Terracotta and Stone Bangles from Vadnagar: Preliminary Observations

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Received: 27 May 2023; Revised: 04 September 2023; Accepted: 01 November 2023
Heritage: Journal of Multidisciplinary Studies in Archaeology 12 (2024): 761-772

Abstract: *This study explores the historical significance, typological diversity, and distribution patterns of terracotta and stone bangles excavated from Vadnagar, shedding light on their cultural relevance and societal practices. Analysing over 138 bangle fragments spanning various cultural periods, the research unveils intricate designs, ranging from plain to elaborately decorated specimens. The analysis discerns distinct types based on surface ornamentation, revealing shifts in popularity and craftsmanship across periods. Additionally, the study delves into the association between bangle diameter and wearer demographics, suggesting varied purposes beyond mere adornment, such as ritualistic offerings or kiln setters. Moreover, parallels between terracotta and shell bangles underscore cultural exchanges and imitation practices. Furthermore, the discovery of stone bangles, adorned with auspicious motifs, enriches our understanding of ancient craftsmanship and symbolism. Overall, this investigation provides valuable insights into ancient material culture, highlighting the enduring allure and socio-cultural significance of bangles throughout history.*

Keywords: Terracotta Bangles, Stone Bangles, Social Identity, Fashion, Craftsmanship, Symbolism, Material Culture

Introduction

Clay is a commonly available and abundant raw material that may be used by anyone to create a variety of items. People have continued to rely on clay as a material despite the emergence of other materials like metals and glass due to its affordability and widespread availability. Personal ornaments are an important part of the everyday practice of personal adornment. They enable individuals to build and show their social identities based on their gender, group membership, gender identity, wealth or status, or other social factors. The most popular adornment objects —since ancient times are bangles, which are composed of metal, shell, glass and terracotta. Terracotta bangles have been prevalent since the Harappan period. They have been found in several archaeological sites, spanning diverse cultural periods, with some common popular styles, sites are Nagarjunkonda, Kalibangan, Atranjikhera, Maheshwar and Navdatoli, Amreli and Ahar (Soundararajan 2006; Lal 1999; Gaur 1983; Sankalia 1958; Rao 1966; Sankalia 1969) respectively.

It was initially worn by men and women. Boys and men in India traditionally adorned their hands and arms with *kadu, kallu, panhochi* (wristlets or bracelets), which could be solid or malleable and made of gold or silver, until very recently. However, by the time of the Mahabharata, a *sankha valaya* (chank bangle) had become associated with femininity, according to the story of Bṛhannalā. Further, references in literature and the various shapes and types of bangles depicted in paintings from caves such as Ajanta, Bagh, and others, as well as sculptures from Barhut, Sanchi, Mathura, and Amaravati, highlight the enduring popularity and historical significance of these accessories among both women and men. (Sankalia 1947). Among the ornamental artefacts from Vadnagar, shell bangles are the predominant type than terracotta, glass, and ivory bangles. This article examines the many varieties, morphometric proportions, and distribution of terracotta bangles across different cultural phases.

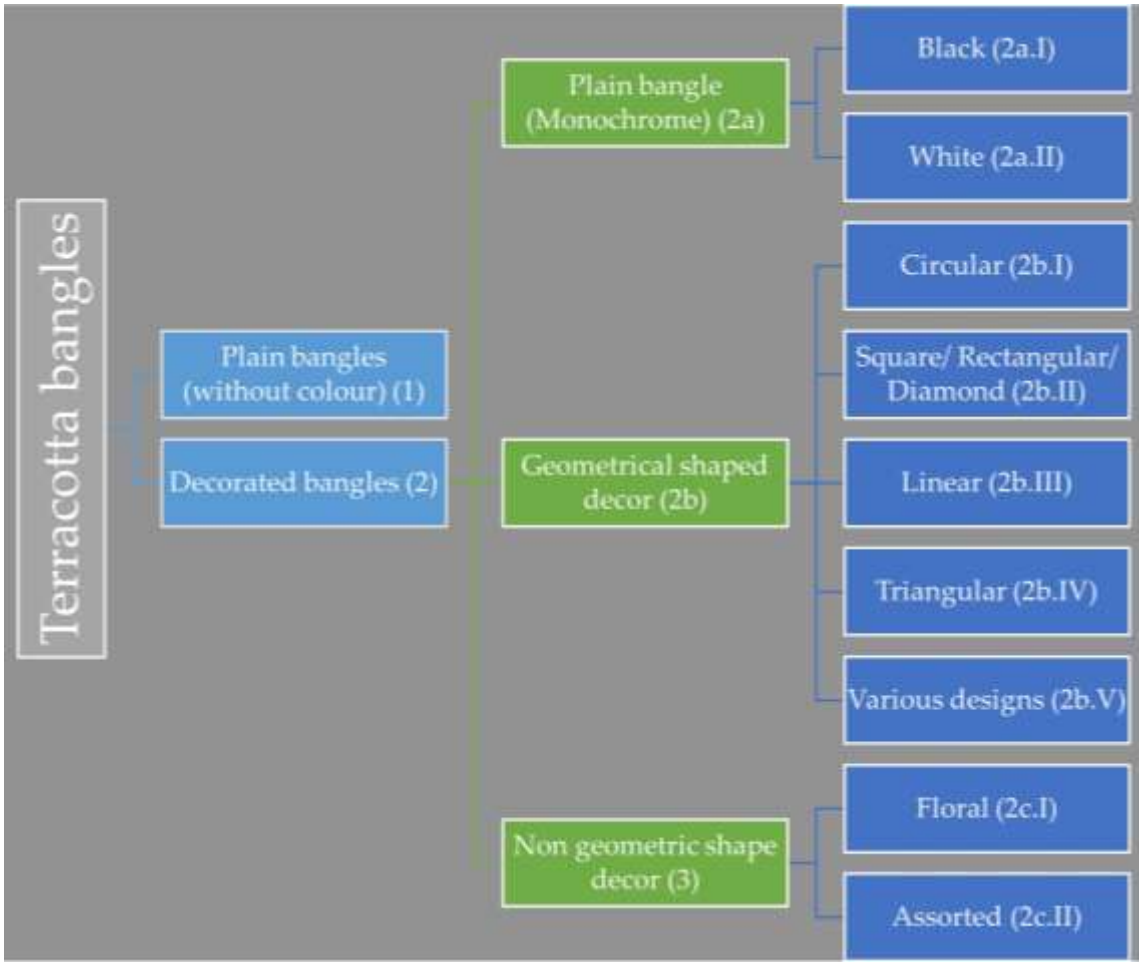

Figure 1: Typology of terracotta bangles from Vadnagar excavation

Another type of bangle from Vadnagar is stone bangles made of schist, resembling stoneware bangles. The stoneware bangle has a long tradition of its existence. They were first identified during the Mature Harappan period. Stoneware bangle made of such a ceramic material that is rich in silica, partially fused, uniform in composition, typically devoid of obvious impurities or voids, and known for its extremely low porosity. (Bisht,

2015). Vidale (1990) explained that producing stoneware bangles involves a sequence of intricate methods and they must be subjected to temperatures ranging from 1000 to 1100°C during firing. Consequently, they are limited to significant political centers and appear to have strong ties to the urban elites of Indus culture. Stoneware bangles have been discovered at Harappan sites such as Mohenjo-Daro, Harappa, Kalibangan, and Dholavira. It was formerly believed that the method did not persist until the historic period. However, four specimens of stone bangles resembling stoneware bangles have been identified during excavations at Vadnagar from the period V deposit (Solanki period).

Typology and Distribution of Terracotta Bangles

The terracotta bangles unearthed at Vadnagar vary in diameter to fit individuals of varying ages, from young children to elderly individuals. A total of 138 terracotta bangle fragments were found during the excavation, all of which were delicate enough to be recovered intact. Bangles were present from the beginning, but their quantity was limited during the Rampart period (period II) most likely because of the restricted excavation area. The number of bangles increased significantly during the Kshatrapa period (period III) and continued to do so in the post Kshatrapa period (period IV). Subsequently, their popularity declined, as evidenced by the decreasing number of fragments unearthed from the Solanki (period V), Sultanate-Mughal (period VI), and Gaekwad periods (period VII). The classification of bangles into 4 basic groups is determined by the diversity of decorations found on their surface (Figure 1).

Type 1 (Plain Bangles): Type 1 distribution extends from the early Kshatrapa (period III A) to the Sultanate-Mughal Period (period VI). There has been a total of 28 fragments of this type of bangle (Figure 2; Sl. number 1-18).

Type 2a (Bangles with Colour Pigments Coating): Type 2a has been divided into two categories: monochrome, with black and white pigment coatings, spanning from the Rampart (period II) to the Sultanate-Mughal period (period VI), containing a total of 46 specimens (Figure 2; Sl. number 19-35).

Type 2a. I (Black Pigment Coated Bangles - Sl. number 19-22, 24, 29, 33): This type of bangle has been documented from the Rampart period to the Solanki period (period V), consisting of 27 fragments.

Type 2a. II (White Colour Coated Bangles - Sl. Number 23, 27-32, 34, 35): This style of white pigment coated bangle has been unearthed from the early Kshatrapa period (period IIIA) to the Gaekwad period (period VII). It gained popularity during the early post-Kshatrapa period (period IVA) with 18 fragments found.

Type 2b (Geometric Decoration): Type 2b is characterized by the surface design and is found from the early Kshatrapa (period IIIA) to Gaekwad periods (period VII), with 53 fragments identified. The quantity of these types of bangle fragments rose throughout the early post-Kshatrapa period (period IVA) (Figure 3; Sl. no. 36-64).



Figure 2: Terracotta Bangles of Type 1 and 2a

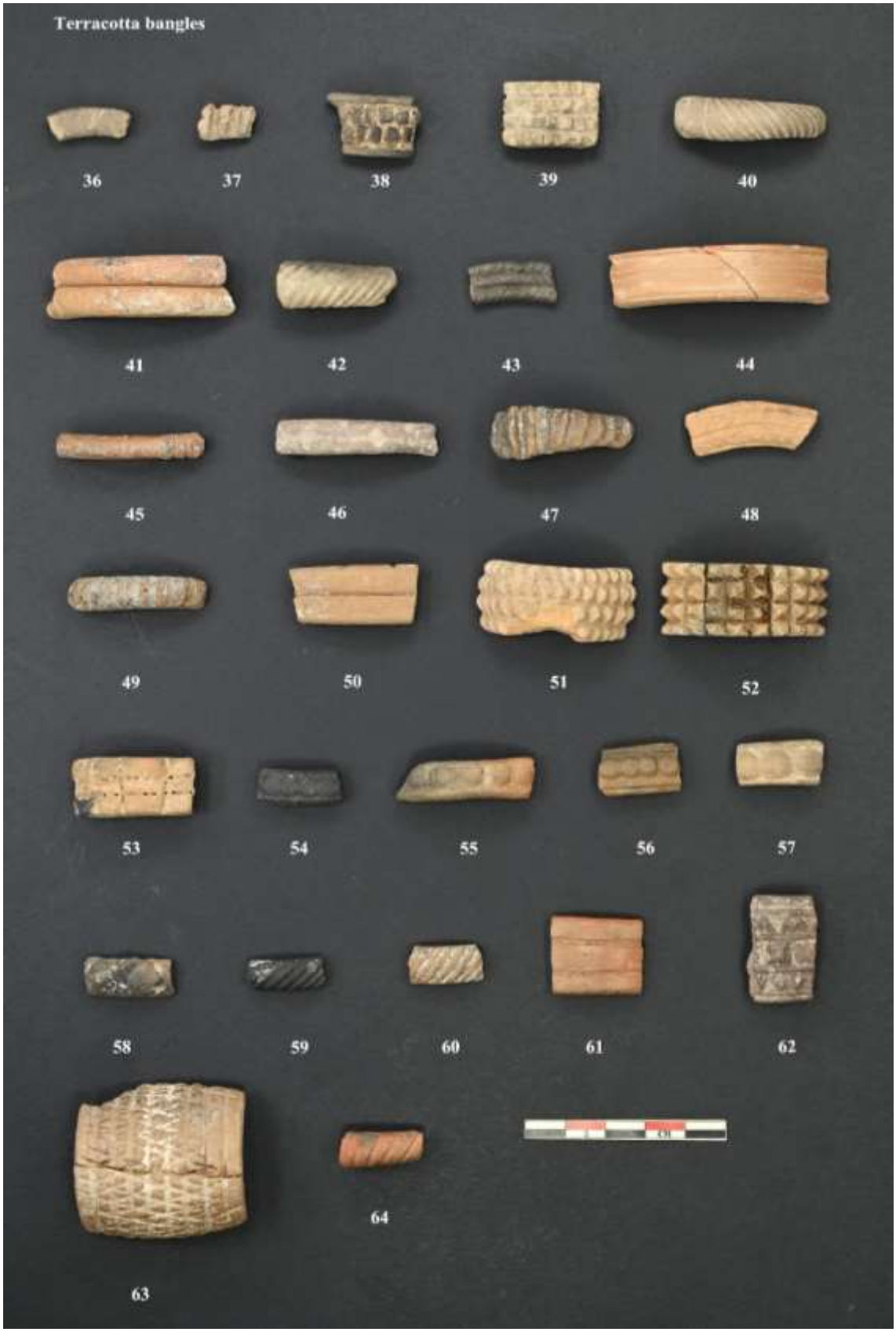

Figure 3: Terracotta Bangles of Type 2b



Figure 4: Terracotta Bangles of Type 2c and Stone Bangles

Type 2b. I (Circular Shaped Decoration – Sl. number 54-57): This kind of bangle has been most frequently documented from the early post-Kshatrapa period (period IVA), beginning in the early Kshatrapa period (period IIIA). These bangles include various designs, with some having rows of circles bordered by lines on one or both sides.

Type 2b. II (Square/ Rectangular/ Diamond Shaped Decoration - Sl. number 38, 39, 46, 59): These bangles were documented from the early Kshatrapa (period IIIA) to the Gaekwad Period (period VII), with a total of 24 fragments. Among these, 11 were primarily found from the early post-Kshatrapa period (period IVA).

Type 2b.III (Linear Decoration - Sl. number 36, 37, 40- 45, 47- 50, 53, 60, 61, 64): This type of bangles was documented from the early Kshatrapa period (period IIIA) and persisted until the Solanki period (period V), but their prevalence significantly decreased. 7 bangle fragments of this type have been unearthed in total.

Type 2b. IV (Triangular Shaped Decoration- Sl. number 51, 52, 63): These bangle fragments are seldom reported in archaeological excavations. Only 2 specimens have been retrieved in total, one from the early post-Kshatrapa period (period IVA) and the other from the Solanki period (period V).

Type 2b. V (Various Ornamental Designs- Sl. number 62): Only one bangle fragment has been reported of this type which includes the fragment have multiple designs on it as three rows with zig zag lines as well as rectangular designs in middle row.

Type 2c (Non-geometric Decoration - Sl. number 65-69): This bangle style can be divided into two groups: one with a floral design on the surface and the other with any other decoration (Figure 4).

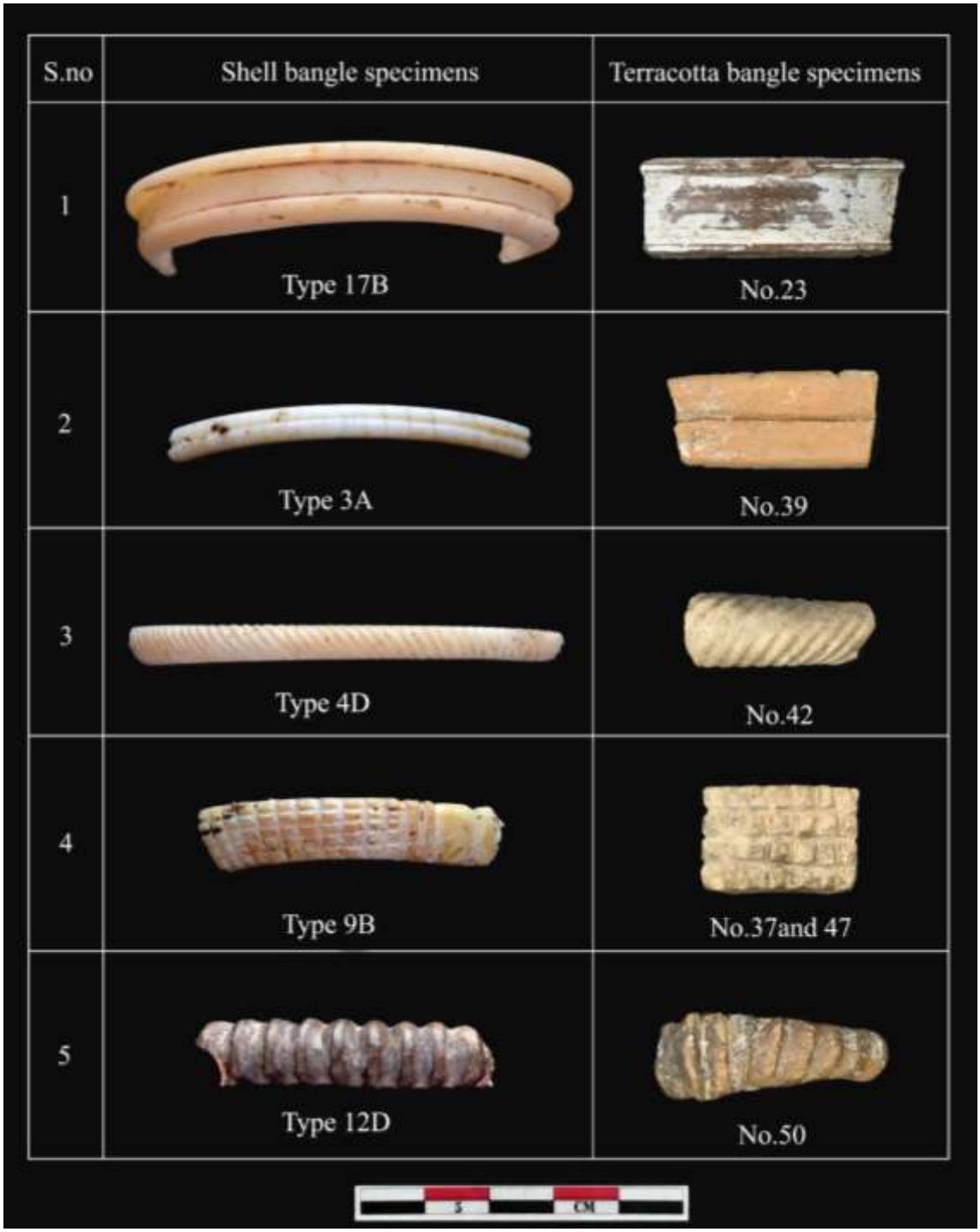

Figure 5: Imitation of various shell bangle designs onto terracotta bangles

Type 2c. I (Floral Decoration- Sl. number 65, 66): Only a small number of bangles in this category feature a stamped floral pattern on the surface.

Type 2c. II (Assorted Ornamentation- Sl. number 67-69): This classification has all the bangles which involve any design which doesn't fall under any other category for example two words engraved on surface of bangle.

Discussion

According to the typological examination of the terracotta bangle and its distribution mentioned earlier, a total of 138 bangle fragments were unearthed at the site. These fragments were found throughout the cultural period, beginning with the Rampart period (period II). No evidence of terracotta bangles has been reported yet due to the small excavation area during the pre-Rampart period (period I). The early post-Kshatrapa period (period IV A) has been documented to contain the most diversity and density of bangles. The distribution of terracotta bangles is presented in Table 1.

Table 1: Distribution of terracotta bangles with respect to cultural periods of Vadnagar

Periods	Number of Fragments
Period II (Rampart)	1
Period III A (early Kshatrapa)	19
Period III B (late Kshatrapa)	13
Period IV A (early post Kshatrapa)	82
Period IV B (late post Kshatrapa)	8
Period V (Solanki)	12
Period VI (Sultanate- Mughal)	1
Period VII (Gaekwad)	2
Total	**138**

Table 2: Distribution of types of terracotta bangles with respect to the cultural periods of Vadnagar

Periods	Patterns			Designs							Total
				Geometric					Non-geometric		
	1 (Plain)	2a (Painted)		2b					2c		
		Black (2a.I)	White (2a.II)	Circular (2b.I)	Linear (2b.II)	Rectangular/ Square (2b.III)	Triangular (2b.IV)	Multiple designs (2b.V)	Floral (2c.I)	Others (2c.II)	
I	0	0	0	0	0	0	0	0	0	0	**0**
II	0	1	0	0	0	0	0	0	0	0	**1**
III A	5	5	1	1	3	3	0	0	1	0	**19**
III B	1	2	2	3	4	0	0	0	0	1	**13**
IV A	13	18	18	15	11	3	1	0	1	2	**82**
IV B	3	0	0	0	4	1	0	0	0	0	**8**
V	5	1	2	0	1	0	1	1	1	0	**12**
VI	1	0	0	0	0	0	0	0	0	0	**1**
VII	0	0	1	0	1	0	0	0	0	0	**2**
Total	**28**	**27**	**24**	**19**	**24**	**7**	**2**	**1**	**3**	**3**	**138**

The most widespread bangle fragment is a row of circular motifs surrounded by a linear or double border, predominantly found in early post-Kshatrapa period (period IV A),

based on the specimens examined. The majority of experimentation with design and techniques occurred during this cultural phase. Table 2 presents the distribution of both geometric and non-geometric designs of terracotta bangles. Table 3 illustrates the distribution of terracotta bangles in the Kotha Ambaji locality.

Table 3: Distribution of Terracotta Bangles from Southern Bank of Kotha Ambaji Lake

Periods	Patterns			Geometric Design					Non-geometric Design		Total
	1 (Plain)	2a (Painted)		2b					2c		
	1 (Plain)	Black (2a.I)	White (2a.II)	Circular (2b.I)	Linear (2b.II)	Rectangular/ Square (2b.III)	Triangular (2b.IV)	Multiple designs (2b.V)	Floral (2c.I)	Others (2c.II)	
Early Kshatrapa (IIIA)	5	2	0	0	2	2	0	0	1	0	**12**
Late Kshatrapa (IIIB)	0	0	2	0	1	0	0	0	0	1	**4**
Early Post Kshatrapa (IVA)	1	5	7	2	2	2	1	0	1	0	**21**
Solanki (V)	4	0	1	0	0	0	1	1	1	0	**8**
Total	**10**	**7**	**10**	**2**	**5**	**4**	**2**	**1**	**3**	**1**	**45**

Table 4: Distribution of terracotta bangle fragments with respect to the diameter

Periods	Diameter in cm							Total
	3	4	5	6	7	8	10	
Period II	0	1	0	0	0	0	0	**1**
Period III A	0	2	6	6	3	0	0	**17**
Period III B	0	1	7	4	3	0	0	**15**
Period IV A	2	12	41	19	4	3	1	**82**
Period IV B	0	3	3	2	0	0	0	**8**
Period V	1	6	1	1	3	0	0	**12**
Period VI	0	1	0	0	0	0	0	**1**
Period VII	0	1	1	0	0	0	0	**2**
Total	**3**	**27**	**59**	**32**	**13**	**3**	**1**	**138**

The excavation took place at two sites: the southeastern side of Sharmistha Lake (Ambaghat) and the southern side of Kotha Ambaji Lake, revealing terracotta bangles. The bangles unearthed at the excavation site south of Kotha Ambaji Lake are exquisitely

fashioned. The floral-patterned bangle variation is unique from this locality. There is only a single specimen found at the same locality as the bangle fragment, and it features a design that looks like a bracelet. Another interesting specimen is a bangle fragment with Brahmi characters engraved on it deciphered as पके/ पक्षे, possibly for ritualistic purpose. There have been reports of 45 distinct bangle fragments from this religiously linked location. These kinds of specimens found in this area have not been recorded in Ambaghat locality.

Study of the Bangle Fragments in Relation to Their Diameter: Analyzing studies comparing bangle sizes with the modern population revealed that the most commonly made bangle had a diameter of 5 cm. This suggests that bangles were popular with individuals aged 13 to 19 years in the present day. It has been reported that there are fragments of bangles with a diameter of 3 cm. Since terracotta bangles are vulnerable, it is unlikely that they were worn by infants or young children. Therefore, it is possible that bangles with a diameter under 3 cm were used as offerings to deities. A study on the diameter of terracotta bangles has been undertaken, and the findings are presented in Tables 4 and 5 across different cultural periods. The terracotta bangles from Nagarjunkonda have a minimum diameter of 3.5 cm. The Vadnagar bangles have been measured to have a maximum diameter of 9-10 cm. These bangles are classified as armlets. On the other hand, bangles with a greater diameter may be utilized as kiln setters. Kenoyer (1991) proposed that 21 artifacts resembling terracotta bangles found at Harappa may have been used as kiln setters instead. It is possible that the terracotta bangles discovered during the Vadnagar excavation were used as kiln setters rather than being worn as armlets.

Table 5: Distribution of the terracotta bangles with respect to age group

Diameter in cm	Total	Contemporary Trend
3	3	1 to 12 years (28)
4	27	
5	59	13 to 19 (90)
6	32	
7	13	20 years old (13)
8	3	Upper arm bangle (Armlets) (4)
9	0	
10	1	

Table 6: Typological comparisons between terracotta bangles and shell bangles

Sl. No.	Terracotta Bangle Specimen	Type in Shell Bangle
1	Specimen number 23	Type 17B
2	Specimen number 39	Type 9B
3	Specimen number 42	Type 4D
4	Specimen number 37 and 47	Type 12D
5	Specimen number 50	Type 3A

The patterns seen on terracotta bangles bear a resemblance to those found on shell bangles, specifically exemplified by specimen 2a. There is a correlation between 5 terracotta bangles and type 17b of shell bangle, as shown in Table 6 and Figure 5. A fascinating revelation is that the geometric design frequently observed in bangles in Vadnagar is also widespread in Amreli. A close observation of terracotta bangles uncovered a coating of white pigment, presumably applied to imitate the appearance of shell bangles. This imitation was likely intended for individuals who may not have the means to purchase them.

Stone Bangles

Stone bangles (Figure 4; Sl. number 70-73) are another type of bangles that have been recorded at Vadnagar. Four specimens of such variety of stone bangles (similar to stoneware bangles) from the early post-Kshtarap period (period IV A) were unearthed alongside terracotta bangles. These bangles were found on the southern bank of Kotha Ambaji Lake and display intricate artistic work. All four bangles are finely polished, with two being plain with a truncated conical shape, one featuring a beaded surface, and the last one having a carved frog design. Additionally, incised lines are present on the inner surface of the bangles. The frog motif is considered to be auspicious. There are few frog figures discovered in ancient sites. Some cultures such as Egyptian, Chinese, and Mexican consider the frog as a symbol of fertility, rain, and renewal of life (Cooper 1987).

Conclusion

The excavation and typological study of terracotta and stone bangles from Vadnagar offer valuable insights into the cultural and historical significance of these artifacts. Spanning various cultural periods, terracotta bangles emerge not merely as accessories but as symbols of social identity, fashion, and craftsmanship. The findings illuminate the evolution of bangle designs, showcasing a spectrum from plain to intricately decorated motifs. These typological classifications unveil patterns reflecting aesthetic preferences, cultural influences, and technological advancements over time. Moreover, the distribution of terracotta bangles across different cultural epochs reveals fluctuations in their popularity and utilization, likely influenced by socio-economic factors and shifting fashion trends. Additionally, comparisons with other materials, such as shell bangles, unveil intriguing insights into cultural exchange and imitation practices. The replication of prestigious shell bangle designs on terracotta suggests a desire to emulate revered adornments, perhaps due to economic constraints or cultural preferences.

The discovery of stone bangles alongside terracotta ones adds complexity, hinting at the significance of bangles in religious and symbolic contexts. Notably, the presence of auspicious motifs like frogs underscores their spiritual and cultural importance. Overall, this study enriches our understanding of ancient craftsmanship, societal values, and material culture. Yet, further research is warranted to delve deeper into the socio-cultural significance of terracotta bangles, including their roles in gender identity, religious rituals, and economic transactions. Interdisciplinary approaches, combining

archaeological evidence with textual sources and ethnographic studies, promise to yield richer insights into the multifaceted meanings of terracotta bangles in ancient societies.

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