
Gamesmen and Board Game-Designs from Vadnagar

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Received: 22 June 2023; Revised: 19 October 2023; Accepted: 01 December 2023

Heritage: Journal of Multidisciplinary Studies in Archaeology 12 (2024): 972-1000

Abstract: This study presents a detailed analysis of gamesmen discovered in Vadnagar. From the examination of the various types of gamesmen made from different materials such as terracotta, stone, glass, and ivory, it was revealed that they have significant similarities with regional and other geographical areas. The diversity in the types and sub-types of gamesmen points towards their traditional nature and the exchange of innovative ideas and cultural practices. The study also focuses on the documentation and analysis of several board game designs engraved on the flooring of the Shitala Mata temple in Vadnagar, which dates back to around the 10th century CE. The documentation process involved a physical assessment of the etched board game designs, measurements, photographs, and recordings. The results of the survey suggest that gamesmen were widely and potentially used during gameplay on these etched board games. This study aimed to revive these ancient board games as a vibrant cultural practice and present them as a component of the intangible cultural heritage.

Keywords: Gamesmen, Terracotta, Stone, Glass, Ivory, Shitala Mata Temple, Vadnagar

Introduction

According to A. Ghosh's work 'An Encyclopaedia of Indian Archaeology' (1989:179), "Gamesmen" are basic gaming pieces that come in various shapes. Some gamesmen have a flat bottom that distinguishes the body from the head, while others have a solid cylindrical shape with a flat circular base and a decorated conical top adorned with animal heads. It has been reported that games were played by the people of the Harappan civilization at various sites, such as Kalibangan, Lothal, and Surkotada. The archaeological site of Lothal has uncovered gaming pieces made of different materials like stone, ivory, bone, conch shells, and terracotta. These pieces come in various shapes like pyramidal, conical, small tetrahedral, cylindrical, castle-like, and button-shaped tops. Some of these gaming pieces are decorated with animal heads that include a dog, a bull, a ram, an equine, and others, as reported by Rao (1985).

The Surkotada specimens are composed of stone and terracotta that exhibit cylindrical, conical, and tetrahedral shapes (Joshi 1990:290-293). At Gilund, the Chalcolithic layers have uncovered terracotta figurines depicting game pieces with animal heads, one of which has been identified as a ram. Additionally, plain terracotta artefacts have been

documented at Lal Qila (OCP level), Atranjikhhera, and Noh at PGW levels (Ghosh 1989:179).

During the early historical period, there is evidence of bone, ivory, and terracotta gamesmen found dating back to the 5th - 4th century B.C.E. These game pieces were widely documented across various regions of India, including the Ganga valley, as well as the central and western parts of the country. Some of the specific sites where these gamesmen have been discovered include Atranjikhhera, Bahal, Nagda, Prakash, Sarai Mohana, Tumain, and Ujjain. These findings have been widely reported in Besanagar, Brahmagiri, Broach, Nagda, Nagari, Nasik, Nevasa, Tripuri, and several other places dating back to the 2nd century BCE. Ivory and terracotta ones are respectively known from Prabhas Patan and Uraiyar in the 1st century CE. However, terracotta specimens widespread in the Ganga valley during the early centuries of CE were reported from Chandraketugarh, Chirand, Kumrahar, Masaon, Rajghat, and other areas. Subsequent terracotta artefacts dating from 300 to 600 CE have been discovered at Maheswar, Paunar, Rajghat, and Salihundam (Ghosh 1989:179).

During the field season from 2019 to 2022, an excavation was carried out at Vadnagar, which resulted in the discovery of 156 gamesmen. The primary objective of the excavation was to study these findings, which are presented in Table 1. In addition, the study focused on investigating and recording the board game designs engraved on the floor of the *Shitala Mata* temple, which is believed to date back to the 10th century CE based on its architectural forms. This temple is located near the Ghaskol area, where a Buddhist monastery was also discovered. The following part of the paper provides documentation, details of the analysis, and a discussion on the functions of the gamesmen used in Vadnagar for playing.

Methodology

Various simple methods were employed to enhance the clarity of analysis and interpretation for each gamesman. Initially, the 156 gamesmen were classified based on the material employed across the seven cultural periods. Each gamesman was thoroughly examined, and its colour was documented using the Munsell Soil-Color Chart (2009) for terracotta, the Munsell Rock Color Book (2014) for stone, and the Munsell Bead Color Book (2012) for glass. To measure the diameter, height, and thickness, the Themisto Digital Vernier Calliper was utilized, while the Digital Scale Machine was used for weighing. In summary, the essential information collected for each gamesman includes the registration number, cultural period, techniques used, description, size, weight, colour, firing conditions, texture, and condition of the specimen (whether it is intact or broken). These details are gathered to enhance the efficiency and accuracy of the study.

Classification and Distribution of Gamesmen

Based on the cultural periods of Vadnagar and the material used for production, the 156 gamesmen were classified.

Table 1: Period-wise and Material-wise distribution of gamesmen reported from Vadnagar

Material	Period									Talus Layers	Total
	I	II	III A	III B	IV A	IV B	V	VI	VII		
Terracotta	0	0	9	9	22	6	56	8	0	5	115
Stone	0	0	1	0	2	4	17	6	1	0	31
Glass	0	0	0	0	5	0	1	0	0	0	6
Ivory	0	0	0	0	1	0	1	2	0	0	4
Total	0	0	10	9	30	10	75	16	1	5	156

Table 1 describe gamesmen made of terracotta, stone, glass, and ivory. Among the 156 gamesmen, Period III (Kshatrapa period) yielded the earliest occurrence of gamesmen. Both sub-phases of this period reported terracotta gamesmen (n=9) in equal numbers, respectively. A solitary stone specimen was unearthed from the early phase of this period. Whereas, Period I and Period II marked the absence of gamesmen.

Period IV (post-Kshatrapa period) marked the presence of gamesmen crafted from glass and ivory, alongside terracotta and stone specimens. Amongst the early phase specimens (n=30), most of them are crafted from terracotta (n=22). Two are fashioned from stone, while five are produced from glass. Last, there is a solitary gamesman who is made from ivory. Likewise, in the subsequent sub-phase, Period IV B, terracotta (n=6) and stone specimens (n=4) have also been unearthed. The concentration of gamesmen (n=75) was found in Period V (Solanki period) with terracotta gamesmen (n=56), stone gamesmen (n=17), and a single specimen each of glass and ivory, respectively.

Period VI (Sultanate-Mughal period) marked the presence of terracotta gamesmen (n=8) and a single-stone gamesman. It revealed the absence of glass and ivory gamesmen. Period VII (Gaekwad period) yielded a single stone gamesman. Furthermore, 5 terracotta gamesmen have been unearthed from the talus layers.

After a broad classification based on the material, the detailed assessment of gamesmen under respective material categories revealed various main types and their respective sub-types. This division was based on the form or shape in which each gamesman was crafted. The following chart shows the main types of each material.

Figure 1 displays various types of gamesmen made from different materials such as terracotta, stone, glass, and ivory. Terracotta has six main types of gamesmen, while stone has only two. Glass gamesmen share a common conical shape, but a new cubical shape was recently discovered. Ivory gamesmen have only one main type, which is conical. The "Others" category for terracotta, stone, and ivory materials refer to forms or shapes that are distinct from the main types.

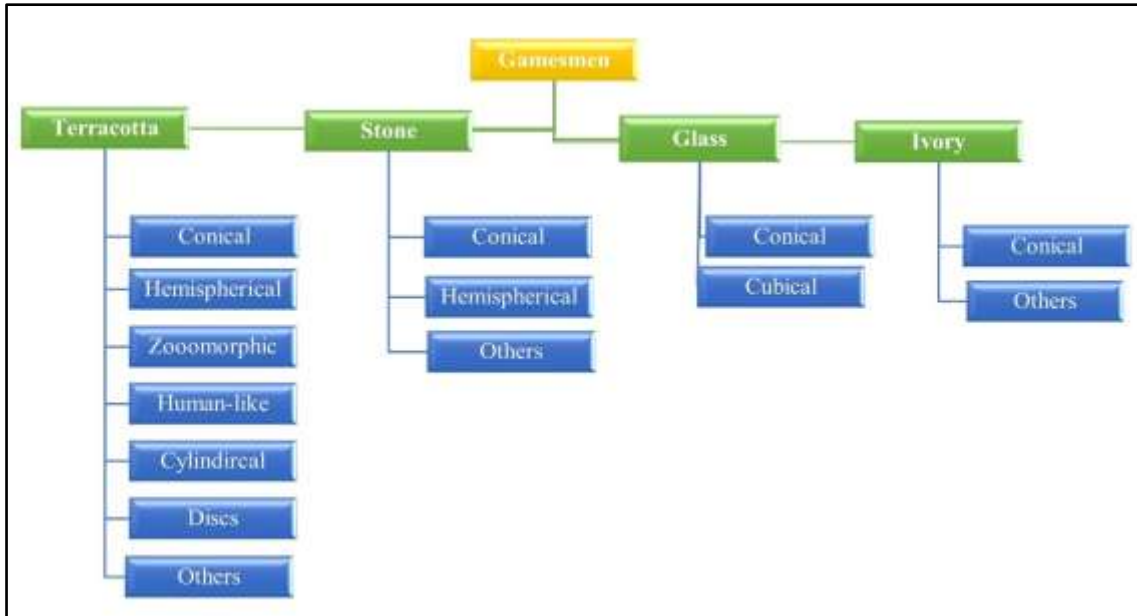


Figure 1: Various types of gamesmen made from different materials

Terracotta

A total of 115 gamesmen were made of terracotta. Based on form or shape, they are divided into six distinct types: i) conical, ii) hemispherical, iii) zoomorphic forms, iv) human-like figures, v) cylindrical, and vi) disc-shape. Gamesmen with no specific form or shape or nothing similar to the above types were considered “Others”.

Table 2: Type-wise and Period-wise distribution of terracotta gamesmen

Types	Period									Talus Layers	Total
	I	II	III	III	IV	IV	V	VI	VII		
			A	B	A	B					
Conical	0	0	4	2	13	2	21	3	0	2	47
Hemispherical	0	0	2	4	3	1	8	1	0	2	21
Zoomorphic	0	0	0	0	1	1	7	0	0	0	9
Human-like	0	0	0	0	0	2	2	0	0	1	5
Figures											
Cylindrical	0	0	1	2	1	0	2	0	0	0	6
Disc	0	0	1	0	3	0	7	2	0	0	13
Others	0	0	1	1	1	0	9	2	0	0	14
Total	0	0	9	9	22	6	56	8	0	5	115

Table 2 displays the complete distribution of terracotta gamesmen, which were 115 in total, divided according to their type and period. Conical-type gamesmen (n=47) and hemispherical-type gamesmen (n=21) were found from Period III to Period VI, including the talus layers. Zoomorphic forms (n=9) and human-like figures (n=5) were discovered from Period IV and Period V. The cylindrical type gamesmen (n=6) were discovered between Period III and Period VI. The circular disc types (n=13) were found

from Period III to Period VI. Additionally, gamesmen falling under the "others" type (n=14) were discovered from Period III to Period VI. Conical types were found in the highest quantity, followed by the hemispherical types. Overall, Period V had the highest presence of all distinct types of gamesmen. The representatives from the main types mentioned above are elaborated below, while the remaining types are assessed in the quantification study.

Cones: There are 47 gamesmen in total, and conical-shaped ones are the most common type. Period III has specimens that have conical bodies with truncated tops and flat bases. Some have conical bodies with pointed-pinched tops and triangular concave bases. The fabric is fine and medium. The base diameters range from 13.41 mm to 18.91 mm, and height ranges from 8.27 mm to 15.72 mm. The weight ranges from 1.4 gm to 4.4 gm (Figure 2 and Figure 6).

Period IV has remarkable findings. A total of five specimens are found from the early phase at the southern side of Ambaji Kotha Lake. Two sets (comprising n=2, respectively) and a cluster (n=3) have conical bodies with flat wide bases and tops either truncated or pointed. The rest of the specimens from Ambaghat locality have shallow concave bases with truncated tops while few have flat wide bases with pointed tops. This period has a unique conical gamesman with a bulbous knob and flat circular base, which is considered to be a subtype of cones. The base diameter ranges from 11.06 mm to 25.55 mm, and height ranges from 9.98 mm to 26.52 mm. The weight ranges from 0.9 gm to 13.17 gm (Figure 2 and Figure 6).

Period V has two gamesmen, one resembling the shape of a rolling pin, and another having a tapering head. Conical gamesmen having a rounded knob-head with a flat circular base continue to appear in this phase. The minimum and maximum diameter of the base range from 11.56 mm to 23.50 mm; height ranges from 11.66 mm to 34.63 mm and weight ranges from 1.06 gm to 10.42 gm. A single tiny tetrahedron (pyramidal shape) devoid of decoration or perforation has also been recorded during this period. The rest of the known specimens have flat circular bases and truncated or pointed tops (Figure 2 and Figure 6).

Period VI deposit yielded a set (n=2) of gamesmen, one having a convex-concave body with a tip raised in a bud form while the other had a conical body with a pointed raised knob and flat wide base. An interesting example is a gamesman with a conical body, a flat base and on the upper side with a raised knob surrounded by concentric circles at the centre. The minimum and maximum diameter of the base range from 11.90 mm to 23.44 mm; height ranges from 23.35 mm to 25.53 mm and weight ranges from 4.03 gm to 12.18 gm (Figures 2 and 6). The surface of the specimens shows colour variation ranging from reddish gray 10R 5/1, reddish brown 2.5 YR 5/4, grayish brown 10YR 5/2, pale brown 10YR 6/3, light brown 7.5YR 6/4, very dark gray 7.5YR 3/1, black 2.5Y 2.5/1, red 10R 5/6. Few damages like broken tips or chipping are observed on the specimens (Figures 2 and 6).

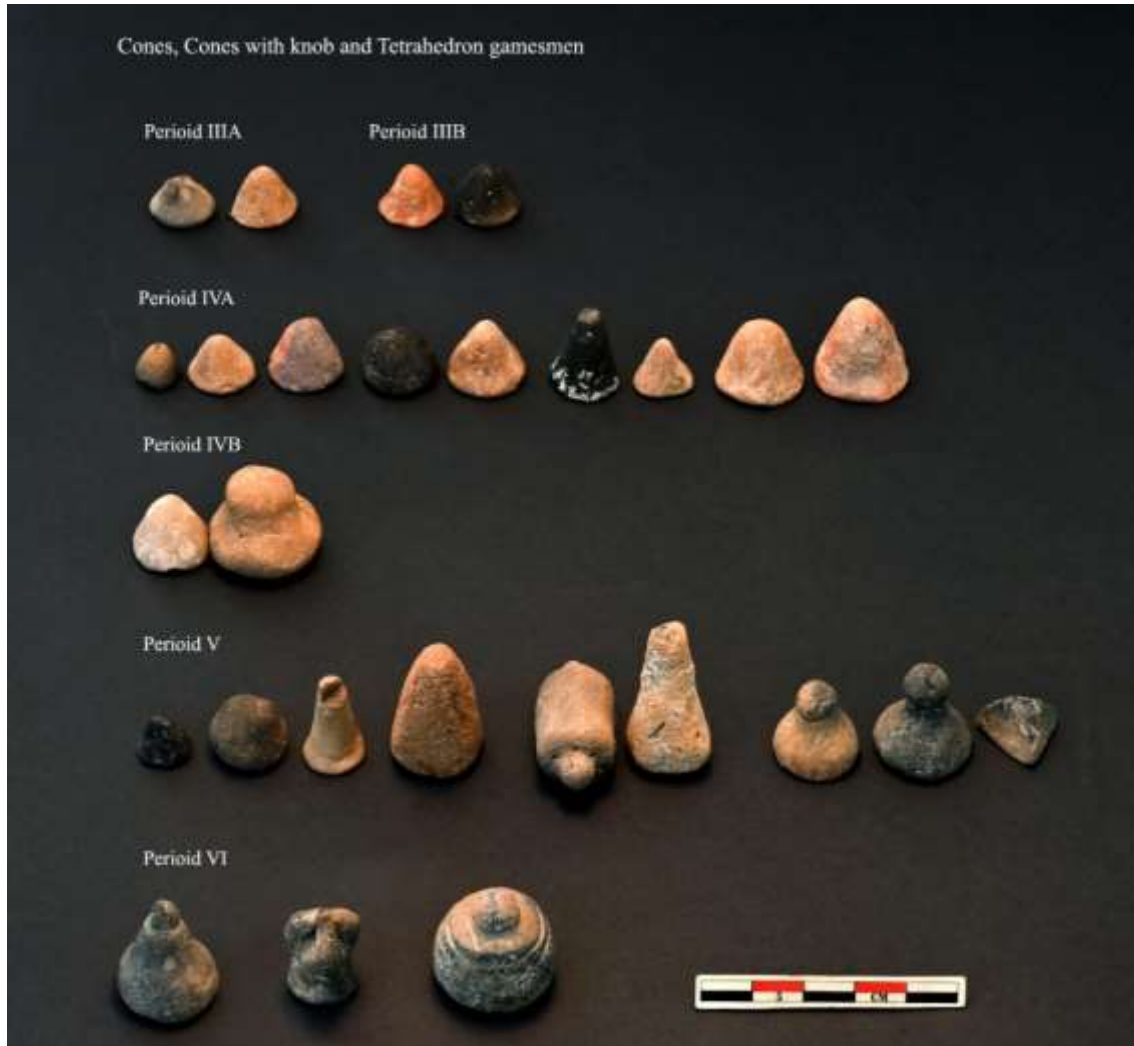


Figure 2: Period-wise distribution of cones, cones with knob and tetrahedron gamesmen made of terracotta

Hemispherical: The second type of terracotta gamesmen that is quite common is hemispherical. There have been 21 specimens that have been documented, and they are hand-made, varying in size and value. These specimens can be divided into two types: one that has a plain, hemispherical body, and the other that has deep, distinct carved/incised lines (Figures 3 and 6). Period III (n=6) mainly yielded gamesmen that had plain, hemispherical bodies with flat circular bases or flat wide bases. The minimum and maximum diameters of the base ranged from 14.01 mm to 23.81 mm, height ranged from 10.38mm to 19.09mm, and weight ranged from 2.40 gm to 12.34 gm (Figures 3 and 6).

Period IV unearthed gamesmen (n=4) that had plain, hemispherical bodies and convex bodies with flat circular bases. The minimum and maximum diameter of the base ranged from 13.80mm to 18.52 mm, height ranged from 11.13 mm to 14.57 mm, and weight ranged from 2.14 gm to 4.20 gm (Figures 3 and Figure 6).



Figure 3: Period-wise distribution of hemispherical-shaped and zoomorphic-shaped gamesmen of terracotta

The concentration of gamesmen (n=8), both plain and decorated types, were found in Period V. The plain varieties commonly had cylindrical bodies with convex heads and flat circular bases, while the hemispherical body gamesmen had flat wide bases and flat circular bases. A single gamesman which had a convex body, deep incised lines on the upper side, and a deep concave base marked its first appearance in this phase. The minimum and maximum diameter of the base ranged from 9.49 mm to 23.97 mm,

height ranged from 9.71 mm to 22.03 mm, and weight ranged from 1.04 gm to 8.83 gm (Figures 3 and 6).

Period VI solely yielded a gamesman that had a convex body, bearing eight deep incised lines on the upper side, and a deep concave base. The diameter of its base is 21.63 mm, its height is 20.16 mm, and its weight is 10.82 gm. Interestingly, the talus layers also unearthed plain and decorated varieties of this type (Figures 3 and 6).



Figure 4: Period-wise distribution of human-like figures, cylindrical-shaped and disc-shaped gamesmen terracotta



Figure 5: Period-wise distribution of other variety gamesmen made of terracotta

Colour variation (ranging from reddish brown 5YR 5/4, brown 10YR 5/3, light brown 7.5YR 6/4, grayish brown 10YR 5/2, dark grayish brown 10YR 4/2, yellowish brown 10YR 5/2, dark gray 10YR 4/1, very dark gray 10YR 3/1, black GLEY 1 2.5/N, and red 2.5YR 5/6) on the surface and few damages like cracks are observed on the specimens (Figures 3 and 6).

Zoomorphic Forms: The third type of handmade game pieces are zoomorphic forms, which are identified as gamesmen with animal heads. In Period III, the zoomorphic figures resemble an elephant with incised decorations around the eyes, on the ears, and

the forehead. Another example is a horse with a long snout, slit mouth, applied ears, and a prominent pinched mane (Figures 3 and 6).

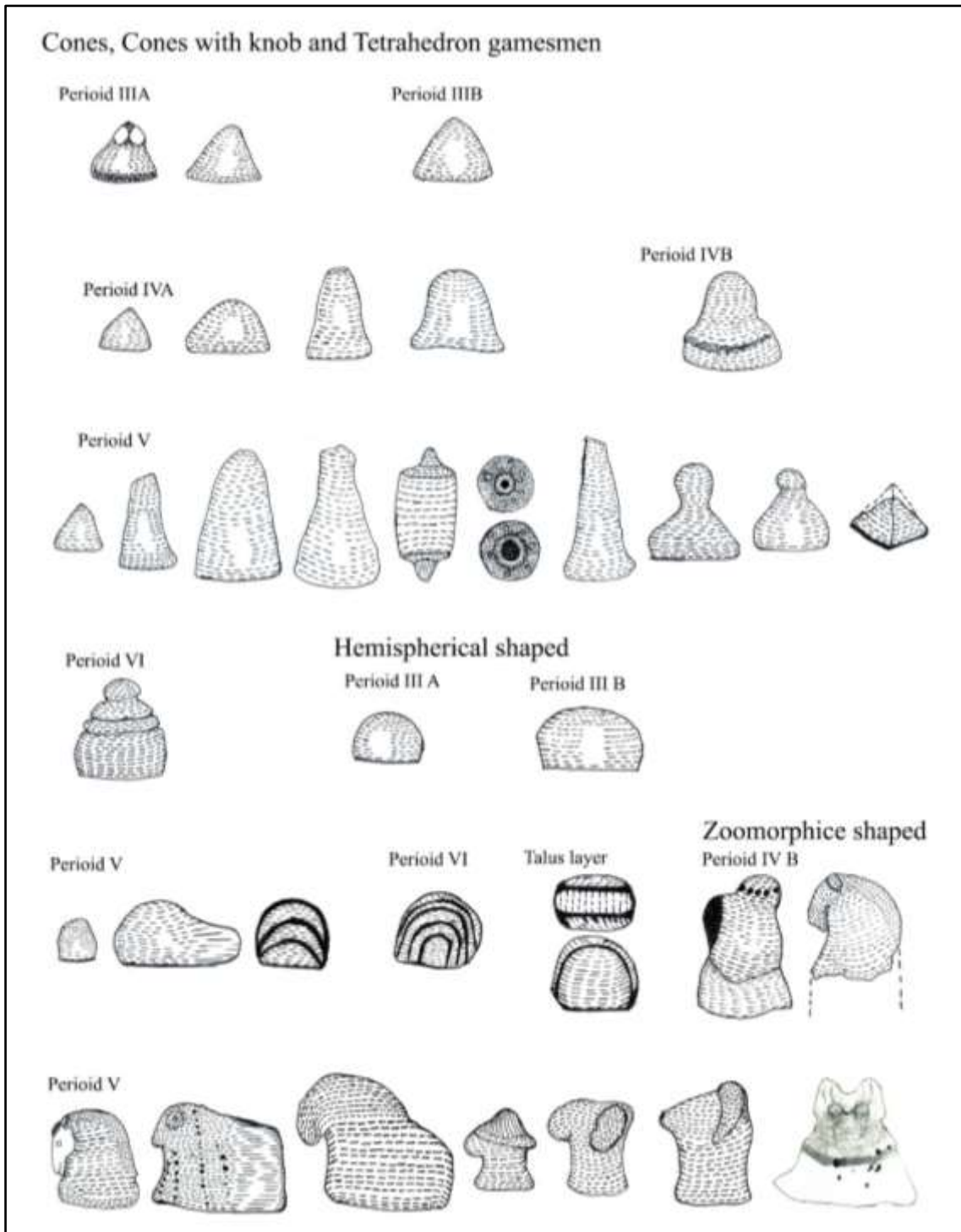


Figure 6: Drawings of terracotta gamesmen

Period V showed the highest number of zoomorphic forms (n=7) of gamesmen. Of these, three are horse pieces intricately stylized with incised decorations, resembling

the modern chess piece known as the 'knight'. The remaining zoomorphic specimens are unidentifiable because some features are damaged. These could be gamesmen with ram heads, elephants with flared ears, or bulls with projecting horns (Figures 3 and 6).

The base's minimum and maximum diameter/width range from 11.96 mm to 38.62 mm, the height ranges from 20.62 mm to 39.55 mm, and the weight ranges from 4.88 gm to 23.08 gm. On the surface, there is a colour variation ranging from brown 7.5YR 5/3, light brown 7.5YR 6/4, dark grayish brown 10YR 4/2 treated with red slip, dark gray 10YR 3/1, very dark gray 10YR 3/1, black GLEY 1 2.5/N treated with black slip, and red 2.5YR 5/6 treated with red slip, and few damages like cracks are observed on the specimens. They are mostly medium-fired in conditions (Figures 3 and 6).

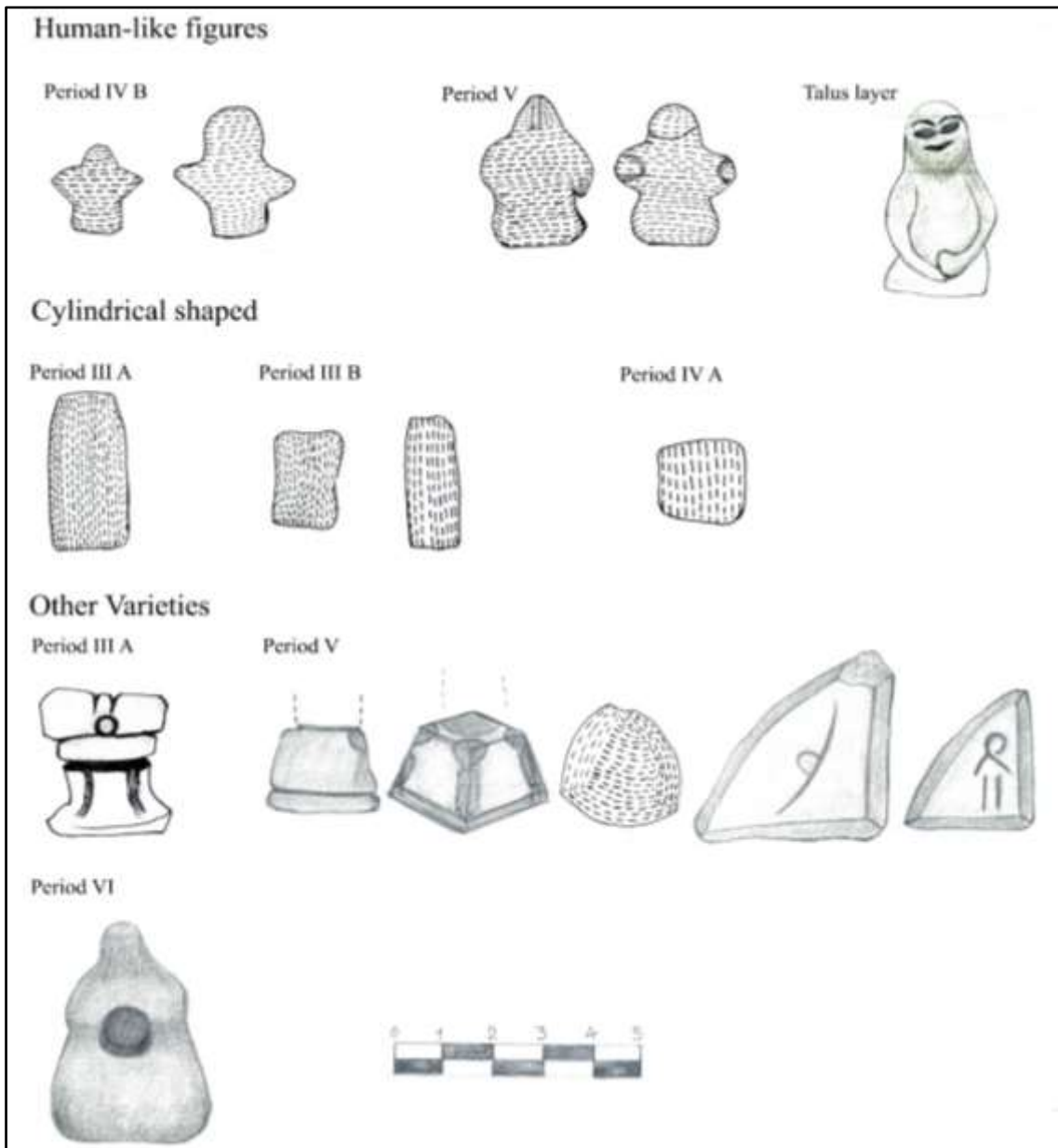


Figure 7: Drawings of terracotta gamesmen



Figure 8: Period-wise distribution of conical-shaped, hemispherical-shaped and other variety gamesmen made of stone

Human-like Figure: Five human-like figurines were discovered from Period IV B and Period V. These are unique types of gamesmen due to their distinct hand modelling style. The figures have a featureless conical projection in place of a head, and their arms are extended straight with a conical end or rounded tip. The base is typically circular and flat. One specimen found from the talus layer had incised almond-shaped eyes, curved eyebrows, a smiling facial expression, and luted hands. The fabric of the figurines ranges from fine to medium, and most of them are well-fired. The base diameters range from 9.96 mm to 21.09 mm, while the height ranges from 16.83 mm to 39.88 mm. The weight varies from 1.88 gm to 17.94 gm. The surface of the figurines displays colour variation, ranging from brown (7.5YR 5/3), very dark grey (2.5Y 3/1), and black (GLEY 1 2.5/N) (Figures 4 and 7).

Cylindrical Shape: The gamesmen made during Period III up to Period V were all shaped by hand and had a solid cylindrical shape. These cylinders come in varying sizes, including short, standard, and long ones with a flat circular disc base, and can be found in thick and slender shapes. They lack any decorative elements or perforations and are made from fine to medium and medium to coarse fabric. All of the specimens are well-fired and their base diameter ranges from 11.81 mm to 16.86 mm, their height ranges from 16.62 mm to 31.90 mm, and their weight ranges from 4.91 gm to 8.94 gm. The surface of these gamesmen displays a range of colours, including yellowish-brown 10YR 5/4, reddish-brown 5YR 5/4, very dark grey 2.5Y 3/1, and black GLEY 1 2.5/N (Figures 4 and 7).



Figure 9: Period-wise distribution of cubical-shaped and conical-shaped gamesmen made of glass; conical-shaped and other variety gamesmen made of ivory

Disc Shape: There are thirteen handmade, circular objects called disc-shaped gamesmen. Their thickness and shape vary, with some being tabular, bi-convex, and oblate in section. These objects were unearthed from Period III to Period VI. One specimen from Period V shows faint signs of a textile impression on its surface. The base diameter ranges from 13.66 mm to 28.65 mm, the thickness ranges from 4.86 mm to 13.94 mm, and the weight ranges from 0.73 gm to 10.94 gm. The colour varies from

brown 7.5YR 4/2, dark greyish brown 10YR 4/2, reddish brown 5YR 5/4, dark grey 10YR 4/1, and very dark grey 2.5Y 3/1 on the surface (Figure 4).

Others: There are two types of terracotta gamesmen, one of which is the main type and the other type is uncommon with variations in shape, technique, size, and decoration. Gamesmen from Period III (n=2) were handmade from fine fabric and medium-fired. The gamesman from the early phase has a tabular body with vertical lines on both sides, a segmented neck by a groove, and perforation on the upper side. The specimen from the late phase has a concave-convex profile with a deep concave top and base, pinched designs at the centre, and etched top and bottom. These examples resemble the modern-day elephant/rook pieces from a chess game (Figures 5 and 7).

The concentration of other types of gamesmen was found in Period V. These specimens were handmade and moulded from fine fabric. The gamesman with a circular head and concave base showed eight spoke-like incisions on both sides. This moulded specimen resembles the modern-day bishop piece from a chess game. Another significant moulded example is a gamesman with a truncated pyramidal body bearing incised horizontal and vertical lines at four ends. Two notable specimens in the shape of quadrants, adorned with graffiti featuring carved human figures, deserve special attention. The remaining gamesmen consist of cuboid and triangular cake-shaped specimens (Figures 5 and 7).

Period VI yielded handmade gamesmen (n=2) of fine and medium fabric. One has a concave-convex profile and a pentagonal-shaped concave top with a pointed knob. This specimen resembles the modern-day castle piece from a chess game. Another gamesman possesses a conical body, a pointed raised knob, and a flat wide base (Figures 5 and 7).

Colour variation ranges from brown 7.5YR 5/3, pale brown 10YR 6/3, light brown, reddish brown 5YR 5/4, reddish yellow 5YR 6/6, gray 5YR 5/1, dark gray 10YR 4/1, very dark gray GLEY 1 3/N, and red 2.5YR 5/6. Surface wear and tear are also observed on the specimens (Figures 5 and 7).

Stone

There are two main types of stone gamesmen: conical and hemispherical. The term "other" gamesmen refer to those not similar in shape to the main types. Among the stone specimens, various forms found in terracotta, such as zoomorphic, human figures, cylindrical, and disc shapes were absent. Upon close examination, it was observed that the surfaces of the stone specimens (n=31) ranged from fine to medium-coarse, and even coarser. The intact specimens were exquisitely finished and polished (Figure 8).

Table 3 shows how stone gamesmen (31 in total) are distributed across five different cultural periods, based on their main type. The conical type (n=6) and hemispherical

type (n=16) were found from Period IV to Period VI. Meanwhile, the "others" type (8 gamesmen) was found from Period III and continued through to Period VII (Figure 8).

Table 3: Type-wise and Period-wise distribution of stone gamesmen

Types	Period									Talus Layer	Total
	I	II	III A	III B	IV A	IV B	V	VI	VII		
Conical	0	0	0	0	1	2	3	1	0	0	7
Hemispherical	0	0	0	0	1	1	11	3	0	0	16
Zoomorphic	0	0	0	0	0	0	0	0	0	0	0
Human figures	0	0	0	0	0	0	0	0	0	0	0
Cylindrical	0	0	0	0	0	0	0	0	0	0	0
Disc	0	0	0	0	0	0	0	0	0	0	0
Others	0	0	1	0	0	1	3	2	1	0	8
Total	0	0	1	0	2	4	17	6	1	0	31

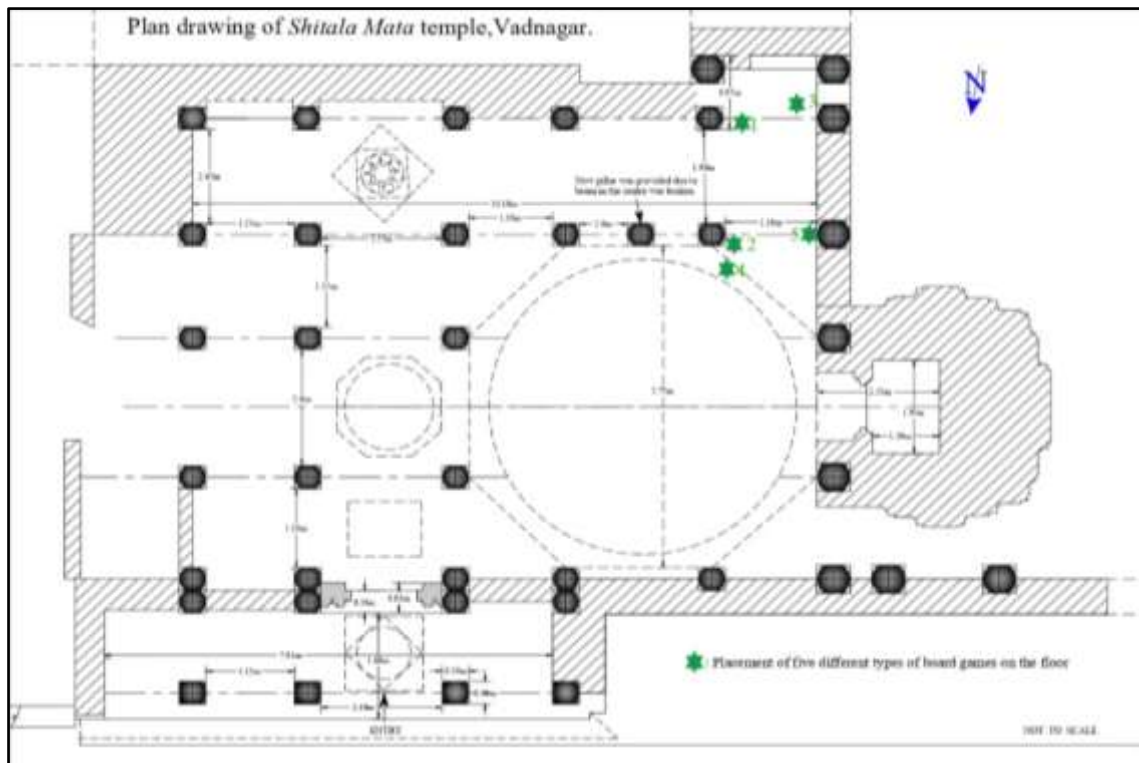


Figure 10: Plan of *Shitala Mata* temple showing the types etched board game on the floor

The main types mentioned in Table 3 are explained in detail, while the rest of the gamesmen are evaluated in the quantification study.

Cones: There are two main types of stone gamesmen - one of them being cones or conical-shaped gamesmen. During the early phase of Period IV, a single tetrahedron-

shaped gamesman was found made of soapstone (pinkish gray 5YR 8/1 in colour). It has a pyramidal body with a flat square base and curved edges. Likewise, during the late phase of this period, two conical-shaped gamesmen made of crystal and sandstone (white N9) were found. Both have flat circular bases.

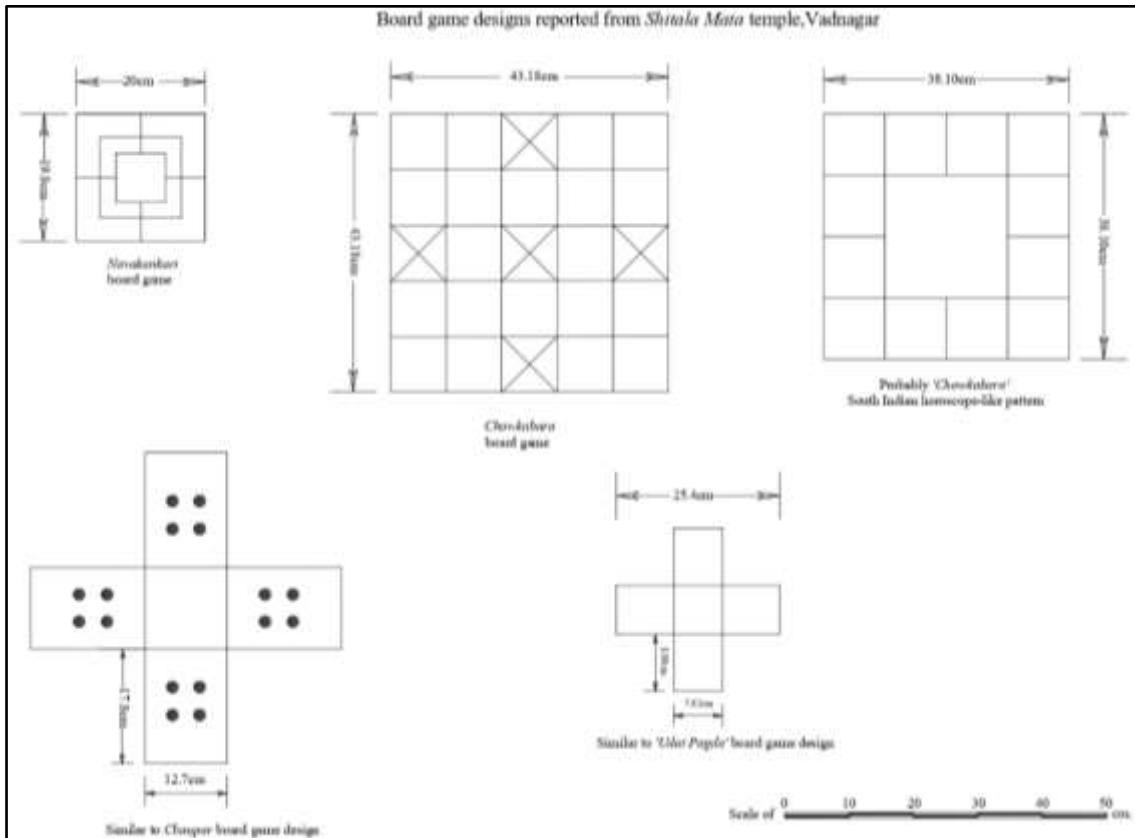


Figure 11: Five types of board game designs from *Shitala Mata* temple, Vadnagar

Period V unearthed gamesmen made from three different stones. Gamesmen carved from banded agate have a truncated conical body with a flat circular base. Gamesmen carved from schist (greenish black 5G 2/1) and sandstone (partially grayish orange 10YR 7/4 and grayish orange pink 5YR 7/2) have conical bodies with flat, wide circular bases. A single sandstone gamesman has a long cylindrical body with a conical top. It is yellowish gray 5Y 8/1 with moderate red lines.

The minimum and maximum diameter of the base of these gamesmen range from 8.49 mm to 17.08 mm, the height ranges from 10.30 mm to 36.41 mm, and the weight ranges from 1.04gm to 14.09 gm. Overall, specimens of this type lack any kind of decoration (Figure 8).

Hemispherical Shape: Hemispherical gamesmen (n=16) are found commonly among other stone types. There are two specimens reported- one is made of agate (yellowish gray 5Y 8/1) from the early phase and the other one is made of jasper (dark yellowish brown 10YR 4/2) from the late phase of Period IV. Both of them have hemispherical

bodies with flat wide circular bases. The base diameter ranges from 15.72 mm to 25.12 mm, height ranges from 9.15 mm to 18.26 mm, and weight ranges from 3.49 gm to 17.14 gm (Figure 8).

Moreover, the concentration of hemispherical type (n=11) was mainly found in Period V. The materials used for this type of gamesmen include sandstone (light brown 5YR 6/4), schist (grayish blue green 5BG 5/2), carnelian (coral 10.0R 5/10), quartz (pale yellowish brown 10YR 6/2), and chert (black N1). They all possess hemispherical bodies with flat, wide circular bases. The base diameter ranges from 1.82 mm to 37.61 mm, height ranges from 12.22 mm to 27.82 mm, and weight ranges from 10.20 gm to 46.10 gm (Figure 8).

Lastly, Period VI yielded hemispherical gamesmen (n=3) made from agate (light brownish gray 5YR 6/1) and sandstone (yellowish gray 5YR 8/1) (Figure 8).

Others: Between Period III and Period VII, eight gamesmen were discovered under the "others" category. These gamesmen come in various shapes, such as multi-faceted, cylindrical, cuboidal, and hexagonal forms. One of the unique gamesmen from Period VI closely resembles a bishop piece from a chess game. Another interesting gamesman from Period VII is made from schist stone that bears two incised concentric circles with a dot at the center. The materials used to make these gamesmen include sandstone (yellowish-gray 5Y 8/1 with moderate red 5R 5/4 lines, pale yellowish-brown 10YR 6/2), soapstone (grayish-blue 5PB 5/2), granite (dark gray N3), and schist (greyish-blue-green 5BG 5/2) (Figure 8).

Glass

Six glass gamesmen have been discovered from Period IV to Period V. These gamesmen come in two main types: cubical and conical. However, zoomorphic forms, human-like figures, and cylindrical and disc-shaped gamesmen are not present (Figure 10). The cubical gamesmen (n=5) found in the early phase of Period IV are unique due to their size and uniformity. They come in two colours: dark palm green (10.0GY 4/4) and surf green (5.0G 5/4). The minimum and maximum sides range from 8.15 × 7.38 to 9.49 × 9.28 mm, while the weight ranges from 1gm to 1.59 gm (Figure 9). Another significant discovery is a single conical-shaped gamesman (deep grass green 10.0GY 4/8 in colour) from Period V. It bears pearl coating over its entire surface, measures 23.92 mm in diameter, 20.14 mm in height, and 14.98 gm in weight (Figure 9).

Ivory

Four ivory gamesmen were discovered from Period IV A up to Period VI. The Period IV A game piece has a plano-convex profile, truncated discoidal top, and flat circular base. It has a diameter of 12.08 mm, a height of 7.82 mm, and weighs 0.8 gm. In Period V, a broken fragment was found, which is possibly from a hemispherical-shaped game piece (Figure 9).

Two ivory gamesmen were found in Period VI. The intact one has a long-truncated shape with a convex-cone profile, a semi-circular top and base, and is divided into three parts by incised lines. It has a width of 30.60 mm, a height of 39.05 mm, and a weight of 15.86 gm. The broken fragment also has three parts made of double-incised lines and probably had a flat top and base. It has a height of 31.78mm and weighs 6.43 grams (Figure 9).

Board Game Designs at *Shitala Mata Temple, Vadnagar*

The *Shitala Mata* temple is an ancient temple located in Vadnagar, north of the Ghaskol area. This area is known for its unearthed Buddhist monastery. Based on the architectural style, this temple can be dated to the 10th century CE. This was likely renovated at different intervals. Undoubtedly, it is regarded as one of the significant temples in Vadnagar. Within the ancient remains, there are two doorframes, a domed roof over the mandapa, and three intricately decorated ceilings. One of these ceilings portrays a lively *Rasamandala* scenario, with Krishna dancing with milkmaids. The main entrance is adorned with a doorframe consisting of seven jambs, namely *gandharva, patra, rupa, rupastambha, another rupa, simha, and khulva* (Rajyagor, 1975).

The temple is now being used for religious worship, and its entrance is located in the northern part of the structure. The present deity is located in the southern section of the temple. Five distinct board game designs were observed in the south-western area of the temple. Among the five board game designs engraved on the temple, three designs were fully discernible, whereas the remaining two had faint indications of the designs. Therefore, efforts were undertaken to complete the design by utilizing a small number of clearly apparent lines. The documentation process involved doing a physical examination, identifying, measuring, photographing, and recording the existing games, as well as collecting contextual information. The Table 4 and Figures 10- 14 contains specific information regarding the recognized designs.

Type 1: The Game of *Navakankari*: *Navakankari*, commonly known as Nine Men's Morris, is a strategic board game designed for two players that has been played since the time of the Roman Empire. The Latin word "*merellus*" means a game piece, token, or counter, which may have undergone modification in English to become "*morris*" (Berger 2004:11-25). Therefore, the name "*Nine Men's Morris*" indicates that each player starts the game with nine pieces/counters that are distinctively coloured or marked.

Each of the two players has nine men, and they take turns entering each man one at a time on any open spot. A player takes one of his opponent's pieces off the board whenever he creates a row or MILL of three pieces along a line, but not the one on a mill. After all the men have been placed, the game progresses by moving a piece to an adjacent empty position along a line to create a mill and capture an opponent's piece. The player who eliminates all of his opponent's men or reduces them to two pieces wins the game (Bell 1960:93). The *Navakankari* board game design engraved inside the temple comprises a grid with three concentric squares and twenty-four intersections or

points. Parts of the design have been weathered and flaked off. Terracotta and stone hemispherical-shaped gamesmen were arranged at intersections as a visual aid to comprehend the game (Table 4; Figure 10, Figure 11 and Figure 12).

Table 4: Types of board game designs documented at the *Shitala Mata* temple

Type No.	Name of board game design	Location (inside the Temple)	Size (in cm)	Condition
1	<i>Navakankari</i>	Next to the pillar, 272° West	Outer square: 20 X 19.8 cm, Second square: 12.7 X 12.7 cm, Third square: 7.6 X 7.6 cm	Weathered, carvings are nearly damaged, irregular
2	<i>Chowkabara</i>	Next to the pillar supporting the domical roof, 263° West	Overall: 43.18 X 43.18 cm	Well-preserved, carvings are visible
3	Similar to <i>Chaupar and Pachisi's board design</i>	Towards the right wall of the temple, 256° West	Each arm: 17.8 X 12.7 cm approx. Central square: 13.97 X 12.7 cm approx.	Deep and well-preserved
4	Similar to <i>Udat Pagda</i>	Near the pillar supporting the domical roof, below the Chowkabara board game, 268° West	Each arm: 8.89 X 7.62 cm, overall: 25.4 cm approx.	Partially visible, traces of modern-day plaster on the rest of the design
5	Probably <i>Chowkabara</i>	Towards the right wall of the temple, 268° West	Overall: 38.10 X 38.10 cm approx.	Partially visible, traces of modern-day plaster on the rest of the design

Type 2: The Game of *Chowkabara*: *Chowkabara* or Cowry game is one of the ancient board games that originated in India. Its history can be traced back to the times of the epic “Mahabharata”. Its variations are popular and are being played in different regions of India under various names, such as *Chakaara*, *Katte Mane*, *Ashta Chamma*, *Pagdi*, *Kavidi Kali*, and *Thayyam*. (Davoudian, 2019). *Chowkabara* is also referred to as *Ahmedabadi-Baji* in Gujarati. The board is a square grid divided into five rows and columns. Each player is assigned a colour (typically red, yellow, green and blue), and has four pieces of the same colour. The outer middle squares on each side of the board represent the starting squares for each player, where initially four pieces of a player are placed. The starting squares function as “safe squares”. The innermost square of the

board is the finishing square for all players. The game is started by throwing four cowries and the player with the highest value moves first. The number of cowries landing with their openings upward shows the number of squares the player should move. The players alternate turns around the board in an anticlockwise direction (Davoudian 2019:174-183).

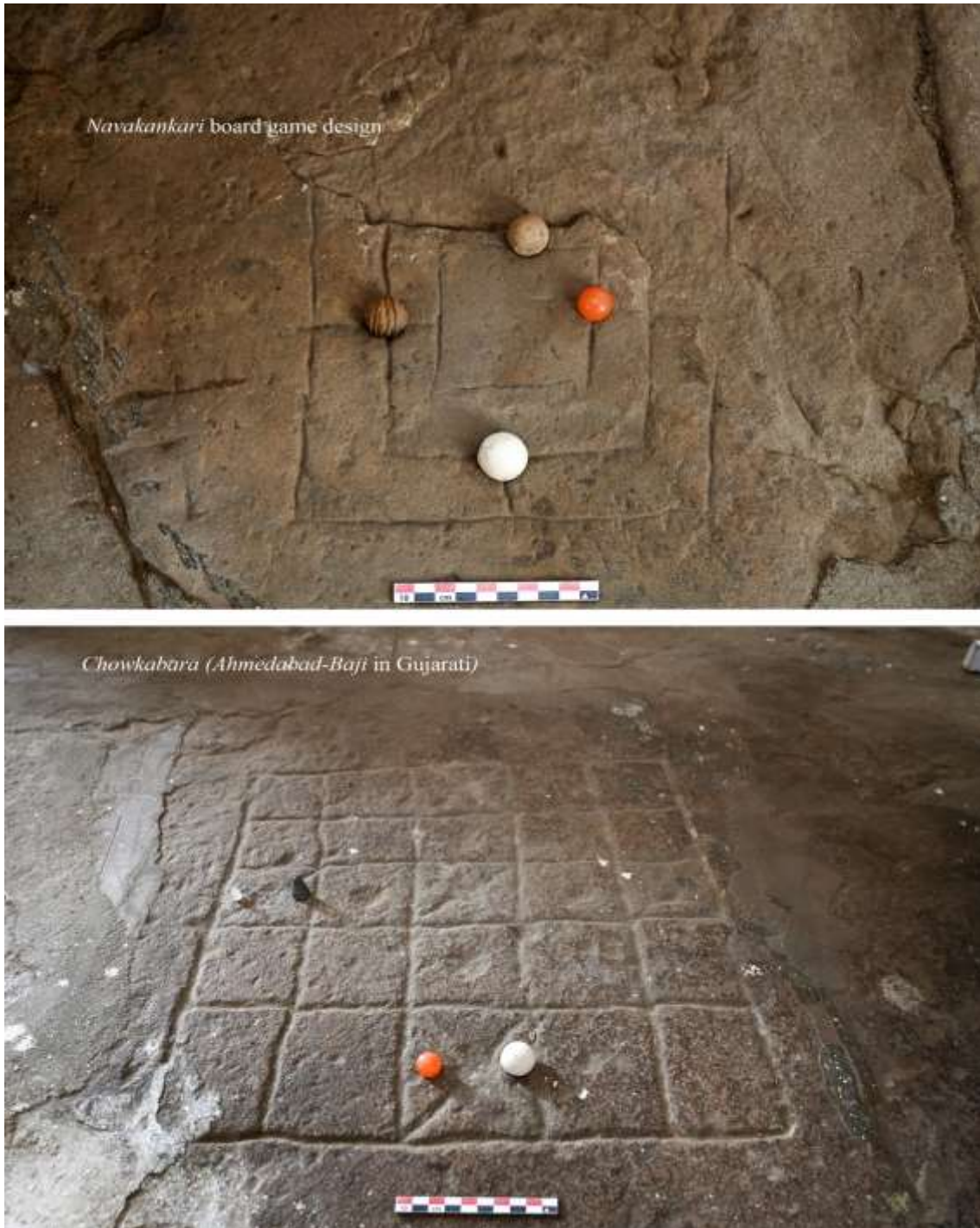


Figure 12: Demonstrating the use of gamesmen in the *Navakankari* board game design and *Chowkabara (Ahmedabadi-Baji)* board game design

The *Chowkabara* board game design at Vadnagar is similarly divided into five rows and five columns. The middle square on the outer rows and columns is cross-divided into four for the gamesman to be placed. Stone conical-shaped and hemispherical-shaped gamesmen were arranged in squares as a visual aid to comprehend the game (Table 4; Figures 10- 12).



Figure 13: Demonstrating the use of gamesmen in the plan similar to *Pachisi* and *Udat Pagda*

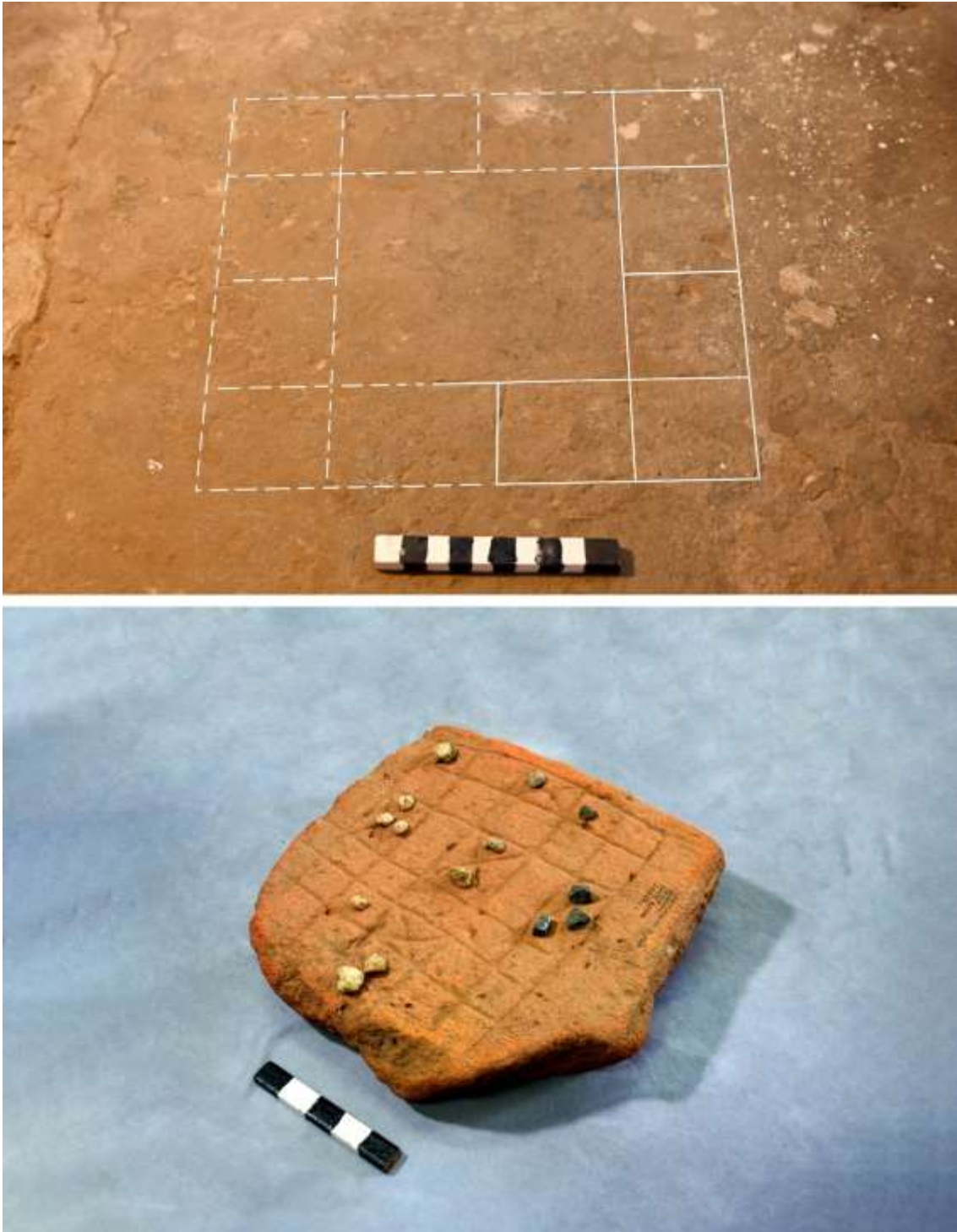


Figure 14: Plan similar South Indian Horoscope design and *Chowkabara*.

Type 3: The Board Game Design Similar to *Chaupar*: This board game design is engraved in the shape of a cross and then four round shallow depressions or cavities are made in each arm. It is only the cross-shape design, which is similar to *Patoli*, *Chaupar* and *Pachisi* board game designs. The above-board games are devoid of any shallow depressions but are bare divisions in each arm by rows and columns.

Each arm of this cross-shaped design is nearly equal in terms of dimensions. The four smaller cavities in each arm are correctly made for placing the gamesman. Stone hemispherical-shaped gamesmen were placed in shallow depressions as a visual aid to comprehend the game (Table 4; Figures 10- 11 and 13).

Type 4: The Board Game Design Similar to *Udat Pagda*: This game design has a resemblance to the Type 3 board game design but is devoid of any shallow depression or any divisions of rows and columns. This game is partially visible because of the contemporary plaster applied on the temple floor (Table 4; Figures 10, 11 and 13).

Type 5: Board Game Design Similar to *Chowkabara* or *Ashta Chamma*: The floor features a board game design with twelve rectangular houses engraved onto it. It lacks round depressions or cavities. The board game design is partially visible due to the contemporary plaster and flooring. Efforts have been undertaken to complete the design by utilizing scarcely discernible lines (Table 4; Figure 10, Figure 11 and Figure 14).

The Board Game Design of *Chowkabara* Carved on Terracotta Brick: In 2001, during an exploration at *Lakha Phulani Medi* in Girnar, an intriguing terracotta brick game board was discovered on the surface. This kiln brick has been engraved depicting the *Chowkabara* board game. The dimensions of the terracotta brick board are 24 x 24 x 7 cm. The etched rows and columns appear as asymmetrical squares. Two-coloured stone pieces were arranged in squares as a visual aid to comprehend the game (Figure 14).

Discussion

A study of 156 gamesmen revealed that they were made of terracotta, stone, glass, and ivory. Based on the significant number of gamesmen unearthed during the excavation, it can be inferred that terracotta gamesmen were widely favoured from the Kshatrapa period (Period III) to the Sultanate-Mughal period (Period VI). Terracotta and stone gamesmen were found together, while glass and ivory were discovered between the post-Kshatrapa period (Period IV) and Sultanate-Mughal period (Period VI).

The craftsman/manufacturer created gamesmen in a variety of forms and sizes, without regard to whether they were decorated or plain. Rather, a variety of types and stylizations were applied to improve the gaming experience. Most of the terracotta gamesmen are meticulously crafted by hand. Chunks or pebbles of stones were cut, grounded, polished and smoothed for a creating gamesman. Variety of stones including agate, schist, jasper, quartz, crystal, chert, granite, and soapstone. However, sandstone is the most commonly favoured stone among them.

The spatial distribution of the gamesmen in the Ambaghat locality (north-eastern side of Sharmistha Lake) is closely linked to residential structures and is concentrated near areas where fire activities, such as the hearth area occurred. The intriguing discovery comprises a set of rolling pin and conical terracotta gamesman that were found some

distance away from the fortification wall. On the other hand, the specimens found on the southern side of Ambaji Kotha Lake (near Anaj Godown) are considered significant in a religious context due to the presence of brick structures associated with Buddhism. The finding includes two conical terracotta gamesmen, with each gamesman consisting of a pair of pieces. Additionally, there is a cluster of three conical-shaped gamesmen from this area, all of which have considerable value. Specifically, glass cubical-shaped specimens are also found in this area.

In general, both localities have recorded a combination of various major types. Although several varieties were experimented with, it seems that conical and hemispherical shapes are the most appropriate pieces used for board games. The fabrics used to make them range from fine to medium and medium to coarse; while the firing conditions vary from well to medium-fired and medium to ill-fired. Stone gamesmen were known for their impeccable craftsmanship and polished appearance.

Through a review of the excavation reports, important discoveries were made concerning the conical type of gamesmen, which was a common form during the Harappan period. This study provides evidence that the use of this form of gamesmen has persisted from the Harappan period through the early historical period and into the medieval period. The wide range of types and their subtypes found in Vadnagar bear a resemblance to the specimens discovered in Lothal, Dholavira, and Khirsara. Cones and cones with knobs in the Solanki period exhibit resemblances to Atranjikhera gamesmen found at the NBPW levels (Gaur, 1983). The tetrahedron and triangle gamesmen made of terracotta and stone, which were found during the post-Kshatrapa and Solanki period, bear a resemblance to the small pyramid-shaped terracotta object gamesmen found in Kanmer (Kharakwal et al. 2012:527, 595). It demonstrates the uninterrupted progression of the forms from earlier periods.

Suggested Function of Gamesmen from Vadnagar

Conical gamesmen may function as pawns in various board games, including chess (also known as *Chaturanga* or *Shatranj*), *Pachisi*, *Dhadi* (Attack game), and *Astha Chamma* (a grid game). Likewise, the gamesmen with a hemispherical shape were employed in the previous games (Reddy and Deme, 2015).

In the game of chess, tetrahedrons might represent footmen. Simultaneously, castles, cones, zoomorphic shapes, and human figures can symbolize other chess pieces like the king, minister, elephant, horse, chariot, and so forth (Rao 1985:502-508). The terracotta and stone figurines unearthed at the site have a striking resemblance to the contemporary chess pieces.

A set of terracotta gamesmen unearthed at Vadnagar, spanning from the 14th to 17th century CE, comprises a plain conical-shaped gamesman and one with elevated tips that have a resemblance to budding forms. These gamesmen exhibit a similarity to the ones unearthed in Torskey, Lincolnshire in England, which were associated with the

Viking Great Army (9th century CE). The majority of these objects consist predominantly of lead and are offered in a range of shapes, including cones, cones with grooved knobs, hemispheres, and cylinders, among others. The presence of 289 lead gaming pieces suggests that the Army may have had some time off for recreational activities (Hadley and Richards 2016:23-67).

Similar Findings of Etched Board Game Design and Game Boards from India and Other Geographical Areas

The board game designs recorded in the *Shitala Mata* temple are classified as race games, strategy games, and games that include both skill and chance. Etched designs can be found in many regions of India and other geographical areas. These board game designs bear a striking resemblance to one another. The following part discusses different names of board games (limited to that particular area) and evidence from India and other regions.

Navankankari, also known as Nine Men's Morris (larger merels), originated from the Latin term Merels. It is a variation of the game Three Men's Morris, which is a smaller version of merels. Boards for these games have been found at various locations, including the El Kurna temple in ancient Egypt around 1440 BCE, Lake, the ancient city of Troy, Athens, a burial site from the Bronze Age in Co Wicklow, Ireland, and a flight of steps on the hill at Mihintale in Sri Lanka dating back to the 10th century CE. According to some accounts, this game was reportedly played in China as far back as 500 BCE (Bell 1960:93; Kowalski 2004:22). The popularity of Nine Men's Morris peaked in the 14th century CE (Bell 1960:93).

Two terracotta game boards have been discovered at Lothal in Gujarat, within the Indian setting. The first square board is marked with concentric squares. Each side of the square is divided into two halves, with a line running parallel to the squares. The second comprises sixteen houses arranged in the shape of a rectangle. Both of these styles can be traced back to the medieval period (Rao 1985:504-510). The first type resembles *Navankankari* or Nine Men's Morris. In comparison, the second type with horoscope-like markings (South Indian horoscope pattern) may be a forerunner of the games *Ashta Chamma* family, as a Backgammon-type game that loops onto itself (Raghavan 2019:198). The type with horoscope-like markings is somewhat similar to the Type 5 board game design (consisting of twelve houses in the form of rectangles).

In southern India, *Navankankari* is also referred to as *Dhadi* (Attack game). More finds have been unearthed in Gudimallam temple, Undrukonda fort, and Rachakonda fort in Andhra Pradesh (Reddy and Deme, 2015). This board game design is also observed in Western India, carved in Ellora caves in Maharashtra (Gawli, 2023).

Chowkabara or *Atthu* in Hindi is also referred to as *Astha Chamma* in Telgu. Game designs have been documented in the monuments of Hampi (Vijayanagar period); monuments in Badami (Chaluyan period); and Khokhari Tombs in Murud (ruled by

Siddhi's of Janjira, Maharashtra). The Type 4 game design documented here, is similar to *Udat Pagda* documented in the Trirasmi Caves (Pandavleni) in Nasik (Western India). This board game pattern was labelled as *Udat Pagda* in a book called "*Marathi Khelanche Pustak*" by A. B. Deodhar published in 1905. As the rules of this game were provided in the book, it was certain that the pattern was a playable game (Instucen Trust Consortium, 2019). This square board is also referred to as *Thayyam* in Southern India, where women and girls play this game using sticks as pieces and tamarind seeds as dice (Bell 1960:17).

There are two ancient temples in Southern India, namely the Parasuramesvara temple in Gudimallam and the Govindarajaswamy temple in Tirupati, that include representations of entertainment or board games. The former temple, built between the second century BCE and the second century CE, exhibits traces of *Dhadi*, *Pachisi*, and chess games on its flooring. Both the temples of the Pallava kings (2nd – 9th century CE) and the Vijayanagara empire (1336-1646 CE) include multiple instances of *Pachisi* game evidence within their respective temple complexes (Reddy and Deme, 2015).

In the early historical levels, game boards incised on stone slabs in the form of a series of rectangles were derived from the Ikshvaku levels (ca. 250-400 CE) at the site of Nagarjunakonda in Andhra Pradesh (Ghosh 1989:179).

The existence and record of board game designs etched at *Shitala Mata* temple in Vadnagar (Table 4; Figures 9-13), as well as the presence of board games recorded in various local and international contexts, have led to numerous queries:

- Why and who etched these board game designs on the floors of the temple?
- How were these games introduced in Vadnagar?
- Are these etched board game designs contemporary to the temple or were they etched after the construction?
- Is there any possibility of dating these etched games?

Therefore, an endeavour is undertaken to address the several questions posed in the study. There are two potential explanations for the origin and authorship of these game designs. During the construction of this temple, likely, several artisans and stone sculptors who dedicated years to this project resided in temporary dwellings near the construction site. Therefore, it would be commonplace for these skilled craftsmen to engage in the creation of this graffiti on the floor as part of their daily recreational activities. During the excavation of a site next to the Kirti Toran, it was noticed that the entire cutting area was filled with stone chips. Additionally, a bent metal bar was found, suggesting that this area may have been used by stone artisans who were involved in the building of the Kirti Toran. It indicates the presence of residential areas for artisans close to the construction site.

Secondly, temple complexes were used as places for social gatherings. Groups of people would meet and socially interact in this area. This temple complex would have

been regularly used for social gatherings, when individuals would engage in activities like carving board game designs and using terracotta or stone game pieces, including cowries. These possibilities also indicate that the engraved designs could have been created during the same period as the temple, either by the temple's skilled artisans and stone sculptors or at a later time when the temple was being utilized for social gatherings.

A comparable scenario occurs with the El Kurna temple in Egypt, which dates back to 1440 BCE. It is said that all the designs for the temple were made simultaneously by the artisans during its construction. This statement is uncertain and lacks persuasive evidence. Therefore, it is recommended that the incisions, engravings, or markings of game designs found in temples, caves, and other public areas can potentially offer us relative chronological information rather than precise dates. Similarly, Schadler (2021:79-97) asserts that there is a need for precise documentation of the designs, their particular locations, the extent of erosion, and the overlapping and distinct states of erosion. This documentation is necessary to enhance our understanding of the purpose and chronological order of these designs.

According to Reddy and Deme (2015), Hindu temples transformed during the medieval period, changing from being exclusively places of worship to becoming community gathering spaces, thereby increasing their flexibility for public use. It served as the focal point for the community's social and spiritual activities. As a result, these temples transformed and became places for entertainment, where the social interactions of the people and the popular games of the time were showcased.

Further, the Morris game, which seems to have been present at many Indian sites, originated and became firmly established in the Graeco-Roman regions. There is a substantial possibility that this specific pattern was introduced to the western part of India through Indo-Roman trade and thereafter disseminated by the same group of merchants/travellers during subsequent periods.

Conclusion

A wide variety of gamesmen yielded from both the localities of Vadnagar, appearing from the Kshatrapa period and continuing until the present day, a concentration was observed during the post-Kshatrapa period (5th century CE to 9th/10th century CE) and Solanki period (10th century CE to 13th century CE). This study has facilitated the understanding of the wide variety of gamesmen, their styles, and forms that arose during these periods. The main reason behind the preference for specific types of gamesmen is the requirement for particular shapes utilized in games. The predominant geometric shapes utilized in games are primarily conical and hemispherical. These shapes have been dominant from the Harappan period until the present day.

It is believed that board game designs were either engraved during the construction or after the completion of the *Shitala Mata* temple (dating back to the 10th century CE,

based on the architectural features). Eventually, as this space became a place for gatherings, designs were engraved on the floor and gamesmen made from materials such as terracotta, stone, glass, and ivory were employed.

A comprehensive survey was done to document and analyse etched board game designs, aiming to get insights into the culture and potential interactions with the general population. The locals have visited the temple of *Shitala Mata* regularly. The temple trust officials and a few locals who were visiting the temple were cognizant of the engraved patterns on the floor. They associated themselves with playing the Type 2 board game (*Chowkabara*) during their childhood. This game is often known as *Ahmedabadi-Baji* in the Gujarati language. This contributed to a certain extent to the dissemination and intangible preservation of the board game notions. However, inadequate and unplanned conservation approaches, lack of awareness, and neglect to document these board game designs before any physical activity have all led to some extent to the loss of valuable data. The haphazard repair of concrete for the flooring has impeded the visibility of the engraved board game evidence that is currently observed. Considering the current state of the temple flooring, it is possible to foresee the eventual erosion and disintegration of the etched designs. Therefore, a comprehensive survey and necessary documentation were carried out to revive these ancient board game designs as a cultural practice. These etched game designs have become a vital element of the temple's ambience. The study successfully prevented the loss of data and uncovered a significant aspect of intangible cultural heritage in Vadnagar.

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