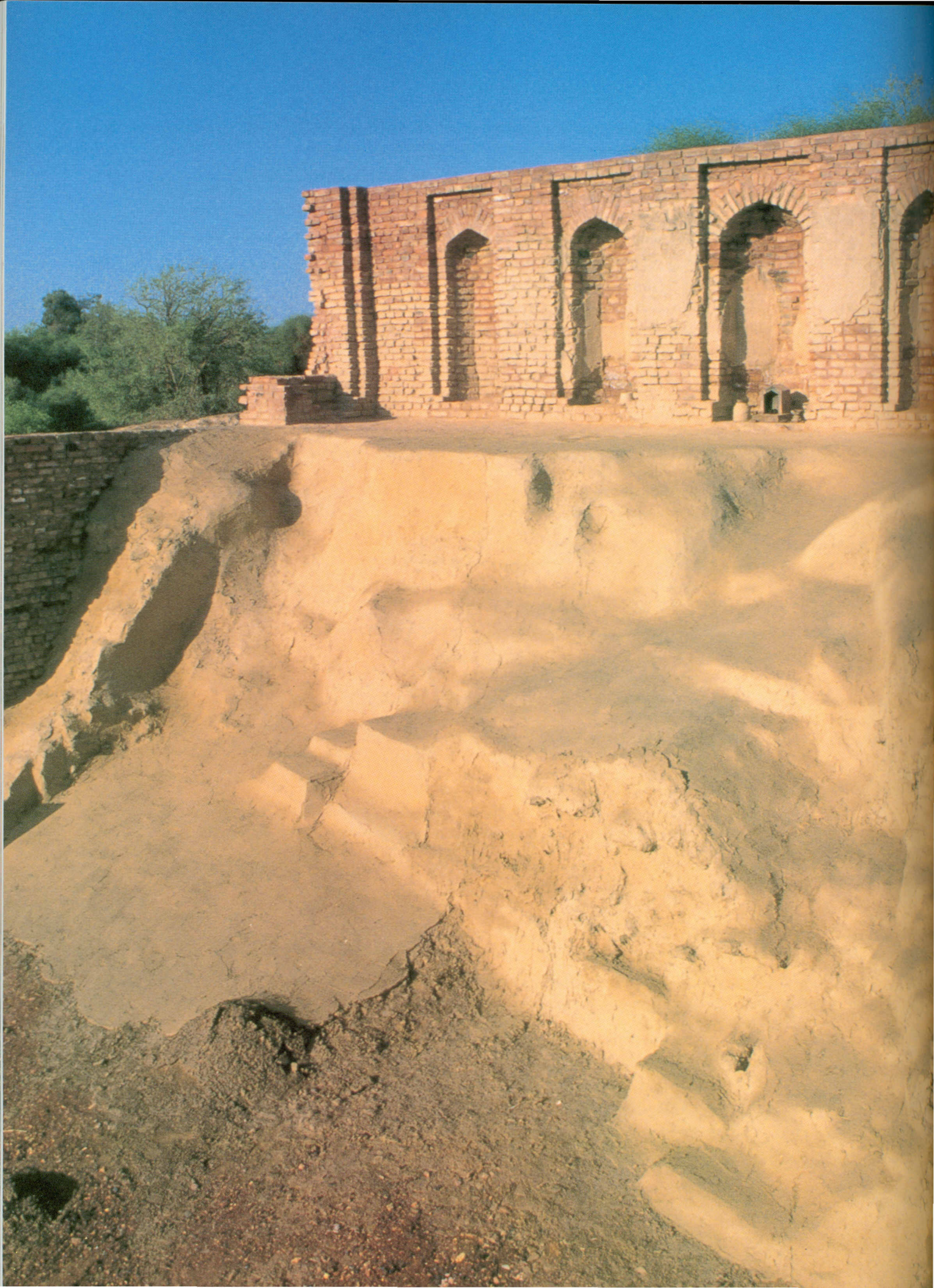


JONATHAN MARK KENOYER

The Ancient City of Harappa

The vast mounded remains of the ancient city of Harappa, one of the largest sites of the Indus Valley civilization, have been known by scholars for more than one hundred years (fig. 1). Occupied almost continuously for more than five thousand years, Harappa's ancient ruins represent the traces of one of the earliest cities of the world, and even today one-third of the area is still occupied by the modern thriving city of Harappa. Although much of the site was devastated by the looting of baked bricks beginning in the 1850s, a vast wealth of archaeological material remains to be fully studied. And because the short inscriptions of the Indus writing have not been deciphered, the enigmatic archaeological remains are all that we have to help us unravel the mystery of this ancient society.

Excavations carried out in the 1920s and 1930s unearthed a wide array of artifacts that have now been scattered throughout museums in Pakistan and India. Terracotta figurines, carved seals with mysterious writing, and innumerable ornaments and tools need to be studied and conserved. And unfortunately, the early excavators never bothered to properly conserve the newly exposed architecture, leaving it to crumble through salt damage and weathering.

After Pakistan achieved independence in 1947, its government and the Department of Archaeology and Museums were left with the immense task of preserving and curating the work left by previous excavators. A new site museum was built at Harappa in 1966, and special storage areas for artifacts were constructed, but funds for site conservation were limited. In spite of this situation, resident curators at the museum were able to repair and maintain many of the structures quite economically, using locally available materials and craftsmen (fig. 2).

Today, the Harappa Archaeological Research Project (HARP), directed by Richard H. Meadow of Harvard University and myself, is working with the Pakistani government's Department of Archaeology and Museums in continued research and excavations. HARP has begun conservation of exposed architecture and control of soil erosion, along with training of professionals and local inhabitants.[1] Current excavations and conservation research are implementing new, inexpensive techniques described below that are proving successful. In addition to site conservation, the project has an on-site objects conservation laboratory staffed by conservators from the Smithsonian Institution's Conservation Analytical Laboratory (CAL) (fig. 3). This multifaceted and multidisciplinary approach has been extremely successful in advancing general knowledge about Harappa, conserving specific areas of the site for tourists, providing information for visitors, and educating the local community about the need to protect and develop their cultural heritage.

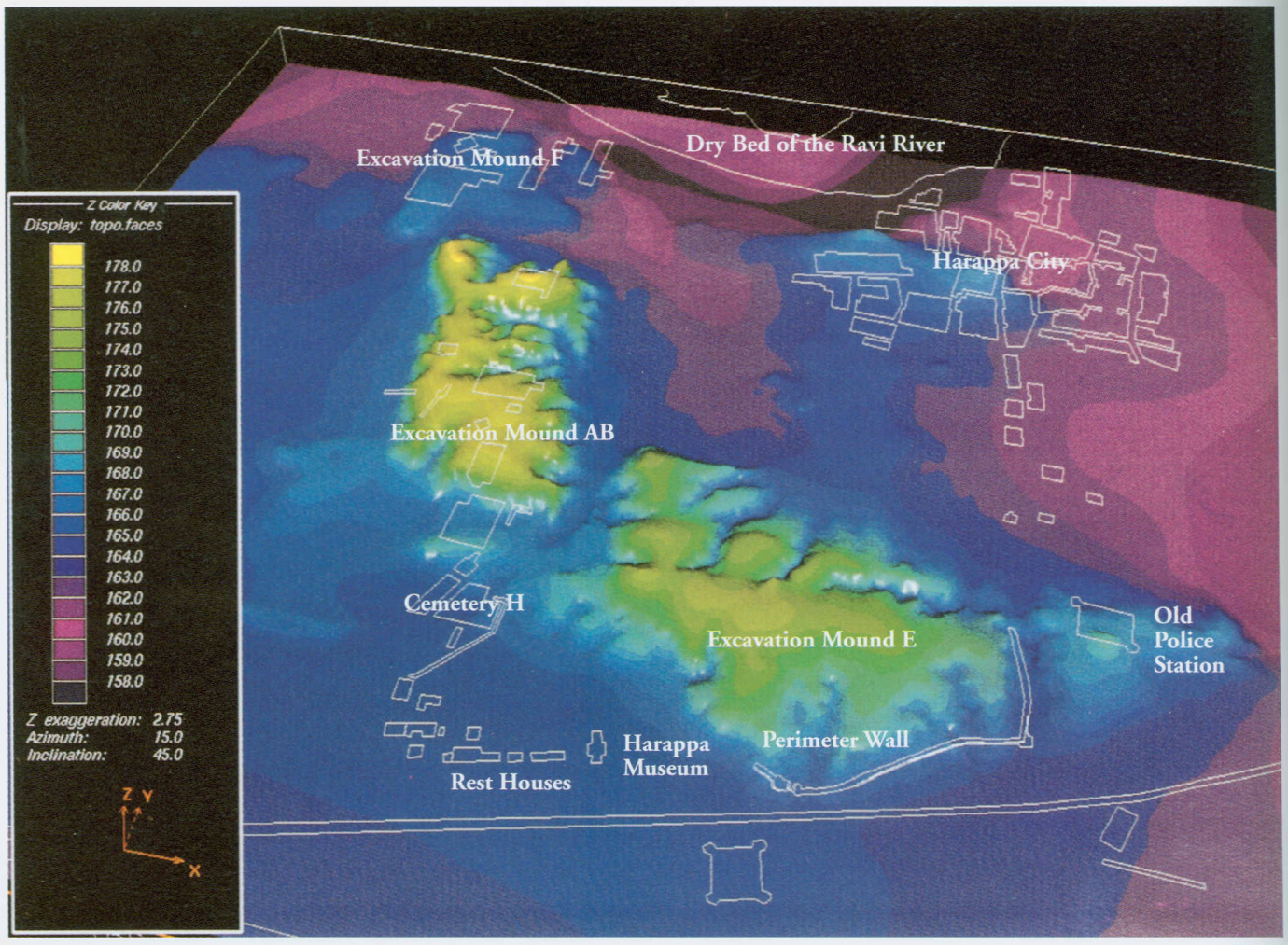
■ Conservators used original types of raw materials to preserve Harappa's monuments, such as this mosque, built on the site between the 15th and 16th centuries. See page 95.

HARAPPA: DISCOVERY AND HISTORY

Harappa, located near the Ravi River about 880 kilometers north of the Arabian Sea, in Punjab, Pakistan, has a long and checkered history that begins more than 5,300 years ago. When discovered in 1826 by Charles Masson, a British army deserter posing as an American engineer, it was simply reported as a ruined city. Now, almost 170 years later, scholars are just beginning to understand the complex processes that helped it flourish and grow. Our accumulated knowledge about Harappa is the result of painstaking archaeological research by numerous scholars from many seasons of excavation and analysis. But archaeologists tend to ask more questions than provide answers, and after years of research there is not a clear picture, but rather a sketch that will be improved upon only with much further work.

■ Figure 1. General topography of Harappa showing excavation areas and modern Harappa City

Based on the most recent work at the site, we know that the first settlers at Harappa established a small agricultural village on the edge of an oxbow lake near the ancient Ravi River around 3300 B.C. This location was ideal for agriculture as well



as for access to rich hunting and fishing grounds. The earliest village occupation was characterized by small mud-brick buildings. Skilled artisans practiced a wide range of crafts: pottery making, copper and bronze working, and the making of exquisite ornaments from semiprecious stone and marine shell. As the settlement became more established, it also gained importance as a crossroads for trade between the highlands to the west and north and the vast alluvial plains to the east and south. Gradually, the village grew into a town, and eventually the town became one of the four largest cities of the Indus Valley civilization.[2]

■ Figure 2. The "great granary" at Harappa showing conservation of previously excavated structures by the Department of Archaeology and Museums, Government of Pakistan

■ Figure 3. A conservator's nightmare: unfired terracotta cakes at Harappa, 1995

Spread out over 150 hectares, the archaeological site comprises several low mounds and three high mounds that rise more than fifteen meters above the surrounding plain. Through excavations, early scholars were able to trace the history of the site back through the Mughal period (1526–1858), to the early Buddhist and Gupta periods (300 B.C.–A.D. 300), and into a past characterized by unfamiliar artifacts and an unknown system of writing.

The discovery of many other sites with similar artifacts throughout the Indus River Valley soon led archaeologists to call what was first referred to as the Harappa culture, the Indus Valley civilization. The urban phase of the Harappan occupation, dating to between 2600 and 1900 B.C., represents the cultural, economic, and political integration of an area that was twice the size of ancient Mesopotamia or Egypt.

The large urban centers of this civilization consisted of administrative, ritual, and residential buildings made primarily of baked brick and equipped with elaborate drainage facilities for removal of wastewater and rainwater. The people living in the cities developed extensive trade networks for obtaining raw materials and distributing foodstuffs and finished goods. Specialized technologies of metalworking, lapidary, and ceramics were perfected to make elaborate ornaments and specialized tools that were used locally or traded to distant lands (figs. 4, 5). A highly standardized system of stone weights was developed for trade and possibly taxation. These weights were used in all the settlements of the Indus Valley, and many have been found at sites in Oman and even in Mesopotamia.

Texts from Mesopotamian cities state that "onions," cotton, hardwoods, pearls, carnelian, peacocks, and monkeys were imported from the land of Meluhha, which can be identified as the Indus Valley. The Indus cities in return obtained a range of goods that included raw materials, copper, gold, woolen items, and perfumes.

Although the Indus traders left many clues to their presence in Mesopotamia, such as weights, seals, and trade goods, there is no concrete evidence of Mesopotamian traders residing in the Indus cities. No Mesopotamian cylinder seals

■ Figure 4. Assorted terracotta figurines from recent excavations at Harappa

or tablets have yet been found in the Indus Valley, and the only objects from outside the Indus Valley can be traced to Central Asia or to the Arabian Gulf. This pattern suggests that the Indus society may have been relatively closed to outsiders, except perhaps to those who lived close by and could adapt to the local culture.

The ruling elites of the Indus cities developed a distinctive form of writing that was used on seals, trade goods, pottery, and even personal objects. This writing remains a mystery, even though careful archaeological studies are helping to develop a new understanding of how writing was used in the Indus Valley. However, because the writing has not yet been deciphered, it is extremely difficult to reconstruct accurately the economic, religious, or political systems of the Indus cities.

Most scholars agree that the Indus cities were organized under some form of government that ruled over a vast hinterland through a combination of religious and economic control. There is little evidence of an extensive military establishment, and it is important to note that there are no representations in the archaeological record of people at war with each other. Surely there was conflict, and most of the cities were surrounded by massive mud-brick or stone walls for defense, but clearly the depiction of conflict was not something that was necessary to legitimize and augment the power of a ruler, as was the case in so many other societies (fig. 6).

■ Figure 5. Square fired steatite seal from Harappa with the famous unicorn motif and undeciphered Indus script

The only context in which physical aggression is depicted is on seals or tablets that show a man fighting a wild animal, usually a bull or water buffalo. Several seals show a deity grappling with two tigers, while others depict a bull trampling a human. The depiction of struggle between people and wild animals is a theme that may stand as a metaphor of conflict between good and evil, or between civilized and wild.

Without written texts it is not possible to make specific interpreta-

■ Figure 6. Overview of elaborate brick gateway at Harappa and reconstructed portion of the mud-brick city wall. The wall is being rebuilt here to protect the excavation areas from erosion and to provide tourists with a better understanding of the site.

tions of these narrative scenes or of the various other symbols used by the Indus people (see "The Enigmatic Indus Script" p. 96.). However, there are strong connections between the art and technology of the Indus Valley civilization and the subsequent cultures of the Indian subcontinent. The concept of yoga is depicted on many Indus seals along with specific symbols that later are used in the iconography of Buddhist and Hindu ritual art: fish designs, swastikas, the stepped cross, and the pipal leaf design. Many of the technologies, such as bead making, shell working, glazed faience and terracotta ceramic production, metallurgy, and even architectural forms continue on into the later cultures of the subcontinent. The standardized system of weights established in the Indus cities reemerges during the subsequent Early Historic Period around 300 B.C. and continues to be used in traditional trading even today.[3]

These strong continuities provide general models for interpreting the Indus culture, but the excavated cities of Mohenjo-daro and Harappa, and numerous other sites, remain the sole source of information for reconstructing this ancient society.

CONTEMPORARY CONCERNS ABOUT PRESERVATION

In most countries the preservation of historical monuments and archaeological sites is not of primary concern to a majority of the population. Although many laws and protective measures have been established to preserve these sites throughout the world, it is hardly unrealistic or fatalistic to say that economic development and market-driven profit often take priority over the preservation of history and culture. As an archaeologist working in Pakistan and India, I am faced with the question of why we spend money on digging and preserving an ancient city that is in ruins when there are thousands of people who are struggling to survive without adequate food, housing, and clothing. The question often posed is: Wouldn't they be better off if they had some of the money spent on preservation?

My answer usually centers around the fact that people are different from animals because we have a history and culture from which we can learn. An equally valid response is that a person without history or culture has no identity and, in a sense, has lost touch with humanity. The archaeological investigation of ancient sites and monuments is an attempt to understand where we came from and to learn how our human ancestors adapted or misused the land. From these studies humanity can learn and develop appropriate methods to continue living in a specific environment.

■ Figure 7. Erosion holes on a mound at Harappa resulting from brick robbing

While these answers may address the issue of why it is necessary to study the past and preserve ancient sites, they do not address the problem of priorities between preservation versus economic development. When should a site be preserved for the sake of the information it may possibly provide archaeologists and historians, and when should it be sacrificed for the betterment of the people who are struggling to survive now?

Harappa is an excellent example of an important monument in Asia that has seen both bad times and good in the course of its existence. When discovered in 1826, its highest mounds were topped by massive buildings and walls as well as a ruined brick castle. Unfortunately, before archaeologists could investigate these remains, most of the structures had been demolished and millions of bricks taken to make the bed for the new Lahore-Multan railway line. Millions of bricks were removed from ancient Harappan buildings, and the mining of these bricks left the upper layers of the site pitted with trenches that resulted in massive erosion of the mounds (fig. 7). This was a time when development clearly was the priority, and the ancient bricks and rubble from Harappa (and innumerable other sites) still support the trains that carry goods and people up and down the length of Pakistan.

During the early excavations at Harappa from the 1920s to 1930s, archaeologists hoped to find complete architecture and determine the layout of the city.[4] By this time most structures were quite fragmentary. Indeed, only a few complete buildings were discovered. When compared with Mohenjo-daro, where vast neighborhoods of well-preserved architecture were recovered (fig. 8), Harappa was much less impressive, and it slipped into the background of research and preservation. Over the following years, Harappa's fragmentary remains were left to the elements, and many of them were gradually buried by erosion or destroyed by the weather.

In the 1920s and 1930s, Harappa had been declared a protected monument, but only the most prominent portions of the site were actually purchased by the government of British India. The remaining areas were subject to encroachment by the local townspeople and their animals.

In 1946, Sir Mortimer Wheeler began excavating at both Harappa[5] and Mohenjo-daro in an attempt to define the nature of the fortifications around the so-called citadel mounds. His work was discontinued in the aftermath of the independence of Pakistan and India in 1947. Nevertheless, Wheeler's excavations revealed that there was an earlier occupation of the site that predated the Harappan culture, and in the 1970s another researcher, Muhammad Rafique Mughal, proposed that this earlier culture should be referred to as the Early Harappan Period, or the formative stage of what would become later the urban Harappan state.[6]

■ Figure 8. Vast expanses of brick architecture at Mohenjo-daro provide archaeologists with a more detailed understanding of the ancient city organization, but also require long-term conservation and restoration. These walls have been partly reconstructed, and a damp-proof course has been inserted to keep salts from percolating up through the structure. Some of the walls have been covered with clay and straw plaster to protect them from wind erosion.

Although Wheeler contributed greatly to the archaeology of South Asia, he did little to integrate the important aspect of architectural and site conservation with ongoing research. As a result, his excavation trenches were left to the elements, and the architecture was soon reduced to dust.

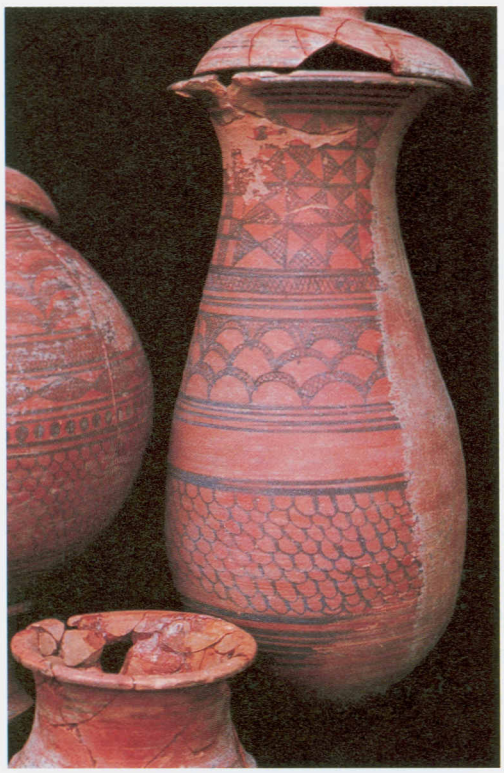
The next major excavations at Harappa were conducted in the cemetery area by Mughal in 1966. Twenty years later, in 1986, a new program of study was begun at the site under the direction of George F. Dales of the University of California at Berkeley and myself.[7] This program was developed in collaboration with the Department of Archaeology and Museums of Pakistan and was designed to combine archaeological research with site and artifact conservation. The program also trains Pakistani archaeologists and students in field and conservation methods.

THE HARAPPA ARCHAEOLOGICAL RESEARCH PROJECT

HARP is gathering new information on the earliest village occupation at Harappa about five thousand years ago to its gradual development into one of the largest urban centers of the Indus Valley civilization, which lasted for over seven hundred years (2600 to 1900 B.C.). In addition to the field research, students from Pakistani and American universities and field officers of the Department of Archaeology and Museums of Pakistan are trained in modern archaeological field methods, computer use, surveying, site and artifact conservation, the writing of field reports, and presentation of reports at formal seminars.

HARP and Pakistan's Department of Archaeology have undertaken the conservation of exposed architectural remains and the immediate protection of Harappa from further destruction. Conservators from the Smithsonian's Conservation Analytical Laboratory, working with the archaeological team, determine the best ways to conserve architecture as well as artifacts excavated from the highly saline soil (fig. 9). Simple, low-cost but effective techniques are being used that allow for continued research and analysis as well as the protection and preservation of ancient structures and artifacts.

The long-term efforts for conservation and protection are closely tied to the attempt to educate people living near Harappa about its value as a cultural property



■ Figure 9. Large painted burial jar from Harappa after conservation, showing portions of fugitive red slip on right side

and its preservation needs in order for it to provide benefits to the inhabitants of the region. The importance of archaeology and conservation for local inhabitants has been linked to the employment and training of local youths. Presentations at local schools and special tours for schoolchildren and teachers have underscored the importance of archaeology and Pakistan's cultural heritage.

An indirect but effective way to communicate the historic and cultural value of Harappa has been through local crafts and the production of modern replicas for sale at the site museum and throughout Pakistan (fig. 10). Many of the traditional crafts still practiced in modern Harappa and surrounding villages had their origins in the first cities of the Indus Valley civilization. Local potters have been integrated into the archaeological research to assist in the replication of ancient manufacturing techniques. The replicas of excavated vessels and figurines that have been made by these potters help us better understand the organization and techniques of these ancient crafts. As a benefit to the community, replicas stamped with the potter's name are sold to tourists and handicraft shops.

Well-made, authentic-looking replicas discourage pilfering the site for souvenirs. One local potter has become quite skilled at making replicas and has won several national prizes for his work. Examples such as this convince local inhabitants that there are legally viable and more profitable ways to reap economic benefits from the development of the site than looting and pilfering. Copper and bronze objects, wooden replicas of both ancient and traditional objects (carts and toys), and carpets and fabrics incorporating Harappan motifs are other crafts that are developing the local community's economy as well as benefiting the archaeological research.

THE SITE TODAY

The modern Harappa City, with a population of more than fifteen thousand, is a regional market center for agricultural produce and numerous cottage industries, such as carpet making, furniture making, leather working, pottery making, and weaving. It has been gradually encroaching onto the protected areas of the site. Several access routes to the modern city cross over the ancient mounds and sometimes even follow the original roads of ancient Harappa. In the rural Punjab, to close a road is extremely difficult, and the government's Department of Archaeology and Museums has had to implement a very gradual process of redirecting traffic in order to limit access to a few well-defined routes. To stop erosion of the site, these routes will eventually have to be paved.

Much of the site is on land that has been designated as "protected" from major cultivation and construction. Recent political pressure from the growing city has forced the government to purchase the land and to continue to protect it. However, the threat to the site is not over: the schools need recreation grounds, the city needs to upgrade its sewage system, paved roads need to be built to allow buses and trucks to come to the main city. Cooperation between city developers and the Department of Archaeology and Museums is necessary to ensure the preservation of the unexcavated site, which is considered a national and international archaeological treasure.

SITE CONSERVATION

Several problems confront conservation at Harappa. The first problem is erosion of the mounds caused by weather, animals, and people. Since it is not possible to construct a roof over Harappa, vegetation has been allowed to grow along the edges and tops of the mounds to reduce soil erosion by wind and rain. At present, barbed wire and pipe fencing keep tourists and local inhabitants from walking on protected areas. Special walkways made of concrete and bricks allow tourists and visitors to see selected areas of the site. Eroding sections of the mounds are being reinforced with mud-brick walls coated with mud and straw plaster. These low-cost structures need to be renewed every two or three years due to rain erosion. Animal burrows are periodically filled in with rubble to stop the gullying and hollowing out of the unexcavated sections of the mounds.

The second problem is the conservation and protection of exposed architecture on the site. Today, the plain around the site is heavily irrigated with unlined canals, resulting in a high water table and high salinity in the poorly drained areas. Salt efflorescence badly affects the site itself. Since the initial excavation seventy years ago, structures that have been exposed have been sadly neglected because most funds and efforts were directed toward preserving the more complete structures at Mohenjo-daro. Some of the original exposed structures have become reburied or totally destroyed by subsequent salt action or water and wind erosion.

To check the damage of water and salt, conservators insert a damp-proof course at the base of a wall to block upward movement of moisture and salts. On smaller walls and low foundations,

■ Figure 10. Local potter Muhammad Nawaz and his assistant Zaman (seated) making replicas of ancient pottery

the structure must be taken apart, first laying a damp-proof course and then reconstructing the structure above this protective layer. The main problem with this technique is the accuracy of the reconstruction.

Larger structures that cannot be totally deconstructed in this manner have had damp-proof courses inserted just above the ground level to block the movement of salts. However, if it is not installed completely across the width and length of the structure, the damp-proof course simply redirects and concentrates the movement of moisture to another portion of the wall, where the damage is actually increased.

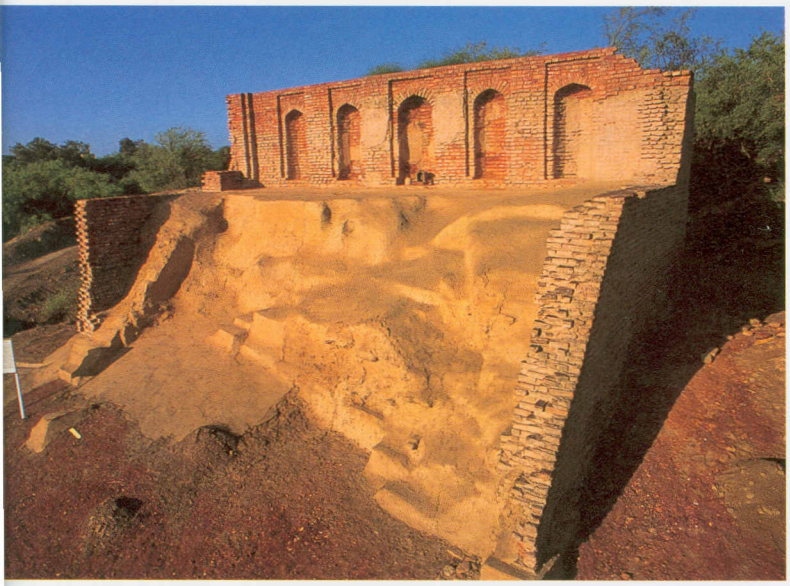
Conservators are also employing techniques that use the original types of raw materials combined with concrete reinforcement to stabilize Harappa's historical monuments. In 1993 and 1994, a badly preserved mosque built on a portion of the ancient mound sometime in the fifteenth or sixteenth century was reinforced and repaired using locally available materials and many local craftsmen and masons (figs. 11, 12). The entire structure was documented archaeologically, and excavations were conducted around the structure to understand its historical context and relation to earlier deposits. Then its foundations were reinforced with brick and concrete facings that were later covered so that they are not visible from the surface. All decayed portions of the structure were grouted and repointed, using a lime plaster similar to the original lime plaster used in the fifteenth and sixteenth centuries. Selected portions of the mosque were reconstructed for both structural and aesthetic purposes.

The conservation of this mosque served two needs: first, it was important in terms of site development, and, second, it was an important structure to the local townspeople. In the past, the mosque had been poorly repaired by the local people without consideration for its original structure and the archaeological importance of the site. Our work allowed local inhabitants to see how such structures should be conserved and will, it is hoped, set an example for further work in Harappa City itself.

■ Figure 11. Temporary repair of eroded portions of the mosque using mud brick and clay/straw plaster, 1994

Monsoon rain and wind erosion caused considerable structural damage to exposed structures at the site. To minimize the damage, the base of the walls has been covered with straw and mud plaster. The Department of Archaeology and Museums has constructed drains in all the major excavated areas to remove rainwater and avoid the pooling of water that can cause undercutting as well as salt damage.

Plastering of brick structures with a thin layer of clay and straw plaster is one of the most efficient techniques of conservation at Harappa. Not only is this plaster cheap to make, but it creates a buffer from rain erosion and serves as a poultice through which salts can effloresce without damaging the actual brick structure. A similar technique used at Mohenjo-daro involves placing mud bricks on top of walls, allowing the rains to wash the clay down over the bricks. The result is a thin layer of clay that protects the brick



■ Figure 12. Overview of conserved mosque, 1994

surface from further salt damage. Structures at Harappa that are still being excavated are temporarily reburied at the end of each research season or plastered with straw and clay plaster, three to four centimeters thick.

OBJECT CONSERVATION AND STORAGE

All the objects collected from the surface or excavated from Harappa suffer the effects of various burial and deposit factors that need to be identified. Only then can the object be stabilized and preserved. Salts have permeated all the porous objects, especially ceramics. After initial cleaning, most of these objects are desalinated by soaking them in distilled water or by making poultices to remove the salts. If the salts are not removed, then fluctuations in humidity result in the repeated crystallization of salt in the outermost pores, eventually resulting in the breakdown and weathering of the object's surface. Other chemical and organic factors can effect similar weathering of the surfaces of less porous or even nonporous objects. Different techniques have been developed for the specific problems presented by the objects and soil conditions at Harappa. Since it is not possible to remove all the salts from objects recovered at the site, the CAL staff are attempting to determine what are acceptable levels of salts in ceramics. This ongoing research in conservation techniques is an important part of our work.

TOURISM AND MUSEUM DEVELOPMENT

To develop the site for tourism, the Pakistani government's Department of Archaeology and Museums and the Harappa Archaeological Research Project have been working together to provide information and facilities to visitors. The museum grounds and the site itself are a major attraction for local residents, not so much because of the ancient artifacts and partially preserved structures, but primarily because of the wonderful lawns, gardens, and shade trees and the tomb of Baba Noor Shah Wali, a famous saint, which is located on the edge of one of the mounds. Regardless of the reasons for their specific visits, most people do see the museum and walk through the site during the course of their outings. The number of visitors is difficult to estimate because school-age children are allowed in free of charge and

no visitor records have been kept. Basic ticket counts from past years average around three thousand people each month (not counting students), but most of the visitors actually visit the site during specific holidays or in the cool winter season.

Near the museum a small canteen for refreshments, new restrooms, and a restaurant is provided courtesy of the government's Department of Archaeology and Museums. The museum itself is quite small, but plans are under way for a major

THE ENIGMATIC INDUS SCRIPT

The mysteries of Egyptian and Mesopotamian society can be explored because we can read what their priests, rulers, and educated elites wrote. In many cases, the earliest forms of writing were simple accounts for goods brought into temples or ritual texts that praised or communicated with the gods, thereby validating the power of the ruler. The writing systems of each of the early civilizations appear to have developed to meet specific local needs, and each form of writing is basically a local development. The deciphering of ancient languages in Mesopotamia and in Egypt has been aided by the discovery of bilingual tablets, such as the well-known Rosetta stone, or inscriptions that allowed scholars to cross-check and confirm the meaning of words and letters.

In the Indus Valley, however, no bilingual tablets and texts have been found, and there is no continuity between the Indus script and later writing systems.* The ancient Indus script appears to have developed locally, though there may be connections with earlier forms of writings in Iran according some scholars.

In addition, the Indus script is not an alphabetic script, but uses more than 450 different types of graphic symbols. Some of these signs are simple lines or dots combined with geometric shapes. Other signs appear to represent stylized animal and human forms or stylized objects and tools. Each sign probably represents a word or syllable, though in some contexts they may refer to a complete sentence. The use of these signs individually or in combination on a horizontal line represents a message that could be a name or title, or possibly a ritual formula. Some tablets may record quantities of goods as a form of accounting, but no long texts exist, and there is little evidence for the use of writing to record histories or for communicating long messages. Most of the writing is thought to proceed from right to left, but there are clear examples of the same sequence of signs occurring in both directions.

Indus writing is found on a wide range of objects and in various mediums and styles. The most common form is scratched onto pottery, indicating that many merchants and possibly even some potters were literate. Square or rectangular soapstone seals, carved in reverse, are perhaps the most spectacular and widely known form of the script. However, the script was also incised, molded, stamped, painted and even inlaid in wooden planks as a signboard. The script may have been written on cloth,

■ Molded faience tablet from Harappa showing traces of blue-green glaze that would have covered the entire surface. This tablet was not used as a seal and reads from right to left.

expansion to exhibit recently excavated artifacts. New storage facilities have also been constructed to house the anticipated increase in artifacts from the current excavations, along with additional laboratory facilities for conservation and analysis. A new ticket office and museum book and postcard shop are also being completed. Publications about the site are available at the museum in both English and Urdu, and a short brochure is in preparation. An additional attraction soon to be installed

palm leaf, or carved into wooden objects, but the absence of long texts or lists of accounts on permanent materials could indicate that such records were not kept at all.

■ Rectangular fired seal from Mohenjo-daro. Deeply engraved in reverse, this type of seal was used to make impressions on clay lumps that were placed as sealings on bundles of goods. Length 5.7 cm

Many scholars and amateurs have claimed to have deciphered the Indus script, yet no decipherment has been accepted by the general academic community. Part of the problem with the texts is that they are all extremely short, averaging about five discrete symbols.

The most widely accepted view is that the Indus script represents a language that is related to a form of ancient Dravidian, a language family that was once present in parts of Pakistan and western India but is now found primarily in southern India. It is important to emphasize, however, that a script can be used to write many different languages or dialects, and that the short inscriptions being recovered by archaeologists may actually be names of people or commodities in different languages. Other languages may have been present in the Indus cities and were definitely present in the adjacent regions. These include Indo-Aryan, Austro-Asiatic, Sino-Tibetan, and obscure languages for which no modern parallels exist.

Until recent excavations at Harappa, work on the Indus script was confined to seals and writing recovered from the earlier excavations, where the specific context of a seal was not well recorded. Since 1986, hundreds of new seals, tablets, and inscribed pottery have been recovered from well-defined archaeological contexts, and a new phase of study has begun. As a result, distinct patterns emerge in terms of where seals and tablets are found in contrast to inscribed pottery. Changes in the style of seal carving and writing on pottery over time can also be seen. On the basis of this evidence the script did not remain stagnant over the seven hundred years of the Indus civilization but adapted to the changing needs of the people who used it. We can only guess what these needs were and await the eventual decipherment of the script through continued excavation, preservation of the ancient sites, and the protection of sites that have not yet been excavated.

* W. A. Fairservis, "The Script of the Indus Valley Civilization," *Scientific American* 248.3 (1983): 58–66, and Asko Parpola, "The Indus Script: A Challenging Puzzle," *World Archaeology* 17 (March 1986): 399–419.

is a post office at the museum that will allow visitors to send letters stamped at the ancient city of Harappa.

Visitors to Harappa will find maps and descriptions of what they can see at the site. Signs identifying specific localities along the walkways have also been installed. At major excavation areas more detailed signs and maps in English and Urdu help inform the visitor. Each year as excavations are completed, new pathways and signs are erected about recent discoveries. Eventually each of the major excavation areas will have large signs with maps and descriptions. In places where the excavated structures are too fragile to be left exposed, exact, full-scale outlines of structures have been constructed on the spot so that visitors can see the most recent discoveries.

THE FUTURE

The success and progress of the work at Harappa are the result of the collaboration between the Department of Archaeology and Museums of Pakistan and HARP. Improvements to the site and museum by the Department of Archaeology anticipate an increasing demand on the facilities as more people become interested in visiting Harappa and other cities of the Indus Valley. Over the past nine years, there has been a gradual increase in visitation during the winter excavation season. With television coverage and other publicity, even more people will likely begin visiting the site.

While funding for research, conservation, and site development is limited, the time and collaborative efforts of many dedicated individuals, both Pakistani and American, have made the current progress at Harappa possible. These accomplishments have not been achieved easily, and there remain numerous problems that confront the continued conservation and development of the site. Foremost is the need for additional money to undertake extensive conservation and proper reconstruction of the previously exposed remains. Without maintaining conservation efforts at the site, the effects of nature and human indifference will quickly return it to its original state.

The direction for future work must be discussed and coordinated with the residents of the local town. Decisions about implementation of further excavation and conservation must assess their needs. Private investment in tourist facilities needs to be encouraged, but commercialization of the area around the site worries some researchers. To avoid commercialization, it is necessary to educate local businesses about the aesthetic appeal of the site and its environs, and the importance of preserving the past as authentically as possible. By involving private parties, the Pakistan Department of Archaeology and Museums and scholars can focus more of their resources and attention on continued research to understand the nature and character of ancient Harappan society, one of the first urban civilizations. ■

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NOTES

1. George F. Dales and J. Mark Kenoyer, "The Harappa Project 1986–1989: New Investigations at an Ancient Indus City," in *Harappan Civilization: A Contemporary Perspective,* ed. G. L. Possehl (New Delhi: Oxford and IBH, 1982), pp. 469–520.

2. Richard H. Meadow, ed., *Harappa Excavations, 1986–1990* (Madison, Wis.: Prehistory Press, 1991); p. 3.

3. J. M. Kenoyer, "The Indus Valley Tradition of Pakistan and Western India," *Journal of World Prehistory* 5 (April 1991): 331–85.

4. M. S. Vats, *Excavations at Harappa* (Delhi: Government of India Press, 1940).

5. R. E. M. Wheeler, "Harappa, 1946: The Defenses and Cemetery," *Ancient India* 3 (1947): 58–130.

6. Muhammad R. Mughal, "The Harappan Period in the Greater Indus Valley and Northern Bauchistan" (Ph.D. diss., University of Pennsylvania, 1970).

7. Dales and Kenoyer, "Harappa Project," pp. 469–520.

FURTHER READING

Allchin, Bridget, and F. R. Allchin. *The Rise of Civilization in India and Pakistan.* 3d ed. Cambridge: Cambridge University Press, 1982.

A textbook of the archaeology of the subcontinent with large section on the Indus Valley civilization.

Brown, Dale M., ed. *Ancient India: Land of Mystery.* Alexandria, Va.: Time-Life Books, 1994.

An excellent book for the general reader that covers not only the Indus civilization but also the early history of Buddhism and Hinduism on the subcontinent.

Kenoyer, J. Mark, ed. *From Sumer to Meluhha: Contributions to the Archaeology of South and West Asia in Memory of George F. Dales, Jr.* Madison, Wis.: Department of Anthropology, 1994.

A collection of papers on current research, many of which deal specifically with Harappa and the Indus Valley civilization.

Possehl, Gregory L., ed. *Harappan Civilization: A Contemporary Perspective.* New Delhi: Oxford and IBH, 1982.

A collection of papers on a wide range of topics encompassing the past fifty years of research on the Harappan or Indus Valley civilization.