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### HARAPPAN CRAFT SPECIALIZATION AND THE QUESTION OF URBAN SEGREGATION AND STRATIFICATION

#### INTRODUCTION

The Harappan Phase of the Indus Tradition (2600-1900 B.C) is characterized by the presence of the earliest urban settlements in South Asia (Kenoyer 1991; Shaffer 1990; Possehl 1977). The largest of these urban centres are Mohenjo Daro, Harappa, Ganweriwala and Rakhigarhi, and they range from 80 hectares to over 200 hectares in area (Kenoyer 1991; Mughal 1990). These sites were located at important cross roads or along trade routes that served to integrate the vast alluvial plains of the Indus and the Ghaggar-Hakra rivers and distant resource areas (Kenoyer 1991).

It has always been assumed that the people of the Indus culture who established and lived in these urban centres were organized in a stratified society made up of different classes. In the absence of written documents, these interpretations have been made on the basis of settlement layout, the use of seals, writing, standardized weights and the presence of various types of occupational specialization. Using a simple hierarchical model, some scholars have suggested that ritual and political elites were probably supported by agriculturalists, traders, a range of service communities and craft specialists (Piggott 1950; Wheeler 1968). Such a model, however, does not take into account the complex social, political and economic relationships that are necessary for maintaining a vast urban civilization, and many questions about the social and political organization of the Harappan cities still remain unanswered.

One approach to understanding the socio-political and economic structure of Indus society is through the study of various specialized crafts, which are thought to reflect occupational specialization, urban segregation and stratification (Kenoyer 1989). In this paper we will critically examine

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the definition of specialized crafts in the Indus cities and the methodologies needed for studying crafts in an archaeological context.

#### THEORETICAL AND METHODOLOGICAL CONSIDERATIONS

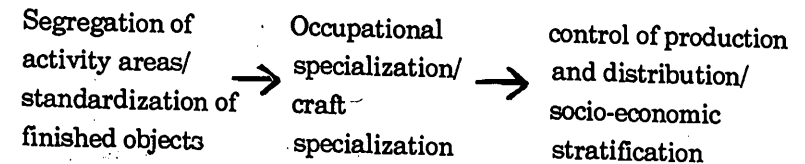
In the larger context of archaeological studies of urbanism and complex societies, specialized crafts are thought to provide reliable indicators for socio-economic complexity and stratification (Kenoyer, Vidale and Bhan 1991). Studies of specialized crafts first became prominent in West and South Asian archaeology through research on proto-urban settlements and "luxury" items used in long distance trade/exchange networks (Kohl 1979; Lamberg-Karlovsky 1975; Tosi 1979). These studies resulted in the application of new models for explaining political control over dispersed economic structures and new interpretations of the organizational character of prehistoric production centres (Tosi 1984).

In South Asia, these approaches came to be applied to the urban centres and regional production centres of the Indus Civilization. For example, at Mohenjo Daro, surface surveys and micro-stratigraphic studies began to focus on identifying the intrasite distribution and chronological fluctuations in specialized craft activities (Kenoyer 1985; Pracchia, Tosi and Vidale 1985; Vidale 1987; Vidale and Balista 1988). Other research began to focus on specific aspects of technology and raw materials in order to differentiate regional craft traditions, resource areas and trade/exchange networks (Blackman and Vidale 1991; Kenoyer 1983; Wright 1985, 1989a).

These recent studies have led scholars to question some of the generalizations that are prevalent about craft specialization and to develop new research strategies to understand the socio-economic organization of the Indus Civilization (Kenoyer 1989; Kenoyer Vidale and Bhan 1991; Rissman 1989; Tosi, Bondioli and Vidale 1984; Vidale 1989; Wright 1989b).

On the basis of earlier excavation reports it was assumed that a certain degree of occupational specialization and spatial segregation of craft activities was present at Indus sites (Mackay 1938, 1943; Marshall 1931; Vats 1940; Wheeler 1968). The correlation of specialized crafts to social stratification has been made by assuming that standardized production combined with craft segregation reflects centralized control of production and distribution (Tosi, Bondioli and Vidale 1984). Furthermore, the presence of centralized control is usually considered as evidence for socio-economic stratification. This series of interpretations can best be represented by the following model:

#### HARAPPAN CRAFT SPECIALIZATION



While this model may seem quite straightforward, a theoretical jump has been made in assuming that the segregation of specialized crafts can be attributed to centralized control and to socio-economic stratification. Ethnoarchaeological studies of specialized crafts indicate that there is no *simple* and *direct* correlation between the standardization and segregation of craft activities, and the centralized control of production or socio-economic stratification (Kenoyer 1989; Kenoyer, Vidale and Bhan 1991).

Such studies have shown that uniform pottery and artefact styles, architecture, and intrasite patterning are the result of many different complex socio-economic processes. In order to make reliable interpretations it is important to assess the nature of stratification reflected by artefact patterning and to identify the processes of control that may have functioned in different contexts. Furthermore, while many of these patterns do in fact reflect stratification and some sort of centralized authority or control, some patterns result from other processes. A brief examination of the ethnographic evidence is necessary to illustrate these important variations.

#### ETHNOGRAPHIC MODELS OF CRAFT SPECIALIZATION

Through ethnographic observations and archaeological research on specialized crafts such as shell working, bead making and ceramic production, two alternative models can be used for understanding the development of specialized crafts and their association with larger communities (Kenoyer 1989). One process that leads to the development of social groups involved in specific occupations is "fragmentation" (Gould 1971) or 'segmentation' within a community. The other process is "agglomeration" (Karve 1961), where an entire community that has become specialized in a specific craft or occupation becomes integrated with a larger community. Both of these processes result in specialized occupations that may be reflected in varying degrees of ranking or stratification, particularly in an urban context.

Based on modern anthropological studies, stratification among urban communities in general would be reflected in conflicting interests and a lack of mutuality (Berreman 1983: 240), while ranking among kin related communities would be reflected in a certain amount of cooperation and sharing of resources. A study of the spatial distribution of artefacts and their

relationships with the architecture within a site should make it possible to distinguish the presence of various occupational specialists, such as craft communities, administrators, agriculturalists, merchants or ritual specialists. The degree of integration or segregation within these communities should be reflected in the distribution of specific indicators in the archaeological record.

Three categories of indicators that are useful in measuring the degree of integration are: uniformities of technology, patterns in the use of raw materials and specific stylistic features of finished commodities. Degrees of ranking or stratification among certain craft groups can be defined by a careful study of these variables.

Assuming that the craft traditions of the Indus period were maintained through kin or alliance related learning processes, crafts that were characterized by the segregation of working areas or the segregation of specific aspects of technology could reflect two different social processes. On the one hand this segregation in an urban context could simply reflect the need of craft groups to reside in close proximity for optimal use of resources or reciprocal exchange of services. On the other hand segregation could be the result of social stratification and intentional urban organization by a state institution. If the segregation is due to centralized control by a state institution, it should be possible to determine that the craft industry is important for the overall economy or the production of elite status objects. However, in some cases, both processes could be working at the same time.

In the absence of written documents it is at times impossible to differentiate these processes in the short term or synchronic perspective. However, through the study of archaeologically visible indicators in modern ethnographic examples, it is possible to develop general interpretive models to identify long term or diachronic patterns that would be visible in the archaeological record.

Some present day crafts, such as pottery making, are organized along kin related networks and are basically decentralized. In urban contexts, pottery manufacture can be seen as spatially discrete, but the production is neither controlled nor organized by state institutions, or for that matter elite groups. Domestic and even most ritual pottery is not important for long distance trade or major transaction. It is usually distributed through reciprocal exchange (*jajmani* relationship) or sold in local and regional markets/fairs. This situation may be due to the local availability of raw materials and fuels. If there is any state or elite control it would be in the form of taxation in market places or the requisition of items for personal use

by elites. Taxation could only be determined through written documents, and the requisition of specific pottery by elites could not be distinguished from less controlled forms of distribution or reciprocal exchange.

Other crafts, such as shell working, rely on long distance kin or alliance networks and are much more homogeneous on an inter-regional scale. Shell production is relatively decentralized at the present time, but in the past, shell collection and trade was an important economic factor in the overall state economy and may have been centrally controlled (Kenoyer 1983). The reason for its importance for state economy can be attributed to revenues from marine resources and long distance trade, as well as the ritual importance of shell in the overall religious ideology. Without the presence of written documents, it would be impossible to identify these factors in the spatial distribution of artefacts at a single shell working community. However, on a regional level it might be possible to identify state control through the distribution patterns of specific artefact types or workshops at different sites. Recent studies of the shell industries of the Indus Civilization have identified regional patterns that suggest some form of control by state institutions or elite groups (Kenoyer 1989).

An example of a modern craft industry that is highly stratified and rigidly controlled by dominant merchant families is agate bead manufacture in Khambhat, India (Kenoyer, Vidale and Bhan 1991). In this industry, merchant groups have close kin relations or alliances with politically powerful individuals or organizations. Through these connections, they are able to control the flow of raw materials, the production processes and the distribution of finished commodities. In bead manufacture, many stages of production are undertaken in dispersed localities by part-time craftsmen of different social groups, while other activities are done by full time specialists under close control of the merchant. The most important and final stages of production are the heating of the beads to change their colour and polishing of the beads. These activities are conducted in specific localities under the direct supervision of the merchant group. The presence of the merchant can be defined by a range of variables, including stockpiled raw materials, tools and finished commodities, critical stages of production, recycling of specific manufacturing waste and the absence of other manufacturing waste. Furthermore, the combined domestic-cum-industrial architectural complex associated with the final stages of production provides an important indicator of direct control. This is evidenced by the fact that although the merchant and his family live in the same unit as the workshop, the scale of production reflected in the stockpiled raw materials and finished objects is

much greater than can be attributed to the people actually living in this complex.

In the bead making industry, the variables that indicate centralization and control could only be defined by a careful reconstruction of the entire manufacturing process. By determining the raw materials and the resources that are needed for production, the relative amount of labour involved, and the spatial distribution of various stages of manufacture, it would be possible to determine that a single habitation unit was the centre for production involving more individuals than could be supported or housed in that specific unit. Other more obvious indicators of control would be visible in large quantities of raw materials, tools or finished items. The presence of tallies and documents of production and distribution provides conclusive evidence for centralized control of production.

With this brief discussion of the theoretical and ethnographic background for craft specialization, it is now necessary to return to a more specific definition of specialized crafts and their representation in the urban centres of the Indus Civilization.

#### CRAFT SPECIALIZATION

The term craft specialization has many different connotations, but in this discussion it refers to an adaptive process rather than a state of being (Kenoyer, Vidale and Bhan 1991). In other words, specialized crafts are not a new feature that appears at some point in the evolutionary history of a culture. Rather, they are present in all societies where skilled individuals are needed to produce objects for use by others. With the rise of large settlements, early urban centres and eventually state level society, craft specialization involved the production of goods by part-time or full-time specialists for redistribution to local and extra-local consumers.

During the Harappan Phase, specialized crafts that had roots in the preceding period became more complex in terms of technological processes, as well as in the varieties and combinations of raw materials being processed. The styles of objects being produced also changed and though there is a general similarity throughout the greater Indus region, detailed studies of specific artefact types reveal the presence of important regional variations (Dales and Kenoyer 1986; Kenoyer 1985). It also appears that specific sites may have become primary manufacturing centres for items related to socio-economic or ritual status (Dales and Kenoyer 1977; Jarrige 1981; Rissman 1989; Vidale 1989; Vidale and Bondioli 1986; Wright 1989a).

These items included necessary tools, weapons and most importantly objects that defined the social and ritual status of the user. In order to maintain the social order or hierarchy and the general status quo, it would have been necessary to control specific crafts that were involved in the production of economically and socially important goods. These crafts could have been controlled through various means, such as the control of raw materials, of technological knowledge, of labour, of distribution of finished goods, through taxation, or through proscribed use. It is important, therefore, to determine the role of specific crafts in the overall economic and social structure of the Indus cities.

Whereas in the past, specialized crafts were grouped all together, in this context it is necessary to distinguish at least four different categories of crafts practised at Harappan sites;

1. those involved in the processing of locally available materials with relatively simple technologies — wood working, terra-cotta ceramic production, house building, etc.
2. those involved in the processing of non-local materials using relatively simple technologies — stone working, chipped stone, ground and pecked stone
3. those involved with more complex production processes using local raw materials — stoneware bangle manufacture, elaborate painted and specialized ceramics, inlaid woodwork, etc.
4. those involved with more complex production using non-local raw materials — agate bead manufacture, seal production, copper/bronze metal working, precious metal working, shell working, faience manufacture, etc. (Kenoyer 1991).

The organization of production in these various crafts was probably quite different. Generally speaking, categories 1 and 2 appear to have more regional variation, while categories 3 and 4 appear more standardized. While certain crafts may have been segregated for controlling the production of important status items, other crafts may have been segregated because of more basic reasons related to the access to raw materials and labour. Similarly, the uniformity and standardization of some items, such as weights or seals, may be attributed to rigid centralized control, while other types of objects, such as pottery and ornaments, may have been standardized through other mechanisms. For example, kin related learning processes or the spread of kin related artisans to different settlements could result in highly standardized technologies and styles through shared ideologies and aesthetics (Kenoyer 1989).

**SPECIALIZED CRAFTS AT HARAPPA**

After Mohenjo Daro, Harappa is the second largest excavated site of the Indus Civilization (Vats 1940), with an area greater than 150 hectares (Dales and Kenoyer 1990). Other large urban centres have been reported but not excavated (Jansen 1980; Mughal 1980, 1990). Smaller regional centres such as Kalibangan, Lothal, Surkotada, Balakot, Kot Diji and Nausharo have been excavated, but they are all much smaller in area, ranging from 1.5 to 7.5 hectares (Kenoyer 1991). At most of these sites, both large and small, we see a segregation of the site into discrete areas or mounds, e.g. the "citadel" and lower town, but it is most distinct at the two largest sites. At both Mohenjo Daro and Harappa the original excavators reported the localized occurrence of artefacts relating to specialized crafts and occupational specialization (Mackay 1938; Marshall 1931; Vats 1940). For example, in the HR Area of Mohenjo Daro there appears to have been some spatial segregation of habitation areas, specialized craft areas and public areas. Unfortunately, the recording techniques used in the past do not allow chronological or spatial analysis of these artefacts.

At Harappa, the area known as Mound E corresponds geographically to the HR Area of Mohenjo Daro, but it has never been excavated. During the first season at Harappa, extensive surface surveys of this mound revealed the presence of numerous craft indicators, including kilns, manufacturing waste and tools. Although these craft indicators appeared to be associated with habitation deposits, their exact relationship could not be determined by surface survey alone. During the last three seasons at Harappa (1988, 1989, 1990) horizontal excavations were conducted in selected areas on Mound E and Mound AB to determine the relationships between architectural features and specialized craft activities (Dales and Kenoyer 1991b). Through these excavations it has been possible to recover some important data on various crafts that indicate the presence of specialization and localization of production. The interpretation of control of production is still not possible as we are in the process of studying the spatial distributions of specific indicators. However, it is possible to suggest some patterns and preliminary observations.

**SPECIALIZED CRAFTS**

The first question to be addressed is which specific craft activities at Harappa are in fact specialized and which ones were practised by individuals throughout the community on the basis of need. The presence of chert manufacturing debris in the form of cortex flakes, flake fragments and broken hammerstones in most of the habitation deposits suggests that

the manufacture of chert tools was quite widespread throughout the site. There may have been specialists who produced the extremely long blades or the cubical chert weights, but in general, chert tools appear to have been manufactured in dispersed areas throughout the site. While many of these tools were probably made for general domestic or agricultural activities, some of the specialized chert tools were used in specific crafts, such as shell, bone and wood working.

In contrast, it appears that the production of pottery, shell ornaments, stone beads, faience objects and copper/bronze objects is in fact the result of specialized production and was not being undertaken at the household level. This conclusion is reached by the preliminary study of the distributions of craft indicators on Mound E and Mound AB, as well as the reconstruction of the manufacturing techniques involved in production. Although actual production areas for each one of these crafts have not been located, the reconstruction of manufacturing stages suggests that these crafts were extremely complex and involved technologies that would have been known only to a limited segment of the urban population.

Occasional fragments of steatite and agate manufacturing waste have been recovered from debris layers and fill inside or outside buildings that appear to be primarily habitation units. While in the surface survey these patterns could have been misinterpreted as representing a workshop, through excavation it became apparent that these craft indicators were inadvertently incorporated in floor or street fill. In these cases, the houses we excavated were not used as workshops, but the presence of craft indicators does indicate that workshops were located somewhere nearby on top of or along the edge of Mound E. A similar pattern of steatite and agate manufacturing waste has been recovered in habitation and debris deposits on Mound AB. This could indicate that these crafts were probably taking place in discrete areas on both mounds and were not limited to only one area of the settlement.

The best indicator of a specialized production area has been the discovery of a large updraft kiln and two earlier kilns on the northeastern slope of Mound E (Dales and Kenoyer 1990, 1991a). The large updraft kiln appears to be of the Period III occupation (Mature Harappan) and a smaller pit kiln is attributed to a slightly earlier Mature Harappan occupation. Lower down the slope and associated with the Period II occupation (Early Harappan) is a smaller kiln that appears to have been used for making blackened or reduced ceramics. In the deposits below this smaller Early Harappan kiln are numerous vitrified pottery fragments and kiln waste

suggesting that even during the earlier Period I occupation, this general area was used for ceramic production.

Radiocarbon dates from the kilns, as well as from hearths in nearby habitation areas, indicate that this area was occupied and used for pyrotechnological activity from approximately 3338 B.C.\* (Beta-33873; 4540+/-85 bp uncalibrated) to at least 2047 B.C.\* (WIS-2074; 3700+/-60 bp uncalibrated). (\* calibrated with the CALIB program, (Stuiver and Reimer 1986).

The only other area of the site with evidence for kilns was discovered by earlier excavators in Mound F to the northwest. Several large furnaces possibly related to copper smelting and/or other undetermined pyrotechnological activities were discovered (Vats 1940: 470-474). Large quantities of kiln waste are scattered around these kilns and though there are numerous vitrified sherds, the large kilns do not appear to have been ceramic kilns. This area will be important for understanding if there was any integration between the copper metallurgy and the ceramic production at large urban centres.

The ceramic production area that we have been able to excavate on Mound E is not associated with other forms of pyrotechnological activities and appears to have been physically segregated from habitation areas that are situated to the east and south. Nevertheless, some domestic debris, such as bone, carbonized grain and used cooking pots is mixed in with the numerous layers of kiln debris that make up this portion of the mound. Being located at the north western edge of the mound the kilns were away from the core of the city and the debris from the kilns was scattered around the activity areas and thrown off the edge of the mound.

#### CONTROL OF CRAFT ACTIVITIES

The next question is to determine if the ceramic production in this area was centrally controlled by elites or if it was basically decentralized. As has been discussed above, the evidence for control could be evidenced through limited distributions of specific raw materials, or in the spatial segregation of one or more stages of production that require a great deal of energy or specialized technology. Control also could be reflected by the presence of sealings on manufacturing containers as has been found at Mohenjo Daro in the production of stoneware bangles (Halim and Vidale 1984) or the segregation of crafts into workshops, where certain aspects of production could be monitored.

Recent research at Mohenjo Daro has shown that certain areas of the site were used as specialized craft areas although the specific crafts changed over time (Pracchia *et al.* 1985). Such a pattern could indicate long term control of spatial segregation and stratification of specific crafts.

In terms of the ceramic production area on Mound E at Harappa, the raw materials used appear to be locally available clays and pigments that were common throughout the Indus region (primarily haematite, for both red and black pigments). We have not been able to define the actual potting areas, but several bone spatulae and some worn chert blades have been recovered from deposits associated with the large Harappan kiln. These tools were probably used for trimming, shaping and smoothing the vessels during manufacture and would therefore indicate that most of the production was being carried out in the vicinity of the kiln. We have also found patches of fine clay that may be the remains of clay mixing or wedging, fine and chuck moulds used for forming the base of large vessels.

The presence of vitrified sherds and large numbers of broken vessels in levels associated with the kiln suggests that the kiln was used for producing a wide range of large undecorated and decorated domestic wares. In general, the vessel types do not include the smaller undecorated wares that are present in most of the occupation and debris deposits. This suggests that the potters were involved in producing specific types of vessels and were not producing the entire corpus of pottery vessels used at the site. The other types of commonly produced vessels must have been made and fired in other areas of the site.

There is no evidence for direct control of ceramic production in the kiln area. No sealings or graffiti have been found associated with the ceramic production in ways that would suggest that specific stages of production were being monitored or controlled, as in the production of stoneware bangles at Mohenjo Daro (Halim and Vidale 1984). Due to the local availability of the raw materials used in production it is unlikely that the restriction of access to these raw materials could be controlled directly. There may have been some sort of taxation or tribute, but this would not be reflected in the actual production sequences. The overall impression is that the Harappan and Early Harappan kilns reflect a localization of production in one area of the city without any direct control by an external authority. This pattern is not surprising given the nature of ceramic production observed among contemporary potters who produce wares for an urban market.

However, the presence of kilns and possible ceramic production in the same locality in earlier stratigraphic contexts that extend back to the Early Harappan and pre-urban phases, suggests that ceramic production was localized in this area for a considerable period of time. One explanation for this pattern is that the potters lived on hereditary land, generation after generation. Another possibility is that this localization was the result of social stratification and segregation or possibly a civic authority that defined where ceramic activities were to take place. At this time it is not possible to determine the specific reasons for localization. This question can only be answered after further excavations at the site have determined if ceramic production was carried out elsewhere during contemporaneous or intervening periods.

#### CONCLUSION

In general, the ceramic production area provides an important new set of data relating to one of the most common crafts practised at large urban centres of the Indus Civilization. We have a better understanding of the types of kilns being used, the types of vessels being produced and the range of manufacturing techniques practised in a specific workshop. More detailed information will come from petrographic and pigment analyses. Samples from the kiln area will be compared with pottery collected from other excavation areas on Mounds E and AB. These comparisons will reveal if these potters were producing wares for the entire city or only for inhabitants of Mound E. One type of vessel found associated with the kiln may have been used to store or transport specific commodities. These large jars with black slip on the interior and exterior are found at most Indus sites and as far away as Oman. The petrographic analysis of these sherds from Harappa and distant regions may provide a new indicator for understanding long distance exchange.

The ceramic production area is only the first workshop area that we have been able to locate and excavate at Harappa, but it provides a good model for illustrating our more detailed approach to the study of specialized crafts. In this example, ceramic production appears to be localized and possibly even segregated in the urban context, but there is no indication of overt control of ceramic production. Continued analyses of the artefacts and new excavations at the site are needed to determine the role of this ceramic production area in the larger urban context. By comparing ceramic production with other crafts such as steatite, faience and agate bead making, it will be possible to distinguish the role of these various crafts in the overall economic and social organization of the Indus urban contexts.

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