

CHAPTER 1

OBJECTIVE, OVERVIEW AND THEORY, HARAPPA AND LINES OF INQUIRY

CHAPTER INTRODUCTION: THE PRINCIPAL RESEARCH OBJECTIVE

This study is an examination of inter-regional interaction and urbanism in the Greater Indus region¹⁾ of Pakistan and northwestern India from the mid-fourth through the early second millennium BC - a period that encompassed the development, existence and decline of South Asia's first urbanized society, the Indus Civilization (ca. 2600 to 1900 BC). The principal research objective is to identify the sources (geologic provenience) of rock and mineral (stone and metal) artifacts excavated at Harappa, which is a site that grew from a small village to become one of the largest Indus Civilization cities. Provenience determinations are used to address *three lines of inquiry* into the inter-regional and intra-site socio-economic relationships of those who dwelled at Harappa during different periods in its history:

- 1) *Who in the Greater Indus region or beyond were the residents of Harappa interacting with when they acquired rock and mineral resources?*
- 2) *How did inter-regional interaction/acquisition patterns change over time?*
- 3) *Did synchronic variations in rock and mineral resource acquisition and use exist between groups of people living in different habitation areas at Harappa?*

Underlying this study is the simple premise that rocks and minerals, from the prestige materials used to create items that signified wealth and social status

to the utilitarian materials necessary to carry out day-to-day tasks, were integral to the development and functioning of early urbanized societies. The need to acquire these vital resources would have been a major impetus for interaction between the first city-dwellers of the Indus Valley, which is a region where stone and metal sources are scarce or absent, and peoples of the neighboring highlands where they occur. Moreover, power garnered from the control of such resources would have been a significant factor in promoting and maintaining the social and political stratification characteristic of an urbanized society like the Indus Civilization. Elucidating rock and mineral acquisition networks through provenience studies of stone and metal artifacts is also an excellent method with which to examine the broad-scale communication and exchange phenomena that Joseph Caldwell conceptualized (1964) as *interaction spheres* (also called *interaction systems* – Shaffer 1992: 442). Archaeologists have come to regard this form of inter-societal contact as an important stimulus for socio-cultural change and innovation (Schortman 1989: 52; Trigger 1989: 330-337). The current state of research indicates that urban lifeways in northwestern South Asia emerged in a milieu of regionally distinct cultures that maintained contact with one another through extensive trade networks and seasonal migration regimes (Kenoyer 1991a; Mughal 1990; Possehl 1990; Shaffer 1992). The resultant urbanized society was characterized by a complex series of internal interaction systems (Kenoyer 1995b), some of which articulated externally with other complex interaction spheres outside of the Greater Indus region (Edens 1993; Hiebert 1995; Lamberg-Karlovsky and Tosi 1973; R.P. Wright 1984). It has been proposed (Possehl

1) see definition on p. 31

2002, 2007) that the Indus Civilization was part of an even larger, trans-regional system – the “Middle Asian Interaction Sphere,” which connected societies from Mesopotamia to the Indus Valley during the third millennium BC. These varying spheres of interaction and the emergence of urbanism in the Greater Indus region are examined here through a series of both broad and fine-scale geologic provenience studies of Harappa’s rock and mineral artifact assemblage.

In order to address three lines of inquiry outlined above, the entire assemblage of stone and metal artifacts recovered by the Harappa Archaeological Research Project since 1986 was categorized, periodized and quantified. Nearly 3000 of those artifacts representing eight different rock or mineral varieties were directly compared to geologic samples collected from potential source formations located across the Greater Indus region. Comparative methods ranged from examinations of basic macroscopic and mineralogical attributes to highly precise and accurate isotopic and elemental assays. In the end, provenience determinations for over 2100 stone or metal artifacts were generated.

The large body of new data produced for this study has permitted the testing of numerous hitherto untested assumptions regarding where it was that Indus Civilization peoples, their Early Harappan predecessors and their Late Harappan successors, acquired rock and mineral resources, who they were interacting with as a consequence and how such resources were distributed in an urban setting. Many findings corroborate widely held views of resource acquisition and inter-regional interaction during the late-prehistoric period in northwestern South Asia. Other findings, however, require that certain assumptions be revised. For instance, multiple lines of evidence now point to the existence of early and enduring acquisition networks between Harappa and source areas to the north of the Indus Valley, which suggest that relations with the peoples of that region were more significant than was generally supposed.

Synchronic spatial examinations of Harappa’s assemblage were also revealing. It appears that, by and large, residents of all parts of the settlement had access to the same varieties of raw materials from the same sources. However, a few variations are evident that suggest groups in some areas of the site may have, at times, favored materials from certain sources and/or controlled specific kinds of stone. Finally, it has been determined that, during every period at Harappa, some rocks and minerals were derived from sources outside of the Greater Indus region, thus indicating that external trade was an important and continuous aspect of the socio-economic lives of the site’s residents. Most of those external sources were located in neighboring highland areas, however. Evidence for external trade with distant regions such as Arabia and Mesopotamia remains, at least in terms of the stone and metal artifact assemblage at Harappa, elusive.

Although the primary focus of this book is Harappa’s rock and mineral assemblage and the urban phenomenon at that site, the data generated are pertinent to the broader issue of inter-regional interaction and its relationship to the initial manifestation of urbanized society in South Asia. In order to bolster a broad-scale perspective, this study has been supplemented with geologic provenience analyses of select stone and metal artifacts from over a dozen additional prehistoric sites in Pakistan, India, Afghanistan and Iran. These data, although limited, have revealed (or confirmed) the existence of several broad-scale inter-regional resource acquisition networks as well as more localized regional ones.

In this chapter, I first provide an overview of the Indus Civilization. The theoretical orientation from which the issues examined in this book are approached is then laid out in discussions of urbanism and its preconditions, inter-regional interaction, long-distance trade and the control of essential resources, the importance of rock and mineral resources to urbanized societies and the utility of geologic provenience studies in research of this kind.

The physical and cultural/chronological aspects of Harappa are then presented. Lastly, the three lines of inquiry are reviewed and an outline is provided.

INDUS CIVILIZATION OVERVIEW AND THEORETICAL ORIENTATION

THE INDUS CIVILIZATION

In the 1920s and 30s, excavators at the sites of Harappa (Vats 1940) and Mohenjo-daro (Marshall 1931b) exposed the remains of a civilization in northwestern South Asia that was roughly contemporaneous with those of Sumerian/Akkadian Mesopotamia and Old Kingdom Egypt (Figure 1.1). This previously unknown society possessed the most well-planned and maintained cities of its era, a system of writing and standardized weights and measures, technologically advanced craft industries and other aspects of a distinctive material culture that, because they were so remarkably similar across a broad geographic expanse, indicated the existence of a widely shared ideology maintained through extensive trade and communication networks. Although its cultural roots were initially believed to lie in western Asia (it was first designated the “Indo-Sumerian” Civilization – Marshall 1924: 528), it was soon recognized (Marshall 1928) that this society,

which has since come to be known variously as the Indus, Indus Valley, Harappan or Sarasvati-Sindhu Civilization (I hereafter use *Indus Civilization*), was fundamentally indigenous in origin.

The Indus Civilization was also, for a great many reasons, an enigma to scholars. Although it was undeniably a complex and highly integrated urbanized society, it lacked (or appeared to lack) certain features exhibited by other early civilizations that were indicative of pronounced social stratification and institutionalized authority. There were no clearly recognizable palaces, opulent tombs or temples that could be associated with either a secular or religious elite ruling class. Nor were there any explicit expressions/depictions of political power such as monuments or murals. Evidence for organized warfare or any other form of violent coercive behavior was practically non-existent. In short, there were few *overt* archaeological indications as to either who governed this society or how they amassed the power and authority to do so. Written records, which had provided valuable insights into these aspects of early Egyptian and Mesopotamian civilizations, were of no help as the Indus script could be not read. Researchers were, therefore, faced with a purely archaeological record of a complex society that was, in several significant ways, at odds with the suite of traits (first outlined by V. Gordon Childe in 1950)



Figure 1.1 Select Old World Civilizations (ca. 2350 BC) and sites mentioned in Chapter 1.

then generally regarded as typical of early urbanized civilizations.

Interpretations of that record by Sir John Marshall (1931b), Ernest Mackay (1948), Sir Mortimer Wheeler (1950), Stuart Piggott (1950) and others were remarkably astute and, in a great many respects, are still benchmarks for understanding the Indus Civilization. However, they are also products of a nascent era – both in terms of archaeological inquiry in general and South Asian archaeology in particular. In trying to reconcile the somewhat atypical (and then quite limited) record of the Indus Civilization with those of other ancient urbanized societies, early scholars came to some disputable conclusions. For example, their characterizations of Indus society as exhibiting “complete uniformity” (Marshall 1931a: 91), “monotonous regularity” (Piggott 1950: 136) and “astonishing sameness” (Wheeler 1950: 29) across the area in which it is found are, for the most part, significantly overstated (Possehl 1992b). High areas at sites were often regarded as defensive “citadels” and certain large structures as state-run “granaries” when, in fact, there is little evidence that such features served those purposes (Fentress 1984; Meadow and Kenoyer 2008; Possehl 2002b: 103-104). A few rare incidences of human statuary at Mohenjo-daro were thought by some to be depictions of austere “priest-kings” who wielded “autocratic and absolute power” (Piggott 1950: 153). In actuality, it is not possible to say who such statuary depicted or if (and much less how) they ruled Indus society (Possehl 2002b: 115).

Our knowledge of the Indus Civilization grew tremendously during the latter half of the 20th century. Surveys brought to light well over 1000 Indus settlements and more than 100 of those sites were excavated (Possehl 2002b: 63). Moreover, investigations and comparative studies of ancient civilizations around the world have significantly broadened our understanding of how early complex societies developed and of the social, economic and political variations that they exhibited (Trigger 2003).

Yet early in the 21st century the Indus Civilization remains as enigmatic as it ever was. Its script has resisted all attempts at decipherment (Parpola 1994) and many fundamental questions about its origins, existence and decline remain to be answered. Chief among these questions concern the development and nature of the extensive networks of inter-regional interaction that permitted an urbanized society to emerge and then be maintained for roughly a 700 year period across the culturally and geographically diverse landscape of northwestern South Asia (Allchin and Allchin 1997; Chakrabarti 1984; Fairservis 1975; Gupta 1999; Kenoyer 1998; Mughal 1990a; Possehl 1999; Shaffer and Lichtenstein 1989). It is this issue that is at the heart of this study and which I am examining through geologic provenience studies of rock and mineral artifacts from Harappa and other prehistoric sites.

URBANISM AND ITS PRECONDITIONS

The Indus Civilization represented the initial manifestation of urbanized society in South Asia and Harappa was among the very first urban centers to emerge in that region. Throughout this book, I endeavor to be attentive to the subtle but important differences in the meanings of the terms “urban,” “urbanism” and “urbanization” (Smith 2003: 12-13 after Fox 1977; see also Cowgill 2004: 527). *Urban* refers specifically to characteristics of cities and their populations while *urbanism* is used in reference to the “general phenomenon of cities” (Smith 2003: 13). *Urbanization* refers to the emergence of cities within a “territorial expanse” and the process by which peoples of that area, whether they dwell in a city or not, become linked in a “center dominated ethos” (ibid.).

Despite the efforts of scholars in a wide range of fields, “no universal or comprehensive definition of the city” has ever been formulated that can encompass the “specificity and uniqueness” exhibited by all of its historical variants, most especially those in ancient South Asia (Eltsov 2005: 319). Nevertheless, Harappa

Figure 1.2 General preconditions for urbanism and the rise of state-level society
(from Kenoyer 1991a: 343-349). *Emphasis added.*

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- 1) Diversity of subsistence base and *resource variability* which have the potential for the production of surplus.
 - 2) Development of social and economic *interaction networks* between major ecosystems and resource areas.
 - 3) *Technological capability* to fill specific needs of urban and state-level society.
 - 4) Differentiation in status on the basis of access to *essential resources* and the ability to control distribution of essential resources.
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and other comparable Indus Civilization settlements like Mohenjo-daro, Dholavira, Ganweriwala and Rakhigarhi would undoubtedly be considered cities in all but the most rigid of classification schemes. Their populations are estimated to have been in the tens of thousands – orders of magnitude greater than the typical Indus Civilization settlement; there is evidence at most of them for massive perimeter walls and multiple, well-demarcated neighborhoods; they were regional centers where a huge range of specialized crafts were produced using raw materials often brought from sources hundreds of kilometers away; and although no definitive examples of administrative and/or religious institutions (palaces or temples) have been identified²⁾, there are monumental buildings at several of them that obviously served some very important communal or private functions (Bisht 2000; Chakrabarti 1995; Jansen 1994; Kenoyer 1997a; Mughal 1994a; Nath 1998; Possehl 1990).

Although its most prominent characteristic is the city, urbanism is actually an extra-regional phenomenon consisting of interrelated environmental, demographic, technological and social components (Wheatley 1972). Based on those components, Kenoyer (1991a) defined four *general*

preconditions for urbanism and the rise of state-level society in ancient South Asia. I have listed these in Figure 1.2 and emphasized (using italics) several key aspects that I focus on throughout this book.

Kenoyer's (1991a) first precondition highlights the necessity of a diverse subsistence base and *resource variability*. The roughly 40 distinct kinds of rocks and minerals found in Harappa's artifact assemblage (Chapter 4) are a testament to the rich and highly varied geologic resources that were available across northwestern South Asia (discussed in Chapter 2). The development of social and economic *interaction networks* between the different ecological zones and resource areas of that region (Precondition 2) provided, in essence, the glue that bound together (integrated) the widely dispersed peoples of the Indus Civilization and the avenues through which subsistence goods and other essential resources could be distributed to them. Identifying these networks through geologic provenience studies of rock and mineral artifacts from Harappa is the central focus of the research presented here. Among the many *technological capabilities* that had to be developed to fill the specific needs of an urbanized society (Precondition 3) were bullock carts and large river boats (Kenoyer 2004; Miller 2006). Such transportation technologies were required to move goods in bulk sizes and quantities over long distances (Law 2006). Their development and use is examined indirectly through the study of bulk goods like grindingstone (Chapter 5) and limestone (Chapter 11)

2) This might be changing. Based on his recent reinterpretation of architectural patterns at Mohenjo-Daro, Massimo Vidale argues (Vidale 2010) that a heterarchy of elites groups dwelled at the site in multiple "citadel-like walled enclosures" that can only be described as palatial.

– the latter of which was, at times, transported over 800 km to Harappa in individual pieces weighing in excess of 100 kg. Differentiation in social status based on *access to essential resources* and the ability to control their distribution is Kenoyer's fourth and final precondition. I argue shortly that rocks and minerals were as essential to the development and maintenance of early urbanized societies as were surplus grain or livestock. The issue of differential access within Indus society to such resources is examined by comparing (in Chapter 4) the rock and mineral sub-assemblages from the various discrete habitation areas at Harappa (discussed below), as well as by attempting to detect intra-site variations in the geologic source proveniences of select material varieties that were used in all parts of the settlement.

All four of the above preconditions were fulfilled in the millennia leading up to coalescence of the Indus Civilization at around 2600 BC. The appearance of cities across northwestern South Asia at that time is indicative of the emergence of a society that was markedly more expansive and complex than the various regional, village-based ones that had existed there before. There is debate as to whether this initial urbanization was an abrupt process (perhaps occurring in a single century – Shaffer and Lichtenstein 1989: 123) or a long and gradual one (Kenoyer 1997a). There is also disagreement as to whether or not the Indus Civilization was a state-level society (see Possehl 1998b and Kenoyer 1994b for opposing views on this issue). Based on evidence that is reviewed in Chapter 2, I take the position that the Indus Civilization was the product of an extended phase of steady developments (occurring circa fourth and early third millennium BC and designated the “Early Harappan” Period by Mughal 1970, 1990a) and that it was probably organized politically as state (or at least an amalgam of city-states). However, the latter issue need not be definitively resolved for this present study of urbanism to move forward. A current trend in research of this kind involves “decoupling our

understanding of cities from our assessment of early states” (Smith 2006: 98). The settlement of Harappa grew from one of many small villages located on the alluvial plains of northwestern South Asia to become one of a few major urban centers in that region. What I seek to shed light on through the study of its rock and mineral artifacts are the local, regional and extra-regional *actors* – the different groups of people residing at the site itself and those peoples (both Harappan and non-Harappan) dwelling in regions often great distances from it, who were involved in the urbanization process and, specifically, their connections (interaction) with one another.

INTER-REGIONAL INTERACTION, LONG-DISTANCE TRADE AND THE CONTROL OF ESSENTIAL RESOURCES

The vast geographic area across which Indus Civilization settlements are found and the highly similar material culture attributes that those sites exhibit together point to the existence of well-developed and far-reaching inter-regional interaction networks binding the civilization's “various social groups as a distinct cultural entity” (Shaffer 1988: 1316). It is through such networks that peoples from distant regions come into contact with one another, material resources are transferred from places where they are abundant (or present) to places where they are scarce (or absent), and “ideas are exchanged, inventions are transmitted, and so are ambitions and aspirations” (Renfrew and Bahn 1996: 336). Their establishment and/or intensification is widely believed to have been an important stimulus toward the development of new and increasingly elaborate forms of social and political organization in many parts of the ancient world (Algaze 1989; Chang 1986; Childe 1950; Dematte 1999; Earle 1991; Feinman and Nicholas 1992; Kenoyer 1995b; Lamberg-Karlovsky 1972; Rathje 1971; Renfrew 1986; Schortman and Urban 1992b; Stein 2002). My objectives are to identify the inter-regional interaction networks of

the Indus Civilization (at least some of them); to determine if and how they were transformed during the emergence and existence of that society; and to examine the possibility that certain groups of people living at Harappa controlled or had greater access to particular networks.

Inter-regional interaction may occur in various forms, such as “trade, warfare, migration, or the diffusion of ideologies” (Stein 1999: 3). All of these no doubt took place during the period that the Indus Civilization emerged and existed. Some forms, however, appear to have been more significant than others in terms of their role in the development and maintenance of that urbanized society. For example, while there were almost assuredly violent confrontations (warfare) between late prehistoric peoples dwelling in different parts of northwestern South Asia, there is no evidence that a level of conflict existed similar to that which accompanied the formation of Uruk city-states in Mesopotamia (Gat 2002) or the unification of Early Dynastic Egypt (Wilkinson 1999). Nor are there any iconographic depictions of captives or conquests that would suggest the integration of Indus society was preserved through any form of “military coercion” (Kenoyer 1991a: 347). The peaceful movement (migration) of pastoralists and various “itinerant” peoples (Possehl 1999: 14-16) was likely a more influential form of interaction. Starting in the early Neolithic (ca. 6000 BC), pastoralists established patterns, which continue to this day, of seasonal, long-distance migration between the plains of the Indus Valley and the highlands surrounding it (Bozdar *et al.* 1989; Fairervis 1975: 210; Meadow 1996). It was such groups that probably did the most to physically connect the disparate regions of South Asia by conveying material resources between them (Law 2006: 306-308; Possehl 1979: 448; Shaffer 1978: 153). However, the transmission of a set of core beliefs and principles (diffusion of ideology) may have played an even greater role in terms of socially/culturally integrating the widely dispersed and

ethnically diverse (Shaffer and Lichtenstein 1989) peoples of those regions. The broad dissemination and strong reinforcement of a distinctly “Harappan” ideology (Miller 1985) is evident in the highly similar ways in which Indus Civilization peoples organized their settlements, buried their dead, used iconography, selected raw materials and fashioned their ornaments and implements. The trouble is that this form of interaction is difficult to document with a reasonable degree of spatial or temporal precision.

The exchange of material resources or finished goods (trade) is the most commonly studied form of ancient inter-regional interaction (Schortman and Urban 1992a: 236). Although this is no doubt due, in part, to the fact that it tends to be the most archaeologically visible form (and thus the easiest to document), long-distance trade is also a frequent subject of examination because of the influence it is thought to have often had on the social and political development of peoples who engaged in it (Adams 1974; Curtin 1984; Earle 1982; Kipp and Schortman 1989; Hirth 1978; Renfrew 1975; Shaikh 1991; Vikrama 2002; Webb 1974). It is an activity that is born of a society’s (or of certain peoples within a society) need or desire to acquire materials/items that are scarce or absent in the region where they live. Those may range from subsistence resources and utilitarian items that are used by all of its members to exotic materials or manufactured goods that might only be used by a select few (Pires-Ferreira and Flannery 1976: 287-289). Long-distance trade provides individuals or social groups with opportunities to enhance their own wealth and/or societal status by taking control of how imported goods are distributed. The “social power” (Mann 1986) that they garner by doing this fosters social/political stratification within their society. Kenoyer (2000) argues that those people(s) who, over time, came to rule Indus Civilization cities acquired the power to do so, in large part, by controlling both access to essential raw materials and the manufacture/distribution of status-defining items.

The kinds of raw materials (imported vs. local) and the technologies (complex vs. simple) that were used in these regards varied considerably (Kenoyer 1995b: 217; Vidale and Miller 2000). Likewise variable was the nature (prestige-related vs. utilitarian) of the materials controlled and of the goods manufactured/distributed. In the next section, I discuss how imported materials (specifically rocks and minerals) of both natures were vital to the political economies of Indus Civilization cities like Harappa. However, it is not my intention to focus on *how* such materials were employed in the power strategies that facilitated the development and reinforcement of the first urbanized society in northwestern South Asia. Rather, it is to use them to ascertain *who* was involved, even indirectly, in that process.

Regions do not interact with one another, people living in different regions do. By identifying the trade networks through which residents of Harappa were importing rocks and minerals I seek to ascertain who it was that they were interacting with. Some of those people would have also belonged to the Indus Civilization. I refer to them throughout this book either as *Indus Civilization peoples* or as *Harappans* (after the type site of Harappa). The latter term is more frequently used by scholars (and is more convenient). Unless the context makes it clear, I refer to those Harappans who lived at Harappa as *residents of Harappa*. In Chapter 2, I provide details regarding the complex mosaic of regional cultures that existed across northwestern South Asia during the millennia prior to the emergence of the Indus Civilization. These peoples are referred to separately by their various regional designations and collectively as *Early Harappans* (following Mughal's [1970] convincing argument that they were all cultural antecedents to the Harappans). Also in Chapter 2, I discuss various *non-Harappan* cultures (and non-Early Harappan ones) that dwelled in regions adjacent to Indus Civilization peoples. Even though these groups were not integrated into the urbanized society of their

neighbors, they were nonetheless vital contributors to it because it was from their territories that many of the resources essential to its development and maintenance were derived.

Fernand Braudel remarked (1966: 29) that the historian tends to “linger over the plain ... and does not seem eager to approach the high mountains nearby.” The same could have once been said of archaeologists investigating early civilizations in the Near East and South Asia. The “highlands” (defined in Chapter 2) adjacent to the broad river valleys of those regions, while never entirely ignored, did not figure significantly in early concepts of how or where urban lifeways developed. Perceptions began to change when, starting in the 1950s, surveys and excavations in the lands between Mesopotamia and the Indus Valley – i.e., Iran, Afghanistan and Balochistan, revealed that their ranges and elevated basins were home to complex and, at places like Shahr-i-Sokhta, urbanized societies (Casal 1961; Dales 1976; Fairervis 1975; Lamberg-Karlovsky 1986; Shaffer 1978; Tosi 1982). As a result, the nature and extent of interaction between the peoples of those regions and their lowland contemporaries became an important topic of inquiry (Beale 1973). Urbanism in this part of the ancient world is now regarded to have been an extra-regional phenomenon in which highland “Middle Asia” was a significant component (Possehl 2007).

Several scholars (Algaze 1993; Dhavalikar 1995; Edens 1992; Kohl 1979) have advocated the use of “world-systems” theory (Frank 1993; Wallerstein 1974) as a model for examining trade and cultural development across a zone stretching from “the Nile to the Indus Valley in the 4th and 3rd millennium BC” (Kohl 1978: 475). In this scheme, complex and powerful “core” societies (such as the Uruk of Mesopotamia or the Indus Civilization) requiring raw materials not available in their territories are seen as engaging in exploitative, asymmetrical exchange relationships with less developed and less powerful

cultures in resource-rich “peripheries.” The political-economies of those peripheral societies are viewed as being structured by this relationship with the dominant core, which controls them either directly (colonially) or indirectly (through local rulers whose power is dependent on trade goods from the core). Although world-systems analysis does constitute a holistic macro-regional model with which to examine inter-regional interaction, recent critiques (Ratnagar 2001a; Stein 1999) of its application in this part of the Bronze Age world (cited above) have found that key aspects of it – notably the assumption of a dominant core and the idea that asymmetrical long-distance trade with it imposes “structured inequalities” upon the peripheries (Ratnagar 2001a: 352), are not really borne out by the archaeological record of that region. Below are just two brief examples related to Uruk Mesopotamia.

At the site of Hacinebi in the Taurus Piedmont of southern Anatolia, a small but long-lived Uruk trading enclave was documented to have existed among the settlement’s local Chalcolithic population (Stein *et al.* 1996). No evidence for inter-societal conflict or competition was recovered there that might indicate “the Mesopotamians dominated their Anatolian host community” (Stein 2002: 912). In fact, the far-flung enclave’s very survival was almost certainly dependent on its members “remaining on good terms with their more powerful (in relative local terms) indigenous neighbors” (*ibid.*: 909). Similarly, Elizabeth Henrickson’s study (1994) of Uruk relations with Chalcolithic cultures dwelling in the Zagros Mountains of western Iran indicated that the people from the politically more complex lowland society did not dominate the comparatively less complex highlanders from whom they were obtaining a range of important resources. The evidence instead suggested that the Mesopotamian “highland strategy” was one of “balanced trade and accommodation instead of brute force” (Henrickson 1994: 98).

There is good reason to believe that Harappans

likewise did *not* dominate societies dwelling in the “peripheries” from which they acquired raw materials. As previously discussed, violent coercion was evidently not the means through which the widely dispersed and ethnically diverse peoples of the Indus Civilization were initially integrated into an urbanized society or how that integration was maintained for 700 years. It seems, therefore, unlikely that Harappans would have employed such a radically different and uncharacteristic strategy as that in their dealings with non-Harappan cultures in regions outside of their homeland. Moreover, even if Harappans had wanted to dominate peoples in the highlands surrounding the Indus Valley, which is where a substantial portion of the raw materials they used occurred, it is unlikely that they would have been able to do so – at least not for very long. Mountainous regions are notoriously precarious places that are often home to societies over which lowland “civilizations” have time and time again failed to establish and/or sustain any significant degree of control (Braudel 1966: 38-41). In South Asia’s modern era this is exemplified in the Afghanistan-Pakistan borderlands region, where there are still today Pathan (Pukhtoon) tribes that have never been entirely subjugated despite repeated attempts by a succession of empires and nations (Hussain 2000).

When Harappans traveled outside of their homeland in order to obtain raw materials, instead of dominating and exploiting peoples of a “passive periphery” as world-systems theory would predict, they likely encountered populations of “active agents” with whom it was necessary to establish some form of mutually satisfactory exchange relationship (the quoted text is from the title of Gil Stein’s 2002 review of this subject). That, at least, is the assumption I am making based on the studies and observations discussed above. I will not be attempting to test if the nature of Harappan long-distance trade did or did not conform to the world-systems model (or to any alternate model of inter-regional interaction).

To do so would require data on the control of goods and resources within its so-called “peripheries.” The primary archaeological dataset that I am using (from the site of Harappa) would be considered representative of the “core.” Geologic provenience studies conducted on it serve only to identify the regions from which residents of Harappa acquired rocks and minerals. Who actually controlled resources in those regions is not determinable using such data. I wish to emphasize this point because such control is sometimes assigned to Harappans without sufficient evidence. For example:

In northern Afghanistan, Harappan “control of ... highland peoples and resources may not have been as great as supposed by some” (Francfort 1985: 129). Shortughai is an Indus Civilization outpost located in that region at the foot of the Badakhshan Mountains (Francfort 1984b). Although there are a half-dozen non-Harappan Bronze Age settlements in its vicinity (Lyonnet 1977), none have yet been excavated. Understanding the actual nature of the Harappans’ relationship with the indigenous population of the region has, therefore, proven problematic (Francfort 1984a). It has been suggested that Shortughai was established to “control the mining of lapis lazuli and other precious materials from this area” (Allchin and Allchin 1997: 168). However, other than the fact that, 1) lapis lazuli was worked at the site and that, 2) it is the nearest Indus Civilization settlement to a source of that stone (although it’s still hundreds of kilometers from and thousands of meters below the actual deposits), there is really no evidence to demonstrate that Harappans *controlled* the extraction and distribution of that or any other raw material from northern Afghanistan.

The control of essential resources is a key issue in this study because, as previously discussed, the social power that groups and individuals derived from it is one of Kenoyer’s (1991a) four general preconditions for the rise of urbanized, state-level society (Figure 1.2). Control of raw material sources is best supported

when there are clear material culture associations with extraction areas, such as there are at chert quarries in the Rohri Hills of Sindh (discussed in Chapter 6) or at some limestone quarries near Dholavira in Gujarat (discussed in Chapter 11). Such instances are, unfortunately, very rare – the two just mentioned are the only ones that I am aware of associated with the Indus Civilization. Although an archaeological site may be situated fairly close to a raw material source, proximity alone does not demonstrate control. Of course, if a source is surrounded by sites that all belong to the same cultural “phase” (see definition p. 37) then it is reasonable to assume that peoples of that phase probably had some degree of control over it. However, the situation is not always that clear cut in most of the regions from which I show that residents of Harappa were acquiring their rock and mineral resources. In many cases, material sources are located in zones where different cultural phases came together. Other times they are found in places far from where any archaeological sites have been identified. It is for these reasons that when addressing questions related to the control and distribution of essential resources I focus on the only contexts that I am studying where a very strong case for such control can be made, which are – the different walled habitation mounds that together make up the site of Harappa. In upcoming sections of this chapter, I discuss these walled mounds and outline what I have attempted to learn by comparing the different sub-assemblages of rock and mineral artifacts recovered from them.

This study was inspired, in part, by Catherine Jarrige and Maurizio Tosi’s (1981) paper “The Natural Resources of Mundigak,” in which they defined the “economical space” of that Bronze Age site in southern Afghanistan by listing the probable sources for the full range of raw materials used to create the stone and metal artifacts discovered during excavations there (Casal 1961). I have adopted a similar broad-scale perspective for this project, which, on a basic level, is a straightforward effort to delineate the rock

and mineral resource catchment area or “economical space” of Harappa. However, I have tried to keep in mind an observation about studies of inter-regional interaction made by the late Prof. George Dales:

The ultimate significance of inquiries such as this is not just to play intellectual games with bits and pieces of ancient castoffs and debris. ... What we would really like to know is the nature and extent of these relations. Just how cognizant were the citizens of each region of the peoples and cultures of the others? What degree of dependence – if any – was involved? (Dales 1968: 22).

Dales’ comments serve to remind that this is also an examination of ancient inter-cultural relationships. In order to have acquired many of the resources that were essential to their urban lifeways, Harappans had to have interacted (either directly or through intermediaries) with peoples in regions that were outside of their homeland. Although the nature of those relationships cannot be clearly determined at this time, it is argued that Harappans were heavily dependent upon them because of the vital role that imported resources played in their political economy (discussed below). It is also argued that because of this, the non-Harappan cultures of the Indus Civilization’s hinterlands should be regarded as among the actors that played a part, if only an indirect one, in the maintenance of Indus urbanized society. One of the aims of this study is to identify and evaluate the significance of these inter-cultural relationships by studying the trade of essential raw materials.

Nayanjot Lahiri remarked that a “qualitative leap in studies of trade [in ancient South Asia] can happen only if detailed and large-scale scientific studies on different kinds of artefacts and their raw material sources are undertaken” (Lahiri 1992: 6). Dilip Chakrabarti has expressed a similar opinion (1990:

141). Recent decades have seen some important steps in this direction. Systematic and/or archaeometric examinations of Harappan resource acquisition and long-distance trade have been conducted on marine shell (Kenoyer 1984b), subsistence goods (Belcher 1998), ceramic vessels (Méry and Blackman 1999) and stoneware bangles (Blackman and Vidale 1992). However, other than a few limited and inconclusive comparisons of copper ore sources and copper-alloy objects (which I discuss in Chapter 12), there has been a “dearth of research” on this subject involving rock or mineral artifacts (Kashyap 2005: 7). My research is, in part, an effort to rectify that situation.

ROCK AND MINERAL ARTIFACTS AND GEOLOGIC PROVENIENCE ANALYSIS

Of the many categories of materials that peoples exchanged in antiquity, items made from rocks or minerals (stone and metal artifacts) are perhaps the best suited to studies of inter-regional interaction and urbanism – for two reasons. Firstly, both prestige and utilitarian (designations discussed below) rock and mineral goods were vital to the *political economies* (“the material flows of goods and labor through a society, channeled to create wealth and to finance institutions of rule” – Earle 2002: 1) of complex hierarchical societies like the Indus Civilization. Secondly, such artifacts are particularly well-suited to studies aimed at reconstructing resource acquisition networks by identifying the place of origin, or *geologic provenience*³⁾, of the raw material from which they are composed.

Exotic (rare) rocks and minerals and the items fashioned from them are among the most important kinds of *prestige* goods. Such goods were used as objects of wealth as well as markers of status, identity

3) as opposed to an artifact’s *archaeological provenience* – meaning the specific archaeological context from which it was recovered, or *provenance* – its history subsequent to its recovery (see Appendix 1.1).

and authority (Brumfiel and Earle 1987; Helms 1993; Hayden 1998; Kenoyer 2000; Trubitt 2003). Although most Harappan stone and metal artifacts of this nature are notable for their small size, I argue later (in Chapter 11) that certain large and heavy objects like limestone ringstones were likely prestige-related. In terms of the political economies of early urban societies like the Indus Civilization, the acquisition of “exotic goods must be seen in the same ways as the accumulation of grain or livestock” (Kenoyer 1991a: 345). Using wealth and influence gained by the control of those goods, individuals or groups governing a society could finance and reinforce institutions of rule. However, rulers that relied too heavily on such a “wealth finance system” (Earle 1991) might find their positions compromised by an interruption in the flow of exotic materials.

Harappans would have required many different kinds of *utilitarian* stone and metal implements in order to carry out innumerable common, day-to-day tasks associated with living and working in an urbanized society. Having reliable access to the resources needed to make them would have been a significant concern for those dwelling at settlements in the Indus Valley proper as there are few sources of stone in that region (there are none at all within 120 km of Harappa – discussed in Chapter 2). The need would have been particularly acute at Harappa itself, which was both a center for numerous craft industries and home to a large urban population. Agate nodules brought to the site from Gujarat (Chapter 8) could not have been transformed into beads with high prestige value unless a range of utilitarian stone was also available to make the different tools needed for chipping, perforating and grinding them. Enough surplus grain to support an urban population could be produced on alluvial plains that surrounded the city, but the heavy sandstone-quartzite querns and mullers needed to process it could be acquired only from geologic formations hundreds of kilometers away (Chapter 5). Monica Smith showed how the

demand for “ordinary goods” played a major role in the “development, success, and long-term viability of regional trade networks” during the Early Historic period of central India (Smith 1999: 109). The need for “ordinary” stone by people dwelling in the rock and mineral resource-poor Indus Valley probably had a similar influence on regional trade in that part of South Asia during the Bronze Age. Controlling utilitarian goods may have even been an important and, in ways, more stable (as compared to a wealth finance system) political-economic strategy for ruling elites in the ancient world (Aoyama 2001; D’Altroy and Earle 1985; Schwartz *et al.* 1999; Wright 1984). Had Harappan elites desired to control “ordinary” rock and mineral resources for their own benefit (i.e., to enhance their own wealth and influence), then the situation in the Indus Valley would have afforded them an opportunity to do that.

It was probably the case that those who governed Indus Civilization cities derived their power to do so, in part, through the control of both “exotic” and “ordinary” goods. However, with a few exceptions, I do not dwell too closely on either the prestige or utilitarian natures of the artifacts examined in this book. As previously stated, it is not my intent to focus on the particulars of how Harappans used rock and mineral resources in their political power strategies. Also, what constitutes a prestige good versus a utilitarian one is not always that clear or absolute (for a detailed discussion of this matter see Smith 1999: 113-114). For the purposes of what I am trying to accomplish, it is important to recognize that stone and metal goods of *both* natures were essential to the development and functioning of the Indus Civilization and its cities. Furthermore, at a settlement deep within the Indus Valley like Harappa, a rock or mineral artifact’s mere presence indicates that someone once decided that it was worth the time and effort to transport it (or worth the expense to acquire it after it had been transported) hundreds of kilometers to the site. In this regard, there are

no unimportant artifacts in this material category, in spite of how mundane some may seemingly be. It is for these reasons that I examine, in one way or another, every rock and mineral variety within Harappa's artifact assemblage. This all-inclusive approach reduces the need to draw sharp distinctions between prestige and utilitarian materials. Both were essential and both are examined. Most importantly, this approach provides the broad perspective required to thoroughly address this study's main question: With whom were the residents of Harappa interacting?

In the absence of historical accounts of trade or other forms of inter-regional interaction, geologic provenience analysis can provide compelling evidence that a link (however indirect) once existed between the ancient inhabitants of a region where a stone or metal artifact entered the archaeological record and those in the region where the raw material the artifact is composed of originated. The soundest provenience determinations are ones based on analyses of artifacts composed of unadulterated rock or mineral rather than processed metal, which could contain metal from multiple sources as well as various alloys and additives. With unadulterated stone, "specific types of raw materials can be related to an objective geologic reality that is derived from natural (as opposed to cultural) processes" (Odess 1998: 419). It is for this reason that the artifacts favored for analysis in this study were raw materials or manufacturing debris. Such artifacts were also favored because they were probably used and discarded during roughly the same period that they were originally acquired and, thus, are likely to represent contemporaneous links between different regions. Finished items (especially ornaments) might have been traded or passed down for decades or even centuries prior to entering the archaeological record.

Archaeologists around the world have used a wide variety of techniques and instrumentation in efforts to identify the geologic sources of an even wider

variety of stone and metal artifacts (Henderson 2000; Lambert 1997; Pollard and Heron 1996; Rapp 2002). In Chapter 3, the strategies and methods employed in this study are detailed in full. To date, over 2100 geologic provenience determinations for eight main varieties of stone or metal artifacts from Harappa have been generated along with nearly 120 for artifacts from twelve other sites. With this substantial new database on rock and mineral resource acquisition, it is possible to examine inter-regional interaction during the initial manifestation of urbanized society in South Asia in an unprecedented level of detail.

Although it is an extra-regional phenomenon, "urbanism plays itself out most visibly on the local" level (McIntosh 1999: 68). In northwestern South Asia, the site of Harappa is the optimal locale to study it. Harappa's stratigraphic sequence encompasses the development, existence and decline of the Indus Civilization and, because it was continuously a center for numerous craft industries from the time it was established, the abundant remains of rock and mineral resources are found at each stage of its existence. These remains, which have been documented by the Harappa Archaeological Research Project, constitute a dataset that is unparalleled in the region. In the next section, I introduce the site and the dataset.

HARAPPA

The focal point of this book is the archaeological site of Harappa, located in District Sahiwal, Punjab Province, Pakistan (Figure 1.3). In this section, I discuss the site's general location and layout; provide an overview of the archaeological investigations that have taken place there; introduce its rock and mineral assemblage, which is the primary dataset for this study; and review the site's chronological / cultural sequence in detail.

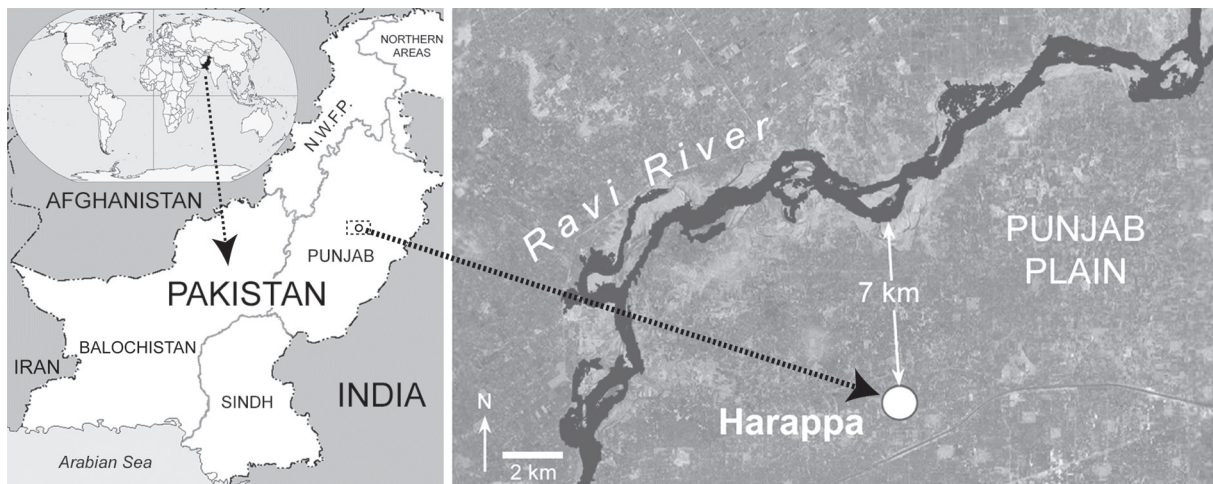


Figure 1.3 Harappa's location today (world map adapted from Wandrey and Law 1998).

GENERAL LOCATION AND LAYOUT

Harappa was founded upon an alluvial terrace in the center of the fertile but rock and mineral resource-deficient Punjab Plain of the upper Indus Basin around the mid-fourth millennium BC (full details relating to the site's geologic and geographic contexts are provided in Chapter 2). By the mid-third millennium BC, the settlement had grown to become one of the largest Indus Civilization cities – covering an area of perhaps 150 hectares (ha) at its greatest extent (Dales and Kenoyer 1989a: 72). At that time, the site consisted of several distinct habitation areas, the mounded remains of which rise as high as 17 meters above the surrounding plain (Figure 1.4). The modern town of Harappa sits atop one of these mounds in the northeast portion of the site. The Ravi River is presently situated seven kilometers to the north (Figure 1.3 *right*) but *may* have been closer in Harappan times. Marking the northern edge of Harappa is an abandoned channel of the Ravi (Figure 1.4), which fills with water during the summer monsoons (Belcher and Belcher 2000).

HISTORY OF DISCOVERY AND RESEARCH

The site of Harappa was “discovered” in 1829 when an antiquarian named Charles Masson camped near the remains of a “ruinous brick castle” while journeying through the Punjab (Masson 1844: 453).

Unfortunately Harappa's bricks also attracted the attention of British railroad engineers who, seeking a source of ballast in the stone-free Punjab Plain, systematically plundered them in the late 1850s for the building of the Lahore-to-Multan line (Possehl 1999: 51-52). This destroyed most of the site's post-1900 BC occupational strata and greatly disturbed much of that belonging to the Harappan Period (ca. 2600 to 1900 BC). In spite of the damage caused by “brick-robbing,” Sir Alexander Cunningham conducted the first limited excavation at Harappa in 1873 (Cunningham 1875). He also published a plan (*ibid.*: Plate XXXII) on which the different mounds and areas of the site were assigned letter designations that are still used today (hence mounds AB, E, ET and F on Figure 1.4). During the 1920s and 30s, large-scale excavations were undertaken by Rai Bahadur Daya Ram Sahni (1921, 1926, 1927) and Madho Sarup Vats (1933, 1935, 1936). These form the basis of the “site report” – Excavations at Harappa (Vats 1940). Although several follow-up digs took place over the next few decades, the results remain largely unpublished (Possehl 1991). Important exceptions are Rafique Mughal's excavations in the cemetery area (Mughal 1968) and Sir Mortimer Wheeler's single excavation season of 1946 (Wheeler 1947) during which he defined the walled “defenses” of Mound AB and, in a deep sounding, discovered a pre-Indus

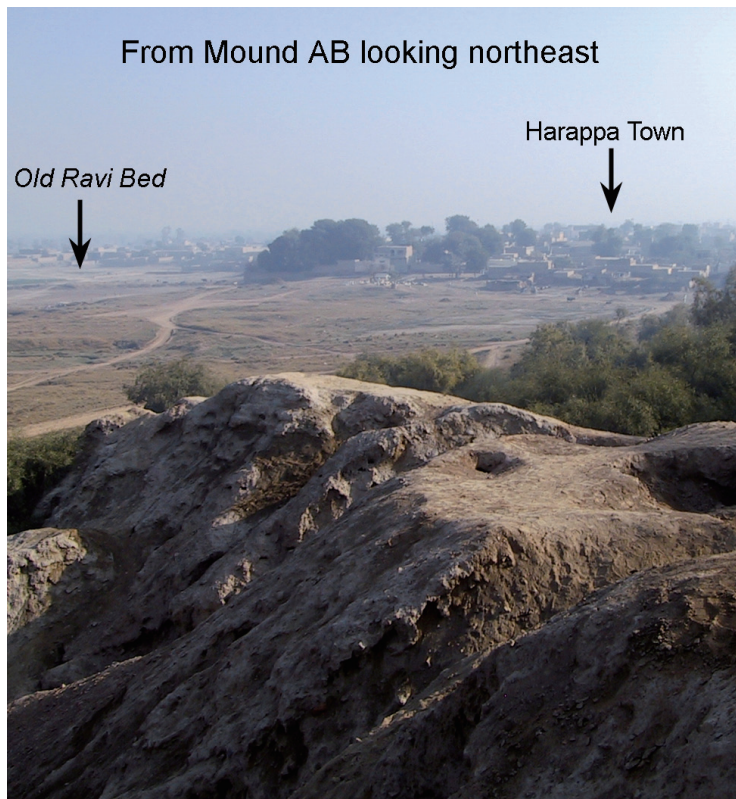
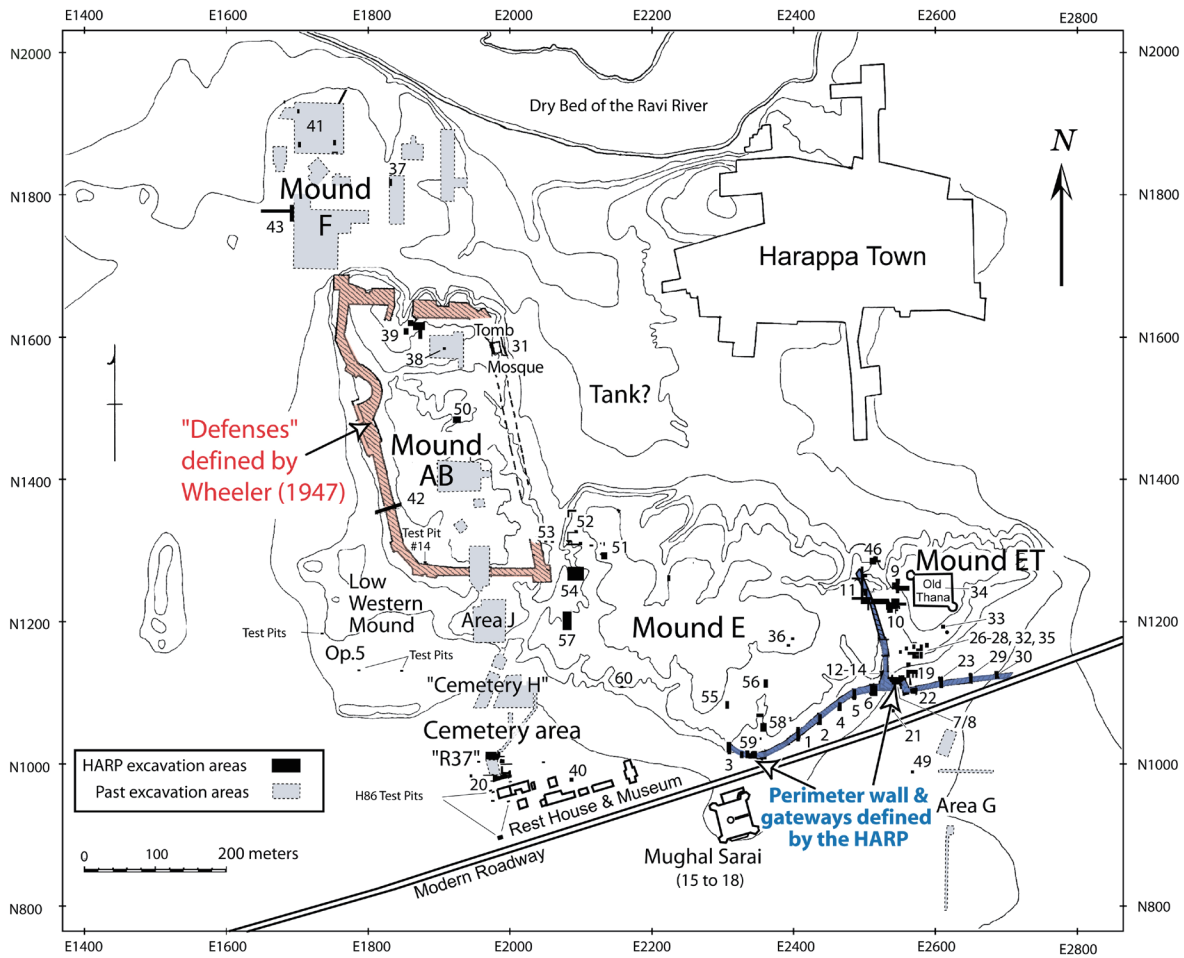


Figure 1.4 Harappa – site plan and views toward and from the mounds.

This and all subsequent site plans in the dissertation are modified from Meadow *et al.* 2001: Figure 2.

Civilization occupation at the site. The areas where excavations prior to 1986 took place are noted in gray on the site plan (Figure 1.4).

In collaboration with the Department of Archaeology and Museums, Government of Pakistan, a program of sustained excavation and research was initiated at Harappa in 1986 – first as a University of California-Berkeley Project under the direction of the late Prof. George Dales and Dr. J. Mark Kenoyer (Dales and Kenoyer 1986b, 1988, 1987, 1989b, 1990b) and then reorganized as the Harappa Archaeological Research Project (HARP) under the direction of Drs. Richard Meadow and J. Mark Kenoyer (Meadow and Kenoyer 1992, 1993; Meadow *et al* 1994, 1995, 1996, 1997, 1998, 1999, 2001). I hereafter use the acronym “HARP” when referring to the post-1986 excavation program. Marked in black on the site plan (Figure 1.4) and labeled by trench number are the HARP excavation areas.

One of the stated objectives of the HARP is the study of Harappa as a “discrete urban phenomenon” (Dales 1991: 1). Now, after 22 seasons of detailed, question-oriented excavation and research, a great deal is known about how the nature of this particular

settlement and the culture of the people living at it transformed over time. These transformations have been documented in the form of changes in site size, architecture, artifact types and artifact forms (Clark 2007; Meadow and Kenoyer 1997, 2001, 2005). Successive innovations in craft technologies have been detected (Kenoyer 1992, 1995b, 2005a; Kenoyer and Miller 2007; Miller 1999) as well as evidence for shifting strategies of faunal (Belcher 2003; Meadow 1991; Miller 2004) and plant exploitation (Weber 1999). Although as yet undeciphered, it is now possible to trace the development and changing uses of the Indus script at Harappa (Kenoyer 2006; Kenoyer and Meadow 1996). Collectively these studies provide a rich body of contextual information that can be used to inform research projects like this one, which should be considered as another aspect of the ongoing effort by the HARP to understand urbanism at Harappa and in ancient South Asia.

HARAPPA’S ROCK AND MINERAL ARTIFACT ASSEMBLAGE

Harappa was a center for many different kinds of craft activities involving stone or metal (Kenoyer 1992,



Figure 1.5 Surface survey on Mound E and some of the stone and metal artifacts recovered.

1995b, 2005a). To appreciate this one need only to walk across its mounds and look down toward one's feet. Numerous varieties of rocks and minerals (in the form of both finished items and production debris) are evident on the site's surface. They are gathered by the handful during surface surveys (Figure 1.5) and are equally abundant as underlying strata are exposed. By the end of the 2004 field season, some 56,350 stone or metal artifacts had been recovered and tabulated by the HARP. My aim has been to make full use of this immense dataset by examining it at multiple scales.

There are certain questions relating to how rock and mineral resources were used and controlled by residents of Harappa that can be addressed only by examining the assemblage on a very broad scale. For example: Was there, in fact, "hardly any major change in the types of raw materials used between the early and mature Harappan" periods as Chakrabarti (1998: 51) has posited? Were groups of Harappans dwelling in different habitation areas (mounds) acquiring the same basic suite of rock and mineral resources? The broad perspective needed to address these kinds of questions is achieved by treating the entire assemblage as a single entity that is made up of multiple "elements" (different rock and mineral varieties), which may or may not vary over space and time. This scale of examination is employed in Chapter 4, when all stone and metal artifacts at Harappa are categorized by material variety and their spatial and temporal distribution patterns are collectively observed. Provenience studies of specific

rock and mineral varieties, which are presented in chapters 5 through 12, constitute examinations of the dataset at finer scales. The summary of the individual provenience study results with assemblage spatial and temporal distribution data that is presented Chapter 13 represents a return to a broader scale.

This study is possible because of the well-planned excavation strategy of the original HARP directors who posed many of the same questions I am now investigating and saw to it that all stone and metal encountered during surveys and excavations were collected and contextual information for each individual item was meticulously recorded. When considered in relation to Harappa's increasingly well-understood chronological / cultural sequence (discussed next) this immense, well-documented dataset becomes a powerful tool for examining resource acquisition and inter-regional interaction over time.

HARAPPA'S CHRONOLOGICAL / CULTURAL SEQUENCE

Other Indus Civilization cities have been excavated but none have a chronological sequence that, being based on over 100 radiocarbon determinations (Meadow and Kenoyer 2005: 208-209), is as temporally secure as the one at Harappa. These ¹⁴C dates, in combination with a close adherence to the principles of stratigraphic excavation (Kenoyer 1992) and diachronic studies (Dales and Kenoyer 1991; Kenoyer and Meadow 1999, 2000;

Figure 1.6 Harappa periodization and chronology (after Meadow and Kenoyer 2001)

Period 1	Ravi (Early Harappa) Phase	> 3300 BC - ca.2800 BC
Period 2	Kot Diji (Early Harappa) Phase	ca.2800 BC - ca.2600 BC
Period 3A	Harappa Phase A	ca.2600 BC - ca.2450 BC
Period 3B	Harappa Phase B	ca.2450 BC - ca.2200 BC
Period 3C	Harappa Phase C	ca.2200 BC - ca.1900 BC
Period 4	Harappa/Late Harappa Transitional	ca.1900 BC - ca.1800 BC?
Period 5	Cemetery H (Late Harappa) Phase	ca.1800 BC? - <1300 BC

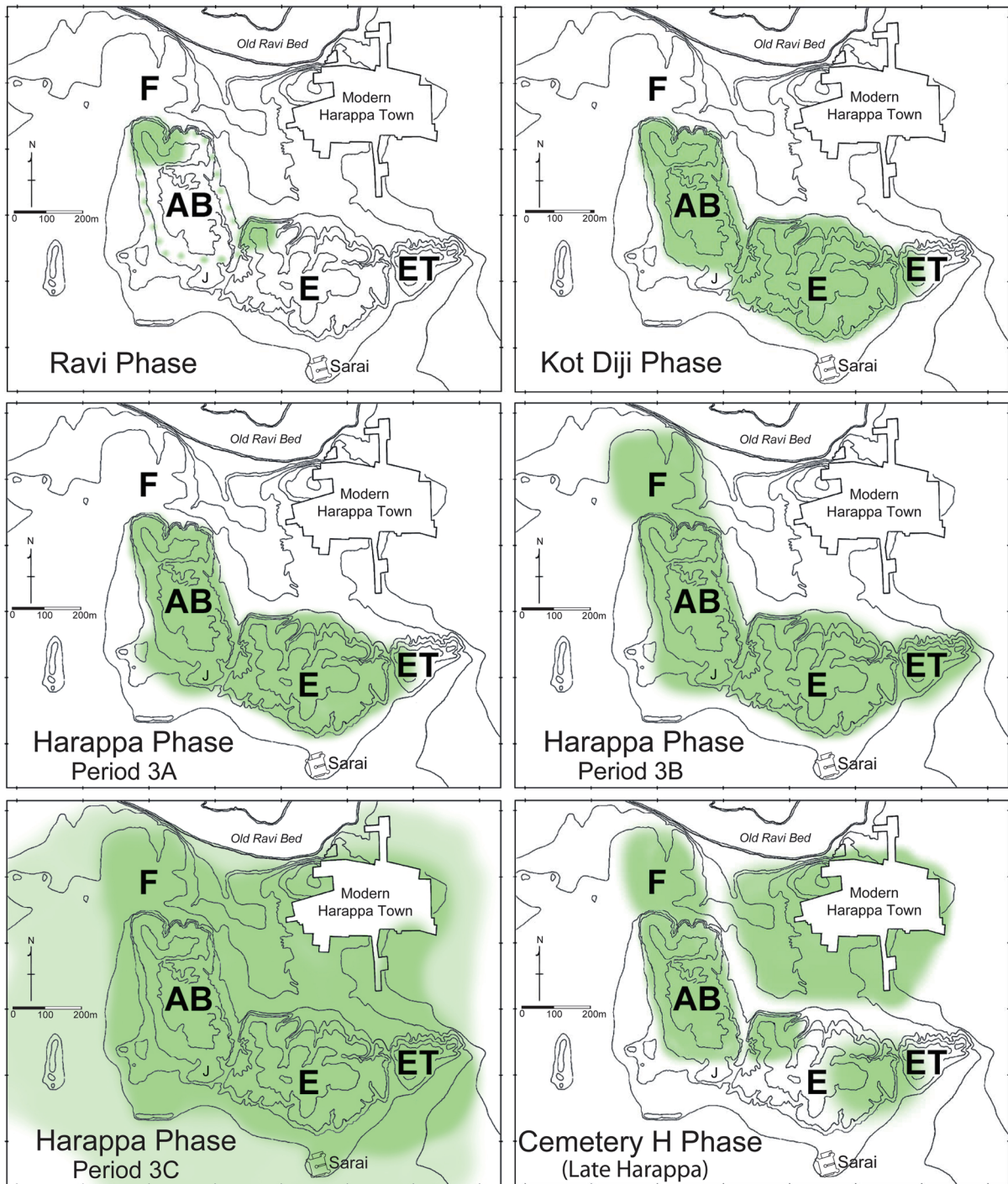


Figure 1.7 Settlement growth and decline at Harappa ca. 3300 to <1300 BC

Meadow and Kenoyer 1994, 1997, 2005, 2008) of architecture, artifact forms and material culture assemblages, have enabled HARP excavators to reconstruct the site's cultural history in great detail. Five main periods of pre/proto-historic occupation have now been delineated that extend roughly from the mid-fourth millennium BC to the mid-second millennium BC (Figure 1.6). This cultural sequence

encompasses the development, existence and later-stage transformations of the Indus Civilization. There are two *Early Harappan* (a chronological / cultural designation that are discussed below and in Chapter 2) phases – the pre-urban *Ravi Phase* (Period 1) and the incipient urban *Kot Diji Phase* (Period 2). These are followed by the fully urban *Harappa Phase* (Period 3 with sub-periods 3A, 3B and 3C). This period/phase

is equivalent to the extra-regional manifestation of the Indus Civilization and is often referred in the literature as the “Mature” Harappan Period. Here, however, I simply use the term “Harappan” when referring to this phase at the site and in the region. The protohistoric sequence closes with a short transitional phase (Period 4) and the late/post urban *Late Harappa Phase* (Period 5).

The settlement of Harappa underwent significant transformations in terms of size and organization during its two millennia-long protohistoric cultural sequence (Figure 1.7). In the sub-sections that follow, I outline these changes (refer to figures 1.3 and 1.6 as they are discussed) and review the cultural attributes characteristic of each the site’s phases and sub-phases. These overviews are intended to be site specific. In Chapter 2, I discuss in detail the regional and extra-regional cultural phases to which residents of Harappa belonged.

Ravi Phase – Period 1 (> 3300 BC - ca.2800 BC)

The initial occupation (Period 1) at Harappa has been designated the “Ravi” Phase by Kenoyer and Meadow (2000). It is presently known from Trench 39 on the northern end of Mound AB and from a very limited exposure in Trench 52 on the northwestern corner of Mound E. The earliest relevant ¹⁴C dates for this period “are not older than c. 3300 calBC” (Meadow and Kenoyer 2005: 209). These dates, however, were obtained from strata that, at the time, would have constituted the northern fringe of the settlement. It is, therefore, quite possible that earlier, more deeply buried levels exist toward the center of the site (ibid.), which is estimated to have been around seven to ten hectares in size (Kenoyer and Meadow 2000: 56). Two sub-periods/phases (1A & 1B) are defined based mainly on changes in ceramic technology that took place over the course of what appears to have been an uninterrupted cultural sequence. The polychrome ceramics used during the earlier part of the Ravi Phase (Period 1A) were all built

by hand. Wheel-thrown pots appeared and gradually increased in number during the latter portion of the phase (Period 1B), which merges into Period 2 at around 2800 BC. The transition from 1A to 1B is not well-demarcated stratigraphically. For this reason and because the total exposure for this period is very limited, the rock and mineral artifacts recovered from Ravi Phase levels are, for the purposes of this study, treated as a single, undivided sub-assembly.

Many cultural features that are hallmarks of the Indus Civilization were already present, at least in rudimentary form, at the Ravi Phase village of Harappa. For example, Ravi Harappans constructed their wattle and daub and mud-brick dwellings with walls that were oriented in the cardinal directions (Meadow and Kenoyer 2001: 22-23), just as later baked-brick architecture would be at this and other Indus Civilization sites. Many of the graphic symbols they inscribed on their ceramics appear to be precursors to the Indus script (Kenoyer and Meadow 1996; Meadow and Kenoyer 2008). Although we cannot be certain until more extensive excavations are conducted, the Ravi Phase village of Harappa already *may* have been organized into distinct habitation areas – Mound AB and Mound E (Kenoyer and Meadow 2000). Most significantly, certain Ravi Harappans were acquiring raw materials (marine shell and different varieties of stone) from very distant sources and, using complex craft technologies, transforming them at the site into items that signified wealth and social status (Kenoyer and Meadow 1999, 2001; Kenoyer 2005a).

Developments similar to the ones above probably took place at villages across northwestern South Asia during the fourth and first half of the third millennia BC. Rafique Mughal characterized the various regional cultures with such antecedent Indus Civilization traits as “Early Harappan” (Mughal 1990a). At Harappa, this apt designation is applied to the site’s first two cultural phases and to the period during which they existed.

Kot Diji Phase – Period 2 (ca.2800 BC to 2600 BC)

There is no discernible hiatus between Ravi Phase strata and that of the subsequent “Kot Diji” Phase (Period 2) in the two trenches (39 and 52) where they are both present. Ravi-type ceramics were gradually replaced by Kot Dijian forms (first defined at the site of Kot Diji in northern Sindh – Khan 1965) sometime around 2800 BC. There are a number of trenches in which Period 2 remains directly overlay natural soil, which indicates the settlement had expanded into new, previously unoccupied areas. Harappa was now clearly organized into two distinct mounds – AB and E. The latter included a portion of what would become Mound ET. The size of the occupation during this phase is estimated to have been greater than 25 ha (Meadow and Kenoyer 2001: 24).

The cultural entity that residents of Harappa belonged to during Period 2 – the “Kot Diji” culture, extended far beyond the site and its immediate hinterland of the Punjab Plain (discussed in Chapter 2). Many have argued that “Kot Dijian” society represents an incipient stage of urbanization in northwestern South Asia just prior to the emergence of the Indus Civilization (Allchin and Allchin 1997; Durrani *et al.* 1995b; Flam 1981; Meadow and Kenoyer 2001; Mughal 1990a). Discoveries made during HARP excavations of Period 2 levels at Harappa have lent support to those assertions (Meadow and Kenoyer 1999, 2001: 23-26, 2005, 2008). It is now known that the massive city walls surrounding mounds AB and E had their origins in the Kot Diji Phase. Early Harappan revetment walls, although smaller than later ones, were built using mud-bricks fashioned in roughly the same dimensions (1:2:3 or 1:2:4 ratio) that would become the standard for bricks across the Indus Civilization. These structures probably served a variety of purposes (Belcher and Belcher 2000: 705; Meadow and Kenoyer 1994: 468) including helping to stabilize architecture, demarcating social and/or administrative boundaries, and providing protection against aggressors (human

or animal) and seasonal flooding. Significantly, the construction of perimeter walls indicates that Kot Dijian Harappans had a concern for controlling access into their settlement. It also demonstrates that they had the ability to organize labor on the scale necessary to build and maintain monumental public works (Dales and Kenoyer 1992: 62). Emerging administrative sensibilities during this period are likewise suggested by the discovery of stamps seals and a standardized cubical stone weight – technologies indicative of the need to document ownership, assess value and facilitate transactions in an increasingly complex socio-economic setting. The use of an early form of the Indus script by Kot Dijian residents of Harappa points to advancements in communication while the diversification of specialized craft industries is thought to be “linked to the emergence of a more highly differentiated society” (Meadow and Kenoyer 2005: 211). The wide variety of non-local raw materials recovered in Kot Diji levels points to active long-distance exchange, which was no doubt facilitated by the advent of bullock cart transportation (Kenoyer 2004). Faunal studies (Belcher 1991, 1998, 2003) have revealed that the importation of salted fish from the Arabian Sea coast (over 800 km distant) began during this period. All of these discoveries paint a picture of a settlement and a society that was markedly more complex than it had been during the Ravi Phase. When they are considered in relation to developments taking place on the regional level (discussed in Chapter 2) and those evident in the site’s subsequent cultural phase (discussed next), a characterization of the Kot Diji Phase at Harappa as incipient urban is clearly appropriate.

Harappa Phase – Period 3 (2600 BC to 1900 BC)

In stratigraphic levels dating to around 2600 BC, ceramics and other artifacts characteristic of the Kot Diji phase underwent a “gradual transformation” into what is commonly thought of as the “Harappan” material culture assemblage of the Indus Civilization

(Meadow and Kenoyer 2001: 25). This transition marked the beginning of the fully urban “Harappa” Phase (Period 3) at Harappa. The first constructions using baked-bricks appeared at this time and there was a “strong continuity in architectural orientation between the earlier city walls of Period 2 and the massive city walls of Period 3” (Meadow and Kenoyer 2005: 224). At several excavated Indus Civilization sites in other regions such as Kot Diji in Sindh (Khan 1965), Nausharo in Balochistan (Jarrige 1989), Ghandi Umar Khan in the North-West Frontier Province or NWFP⁴⁾ (Ihsan Ali *personal communication* 2004) and Kalibangan in Rajasthan (Thapar 1973), there are apparent localized discontinuities (burnt or sterile layers) between the remains of Early Harappan and Harappan Period occupations. This likely indicates that, not surprisingly, the emergence of the Indus Civilization occurred in different ways in different parts of northwestern South Asia. At Harappa in the Punjab, however, it is clear that the cultural roots of the site’s Period 3 residents were local, emerging directly and without disruption from the preceding Kot Diji Phase.

The Indus Civilization existed for approximately 700 years. Although it exhibited a striking degree of diachronic continuity in terms of its general material culture attributes, this society underwent significant cultural developments during that time. At Harappa, these are evident as changes in site size, organization, architecture, artifact forms, motifs and technologies. Based on these documented developments and supported with ¹⁴C dates, three chronological sub-periods of the Harappa Phase have been defined: *Period 3A* from 2600 to 2450 BC; *Period 3B* from

2450 to 2200 BC; and *Period 3C* from 2200 to 1900 BC.

- *Period 3A*

Period 3A is the least well-understood of the Harappa Phase sub-periods due the fact that it is deeply buried. It has been possible to determine through deep soundings across the site that the area of occupation at this time remained more or less confined to mounds AB and E (Area J just south of Mound AB was *perhaps* also occupied by this time or soon after). The portion of mound E that during the Kot Diji Phase had extended short a way into what would later become mound ET was truncated by the massive city walls built during Period 3A over the smaller ones of Period 2 (Meadow and Kenoyer 1997). Although the “Harappan” material culture assemblage was fully developed at this time, many aspects of it (ceramics, seals, writing, figurines etc.) would continue to undergo stylistic and functional changes as Period 3 progressed. Toward the end of this sub-period, the city, or at least certain parts of it, endured a period of “decay and disrepair” (Kenoyer 1991b: 55). Excavations of 3A levels on the south side of Mound E revealed clogged sewer drains that had overflowed into the streets, the remains of discarded animal carcasses and a general deterioration of the city wall and gateway (*ibid.*).

- *Period 3B*

Period 3B appears to have been a time of significant renewal, growth and innovation at Harappa (Meadow and Kenoyer 2000: 337). The deteriorating architecture on the southern side of Mound E was rebuilt at the beginning of this sub-period (Meadow and Kenoyer 1997: 140) and at least two new habitation areas – Mound ET and Mound F, were incorporated into the settlement. Mound ET has been characterized as a “suburb” (Kenoyer 1998: 55) that grew directly east from Mound E. Around the beginning of Period 3B, the city wall of

4) On April 15th, 2010 the North-West Frontier Province was officially renamed Khyber-Pakhtunkhwa Province. Unfortunately, the maps prepared for this book could not be revised before it went to press. Therefore, for internal consistency, the name North-West Frontier Province and the initialism NWFP will be retained in the text.

E was extended to encircle ET and a gateway was constructed at the southern juncture of the two mounds (Meadow and Kenoyer 1997: 143). The habitation area designated Mound F was built upon the remains of Period 3A garbage debris that had been dumped into a depression left by the mining of clay to build the walls and houses of Mound AB, which lay directly to the south (Meadow and Kenoyer 2005: 211-212). The massive wall surrounding Mound F and the large structure built within its confines called the “granary” (although there is no real evidence that building served this purpose) were first constructed in Period 3B (Meadow and Kenoyer 2008). Coinciding with this period of urban renewal and expansion are communication innovations in the form of tiny (≈ 1 cm in length) steatite “seals” (tablets) incised with the Indus script and small (≈ 2 to 3 cm) molded faience and terracotta tablets bearing writing and ritual scenes (Meadow and Kenoyer 2000).

- Period 3C

Period 3C is the best studied of all the time periods at Harappa due to the fact that its extensive remains were made easily accessible when they were laid bare by brick-robbing activities. The most conspicuous and reliable material indicator of this sub-period is a distinctive type of ceramic known as a pointed-base goblet or “PBG.” These mass-produced and evidently disposable drinking vessels are found in enormous quantities in every area of the site. When examining the records of past excavations at Harappa (for which stratigraphic control was generally poor), it is possible to be fairly confident that levels equivalent to Period 3C (or later disturbed deposits) are being reported when PBGs are mentioned or appear on a plan or section drawing. HARP excavators have determined that two other artifact types – rectangular steatite seals bearing the Indus script only and glazed faience geometric seals, were also used exclusively during this sub-period (Meadow and Kenoyer 2001: 27). Artifacts associated with the Bactria-Margiana

Archaeological Complex (BMAC) of southern Central Asia likewise appear in the archaeological record at Harappa during Period 3C (Meadow 2002; Parpola 2005). The timing of these finds, which are both indicative of the cosmopolitan nature of the site and important evidence for long-distance interaction with cultures originating to the northwest of the Indus Valley region, is wholly consistent with the established BMAC chronology (Hiebert 1994).

Each major mound at Harappa was settled by Period 3C, including the one over which the modern town of Harappa is built. In addition, remains have been encountered during past excavations, HARP operations (trenches, test pits, corings) and modern construction projects (sewers, wells, roads) away from the mounds that indicate the settled area during this period extended well beyond the parts of the site that are visible above the alluvial plain. Trenches sunk by M.S. Vats (1940: Chapter V) in Area G south of Mound ET revealed fragmentary structures and burials in association with numerous PBGs. Period 3C remains were also encountered during HARP excavations beneath the Mughal Period (ca. 16th century AD) caravansarai, which is situated just south of Mound E’s southern gateway (Meadow and Kenoyer 1993: 14). The total area occupied during this sub-period is estimated to have been 150 ha or more (Dales and Kenoyer 1989a: 72).

Kenoyer hypothesized (1993: 186-187) that overcrowding during Period 3C may have led to “a breakdown of civic order” – at least in certain parts of the city. For example, the south side of Mound E was an active neighborhood at this time as indicated by extensive deposits filled with PBGs and numerous kinds of craft production debris. However, degrading architecture, construction re-using broken bricks, structures encroaching into public thoroughfares and clogged sewers point to a greatly diminished emphasis on civic maintenance (similar to that evident at the end of Period 3A) in this part of the city. In contrast, areas like Mound AB and Mound

F were comparatively well-maintained during Period 3C and, based on a number of material indicators, are thought to have been “inhabited by prosperous individuals” (Meadow and Kenoyer 2005: 212). Such diachronic fluctuations and synchronic disparities in the relative prosperity of different neighborhoods (zones, quarters, barrios, etc.) are typical of long-lived urban centers. Even so, the overcrowding and lack of civic control evident at Harappa during Period 3C, while not yet site-wide phenomena, may have been harbingers of things to come.

Transitional and Late Harappa Phases – Periods 4 & 5 (1900 BC to <1300 BC)

South Asia’s first era of urbanization gradually began to come to an end around 1900 BC. For reasons not yet entirely understood, but which probably relate in some part to changes in river courses and a general demographic shift eastward (Possehl 1997c), the interaction networks that had culturally and economically integrated peoples across the Greater Indus region for seven hundred years diminished and several localized “Late Harappan” cultures emerged (discussed in Chapter 2). In the upper Indus Valley, the Late Harappan Period is represented by the “Cemetery H” culture. At Harappa, where it was first defined (Vats 1940: Chapter IV), this cultural phase is designated as Period 5 and seems to have been “firmly established” by 1700 BC (Meadow and Kenoyer 2005: 209). A transitional phase (Period 4) between the Harappa and the Cemetery H phases has been designated but is not well-defined temporally due to the poorly preserved nature of post-Period 3C deposits. However, excavations in the areas where small amounts of undisturbed strata from periods 4 and 5 remain (Trench 43 on Mound F and Trench 38 on Mound AB) seem to indicate that the transition did not involve the abandonment, invasion or destruction of the city. In fact, important continuities are evident. Many established architectural and craft traditions

continue through the last two periods (Kenoyer 2005b) and there are indications that users of “Late Harappan style pottery were living together with people using Harappan style pottery during the Period 4 transition” (Meadow and Kenoyer 2001: 34). Most significantly, the skeletal remains of Cemetery H Phase Harappans show “clear biological affinities with the earlier residents of Harappa” (Kennedy 2000: 312).

Continuities notwithstanding, the Late Harappa Phase represented a dramatic cultural transformation at Harappa (Kenoyer 2005b). Very different burial practices and new highly distinctive artifact styles and iconography are associated with the Cemetery H culture. The shell-working industry at the site seems to have come to an end (possibly due to the break down of long-distance trade routes to the south) while early glass-making technology and new innovations in bead-drilling appeared (ibid.). Barley became the dominant cereal crop (whereas wheat had been dominant in the Harappa Phase) and there was a large increase in the use of summer-cropped plants during the Late Harappan Period (Weber 1999, 2003). The need for the communication and administrative technologies such as the Indus script, cubical stone weights and stamp seals appears to have ceased despite indications that the site remained densely populated (Kenoyer 2005b). Judging by the distribution of Cemetery H ceramics on the site’s surface and test pits made in the vicinity of Harappa town, it is estimated that an area up to 100 ha may have been occupied during Period 5. A terminal date for this phase at Harappa is, again because of the brick-robbing, difficult to estimate but it was most likely prior to 1300 BC (ibid.).

Because the total excavated area for periods 4 and 5 is so small (even more so than for Period 1), the rock and mineral artifacts recovered from these levels are treated as a single chronological sub-assemblage (Period 4/5) for the purposes of this study.

NON-HABITATION AREAS AT HARAPPA

I conclude this introduction to Harappa with a few brief remarks regarding areas of the site that were not inhabited. Nearly 7% of the rock and mineral artifacts recovered during HARP excavations and surface surveys came from such contexts.

An extensive cemetery area is located in the southwest corner of the site. A series of Late Harappan Period pot burials and graves were excavated in “Area H” (hence Cemetery H), immediately to the south of Mound AB and Area J (Vats 1940). Farther to the south is another group of interments in an area designated “R37.” This Harappa Phase cemetery was the focus of HARP excavations during the late 1980s (Dales and Kenoyer 1989a) and several of the stone and metal artifacts that are the subjects of detailed geologic provenience studies are well-dated burial items associated with individuals in these graves.

A great deal of rock and mineral debris has been recovered from areas surrounding the site where Harappans dumped their garbage. One of the most extensive of these areas is known as the “Low Western” Mound, just off the southwest corner of Mound AB. Test pits sunk to natural soil there encountered no structures – only Harappa Phase refuse (Dales 1991: 187, 190). Nearby, a thick layer of Period 3C dump debris overlies Cemetery R37.

Although no artifacts have been recovered there, it is important to note the broad, flat, featureless area at the center of Harappa, which *may* be where a large water tank/reservoir (now filled in) was located (Kenoyer *personal communication*). Such water management structures have a long history in South Asia (Whitcombe 1982), going back as far as the Harappan Period at the sites of Dholavira (Bisht 2005) and Lothal (Leshnik 1968).

In the next section, I outline the three lines of inquiry pursued in this book.

THREE LINES OF INQUIRY

This research project was designed to shed light on the inter-regional relationships that residents of Harappa engaged in during the urban transformation of their settlement and society by identifying the geologic sources of the rock and mineral resources that they acquired. Provenience determinations, generated through both broad and fine-scale analyses of the site’s stone and metal artifact assemblage and periodized with reference to the detailed chronological sequence presented in the previous section, are used to inform three lines of inquiry. The first two concern identifying the Harappans’ inter-regional interaction/acquisition networks, defining their extent and tracking them through time. The third involves elucidating synchronic variations in those networks at the local or site level.

FIRST LINE OF INQUIRY:

HARAPPAN INTERACTION/ACQUISITION NETWORKS AND THEIR EXTENT

There has been a great deal of speculation (which I review in upcoming chapters) regarding where it was that Indus Civilization peoples, their Early Harappan predecessors and Late Harappan successors obtained rock and mineral resources; who they came into contact with as a consequence; and the overall scope of those inter-regional trade activities. These issues constitute this study’s first line of inquiry, which asks: *With whom in the Greater Indus region or beyond were the residents of Harappa interacting (directly or indirectly) when they acquired rock and mineral resources? What was the extent of those inter-regional relationships/resource acquisition networks during different periods in time?*

Much of this study rests on one assumption – that the acquisition of rock and mineral resources by residents of Harappa would have entailed either direct or indirect *interaction* with peoples dwelling in the regions from which such resources came. Stated

another way, it is considered to be highly unlikely that Harappans (or whoever was supplying them or supplying their suppliers) traveled into a region, obtained a resource and then left without having had any contact whatsoever with local populations. Although this seems almost self-evident, it is an assumption that needs to be declared at the outset. It is recognized that, like the issues of domination and the control of raw materials within source areas, actual face-to-face contacts between different individuals or groups in regions outside of Harappa cannot themselves be positively confirmed using the type of data produced for this study. Nevertheless, **residents of Harappa will be said to have had interacted with the peoples of a particular geographic region when the material (rock or mineral) composing a stone or metal artifact excavated at the site is determined, through one of the methods outlined in Chapter 3, to have most likely been derived from a source in that region.** This does not necessarily mean that site residents met or even had knowledge of peoples living in all source areas – only that they “interacted” with them through the transfer of material goods.

The avenues through which the stone and metal artifacts examined in this study came to Harappa will be called *acquisition networks*. The term “acquisition,” as it is used here, is meant only to indicate that someone at the site *gained possession of* (acquired) a raw material or finished item at some point in time prior to it entering the archaeological record there. Acquisition may have occurred as “direct contact trade” between residents of Harappa and the peoples of a region where an artifact originated or as “indirect exchange” involving one or more (perhaps many more) intermediary groups (Lamberg-Karlovsky 1972; see also Renfrew and Bahn 1996: 352 for variations on those forms). The manner in which a stone or metal artifact was moved from Point “A” (source) to Point “Z” (Harappa), the places it passed through along the way (points “B” through “Y”) and the number of groups that were involved in the process is not

determinable through provenience studies. What can be determined (with varying degrees of confidence and geographic precision) is the location of Point “A.” That information enables us to infer *who* (which regional cultural phase) was most likely present at a rock or mineral acquisition network’s point of origin.

As this study proceeds, it will be shown that, in some cases, the cultural phase associated with an acquisition network’s point of origin is the same one to which residents of Harappa belonged (i.e., Ravi, Kot Dijian, Harappan or Cemetery H depending on the period). In other cases, it is a different Early Harappan phase or a non-Harappan phase. Still in other cases, the source of an artifact is determined to be located in an area where no archaeological remains contemporaneous to those at Harappa have yet been identified. When all such instances are considered for each of Harappa’s chronological phases individually (as they are in Chapter 13), a series of detailed “pictures” of rock and mineral acquisition patterns emerge (Figures 13.2 through 13.7) that approximate the *extent* of its resident’s inter-regional relationships at different periods in time. These synchronic pictures, although “Harappa-centric” (a feature mitigated somewhat by limited provenience data from other sites – Figure 13.8) and not necessarily representative of the full scope of interaction, can be used to examine general suppositions about culture contact and long-distance trade in northwestern South Asia during the late prehistoric period.

For example, it has been argued that Indus Civilization peoples, their predecessors and their successors had cultural connections and/or trade relationships with groups in various regions surrounding the Indus Valley such as (but not limited to) the highlands of Balochistan (Fairservis 1975; Kakar 2002), the Subcontinent’s mountainous north (Allchin 1984; Stacul 1985) and parts of Rajasthan (Agrawala and Kumar 1982; Hooja 1994; Misra 1995). The synchronic pictures of rock and mineral acquisition generated in this study indicate that

Harappan connections/relations with peoples in some regions, especially those to the north of the Indus Valley, were stronger than is generally supposed. They also suggest that ties to other regions, notably Rajasthan, *may* have been less significant than previously thought.

Another issue to be examined concerns the extent to which rock and mineral resource acquisition networks were *internal* or *external* (designations discussed on pp. 40-42; see also Kenoyer 1991a: 358-361) to Harappan society. Some scholars feel that external trade with western Asia, in particular Mesopotamia, was a significant factor in the development of urban lifeways in the Greater Indus region (Asthana 1976; Possehl 1990; Ratnagar 2004). Others have argued that nearly all of the raw materials found at Harappan sites could have been acquired through internal networks and that the role of external trade in that regard has been overstated (Chakrabarti 1990; Lahiri 1990; Shaffer 1982). Still others argue that while the Indus Civilization was a product of indigenous developments, “once the urban phenomenon was established, external trade was a critical factor to the internal controls that maintained the Indus structure” (Kenoyer 1991a: 361). When the pictures of the full extent of rock and mineral acquisition are examined in Chapter 13, it is evident that, during all periods, some materials came from sources beyond the Greater Indus region. However, nearly all such sources were in areas directly adjacent to that region. So while it can be said that external trade for rock and mineral resources was a constant feature at Harappa, there is no clear evidence, at present, indicating that acquisition networks extended to western Asia.

Finally, one of the most interesting and potentially important outcomes of this first line of inquiry involves what it reveals about regions for which the prehistoric period is, at present, poorly understood. As previously mentioned (p. 25), it will sometimes be the case that the point of origin

(source) for a particular rock or mineral acquisition network is determined to be located in an area, such as the Hazara District of the NWFP, where no archaeological remains (Harappan or otherwise) contemporaneous to those at Harappa have yet been identified. That, of course, does not mean that the area surrounding the source was uninhabited. There are many parts of northwestern South Asia that have not been surveyed in detail or even at all. Moreover, sites in some regions may have been entirely lost to cultural and, especially in the tectonically active mountains of the northern Subcontinent, environmental processes. The only evidence that people were present in (or at least periodically visited) such areas during the Harappan Period might end up coming from studies such as this one. Knowledge of the extent of Harappan rock and mineral acquisition networks could allow us to “fill in the gaps” so to speak.

An issue that comes up repeatedly throughout this book concerns the problem of Shortughai – the previously discussed (p. 10) Harappan outpost in northern Afghanistan. At present, there are no other known Indus Civilization sites located between Shortughai and Musa Khel, which is the next nearest Harappan settlement located 550 km to its southeast on the northern edge of the Punjab Plain. Traveling to and from northern Afghanistan would have necessitated that Harappans either go through or around the Hindu Kush. Until now, there have been few indications as to which of the many possible routes (Chakrabarti 1990: 117-131; Channing 1885; Dale 1994: 46-55; Thomas and Knox 1994: 91-94; Markham 1879) they might have taken. However, if provenience determinations made for raw materials such as steatite (Chapter 7), vesuvianite-grossular (Chapter 9) and alabaster (Chapter 10) from Harappa and other Indus sites are indicative of the regions from which Harappans were accessing resources along the way, then some routes may have passed through what today is Pakistan’s North-West Frontier Province (Appendix 13.1).

SECOND LINE OF INQUIRY:

DIACHRONIC CHANGES IN INTERACTION/ ACQUISITION PATTERNS

Questions in the second line of inquiry ask: *How did the patterns of inter-regional interaction/acquisition exhibited by residents of Harappa change over time?*

The diachronic perspective necessary to address them is generated when the multiple synchronic pictures of Harappan rock and mineral acquisition produced for the first line of inquiry are regarded simultaneously. In Chapter 2, I present an overview of the culture phases that existed across northwestern South Asia from the early fourth through mid-second millennium BC. That, along with Harappa's own cultural sequence, provides the backdrop against which any evident diachronic changes (or lack thereof) in its resident's acquisition patterns are examined and, in Chapter 13, interpreted. Two ancillary queries related to changes in rock and mineral use and acquisition over time at Harappa are also outlined in this section.

Over the period of time (early third through mid-second millennium BC) that urban lifeways first emerged, existed and then waned in northwestern South Asia, the culture phase that residents of Harappa belonged to variously expanded, contracted, coalesced with other phases, split apart and shifted across the landscape (see Figure 2.6 on p. 41 for a series of maps depicting these changes). Several questions relating to those societal and geographic transformations are taken up in the second, diachronic line of inquiry. To begin with: Did the Harappan's rock and mineral acquisition networks expand from the pre-urban Ravi Phase (Period 1), which currently appears to have been confined to the western Punjab, to the incipient urban Kot Diji Phase (Period 2), which extended approximately 1000 km from Sindh in the south to the Himalayan foothills in the north? Similarly, as the various regional pre/incipient urban Early Harappan culture phases coalesced into the Indus Civilization starting at around 2600 BC, did stone and metal artifacts from new sources reflecting

the extra-regional scope of that urbanized society's internal interaction networks begin to appear in Harappa's assemblage? When the cultural horizons of site resident contracted (apparently) from regions to the north of the Indus Valley around that same time did their rock and mineral acquisition networks follow suit? Were acquisition patterns uniform throughout the urban phase (Period 3) at Harappa or did changes in their direction and extent occur during that long (≈ 700 years) period? Did a shift in the Harappan's acquisition networks accompany the dissolution of the Indus Civilization (ca. 1900 BC) and the eastward demographic movement of the Late Harappan Cemetery H culture phase?

Affirmative answers to some of the above questions will serve to support current views of inter-regional interaction and cultural development during South Asia's first period of urbanization. That is, some of the provenience data from Harappa provide new details that corroborate the sequence of extra-regional developments that scholars have previously defined through studies of settlement patterns, material culture affinities and other types of long-distance trade (the sequence and the studies are reviewed in Chapter 2). For example, steatite and lead artifacts attributable to sources in the southern Balochistan region first appear at Harappa in levels dating to the site's urban phase (Period 3). This finding corresponds well with the established extra-regional sequence. The Early Harappan phases that residents of Harappa belonged to during periods 1 and 2 did not extend into southern Balochistan. It was not until Period 3 at Harappa that Indus Civilization peoples were present in that region at sites like Balakot and Bakkar Buthi and, presumably, had first-hand access to raw materials occurring there. The appearance at Harappa in Period 3 of steatite and lead from southern Balochistan sources is no doubt indicative of the extensive internal trade networks that had emerged by the Integration Era of the Indus Tradition⁵.

Negative answers to some of the questions posed

in this diachronic line of inquiry are also highly informative. For instance, the Early Harappan phase that Harappa's residents belonged to during Period 2 – the Kot Diji Phase, extended north across the Salt Range to the foothills of the Himalayas. Resources attributable to sources in those highland areas dominate the site's rock and mineral assemblage from that time. During the subsequent urban phase (Period 3 at Harappa), no Indus Civilization settlements (save for distant Shortughai) have been found beyond the Salt Range, which creates the impression that Harappan interaction with previously occupied regions in the north diminished or ceased entirely. However, the diachronic picture of rock and mineral acquisition generated for this study suggests otherwise as the networks bringing stone and metal resources to Harappa from northern sources evidently continued unabated throughout the urban phase. Among the many implications of these findings (discussed in Chapter 13) is the possibility that there are undiscovered Harappan settlements in the north and/or that a "Late" Kot Diji Phase continued in that region concurrent with the Indus Civilization.

Two ancillary queries concerning diachronic changes

Two ancillary queries – one related to diachronic changes in the overall composition of Harappa's rock and mineral assemblage and the other to changes in the acquisition and use of heavy or *bulk* stone goods – are examined at appropriate points in this book.

- Diachronic changes in assemblage composition

Firstly, I evaluate the assertion by Dilip Chakrabarti (1998: 51) that, despite a marked intensification in craft specialization between the Early Harappan and Harappan periods in the Greater Indus region, there was "hardly any major change" in the types of raw materials used during those times. Is this characterization correct? At the outset of

this project I thought perhaps it was not. It seemed reasonable to think that, because of the substantially larger geographic area encompassed by the Indus Civilization (as compared to the various Early Harappan societies) and its clear links to regions outside of South Asia such as Oman (Cleuziou 1992), consumers during the Harappan Period may well have had a wider variety of raw materials types available to them. Moreover, the development of new craft technologies during that period might have permitted some previously unusable types of raw materials to be exploited. A diachronic examination of the composition of Harappa's rock and mineral assemblage, which was fully inventoried and periodized for this study (Chapter 4), offered a good opportunity to test Chakrabarti's assertion. As it turns out, the basic suite of raw materials that was used at the site does appear to have been largely the same during both the Early Harappan and Harappan phases. Most (but not all) discrepancies between the phases can be attributed to the lower probability of recovering less abundant rock and mineral varieties in earlier, less extensively excavated levels.

- Diachronic changes in the acquisition and use of bulk stone goods

I have termed the largest and heaviest objects at Harappa *bulk* stone goods. By diachronically querying the record of where such goods were acquired and when certain varieties of them were used, it has been possible to examine emerging transportation capabilities and observe the appearance of what could be interpreted as a new expression of social status.

The vast majority ($\approx 95\%$) of stone and metal artifacts recovered at Harappa are small in size and light in weight. Most weigh between a few milligrams up to a few hundred grams. Even though nearly all such artifacts probably first came to the site as part of larger, heavier pieces of raw material (unworked stones, roughouts or ingots) it is unlikely that the original pieces themselves weighed more than a few

5) see definitions and descriptions on pp. 37 & 45-47.

kilograms. There were doubtlessly some exceptions. Several very large chert flakes and cores (see Figure 6.33 and 6.34) have been recovered at Harappa that suggest heavy (perhaps up to 30 kg) chert nodules may have sometimes been transported to the site in whole or minimally reduced form. Of course, it is impossible to say with certainty that this was the case until at least one example is recovered. For this study, artifacts designated as bulk stone goods (\approx 5% of the assemblage) were those that weighed from one to 150 kilograms or are smaller fragments that were unquestionably once part of objects of that weight. With very few exceptions, such artifacts are either grindingstones (querns and mullers) or large-sized limestone objects such as ringstones.

The very largest bulk stone artifacts at Harappa do not even closely approach the weights of some of the monumental stones that were quarried and moved by other ancient societies (see Heizer 1966 for examples). Nevertheless, getting them to the site, which is hundreds of kilometers from any source, would have required, as compared to smaller varieties of stone, a significant expenditure of energy and specialized transportation capabilities. Of course, moving individual, heavy loads made up of many of smaller stones – say 20 kg bags of agate nodules – would have also required those things. However, because they were dispersed, it is impossible to know (without written records) exactly how heavy were there single shipments of small-sized raw materials actually. In contrast, the sandstone from which a 20 kg quern was fashioned clearly could have weighed no less than 20 kg when it was conveyed to Harappa. This is the unique feature of bulk stones. Although it is hard to quantify, some degree of expense/value can be confidently associated with even the most mundane of such goods because of their weight and the difficulty inherent in moving them.

By focusing on factors of weight/size and distance/direction to sources, it was possible to diachronically query the records of the two main

types of bulk stone goods at Harappa. In Chapter 5, I argue that the trend away from the acquisition of querns and mullers from relatively nearby occurrences of poor quality stone toward more distant sources of higher quality material is due, in part, to the advent of new technologies (i.e., wheeled transport) that facilitated the long-distance transportation of heavy bulk goods. In Chapter 11, I tentatively interpret the finding that non-utilitarian bulk-sized limestone objects (some weighing over 100 kg from sources over 800 km away) were used only during latter part of urban phase to reflect a new development in the way that certain Harappans expressed their social status through the consumption and display of stone.

THIRD LINE OF INQUIRY:

SITE-WISE SYNCHRONIC VARIATIONS

Earlier (pp. 7-8) I discussed Kenoyer's thesis (2000) that those groups who ruled Indus Civilization cities acquired and maintained their power to do so, in part, by controlling essential raw materials as well as the manufacture and distribution of status-defining items. Kenoyer argued (ibid.: 89-90) that extensive inter-regional interaction networks in combination with the wide distribution and multiple occurrences of essential resources across northwestern South Asia "stimulated economic competition and more complex economic and political interaction between the early village communities" of the ancient Indus Valley. Economic power and political authority, rather than being concentrated in a single individual, institution or community, instead came to be distributed among multiple groups of competing elites. By the urban phase this was reflected in the segregated layout of Indus Civilization cities. The multiple walled and gated areas at settlements like Harappa and Mohenjo-daro are thought to have been "centers of power" where competing elites not only dwelled but also controlled access to valuable resources and the production/distribution of the wealth and status-defining items made from them (Kenoyer 1997a:

69). It is these issues – competition and the control of essential rock and mineral resources, which are the focus of this study’s third line of inquiry: *Did synchronic variations in patterns of rock and mineral resource acquisition and use exist between groups of people living in different habitation areas at Harappa?*

The expectations are fairly straightforward. If the major mounds at Harappa (recall Figure 1.4) were inhabited by separate communities which were ruled by elites actively competing with one another through the control of essential resources and goods, then synchronic variations in the material variety and/or geologic provenience composition of the site’s rock and mineral artifact assemblage *might* be observable. For example, if it is determined that a specific material variety was used only (or mainly) on a particular mound, then this could be construed as evidence that the inhabitants/rulers of that mound closely controlled access to that material. Similarly, if it is found that communities on different mounds were utilizing the same variety of rock or mineral but from different geologic sources, then this could be viewed as evidence for competition between the elites who presumably controlled the raw materials coming into those areas.

Ultimately, phase-by-phase synchronic assessments of Harappa’s rock and mineral assemblage revealed both striking similarities and some notable differences among its mounded areas. Overall, it appears that, during all periods, Harappans living and working in different parts of the site had access to and were acquiring raw materials and/or finished goods derived from the same geologic sources. The two biggest exceptions are for vesuvianite-grossular and “Ernestite,” which appear to have been almost exclusively used by Harappans dwelling on mounds E and ET.

CHAPTER CONCLUSION: AN OUTLINE OF THIS BOOK

In this introductory chapter I have presented the principal research objective, the general background to the Indus Civilization; a discussion of theoretical orientation, a review of Harappa’s cultural/chronological sequence and an outline of the three lines of inquiry pursued in this study. In Chapter 2, the site of Harappa is placed into its geographic, geologic and ancient temporal-cultural contexts within the Greater Indus region. In Chapter 3, the various research strategies and methods that have been employed in this research are discussed. In Chapter 4, the 56,350 rock and mineral artifacts that have been recovered from Harappa to date are categorized, periodized and quantified. Then, over the next eight chapters, approximately 3000 of those artifacts representing eight main material varieties are subjected to geologic provenience analysis using one (or more) of the methods described in Chapter 3. I begin with a complete analysis of Harappa’s grindingstone assemblage (Chapter 5) and then move on to geologic provenience studies of judiciously selected samples from the assemblages of chert (Chapter 6), steatite (Chapter 7), agate (Chapter 8), vesuvianite-grossular garnet (Chapter 9), alabaster (Chapter 10), limestone (Chapter 11) and various metals (Chapter 12). In the end, specific provenience determinations (a source or source area in defined geographic space) were made for 2170 artifacts from Harappa and 119 artifacts from other sites. These data are summarized in Chapter 13, brought to bear on the three lines of inquiry outlined in this chapter, and the implications of the answer to those inquiries are discussed. Brief concluding remarks including thoughts for future studies are presented in Chapter 14.