perspectives on Pre-Industrial Urbanism

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Indus Urbanism: New Perspectives on its Origin and Character

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During the past two decades a variety of archaeological research projects focused on the Indus civilization have made it possible to refine earlier models regarding the origin and character of this distinctive urban society. Excavations at the major city of Harappa have revealed a long developmental sequence from its origins to its eventual decline and subsequent transformation. Recent excavations at the large urban centers of Dholavira and Rakhigarhi, along with reexamination of the largest city of Mohenjo-daro have shown that the development of urbanism was not uniform throughout the greater Indus region (Kenoyer 1998). Detailed studies within each city have revealed many shared characteristics as well as some unique features relating to the dynamic process of city growth and decline. In addition to the excavations of larger urban centers, regional surveys and extensive excavations at smaller settlements have provided a new perspective on the nature of interaction between large and small urban centers and even rural settlements.

The increase in radiocarbon dates from well-documented contexts in stratigraphic excavations has helped to refine the chronology of settlements in both core areas and rural areas (Meadow and Kenoyer 2005b; Possehl 2002a; Possehl 2002c). On the basis of a more refined chronology and comparisons of the material culture, it appears that some rural settlements may have been directly linked to the major cities, while others appear to have had relatively little direct contact during some time periods (Meadow and Kenoyer 2005b). Such patterns can be interpreted as reflecting fluctuations in economic and political

networks or alliances, providing an indication of economic and political organization. This dynamic quality is only revealed when sites of different size are excavated and when the regional chronology is sufficiently fine-grained.

The most significant advances in our understanding of the Indus civilization as a whole and the Indus cities in particular have been through the scientific study of subsistence, craft production, trade and city planning. At sites such as Harappa, changes in these important components of urban centers can be traced over two millennia, from approximately 3900 to 1700 BCE (Kenoyer 2003). The growth of cities such as Harappa appears to be directly linked to increase in regional and long distance trade. The use of multiple sources from similar raw materials suggests that competition between merchants or local elites, as well as the heterogeneity of urban populations may have stimulated more extensive trade networks, exploration for new resource areas and possibly the colonization of distant regions. The use inscribed seals and tablets for economic purposes further supports the importance of trade for the accumulation of wealth and power by a relatively small number of elites.

Although recent excavations have not revealed any bi-lingual texts to aid in the decipherment of the enigmatic Indus script, they have produced a larger sample of inscribed objects. These new inscriptions come from many different types of sites and contexts and it is now possible to define numerous distinct contextual uses of writing, as well as regional variations and changes in the nature of the writing system over time (Meadow and Kenoyer 2005a). Writing in the Indus cities is clearly associated with both economic administration and ideology, which in turn appear to be linked to political organization. While the names of ruling elites and lineages cannot be identified, the use of writing appears to be limited to the merchants and elite segments of the population. Ongoing studies of inscribed objects such as seals and tablets include the reanalysis of the signs and sign sequences chronologically as well as contextually.

Through a more comprehensive understanding of the nature of Indus urbanism, many earlier models for its decline have been replaced by models of transformation (Jarrige 1997; Kenoyer 2005; Mughal 1990; Possehl 1997). While some settlements were rapidly abandoned, many of the major cities continued to

be inhabited for hundreds of years after the height of Indus urbanism. At Harappa for example, there is evidence for continuity in settlement layout and internal spatial organization, regional and long distance trade networks, along with significant advances in technology (Kenoyer 2005). Even though there is continuity in some aspects of the city, during the final stage there are major changes in ideology, the Indus script disappears, and key indicators of merchants and elites, such as seals and standardized weights, also disappear. As with the origins of these cities, their decline and transformation are quite varied across the vast expanse of the greater Indus region.

Indus Tradition and Chronology

The Indus Tradition refers to the total phenomenon of human adaptations that resulted in the integration of diverse communities throughout the greater Indus Valley and adjacent regions. This Tradition has also been called the Indus Valley Tradition (Kenoyer 1991; Shaffer 1992) and Indus-Saraswati civilization (Gupta 1999; Lal 1997). The Indus Tradition has been divided into five eras and numerous phases that allow archaeologists to organize and compare materials from different periods and regions.

Figure 1. Map of the major Traditions

Table 1. Indus Tradition

Foraging Era	10,000 to 2000 BCE
Mesolithic and Microlithic	
Early Food Producing Era	7000 to 5500 BCE
Mehrgarh Phase	
Regionalization Era	5500 to 2600 BCE
Early Harappan Phases	
Ravi, Hakra, Sheri Khan Tarakai,	
Balakot, Amri, Kot Diji, Sothi,	
Integration Era	
Harappan Phase	2600 to 1900 BCE
(Harappa site - Period 3A – 2600-2450 BCE)	
(Harappa site - Period 3B – 2450-2200 BCE)	
(Harappa site - Period 3C – 2200-1900 BCE)	
Localization Era	
Late Harappan Phases	1900 to 1300 BCE
Punjab, Jhukar, Rangpur	

Geography and Climate

Most cities of the greater Indus Valley were established along two major river systems; the Indus River and the Saraswati-Ghaggar-Hakra-Nara River that flowed along the eastern edges of the Indus plain. To the east and west, the alluvial plains are bordered by mountains and deserts that are filled with valuable mineral resources and seasonal grazing areas. Several large cities were located on islands in the Rann of Kutch and along major rivers in Saurashtra or mainland Gujarat. Smaller towns and villages were scattered along the coast, as well as along the major trade routes leading to resource areas surrounding the alluvial plain.

The Indus Valley and adjacent regions are dominated by two major weather systems. The winter cyclonic system of the western highlands results in snowfall in Baluchistan and rainfall in parts of the Indus valley. The summer monsoon brings moisture to the high mountains in the north as well as the northern Indus plain. Scanty rainfall from both systems occurs in the southern Indus region and the deserts of Rajasthan. The climatic diversity resulting from these two weather systems is beneficial to the rise of large urban centers, and one system may provide water if the other fails.

Recent models of global climate indicate that, from around 18,000 to 9000 BP, southern Asia would have been cooler and drier than today, with a weak summer monsoon. From around 9000 to 7000 BP, there appears to have been a stronger summer monsoon, warmer summers, and cooler winters. Although these models work at the macro level, they cannot be confirmed through detailed analysis of specific sites or regions. Generally speaking, there is no evidence for major changes in climate or rainfall since 9000 BP.

Figure 2. Major Sites and Regions of the Indus Tradition

Origins of Indus Urbanism

The origin of Indus urbanism can be studied from either a general perspective of the Indus civilization as a whole or by looking at a few major urban centers. During the excavations of Harappa (Mackay 1938; Vats 1940) and Mohenjo-daro

(Marshall 1931) in the 1920s-30s, scholars had three different explanations for the origins of these cities and the urban civilization they represented. Some argued they were the result of outside western influence (Wheeler 1953); others claimed they were the result of indigenous processes (Marshall 1931); and still others suggested they emerged through a combination of internal and external factors (Allchin and Allchin 1982; Piggott 1952; Wheeler 1968). All of these suggestions were based on indirect evidence, since the earliest levels of these cities had never been excavated; in the case of Mohenjo-daro it was because of a high water table and at Harappa it was due to a sampling problem. The interpretations for the origin of Indus cities were therefore based primarily on general comparisons between the fully urban phase of occupation with smaller regional settlements in the highlands to the west and excavations in Mesopotamia and Iran.

It was not until the discovery and excavation of Mehrgarh from 1974-86 (Jarrige 1991; Jarrige and Meadow 1980) and the reanalysis of the site of Kot Diji, Sindh by Mohammad Rafique Mughal (1970), that the foundations for the Indus Civilization were clearly established within the confines of the greater Indus Valley region and the emergence of the Harappan culture attributed to local cultural development (Figure 2). Some scholars still suggest that the impetus for urbanism was the result of developments in Mesopotamia (Ratnagar 1991; Ratnagar 2001), but these suggestions cannot withstand rigorous critique (Lamberg-Karlovsky 2001) and cannot be supported by recent data.

Today most scholars support a model of indigenous development for Indus urbanism (Jarrige and Meadow 1980; Kenoyer 1998; Mughal 1991; Possehl 1990), but there is still no consensus regarding the role and contribution of different regions to the larger whole. In order to investigate the origins of individual urban settlements and their regional contributions to Indus urbanism, long-term excavations were begun at the site of Harappa in 1986 (Dales 1989) and have continued through 2001 (Meadow and Kenoyer 2005b; Meadow, Kenoyer, and Wright 2001). The results of these excavations can be compared with earlier excavations at the site of Mohenjo-daro as well as more recent but not fully published excavations at the major urban centers of Dholavira and Rakhigarhi. These four settlements are the largest known urban centers of the Indus civilization and each center dominated a part of the alluvial plain, or a

coastal trade route as in the case of Dholavira (Figure 2). In earlier publications the site of Ganweriwala was included as a fifth major urban center (Kenoyer 1991, 1998), but after visiting the site in 2001 and examining the pottery and exposed stratigraphy, I do not believe it should be included along with these other urban centers until excavations have been undertaken. The site of Harappa has the most complete and well-documented stratigraphic sequence, and it will be presented first, followed by general summaries of the other major sites.

Figure 3. Map of Harappa

Table 2. Harappa Chronology

Early Food Producing Era		
No traces of occupation		
Regionalization Era		
Period 1A-B	Ravi aspect of the Hakra Phase	> 3900 BC - c. 2800 BC
Period 2	Kot Diji Phase	c. 2800 BC - c. 2600 BC
Integration Era		
Period 3A	Harappa Phase A	c. 2600 BC - c. 2450 BC
Period 3B	Harappa Phase B	c. 2450 BC - c. 2200 BC
Period 3C	Harappa Phase C	c. 2200 BC - c. 1900 BC
Localization Era		
Period 4	Harappa/Late Harappa Transitional	c. 1900 BC - c. 1800 BC(?)
Period 5	Late Harappa Phase	c. 1800 BC(?) - < 1300 BC

Harappa: Early Settlement

Harappa is situated on a low Pleistocene terrace between two major tributaries of the Indus River, the Ravi and the ancient Beas (now the Sutlej) Rivers. The ruins of ancient Harappa consist of three large walled sectors and several smaller suburbs that cover approximately 150 hectares (Figure 3). One third of the ancient site is occupied by the modern city of Harappa and parts of the site may have been washed away by the Ravi River. Recent discoveries in a suburb of modern Harappa to the north of the old bed of the Ravi River suggest that there may be an extension of the ancient settlement in this area as well.

Excavations at Harappa have revealed a full sequence of occupations beginning with an early village phase and continuing through the full urban phase. The Ravi phase village (Period 1 : >3900 BC -2800 BC) (Kenoyer and Meadow 2000) was probably divided into two parts, with one part along the

northern edge of what is now Mound AB and the other at the northwest corner of Mound E; the two areas may have been separated by a low-lying area. The division of the settlement into adjacent, but separate habitation areas is a pattern that continues in the subsequent proto-urban Kot Diji phase. The earliest architectural structures appear to have been huts oriented north south and east west made of wooden posts with walls of plastered reeds. Some mud-brick fragments of what may be a kiln have been found, but no mud-brick architecture has been found to date.

The earliest ceramic vessels at Harappa (Period 1A) are entirely handmade, with a range of decoration from plain to polychrome. Plain cooking pots have a coarse appliqué on the exterior made from clay and calcium carbonate nodules to avoid thermal stress. The Ravi phase pottery is quite distinct from pottery found at sites to the southwest such as Mehrgarh, but it has some similarities to pottery found at sites in the Suleiman range to the west, and many more similarities to pottery in the Ghaggar-Hakra river valley region to the east (Mughal 1980; Mughal 1990). This suggests that the overall ceramic tradition of the central and eastern alluvial plains evolved parallel to that of the southwestern plain and highlands. Towards the end of the Ravi phase (Period 1B), the potter's wheel began to be used, resulting in new and diverse vessel forms and rim shapes. Some of these forms became the basis for the pottery of the subsequent Kot Diji phase.

The use of pre-firing "potter's marks" and post-firing "graffiti" on pottery also indicates that concepts of graphic expression using abstract symbols were emerging. Many of the marks and signs consisted of a single character or symbol, but one example has three linked trident or plant shapes (Figure 4a). Many of marks and signs used during the Ravi phase continued to be employed through the Kot Diji phase, and on into the Harappa phase, where some of them can be identified as elements of the Indus writing system (Meadow and Kenoyer 2005a).

During the Ravi phase there is evidence for local craft production in close proximity to domestic structures. A wide variety of craft production indicators and workshop areas have been found, including evidence for shell working, soft and hard stone bead making, bone working, textile production (spindle whorls) and pottery making (Kenoyer and Miller in press). Except for clay and bone, all

other materials were brought to the site from distant resource areas. Marine shell came from the coast some 860 km to the south while lapis lazuli came from 800 km to the north in Afghanistan. Recent sourcing studies by Randall Law have traced grey cherts to the Suleiman Range, more than 300 km to the northwest (Law and Baqri 2001), grinding stones to the Kirana hills (100 km to the north) and to the Suleiman Range to the west (Law 2005). The sources of many other materials such as steatite, carnelian, and amazonite are still being studied, but current evidence indicates that the people living at the site were connected to all major regions that became integrated into the later Indus urban phenomenon.

Other sites dating to this period have been found to the north and south of Harappa. The site of Jalilpur, some 75 km to the southwest of Harappa has evidence for a Hakra/Ravi phase occupation in the earliest levels. During the subsequent phase, the site developed into a relatively large Kot Dijian settlement (13 ha). In the course of surface surveys by the Pakistan Department of Archaeology (Mughal, Iqbal et al. 1996) and A. Dogar personal communication), two Ravi phase settlements Rajanpura and Hissoka were located approximately 110 km northeast of Harappa on the opposite bank of the Ravi River.

On the basis of these initial surveys, Harappa appears to have been a central place in trade networks along the Ravi drainage. Although other sites were abandoned at the end of the Ravi phase or later Kot Diji phase, Harappa continued to grow in size and importance. Additional excavations will be needed at Harappa and other regional sites to understand the economic and political factors that made it possible for Harappa to become a regional urban center during the subsequent Kot Diji (Early Harappan) phase (Period 2: 2800BC - 2600 BC).

Harappa: Incipient Urbanism

Early Harappan, or the Kot Dijian period, was first defined by R. Mughal (Mughal 1970) who proposed on the basis of both artifact analysis and settlement pattern studies, that this phase represented the initial urbanism in the greater Indus valley (Mughal 1990). This interpretation has been confirmed through excavations at Harappa (Meadow and Kenoyer 1997; Meadow and Kenoyer 2001) and the discovery of numerous smaller, Kot Diji phase settlements in the

Punjab and in the hinterland around Harappa (Dar 1983; Meadow, Kenoyer and Wright 1999; Mughal 1997; Mughal, Iqbal et al. 1996; Schuldenrein, Wright et al. 2004). It is now clear that initial urban development in the Indus region began between approximately 2800 and 2600 BC during the Early Harappan, Kot Diji phase (Harappa Period 2). The settlement data are still being analyzed, but they fit the general pattern described by Mughal in which each major region sees the emergence of a three- or four-tiered settlement hierarchy of site sizes (Mughal 1990, 1992). The overall scale of the urban networks is smaller than that characteristic of the Harappa phase, but as noted below, many of the diagnostic features of Harappan society begin to appear during this phase.

The total area of the Early Harappan, Kot Diji phase settlement at Harappa is more than 25 ha and covers most of Mound AB, Mound E and parts of Mound ET. Early city planning is reflected in the layout of north-south and east-west streets and houses, and in the use of mud-bricks of two sizes with 1:2:4 ratios to build houses, massive mud-brick platforms, and perimeter walls (Kenoyer 1993; Kenoyer 1995). The presence of wide streets running into the core areas of the city reveals the importance of vehicular traffic in these early urban centers.

The original Ravi phase division into two settlements was maintained (Mounds AB and E), but during the Kot Diji phase these settlements appear to have been delimited by massive mud-brick perimeter walls. Since there is no evidence for conflict between the two settlements, the walls may have been used for economic control and to reinforce political power or to protect both settlements from outsiders (Kenoyer 1991). During this period Harappa emerged as a major regional center, integrating its hinterland as well as obtaining materials from distant resource areas (Kenoyer 1997).

During the Early Harappan Kot Diji phase, an expansion of trade networks that were initiated during the Ravi phase brought not only new varieties of raw materials to the site, but also various qualities of similar materials used for the manufacture of utilitarian as well as elite objects. In addition to access to new sources of raw materials, this period sees the development of more efficient forms of transportation for heavy commodities by wheeled carts (Kenoyer 2004) and possibly by boat. The use of similar raw

materials from different resource areas, such as grey black chert from Baluchistan and tan chert from Sindh, indicates a competitive expansion of trade networks and the increasing importance of exotic items.

The production of glazed steatite beads and seals as well as faience ornaments indicate an increase in technological complexity and new types of finished objects. Precious metals such as copper and gold were also employed for both utilitarian and decorative purposes. Many additional styles of bangles, beads, pottery and other utilitarian objects reveal the need for increased variety for a more diverse urban population (Kenoyer 2000).

Wheel made pottery became relatively common during this period and was probably made in large pottery kilns similar to those found at the site of Lal Shah near Nausharo, Baluchistan (Pracchia 1985). Smaller kilns were used for the production of figurines and bangles. Red slip and black painted designs replaced polychrome decorations of the Ravi phase. The motifs include horizontal bands, new styles of geometric and floral motifs, as well as the more traditional pipal leaf, fish scale, and intersecting motifs that had their origins in the Ravi phase. Careful stratigraphic documentation of pottery forms and painted motifs have shown the development of the distinctive Kot Dijian style pottery from earlier Ravi pottery and a gradual transformation into what is commonly referred to as Harappa phase pottery. When combined with the evidence of other artifact types, such as terracotta cakes, bangles, figurines and even architecture, it is possible to confirm that the Harappan culture emerged from the earlier Kot Diji culture and that it was not introduced to this area from outside regions.

One of the most important developments documented at Harappa is the emergence of the Early Indus script, incised on pottery and seals (Figure 4b). While many Early Harappan, Kot Dijian sites have evidence for graffiti on pottery, the lack of proper documentation had led earlier scholars to dismiss these objects as irrelevant for the development of the Indus writing system (Parpola 1986). The discoveries at Harappa and similar evidence from Mehrgarh and Nausharo (Quivron 1997), Rehmandheri (Durrani, Ali and Erdosy 1995), Kalibangan (Lal 1975), and possibly Dholavira suggest that regional styles of writing were developing at many sites throughout the Indus region.

Other indicators of control at Harappa are seen in the use of a cubical limestone weight that conforms to the later Harappan weight category, a clay sealing made by a square seal with Early Indus script, and an unfinished square steatite seal carved with an elephant motif (Kenoyer 2003; Meadow, Kenoyer and Wright 2001). The emergence of writing, seals, and standardized weights implies the development of more complex social, economic, and political organizations that would have required these sophisticated tools and techniques of communication and administration. During the late Kot Dijian phase, sites like Harappa were probably organized as complex chiefdoms or early states.

The current evidence from Harappa and other Early Harappan sites suggests that the use of writing, stamp seals and standardized weights developed over a period of 200 years prior to the Harappan phase, with the beginnings of writing possibly extending even earlier to the Ravi phase. Earlier models for abrupt change (Possehl 1990, 2002) leading to the emergence of Indus cities and the Harappan phase are not supported by these new data.

Harappa: Urban Expansion

During the Harappa phase, which lasted around 700 years, the city grew to cover 150 ha and was made up of three large mounds and associated suburbs. At Harappan, three subphases can be defined on the basis of major rebuilding phases of the city walls and site expansion, changing artifact and pottery styles, and changes in styles of seals. Fired brick was used to construct multistory houses that were laid out along north-south and east-west streets. Houses were equipped with bathing areas, latrines and sewage drains that were linked to larger drains, which eventually emptied wastewater outside the city walls.

Massive mud-brick walls enclosed each of the mounds with access limited to narrow gates that were only wide enough for a single ox cart to enter or leave. Major streets were over 8 m wide, and some had central dividers that may have been to regulate two-way traffic of oxcarts. Major streets for cart traffic traversed the city and wide streets were also present on the interior and the exterior of the city walls. This feature appears to be distinctive of Indus cities and has not been documented in early urban centers of Mesopotamia or Egypt.

The city had links to smaller settlements in the surrounding hinterland, as well as to distant urban centers such as Mohenjo-daro. Raw materials from distant resource areas were brought to the city workshops to be transformed into valuable local commodities for both everyday use and as wealth indicators for the urban elites. Specialized crafts, such as stone bead making, steatite and faience ornament production, copper working, pottery manufacture and a variety of other crafts were carried out in workshops throughout each of the walled sectors of the city (Kenoyer 1997; Miller 1999). All crafts practiced inside the city walls were indirectly controlled, but some crafts such as weight manufacture and seal and tablet manufacture appear to have been more directly regulated due to their importance for merchants and the ruling elite.

The city was supported by a complex subsistence base that included wheat and barley agriculture (Weber 2003; Weber and Belcher 2003); cattle and water buffalo animal husbandry, supplemented by sheep and goat herding (Meadow 1991, 1996; L. Miller 2003, 2004); and a well-organized fishing industry (Belcher 1998). The hunting of wild animals also contributed to the support of the urban populations, both for food as well as for skins, ivory and other animal products.

There is no evidence for warfare or a centralized ruling elite, and each of the walled areas may have been maintained by competing elites, merchants, landowners and religious leaders. This type of decentralized, corporate rule has been documented during the later Early Historic period in northern South Asia (Kenoyer 1997). No royal cemetery has been discovered and only one relatively small cemetery of the Harappan period has been excavated; it is to the south of Mound AB and west of Mound E (Dales and Kenoyer 1991). Analysis of the burials and the burial goods suggests that the individuals in this cemetery were members of one of the elite communities of the city, but clearly do not represent the only elite community (Kenoyer 1998, 2000). Although the diversity of the urban population cannot be studied from the cemetery, comprehensive analysis of Harappan ornaments (Kenoyer 1992) as well as terracotta human figurines (Clark 2003) indicates the presence of many different communities who distinguished themselves by different styles of ornaments, hairdos and clothing.

Harappa was clearly a meeting place for many different classes and ethnic communities.

At the beginning of the Harappa phase (Period 3A, 2600-2450 BCE) the earlier division of the settlement into two walled sectors was maintained. A third habitation area, currently buried beneath Harappa town may have been established at this time (Figure 3). In some sectors of ancient Harappa, such as Mound AB and the western edge of Mound E, the transition from the Kot Dijian to the Harappan phase appears as a gradual transformation of pottery and artifact forms, along with strong continuities in settlement planning. The Harappan city walls were constructed directly above or slightly offset from the Early Harappan walls. Houses and streets were constructed along the same general plans with north south and east west orientation. The absolute sizes of bricks and the 1:2:4 ratios of the bricks remained the same in all parts of the site. In other areas of the site there are distinct and relatively abrupt stratigraphic indicators of change, as well as architectural changes. On the eastern edge of Mound E, domestic structures were replaced by Harappan streets, and the Harappan city wall was constructed along a different plan. While the city walls continued to be constructed of mud-brick, the architecture of the Harappan period is primarily made of fired brick with some wooden components. Fired brick has been reported from some Early Harappan sites, such as Kalibangan, where it was used in drains, but the widespread use of fired brick for architecture at Harappa does not begin until around 2600-2500 BCE.

During Period 3B, from 2450-2200 BCE, the city began to grow dramatically, with major walled suburbs constructed to the north and south of Mound AB, and to the east of Mound E. Parts of the settlement currently buried under modern Harappa date to this same time period. The population increase was probably the result of agglomeration of merchant and craft communities (Kenoyer 1989), some migration to the city from the surrounding countryside, as well as normal population growth. This process of urban growth appears to have been going on at all of the large urban centers in the greater Indus Valley.

The largest architectural feature of Harappa, commonly referred to as the "granary" was constructed at this time in one of the new walled suburbs called Mound F. Renewed excavations have shown three major building episodes for

this structure and no evidence for its use as a ”granary”. Furthermore, this building or “Great Hall” was built 200 years before the construction of circular brick platforms located to the south. These circular platforms were originally thought to have been used to process grain but new excavations do not support this interpretation. The circular platforms were originally enclosed within small rooms and may have been used for some industrial purpose, possibly the production of indigo dye. They were constructed during the subsequent Period 3C, which dates from around 2200-1900 BCE and represents the largest urban expansion of the city.

During Period 3C, Harappa appears to have been directly linked to surrounding rural settlements as well as distant urban centers and resource areas. Impressed pointed base goblets made at Harappa have been found at a small site called Lal Shah, located a day’s walk (16 km) to the northeast (Wright, Schuldenrein and Khan 1999). Analysis of stoneware bangles made at both Harappa and Mohenjo-daro show that these distinctive ornaments were worn by elites who traveled between the two sites (Blackman and Vidale 1992). In addition to lapis lazuli and other minerals, the discovery of a pressure flaked arrow point fragment and carved steatite figurine wig at Harappa, provide evidence for close links to Central Asia (Meadow 2002). The trade in raw materials such as shell (Kenoyer 1983), carnelian, copper ingots, lead ore (Law, Burton et al. in press), and carved limestone (Law In Press) confirm that Harappa had trade items which provide evidence for contact with Gujarat, the Makran coast, Baluchistan, the foothills of the Himalayas, and possibly Rajasthan. The expanded trade contacts during this time may have been stimulated by intense competition for access to resources, the high demand of urban and regional consumers, as well as international trade. It is during this time period that the Indus script is executed on a wide variety of materials and in a wide range of public and private contexts.

Indus Script

The Indus script did not appear abruptly but evolved from the Early Indus script during a period of 200 years. During the Harappa phase (2600-1900 BC) the Indus script became more standardized and widespread in all of the

major urban centers of the Indus Valley (Figure 5). Although this writing is undeciphered, the contexts in which it was used allow archaeologists to reconstruct the function of writing in the economy, politics, and ideology of the Indus cities. Discoveries of unfinished seals and an inscribed tablet workshop at Harappa, combined with numerous finds from stratified contexts have provided a new chronology for the writing and helped scholars understand the wide range of contexts in which literate elites (trader, land owners, ritual specialists) used writing. Square seals with animal motifs and bold script across the top were used to seal goods for trade. Literate elites used writing on large jars filled with trade goods, they inscribed their names on small pieces of gold jewelry, and developed a complex system of inscribed tokens for keeping accounts and maintaining trade contacts throughout the Indus Valley. Writing was also used in combination with narrative depictions of myths and religious ceremonies, possibly identifying the main characters, deities, or the name of the ritual. The production of distinctive copper tablets with script and animal motifs is possibly the earliest evidence for city coinage at the ancient cities of Harappa and Mohenjo-daro.

Square steatite seals with animal motifs and short inscriptions become more common in Period 3A and continue though Period 3C, but the carving style for both the animal motifs and the inscriptions shows stylistic changes. The greatest variation and widespread use of such seals appears to be during Period 3B. Small rectangular inscribed tablets made from steatite begin to appear at the beginning of Period 3B, and by the end of 3B there is a wide variety of tiny tablets in many different shapes and materials. They were made of fired steatite or of molded terracotta or glazed faience. These various forms of inscribed tablets continued into Period 3C where we also find evidence for copper tablets all bearing the same raised inscription. In contrast, copper tablets at Mohenjo-daro are incised and have several variations in terms of animal motifs on one side and inscriptions on the opposite side. Rectangular steatite seals with inscription only, glazed faience geometric seals, and stamped pottery (exclusively pointed-base or Indus goblets), appear to have been used only in Period 3C. During Period 3C writing is found on steatite seals and various types of tokens or tablets, gold ornaments, bangles, bone and ivory objects, bronze

tools, trade vessels, and storage containers. It was incised in negative for making positive impressions, incised in positive, molded, and scratched into wet or fired clay, stamped and painted. The nature of the writing in the different contexts suggests that the script was quite versatile and could be used to encode a range of messages.

At Harappa the use of inscribed Indus seals disappears at the end of Period 3C, though there may have been some use of graffiti on pottery during the Late Harappan period.

Harappa: Urban Transformation

During the Late Harappan phase (1900-1300 BCE), most of the walled mounds were fully inhabited and the encroachment of houses and workshops onto the streets suggest that the city was overcrowded, possibly as a result of refugees from regions to the east, where the Saraswati-Ghaggar-Hakra River was beginning to dry up. Although most of the Late Harappan occupation levels were destroyed by brick robbing, a few remaining areas and a large cemetery (Cemetery H) show a gradual transition from the Harappa to the Late Harappan phase (Kenoyer 2005). Continuities in some technologies and art styles, and changes in other aspects of technology indicate that the transition was not abrupt or the result of replacement by new people.

This brief and selective treatment of Harappa is intended to provide a general comparative background for the evidence from the other excavated urban centers presented below. Although Harappa provides a relatively complete sequence, it was only one of several large urban centers of the larger Indus tradition.

Figure 6. Map of Mohenjo-daro

Table 3. Mohenjo-daro Chronology
Regionalization Era: circa 3500-2600 BCE
Lowest levels of the site
Integration Era: 2600-1900 BCE
Most of the occupation levels of the site
Localization Era: 1900-1700 BCE
Mixed uppermost levels of the site

Kushana Occupation (Indo-Gangetic Tradition – Localization Era) 0-300 CE

Mohenjo-daro

The site of Mohenjo-daro is the largest and best-preserved urban center, which dominated the major trade routes and agricultural products of the southern Indus plain (Figure 6). The ruins of this ancient city extend over 250 ha and are currently situated to the west of the Indus River in Sindh, Pakistan. Numerous mounds rise up above the plain while others are partly buried by the silts of the encroaching Indus River. The earliest levels of the site currently lie buried below the water table, but small-scale excavations at the northwest corner of the western "citadel" mound by Wheeler (Alcock 1986) resulted in the recovery of pottery that was similar to that found at the early levels of the nearby sites of Jhukar (Mughal 1992) and Kot Diji (Mughal 1970) as well as the site of Amri (Casal 1964). On the basis of comparative analysis of this early pottery (Chaolong 1990), the origins of Mohenjo-daro may date to around 3500 BCE, during the Kot Diji phase of the Regionalization era.

Most of the excavations carried out by Marshall and Mackay focused on the uppermost levels of the city, which correspond to the final occupation of the Integration era, Harappa phase and the Localization era, Late Harappan. Two radiocarbon dates from the mixed later levels place the final occupation between 2200-1900 BCE (Dales 1973); the Late Harappan may continue much longer to 1700 or even 1300 BCE based on dates from other regions.

The citadel mound on the west is the highest sector of the city and contains the famous "Great Bath" and so-called "Granary," as well as numerous other large buildings and impressive streets with covered drains. One portion of the citadel mound has not been excavated because it is covered by a Buddhist stupa dating to the Kushana Period, circa 2nd century CE. A massive mud-brick wall that had a large brick gateway in the southeast originally surrounded the citadel mound.

The other mounds of the city on the east are somewhat lower in height and have been referred to collectively as the "Lower Town", but in fact they comprise several distinct habitation areas set apart by massive mud-brick walls and platforms and wide streets. Additional suburbs are located further to the

east and south. Each sector has numerous large brick houses that could have been the mansions of powerful merchants or landowners. No temples have been identified, though there is one building with a double staircase that may have had a ritual function.

As noted for Harappa, important crafts were produced in different sectors of all the major mounds and include copper working, shell and ivory carving, lapidary and stone tool production, as well as many different types of furnaces for the manufacture of terracotta pottery, stoneware bangles, glazed faience ornaments, and fired steatite beads. Seal manufacturing workshops have been discovered in very restricted locations indicating strong control of production. The variety of raw materials at the site demonstrates the vast trading networks that linked the city to distant resource areas.

Rare discoveries of gold and silver ornaments provide evidence for a class of wealthy merchants or landowners similar to that seen at Harappa. At Mohenjo-daro there are stone carvings of seated male figures that may represent some of the ancestral leaders of these communities. One of these fragmentary figures is called the "Priest-King" even though there is no evidence that either priests or kings ruled the city. This bearded sculpture wears a fillet around the head, an armband, and a cloak decorated with trefoil patterns that were originally filled with red pigment. Male and female human figurines as well as animal figurines were made of terracotta, bronze, faience, or even shell. Different styles of ornaments and headdresses on the human figurines suggest that many different classes and diverse ethnic communities inhabited the city. The painted pottery of Mohenjo-daro is very similar to that at Harappa, but there is some regional variation.

Towards the end of the Harappa phase, people using a slightly different type of pottery and new styles of geometric seals that did not have writing lived together with the latest Harappa phase communities at Mohenjo-daro. The transition to the Late Harappan phase was gradual as is the case at Harappa, and there is no evidence for a violent transition or an Indo-Aryan invasion. There appears to be a long hiatus after the Late Harappan, with the next major occupation of the site and the construction of a Buddhist stupa in the 1st-2nd centuries CE, during the Kushana period. The region around Mohenjo-daro

continued to be inhabited throughout the Early Historic period and a modern village is located near the mound today.

Figure 7. Map of Dholavira

Table 4. Dholavira Chronology
Regionalization Era: circa 3500 – 2600 BCE
Stages I -III
Integration Era: circa 2600-1900 BCE
Stage IV-V
Localization Era:
Stage VI: circa 1900-1700 BCE
Stage VII: after 1700 BCE

Dholavira

Dholavira (Kotada) is located on the Kadir Island just north of the large island of Kutch, Gujarat, India (Bisht 1989; Bisht 2000) (Figure 7). The site, which extends over 100 ha, is situated on the slope of a low hill with two seasonal rivers flowing on the north and south of the walled settlement. The excavator has divided the occupation into seven stages (Bisht 1998-1999) beginning in the Regionalization era, Kot Diji phase, and continuing through to the Localization era, Late Harappan phase, after which the site appears to have been largely abandoned.

The earliest settlement, Stage I, was located beneath the citadel and reveals the construction of a massive perimeter wall of mud-brick as well as domestic architecture using both mud-brick as well as dressed and undressed local stone. The perimeter wall was repaired and enlarged on the inner face during Stage II and residential areas expanded to the north of the citadel. In the following Stage III, the wall was enlarged again and the basic outline of the citadel was created. A smaller walled area, called the bailey, was added to the west of the citadel. The residential areas adjacent and north of the citadel were removed and a large rectangular ceremonial ground or plaza was created. Stone lined reservoirs excavated into the natural bedrock were added to the expanding settlement in the north, south, and west. Earthquake damage in Stage III resulted in major repairs of the city walls and the walled settlement was expanded to the east. By

the end of Stage III the overall settlement plan had become established, with a series of three nested rectangular city walls, the highest area being located in the south. This pattern suggests a socio-economic and political organization that is different from that seen at the other large urban centers. The nested walls may reflect a hierarchy of internal settlement, a higher degree of control of access between different sectors of the settlement, as well as a need for defense against attack.

The outer wall enclosed an area approximately 771 m x 616.8 m (47 ha) (Bisht 1994) and was constructed entirely of mud-brick. Large square bastions and two major gateways were located at the center of the northern and southern walls. Inside the outer wall is a fortified middle town (360 x250 m) with four gateways and an associated ceremonial ground with two gateways. The acropolis (300 x 300 m) that rises approximately 13 m above the lower town has five gateways and the small bailey on the west has two gates. A large rectangular open area or plaza and entrance ramp are situated directly below the major north gateway of the acropolis, and numerous large open spaces are found within the different walled areas. Some of these open spaces appear to have functioned as reservoirs that would have been filled with seasonal rainwater. The 16 or more reservoirs account for approximately 10 hectares (10%) of the walled areas (Bisht 1998-1999). To the west, outside the walled city, are additional areas of habitation and a cemetery area, which bring the total area of the site to approximately 100 ha (Bisht 1989).

Large buildings in the acropolis area may represent administrative or ritual structures, and some of the open areas in the city could have functioned as markets or public gathering places. Like most sites in Kutch and Gujarat, the houses were made with sandstone blocks (dressed and undressed) combined with some mud-brick superstructures. Habitation and craft activity areas in the lower sectors of the city are organized in well-planned architectural blocks divided by north-south and east-west streets (Bisht 1998-1999). Small sewage drains made with stone were used to carry dirty water away from latrines and bathing areas to large sump pots placed on the streets. Various types of craft activity areas for agate bead making, shell working, and ceramic production have been located within the acropolis as well as the lower town.

Figure 8. Map of Rakhigarhi

Table 5. Rakhigarhi Chronology
Regionalization Era: >3000-2600 BCE
Period 1A - Early Harappan – preformative
Period 1B – Early Harappan - formative
Integration Era: 2600-1900 BCE
Period II – Harappa phase

Rakhigarhi is located along the south bank of the Chautang River (ancient Drishadvati or Saraswati River) in Haryana, India (Nath 1998; Nath 2001) (Figure 8). The overall site topography consists of a large east-west mound on the south (designated RG-4 and RG-5) that is currently occupied by two modern villages, Rakhishahpur and Rakhikhas. The current height of this mound is approximately 17 m. To the northwest are two smaller mounds separated by a north-south street. On the west is RG-2, which is called the citadel mound and stands around 14 m high. On the east is RG-3, ca. 12 m high and slightly smaller in area. Mud-brick perimeter walls have been noted around mounds RG-2, 3, and 4. These mounds appear to form the core of the urban center. The overall layout of the settlement, with multiple walled mounds is generally comparable to Mohenjo-daro and Harappa, but the relationships between the mounds is unique.

Two additional mounds have been located to the north (RG-1) and northwest (RG-6) of the main settlement. Both of these mounds as well as the northern part of Mound RG-2 have Early Harappan occupation levels. Some 200 m to the north of RG-1 is another low mound called RG-7 which appears to be a Harappan cemetery, but it also has some habitation deposits.

Limited excavations have been carried out at the site and preliminary reports provide our only information on the nature of the site. The earliest occupation recorded can be associated with the Regionalization era, Kot Diji phase, but so far no radiocarbon dates have been reported. The earliest architecture in Period 1A includes rectangular mud-brick structures as well as circular structures (1.9 to 2 m in diameter) with doorways. The circular structures were made with mud-brick, combined with postholes. A fired brick paving has

been reported for one circular structure and another was made from wedge-shaped mud-bricks. During the subsequent Period 1B, more typical rectangular structures with bricks made according to the 1:2:3 ratio, were constructed along a street that runs east-west. The pottery from this period is generally similar to that found at the extensively excavated but much smaller site of Kalibangan, and can be correlated to the local pottery traditions of the Indo-Gangetic divide (Sothi-Siswal Ware) as well as the Kot Dijian and Hakra pottery traditions. Around 13 radiocarbon dates are attributed to the Period I Early Harappan occupation at Kalibangan but they range from 5566 BCE to 70 CE (calibrated) with a majority of the dates in the 3000-2600 BCE range, which corresponds with the dates from Harappa and other Early Harappan sites.

Geometric seals without script were used, along with cubical stone weights, both of which are important indicators of the emergence of elites and centralized control. Some pottery with graffiti has been reported. Other artifacts include stone beads, terracotta bull figurines, toy carts and cartwheels, segmented bangles, and pottery discs. Detailed studies of these artifacts and the pottery are needed to determine if they represent a distinctive regional style similar to Kalibangan or to the other lager urban centers of Harappa and Mohenjo-daro to the south.

The subsequent Period 2 occupation at Rakhigarhi represents the Integration era, Harappa phase that is generally dated between 2600-1900 BCE. The citadel mound (RG-2) has a massive perimeter wall along the western edge that is 12 m wide, with a preserved height of around 1.5 to 2 m (15 to 18 courses) and can be traced for around 25 m. The wall is battered on the exterior and the interior face is plastered. A large brick gateway is located in the north and another one on the southwest with steps leading up to it from the exterior. The pathway leading to the southwestern gate is 1.1 m wide. The interior part of this mound has a large mud-brick platform and a brick-lined well. In the southwestern portion, excavations in 1997-1998 revealed a pillared corridor, with flanking rooms. Nearby was a craft working area with shell working debris from the manufacture of shell bangles (*Turbinella pyrum*). There is also evidence for steatite bead making as well as agate or carnelian stone bead making. A circular potter's kiln may have been used to produce goblets, dishes and terracotta

bangles. A structure with small cell-like rooms with traces of barley has been identified as a granary. In front of the small rooms was a corridor with a bench has been called a "guard cell."

The drainage system included brick-lined public drains in the middle of the street with terracotta pipes leading from the side streets. In domestic structures, smaller brick drains have been found associated with bathing platforms.

Various types of hearths have been identified, and one unique hearth with curved arms on either side has been identified as a fire altar. A rectangular mud-brick lined pit, similar to sump pits at Mohenjo-daro was found filled with debris and some animal bones. This pit has been designated a pit for animal sacrifice. An oval hearth with an upright mud-brick in the center is identical to hearths and small kilns found at Harappa and Mohenjo-daro has been called a fire altar. It is associated with a large storage jar. Such storage jars are commonly set into the ground near cooking areas for storage of goods, water, or garbage.

The largest mound (designated RG- 4 and RG-5) is currently occupied by two villages, called Rakhishahpur and Rakhikhas. Limited excavations on RG-4 revealed north-south streets and mud-brick platforms. A modern north-south road that may run along an ancient street separates RG-5 on the east. Small excavations on RG-5 have turned up evidence for the manufacture of bone, antler and ivory artifacts, such as bone points, ivory combs, and needles.

All of the typical Harappan styles of pottery and painted designs have been found, but a careful analysis of the pottery has not been undertaken yet. Terracotta cart fragments and wheels have been recovered. One wheel has an exterior surface with radiating ridges (resulting from the hand modeling) that appear to represent spokes of a wheel. The subsistence evidence includes wheat and barley as well as cattle, water buffalo, fish, and a relatively low percentage of wild animal bones.

According to the published reports, inscribed seals and tablets have been found only in the excavations of the citadel mound (RG-2). Square steatite seals have the typical unicorn motif and Indus script on the front and a perforated boss on the back. A molded cylindrical faience tablet was discovered with a gharial (narrow snout crocodile) and Indus script. Two circular terracotta

sealings with plano-convex cross sections had the impression of an elephant seal with Indus script. These molded terracotta tablets are similar to the ones found at Harappa and Mohenjo-daro.

Some 200 m to the north of Mounds RG-1, 2, and 3 is a small mound (RG-7) that appears to be a Harappan cemetery. The location of the cemetery to the north of the site is unusual since most Indus cemeteries are located to the south or west of the settlement. Eleven extended burials were found in oblong pits with the head to the north. Three phases of burial were indicated because some burials intruded into and disturbed other burials. Burial goods included pottery, and three female skeletons had shell bangles on their left wrists. One miniature gold amulet was found near the elbow of a female and some of the burials had steatite beads around the skull, possibly the remains of a headdress or necklace.

Conclusion

This chapter has provided new evidence for urban origins by looking at the major urban centers themselves. At a very general level, Indus cities are similar to other early urban centers in terms of the concentration of a diverse and hierarchically organized population. Another similarity is that most cities have a long pre-urban settlement history. Each of the largest Indus cities appears to have had an Early Harappan component that indicates these cities were pristine urban settlements; they evolved over hundreds of years, through the internal competition of resident elites and the external influences of the rural hinterland and distant trading partners. In contrast to other urban cultures, the layout of Indus cities is quite unique. Each city had a distinct pattern of multiple walled sectors and these settlements were never destroyed by warfare. The lack of conspicuous temples or administrative buildings is also a unique feature of the Indus cities. Mohenjo-daro, Harappa, and Rakhigarhi may have been ruled by competing elites, with fluctuating centers of power located in different walled sectors. The site of Dholavira is the only settlement that may have been administered by a small ruling class living in a central citadel area. Each of these cities was a central place for a large hinterland and all were united by a shared ideology, material culture, the use of a common writing system, and the use of a standardized system of weights that may have been used for taxation. The

relative uniformity of the material culture does not reflect an authoritarian society, but can be explained through a variety of mechanisms, including a common belief system and conservative ideology that used material symbols to reinforce social hierarchy, as well as kin based craft traditions that spread to all of the cities.

While many of the major features of the Indus cities are no longer a mystery, there are still many areas that need further research. More information from smaller settlements in the hinterlands around the major cities and in distant resource areas is needed to fully understand the complexity and fluctuations in economic and political organization. Unfortunately, small sites in the heavily populated Indus Valley are rapidly being leveled to create agricultural land. In more remote areas, cemeteries and settlements are being looted for pottery, beads, figurines, and the isolated inscribed seal.

Ever since the independence of India and Pakistan, the sites that lie along the border between these two countries have been inaccessible for research. The area along the dried up portion of the Ghaggar-Hakra River holds great potential for understanding the interactions between urban centers on the Indus River and its tributaries and the Thar Desert and Rajasthan to the east. In the other direction, the long drawn out conflict in Afghanistan and recent disturbances in Baluchistan have made it difficult to investigate the relationships between the Indus settlements located on the alluvial plains and those that are scattered throughout the western highland regions. The nature of interaction between the Indus region and the further regions of peninsular India, Central Asia, the Gulf region and Mesopotamia also needs to be investigated in order to test and refine models of external trade and core-periphery relations. Changes in political relations and the eventual stabilization of these various regions may begin to open these areas up for research.

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Illustrations

Figure 1. Map of the major Traditions

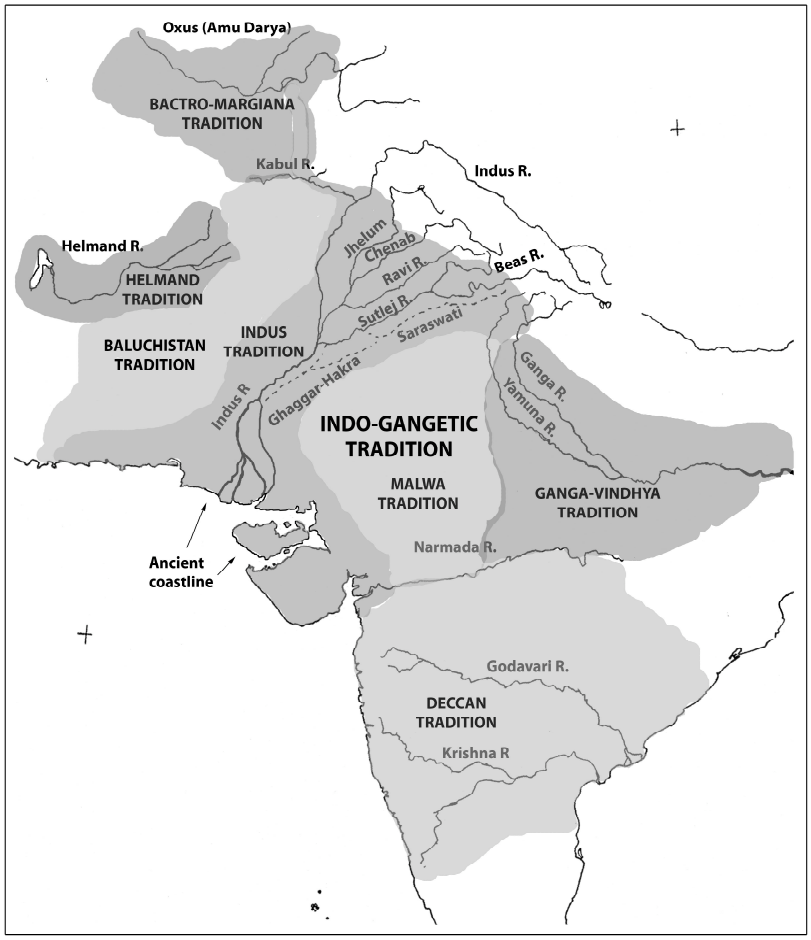


Figure 2. Major Sites and Regions of the Indus Tradition

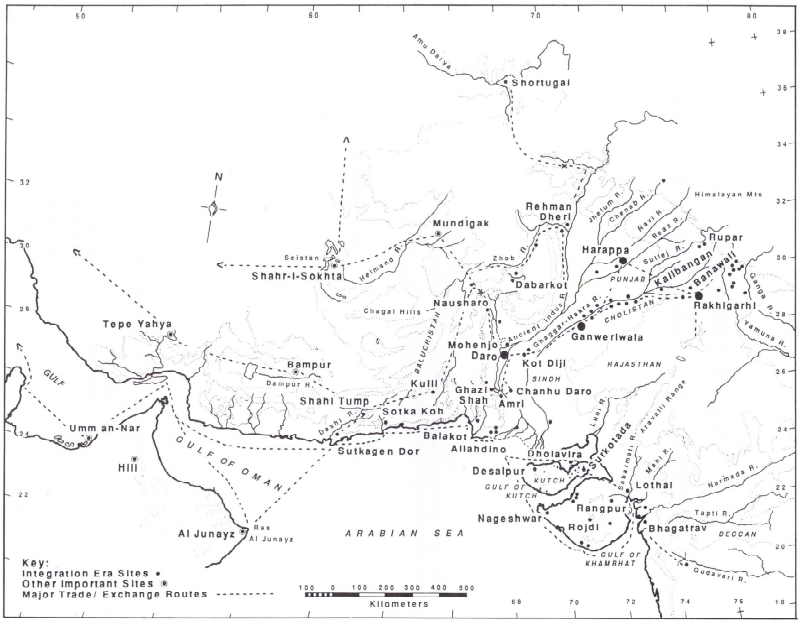


Figure 3. Map of Harappa

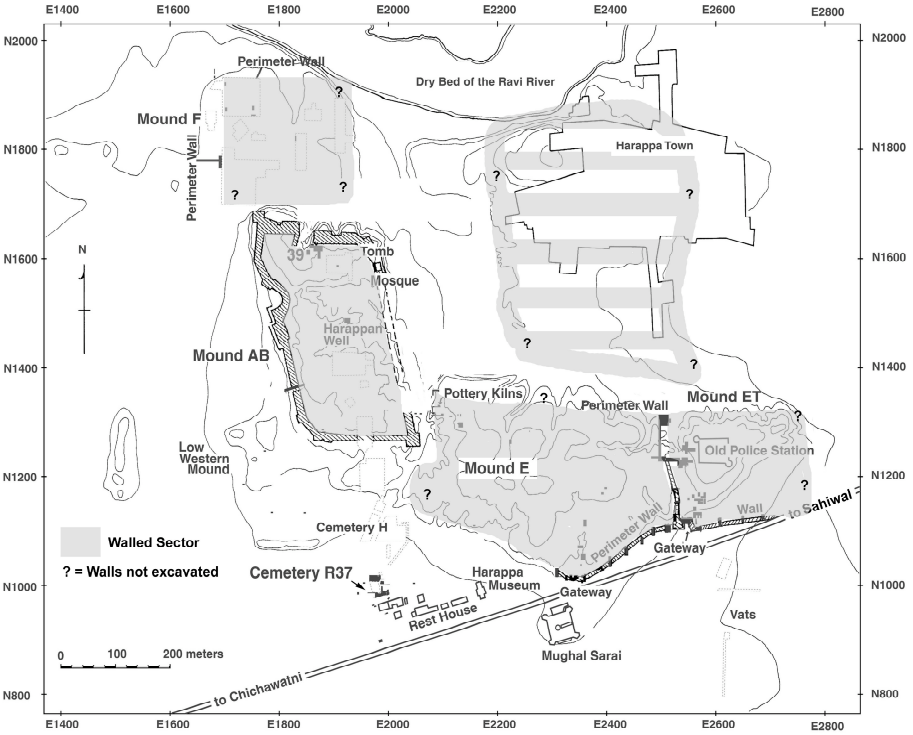
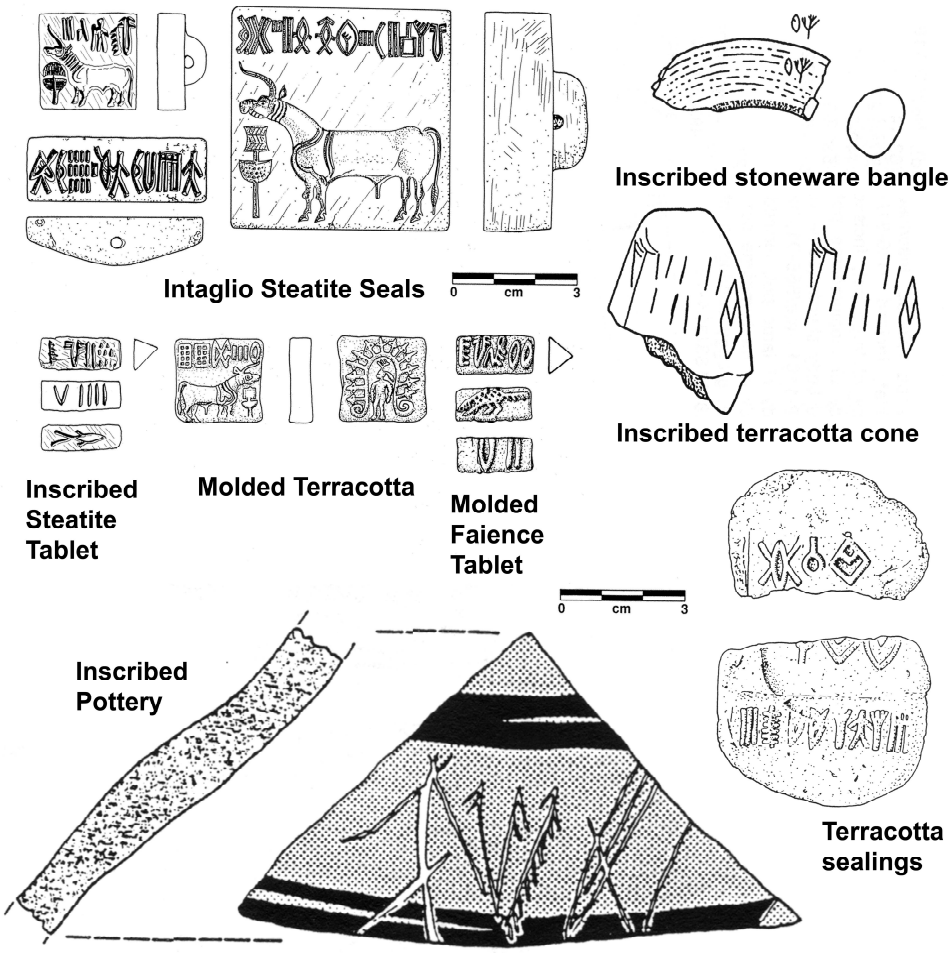


Figure 4. Early Indus Script

Figure 5. Indus Script and Writing



1. H90-1600/3166-01: Steatite seal, Period 3A.
2. H95-2491/4690-01: Steatite seal, Period 3B.
3. H99-4064/8796-01: Steatite seal, Period 3C.
4. H95-2482/4419-05: Incised steatite tablet, Period 3B/3C.
5. H95-2485/5719-02: Molded terracotta tablet, Period 3B/3C.
6. H94-2177/4999-01: Molded faience tablet, Period 3B/3C.
7. H94-2184/4999-216: Molded faience tablet, 3B/3C.
8. H98-3491/8322-21: Steatite seal, Mound AB, Period 3C.
9. H99-3814/8756-01: Button seal, molded faience, Period 3C.

Figure 6. Map of Mohenjo-daro

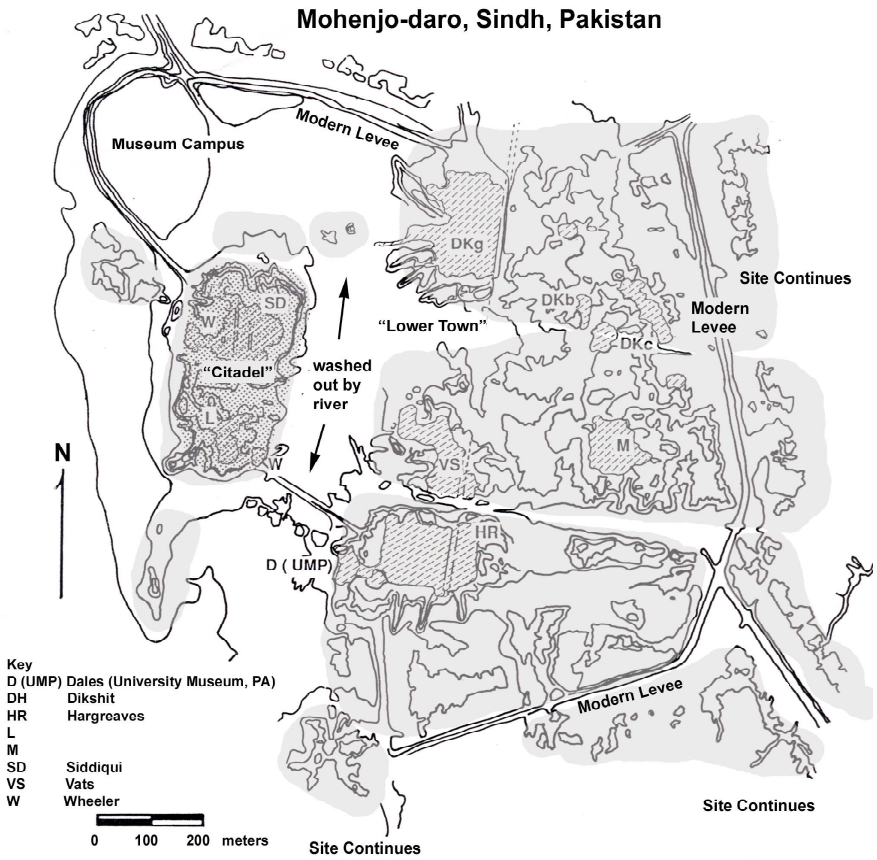


Figure 7. Map of Dholavira

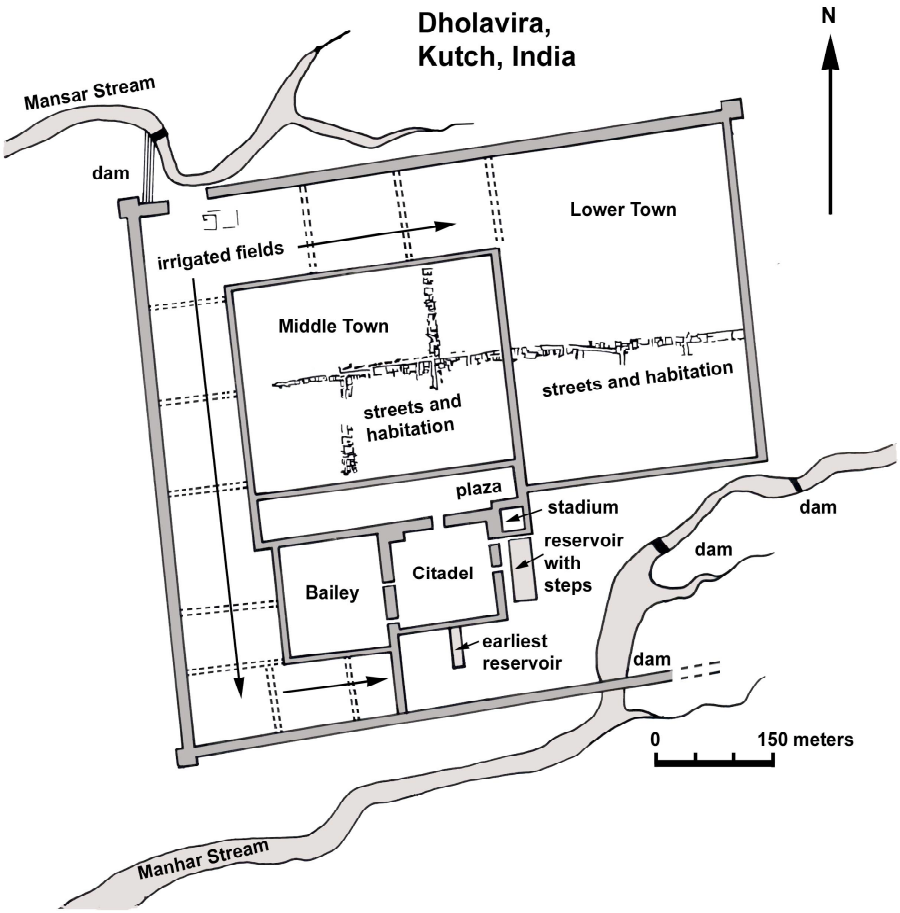
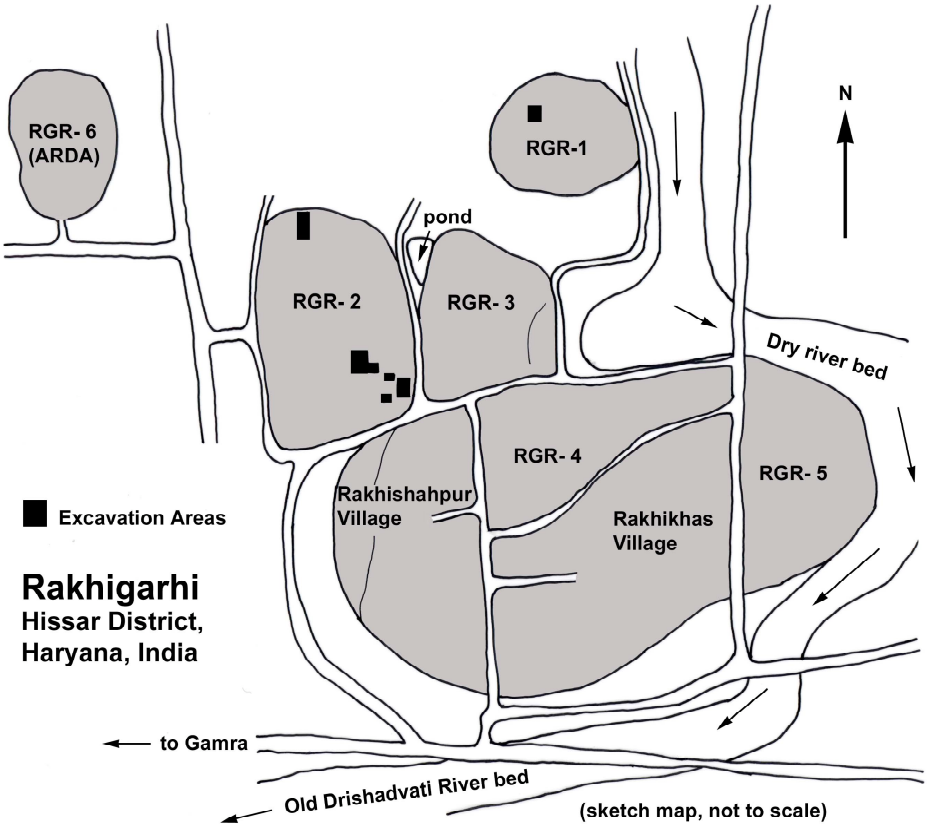


Figure 8. Map of Rakhigarhi



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