

## *Associations and Ideologies in the Locations of Urban Craft Production at Harappa, Pakistan (Indus Civilization)*

Heather M.-L. Miller  
University of Toronto

### ABSTRACT

A number of factors can affect spatial associations among production areas for different crafts. Surprisingly, survey and excavation of craft production areas from the Harappan Phase (2600–1900 calibrated B.C.) at the Indus urban site of Harappa have revealed no evidence that production locations were related to control by nonproducers. Instead, the distributional groupings of craft production areas were at least partially related to similarities in manufacturing processes. The three craft categories were extractive-reductive crafts such as lithic- and shell-working, pyrotechnologically transformative crafts such as metal and pottery production, and bridging crafts like talc/steatite and faience production that have both reductive and high heating stages. The patterns of association may relate to knowledge relationships between the producers or to requirements of manufacturing. Other factors in production location may have been Harappan views of what constituted distinct crafts, the value of the goods produced, and the likely consumers. A further factor, hinted at by the location of production areas on the various mounds of Harappa, may have been Indus ideological beliefs about civic structure and the proper placement of manufacturing within city centers.

*Keywords:* city, technology, survey, control, South Asia

Archaeologists have had considerable success in using the locations of craft-working areas as a source of information about control of craft production by nonproducers for economic gain or as a source of prestige items (see Brumfiel and Earle 1987; Costin 1991 for summaries). The usual assumption is that production locations concentrated in a few areas near elite or government buildings likely reflect control of production by elites or by the ruling political power. Production locations widely dispersed across a settlement or landscape, particularly if composed of small-scale production, are usually seen as evidence for independent producers not controlled by social or political powers. Of course, many exceptions and refinements to this correlation

between concentration, location, and control of production have been discussed in the literature (e.g., Costin 1991; Stein 1998; Tosi and Vidale 1990). Costin (this volume) cautions us again that we must refer to attached and independent *situations* of production, not attached and independent *producers*, since individual producers can work in both situations, a point that has been emphasized in ethnoarchaeological work in India by Bhan, Kenoyer, and Vidale (Bhan et al. 1994; Kenoyer et al. 1991, 1994) and the team led by Roux (Roux 2000). However, the examination of this relationship—the relationship between location and control of production by nonproducers—is still the main use of location of production by archaeologists, within the Indus as elsewhere (see

Blackman and Vidale 1992; Kenoyer 1992; Tosi and Vidale 1990; Vidale 1989a, 2000; Wright 1991, 1993 for Harappan Phase examples).

Locational data can be applied to many other questions about craft production besides control of production by non-producers. For example, I employ large-scale locational data from the Indus urban site of Harappa to address two quite different social and ideological topics that are central to this collection of essays. First, I examine the spatial associations between different crafts, looking for possible relationships between different crafts and craftspeople. As part of this process, I discuss ways of grouping crafts according to their technological processes. Second, I discuss possible ideological aspects of the location of production areas, as part of Harappan Phase conceptions of civic structure. Throughout, I have provided abundant citations to give readers access to the widely scattered literature on Indus civilization craft production.<sup>1</sup>

My focal point in this examination of production location is the craftspeople who worked in these locations—the producers themselves. I would like to know more about the relationships *between* craftspeople, as well as their relations with consumers, managers, and other nonproducers. I have focused on crafts in the urban cores of the Indus civilization not only because these working areas were the most likely to have been controlled by elites but also because these craftspeople were the most likely to be in frequent contact with other producers, as per Costin's (1991) "concentration of production" category. In addition, I am interested in how production fit into the Indus peoples' use of the physical space within the dense city cores as a clue to the social and ideational space occupied by craft production and craft producers. All of this information would be helpful in understanding how production of the Harappan Phase cultural style was maintained, encouraged, or regimented across this large area and long time period.

### Background and Data Sources

The Harappan Phase of the Indus Valley Tradition was located in what is now Pakistan and northwest India during the third millennium B.C.E., from about 2600 to 1900 B.C. (calibrated) (Shaffer 1992). Sites with Harappan Phase material culture and civic planning styles covered an enormous region that was larger than contemporaneous civilizations in Mesopotamia and Egypt combined, with some 600 kilometers between the two best-known cities of Harappa and Mohenjo-daro. The Harappan Phase (also known as the "Mature Harappan" and the "Indus Civilization") is chiefly known for this widely distributed material culture created

by highly talented craftspeople and for its planned cities and towns, particularly the well-developed water and waste-disposal systems.

These objects and architecture form our main conception of life during the Harappan Phase, for our current conception of the Indus civilization is primarily as a *cultural* unit. This cultural unity is based on both the documentation of shared material culture and the likelihood of shared ideologies, as identified by archaeological research over the past 80 years. Whether this shared culture also relates to a shared *political* system is still an open question, and the nature of that political system is also still unclear (Kenoyer 1994b, 1997a, 1998; Possehl 1998, 2002; Ratnagar 1998; Shaffer 1982, among many others). However, long before *heterarchy* was a popular term in the archaeological literature, most Indus archaeologists suggested some form of power-sharing between various groups.

The nature of Harappan Phase *social* organization—the relations and ranking of individuals within this cultural system—also remains unclear but is an essential aspect of any discussion of craft production. Archaeologists from Childe (e.g., 1956; see Wailes 1996) to Costin (1991, 1998) have examined the links between social organization and craft production organization or specialization, particularly with regard to control of production by elites. Stein (1998:12–13) notes that to understand the sources of social and political power, we must have some idea of the ideology and practices through which groups define themselves. These he divides into three aspects: class, based on hierarchy; ethnicity, based on ideological concepts of origin; and gender. For the Harappan Phase, there has been scattered research on ethnicity and regional differences (Kenoyer 1991, 1998; Possehl 1986, 1992, 2002; Shaffer and Lichtenstein 1989, 1995, 1999; Shinde 1991), gender (Clark 2003; Kenoyer 1998:133–137), and hierarchy or class (Jacobson 1986; Kenoyer 1998, 2000; Miller 1985; Miller in press b; Possehl 1998; Rissman 1988; Vidale 1989a; Vidale and Miller 2000; Wright 1993).

Part of the difficulty in evaluating the Harappan Phase social system is that the nature of an elite class is not as clear as for other early states. There are no palaces, no central monuments, and no wealth-filled tombs. The majority of large-scale public works, such as city walls and sewage systems, were utilized by the greater part of the populace, not a select few. However, these same public works provide clear evidence for tremendous managerial organization, as their creation and maintenance must have been planned and directed by a small group. In addition, there is certainly evidence for differential accumulations of wealth (Fentress 1977; Rissman 1988). Wealth, however, was not only measured by access to rare materials. Manufacturing

complexity was also highly valued by the Harappan Phase people for the knowledge as well as the labor involved (Kenoyer 1998, 2000; Vidale 2000; Vidale and Miller 2000; cf. Helms 1993:157). I have argued elsewhere that certain characteristics of the manufacturing process itself, such as change of color in firing, were more important than rarity in judging value, and these characteristics likely related to larger social and ideological symbolisms (Miller in press b).

As noted above, the use of production location to examine control of production by nonproducers provides extremely valuable insights into political and social relations, and it is unfortunate that it has been very problematical for Harappan Phase cases. The lack of textual material at production sites and our inability to decipher the few inscriptions found is a tremendous handicap. The unusual paucity of elite or government buildings at Harappan Phase sites makes association or lack thereof with such structures difficult to measure. Even more problematical has been the high level of disturbance at these sites, especially cities such as Harappa and Mohenjo-daro. Thus, there are not many examples at present for the organization *within* working areas at these cities. The relatively few craft-working areas found by modern projects have unfortunately been highly disturbed. The team focusing on craft production at Mohenjo-daro (as part of the Aachen-IsMEO expedition) withdrew most of its own conclusions about social aspects of production, citing problems with the surface survey data (Tosi and Vidale 1990; Vidale and Balista 1990 for the reevaluation). At the city site of Harappa, most Harappan Phase working areas found to date have been too disturbed to allow detailed analysis of organization *within* working areas in contrast to working areas from some earlier periods (Kenoyer and Miller in press). Nevertheless, some fruitful studies have been made of production location, to the extent possible, and are cited below.

My data are based primarily on the accumulated research of the Harappa Archaeological Research Project (HARP), including my own surface and geomagnetic surveys. The conclusions drawn from these extensive investigations at Harappa are compared with the data from the Aachen-IsMEO project at Mohenjo-daro. At the present, there is almost no published information relating to production available from the three other Harappan Phase cities of Ganweriwala, Rakhigarhi, and the smallest, Dholavira. For the much smaller Harappan Phase towns of Chanhu-daro, Kalibangan, Lothal, and Nausharo, I have evaluated the published pyrotechnological craft production data elsewhere (Miller 1999). This reanalysis provides an especially important corrective source for Chanhu-daro, where widespread evidence for pottery production was based on incorrect identification of manufacturing debris by Sher and Vidale (1985) as a result of lack of complete data on Indus fired-clay debris

types at the time. A similar problem exists for pottery production identification by the Mohenjo-daro surveys (Miller 1999; Vidale, personal communication 1997).

Harappa is the best-studied city of the five known, given the research carried out from 1986 to the present by HARP. It is also the only urban site whose core has been almost entirely surveyed for at least some crafts, particularly the pyrotechnological crafts. Figure 3.1 is based on data from (1) excavation work by HARP from 1986 through 2000; (2) earlier excavations at Harappa in the 1920s, (3) my own systematic surface surveys in 1994 and 1995 of the entire mounded, walled city core of Harappa, excluding the mound under the modern town; and (4) six small geomagnetic surveys of suspected production locations in 1995. Because of methodological issues, this map does not show *all* locations of lithic- and shell-working, only the areas of most intense activity. There are few areas of the site that do not have some lithic-working debris on the surface, as this was an intensely occupied city site with a high level of postdepositional disturbance and erosion. (See Bondioli et al. 1984; Bondioli and Vidale 1986; Miller 1999:340–481, 2000; Pracchia et al. 1985; Tosi and Vidale 1990; Vidale and Balista 1990; Vidale and Lechevallier 1994 for more on these methodological problems for lithics and how they have been dealt with by survey projects.)

In this chapter, I examine two larger-scale locational relationships affecting craft production: (1) possible relationships between different crafts in terms of their proximity to each other at Harappan Phase cities and (2) possible civic control of *location* of production within Harappan Phase cities, an issue that perhaps has more to do with conceptions of city structure than with economic control of production.

While we can very clearly see areas of high-intensity craft production activity at the large scale used for this study, pinpointing all craft locations at a finer level is usually impossible at tell sites without excavation—and difficult even with excavation in many cases. Thus, only large-scale patterns can be examined, and my conclusions should only be compared with studies carried out at similar scales. Other scales of analysis might show other patterns (Feinman 1998), as finer-scale studies will include “household” level crafting that would be difficult to identify at my scale of analysis. It is thus particularly surprising that there is such dispersed production seen in my results, given that I am recovering the largest working areas, which would be the most likely to be under the eye of an elite or civic authority. Interestingly, dispersed patterns of production location are also seen at urban sites in other time periods and regions in South Asia (Coningham 1997; Sinopoli 1998) and elsewhere (e.g., Cowgill 2003; Keith 2003; McIntosh and McIntosh 2003; Shen 2003; Stone 1997; Wattenmaker 1998). Most of these

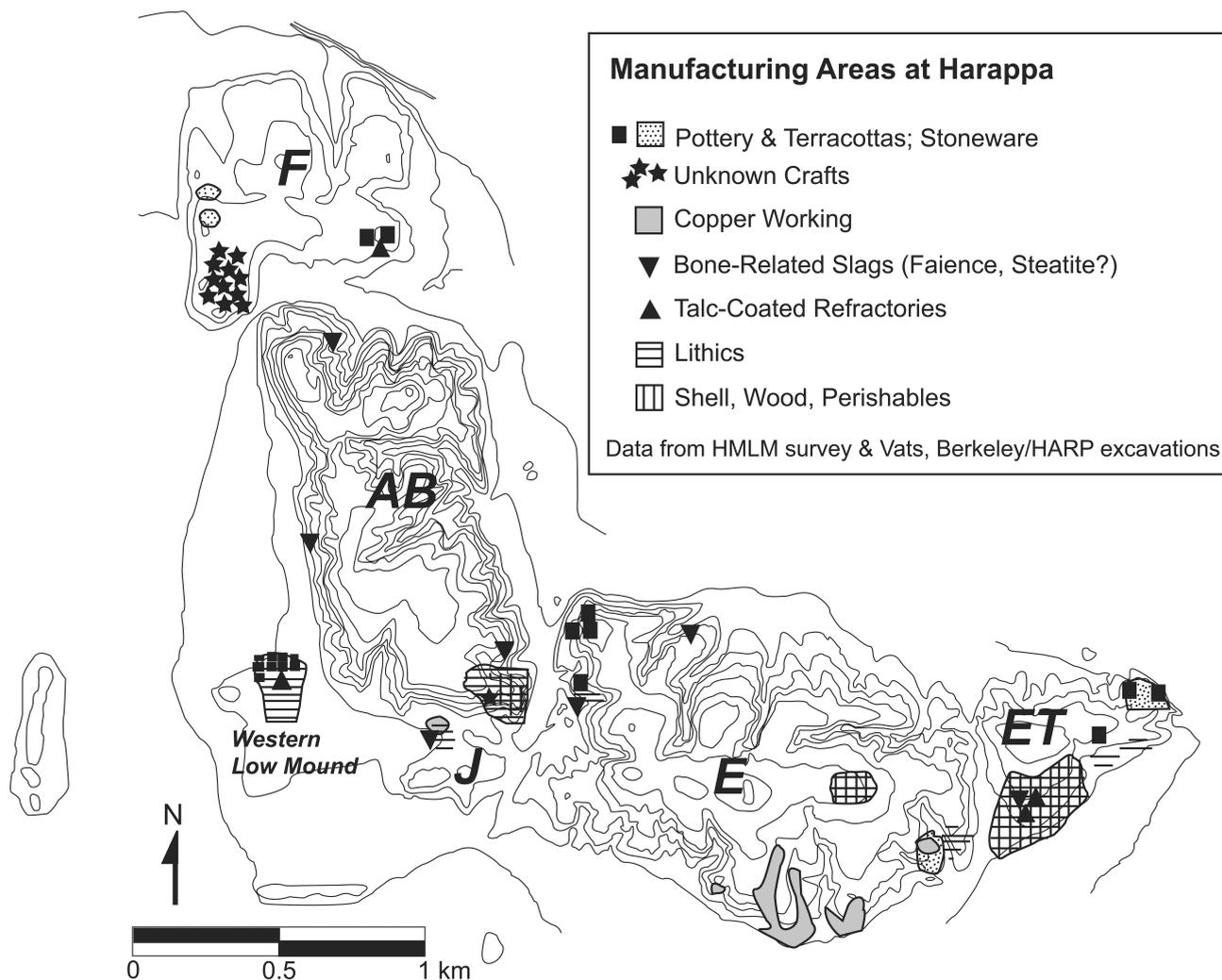


Figure 3.1. Manufacturing areas at Harappa.

cases do focus on smaller-scale production sites as well as large-scale ones. Nevertheless, the fact that dispersed production locations are not at all unusual reminds us of the complexity of production organization in state-level societies. The reasons for the dispersed patterns vary, as do other aspects of production location. In the Harappan Phase case, manufacturing is found on all of the mounds of Harappa and on both of the mounds at Mohenjo-daro, and there is no association of particular types of crafts with particular mounds. The patterns that do occur are described in the following two sections.

### Production Location and the Relations between Crafts

My first topic is the possible relationships between different crafts and craftspeople in terms of the spatial associa-

tions of working areas. This includes the production of both prestige items and staple commodities, as Indus archaeologists do not divide craft production into prestige versus utilitarian production (cf. Flad, this volume). Instead, Indus archaeologists tend to use attributes of the production process in their creation of categories (e.g., Kenoyer 1998; Vidale and Miller 2000; Wright 1991). For Harappa, one apparent difference in locational patterns is between extractive-reductive crafts and pyrotechnologically transformative crafts, to elaborate on the typology originally proposed by the Italian team at Mohenjo-daro (Miller 2000; Pracchia et al. 1985).

*Extractive-reductive* crafts use extractive or reductive processes such as chipping, grinding, carving, and twisting to process raw materials into finished objects. For the Harappan Phase, studies have been done of shell-working (Kenoyer 1983, 1984, 1997b); stone tool production (Biagi and Cremaschi 1991; Biagi and Pessina 1994; Cleland

1977; Hoffman and Cleland 1977; Inizan and Lechevallier 1997; Pelegrin 1994); seal production (Rissman 1989); several types of stone bead manufacture (Barthélémy and Bouquillon 1997; Beck 1940; Bhan et al. 1994; Kenoyer 1997b; Kenoyer et al. 1991, 1994; Mackay 1938, 1943; Roux 2000; Roux and Matarasso 1999; Vidale 1987c, 1990a, 1992, 2000; among many more); and other types of lithic production. Basketry and textiles await future work. Architectural and other sorts of building crafts (e.g., Jansen 1993) would also be included in this category, although the materials used can be either extractive-reductive (stone, wood, unbaked clay) or transformative (baked brick).

*Transformative* crafts transform raw materials through pyrotechnology or chemical processes to create a new material. Harappan Phase research of this type has featured terracotta figurine production (Clark 2003; Dales 1991; During-Caspers 1994), stoneware bangle production (Blackman and Vidale 1992; Halim and Vidale 1984; Kenoyer 1994a; Pracchia and Vidale 1993; Vidale 1987a, 1990b), pottery production (Dales and Kenoyer 1986; Méry 1994; Miller 1997; Pracchia 1985, 1987; Pracchia and Vidale 1990; Wright 1989, 1991, 1993; among many more), and copper-bronze metallurgy (see Kenoyer and Miller 1999 for a summary). For the Indus, the dichotomy is usually drawn between extractive-reductive and pyrotechnological crafts, because all of the strictly transformative crafts are pyrotechnological, not chemical. All of the known Harappan Phase crafts involving chemical transformation also involve extractive-reductive stages and so are part of a third category, what I refer to as bridging crafts.

*Bridging* crafts are those with substantial use of both extractive-reductive and transformative stages. For the Indus case, the transformative stages in bridging crafts are usually pyrotechnological, but there is at least one example of a bridging craft with a chemical stage: the production of bleached carnelian beads. A significant bridging craft for the Harappan Phase is the complex of heated and glazed talc/steatite and faience materials. These involve the reduction of stone as well as pyrotechnological transformation to increase hardness, to change the color, for glazing, or for the creation of the faience bodies (Barthélémy and Bouquillon 1997; Beck 1934a, 1934b, 1934c; McCarthy and Vandiver 1991; Mackay 1938, 1943; Miller 1999, in press a, in press b; Sana Ullah 1931; Vidale 1986, 1987b, 1992, 2000). Fired or glazed talc (also called steatite) and a variety of silica-based faiences were used to make objects such as small figurines, beads by the thousands, small vessels, and the famous Indus seals and tablets (Barthélémy and Bouquillon 1997; Bouquillon and Barthélémy 1995; Kenoyer 1998; Vidale 1986, 1989b, 1992, 2000). The production of carnelian ornaments should be included among

the bridging crafts, since these agates shaped by reduction were first heated to achieve their deep carnelian color and to improve their knapping qualities (Kenoyer et al. 1994). However, my current database does not allow the determination of carnelian versus other agate flaking sites, if such a distinction existed. A related bridging craft is the production of bleached (“etched”) carnelian beads, involving heating, reduction of stone, and transformation of color through chemical bleaching (Beck 1933; Kenoyer 1998). Dyed textiles would make up a bridging class as well, but we have very little information on textile production or dyeing.

In general, pyrotechnologically transformative crafts at Harappa were more segregated from other crafts, while extractive-reductive crafts were more aggregated (Figure 3.1). Bridging crafts, as might be expected, follow both patterns. There are thus differences in the organization of the pyrotechnologically transformative crafts versus that of the extractive-reductive crafts in terms of their locational relationships to other production areas. At Harappa, almost all pyrotechnologically transformative craft assemblages (including copper melting debris and pottery firing assemblages) and *some* of the various bridging crafts (such as by-products from talc/steatite heating, talc glazing, or faience manufacture) are found in isolated working areas and not intermixed with debris from other transformative or reductive crafts. Thus, pyrotechnologically transformative crafts and some bridging crafts were undertaken in relative isolation, without any clear association with other craft production. In contrast, large-scale debris assemblages from the extractive-reductive crafts are always found together, representing the close association of production areas for shell-working and most types of lithics—chert, talc/steatite, semi-precious stone, and possibly ground stone. In other words, extractive-reductive crafts such as shell-working, steatite and agate bead-making, and stone tool production appear to have been practiced together in distinct areas of the ancient settlements. Some bridging crafts have also been found in these areas for the production of extractive-reductive crafts.

To summarize, pyrotechnologically transformative crafts and most bridging crafts at Harappa were locationally segregated from other crafts, while extractive-reductive crafts and some bridging craft working areas were more aggregated. Unfortunately, this pattern cannot be assessed for the city of Mohenjo-daro at this time because of (1) the restricted nature of the surface survey, which covered only 25 percent of the mounded site, and (2) some mistaken identifications of vitrified nodules as pottery kiln wasters. Other city and town sites have even less suitable data for a comparative assessment. However, while this chapter is focused on urban core production, there are some isolated, specialized pottery

production areas known for the Harappan Phase. These firing areas located away from settlements represent an extreme case of the segregation of pyrotechnological transformative crafts (Miller 1997; Mughal 1997; Pracchia 1985).

I will provide a closer look at one of these production location patterns as an example of what production location can tell us about associations between different craft producers. To date, bridging craft production locations clearly associated with extractive-reductive craft production locations have only been found in two areas at Harappa. The two areas, one on the southwest corner of Mound ET and one on the west side of Mound E, were both examined by extensive excavations. Both had evidence for the manufacturing of various lithic objects, as well as various objects and materials within the talc-faience complex. The talc-faience complex involves both reductive production of steatite objects and pyrotechnologically transformative firing of glazes and faience objects. The practitioners of these bridging crafts may have had contacts with lithic craftspeople as well as with other pyrotechnological workers. Such an organizational association between at least some of the talc-faience craftspeople and the lithic producers, if proven, may give us insights into the development of the tremendously complex talc and faience industries and the high level of innovation that characterizes them (Barthélémy and Bouquillon 1997; Vidale and Miller 2000). The production location of chemically transformed (bleached) agate beads is unknown, but this production may similarly have taken place in association with reductive production as another aspect of stone-working. Finally, and very suggestively, both areas also had evidence for small-scale gold-working, probably jewelry-making. Examination of the Mound ET location in more detail provides an example of this unusual pattern.

The location on the southwest corner of Mound ET was near a main gateway to the mound. This large area, disturbed by brick-robbing over the past century, was excavated by HARP in 1994, 1995, and 1996 and yielded workshop debris from many different crafts in secondary and tertiary deposits (Meadow and Kenoyer 1997; Meadow et al. 1996). Kenoyer (personal communication 2002) has identified some primary bead manufacturing areas for talc/steatite and agate beads on the basis of nodule fragments, flaking debitage, bead blanks, partly drilled beads, several different types of spent drills, and drill manufacturing waste. Microdebitage from all stages of talc and agate bead manufacture has been recovered from some floors inside rooms and courtyard areas, but excavations in adjacent areas of the site have yielded no evidence for talc or agate bead-working (Kenoyer 1997b:270, personal communication 2002). Kenoyer suggests that while this area was architecturally disturbed, with trenches dug by historic brick robbers to remove the baked brick walls, the

microdebitage found on the floors of the rooms was still highly localized.

Debris from other crafts found in this area of the site, although not in these rooms, included waste from shell ornament and inlay manufacture, as well as chert weight manufacture and chert tool production that may have been associated with woodworking or furniture inlay setting (Meadow and Kenoyer 1997). All of these are reductive crafts. The pyrotechnological stages of bridging crafts also took place in this area, as represented by (1) numerous fragments of high-fired talc-coated setters or kiln walls most likely used for the firing of talc beads and (2) a few pieces of debris probably related to faience production (Miller 2000, in press a). Finally, the few droplets of gold recovered are indicative of gold-working, a pyrotechnologically transformative craft, but on an extremely small scale. The second area, on the west side of Mound E, also contained evidence for a variety of reductive crafts, a significant faience firing area, and a very small amount of gold-working, the last again probably related to jewelry-making (Kenoyer and Miller in press).

These two areas—exceptions to the general pattern of segregation of pyrotechnological crafts, including bridging crafts—might relate to Harappan perceptions of what was one “craft.” The aggregation of gold-working with other crafts, at least at this scale, is particularly interesting, and it is unfortunate that we know of no silver-working locations. Perhaps all workers in stone and shell, or all jewelers, were seen as *belonging to the same craft* and so were located in neighboring working areas, regardless of their specialization in material types or end objects or the need for an additional high-temperature heating stage. Hruby (this volume) makes the same point in his insistence on the need to carefully examine the types of production organization categories we use and to realize that these are external (etic) rather than internal (emic) categories.

Alternatively, this pattern of production location might be about the *value* of end products, so that all producers of high-value goods were seen as related and worked in the same area, regardless of the raw materials used or end product produced. Kenoyer (personal communication 2002) has suggested that these two areas at Harappa might represent production areas for objects of high value, either economically or symbolically. By use of the term *value* I refer to hierarchies of worth based on rarity of raw material *and* complexity of production, both skill and labor. (See Miller in press b for more details of the Indus case; also see Lesure 1999 for a more general cross-cultural approach and Clark, this volume, for an extensive discussion of value and labor.) Both of these areas contain evidence for ornamental, decorative, or administration-related reductive crafts, including various types of lithic production from semiprecious beads

to chert weights. Both areas yielded some evidence for small-scale gold-working, and both contained debris from the firing stages of the talc-faience craft complex, albeit different crafts within the talc-faience complex. It is intriguing to suggest that the value of the craft related to the status of the producer, in line with Inomata's findings (this volume) and the situation in historic South Asia (Sinopoli 1998), but we have no evidence at this point to judge such a proposal for the Indus civilization.

A related possibility for both of these alternatives is that all workers may have worked with all (or many) types of materials to produce a range of products; that is, there was *minimal product specialization* within at least some ateliers. (See the introduction to this volume [Chapter 1] for definitions of specialization.) Such a scenario might be used to support a reconstruction of a small-scale entrepreneurial system, wherein a worker made whatever was needed using whatever material was available, rather than a large-scale, segmented, workshop tradition with a few owners organizing and directing a host of specialized workers, as in the ethnographic examples discussed by Kenoyer et al. (1991, 1994) for Khambhat, India. More detailed examination of each location is necessary before embracing such a conclusion, however, and small-scale entrepreneurial systems were clearly not the only type of production system at Harappa. For example, there is possible evidence for large-scale specialization and segmentation in stone work at Harappa, as seen in an area at the center of Mound E showing large-scale or long-term use of the location almost exclusively for drilling (Miller 1999, 2000). Yet all kinds of materials were drilled in this location, including various stones, shell, and probably wood and ivory, so specialization probably did not extend to material type, only to production stage. Interestingly, specialization and segregation based on *production stage rather than material type* was found by Kenoyer et al. (1994) for the ethnographic case of the large-scale specialized workshops in Khambhat. In my opinion, both sorts of pattern were likely found at ancient Harappa, just as they are in modern Khambhat.

Finally, as noted above, the craft production area on the southwest corner of Mound ET was located not far inside a main gateway in the city wall. It is noteworthy that most of the ateliers in this location were producing objects thought to be of high value. This is rather surprising, as we might expect high-value objects to be produced in a more isolated, protected location than near a city gate. Kenoyer (1997b:270) suggests that the location of these crafts in an area inside the city wall near a gate indicates a degree of indirect control of production by civic authorities through the regulation of movement into and out of the craft area. He observes that the presence of chert weights and weight manufacturing debris

in the area just inside the gateway may indicate the taxation of goods coming into or leaving this walled sector of the city. Alternatively, craftspeople may have been located here to attract customers, either visitors to the city from surrounding settlements and beyond or city dwellers passing in and out of the gate to their fields and work outside the walled portion of the city.

### Production Location and Civic Structure

My second topic focuses on possible ideological aspects of production location within Harappan Phase cities (and towns) as part of large-scale conceptions of civic structure. My focus is on *civic* and not exclusively elite control of location of production within cities, an issue that I suggest has more to do with cultural conceptions of city structure than with economic control of production for Harappa. In particular, I suggest that there are ideological rather than functional reasons for the placement of at least some production areas within specific parts of the settlement mounds at Harappa. Such ideological organization of production within cities has been discussed for other civilizations (Cowgill 2003; McIntosh and McIntosh 2003; Stein 1998:14; Wheatley 1971), primarily from the perspective of cosmological organization or spatial location of groups of differing status or ethnicity.

One of the signature characteristics of the Harappan Phase is the organization of their cities, as represented by massive systems of mud-brick platforms or boundary walls, a network pattern of streets, and elaborate water/waste disposal systems on a city-wide level. These elements indicate the presence of organized civic planning and maintenance under the direction of urban authorities and managers. However, the distribution of craft production areas within the city does not seem to fit this ideal of civic order, particularly that of pyrotechnologically transformative crafts like the manufacturing of pottery and copper objects. That the noxious, dangerous firing stages of high-temperature crafts took place in the densely populated city center seems counterintuitive, given the focus of the Indus peoples on civic maintenance and organization. Is this production occurring within the mounded, walled cities of Harappa and Mohenjo-daro because it was controlled by a powerful elite who were able to use city space as they wished? Or do these production sites indicate that civic authorities did not have absolute power but that city growth and structure involved compromises between the needs of many different city inhabitants, including craftspeople?

Obviously, this opposition—control of production location by a powerful elite civic authority versus control of

production location by compromises between various groups of city inhabitants—forms two ends of a continuum. Various crafts and even various workshops no doubt fall at different points along this continuum of control. However, I have found very little evidence to support any sort of authoritative ordering of production *location* in the Indus cities, at least for Harappa and Mohenjo-daro. In contrast to the organization of drainage and street systems, any civic ordering is not very obvious where manufacturing is concerned. As I have illustrated (Figure 3.1), *all* of the separately walled mounds at Harappa had pyrotechnological manufacturing areas, and most also had reductive working areas. Furthermore, there does not seem to be a division in the locations of the production of “everyday” versus “elite” items (as based on our current assessments of their values) *in relation to particular mounds*. Especially at Harappa, there is no apparent “citadel” mound, “high” mound, or “elite” mound, at least as far as the distribution of manufacturing is concerned (see also Kenoyer 1997a:55–56).

Nevertheless, there may be some hints of order at Harappa in terms of the general location of manufacture *within* each mound. It appears that a preponderance of manufacturing of all types took place on the southern half of mounds (Figure 3.1). Functional, technical explanations for this pattern, such as attention to prevailing wind patterns, are not very satisfying, given the southern location of lithic-working areas as well (which did not involve firing). In fact, the considerable evidence for pottery production on the north side of Mound ET and the northwest corner of Mound E (Figure 3.1) might represent exceptions to a “standard” southern location that were special attempts to protect from or take advantage of prevailing winds. Unfortunately, as noted above, the surface survey evidence from the city of Mohenjo-daro cannot be applied to test this apparent patterning. However, the pattern to date at Mohenjo-daro does not seem to contradict this patterning, including the “aberrant” location of some pottery production on the northern side of the Lower Town Mound (Pracchia et al. 1985). The major pottery production location at the town of Nausharo was found on the south side of the site (Jarrige 2000). Surface survey data from the town of Chanhudaro are too flawed for comparison (Miller 1999).

If this pattern of manufacturing predominately occurring on the south side of mounds holds with future research, it must represent a definite decision on the part of the Indus craftspeople or civic planners. Such a decision almost certainly resulted from ideological, perhaps cosmological, conceptions of city planning rather than technical requirements. As Hendon (this volume) indicates, we are concerned with social location as well as physical location, and so functional reasons for location choices such as issues of noxiousness

may not always be the most important reasons for the final choice of location.

## Summary

During the Harappan Phase (2600–1900 calibrated B.C.), the distribution and association of various crafts is related to the similarities between their manufacturing processes, particularly extractive-reductive versus pyrotechnologically transformative crafts. At Harappa, working areas for reductive crafts such as lithic- and shell-working were usually located together, while those for pyrotechnological crafts such as metals and pottery production were typically isolated from other crafts. Production areas for bridging crafts like talc/steatite and faience production, which have both reductive and high heating stages, were located both in isolated working areas and in association with reductive crafts. When the type of objects produced is examined more closely, this last production location pattern of bridging crafts associated with reductive crafts may relate either to particular Harappan views of what constituted one craft or to the relative value of the objects being manufactured. The existence of both small-scale entrepreneurial and large-scale segmented workshops can be supported with the data to date.

There is no evidence that these patterns are based on control of organization by nonproducer elites, although it may be that similarities in types of objects produced and customer base were the main ties between some of the aggregating crafts. It is noteworthy that these locations did not show any of the usual types of evidence for control of production, such as a greater than average number of seals or sealings. If this pattern is supported by future excavations, other factors seem much more important in determining Harappan Phase craft production locations than types of production control, at least at Harappa. Such factors include the requirements of the production process, the relations among the producers, and the value of the goods and hence the likely consumer. More information on the consumers of these objects would be extremely useful, especially given the apparent widespread distribution of most Harappan Phase object types, which are found at large and small sites alike (Miller in press b; Shaffer 1982).

Looking at craft production location with respect to civic organization provides insights into possible associations between crafts, as well as general Indus attitudes toward the placement of manufacturing within city centers. There are several possible interpretations for these locational patterns, but all interpretations illustrate that craft production distribution sheds light on more than just control of

production. Craft production location informs on the technical development of and links between various crafts, the structure of Harappan Phase cities in general, and the social relations of people within them. Considerably more work needs to be done to verify the patterns I have identified, particularly continued systematic survey of other city and town sites.

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### Note

1. Many of the sources I have given in the references section are also intended to provide an entry into the literature through their bibliographies. Thus, where several articles by an author are applicable to a topic, only the most recent reference is cited.

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