Introduction

Pottery is regarded as one of the oldest and most significant traditional crafts since it is connected to human activity in everyday life. Food was cooked, served, and stored in ceramic utensils; while they are breakable, the small bits remain unbreakable even after being buried for thousands of years.

Even though pottery is among the most frequent artefacts discovered during the excavation, the potsherds linking the purposes of specific shapes and the symbolism of decorations received little consideration. In order to compare the content of one level with that of another, archaeologists were required to employ potsherds up until a change occurred when stratigraphic methods of excavation were established. Later, secondary characteristics like rim shape and physical characteristics like surface colours, hardness, and paste texture received increased focus. Pottery is a very helpful tool for seriation, correlating discoveries, and establishing relative chronologies, according to the study of stratigraphic material. (Shepard, 1956. Pp. 1-5)

Area of Research

Gujarat's physiography displays a range of physical characteristics, from coastal lowlands to Himalayan highlands. Due to its location near the Tropic of Cancer, it features a diversified topography, a branched drainage system, uneven soil deposition, and many types of abundant vegetation, and fauna.

Its vast size allows for division into three distinct regions: the mainland, which stretches from the Rann of Kutch and the Aravalli Hills to the river Damanganga; the peninsula, also known as Saurashtra; and the Kutch, which is stony and desolate with significant salt deposits. Gujarat's terrain is mostly dry and arid due to its proximity to the Thar desert. (Shukla, 2014)

Gujarat State is divided into five regions: the north, the centre, the south, the east, and the west. The current study's focus is on the six districts of Mehsana, Patan, Banaskantha, Sabarkantha, Gandhinagar, and Aravalli in the northern part of Gujarat. Since it was easily accessible from the north, north-west, west, and south via sea and inland routes, the north Gujarat region was chosen for investigation because of its geographic position, which allowed for the possibility of having an archaeological and historical past, that is, a Prehistoric, Proto-historic, and Historic period. This served as a gateway for cultural interaction and influence from the earliest

times by way of commercial activities in evident in Vadnagar, Devnimori and Shamlaji, the important Early Historic excavated sites in north Gujarat.

Previous work:

Gujarat witnessed significant traders and kings from various kingdoms exchange commodities because of its lengthy history and rich cultural traditions. As a result, the research community in north Gujarat has conducted significant studies being descriptive in nature, focusing on the political, geographical, literary, cultural, and architectural histories as well as understanding the ports and trading sites of the Harappan and Early Historic periods. It has also explored sites from the Prehistoric, Chalcolithic, Harappan, Early Historic, Medieval, and Late Medieval periods. (Kumaran 2015).

The Department of Archaeology & Ancient History of the M.S. University of Baroda carried out a systematic excavation at Devnimori from 1960 to 1963. The excavation yielded in the discovery of Buddhist stupa, viharas and other antiquities. Caskets with the relics of Dashabala (Buddha) are one of the important findings. (Mehta & Chaudhary 1967).

Further, the M.S. University of Baroda excavated Shamlaji in the field season of 1962. The excavation revealed four periods right from the town being occupied by iron smith around the beginning of the Christian Era to the habitation becoming an important town with its fortification. But the town shrank for some centuries post-9th/10th CE. The site again rose to prosperity in the 15th-16th CE but it was comparatively short-lived and the site again fell. (Mehta & Chaudhary 1967).

The ancient city of Vadnagar, a rich cultural heritage, is part of the Mehsana district of Gujarat, which has been chosen as the investigation's primary reference site because it offers evidence of a continuous stratified cultural sequence from the 2nd century BCE to 18th to 19th century CE.

The beginning of the studies on Vadnagar goes back to the date 1952, by Shri S. Ranganath Rao who identified the presence of ‘Red Polished Ware’, and the excavation revealed a sequence of three cultural eras. Eventually, under Y. S. Rawat's supervision, the Gujarat State Directorate of Archaeology continued excavations starting in 2006. Settlement patterns, changes in the cultural assemblage, and related artefacts (coins, beads, seals, TC items, etc.) allowed for the assignment of a continuous sequence from the 3rd to 4th century BCE to the present. A continuous stratified cultural sequence from Pre-Rampart (second century BCE to

second century CE) to Gaekwad (18th century CE to 19th Century CE) has also been discovered as a result of excavations conducted by the Archaeological Survey of India Excavation Branch-V in various areas of Vadnagar beginning in 2016 as well. The majority of previous research has been descriptive, focusing on the political, geographical, literary, and cultural history, architecture, distinctive typological variety of pottery, Buddhist relics, and ancient trading mechanisms. (Cunnigham 1871; Burgess and Cousen 1903; Dave 1937; Subbarao and Mehta 1953; Majumdar 1960; District Gazetteers-Mehsana 1975; Rawat 2011; Kumaran 2015).

Aims & Objectives of the current research

While the aforementioned researchers shed light on a few Early Historic ceramics of Gujarat, there are some gaps in their studies, including the following: (a) In the decades of ceramics research discussion, Harappan and chalcolithic context-related is on the higher scale, while very little research has been conducted on the Early Historic period potteries. (b) Prior studies have used a variety of methodologies to comprehend the Early Historic period, but by focusing only on the unique potteries, they have been unable to address the common/regular potteries, which are abundant.

The primary goal of this work is to fill in the gaps mentioned above by conducting comparative and typological analysis to recognize the behavioural patterns in the various cultural periods of North Gujarat, from the Early Historic to the Medieval period, and by providing an understanding of the nature of activities occurring in the characteristic features of ceramic. In order to achieve the objectives Vadnagar site has been taken as the reference site for north Gujarat due to its continuous cultural activity.

1. The study intends to understand and identify the various kinds of wares, shapes, types, and sub-types found in the cultural sequence and regional stratigraphy of North Gujarat.
2. To conduct a thorough typological quantitative analysis. Such an undertaking would facilitate typological quantitative data for the research community to determine the behavioural patterns over various cultural eras.
3. To examine and identify the popularity, markers, continuation, discontinuation and evolution of these types (shapes) through typological and quantitative analysis. This would lead to reconstructing the temporal distribution of these shapes and sub-shapes.

4. To examine the stylistic changes and decoration patterns. An examination of this facet of stylistic change and decoration pattern facilitates an understanding of popular fashion and the requirements of the people.

5. To present a tentative pottery chart integrating typological analysis data obtained in the cultural sequence with synchronization to the regional stratigraphy of North Gujarat.

Methodology

The methodologies adopted in this research for data sources include primary and secondary in the form of literary sources and field surveys. Further, the pottery analysis presented has been done by first selection and comparison of two seasons (2016-2017 and 2017-2018) of deepest index trenches in different localities. The collection of potteries found in the stratigraphic context was recorded based on the period, ware, surface treatment, shape, and morphological features. Based on the categorisation of pottery appearing in each stratigraphic context the broadly recorded data was further scrutinized into representative types, or in other words, potteries having common characteristics for each period, ware and, shape. Based on the types formed the method of seriation was adapted which is a relative dating technique where artefacts and assemblages are separated and classified by style and frequency to create a relative chronology. The result from the seriation method supported getting a quantitative theme that is the amount of each type of pottery found in an assemblage. Hence, a statistical graph was made to get a clear picture of understanding as to which type is continuing, discontinuing, and which new type is being introduced and is popular in a particular period. Descriptive analysis, drawings, and photographic documentation of the selected potteries were conducted. The examined data of Vadnagar was further then compared with the other early historic sites of north Gujarat namely Devnimori and Shamlaji to comprehend regional variations.

Limitations of the study

As previously indicated, the sherds unearthed during excavations were in lakhs, so there is room for human error in the collection of samples from the site and in the analysis conducted. Further, it was observed that the area of excavation did not remain the same throughout due to the presence of structural remains and other human activities. Further, the excavation in the deep cuttings being confined to a limited area and water logging resulted in uncovering inadequate sherds.

Therefore, the findings reported in the typological and quantitative form are the general observation that was drawn during the study, keeping in mind the practical excavation

challenges. The research only aims at giving a tentative ceramic chart found in the cultural sequence and regional stratigraphy of North Gujarat. However, further research or contribution by tertiary educators and researchers on these observations are open and could determine deeper knowledge.

Plan of Thesis:

Chapter 1: Introduction

This chapter offers a discussion of the main aims and objectives of the study, a succinct but instructive breakdown of the concept definitions, a synopsis of previous research on the subject, and a summary of current related findings in this field of study. It also outlines the methodologies used in the data collection process, their limitations, and how the research was carried out. It also covers the use of quantitative and qualitative analysis and the classification of the data.

Chapter 2: Geographical Setting and Cultural History of North Gujarat

This chapter primarily discusses the local environment before moving on to its cultural history. The goal is to present a sketch of the recorded ceramic sequence against a physiographic and cultural backdrop.

Chapter 3: A ceramic sequence in North Gujarat

The character of the Early Historical settlements in North Gujarat is described in this chapter. Observations have been shown regarding the types of activities that took place in the various cultural periods of North Gujarat, as well as other associated technological and behavioural aspects. It goes on to elaborate on the typological division of ceramics into distinct levels of wares, forms, and sub-types, as well as their distribution in other, excavated North Gujarat sites.

Chapter 4: Analysis of the Ceramic from North Gujarat

This chapter combines quantitative and qualitative statistics to support the research's findings. To comprehend the changes in continuation, discontinuation, popular type, and introduction that occurred in each ware and forms types, and sub-types, from the Early Historic to Medieval period, the data have been presented and summarised in a statistical graph format.

Chapter 5: An Assessment and Conclusion

In order to accomplish the goals outlined in the introduction chapter, this chapter discusses the findings of the data supplied in the previous chapter. Here, it suggests a number of different factors, including the connection between shape, usage, function, and technological capability. It also discusses the various vessel specifications, themes, and changes in shape related to human needs. Important issues from the previous chapter have also been explored in this final section. In addition to providing a summary, it draws attention to the importance, limitations, and potential future applications of the research.

Appendices

This part contains a visual tabular representation of the ceramic chronology facts at a glance. To illustrate the changes that occurred in particular pottery and shape from the Early Historic to the Medieval period, tables are ordered, simplified, and summarised.

STATEMENT - I

(Statement showing the particular, on which the work is based, the discovery of new facts and of new relationships between facts observed by others and how the work tends to help the general advancement of knowledge.)

Pottery being the most common artefact found during excavation is an alphabet of archaeology which gives an idea about socio, the economic and religious activities of an ancient past. Prior research on north Gujarat was conducted with a descriptive approach, focusing on the political, geographical, literary, cultural, and architectural histories as well as understanding the ports/trading sites of the Harappan and Early Historic periods, explored sites of Prehistoric, Chalcolithic, Harappan, Early Historic, Medieval and Late Medieval Period in North Gujarat and the distinctive typological variety of ceramics (for instance. Cunnigham 1871; Burgess and Cousen 1903; Dave 1937; Subbarao and Mehta 1953; Majumdar 1960; District Gazetteers-Mehsana 1975; Rawat 2011; Kumaran 2015)

While the aforementioned academics provided light on the themes of north Gujarat, the studies are notable for some gaps, such as the assertion of political history continuity despite no archaeological evidence supporting it. Previous research in north Gujarat has used only some ceramics samples in its experiments. As previously stated, the abundant normal potteries have been overlooked in favour of special/marker potteries.

Therefore, this study has made a comparative and typological analysis based on the method of seriation which is a relative dating technique where artefacts and assemblages are separated and classified by style and frequency to create a relative chronology. Objects evolve over time based both on style and function, and these changes can be organised and tracked to form relative dating chronologies over various archaeological sites to get a better understanding of the development and spread.

The following are the major findings of the work:

1. The work is based on the ceramic unearthed from the excavated historic sites from the Early Historic to Medieval period in North Gujarat.
2. Combination of Typological and quantitative analysis has resulted in identifying behavioural patterns in the ceramic assemblage occurring in different cultural sequences.

3. Prior studies have only reported the markers/special potteries but this study sheds light on the common/regular potteries.

4. Three excavated historic sites have been investigated in the region of north Gujarat for this research: Vadnagar, Devnimori and Shamlaji.

5. Vadnagar chosen as the reference site for this research has seven cultural periods ranging from the early historic to the late medieval period, the continuous sequence aided in the documentation of overall features of the ceramic assemblage.

6. The typological classification of the ceramics was undertaken as per their stratigraphic context, nature and purpose of utilization. They have been broadly classified under four heads such as (a) Period, (b) Ware, (c) Shapes, and (d) Sub-shapes.

7. On the account of the quality of clay, shapes, surface treatment techniques of manufacturing, firing and decorations can be classified into 17 types of wares namely 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, Black Slipped ware, Chocolate Slipped ware, Kaolin ware, Glazed ware, Celadon ware, Torpedo jar and Turquoise Blue Glazed ware.

8. Broad categories of vessels include:
   Storage (dry and wet) b. Cooking vessels c. Water vessels. Additionally, based on the nature of the requirement and utilization the ceramic shapes were further segregated into the globular pot, bowls, basin, dish, storage jar, lid, base, sprinkler, spouts

   a. Based on the different accessories like an amalgamation of the size of the neck and rims, all the types were further divided into sub-shapes.

   b. In general, the fabric of potteries is from coarse to medium where a good amount of tempering material in the form of husk, mica and sand particles is mixed in the clay.

   c. The core (section) of the sherd shows fine to ill-fired technique and is made on a medium to fast turn wheel.

   d. Overall morphological features of necks are long to small size in concave and constricted shape.

   e. The shapes of the rims identified are in the form of round/beaded, triangular,

beaked, tapering, pointed and squared which are either everted/inverted.

f. The angles of the rim running in the case of the concave necks occurring in small, medium and long lengths are either outgoing or out-turned.

g. The angles of the rim running in the case of the constricted necks from Pre-rampart to Post Kshatrapa are flaring and flared out.

h. However, the angles of the rim running in the case of the constricted necks from Solanki to Sultanate Mughal are projecting and angular.

i. The surface treatment observed consists of slip, wash, burnishing and, glaze

j. The decoration comprises incised, applique, stamped, paintings in geometrical, non-geometrical, natural, flora, and fauna designs.

9. In this research, a detailed typological analysis of all wares and shapes was carried out based on the combination of the size of the neck and rims. Thereby classifying a total of 1701 sub-shapes were identified in the different cultural periods.

10. The seriation method implemented in this study has enabled an illustration of the *stylistic seriation* and *frequency seriation* analysis in a detailed manner by determining the chronology of the wares, shapes, and sub-types that reveal an origin, popularity and disuse of the types.

11. The ceramic assemblage from Devinimori and Shamlaji excavation also matches the ceramic chronology of Vadnagar.

12. A tentative ceramic chronology chart for north Gujarat has been established by giving a tentative scale from early to late for every ware, shape and sub-shapes.

13. The Ethno- graphical study was conducted with an aim of improving the understanding of the purpose of different accessories like the rim and neck of a vessel.

STATEMENT- II

(Statement indicating the sources of information and the extent to which the thesis is based on the works of others and the portion of the thesis claimed as original.)

The study is based on pottery which was discovered during the field seasons of 2016–17 and 2017–18 in two index trenches of Vadnagar. The focus of the research is to understand the behavioural patterns that existed during the many cultural eras of North Gujarat, from the Early Historic to the Medieval periods, and to do so by elucidating the nature of the activities that took place in the distinctive ceramic features. A descriptive technique was used in earlier studies of north Gujarat, which concentrated on the political, geographical, literary, cultural, and architectural histories as well as understanding the ports/trading sites of the Harappan and Early Historic periods, explored sites of Prehistoric, Chalcolithic, Harappan, Early Historic, Medieval and Late Medieval Period in North Gujarat and the distinctive typological variety of ceramics. (for instance. Cunnigham 1871; Burgess and Cousen 1903; Dave 1937; Subbarao and Mehta 1953; Majumdar 1960; District Gazetteers-Mehsana 1975; Rawat 2011; Kumaran 2015)

The data in the thesis, which is claimed to be authentic, offers an overview of the ceramic assemblage found in north Gujarat by highlighting the various types of wares, shapes, and subtypes produced at distinct periods. Further, an effort is made to establish a ceramic chronology chart for North Gujarat through comparative and typological analysis. This research would benefit any researcher or the future generation in understanding a tentative range of types of ceramics and changes occurring in north Gujarat.

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