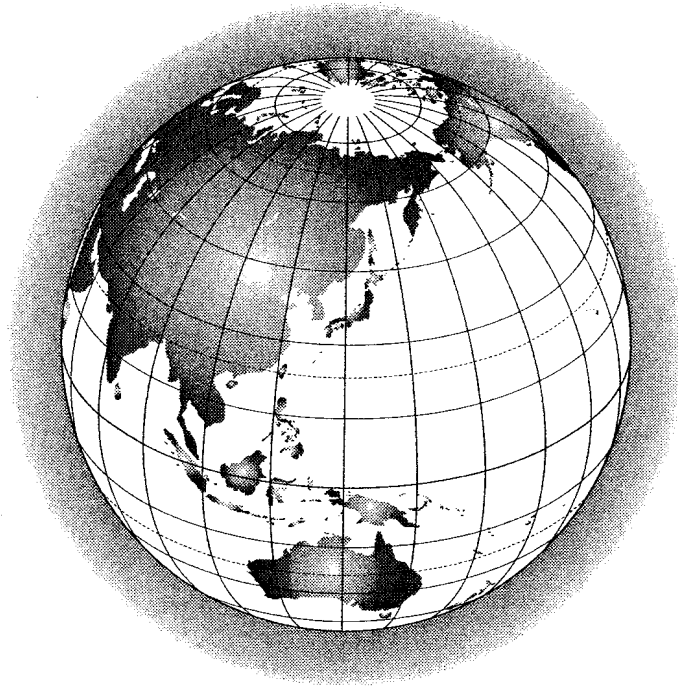


**Proceedings of the Pre-symposium of RIHN and  
7th ESCA Harvard-Kyoto Roundtable**



**Edited by OSADA Toshiki  
with the assistance of HASE Noriko**

**Research Institute for Humanity and Nature (RIHN)  
Kyoto, Japan  
2006**

## **The Origin, Context and Function of the Indus Script: Recent Insights from Harappa**

**J. M. Kenoyer**

University of Wisconsin

### **Introduction**

The origin and development of writing in the Indus Valley is a highly debated topic but one that is extremely important because of the impact writing had on early cultures. Writing allowed literate elites to store knowledge and communicate this knowledge to other elites within the context of their cities and towns as well as over great distances. It also allowed literate elites to demonstrate their power to illiterate individuals who would have visually interpreted the writing as symbols of power, but not necessarily understanding the specific semantic meaning. This dichotomous use of the same graphic symbols poses a major problem for scholars today who are trying to understand the nature of the Indus writing system.

The interpretation of these ancient documents is of course a very challenging task since the Indus script is one of the major ancient writing systems that have not yet been deciphered. For over 125 years, scholars struggling to decipher this script have worked under the assumption that it was invented suddenly and appeared fully formed with the rise of urban centers around 2600 to 2500 B. C. (Parpola 1996). This assumption has been applied to every major world script due to the lack of proper archaeological excavations of the often deeply buried occupation levels of the large urban centers. To date there are no stratified sites in Egypt, Mesopotamia or China where the developmental stages of a writing system have been properly documented. In Mesopotamia for example, the earliest writing, known as proto-cuneiform, comes almost exclusively from disturbed, secondary deposits at the site of Ur. The script of these early texts can be vaguely understood, but it cannot be fully read as with later texts. According to Michalowski, the exact chronology of these texts is unknown and it is not possible to establish the earlier history of the writing system except through future chance discoveries (Michalowski 1996). pp. 33-34). A similar situation exists in China (Boltz 1996) and Egypt (Ritner 1996).

While some have argued that the Indus writing is a form of ancient Indo-Aryan language (Rao 1984) or perhaps an ancient Dravidian language (Mahadevan 2001; Parpola 1994), others claim it is not a writing system at all (Farmer, Sproat and Witzel 2004). One of the main reasons why it has been impossible to decipher this writing is because no one has found a text that includes the Indus script and one or more other known scripts. The lack of consensus on the nature of the writing is also due in part to the paucity of properly excavated and well-documented examples of writing. On the basis of computer-aided comparative analysis of symbol sequences, some scholars have concluded that the Indus script is not directly related to any known writing system (Parpola 1994). However, the sample used to analyze the writing from this perspective is not a statistically meaningful set of data since it is derived from chronologically mixed contexts and usually includes only one type of artifact, namely inscribed seals, which themselves cannot possibly represent full texts.

Scholars investigating the earliest use of writing have been strongly influenced by how writing was used historically in Mesopotamia and Egypt, and how it has been used in the present. If the Indus script was

radically different from these other ancient languages it is also quite likely that it is different from later scripts that evolved from these earlier ones. This presents a unique dilemma to archaeologists who are trying to study the script based on the assumption that it is structured according to later systems of writing. While it is difficult to get away from ethnographic or comparative historical models, it is also necessary to first look at the ways the script is used and compare the contextual data with contextual rather than semantic or literary data from other periods or regions.

As will be presented in more detail below, the well preserved stratified occupation levels that have been exposed at the site of Harappa provide the first opportunity to investigate the development of the Indus script from its early origins in the Ravi Phase, more than 5500 years ago, through the establishment of a well developed writing system used extensively throughout a region that was twice the size of Mesopotamia or Egypt for over 700 years (2600-1900 BC).

4500 BC	early potter's marks on pottery in Baluchistan and Mehrgarh
3300 BC	earliest writing/graffiti on pottery from Harappa, Ravi Phase
(3300 BCE	early Proto-Cuneiform in Mesopotamia)
(3100 BCE	early Hieroglyphs in Egypt)
2800 BCE	Early Indus Script at Harappa, Kot Diji phase
2600-1900 BC	Indus Script found at all major Indus cities and towns, Harappa Phase
1900-1300 BC	Late Indus Script/graffiti, disappearance or low incidence of writing

Table 1. Chronology of Writing in the Indus Valley

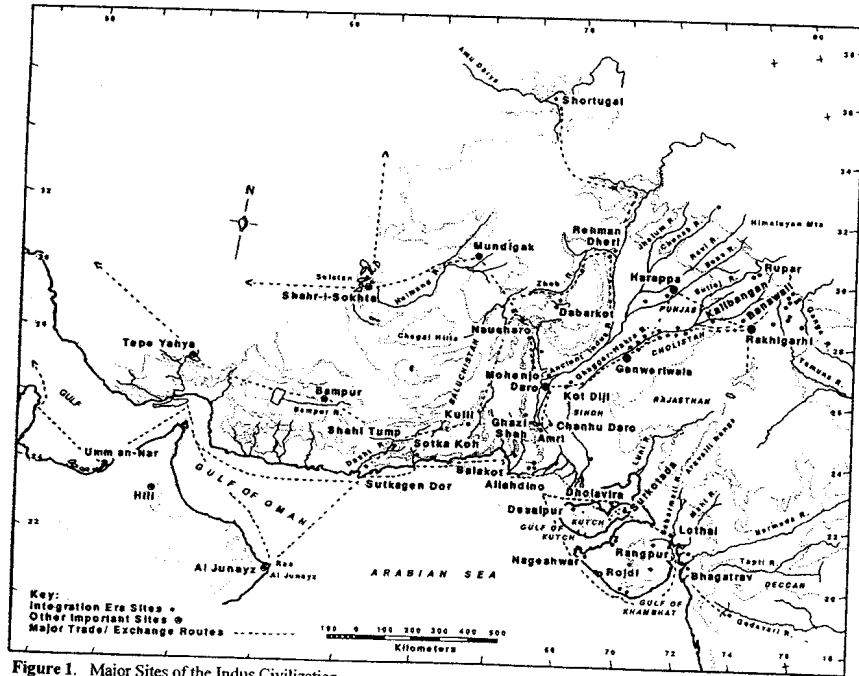


Figure 1. Major Sites of the Indus Civilization

### Origins of the Indus Script

The origin and nature of the Indus script can be addressed by examining the chronology of writing, the contexts in which inscribed objects have been found and the functional analysis of inscribed objects themselves. The site of Harappa will be the main focus of this study, but additional evidence will be drawn from other discoveries at Indus sites in both Pakistan and India.

The use of graphic symbols in the form of potters marks or post firing graffiti, and abstract pictographs seen on painted pottery, has been discovered in agro-pastoral villages of Baluchistan and the Indus Valley, dating as early as 4500-4000 BC.

The origins of many characters of the later Indus script can be traced to the potters marks and particularly post-firing graffiti found during the Early Harappan period at sites throughout Baluchistan and the Indus valley. While earlier scholars discounted the importance of these early symbols, recent excavations at Harappa have been able to trace the development of some symbols from the Ravi Phase occupations (3900-2800 BC) through the Kot Diji Phase (2800-2600 BC) and into the Harappan Phase (2600-1900 BC). By around 2800 BC, during the Kot Diji Phase at Harappa, the use of script on seals and inscribed pottery indicates the presence of an Early Indus script.

During the period from 2600-1900 BC, during the Harappa phase, the fully developed Indus script appears to have been standardized to some extent and it was used in a wide variety of contexts and forms. Square steatite seals were carved with animal motifs that could have been understood by illiterate workers and bold script that could be read by literate merchants. Some seals were clearly used for economic control, while others do not appear to have been used at all. A form of large cursive writing is found on pottery jars that would have been filled with trade goods. Miniature inscriptions that may have been seen only by a few private individuals are found on tiny gold ornaments. A complex system of inscribed tokens was developed for keeping accounts and maintaining trade contacts throughout the Indus valley. Writing was also used on seals and molded tablets that include narrative depictions of myths and religious ceremonies. Distinctive copper tablets with script and animal motifs have been found at both Harappa and Mohenjo-daro. Numerous other examples of script have been discovered that provide additional evidence for its use in multiple contexts.

At Harappa the use of inscribed Indus seals disappears around 1900 BC, and although there are some rare examples of graffiti on pottery during the Late Harappan Phase at Harappa (1900-1300 BC), most traces of writing disappear along with the seals. While the use of Indus script may have ceased at Harappa, it is possible that it continued to be written in the form of graffiti on pottery for a longer time in other regions such as Gujarat.

Although this script is still undeciphered, the multiple contexts of its use allow archaeologists to reconstruct the function and importance of writing in the economy, politics and ideology of the Indus cities. The stratigraphic recovery of different types of inscribed objects reveals important changes in the use of writing over time and also the introduction of new types of inscribed objects. The nature of the writing in different contexts suggests that the script was quite versatile and could be used to encode a range of messages.

Finally, the disappearance of this important writing system during this crucial transition from the Harappan to the post-Harappan period suggests that the writing was closely linked to a broader system of political-ideology associated with large urban centers. When these urban centers began to decline, and

were replaced by a new political ideology associated with Vedic culture, the need for writing was lost and it did not reemerge until the Early Historic period, over 1000 years later.

Early Food Producing Era	circa + 7000 to 5000 B.C.
Regionalization Era	circa 5000 to 2600 B.C.
Harappa Period 1A/B (Hakra/Ravi)	>3700-2800 B.C.
Harappa Period 2 (Kot Dijian)	2800-2600 B.C.
Integration Era	2600 to 1900 B.C.
Harappa Period 3A	2600-2450 B.C.
Harappa Period 3B	2450-2200 B.C.
Harappa Period 3C	2200-1900 B.C.
Localization Era	1900 to 1300 B.C.
Harappa Period 4 (Late Harappan)	1900-1800 B.C.
Harappa Period 5 (Late Harappan/Cemetery H)	1800-<1700 B.C.

Table 2. General Chronology: Indus Tradition and Harappa Chronology

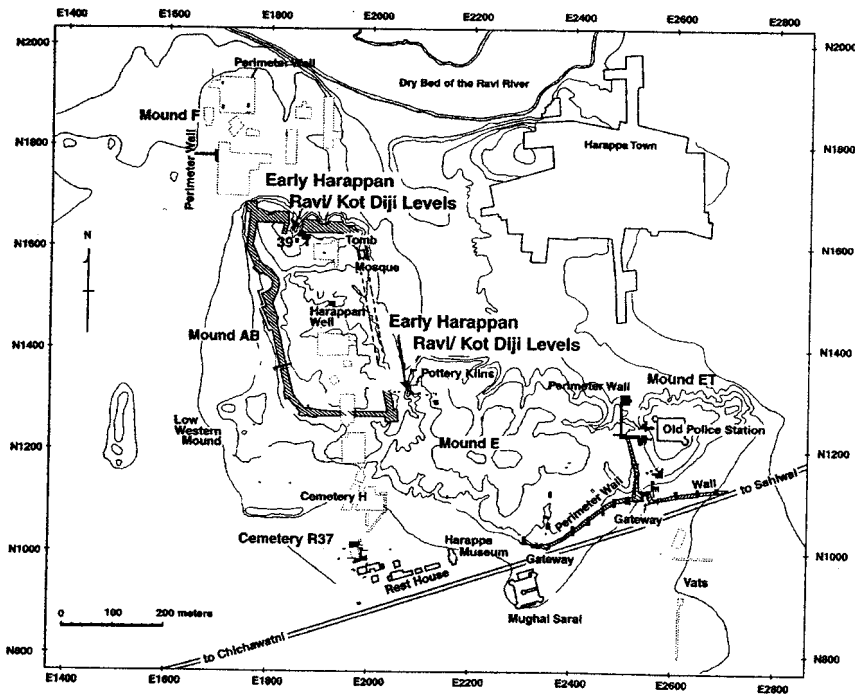


Figure 2. Map of Harappa

## Harappa Overview

A brief introduction to the chronology of Harappa and a discussion of site development and growth is necessary before providing the more detailed discussion of the evidence for writing. Located in the fertile plains of the Punjab, the site of Harappa is situated in a strategically important position that provides access to both north-south, as well as east-west trade. All of the major Indus settlements would have had similar strategic importance but Harappa is the only major city that has revealed the full sequence of occupation, beginning from the earliest farming village to the rise and eventual decline of the city.

Three large walled sectors and several smaller suburbs have been identified at the site, which covered more than 150 hectares during the full expansion of urbanism. This settlement was a central place in a wide network of smaller settlements that have been recently discovered along the Ravi, Beas and Sutlej River system (Mughal 1997; Wright, Schuldenrein and Khan 1999).

The original settlement may have been a single village during the earliest part of the Ravi Phase around 3500 BCE, but it soon was divided into two sectors, with a combined area of over 10 hectares (Kenoyer and Meadow 2000). By the Kot Dijji Phase (2800-2600 BCE) the early Ravi settlements grew into two distinct mounds that were each enclosed by separate mud-brick perimeter walls. The overall settlement size grew to around 27 hectares, with well-laid-out streets and mud-brick houses (Kenoyer 1993). During the Harappa Phase (2600-1900 BCE) the two walled mounds grew in height and new suburbs were established to the east, north and south of the original walled sectors. Eventually, new perimeter walls were built to enclose the new suburbs and gateways were maintained at strategic locations to allow the dominant elites in each sector to control access into and out of their neighborhoods. Economic as well as political competition may have been key factors that stimulated the continuing expansion of the site during the 700 years of the Harappa Phase. Three periods of settlement growth and expansion can be defined and these are associated with the construction of new suburbs, changes in seals and writing, new pottery forms, specialized crafts, and changing trade networks (Meadow and Kenoyer 1997).

The final Harappan occupation is called the Late Harappan Phase (1900-1300 BCE). During this time some areas of the city were overcrowded, possibly due to the influx of refugees from the east, where the Saraswati-Ghaggar-Hakra River was beginning to dry up. There is no distinct hiatus between the Harappan and the Late Harappan occupations, but rather a gradual transition is seen in terms of technological traditions as well as in the arts and ideology. By the end of the Late Harappan however there is a major change in religion as reflected in different burial traditions. The Harappan practice of extended burials was eventually replaced by pot burials that contained the secondary burial of long bones and skulls. During this period the use of distinctive Harappan cultural and ideological symbols, such as seals, weights and writing disappeared (Kenoyer 2005).

After the Late Harappan period the history of the site is less clear due to the destruction of the upper layers by erosion and brick robbing. We do know from other sites, that the region around Harappa was not abandoned, but that there was a continuity of occupation in the Punjab up through the Early Historic Mauryan period (Erdosy 1995; Shaffer 1993). Recent discoveries of carved stone bull statuary suggest that the site may have had a Mauryan period stone monument (Meadow, Kenoyer and Wright 2001). Fragments of Gupta brick architecture and sculpture dating to around CE 320-454 have also been recovered from the site (Vats 1940), but very little remains from what must have been a very large Early Historic city.

### Early Graphic Symbols

The earliest evidence for abstract graphic symbols in the Indus Valley are seen in the form of graffiti and painted symbols on pottery at the site of Mehrgarh, dating to around 4500 BC (Quivron 1997) and also at the site of Balakot (Dales 1979). While Indus scholars have acknowledged the presence of such early forms of abstract graphic expression they have generally grouped all forms of abstract graphic design on pottery as either being "potter's marks" or as ritual symbols with no direct connection to later script (Parpola 1994).

On the basis of inscribed pottery from the earliest Ravi Phase occupation levels at Harappa, it is important to distinguish between the uses of different types of graphic symbols. Except for the abstract intersecting circle motif no painted symbols have been found that might relate to later Indus script signs. Other graphic symbols can be divided into pre-firing potter's marks and post-firing graffiti. Pre-firing "potter's marks" are found on the base and lower body of some vessels and generally consist of single or double strokes or "v" or "x" motifs (Figure 3). These signs may have been made by potters to differentiate pots being produced for a specific customer or by a specific individual. While some of the simple strokes as well as the "x" and "v" signs might look like later writing signs, generally speaking these types of marks continue to be used throughout the later Kot Diji and Harappa period after a more formal writing system emerged.

Post-firing graffiti is put on the pot by the consumer or user of the pot and includes some symbols that may represent early forms of the Indus script. Some of these symbols occur singly or along with other signs, the latter may represent the formation of multiple words or short sentences (Figure 3:1, 2). The precise meanings of these signs is unknown, but they may encode information such as the name of the owner of the pot, the deity to whom the offering is intended, the contents of the vessel, or possibly a destination to which the vessel is being directed. The presence of such symbols on the pottery indicates that someone was able to use them as form of communication.

The Ravi levels also have a fragment of a bone button seal with an abstract motif that may represent the swastika (Figure 5:1). Geometric symbols may represent ritual power, words or clan names and would have been worn as ornaments or sewn on to clothing. Some seals may have been used to stamp good to indicate ownership or to ritually protect the contents. Button seals with geometric designs have been found at other sites throughout the Indus Valley (Durrani, Ali and Erdosy 1995; Jarrige, Jarrige et al. 1995), but so far no swastika seals have been reported for the Early Harappan period. If the fragment from Harappa does turn out to be a swastika, it would represent the earliest example in the Indus valley. The swastika motif continued to be used in later periods and was often used on Indus seals, sometimes in association with the Indus script.

Due to the relatively small area exposed for the Ravi Phase at Harappa, the sample of inscribed vessels is quite small. So far, only thirteen inscribed sherds have been recorded with post-firing graffiti, and six of these are rims. One rim sherd has three signs combined together to form what could be interpreted as an anthropomorphic image, or a complex plant motif (Figure 3:1). A second sherd has a partially preserved sign that looks like it might be ancestral to the most common symbol in the later Indus script (Figure 3:2). Several of the post-firing graffiti are simply incised lines that could be numerical indicators. Only four sherds with pre-firing potter's marks have been found, one of which is a base. Some of the pre-firing potter's marks are identical to post-firing graffiti, and all have parallels in the potter's marks reported at other sites

such as Mehrgarh, Nausharo and Rehmandheri.

At present we can only suggest that some of the signs could be ancestral to the Early Indus script that is well documented from later levels of the site, and that further excavations are needed to collect a larger corpus of inscribed materials and develop a better defined chronology for the early and later Ravi levels.

### Early Indus Script: Kot Diji Phase

The Kot Diji Phase, or Early Harappan Period (2800-2600 BC) (Mughal 1970) represents the initial urban phase of the site. At the beginning of the Kot Diji Phase the site was already divided into two separate settlements encompassing an area of over 27 hectares in area. The construction of massive mud brick walls around these two settlements suggests major political and economic developments. The presence of social and economic segregation and stratification is seen in the well laid out streets and walled mounds, as well as in the numerous different types of ornaments and decorated pottery being produced in city workshops.

Continuing with the pattern seen in the Ravi phase, pottery during the Kot Diji Phase is inscribed with both pre-firing potter's marks as well as post firing graffiti. The area of excavation for the Kot Diji phase is significantly larger however, and includes multiple trenches on Mound AB, E and the area between E and ET. An exact breakdown of pre-firing potter's marks compared to incised or inscribed sherds has not been completed, but a total of 95 sherds have been recorded from un-mixed contexts as having some type of incising or inscription. Further inscribed sherds from mixed contexts can be identified as belonging to the Kot Diji Phase, and therefore a final count of inscribed sherds cannot be given at this point in time.

During the Kot Diji phase, potter's marks consisting of single signs similar to those used in the Ravi phase continue to be created. However, a new type of potter's mark that may in fact represent writing, consists of multiple signs that are inscribed into molds used to make large bowls or jars (Figure 4:11, 12). If these combination signs represent a form of early writing, then it may be the earliest evidence for literate potters. Although it is not possible to give final counts, there appears to be a significant increase in post-firing graffiti, including numerous duplicate inscriptions of single signs on similar types of pottery vessels. In addition, some sherds have multiple signs, including sequences that later appear in the Indus script itself. These multiple signs include three of the more common Indus signs (Figure 4:1, 2, 3, 4, and 6). Since several of these signs are identical to some of the most common and prominent Indus script signs, it is possible to suggest that the Kot Diji period saw the initial development of a writing system, which can be called the Early Indus script. Most if not all of the signs from this earlier form of the script were incorporated into the larger corpus of signs from the

The use of seals with script first appears during this time period as revealed by a clay sealing of a square seal with script (Figure 5:9). The low-fired sealing was discovered in a hearth where it must have become accidentally hardened by fire, after being removed from a bundle of goods or a doorway. The script on this sealing includes the most common Indus sign, of the "V" with double projections, as well as two other symbols that are not oriented in a linear manner. The lack of linear orientation of script symbols could indicate an initial stage of writing.

Perhaps the most important new development relating to the writing is the discovery of an unfinished steatite seal with an elephant motif (Figure 5:8). The upper part of the seal is missing, but there would have been a space for script as was common in later Harappa phase seals.

Glazed square steatite seals with geometric designs have been found in the same general levels as the unfinished steatite seal (Figure 5:2-7). Seals with circle and star motifs (Figure 5:7) have been reported from the Kot Diji phase sites of Rehman Dheri (Durrani, Ali and Erdosy 1995) and Kunal (Khatri and Acharya 1997).

Another piece of evidence that is relevant to the use of writing and seals is a cubical limestone weight (1.7 grams) that corresponds to the standard weights of the subsequent Harappan period (Figure 5:10). This weight was found in a pit that was stratigraphically associated with the hearth containing the low fired sealing and the street levels containing geometric seals, the unfinished elephant seal and inscribed sherds. The weight may have been for small-scale measurement of high value materials such as gold or silver. Small gold sequins found in associated street levels indicate the use of gold buttons and ornaments on clothing, which must have been worn by wealthy elites.

The use of weights, seals and sealings as well as graffiti on pottery are clear evidence of elite communities who need to record and control access to resources. The patterns seen at Harappa are not unique for the Indus region, as similar patterns for the use of both potter's marks and post-firing graffiti have been reported for Nausharo and Rehmandheri. This evidence suggests that various regional forms of writing were being developed at major sites during the Kot Diji phase. Future comparative studies are needed to better understand the relationship between the Early Indus Script at Harappa and that seen at other sites.

### Indus Script: Harappa Phase

The transition between the Kot Diji and the initial Harappa Phase appears to have been continuous without any significant break in occupation. This makes it difficult to determine when the stratigraphic levels should be designated as Kot Dijian and when they should be associated with the Harappa phase. Generally speaking, the presence of distinctive styles of painted pottery with red slip and black painted designs is the major indicator, but in most cases the presence of fired brick and associated red brick dust is also an important added variable (Kenoyer 1991). Although fired bricks are reported from the Kot Diji levels of sites such as Kalibangan, no fired bricks are associated with the Kot Diji levels at Harappa. The increase in use of red-fired brick results in many tiny eroded brick fragments that turn the site strata red. This is a clear indication of the Harappa phase, 3A, but it also is found throughout all subsequent levels of the site.

During the Harappa phase (2600-1900 BC), occupation areas expanded to around 150 hectares and the site was integrated into the larger economic and political sphere of the greater Indus Valley. Over the course of 700 years, numerous changes can be identified in craft technologies, economic stratification and social hierarchy, so it is not surprising that the Indus script also underwent significant changes. Earlier scholars have combined all Indus writing for analytical purposes, particularly that found on seals together, but recent excavations make it possible to break up the style of seals into at least three major periods (Table 3, Figure 6). It is also important to recognize that writing came to be used in many new ways, particularly towards the end of the Harappa phase, so it is more appropriate to examine writing as it appears on different types of objects according to their specific function and context of use. Due to limited space I will only address the use of seals and inscribed pottery in the following section, but a brief glance at the many different types of objects listed below should indicate the many different contexts in which writing was being used.

### Script Context and Use

The most obvious context for script use is on seals that were used to control the trade and access to goods or storage areas. It is important to note that it is not the location of the writing on the seal that is important, but rather the impression made by that seal. This impression is going to be seen by merchants, laborers, sailors and finally consumers at the opposite end of a long trade network. Once the sealing is broken, however, it was apparently tossed in the trash and discarded. Only chance burning has preserved the unbaked sealings. In contrast to sealings, there are some examples of low fired terracotta cones with inscribed texts that were possibly used to seal doors or goods. These too were accidentally preserved through chance burning.

Incised steatite tablets, along with molded tablets of faience and terracotta appear to have been used for accounting as well as possibly for ritual used. Narrative depictions on seals and tablets are thought to represent rituals, and writing on these types of tablets may have had a very different function than writing on tablets that have what appear to be numbers.

The context for writing on pottery is highly varied since it was executed sometimes by the potters to identify their goods or even their tools (such as base moulds), as well as by merchants and consumers to identify trade goods or destinations. A single pot may have more than one type of writing on it and this suggests that writing had multiple functions even within a single context, such as on a large storage jar (see below) (Figure 7.2)

Various forms of writing have also been found on large ringstones that may have been used for architectural components. The writing would have been concealed if the ringstones were used as column bases, so the only function would have been to indicate placement or ownership, though the signs may have had some ritual significance as well.

Inscriptions on tools, weapons, ornaments and various domestic items provide another range of contexts that must be studied in detail to better determine what types of signs were used. While most of the inscriptions on such objects are relatively short, often only one or two signs, they must have had a special function in terms of the person who was executing the writing. Sometimes the script is very precise and regular, while other examples are irregular and often indistinct.

These examples provide a broad overview of the many different contexts in which script was incised or molded, but the context of actual use and then eventual discard is also important to consider. Generally speaking inscribed objects such as seals, tablets, inscribed tools and jewelry, etc, were either carefully maintained in the homes of merchants and elites or intentionally buried in domestic contexts. Most seals were intentionally broken and discarded with the trash. Unbroken and used seals have been found buried intentionally in house floors, often near a hearth or in a household pit. Occasionally, complete seals have been found in drains or on the streets, but these could represent seals that had been lost or ones that were redeposited on the street when fill inside a house was removed for reconstruction or simply eroded. Inscribed storage jars were often reused as sump pots or broken to make hearths. The other types of inscribed objects have been found broken and discarded with the trash.

In contrast to other early civilizations, no examples of Indus script have been found associated with burials. No seals or tablets were placed in the grave of a dead merchant or any other individual for that matter. The comprehensive analysis of the archaeological context for inscribed objects is still underway for Harappa, but these preliminary results indicate that there are many differences between the Indus and other contemporaneous regions, and relatively few similarities.

<p><b>Period 2 – 2800-2600 BC</b> Seals: inverse script Square steatite seal – crude carving, irregular script placement Steatite button seal – symbol, no script</p> <p>Positive script Inscribed pottery – post-firing graffiti, pre-firing script?</p>	<p>Incised steatite tablets - script, motifs and symbols Incised terracotta tablets/ shaped sherds – incised irregular script Molded copper tablets – regular script, raised in positive Molded faience tablet – narrative scenes, script, motifs and symbols Molded terracotta tablet – narrative scenes, seal impression with animal motif and script Molded terracotta token – circular with script on one or both sides, low fired Terracotta flat sealing – molded script from various types of seals Inscribed terracotta conical sealing – irregular script</p>
<p><b>Period 3A – 2600-2450 BC</b> Seals: inverse script Square steatite seal – angular carving of animal, linear script placement, curved script Positive script Inscribed pottery – post-firing graffiti, pre-firing script</p>	<p>Pottery Pointed base goblets – impressed with script seal Inscribed pottery – large and small, generally irregular post-firing graffiti, large and small refined and regular pre-firing script Inscribed stone vessel – bold regular script</p>
<p><b>Period 3B – 2450 -2200 BC</b> Seals: inverse script Square steatite seal – animal motif and linear but irregular script Square steatite seal – only with script, linear regular script size Steatite button seal – symbol, no script</p> <p>Positive script Incised steatite tablets - regular and irregular script, motifs and symbols Molded faience tablet – script, motifs and symbols Molded terracotta tablet – seal impression with animal motif and script</p> <p>Inscribed pottery – post-firing graffiti, pre-firing script</p>	<p>Architecture Inscribed ringstone – regular script</p> <p>Tools / weapons Inscribed copper tools / weapons – bold, rigid, regular script Inscribed bone point – irregular script</p> <p>Ornaments Inscribed gold jewelry – miniature irregular script Inscribed stoneware bangles – miniature irregular script Inscribed shell bangle – irregular script Inscribed terracotta bangle</p>
<p><b>Period 3C – 2200-1900 BC</b> Seals – inverse script Square steatite, copper and silver seals – animal motif, bold, rigid, regular script Long rectangular steatite seal – no animal motif, bold, rigid, regular script Terracotta seal – regular script Faience button seal – symbols, no script</p> <p>Positive script Trade and Accounting devices</p>	<p>Molded terracotta bead – irregular script Molded faience bead (or perforated tablet) – regular script</p> <p>Domestic, ritual and other Inscribed bone and ivory dice – irregular script Inscribed terracotta conical object / gaming piece – irregular script Inscribed terracotta top, wheel, figurine Inscribed terracotta triangular cake Inscribed pebble – irregular script</p>

Table 3: Chronology of Indus Script and Seal types

### Chronology of Seals

Based on the recent excavations at Harappa, it is possible to determine that square seals with animal motifs such as the elephant (Early Harappan) and possibly the short horned bull are among the earliest form of seal with writing. The earliest seal with writing comes from the Harappan Period 3A levels on Mound E, dating from around 2600-2450 BC (Dales and Kenoyer 1993) (Figure 6.1). The style of the animal carving is more angular than in later seals and the script is more curving. In later seals the animal motifs tend to be more rounded while the script becomes very rigid and geometrically carved.

Square seals with unicorn and other animal motifs can be associated primarily with the later phase of Period 3A and are relatively common throughout Period 3B and on into 3C (Figure 6.2, 3, 6) (Meadow and Kenoyer 1997). The inscriptions on the top part of these seals is usually not very uniform in terms of the relative size of each script sign. On some seals it is clear that the inscriptions were made from right to left as they were being incised (Figure 6.3), with the right hand signs being larger than those that were squeezed into the left edge of the seal. When these seals were impressed into clay, the text would be read from right to left and the writing would appear to start out all cramped and then open out into large clear letters. In contrast, when the script was written in positive, the initial letters are generally large and clear while those at the end of the sequence are often cramped (Figure 7.8).

Square seals with only script are found at the end of Period 3B or beginning of 3C and they appear to have been made more carefully to ensure that the writing was even across the entire seal (Figure 6.4). The carefully sized writing reaches its highest quality on long rectangular seals that are inscribed only with script and found only in Period 3C (Figure 6.5). During Period 3C the production of unicorn seals is also quite formal and the writing tends to be rigid and evenly spaced as seen on the rectangular seals (Figure 6.6).

By sorting out the major categories of seals according to the chronological and stylistic groupings revealed at Harappa, a new set of statistics should emerge relating to the number of signs used during each major period. It is also possible that specific sequences of writing may be associated with distinct styles of seals. While these patterns will not allow for the decipherment of the script, they will take us one step closer by sorting the Indus script in a more meaningful manner.

### Inscribed Pottery

Although inscribed steatite seals are given the most prominence in discussions of the Indus script and are the most common source for analysis, they form only percent of the total corpus of Indus inscribed objects. Pottery with inscriptions is in fact the most common inscribed object throughout the history of the site. At present it is not possible to provide statistics on the number of inscriptions for each sub phase of period 3, but after the pottery analysis has been completed it will be possible to determine some basic patterns.

The main problem with studying inscribed pottery is the fragmentary nature of the inscriptions. Unlike Mediterranean and Egyptian cultures, the Indus people did not write on pottery sherds as "scrap paper". There are only two examples of shaped sherds with writing that was executed on the sherd itself. On the other hand, the Harappans did a lot of writing on their complete pots that have unfortunately been broken over the course of time. Rare examples of complete script indicate some interesting patterns regarding the use of writing. Traces of writing have been found most commonly on large storage jars (black slipped and red slip with black band) that were used to trade commodities throughout the Indus valley and beyond. On

some sherds, there is clear evidence of post-firing graffiti on both the rim and the body of the vessel (Figure 7.1). The rim may have been concealed by a covering or lid during shipment, so this writing was done either prior to shipment or after the lid was reopened. The writing on the body is usually on the upper portion and executed in large bold strokes. Often the writing is very faint (figure 7.2) and was probably made using a copper tool, but in other cases the writing was deeply incised with what appears to have been a stone blade or burin (Figure 7.3). One complete black slipped jar has a very interesting combination of pre-firing potter's marks and post-firing graffiti. The base of the vessel has three pre-firing incised potter's marks and two script signs similar to ones seen on some large copper tools were impressed on the upper body when the clay was leather hard. This indicates the use of what may be simply symbols on the base, and script signs on the body, both executed prior to firing, presumably by the potter or workshop master. After firing a large inscription was made on the upper body, and a series of single strokes were incised on the rim. The rim strokes could be relating to accounting, such as the measures of oil or grain placed in the jar prior to sealing it. These post-firing graffiti reflect the use of two types of symbols one that appears to be script and the other simply counting. Sometimes the writing on the exterior of the vessel was re-inscribed by overlapping signs, possibly done at different times (figure 7.4). Although most of the inscribed pottery from Harappa is fragmentary, the careful refitting of sherds has allowed for the reconstruction of complete script sequences from one to more than 6 signs (Figure 7.5 to 8). One all the inscribed sherds have been refitted it will be possible to study the whole corpus of inscribed pottery as a distinct unit and contrast the types of inscriptions with those seen on seals and tablets.

#### Late Harappan: Button seals and graffiti

During the Late Harappan period, approximately 1900 B. C. to around 1700 B.C., Harappa was not abandoned as has been suggested in much of the earlier literature. In fact the city seems to have become highly congested, possibly by refugees from settlements along the Ghaggar-Hakra River as it began to dry and shift its course. The city continued to be a major center for regional trade and technological developments but there is no evidence for long distance trade, the use of weights and inscribed seals or tablets during this period (Meadow and Kenoyer 2001, Kenoyer, 2005). The only types of seals are geometric button seals, usually made of glazed faience. There are only a few examples of what might be graffiti on pottery from this phase, and further studies at sites with less disturbance are needed to confirm the patterns seen at Harappa.

It is not possible to discuss the many factors that may have contributed to the disappearance of writing, but it must have been linked to changing elites, changes in ideology and ultimately changing patterns of information storage and communication. Changes in the economic and ideological spheres undoubtedly corresponded to major social and political restructuring that ultimately resulted in the disappearance of many diagnostic administrative objects of the Harappan Phase, including seals, writing, and weights.

#### Conclusion

The considerable new information resulting from the recent excavations at Harappa is the result of a multifaceted approach to research on the Indus script. The origins of the Indus writing system is appears to the result of a complex indigenous process that can be traced back to the Regionalization Era communities living throughout the greater Indus valley region. Stages in the development writing can be divided into the Early

Indus script of the Kot Diji phase, and the fully developed Indus script of the Harappa phase. In addition to these broad developmental stages is now possible to identify chronological developments in the styles of seal and script carving, as well as the use of different types of inscribed objects during the Harappa phase. In addition to the common form of script on seals and tablets, the research at Harappa has revealed new types of inscribed objects and for the first time a comprehensive stratigraphic record is available for the contextual and spatial analysis of the use of writing. As research on the Harappa inscribed objects continues, it is important to begin reexamining the seals and inscribed objects from earlier excavations in order to begin sorting these out chronologically. Although these approaches will never decipher the Indus writing, they do provide the most concrete information on how the ancient Indus people used their writing system and how this use changed over time.

#### Acknowledgements

I would first like to thank the organizers for inviting me to participate in the symposium and contribute to this volume. I would especially like to thank the Government of Pakistan, Department of Archaeology and the numerous curators at the Harappa Museum for facilitating our continued work at Harappa. Special thanks to all the colleagues who have participated in the research at Harappa and have helped to collect and analyze data: the late Dr. G. F. Dales, Dr. Richard Meadow, Dr. Rita Wright, Mrs. Barbara Dales, Sharrī Clark, Aasim Dogar, Naadeem Ghouri and all the other team members. My ongoing research at Harappa and the Indus Valley Civilization has been supported by numerous organizations: the National Science Foundation, the National Endowment for the Humanities, the National Geographic Society, the Smithsonian Institution, the American School of Prehistoric Research (Peabody Museum of Archaeology and Ethnology, Harvard University), the University of Wisconsin, [www.HARAPPA.com](http://www.HARAPPA.com) and private donors.



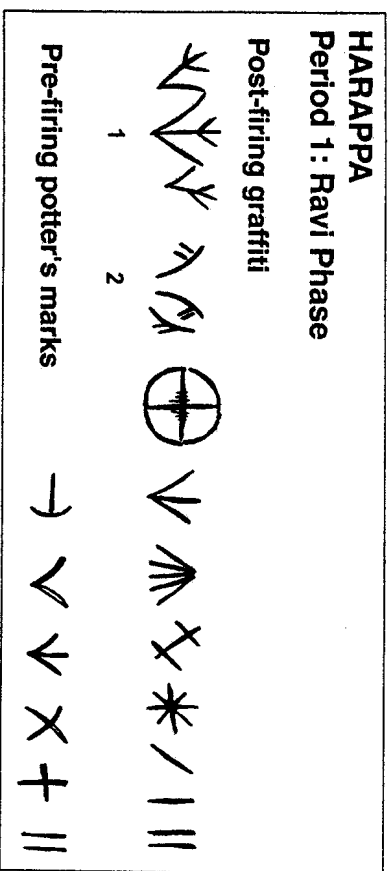


Figure 3. Harappa, Ravi Phase Script

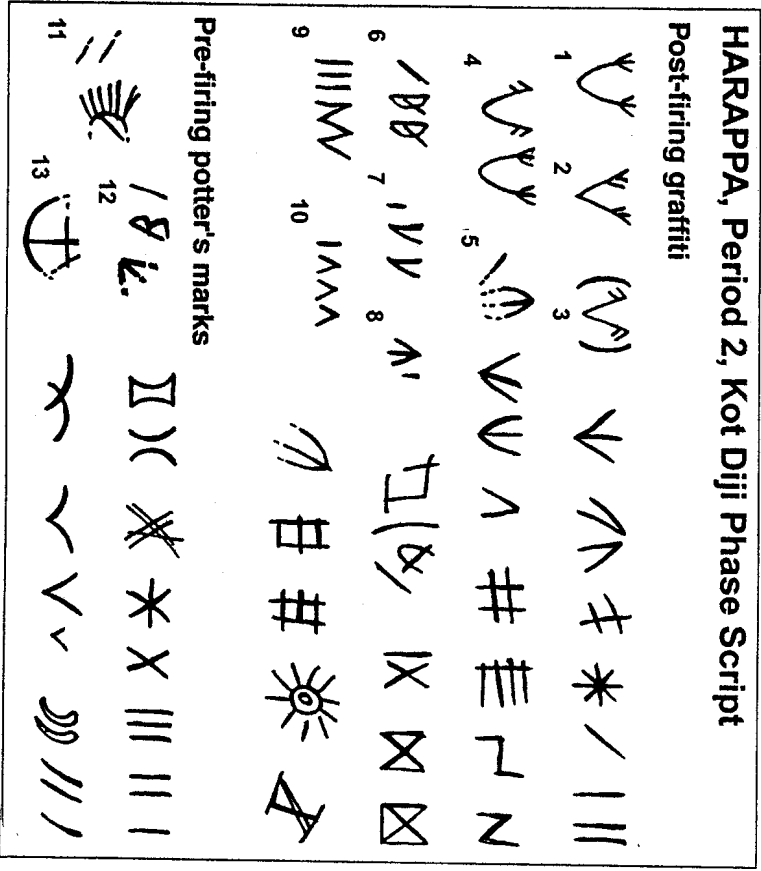


Figure 4. Harappa, Kot Diji Phase Script

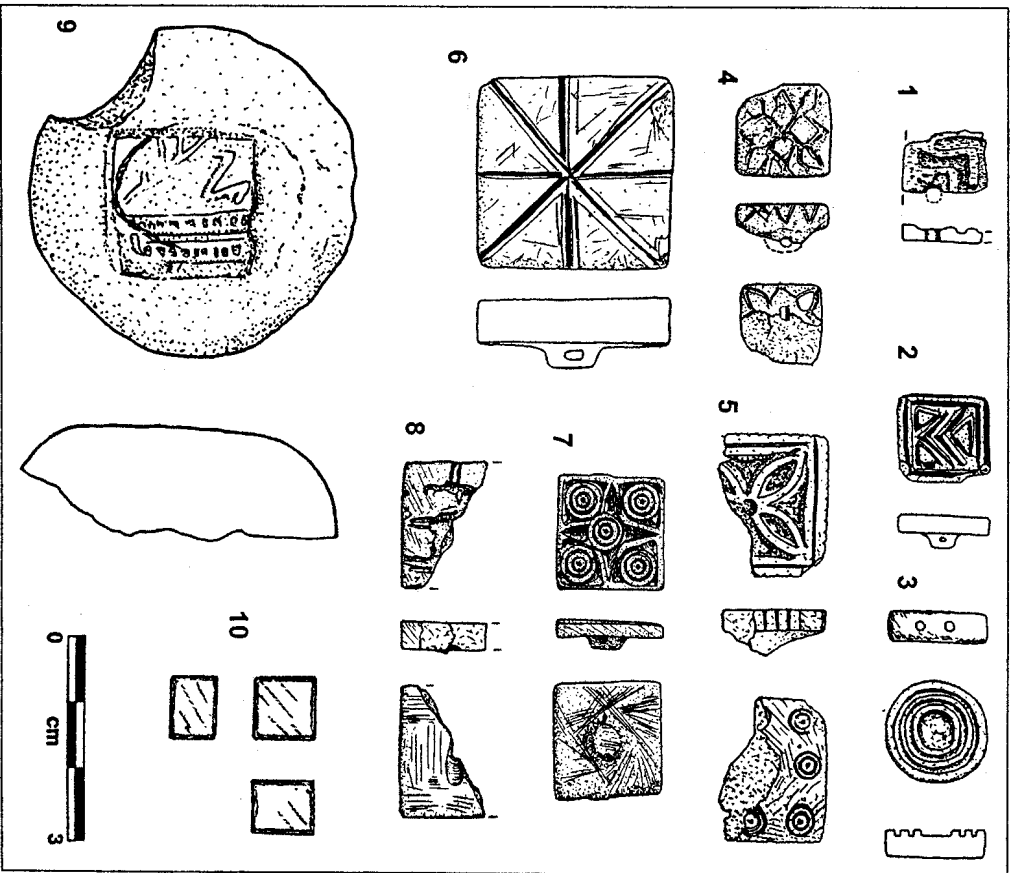


Figure 5. Harappa, Ravi and Kot Diji Phase Seals

1. Burton Seal, bone, Ravi Phase Period 1 (H98-3503/8514-07)
2. Burton Seal, glazed steatite, Kot Diji Phase, Period 2 (H96-2740/7469-01)
3. Burton Seal, glazed steatite, Kot Diji Phase, Period 2 (H96/7458-01)
4. Burton Seal, glazed steatite, Kot Diji Phase, Period 2 (H98-3453/8301-01)
5. Burton Seal, glazed steatite, Kot Diji Phase, Period 2 (H98-3493/8314-01)
6. Burton Seal, unfired steatite, Kot Diji Phase, Period 2 (H98-2743/7402-90)
7. Burton Seal, glazed steatite, Kot Diji Phase, Period 2 (H2000-4495/9597-010)
8. Elephant Seal, glazed steatite, Kot Diji Phase, Period 2 (H2000-4474/8994-01)
9. Terracotta sealing, Kot Diji Phase, Period 2 (H98-3485/8437-01)
10. Limestone cubical weight, Kot Diji Phase, Period 2 (H98-3430/8499-16)

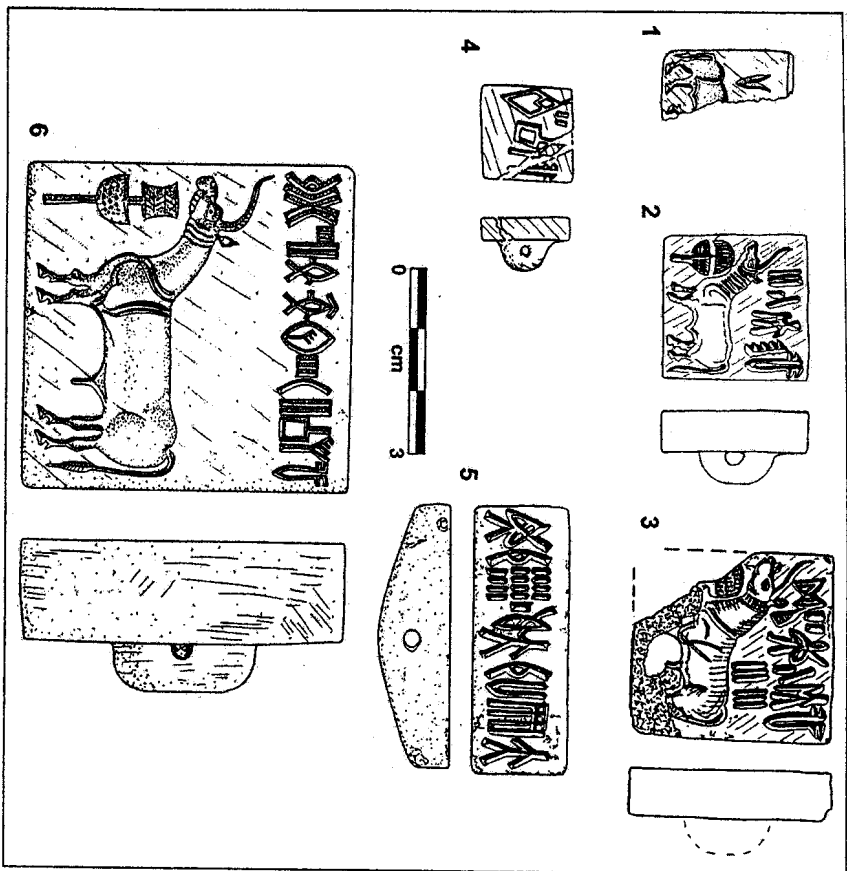


Figure 6. Harappa Phase Inscriptive Seals  
 1. Steatite seal, Period 3A, (H90-1600/3166-01)  
 2. Steatite seal, Period 3B, (H95-2491/4690-01)  
 3. Steatite seal, Period 3B, (H95-2410 / 5145-55)  
 4. Steatite seal, Period 3B/3C, (H93-2170 / 4114-09)  
 5. Steatite seal, Period 3C, (H98-3491/8322-21)  
 6. Steatite seal, Period 3C, (H99-4064/8796-01)

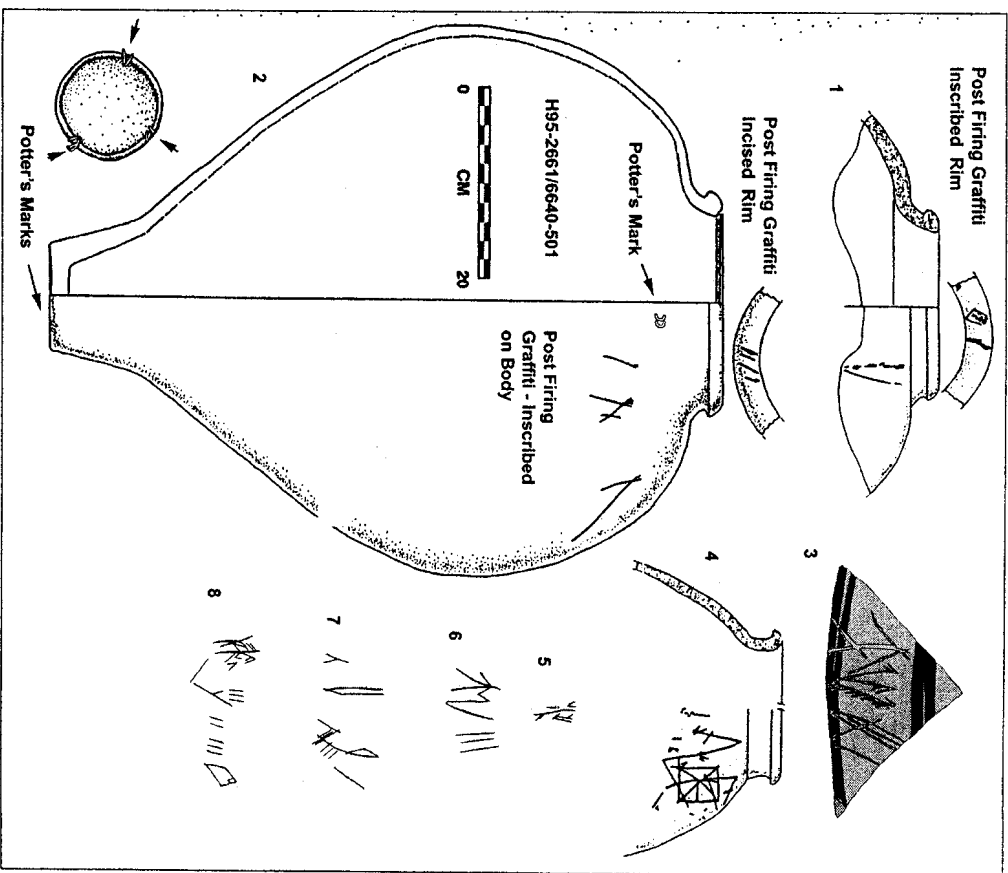


Figure 7. Harappa Period Inscriptive Pottery.  
 1. Black Slipped Jar, post-firing graffiti on rim and body, pre-firing potter's marks on base and body (H95-2662 / 6640-501)  
 2. Black Slipped Jar, post-firing graffiti on rim and body, pre-firing potter's marks on base and body (H95-2662 / 6640-501)  
 3. Large Red Slipped Black Band Jar, post-firing graffiti on body (H94 / 4290-14)  
 4. Plain globular jar, post-firing graffiti on body (H95 / 5630-15)  
 5. Black Slipped Jar, post-firing graffiti on body (H93 / 4305-500)  
 6. Black Slipped Jar, post-firing graffiti on body (H93 / 4159-500)  
 7. Black Slipped Jar, post-firing graffiti on body (H93 / 4043-503)  
 8. Black Slipped Jar, post-firing graffiti on body (H93 / 4304-500)

**paleography**

- Boltz, W. G. 1996 Early Chinese Writing. In *The World's Writing Systems*, edited by P. T. Daniels and W. Bright, pp. 191-199. New York, Oxford University Press.
- Dates, G. F. 1979 The Balakot Project: Summary of Four Years of Excavations in Pakistan. *Man and Environment* 3: 45-53.
- Dates, G. F. and J. M. Kenoyer 1993 The Harappa Project 1986-1989: New Investigation at an Ancient Indus City. In *Harappan Civilization: A Recent Perspective*, edited by G. L. Possehl, pp. 469-520. New Delhi, Oxford & IBH Co. Pvt. Ltd.
- Durrani, F. A., I. Ali and G. Erdos 1995 Seals and Inscribed Shards of Rehman Dhert. *Ancient Pakistan* 10: 198-233.
- Erdos, G. 1996 The prelude to urbanization: ethnicity and the rise of Late Vedic chiefdoms. In *The Archaeology of Early Historic South Asia*, edited by F. R. Allchin, pp. 73-98. Cambridge: Cambridge University Press.
- Farrar, S., R. Sprua and M. W. Witzel 2004 The Collapse of the Indus-Script Thesis: The Myth of a Literate Harappan Civilization. *Electronic Journal of Vedic Studies* 11(2): 19-57.
- Jarrige, C., J.-F. Jarrige, R. H. Meadow and G. Quivron, Eds. 1995 *Mehrgarh Field Reports 1975 to 1985 - From the Neolithic to the Indus Civilization*. Karachi, Dept. of Culture and Tourism, Govt. of Sindh and the French Foreign Ministry.
- Kenoyer, J. M. 1991 Urban Process in the Indus Tradition: A Preliminary Model from Harappa. In *Harappa Excavations 1986-1990*, edited by R. H. Meadow, pp. 29-60. Madison, Prehistory Press.
- Kenoyer, J. M. 1993 Excavations on Mound E, Harappa: A systematic approach to the study of Indus urbanism. In *South Asian Archaeology 1991*, edited by A. J. Gail and G. J. R. Mevissen, pp. 165-194. Stuttgart, F. S. Verlag.
- Kenoyer, J. M. 2005 Culture Change during the Late Harappan Period at Harappa: New Insights on Vedic Aryan Issues. In *Indo-Aryan Controversy: Evidence and Inference in Indian history*, edited by E. F. Bryant and L. L. Patton, pp. 21-49. London, Routledge.
- Kenoyer, J. M. and R. H. Meadow 2000 The Ravi Phase: A New Cultural Manifestation at Harappa. In *South Asian Archaeology 1997*, edited by M. Taddei and G. De Marco, pp. 55-76. Rome/Naples, Istituto Italiano per l'Oriente/Istituto Universitario Orientale.
- Khan, J. S. and M. Acharya 1997 Kunal: The Earliest Pre-Harappan Settlement. In *Facets of Indian Civilization Recent Perspectives-Essays in Honor of B. B. Lal*, edited by J. P. Joshi, pp. 87-91. New Delhi, Aryan Books International.
- Mahadevan, I. 2001 *Aryan or Dravidian or Neither? A study of recent attempts to decipher the Indus script (1995-2000)*. Indian History Congress - Presidential Address. Bhopal.
- Meadow, R. H. and J. M. Kenoyer
- 1997 Excavations at Harappa 1994-1995: New perspectives on the Indus script, craft activities and city organization. In *South Asian Archaeology 1995*, edited by B. Allchin and R. Allchin, pp. 139-172. New Delhi, Oxford & IBH.
- Meadow, R. H. and J. M. Kenoyer
- 2001 Recent Discoveries and Highlights from Excavations at Harappa: 1998-2000. *INDO-KOKO-KENKYU Indian Archaeological Studies* 22: 19-36.
- Meadow, R. H., J. M. Kenoyer and R. P. Wright
- 2001 *Harappa Archaeological Research Project: Harappa Excavations 2001-02*, Report submitted to the Director General of Archaeology and Museums, Government of Pakistan, Karachi.
- Michalowski, P. 1996 Mesopotamian Cuneiform: Origins. In *The World's Writing Systems*, edited by P. T. Daniels and W. Bright, pp. 33-36. New York, Oxford University Press.
- Mughal, M. R. 1970 *The Early Harappan Period in the Greater Indus Valley and Northern Baluchistan*, PhD, University of Pennsylvania, Dept. of Anthropology.
- Mughal, M. R. 1997 *A Preliminary Review of Archaeological Surveys in Punjab and Sindh: 1993-1995*. *South Asian Studies* 13: 241-249.
- Panpola, A. 1994 *Deciphering the Indus Script*. Cambridge: Cambridge University Press.
- Panpola, A. 1996 The Indus Script. In *The World's Writing Systems*, edited by P. T. Daniels and W. Bright, pp. 165-167. New York, Oxford University Press.
- Quivron, G. 1997 Incised and Painted Marks on the Pottery of Mehrgarh and Nausharo-Baluchistan. In *South Asian Archaeology 1995*, edited by B. Allchin and R. Allchin, pp. 45-62. New Delhi, Oxford & IBH.
- Rao, S. R. 1984 New Light on the Indus Script and Language. In *Frontiers of the Indus Civilization*, edited by B. B. L. a. S. P. Gupta, pp. 139-201. New Delhi, Books and Books.
- Ritter, R. K. 1996 Egyptian Writing. In *The World's Writing Systems*, edited by P. T. Daniels and W. Bright, pp. 73-83. New York, Oxford University Press.
- Shaffer, J. G. 1993 Reurbanization: The Eastern Punjab and Beyond. In *Urban Form and Meaning in South Asia: The Shaping of Cities from Prehistoric to Precolonial Times*, edited by H. Spodek and D. M. Sathivasan, pp. 53-67. Washington, D. C., National Gallery of Art.
- Vas, M. S. 1940 *Excavations at Harappa*. Delhi, Government of India Press.
- Wright, R. P., J. Schultenian and M. A. Khan 1999 Appendix 2: Old Beas Survey, February 8-May 3, 1999. In *Harappa Archaeological Research Project: Harappa Excavations 1999*, edited by R. H. Meadow, J. M. Kenoyer and R. P. Wright, pp. 21-24. Cambridge, MA, Madison, WI, New York, NY, Harvard University, University of Wisconsin, New York University.