

Chapter V

Analysis and Conclusion

This chapter presents an overview of the findings through an amalgamation of typological and quantitative analysis. The key results and insights obtained through rigorous examination and interpretation of the data shed light on the ceramic traditions occurring in north Gujarat and contribute to the existing understanding in the field. The culmination of this analysis chapter brings together the key discoveries, implications and limitations, paving way for future additional research. In the following sections, a summary of the general observations drawn from the analysis, highlighting their significance and potential vessel forms and their usage will be highlighted.

Pre 2nd century BCE

The typological study resulted in identifying wares which are Red Ware and Red Slipped Ware, characterized by medium to small-sized vessels including globular pots, storage jars, basins, bowls, and lids. Black and Red Ware also featured globular pots, basins, and bowls. The production techniques exhibited variation, with some ceramics made on slow to medium wheels, displaying striation marks at irregular intervals, while others were handmade. The pottery fabric ranged from coarse to medium coarse. The tempering materials employed included sand and husk, and the surface treatment typically involved a thick slip applied to the surface, with minimal decorative techniques.

During this period, and the subsequent one the outcome of the quantitative analysis shows that Red Ware and Red Slipped Ware displayed a prevalence of concave necks over constricted necks, whereas Black and Red Ware predominantly featured constricted necks.

A distinctive feature of this period was the presence of bowls with flaring sides and a vertical rounded or tapering rim, a characteristic that persisted into the following period. Red Ware, characterized by a coarse to medium fabric often mixed with husk and sand, was produced on slow to medium wheel made. The surface treatment was relatively poor, featuring a thin wash of pale orange color which was generally underfired. Common shapes included medium to small globular pots, lids, bowls, and basins, with simple outgoing and rounded rims, and medium to small concave or constricted necks.

Red Slipped Ware has a coarse to medium fabric with sand and husk tempering material and is slow to medium wheel made. Its distinguishing feature was a thick coating of dark red slip, often with a pale finish, though the thickness of the slip could lead to surface cracking. Common shapes were similar to Red Ware, with outgoing and rounded rims and medium to small concave or constricted necks.

Black and Red Ware exhibited a very coarse fabric with a significant amount of sand and husk in the clay. These vessels are medium to slow wheel made.. The surface treatment was rudimentary, featuring a thick coating of black slip on the inner portion with burnishing marks, contrasting with a light pale red color on the outer portion. Common shapes included medium to small globular pots, bowls, and basins, with simple flaring rounded and tapering rims.

Regarding decorated pottery, the excavation has yielded only a sparse quantity of painted sherds, limiting in uncovering of comprehensive insights into the artistic aspects of this period's ceramics.

Observation

The excavation conducted in this region in the deep cuttings had limitations in scope, with practical challenges such as waterlogging hindering the recovery of sufficient diagnostic sherds. However, further excavations into the lower levels of the site in detail could yield extensive data collection, thereby facilitating a more concrete understanding of the assemblage of this earliest period. Nonetheless, the ceramics from this phase predominantly comprised Red Ware, Red Slipped Ware, and Black and Red Ware.

2nd century BCE to 1st century CE

During this period, as per the typological analysis, the ceramic assemblage is classified by three common ware types: Red Ware, Red Slipped Ware, and Black and Red Ware, with Red Ware and Red Slipped Ware emerging as the dominant categories. Overall, both Red Ware and Red Slipped Ware exhibit medium to small globular pots, basins, storage jars, and bowls with a notably thick section. In the case of Black and Red Ware, the main forms consist of globular pots and bowls. The fabric, while generally finer compared to the preceding period, remains coarser for Black and Red Ware. Sand and husk are the tempering materials used across all categories.

The surface treatment involves a coating of slip, and decorative elements include ridges and incised horizontal grooves. The prevalent rim shapes are simple outgoing and out-turned

rounded rims, often accompanied by concave and constricted necks. Notably, Red Ware and Red Slipped Ware exhibit a prevalence of concave necks in various sizes, while Black and Red Ware predominantly features constricted necks. The continuity of bowls with flaring sides and a vertical rounded or tapering rim from the preceding period is observed.

The findings derived from the quantitative analysis along with the typological study of three distinct wares are outlined as follows:

The fabric of Red Ware is comparatively finer than the previous period. These ceramics are produced on fast wheel made, featuring improved surface treatment and medium firing. Common shapes include medium to small globular pots, bowls, and basins. Rims typically exhibit simple outgoing rounded forms, with the addition of new rim varieties. Bowls having flaring sides and a vertical rounded or tapering rim are dominant, and necks are medium to small with concave and constricted shapes. Decorations may include ridges on the outer body portions.

The fabric of Red Slipped Ware ranges from coarse to medium, incorporating a significant amount of husk and sand. Produced on fast wheel made, these ceramics are ill-fired with a poor surface treatment, featuring a thick coating of dark red slip that is pale in finishing, lacking burnishing or polishing. Common forms include medium to small globular pots, basins, storage jars, bowls, and lids. Rims are generally simple, outgoing and rounded, and necks are medium to small with concave and constricted shapes. Decorations involve ridges and grooves on both the outer and inner portions of the rim.

Black and Red Ware has coarse fabric with a substantial amount of coarse sand particles and husk in the clay. Produced on medium to fast wheel made, these ceramics are ill-fired and exhibit poor surface treatment. The outer portion of globular pots shows a light orange color with a pale slip, while the inner sides have a black slipped coating. Burnishing marks are visible on some sherds. Common shapes include medium to small globular pots and bowls. Rims are generally simple outgoing and rounded, and necks are medium to small with concave and constricted shapes.

Decorated Pottery: Limited evidence of decorated sherds was unearthed during this phase. However, observations included traces of bichrome and black painted decoration.

Observation

Considering the constraints encountered during the excavation of deep cuttings in both the preceding and current periods, there is a challenge in comprehensively understanding the ceramic assemblage. Nonetheless, through typological and quantitative analysis, three predominant wares mentioned above have been identified.

1st century CE- 4th century CE

The typological study facilitated the observation that this period exhibits a diverse range of wares and shapes, showcasing an enhancement in both the quality and quantity of pottery compared to preceding periods. Considering aspects such as fabric, firing, color, and surface treatment, minimal differences or changes were observed. However, this period is subdivided into two phases, IIIA (early phase of Kshatrapa) and IIIB (late phase of Kshatrapa), based on the emergence of new shapes and wares, including Red Polished Ware, Coarse Grey Ware, Black Burnished Ware, and Northern Black Polished Ware (NBPW).

The common wares include Red Ware, Red Slipped Ware, and Black and Red Ware, featuring medium to small globular pots, basins, storage jars, and bowls with a thick section and rim. Additionally, new shapes such as dish, base, lid with knob, jar, and spout are introduced in Red Ware and Red Slipped Ware. Rims predominantly exhibit outgoing or out-turned forms, characterized by rounded, triangular, squared, tapering, and beaked shapes. The necks vary from long to small with concave and constricted shapes, witnessing a steady increase in medium and long concave necks. A noteworthy finding includes a single sprinkler sherd of Red Polished Ware from the early Kshatrapa period, signifying marked improvements in fabric, firing, and surface treatment compared to earlier periods.

The quantitative analysis undertaken has yielded noteworthy outcomes, providing a comprehensive understanding of the shifts in ceramic styles in this time frame. In this context, the late Kshatrapa phase witnessed a notable introduction of black burnished ware, accompanied by a sudden rise in the quantity of black and red ware. The appearance, shape, and variety of shapes exhibit distinctive changes compared to preceding periods, featuring lids with central cup-like hollowness and lids with knobs as characteristic features that continue into the succeeding period.

The fabric of Red Ware is medium to coarse, with less tempering material such as husk and coarse sand mixed in the clay. These ceramics are fast wheel made, mostly medium fired, with

a fine surface treatment and a range of colors from light red to dark red. Common forms include medium to small globular pots, storage jars, dishes, bowls, basins, and lids. Rims exhibit outgoing or out-turned shapes, including rounded, triangular, squared, tapering, and beaked. Necks are typically long to small with concave and constricted shapes. Decorations involve ridges, incised horizontal grooves, and paintings on the outer, inner rim, neck, and body portions.

This period witnesses a considerable quantity and variety of red slipped ware as well. The fabric is medium to coarse, incorporating less tempering material like coarse sand and husk. These ceramics are mostly fast wheel made, ranging from medium to ill-fired. Surface treatment quality improves, with some sherds featuring a bright red slip coating, and occasional use of mica, giving a mica wash appearance. Common shapes include medium to small globular pots, basins, storage jars, spouts, bowls, and lids. Rims are generally outgoing or out-turned with rounded, squared, tapering, and beaked forms. Necks vary from high to small with concave and constricted shapes. Decorations include incised horizontal grooves, ridges, appliqué, and paintings on the outer, inner rim, neck, and body portions.

As mentioned above Black Burnished Ware, introduced in the late phase of Kshatrapa, features a coarse to medium fabric with a substantial amount of tempering material such as coarse sand and husk. This ware was produced on fast wheel made and is mostly ill-fired. The surface treatment involves a coating of jet black slip with visible burnishing marks. Common shapes include medium to small globular pots and bowls, with outgoing rounded, tapering, and squared rims. Necks are typically small to medium with concave and constricted shapes. Notably, the late phase introduces a pattern where constricted necks have either angular or projecting rims, a characteristic that becomes prominent from the Post Kshatrapa period onwards. Decorations include incised horizontal grooves and ridges on the inner and outer rim, neck, and body portions.

Similarly, a sudden increase in black and red ware quantity towards the late phase of Kshatrapa can be observed. The fabric is medium to coarse with tempering material such as husk and coarse sand. These ceramics are fast wheel made and mostly ill-fired. Surface treatment involves a slip coating, with the outer surface displaying pale red to bright red color and the inner portion featuring a black slip with burnishing marks. Common shapes include medium to small globular pots, jars, and bowls, with outgoing rounded, tapering, and squared rims.

Necks range from medium to small with concave and constricted shapes. Decorations involve shallow incised horizontal grooves on the outer and inner rim portions.

As discussed earlier, a specimen of classical Red Polished Ware (RPW) was found, featuring a well-levigated fabric with no added tempering material. This ware is well-fired at a high temperature, with a supremely smooth and polished outer surface in a dark red color and is a fast wheel made. The shape found is of a broken sprinkler and globular pot.

Grey Ware introduced from this period onwards, is present in lesser numbers. The fabric is medium to coarse, with tempering material such as husk and coarse sand added to the clay. These ceramics are mostly ill-fired, with a very poor surface treatment in ash grey color and no coating of slip. Shapes include medium to small basins and lids, with rims exhibiting everted or inverted forms, including rounded, beaked, and tapering shapes. Decorations involve incised horizontal grooves and ridges on the outer, inner rim, and body portions.

This region yielded very few Northern Black Polished Ware (NBPW) bowl sherds. The fabric is medium to coarse, with a minimal amount of tempering material like coarse sand added to the clay. These ceramics are well-fired and feature burnishing on the outer surface for a smooth finish. Shapes consist of common small bowls, and while slightly degenerated compared to classical NBPW found in the north or middle Ganga valley, these sherds represent the late phase of NBPW chronology.

During this period, there is a noticeable escalation both in the quantity and quality of decorated and painted sherds as well. A distinctive type known as the Rang Mahal type, characterized by black motifs on a red background with geometric and naturalistic patterns, emerges in this chronological phase.

In the early Kshatrapa period, common decorative elements include appliqué, incised, stamped, and simple painted designs featuring horizontal bands at regular intervals, primarily executed in black and red colours.

As the period progresses into the late Kshatrapa phase, a notable shift is observed with the introduction of new colors such as purple, brown, white, and bichrome paintings, gaining prominence in the decorative sherds. Notably, appliqué, incised, and stamped designs evolve in complexity, showcasing increased implementation of intricate geometric and naturalistic patterns during this later stage.

Analysis

In the Post Kshatrapa period, a significant upsurge in the quantity and quality of ceramics is again observed. Unlike the Mauryans the Gupta administration displayed a decentralized structure. The empire saw significant influence wielded by feudatories, who governed extensive regions, while artisans and merchants actively participated in town administration. Nonetheless, peasants faced the dual responsibility of meeting the demands of feudatories and providing sustenance to the royal army as it passed through villages. Consequently, this might have been a contributing factor that led to a heightened demand for responsiveness to the needs and dynamics of the common population.

Furthermore, potters seem to be more aware of the material advantage along with the selection and quality of clay, coupled with a willingness to engage in experimentation with manufacturing and firing techniques. In view of the above noteworthy efforts were being invested in the production of diverse shapes and qualities of ceramics, reflecting a proactive response to evolving preferences and an inclination toward innovation in the realm of pottery making.

5th century CE- 10th century CE

The typological research resulted in suggesting that this phase marks the peak prosperity in terms of the variety of wares, shapes, types, forms, manufacturing technology, and associated findings found in this region. This period like the preceding has also been divided into two sub-periods, 4A (early post-Kshatrapa) and 4B (late post-Kshatrapa), based on subtle changes in fabric, firing, color, surface treatment, etc. Common wares in this period encompass Red Ware, Red Slipped Ware, Red Polished Ware, Black and Red Ware, and Black Burnished Ware, featuring medium to large globular pots, basins, bowls, dishes, storage jars, sprinklers, spouts, and lids. New additions to the wares include Chocolate Slipped Ware, Kaolin Ware, Black Slipped Ware, and imported wares such as Torpedo and Turquoise Glaze Ware.

Additionally, the quantitative analysis played a pivotal role in comprehending the overall evolution of styles and trends evident in the diversity of wares and shapes, as outlined below.

Significantly, a notable increase in both quantity and variety of Black Burnished Ware can be observed. Regular shapes from the previous phase continue, with pottery fabric ranging from medium to coarse, incorporating a significant amount of tempering material, and generally

being ill-fired. Rims are predominantly outgoing or out-turned, exhibiting rounded, triangular, squared, tapering, and beaked forms. Necks vary from long to small, featuring concave and constricted shapes, with a consistent presence of medium and long concave necks.

Towards the late phase of the post-Kshatrapa period, new varieties in the shape and size of rims are observed. Surface treatment in the early post-Kshatrapa is darker, gradually transitioning towards brighter colors in the late post-Kshatrapa, often accompanied by long concave necks. A distinctive characteristic of this period is the application of gold and silver mica wash treatment on the surface, grooved rims, 'V' shaped bowls (which become more prominent in the subsequent period), long humped spouts, and red slipped ware sprinklers.

The fabric of Red Ware ranges from medium to coarse, incorporating a significant amount of tempering material such as coarse sand and husk. This ceramic is fast wheel made, with firing mostly from medium to well-fired. The surface treatment is fine, displaying dark red to bright red colors, along with buff, golden, and silver mica wash on the outer surface—a distinctive feature of this period. Common shapes include medium to small globular pots, bowls, basins, spouts, dishes, storage jars, handles, and lids. Notably, the introduction of long spouts begins in this period, with some sherds bearing golden and silver mica wash with additional painting. This period exhibits the maximum variety of wares, shapes, and rim types, with decorations in the form of ridges, incised horizontal grooves, and paintings on the outer, inner rim, neck, and body portions.

The fabric of Red Slipped Ware is medium to coarse, incorporating less tempering material such as coarse sand and husk. This ceramic are fast wheel made and range from medium to well-fired. The fine surface treatment features light red to dark red colors, with a thick coating of slip, sometimes burnished on the inner and outer surface. Common shapes include medium to small globular pots, bowls, basins, storage jars, sprinklers, and lids. Imitation of Red Polished Ware (RPW) in the form of sprinklers, with a coating of dark red slip and burnishing marks, is observed in this ware. The variety of rim types is notable, with rims generally being outgoing or out-turned, exhibiting rounded, triangular, squared, tapering, and beaked shapes. Necks are typically medium to small with concave and constricted shapes. Decorations include ridges, incised horizontal grooves, and paintings on the outer, inner rim, neck, and body portions.

This period witnessed the continuation of a substantial amount of black burnished ware, featuring a medium to coarse fabric with tempering material such as coarse sand and husk added to the clay. This ceramic is fast wheel made and are mostly ill-fired. The surface treatment involves a coating of jet black slip along with visible burnishing marks. Shapes include medium to small globular pots and lids, with outgoing and out-turned rims, exhibiting rounded, squared, and beaked forms. Necks are typically small to medium, featuring concave and constricted shapes. Notably, among the constricted necks, the shape of the rim varies, being either angular or projecting, with lengths ranging from medium to long. Decorations include incised horizontal grooves and ridges on the inner, outer rim, neck, and body portions.

The fabric of Black and Red Ware ranges from medium to coarse, with tempering materials such as husk and coarse sand added to the clay. This ceramic is fast wheel made and are mostly ill-fired. Surface treatment involves a coating of slip, with the outer surface displaying pale red to bright red colors, while the inner portion is black with burnishing marks. Common shapes include medium to small globular pots, jars, and bowls, with outgoing rounded, tapering, and squared rims. Necks range from medium to small, featuring concave and constricted shapes. Among the constricted necks, the rims are either projecting or angular, with lengths varying from medium to long. Decorations involve shallow incised horizontal grooves on the outer and inner rim portions.

Only a single specimen of Black Slipped Ware was recovered from this period, featuring a fine fabric with minimal tempering material having coarse sand. This ceramic is fast wheel made and is well-fired. The surface treatment includes a coating of black slip, burnished to reveal visible burnishing marks on the outer and inner surfaces. It is in a small bowl shape having thin section, with an incurved square rim.

The fabric of Red Polished Ware is fine, with an extremely minimal amount of tempering material in the form of coarse sand added to the clay. This ceramic is fast wheel made and is mostly well-fired at high temperatures. The surface treatment ranges from dark red to bright red colors and is highly polished. Common shapes include medium to small globular pots with funnel-shaped wide mouths, spouts, sprinklers, and handles. Rim shapes include rounded and tapering towards the part. Some specimens of a coarse variety imitate RPW, featuring the same shapes but differing in fabric quality.

Only a few specimens of Kaolin Ware were uncovered from this site, featuring a fabric ranging from fine to medium with a minimal amount of tempering material in the form of coarse sand added to the clay. This ceramic is fast wheel made and is uniformly well-fired. The surface treatment has a cream whitish color with a coating of slip on the outer and inner surfaces. Shapes include a small globular pot and bowl, with thin sections. Rim forms are tapering towards the part, with a constricted neck.

The fabric of Chocolate Slipped Ware is fine, with very little tempering material in the form of coarse sand added to the clay. This ceramic is fast wheel made and is uniformly well-fired. Surface treatment includes a matte and glossy surface with a coating of chocolate slip on the outer and inner surfaces. Popular shapes are small bowls with thin sections, featuring either incurved rounded or squared rims, and convex and vertical bodies.

This period features predominantly painted varieties, with the Rang Mahal type being prevalent, along with bi-chrome, brown paintings on a white background, and brown paintings on a buff background, showcasing geometric and naturalistic patterns. Combinations of white and black bands are often used, and a mix of incised, stamped, appliqué, and punctured decorations is observed.

Towards the late Post-Kshatrapa period, a gradual decrease in the Rang Mahal type, accompanied by an increase in bi-chrome painting and incised decoration can be observed. Brown painting on a buff background on the red slip with geometric patterns becomes a common practice. Stamp decoration, featuring various sizes over an appliqué band with thumb, circle, fingertip marks, and floral motifs within a circle, begins to appear on large storage jars.

Analysis

In situations where water is needed in agricultural fields or at a distance, vessels with smaller mouths and constricted neck are preferred to minimize spillage. Those transported on bullock carts or camels often incorporate grooves in the neck to secure ropes for transportation. Moreover, during water-fetching activities from a distance, vessels of various sizes with flat and out-turned rims are strategically stacked to optimize water collection in a single trip. Additionally, vessels with long necks or constricted/small necks are carried, with the former positioned between the elbow and hip and the latter held by hand.

From the 4th century CE to the 8th century CE, there was a notable expansion in agriculture. Extensive areas of land were cultivated, and enhancements were made to existing production methods to achieve higher yields. One contributing factor was the allocation of land to both Brahmanas and secular officers across different regions. Additionally, the dissemination of knowledge on the use of iron ploughshares, manure, irrigation, and the preservation of cattle in less-developed areas played a role in promoting rural prosperity.

Vessels employed in the milking of cows or camels have a long neck, facilitating the collection of milk while balanced between the knees of the individual. Additionally, the broad oval base of these vessels helps control movement, preventing complete spillage during the milking process.

The earlier period served as a foundational phase for experimenting with stylistic and manufacturing techniques. Consequently, this era represents the pinnacle of prosperity concerning the diversity of wares, shapes, types, forms, manufacturing technology, and associated discoveries found in the region. Following the decline of the Gupta Empire, various regional kingdoms emerged, likely continuing the intellectual legacy and tradition of pottery manufacturing. Local artisans, in an effort to sustain the economy and commerce, initiated their own regional variations alongside the existing practices.

11th century CE- 13th century CE

The ceramic tradition during this period, a discernible refinement is noted in the quality of pottery, including fabric, firing techniques, and manufacturing technology, surpassing the standards set by the previous era. The typological analysis indicates that along with the regular wares namely Red Ware, Red Slipped Ware, Black Burnished Ware, Grey Ware, and Black and Red Ware, a distinctive trend emerges in Black and Red Ware, featuring elongated rims on globular pots, either projecting or angular, and broad channel-like grooves on the inner part of the rim, serving as characteristic attributes of this period. Additionally, Fine Red Slipped Ware and Chocolate Slipped Ware, both with thin sections and glossy surfaces, make their appearance, alongside Mica-washed Red Ware.

The outcome of the quantity analysis suggests that the quantity and variety of Black Burnished and Grey Ware are nearly equivalent to Red Ware and Red Slipped Ware during this period. The regular shapes from the previous phase continue. The prevalent characteristic shape

involves black and red ware having constricted necks and long projecting rims along with the prominence of V shaped bowls.

This period sees a substantial quantity of Red Ware with a fabric ranging from fine to coarse, incorporating a lesser amount of tempering material such as coarse sand and husk. These ceramics are fast turn-table creations, ranging from medium to well-fired. Surface treatment involves a fine finish with dark red to bright red colors, often accompanied by mica wash on the outer and inner surfaces—a distinctive feature of this period. Common shapes include medium to small globular pots, bowls, basins, spouts, dishes, storage jars, and lids. The spouts are comparatively smaller in length, occasionally featuring gold and silver mica wash surface treatment. Rims exhibit sharper features compared to preceding periods, typically outgoing or out-turned with rounded, triangular, beaked, and tapering forms. Necks are generally medium to small with concave and constricted shapes. Decorations include ridges, incised horizontal grooves, and paintings on the outer, inner rim, neck, and body portions.

The fabric of Red Slipped Ware ranges from medium to coarse, with a lesser amount of tempering material such as coarse sand and husk. These ceramics are fast turn-table creations, mostly firing from medium to well-fired. Surface treatment features a fine finish with light red to dark red colors and a thick coating of slip, sometimes burnished on the inner and outer surfaces. Common shapes include medium to small globular pots, handi, bowls, basins, handles, and lids. Rims are typically outgoing or out-turned, exhibiting rounded, triangular, squared, tapering, and beaked forms. Necks range from medium to small with concave and constricted shapes. Decorations include ridges and incised horizontal grooves on the outer, inner rim, neck, and body portions.

A distinct variety of fine Red Slipped Ware with a thin section is unique to this period, appearing as an imitation of Red Polished Ware (RPW) in terms of treatment and firing technique. Shapes found in this specific ware include small globular pots with carination on the body.

The quantity of Grey Ware increases featuring a coarse to medium fabric with tempering material such as husk and coarse sand added to the clay. These ceramics are fast turn-table creations, mostly firing from medium to ill-fired. Surface treatment is poor, presenting an ash-grey color without a coating of slip. New shapes include medium to small globular pots, basins, bowls, spouts, and lids. Rims are either everted or inverted, featuring rounded, beaked, and

tapering forms. Decorations include incised horizontal grooves and ridges on the outer, inner rim, and body portions.

The fabric of Black Burnished Ware ranges from medium to coarse, with the addition of tempering material in the form of coarse sand and husk to the clay. These ceramics are fast turn-table creations, mostly ill-fired. Treatment involves a coating of jet-black slip with visible burnishing marks on the surface. Shapes include medium to small globular pots, handi, and basins. There is an increase in rim varieties, featuring outgoing and out-turned forms that are rounded, squared, and beaked towards the part. Necks are usually small to medium with concave and constricted shapes. Among the constricted necks, the shape of the rim may be angular or projecting, varying in length from medium to long. From this period onwards, there is an increase in decorations comprising incised horizontal grooves, wavy lines, and ridges on the inner, outer rim, neck, and even above carination increases.

The fabric of Black Slipped Ware is fine, with a minimal amount of tempering material such as coarse sand added to the clay. These well-fired ceramics, created on fast turn-tables, feature a coating of jet-black slip, sometimes burnished with visible marks on the outer and inner surfaces. Common shapes include globular pots with funnel-shaped open mouths, bowls, and humped spouts, all thin in section with rounded, tapering, triangular, and squared rims. Prominent ridges adorn the outer rim and neck portions.

The fabric of Chocolate Slipped Ware is fine, with a minimal amount of tempering material such as coarse sand. Uniformly well-fired on fast turn-tables, these ceramics feature a matt and glossy surface with a coating of chocolate slip on the outer and inner surfaces. Shapes include small bowls having thin sections and rims that are incurved, rounded, and feature convex sides.

It is observed that the Kaolin Ware continues, with the fabric ranging from fine to medium and a minimal amount of tempering material in the form of coarse sand. These well-fired ceramics, produced on fast turn-tables, exhibit a cream-whitish color with a coating of slip on the outer and inner surfaces. Shapes in this phase are limited to spouts, along with evidence of body sherds.

Torpedo jar ends in this period, with a considerable number of diagnostic and non-diagnostic sherds recovered. The fabric is medium-coarse to coarse, well-fired, and thick in section, featuring a buff color and a black coating of bitumen on the inner surface.

This period continues the practice of stamp decoration in various sizes over an appliqué band, featuring larger patterns of thumb, circle, and fingertip marks. Notably, bichrome painting bands in black and white persist, while purple painting almost disappears. Incised decoration becomes more prevalent than paintings, introducing new patterns such as triangles, punctured motifs on the carinated part of the body, and incised lines within bands, especially in Black Burnished Ware. Incised designs on a buff background in red ware dominate, varying from wavy lines to geometric patterns towards the end of this period. Additionally, evidence of a few cut ware fragments is found.

Analysis

It's worth noting that the spouts were relatively shorter, probably designed for dispensing oil or ghee. Occasionally, they also proved convenient for pouring water during handwashing. Furthermore, along with established pottery-making practices, the combined quantity of black burnished ware and grey ware roughly equals that of the red varieties. This suggests that, probably due to increased vessel demand, there was a quest for a more cost-effective clay fabric, with the black varieties serving as a viable alternative, considering that red varieties are deemed comparatively superior.

In contrast to previous periods, there seems to be a gradual decline in experimentation regarding surface treatment and stylistic form in pottery. The focus on pottery manufacturing appears to have shifted, with a growing emphasis on quantity rather than quality.

13th century CE- 17th century CE

The typological study in this period indicates that the ceramic industry is distinguished by the prevalence of Black Burnished Ware, Red Ware, Red Slipped Ware, with notable additions being Glaze Ware and Celadon Ware. Subtypes of Grey Ware and Black Burnished Ware exhibit a slight increase, featuring common shapes such as globular pots, bowls, jars, lids, and handi. Noteworthy innovations in pottery include changes in neck and rim forms, with constricted necks and longer rims displaying projecting and angular shapes, accompanied by meticulous surface treatment. A distinctive pot type, the 'lota,' distinguished by its narrow mouth, collar-like rim, and constricted neck, becomes a hallmark of this phase, along with the prominence of carination and ridges at the outer end of the rim.

Nevertheless, the quantitative analysis show that from this period onward, the variety in rim types of Red Ware decreases, featuring a medium to coarse fabric with a significant amount of tempering material like coarse sand and husk. Crafted on fast wheel made, these ceramics are mostly well-fired with poor surface treatment, lacking a coating of slip. Common shapes include medium to small globular pots, bowls, basins, spouts, and handles. Rims are typically outgoing or out-turned, exhibiting rounded, squared, tapering, beaked, and triangular forms. Necks are generally medium to small with concave and constricted shapes, while basins and bowls exhibit convex and vertical shapes. Decorations involve incised horizontal grooves and ridges on the outer, inner rim, and body portions.

The fabric of Red Slipped Ware is medium to coarse, with tempering material in the form of coarse sand and husk. This ceramic ranges from medium to ill-fired and is fast wheel made. The surface treatment features light red to pale red colors with a coating of slip on the inner and outer surfaces. Common shapes include medium to small globular pots, bowls, basins, spouts, storage jars, and dishes. Rims are typically outgoing or out-turned, with rounded, triangular, and squared forms. Necks are usually medium to small with concave and constricted shapes. Decorations consist of ridges and incised horizontal grooves on the outer, inner rim, neck, and body portions.

The fabric of Grey Ware is coarse to medium, with tempering material in the form of husk and coarse sand. This ceramic is mostly medium to ill-fired and is fast wheel made. The surface treatment is very poor, presenting an ash-grey color without a coating of slip. New shapes include medium to small globular pots, basins, bowls, spouts, and storage jars. Rims are outgoing or out-turned, exhibiting rounded, squared, and triangular forms. Decorations involve incised horizontal grooves and ridges on the outer, inner rim, and body portions.

The Black Burnished Ware's fabric is medium to coarse, with the addition of tempering material such as coarse sand and husk. This ceramic is mostly ill-fired and is fast wheel made. The surface treatment involves a coating of jet-black slip with visible burnishing marks. Shapes include medium to small globular pots, basins, handi, and lids. Varieties in rim shapes persist, featuring outgoing and out-turned forms that are rounded, squared, and beaked. Necks are usually small to medium with concave and constricted shapes. Among the constricted necks, rim shapes may be angular or projecting, varying in length from medium to long. Decorations continue in the form of incised horizontal grooves, wavy lines, ridges on the inner, outer rim, neck, and even above carination.

The continuation of Black Slipped Ware is a characteristic feature of having fine fabric with a minimal amount of tempering material like coarse sand. This ceramic is well-fired, with a surface treatment involving a coating of jet-black slip, sometimes burnished and is fast wheel made. Common shapes include globular pots and hukkas, with decorations involving prominent ridges on the outer rim and neck portions.

There is a continuation of incised patterns from the late phase of Solanki which dominates the decorative landscape. Common designs in Black Burnished Ware include incised decoration in the form of triangles, dots, nail-headed motifs, applique, and incised grooves, such as horizontal lines running parallel at regular intervals on the shoulder or upper body a prevalent decorative style. Incised horizontal grooves may also continue on the inner part of the rim.

Analysis

There is a shift in the composition of black and grey varieties which slightly surpasses that of red wares. The patterns available are rather limited, and the use of straightforward incised techniques for decoration, suggests a casual approach on the part of both the manufacturer and the buyer. Notably, the evidence of painted bands in this phase is almost absent. However, there is a notable prevalence of glaze wares in substantial quantities indicating the exchange or influence of emerging ceramic manufacturing techniques. This might be attributed to the desire to uphold a self-sufficient economic system and meet the growing demands of the populace. Opting for a more affordable, simpler, and resource-efficient stylistic form, which also requires less energy and manpower, seems to have been the prevailing trend.

Conclusion

Overall, Gujarat's geographical diversity, including its marshy regions, fertile plains, and hilly terrains, has a considerable impact in shaping its cultural and historical landscape. The geological composition of clay varies across regions affecting the characteristics of pottery. The analysis reveals a nuanced relationship between environmental factors and pottery in archaeology. Understanding how form and function adapt to the environment enhances our comprehension of ancient life, technological choices and the cultural significance embedded in pottery traditions.

In this research, a significant contribution has been made in bridging gaps left by previous studies through a comprehensive exploration of excavated ceramics of Vadnagar, Devnimori and Shamalaji sites in North Gujarat, spanning the Early Historic to Medieval period. By

utilizing Vadnagar as a reference site characterized by continuous cultural occupation, the study has successfully identified the various ware types, shapes, and sub-types within each historical period, taking into account morphological features and potential influencing factors such as religion and economics.

A notable outcome of this research is the establishment of a robust ceramic chronology for North Gujarat. This was achieved through a meticulous combination of typological and quantitative analyses, encompassing not only special pottery specimens but also regular ones. This chronology offers valuable insights into the development of wares, shapes, colors, and decorations over time, an aspect that has often been overlooked in prior studies. Furthermore, the researcher has examined the popularity, continuity, discontinuation, and evolution of various shapes, shedding light on the temporal distribution of these forms. Additionally, the study has delved into the realm of stylistic changes and decoration patterns, contributing to an understanding of fashion trends and societal preferences.

In summary, the ceramic industry in north Gujarat, presents a diverse range of pottery shapes, including globular pots, storage jars, regular jars, basins, bowls, and associated lids. The pottery fabric typically exhibits a coarse to medium texture, characterized by the incorporation of tempering materials such as husk, mica, and sand particles into the clay. The ceramic sherds show variations in firing techniques, from fine to ill-fired, and are commonly produced on medium-to-fast-turning wheels.

Morphologically, the necks of these ceramics display a spectrum of sizes, ranging from long to small, with both concave and constricted forms. The rims of the vessels come in diverse shapes, encompassing round/beaded, triangular, beaked, tapering, pointed, and squared, with the option of being either everted (outwardly curved) or inverted (inwardly curved). The decoration techniques applied to these ceramics are equally diverse, featuring incising, appliqué, stamping, and painting, with a wide range of designs, including geometrical patterns, non-geometrical motifs, natural elements, floral patterns, and bi-medium compositions.

Categorically, based on the quality of clay, the shapes, surface treatment, manufacturing techniques, firing methods, and decorative styles, the ceramic assemblage can be broadly classified into 17 distinct types, which include: Red Ware, Red Slipped Ware, Grey Ware, Black Burnished Ware, Black and Red Ware, Fine Red Slipped Ware, Rang Mahal type, Mica-washed Red Ware, Red Polished Ware, NBPW (Northern Black Polished Ware), Black Slipped

Ware, Chocolate Slipped Ware, Kaolin Ware, Glazed Ware, Celadon Ware, Torpedo Jar and Turquoise Blue Glazed Ware.

The observations presented here are based on the findings at the index site Vadnagar, with subsequent comparisons made to the Devnimori and Shamalaji sites where similar shapes and wares have been found. It is important to note that these observations represent an overall assessment, considering the pragmatic challenges faced while excavating each site and the accessibility of data. The findings focus on showcasing a preliminary ceramic chart within the cultural sequence and regional stratigraphy of North Gujarat. Nevertheless, the findings suggest scope for future interdisciplinary research and further research or input from tertiary educators and researchers regarding these findings is encouraged and could lead to a more profound understanding.

In the Appendix, a visual tabular chart is provided to aid in the easy comprehension of the ceramic chronology chart of North Gujarat. This tabular format simplifies and organizes the data, offering a concise overview of the changes occurring in both ware and shape from Period I to Period VI (Pre 2nd Century BCE to 13th to 17th Century CE). The tables are structured to emphasize the evolution of wares and shapes, as well as the distinctive markers and combinations of neck and rim characteristics observed throughout each period.