Archaeological Investigations of the Harappan Settlement at Gajod, Bhuj Taluka, Kachchh District, Gujarat

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Abstract: *The archaeological site of Gajod (GJD L1) in Bhuj Taluka, Kachchh district, Gujarat, was first identified in 2018. Systematic surface surveys conducted between 2018 and 2021 revealed a Sorath Harappan settlement with a massive rectangular stone fortification enclosing 1.25 hectares. The site has been significantly disturbed by agriculture and land levelling, yet important cultural materials were documented. The ceramic assemblage includes Classical Harappan, Anarta, Reserved Slip Ware, Black and Red Ware, and Sorath Harappan pottery, dating from the Mature to Late Harappan phases. Other finds include copper objects, shell artifacts, faunal remains, lithic debitage, grinding stones, and terracotta items. The findings suggest that Gajod was an important regional center with interactions across Kachchh and beyond. The presence of Classical and Sorath Harappan and other regional Chalcolithic elements highlights its complex cultural dynamics. Further excavation is necessary to understand its full occupational history, settlement organization, and economic activities.*

Keywords: Gajod, Classical Harappan, Sorath Harappan, Anarta Tradition, Reserved Slip Ware, Nagamati River, Fortification

Introduction

The archaeological sites in Gajod (Figures 1 and 2), Bhuj Taluka, Kachchh district, Gujarat, were first identified by the first author in November 2018 (Jadeja et al. 2023). Explorations in the area, particularly on the right bank of the Nagamati River, led to the discovery of four sites—GJD L1 (Gadhda varu Khetar), GJD L2 (Dhandhukada), GJD L3 (Juno Gam), and GJD L4 (Gajikafar Ni Ghanni). Of these, three are associated with the Harappan culture, while GJD L4 belongs to the Early Historic period. The present study focuses on GJD L1, locally known as "Gadhda varu Khetar" or "Kotada

varu Khetar" (23°03'07.78" N; 69°34'14.59" E), which has been significantly impacted by intensive cultivation and land leveling, resulting in the near-total removal of its southwestern portion. Despite these disturbances, systematic surface surveys conducted between 2018 and 2021 by the authors and students from the Department of Archaeology, K.S.K.V. Kachchh University, Gujarat, have provided crucial insights into the site's architecture, ceramic traditions, and other artifacts.

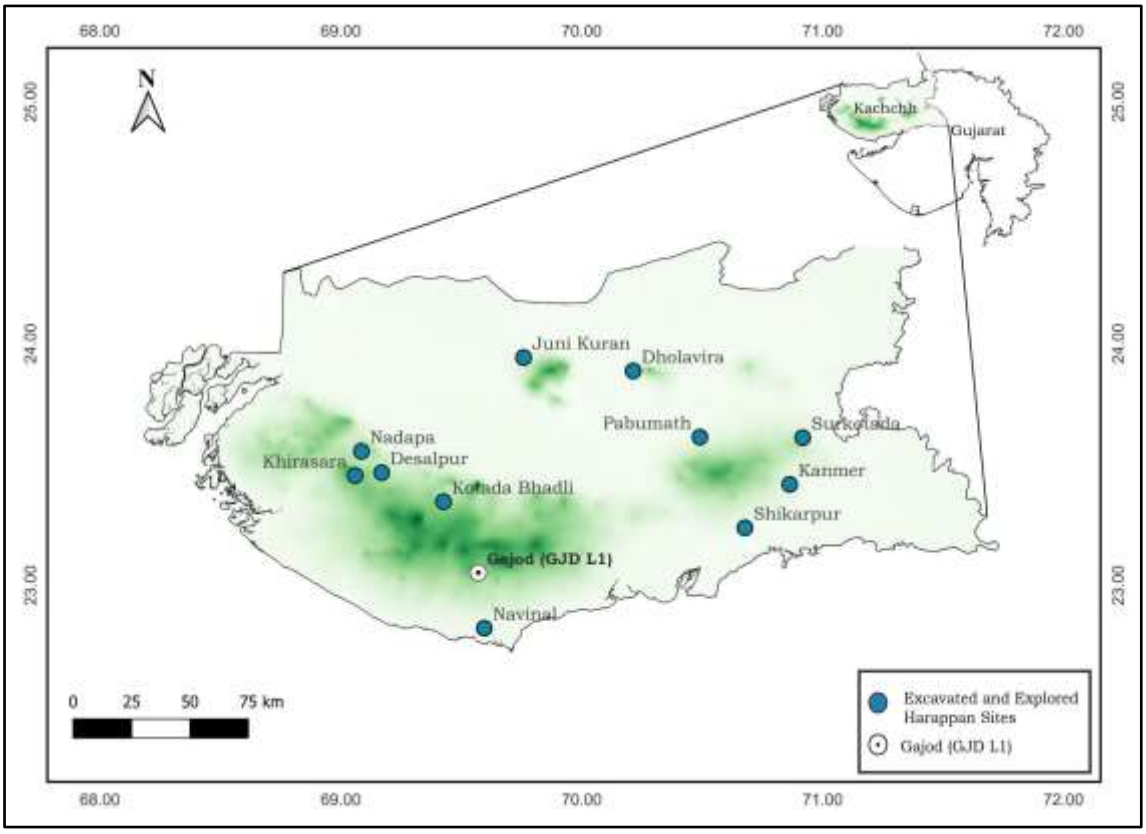


Figure 1: Location of Gajod (GJD L1) and other Harappan Sites in Gujarat

Geology and Geomorphology of the Study Area

Kachchh is a pre-tectonic rift basin characterized by multiple faults and associated hill ranges. The study site is situated on the back-slope of the Katrol Hill Range, which extends approximately 65 km in an east-west direction. The general slope of the region trends southward, draining into the Arabian Sea. Numerous small rivers and tributaries dissect the landscape, shaping its geomorphology. The confluence of the Nagmati River and its tributaries, along with a modern check dam and water reservoir, is located in close proximity to the site. The site itself lies on a paleochannel of the Nagmati River, with its current topography shaped by various surficial geological processes. The present river channel has been incised into the basaltic terrain, primarily due to reservoir construction and road material extraction, forming waterfalls at certain locations. The Nagmati River and its tributaries flow in a SW-NE to NS direction, cutting through diverse lithological formations. In the upstream region, the river traverses sandstone and shale deposits of the Bhuj Formation (Mesozoic) (Biswas

1993), while in the downstream section, it passes through basalt, Tertiary shales, and recent alluvial deposits. Exposures of sandstone and basalt are visible near the site. The Bhuj Formation is overlain by Quaternary sediments sourced locally and mixed with reworked miliolite. However, agricultural activities have significantly altered the depositional structure of these Quaternary deposits. Additionally, cavity minerals from the basaltic terrain may have been utilized for the production of stone tools, indicating the potential exploitation of local geological resources by past inhabitants.



Figure 2: General View of Gajod

Architecture

The Sorath Harappan settlement at Gajod was planned to imitate the general layout of Classical Harappan sites. Explorations between 2018 and 2021 revealed substantial structural remains, including a massive rectangular stone fortification measuring 125 × 100 meters, with its longer side oriented north-south, enclosing an area of 1.25 hectares (Figure 3). Constructed using basalt, shale, and sandstone blocks sourced from the region's basal formation, the fortification stands over two meters high along its partially destroyed northern wall (Figures 4 and 5). The corners remain unclear, making it difficult to confirm the presence of bastions. No structural remains have been identified beyond the fortification, though pottery fragments are scattered outside its perimeter. Due to surface disturbances, vegetation cover, and the absence of visible structures, the wall's thickness, potential gateways, and the full extent of habitation beyond the enclosure remain uncertain. The fortification's construction style indicates the site's Sorath Harappan affiliation. The site has suffered significant damage from

agricultural activities, land levelling, and the construction of wells, tanks, and houses (Figure 6). Cultural deposits within the fortified area range from 0.5 to 2.5 meters in depth, as observed from the disturbed areas. Numerous stones are scattered on the surface, with traces of internal structures exhibiting walls 60 to 80 cm thick. However, apart from the uppermost disturbed layer, little remains exposed. Only systematic excavations can provide further insights into these architectural features.

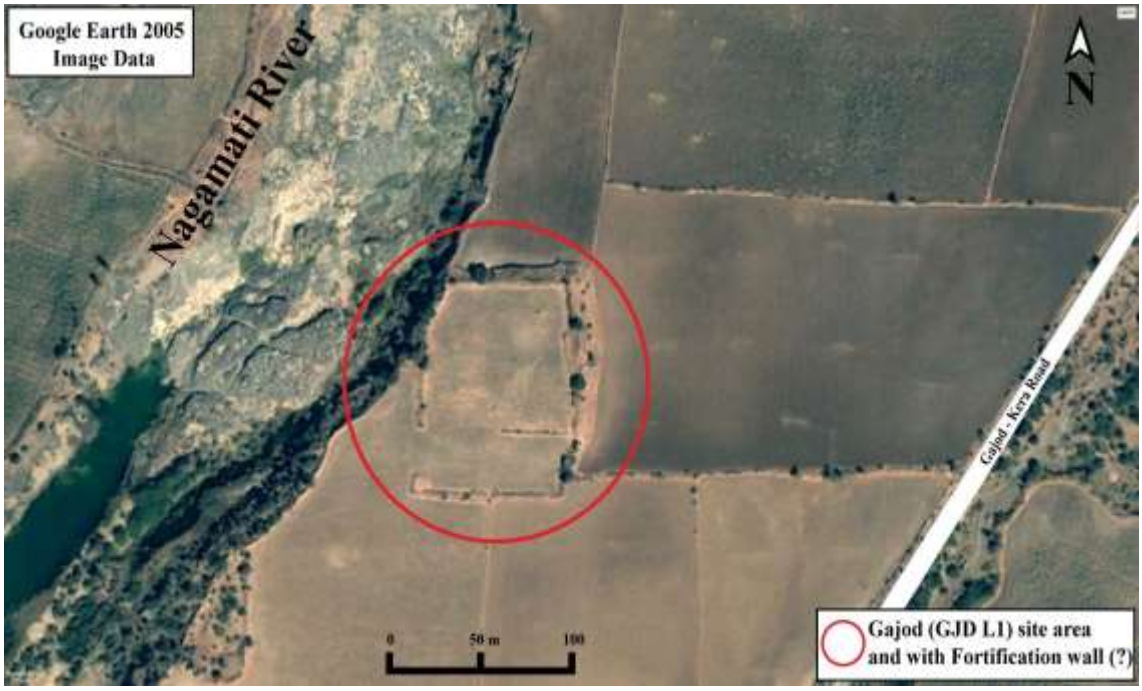


Figure 3: Gajod in Satellite image of 2005, Fortification wall in red circle



Figure 4: General View of disturbed Northern Fortification Wall



Figure 5: Closeup of Disturbed Northern Fortification Wall



Figure 6: Satellite image of Gajod in 2022 showing vegetation growth and disturbances due to agriculture in red circle

Artifacts

Artifacts recovered from the site include a significant quantity of potsherds, shell fragments and objects, chalcedony blades, lithic debitage, terracotta artifacts, grinding stones, hammer stones, copper objects, and animal bones.

Pottery

The pottery assemblage from the site includes Classical Harappan, Anarta Tradition, Reserved Slip Ware, Black and Red Ware, Sorath Harappan, and Late Sorath Harappan. Among these, Sorath Harappan and Late Sorath Harappan pottery are the most prevalent.



Figure 7: Perforated Jars fragments from the site

Classical Harappan Pottery: Classical Harappan pottery from the site is limited in quantity and primarily represented by Red Ware and Buff Ware. Recovered vessel parts include rims, necks, shoulders, bodies, bases, and stems. The identified shapes comprise cooking vessels (handis), basins, dishes, pots, and dish-on-stands, exhibiting similarities to pottery from Harappa (Figure 10) (Vats 1940), Mohenjo-Daro (Marshall 1931), Dholavira (Bisht 2015), and Lothal (Rao 1979, 1985). Some vessels feature black-painted geometric designs. Although perforated jar sherds were found, they cannot be exclusively attributed to the Classical Harappan phase, as similar styles were also produced by the Sorath Harappan tradition (Figure 7). The pottery was manufactured using multiple techniques, with fast wheel production being dominant, evidenced by regular striations. Most sherds have a fine texture, with some medium-textured examples, and all display an oxidized core.

Anarta Pottery: A small number of ceramics from the Anarta tradition (Ajithprasad and Sonawane 2011; Rajesh et al. 2013) were recovered, including Gritty Red Ware and Coarse Red Ware. These vessels, made by hand or slow wheel, include straight or convex-sided bowls with incurved rims, basins with thick flaring rims and blunt carinated shoulder, and pots/jars with flaring rims, constricted necks, and bulbous bodies. Some Coarse Red Ware pots (Mat-surfaced pots) feature shallow groove-like depressions at the junction of the rim and shoulder, along with scraping, beating, and paddling marks on the body. Most vessels are treated with a red slip and painted in red, black, or white. Decorative motifs include geometric patterns such as vertical and horizontal bands, slanting lines, net patterns, and intersecting bands. Natural designs mainly consist of wavy lines. Decorations appear on the brim, rim, neck, shoulder, body, and base, while internal decoration is limited to the rim. Two distinct vessel-forming techniques were identified. Some vessels are purely handmade, characterized by surface undulations and beating marks. Others combine slow-wheel throwing with hand-luted parts, evident from variations in striations, luting marks, and scraping traces. Vessels with oxidized and deoxidized cores occur in nearly equal proportions. Based on relative dating, Anarta pottery can be attributed to the Mature Harappan period.



Figure 8: Reserve Slip Ware Sherds from Gajod

Reserved Slip Ware: Reserved Slip Ware (Krishnan et al. 2005), primarily produced in the Kachchh region of Gujarat, is well-represented at multiple sites, indicating its regional significance. A few sherds of this ware were also recovered from Gajod, all

belonging to the glazed variety of the Mature Harappan period. The decorative patterns include horizontal bands, wavy lines, and their combinations (Figure 8). Slip colors range from grey, red, and light blue to light yellow. Identified vessel forms include dishes, basins, bottles, miniature pots, and dish-on-stands. The core color varies from grey and red to buff. Some potsherds were reworked into pottery rings and discs.

Black and Red Ware: The site has yielded a few sherds of Black and Red Ware (Shah 2001), representing both coarse and fine varieties, with a black core. The fine variety is burnished on the exterior. The recovered vessel parts include rims and body portions of pots and bowls. The coarser pots likely served cooking purposes, while the finer bowls suggest more refined use. No decorative patterns were observed on the pottery. Stylistically, this pottery resembles that of Surkotada IC, and based on relative dating, it can be placed in the Late Harappan period.

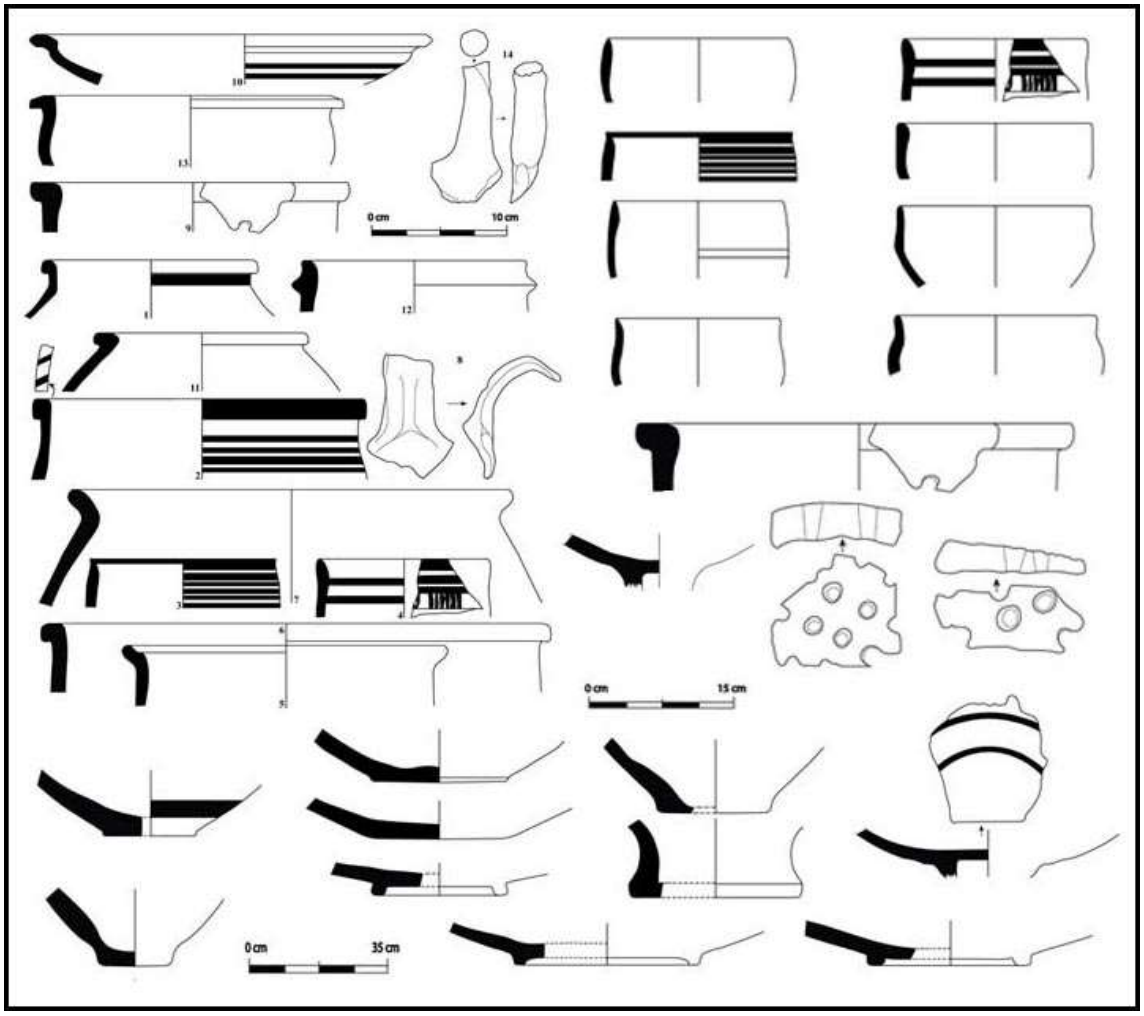


Figure 9: Sorath and Late Sorath Harappan Pottery from Gajod

Sorath and Late Sorath Harappan Pottery: Majority of the Chalcolithic pottery from Gajod belongs to the Sorath and Late Sorath Harappan (Possehl 1992; Ajithprasad

2008) represented by various vessel forms, i.e. pots, dishes, jars, bowls, basins, and dish on stands (Figures 9 and 10). Like many Sorath Harappan sites, convex-sided bowls and Late Sorath Harappan concave-sided and straight-sided bowls are available in good numbers at the site. Another feature noticed at the site is the scarce presence of stud-handled bowls and the good presence of channel-handled bowls, probably a regional variation/ adaptation within the Sorath Harappans of Kachchh (Figures 11 and 12). The channel-handled bowls are there in good quantity, with differences in size and shape, and some sherds have painting of straight parallel black bands on both sides. The site also revealed long stud handles of bowls belonging to the Late Harappan period.

Decorations on the sherds from the site can be divided into two categories, i.e. painted and incised designs. The decorations on majority of the vessels include simple geometric motifs such as a series of horizontal lines, short vertical strokes, intersecting loops filled with cross-hatching, oblique lines, vertical wavy lines, and dots bounded by horizontal lines or intersected and joined by sets of lines (Figure 13). Biochrome painting depicts fish scale and floral decoration on ceramics. The decorations on the external surface are confined to different parts of vessels, i.e. brim, rim, neck, shoulder, body and on the internal surface it is limited to the rim. The rim of pots, dishes and bowls is often decorated with straight bands, and some dishes have semicircular loop designs. All these decorations are commonly found on fine and medium potteries. The common type of decoration on the coarse pottery is the incised decoration. Based on relative dates, the Sorath and Late Sorath Harappan pottery from the site can be relatively dated to the Late Phase of Mature Harappan (c. 2200-1900 BCE) and Late Harappan (c. 1900-1600 BCE) periods.

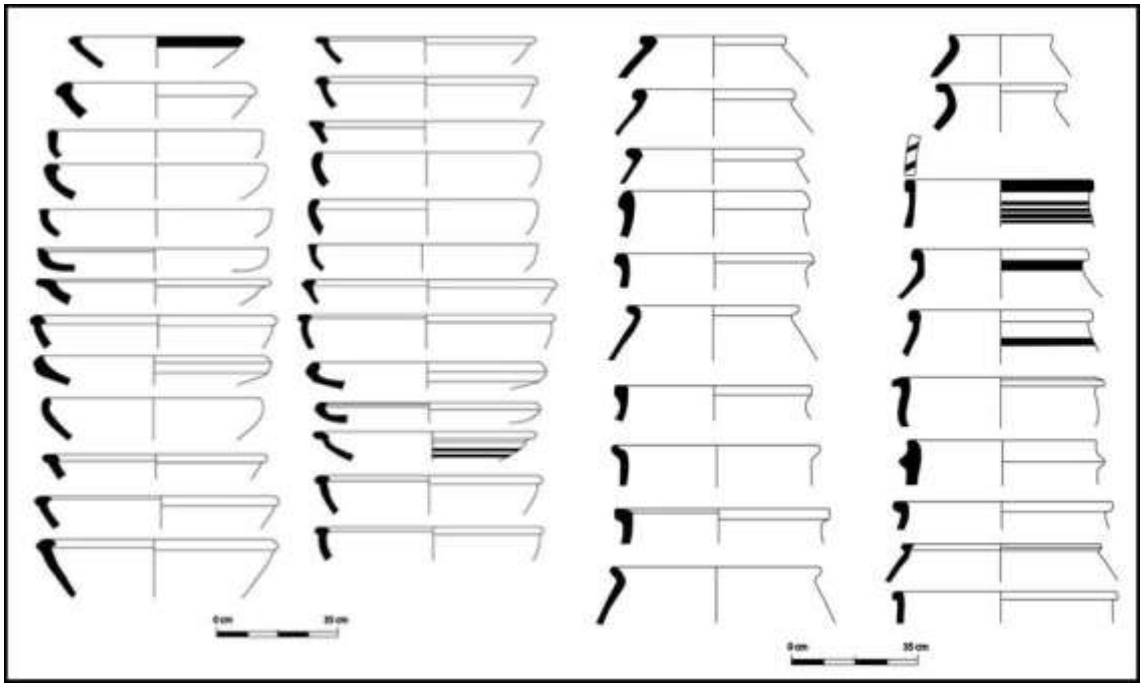


Figure 10: Classical, Sorath and Late Sorath Harappan Pottery from Gajod



Figure 11: Channel handles and Stud Handles from Gajod

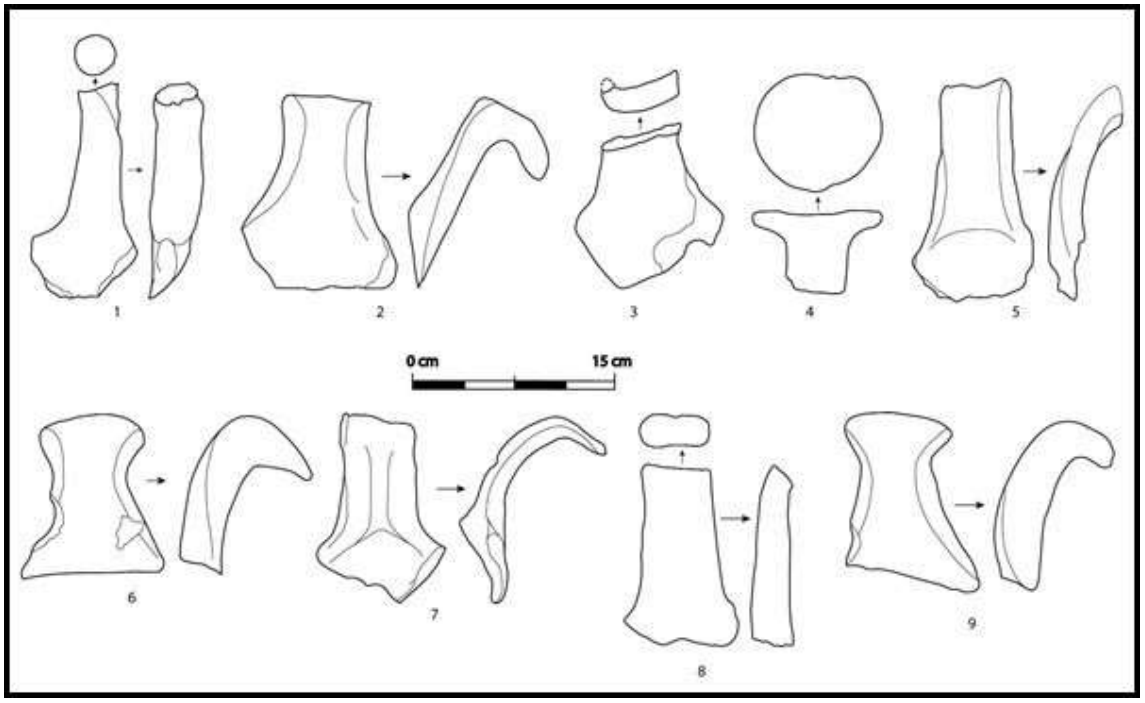


Figure 12: Channel handles and Stud Handles from Gajod



Figure 13: Painted Pottery from Gajod



Figure 14: Copper Dagger from Gajod

Copper Objects

The site has yielded a few highly corroded copper fragments, making it difficult to determine their original shape and size. Additionally, a dagger or spearhead (Figure 14) was discovered during agricultural activities. The object is in relatively better condition of preservation. It does not resemble typical Classical Harappan or Sorath

Harappan artifacts. The object features a leaf-shaped blade with a tang, though one tip of its triangular, fishtail-shaped tang is broken. A prominent midrib runs along the center of the blade, providing structural strength and preventing bending or breakage. This type of dagger closely resembles those associated with the Copper Hoard Culture of the Ganga-Yamuna Doab. Notably, the blade edges appear sharpened, indicating that the landowner, who currently possesses the artifact, attempted to refine its cutting edges.



Figure 15: Shells, Shell Debitage and Shell bangle Fragments from Gajod

Shell Objects

Explorations at this site have revealed several shells and shell objects (Figure 15). The shell assemblage includes species such as *Turbinella pyrum*, *Babylonia spirata*, *Pugilina bucephala*, and various bivalves. While some shells were clearly used as a food source, others were likely employed in the production of shell bangles. Despite the recovery of numerous columellae, none exhibit the saw marks characteristic of shell bangle manufacture, suggesting their primary use was for consumption. Only a single cut lip fragment of *Turbinella pyrum* was found. This single find is insufficient evidence to classify the site as a bangle production center. However, numerous shell bangle fragments were discovered, including both thin and thick varieties, potentially reflecting the socioeconomic stratification of the site's inhabitants (Kenoyer 1991, 1992, 1997). Notably, two of these fragments bear chevron marks, a common characteristic of Classical Harappan bangles. This contrasts with Sorath Harappan sites, where such marks are absent. The presence of both chevron-marked and unmarked bangles at this site suggests the possibility of concurrent use by Classical and Sorath Harappan populations.

Faunal Remains

The surface survey uncovered soil-encrusted animal bones and teeth (Figure 16), indicating considerable age. Analysis identified the remains of cattle, sheep, and goats. A few bones of wild animals, such as nilgai, were also found at the site. The diverse collection of bones includes various skeletal elements from these animals, such as long bones (ranging from distal phalanges to scapulae), vertebrae, and ribs. The presence of cut marks and charring on both sheep/goat and cattle bones confirms their use as a food source for the site's inhabitants.

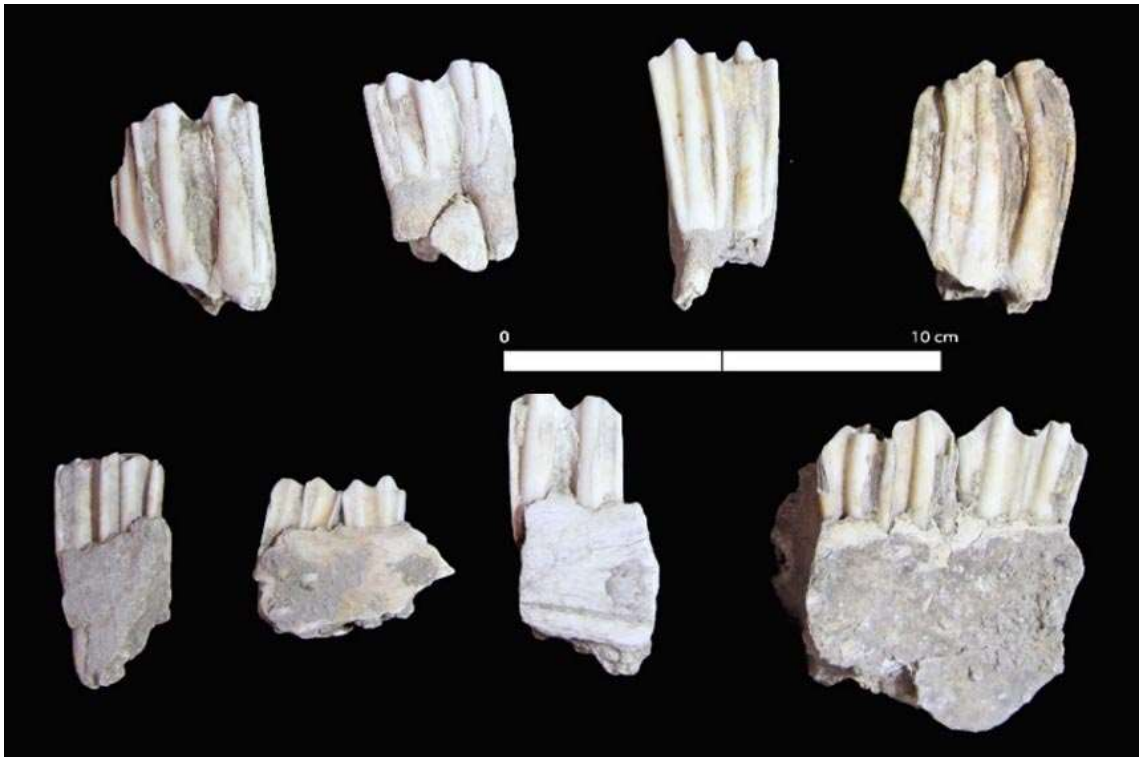


Figure 16: Cattle Teeth from Gajod

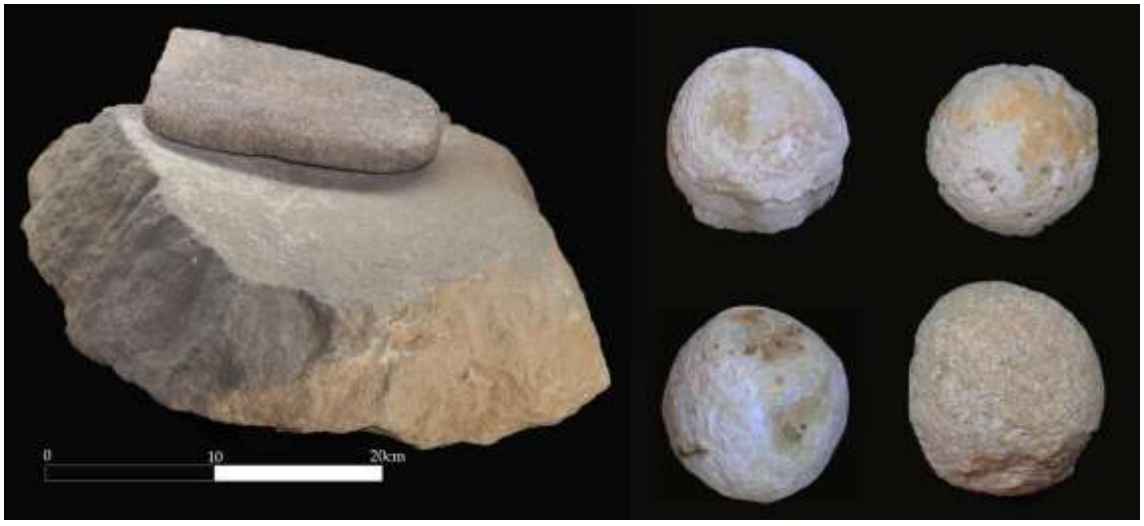


Figure 17: Grinding Stones and Hammer Stones from Gajod

Stone Tools and Lithic Debitage

The lithic assemblage from Gajod includes both tools and debitage. The limited quantity of debitage, including cores, suggests small-scale tool production at the site. Chalcedony was the primary raw material used, with a few broken chalcedony parallel-sided blades recovered. Small amounts of chert and agate flakes were also found. Significantly, the absence of Rohri chert blades, cores, and related debitage indicates the site's Sorath Harappan character.

Grinding Stones and Hammer Stones

The site yielded fragments of two sandstone grinding stones (Figure 17). One fragment suggests an original oval shape with rounded corners, though half is now missing. The other, thicker stone has a distinct central depression, clearly indicating its use. These grinding stones were likely used for processing food grains, though the possibility of industrial use cannot be excluded. Four hammer stones of varying sizes were also recovered (Figure 17). One is sandstone, while the other three are made of quarzitic sandstone. Battering marks on all four stones confirm their use as hammers.



Figure 18: Terracotta Objects from Gajod

Terracotta Objects

Several terracotta objects were found on the site's surface, including a broken hubbed wheel, beads/spindle whorls, pottery discs, and pottery rings (Figure 18). Pottery discs, ranging from 5mm to 10mm in thickness, were recovered. Four roughly circular

pottery discs, ranging from 5mm to 10mm in thickness, were found at the site. They were made from ground Red Ware and Buff Ware potsherds. While their exact function remains unknown, they may have been used in games like pittu (seven tiles), which is played with similar discs in modern-day India and Pakistan (Rogersdotter 2006, 2007). A fragment of a terracotta toy cart wheel with a hub, decorated with red-painted spokes, suggests the use of bullock carts and provides insight into children's activities. Six perforated pottery rings, in red and grey ware with varying hole diameters, were also found. These may have served as net sinkers, indicating fishing practices at the site. Six spindle whorls were collected, one fashioned from a perforated potsherd and five resembling beads or ear studs. These whorls suggest thread production from cotton, indirectly pointing to cotton cultivation and cloth-making.

Chronology

Based on ceramic data, relative chronology, and radiocarbon dates from various excavated sites in Gujarat, the Harappan occupation at Gajod can be broadly dated to the Urban Harappan (c. 2600-1900 BCE) and Post-Urban Harappan (c. 1900-1600 BCE) periods. The majority of ceramics from the site, similar to those found at Nadapa (Rajesh et al. 2020), Kotda Bhadli (Shirvalkar 2012-13, Shirvalkar and Rawat 2017), Navinal (Rajesh et al. 2015), and Desalpur (Uesugi et al. 2015), belong to the late phase of the Urban Harappan period (c. 2200-1900 BCE), indicating its Sorath Harappan character. Radiocarbon dates from Navinal and Kotda Bhadli fall within the 2200-1600 BCE range. Therefore, a similar occupation period at Gajod, from approximately 2200-1600 BCE, is plausible.

Discussion

The archaeological investigations at Gajod (GJD L1), despite the site's disturbed condition due to modern agricultural practices, land levelling and constructions, have revealed valuable information about the presence of Classical Harappans and other regional Chalcolithic traditions. The discovery of a substantial rectangular fortification, constructed from locally sourced stone, underscores the site's significance and layout, echoing characteristics of Sorath Harappan settlements. However, the lack of clearly defined corners and the absence of structures outside the fortification wall raise questions about the site's overall extent and require further investigation. The presence of both Classical and Sorath Harappan pottery, alongside pottery of Anarta tradition, Reserved Slip Ware, and Black and Red Ware, suggests a complex cultural interaction and a potentially long period of occupation. The dominance of Sorath Harappan channel-handled bowls in the Kachchh region and the scarcity of stud-handled bowls of Sorath Harappans point to regional variations within the Sorath Harappan cultural sphere.

The limited quantity of Classical Harappan pottery, along with the presence of chevron-marked shell bangles, raises intriguing questions about the relationship between Classical Harappans and Sorath Harappans at Gajod. Were they contemporaneous, or did the Sorath Harappans occupy the site during the Classical

Harappan presence? The presence of Anarta pottery, a regional style, further complicates the picture and necessitates further research to understand its chronological and cultural relationship with the other ceramic traditions. The discovery of a copper dagger or spearhead, resembling artifacts from the Copper Hoard Culture, is an unexpected find and raises questions about potential connections with other contemporary cultures. While the shell assemblage suggests shell consumption, the limited evidence for bangle production hints at small-scale craft activities at Gajod or, at the very least, a minor role within Harappan trade networks. The faunal remains confirm the importance of domesticated animals in the diet of the inhabitants, while the presence of wild animal bones suggests hunting practices. The lithic assemblage, characterized by the use of chalcedony and the absence of Rohri chert, reinforces the site's Sorath Harappan affiliation. The presence of grinding stones and hammer stones indicates food processing and other domestic activities. The terracotta objects, including pottery discs, a toy cart wheel, pottery rings, and spindle whorls, offer glimpses into daily life, suggesting activities such as games, transportation, fishing, and textile production.

Conclusion

In conclusion, the archaeological investigations at Gajod have revealed a significant Sorath Harappan settlement with evidence of interaction with other contemporary cultures. The site's fortified nature, diverse ceramic assemblage, unique copper object, shell objects, faunal remains, and other artifacts provide valuable insights into the life and cultural practices of its inhabitants. While the site has suffered significant damage, the recovered evidence allows for a preliminary understanding of its chronology and cultural affiliations. Further systematic excavations are crucial to fully understand the site's architecture, stratigraphy, and the complex interplay of different cultural influences during its occupation. The excavations will help clarify the relationship between Classical and Sorath Harappans and the role of Gajod within the broader context of the Harappan civilization in Gujarat. The ongoing research at Gajod promises to contribute significantly to our understanding of the Classical Harappans, Sorath Harappans and other regional chalcolithic cultures/traditions.

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