An Insight from Khanak and Masudpur about Bhirrana and Rakhigarhi: A Comparative Analysis of Indus Pottery

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Abstract

This paper presents a comparative analysis of Indus pottery assemblages from four prominent Indus archaeological sites- Khanak, Masudpur, Bhirrana and Rakhigarhi, which are located in the eastern domain of the Indus-Saraswati civilization. These locations are at the heart of the Indus-Saraswati Valley Civilization and provide important source material on the socioeconomic, technological and cultural facets of pottery production and usage. The study reveals beautiful and enriching local adaptations across diverse locations, provincial continuities, and inter-site links by investigating typological differences, decorative motifs, manufacturing processes, and material composition. These findings highlight the comparative evaluation of distinct patterns in pottery design and usage, reflecting the diverse functional and symbolic roles of ceramics in the ancient South Asian communities, alongside localized innovations that underscore the uniqueness of each site. This study contributes to a broader understanding of the complexity and heterogeneity within the Indus cultural landscape, reinforcing the importance of pottery as a key artefact in reconstructing ancient livelihood and inter-site networks.

Keywords: Indus Valley Civilization, pottery analysis, ceramic typology, cultural continuity, ancient trade networks.

Introduction

The Indus-Saraswati Civilization marked the inception of urbanism in South Asia, with the construction of impressive cities that endured for centuries. This civilization gets its name from the archaeological sites that were discovered along the banks of the Sindhu Saraswati and its tributary rivers. This civilization is renowned for its sophisticated urban planning, script and material culture, unique drainage system and measurement. Among its diverse archaeological remains, one could find pottery, one of humanity's oldest crafts, playing a pivotal role in this civilization, allowing people to express their feelings and aesthetic sensibilities through clay[1], back in the day. Various forms of terracotta, including bricks, pottery and figurines, were created for diverse purposes within the clay industry of the Harappan civilization, showcasing the multifaceted development of this ancient art form intertwined with the growth of human civilization. This historical progression underscores the evolution of pottery-related research within the context of the Indus Civilization, showcasing a shift from basic artefact description to a more sophisticated and nuanced understanding of pottery morphology, composition, and production techniques[2].

The origins of pottery-making art are attributed to numerous advancements in craft-making technology, which are mostly seen in the various types of potters i.e. discs, bowls, dish-on-stand, perforated jars etc. These artefacts are made from burnt clay referred to as ceramic. They include earthenware, stoneware, terracotta figurines, glazed objects, faience and glass. These various forms present technological advancement, and carry economic and social implications and the adoption or non-adoption of those innovations, cultural sequence and chronology of most sites which are significant for understanding past human behavior. This paper presents a comparative account of ceramic traditions between four noteworthy Indus settlements in Haryana. It provides proof that potters of the IVC employed various shaping techniques to create ceramic traditions with regional differences. The earliest example of pottery production in the Indian subcontinent comes from Mehrgarh (Period

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IB/IIA)[3]. Along with Mehrgarh, the site of Naushahro has also provided lots of material evidence of pottery production that indicates the different stages of pottery manufacturing[4,5.] Many Indus sites namely Mohenjo-Daro, Harappa, Chanhudaro, Balakot and Nageswer also present pottery kilns that are an important sign of pottery manufacturing. This research is part of an overall investigation of Indus ceramics, which used a comprehensive, integrated method to examine the steps involved in creating pottery. By this study, pottery can be studied several historical traditions and their social ramifications using a "*chaîne operative*" approach[6], however, the elements discussed here concentrate on analysis and comparison in the context of the Indus ceramic industries, particularly in the regional setting of these sites. Harappan pottery also presents a developmental cycle of technological advancement, progressing from non-specialized to specialized, and eventually reverting to a non-specialized form. The four sites of the ceramic assemblages under examination are two villages and the other two are the major Indus centres in Haryana excavated by LWS projects Masudpur, Khanak, Rakhigarhi and Bhirrana. Each of these sites has a specific spatial relationship to a more well-known, substantial urban settlement. This paper is based on a part of the conventional archaeological study on chronological and typological variations in pottery forms and decoration. The objective of this exploration was to contribute to the discussion of Indus Valley material culture by highlighting the significance of pottery as a symbolic and utilitarian artefact in ancient communities. Besides this, it compares the pottery assemblages from Khanak, Masudpur, Bhirrana, and Rakhigarhi, focusing on typology, morphology, and decorative styles. It also explores regional variations and site-specific innovations in pottery production, reflecting local adaptations within the broader framework of the Indus Valley Civilization. Besides this, the exploration aimed at identifying chronological patterns in pottery styles and technologies, contributing to a better understanding of the temporal development of the Indus Civilization and assessment of the balance between cultural continuity across these sites and localized expressions of ceramic traditions. It further explores the role of pottery in daily life, ritual practices, and inter-site exchange networks among Indus settlements.

Geomorphology: Geomorphological knowledge is necessary for the discovery of ancient societies to map and understand the resource-use patterns of early communities. The people of the Indus civilization most likely had an extensive knowledge of the local availability of raw materials. Geo-morphologically, Haryana is a crucial part of the Punjab alluvial plain, covering 44,212 square kilometres. Haryana's cradle land, shaped by deposits from rivers Saraswati, Ghaggar, Yamuna, Satluj and other tributaries, condenses the area as agriculturally fertile. Geographically, the state featuring rich alluvial plains, hills, and dry areas mirrors its abundant natural legacy, significantly influencing its historical and economic development. Historical literature refers to this region as Brahmavarta, Aryavarta, and Brahomoupdesa, introducing the genesis of Vedic culture in Haryana. In ancient times, this region was known as the home of Aryas and the Centre for Vedic culture. Over time, rivers like Ghaggar, Saraswati, Yamuna, and Sutlej have changed their paths. Significantly, many of the Harappan archaeological sites may be found on the terraces of river valleys and stream surfaces, providing important archaeological evidence for the existence of the Harappan civilization in Haryana.

Study Area: The study area encompassing the sites of Rakhigarhi, Masudpur, Khanak, and Bhirrana exhibits diverse and intriguing geomorphology that played a significant role in shaping the historical and cultural dynamics of the region. This region falls within the eastern domain of the Indus Valley Civilization (IVC), and the geomorphological features of the landscape have contributed to the settlement patterns, trade networks, and interactions among these ancient sites. The site of Rakhigarhi, positioned in the hinterland of the IVC, is characterized by its location within a broader eastern domain. The surrounding geomorphology likely influenced its connectivity with other sites in the area. Masudpur, situated southwest of Rakhigarhi within a radius of 10-15 kilometres, also occupies a distinct geomorphic setting. This proximity might have facilitated interactions and cultural exchanges between the two sites. Khanak, an essential trade Centre during the Harappan period, is strategically located near the Aravalli hills. The geomorphology of this region, with its proximity to hills, could have contributed to its role as a hub for trade activities, serving as a conduit between different regions and cultures. Bhirrana's location near the site of Kunal underscores the significance of its geomorphological context. The interaction between these sites might have been influenced by the shared landscape features and resources. (Bhirrana and Kunal are geographically located at a distance of 18 km. Both these sites follow the same cultural sequence and on studying their cultural material it is known that both represent the earliest cultures of this area wherever Banawali site is to be mentioned, Banawali also follows the same earliest culture, but this site is situated on 45km from Kunal, so keeping in view the importance of research, it has been

kept in isolation.) The settlement patterns and resource usage in the studied area were likely formed by its geomorphological features, containing hills, valleys, and river systems. Survey data and material comparisons from various periods provide insights into how the landscape influenced the social, economic, and cultural aspects of ancient civilizations. Finally, the diverse geomorphology of the study area, encompassing Rakhigarhi, Masudpur, Khanak, and Bhirrana, has contributed to shaping the historical narratives and archaeological interpretations of this region. The interactions between these sites played a pivotal role in the dynamics of the Indus Valley Civilization's eastern domain.

Methodology

In this paper, an attempt has been made to collect data from published preliminary reports of the excavated sites and work related to exploration. All research articles related to this region, adjacent area and Greater Indus region will be referred to develop an understanding of ceramic-making techniques, and motifs. Comparative research methods have been used for a better understanding of the Greater Indus region to avoid isolation studies.

Pottery Assemblage

The variety of ceramic varieties indicates specialized manufacturing for residential, ritual, and commercial uses. This evidence offers essential stratigraphic insights, helping archaeologists in understanding to establish the chronological framework of the civilization. The evidence obtained from selecting the study area is further discussed in detail.

Early Harappan Culture: The material regarding Early Harappan culture comes from Bhirrana, Kunal, Balu, Banawali, Rakhigarhi, Siswal, and Farmana, etc.[7] The material culture of the early Harappan culture is quite similar to the Sothi-Siswal phase. The earlier phases of Masudpur and Khanak follow ceramic typologies of the Kalibangan six fabrics. However, the archaeological site of Khanak shows the presence of the first farming community in a similar geographical area shared by the chalcolithic habitation at Bhirrana and Kunal. The most common material recovered here is various types of fired ceramic vessels[8]. Khanak ceramic was largely wheel-made, with few hand-made as well found at Rakhigarhi. The pottery found here is typical dull red ware including chocolate slipped ware, exterior incised ware, mud applique ware, black slipped ware, painted red ware, interior incised shreds (fabric D), bearing typical shapes such as flat-topped bowls, basins, disc base of the vase, beaded rim vase, perforated jar, dish on a stand, goblets, handled vessels, and a handmade spouted pot (milk feeding?) (fig.1) vases, legged bowls goblets, handle, miniature pots, Dish-on-stand etc[9]. The majority of the characteristic pottery is dull (or red-washed) ware with painted decorations in two colours (bi-chrome akin to Kunal and Kotdiji), a few with Pipal leaf and bi-chrome pottery of this site is similar to Kunal and Kotdiji. The pottery decorated with incised designs includes groups of parallel and intertwined line bands, herring-bone patterns, chevrons, short strokes, nail & thick wavy lines, etc. (fig.2 & 3)[10].

Khanak mud applique ware features clay pottery with post-firing mud applications that often incorporate organic materials, resulting in a smoother surface suitable for intricate designs, and it is associated with the Indus Valley Civilization. In contrast, Bhirrana mud applique ware stands out for its incorporation of calcareous granules into the clay, creating a rough and gritty exterior texture, which may limit the complexity of designs, and it belongs to the pre-Indus Valley Civilization period, offering insights into earlier cultural developments in the region[11].

Excavations at Masudpur I, III and VII reported potteries from the Sothi-Siswal period to the Late Harappan period[12]. There were several different types of pottery featured; these will be discussed by period-wise. Various unique fabric types that have been previously documented at sites like Kalibangan emerged, marking the pottery of the Early Harappan/Sothi-Siswal type. These consist of samples of Kalibangan fabrics A, B, and D as well as chocolate slipped ware. Examples of post-firing graffiti were found on several shreds, including those that featured a theme that looked like crossed flags (fig. 6, 7 & 8)[13]. These are the unique motifs mostly which were mostly not found in Haryana.

In Bhirrana, the neighbouring site of Kunal, the existence of bi-chrome ware in connotation with Hakra wares was noticed at the upper levels of the site. Some regional variations could be seen in this region. These people manufactured mud-applied ware much in contrast to the incised varieties. Pottery types of Bhirrana are "Tan slipped/ chocolate slipped ware, Mud applique ware, incised ware, Black Burnished ware, Bi-chrome ware, Brown on Buff ware, Black-on-red ware and red ware" found in the earliest level of the site. The painted repertoire is essentially geometric comprising incised parallel and intertwined lines, loops, triangles, etc. Bhirrana people used the two types of incised ware deep and light incised ware[14].

The pottery kilns found in RGR 1 are brick-lined in a rectangular shape. An initial examination of the ceramics in this area has uncovered open-fire kilns at a

Fig. 1 & 2. Spouted Handmade (milk feeding) pot & Dish-on Stand from Khanak (Courtesy IAR 2008-09).

Fig.3 & 4. A few painted potteries & Fig.4.Incised Pottery (Internal, Fabric Incised potteries with paintings Kalibangan Fabric-D) (Khanak).

Fig. 5. Potteries with post-firing mud (soothing) applications (Khanak)

Fig. 6 & 7. Early Harappan/Sothi-Siswal pottery, Masudpur. (IAR:2008-09)

Fig. 8. MSD III Vase of Miniature Red Slip Ware with featureless rim.

pre-formative stage. Concerning the clay procurement process, it has been noted that multiple sources were[15].

The sandy soil within the local catchment area has probably been used for pottery production since the pre-formative stage. Notably redware and chocolate slipped ware were esteemed as high-quality products during that time. Ceramic analysis has revealed that the pottery vessels used at the location are unique from those seen at greater Indus sites and resemble the 'Sothi-Siswal ceramics' discovered at Mitathal and Farmana.

The Early Harappan ceramic industry uncovered at Rakhigarhi exhibits all six fabrics found at Kalibangan, showcasing a range of techniques in shapes, decorative elements and surface treatment. The majority of pottery was wheel-made, with rare exceptions of handmade pieces. It featured a quite thin and lightweight fabric, ranging in colour from red to pinkish, often painted in black and occasionally complemented with white accents on a dull, self-slipped surface.

The design elements primarily followed geometric patterns, with simpler motifs including rows of dots, horizontal bands, latticed triangles, and fish scales. Fillers in the designs consisted of radiating lines culminating in solid disks, four-petaled flowers, pipal leaves, circles with radiating arches, etc.

Among the pottery types, one could find jars with outward-turned rims, basins and dishes-on-stands. However, in addition to the redware, this site's earlier phase also yielded plain and painted varieties of pottery. Notably, Hakra ware pottery was also reported from this level featuring incised appliqué, dendritic patterns, ridged textures and striated ware[15].

Graffiti Marks

The graffiti marks found on these potsherds are characterized by light incisions. This analysis suggests that they were not executed in a structured manner, as seen with the vertical, horizontal, and slanting strokes found at sites like Khanak and Rakhigarhi[15]. However, a different perspective emerges at Masudpur pottery, as it presents evidence that contrasts with these sites. Here, the group of graffiti marks appears to represent various symbols such as tree-like shapes, stars, and swastikas. These potter's marks, typically engraved on the base and rim of the pottery in a leather-hard condition, reflect the

Fig. 9 & 10. Khanak and Masudpur (IAR: 2008-09)

artistic sensibilities of the Harappan people. It is possible that these marks served as a means of identifying the production house or factory responsible for these items. These marks, created using fine-pointed implements, exhibit a remarkable level of uniformity and consistency. These tools were likely crafted from stone and metal and were predominantly used for carving graffiti marks after the firing process. This was necessary because after firing; the surface of the pottery converted hardened, making it hard to scrape marks using conventional tools that are usually not uniform in their execution[16]. Intriguingly, some of these graffiti marks bear a resemblance to the signs of the Harappan script, leading to the presumption that they may represent the names of the pottery owners. Furthermore, some of these graffiti marks bear a resemblance to the signs found in the Harappan script, raising the possibility that they could represent the names of the owners or other significant information. The similarities between Early Harappan (RGR-1, RGR-6) and Mature Harappan levels (RGR-1, RGR-2) lead to a progression in the use of these marks, with the latter showing a stronger resemblance to the signs of the Harappan script, suggesting a potential linguistic or symbiotic relationship[15].

In conclusion, the early Harappan graffiti marks discovered at Rakhigarhi and Masudpur provide

Fig. 11 & 12. Chanhu-Jo-Daro & Khanak (Showing similarity between two different regions)

intriguing insights into the artistic and potentially functional aspects of Harappan pottery production. While Rakhigarhi's marks lack a systematic structure, Masudpur showcases a more artistic approach, and both sites offer valuable clues about the culture and practices of the Harappan people during different phases of their civilization.

As shown in the center of the figure, the middle pot at Khanak is decorated with an extensive checkered pattern. This painted pot is similar to Chanhu-Jo-Daro pottery motifs in which the decorated pattern is chequered form, one square is decorated with lines and one square is blank. But we can see the same pattern in the later phase of this civilization where blank-square is designed with crossed lines[17]. It is the pivotal motif for the grid pattern decoration. It initially appeared on Kulli-Gul-Mohammad Black on Red slipware at Kulli-Gul-Muhammad-III in the Quetta Valley.

Mature Harappan Culture

The Mature Harappan pottery was characterized by the appearance of numerous fabrics and fragments such as Dish-on-Stand, perforated vessels and decorative styles. The well-known forms and textiles, such as painted repertory with geometric, floral, and faunal themes, aptly illustrate the ceramic assemblage of the Classical Harappan period. A storage jar of sherds shows two idealized peacocks and pipal foliage. Several complete goblet specimens were gathered at Masudpur I (fig.13 & 14)[18].

Fig. 13. Masudpur I (Mature and Late Harappan), courtesy: Living in the Hinterland survey Masudpur.

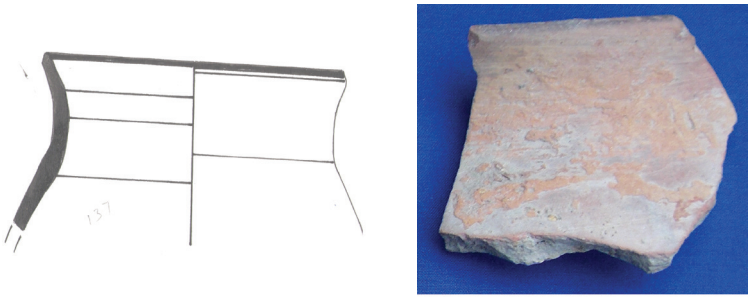

Fig. 14. MSD III Red Ware with elliptical rim MH

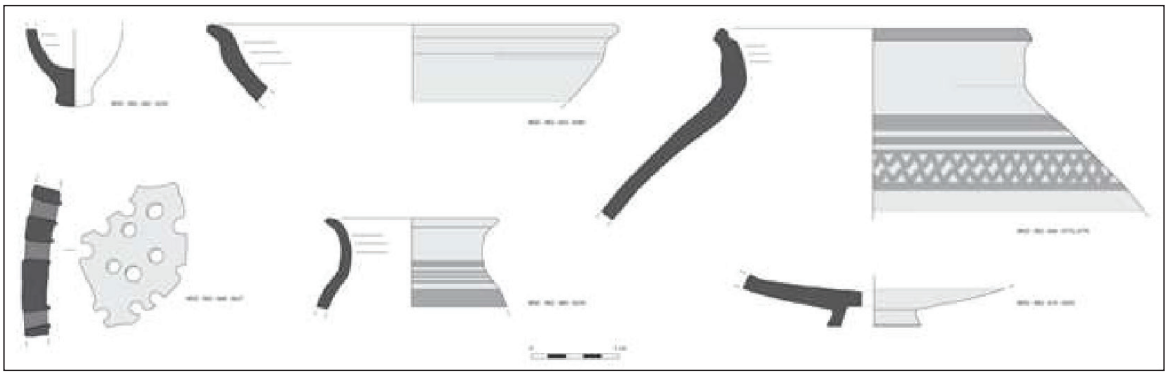

Fig. 15 (A & B): 'Local' style Mature Harappan pottery from Masudpur I (photograph A. Ceccarelli)

Rakhigarhi Mature Harappan phase has produced classic red and grey ware with a few shreds of non-glazed reserve slipped ware. This red ware is separated into three categories i.e. red-slipped ware pottery, Black-Painted on red slipped and black-painted ware pottery. Important shapes in redware included goblets, perforated jars, dish-on-stands, vases, jars, legged rim vessels, fluted vessels, and ribbed vessels[19].

Late Harappan Culture

MSD I and MSD VII have a mixture of Early and Mature Harappan material which is superimposed by phases characterized by the Late Harappan period (fig. 16, 17 & 18)[20].

This type of pottery has a rough surface and less surface treatment. These vessels have a medium coarse with an oxidized grey core fabric manufactured by a well-fired technique. Reported vessels of this ware are made by fast and slow wheels[21& 22]. The most frequent shapes are beaked, rounded, square, triangular, flared, and globular pots with medium-length necks. RKG II late Harappan pottery is different from Masudpur[23, 24 &25]. The rad slipped pottery has a comparatively fine surface with medium fabric and both thin and thick slips of dull to bright red.

Conclusion

Briefly, the distinctiveness of the pottery from Khanak and Masudpur within the context of the Indus Valley Civilization is significant because it reflects the localized adaptations and innovations that occurred across different regions within this ancient civilization. The simplicity of the decorative patterns suggests a pragmatic approach to pottery making, with an emphasis on utility and elaborate ornamentation. This practicality aligns with the daily life needs of the people in these regions, as the pottery shapes and sizes are indicative of functions like food preparation, storage and serving. The pottery found at Khanak and Masudpur is primarily Red Ware, which is considered to be the most prevalent type of

Fig. 16 & 17: Late Harappan Pottery from Masudpur, Courtesy: IAR 2008-09.

Fig.18. RKG II: Fragment of Vase of red slipware with splayed out-turned rim, deeply concave neck oblique body, medium fabric, Late Harappa (IAR, 2008-09)

Indus Valley Pottery. This pottery is usually thin and well-burnt with a dark red surface and a polished finish. Red Ware pottery is often decorated with various designs and patterns, which are unique to that specific region. The decorative patterns observed on the pottery unearthed in Khanak and Masudpur are simpler than those discovered in Rakhigarhi and Bhirrana, they nonetheless have a significant place in the creative and industrial expressions of Indus Valley Civilization. Archaeological analyses imply that the vessels found in Khanak and Masudpur performed essential roles in daily living activities, such as cooking, storing, and serving food, based on the characteristics of the pottery, which include shape, size, and ornamental motifs.

In conclusion, the comparative study of pottery from Rakhigarhi and Bhirrana with Khanak and Masudpur reflects the technological sophistication, cultural continuity and communication network. Rakhigarhi is the zenith of Harappan urban life, with more sophisticated pottery types, while sites such as Bhirrana display early kinds of pottery linked to the pre-Harappan period. The simpler but functional pottery of smaller communities like Masudpur and Khanak reflects their role as satellites that supplied or complemented the larger urban centers.

This work will enhance our comprehension of the Indus Valley Civilization's complex nature and aid future investigations into other facets of it.

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