

Excavations and Geophysical Survey at the Early Historic Town of Talapada, Odisha (2013)

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Abstract

The site of Talapada is a 25 ha settlement with a square formal perimeter that replicates the rampart at the nearby Early Historic urban centre of Sisupalgarh. Geophysical survey and excavations were used to investigate the interior of the Talapada settlement, revealing that occupation was selective within the rampart perimeter and that the site was not fully inhabited even during the period of substantial occupation at the nearby Early Historic site of Sisupalgarh. Artefacts were similar in type and abundance to Sisupalgarh, however, suggesting that the dwellers of smaller sites in the urban hinterlands fully participated in the regional economy of the Early Historic period.

Introduction

Talapada measures 25 ha in size and is formally delineated by a square rampart measuring up to 3 m in height. Located 42 km south of Bhubaneswar, the site was first discovered in 2011 in conjunction with an exploration of the nearby Neolithic settlement of Golbai Sasan (Mohanty *et al.* 2011, n.d.; Thakuria *et al.* 2013). Until the time of this discovery, the only known fortified sites of the Early Historic period in Odisha were the large urban settlements of Sisupalgarh and Jaugadh, each of which is approximately 1 km² in size with a rectilinear fortification with two gateways on each side. At Talapada, aerial imagery revealed a square formal rampart with four gateways, one in the middle of each side. Ground reconnaissance also revealed that Talapada had a ceramic and artefact repertoire highly similar to that of Sisupalgarh. The present project was developed to assess how a town-sized settlement functioned in the urbanizing landscape of the Early Historic period, with particular reference to previous work at Sisupalgarh (Lal 1949, 1991; Mohanty and Smith 2006, 2007, 2008, 2009; Mohanty *et al.* 2007, 2013, in press; Smith 2002a, 2002b, 2005, 2006,

2008, 2012; Smith and Mohanty 2007, 2010, 2012, in press).

Geophysical Survey

Geophysical survey is a method of assessing the characteristics of the ground's subsurface prior to and in conjunction with excavations (Campana and Piro 2009; Herz and Garrison 1998; Kvamme 2003). In the 2013 field season at Talapada, 5.33 hectares were surveyed with a Geoscan Research FM-256 Fluxgate Gradiometer, providing a total of 865,600 data points (21% of the area within the ramparts; Matney *et al.* 2013). Eight separate areas, each consisting of contiguous 10 x 10 or 20 x 20 m blocks, were investigated within and around the site's perimeter (Fig. 1).

Area A was located in a slightly raised area on the western portion of the site. The geophysical survey did not indicate subsurface remains in this area except for the presence of what appears to be a rectilinear feature measuring approximately 40 x 40 m on the northern end of Area A. At the end of the 2013 field season this area was re-surveyed in order to confirm the results and produced identical readings, indicating the replicability of the geophysical results and the likelihood of meaningful ancient subsurface deposits in this area.

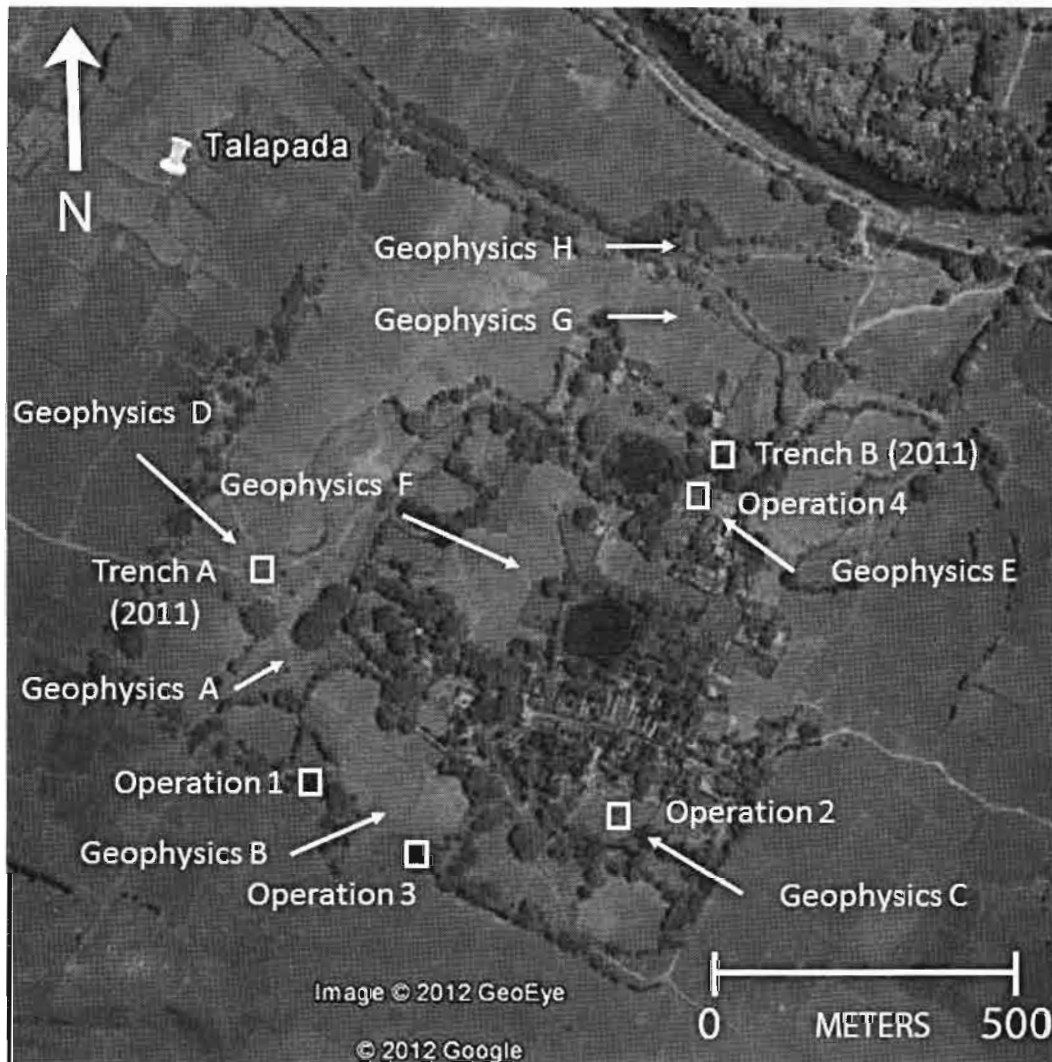


Fig. 1: Talapada Google Earth image showing excavation and geophysical survey areas

Area B consisted of the southern gateway along with the adjacent ramparts and agricultural fields. Two areas of anomalies were noted: a strong linear signal at the top of the rampart that was investigated through excavation (Operation 1, described below), and a series of subsurface linear intersections recorded in the fields on the interior of the rampart adjacent to the western flank of the gateway.

Area C was located in a small pocket of agricultural fields between houses and the southern rampart. The survey here followed upon villagers' reports of subsurface architecture and the visible nearby presence of large unearthed laterite blocks measuring up to 167 x 70 x 22 cm. The potential for intact architecture also was suggested by two embedded blocks at 50-70 cm below modern ground surface

in the vertical section of a recent fishpond in the adjacent field. Area C was surveyed in 10 x 10 m collection units in which several strong single-point anomalies were detected along with rectilinear anomalies running NW-SE in the central portion of the fields. Excavation of a 10 x 10 m area focusing on these anomalies was afterwards conducted (Operation 2; see below). In the course of the excavations, the area was re-surveyed twice, once at 25 cm below modern ground surface and again at 80 cm below modern ground surface; by the lower depth of 80 cm there were no anomalies noted.

Area D is an extensive area in the southwest interior of the site including the western rampart and a portion of the site exterior beyond the rampart. Area D is topographically lower than much of Area A. The

gradiometry survey showed virtually no subsurface anomalies in the agricultural fields, but we did detect an elaborate key-like rectilinear configuration at the crest of the rampart on the southern flank of the western gateway.

Area E is a small area within a pocket of fields in the central-northeastern area of the site located between a pond and village houses. This area was investigated at the invitation of local landowners, who indicated that agricultural activities in the region had previously exposed large (1 m-plus size) laterite blocks, some of which are still piled along the edges of the fields. The geophysical survey faintly indicated the presence of some linear anomalies, which were subsequently investigated through excavation (Operation 4).

Area F is located in the exact center of the formal rampart perimeter of the site. The geophysical survey indicated some subsurface anomalies. However, some fields were under crop during the field season and not all of the area could be surveyed.

Area G was located in agricultural fields to the south of the northern gateway. As in the case of Area D, no distinct anomalies were noted confirming that some portions of the site lack obvious signs of brick or stone subsurface architecture.

Area H was located in the northern gateway, which appears to be more substantial than the site's other preserved gateways. The geophysical survey of area H produced a very strong signature of underlying architecture. Conversations with local villagers additionally indicated that the slight undulations perceptible on the gateway represent a series of "steps."

The geophysical survey has provided information about the settlement configuration that is much more extensive than what could be achieved by excavation alone. However, as with all geophysical surveys, the results must be interpreted within the context of the site's occupational history and sedimentology. At Talapada, only one of the areas identified as having subsurface anomalies subsequently proved to have stone-block architecture (Area E), and even in that case the density of pottery in the subsurface as well as the configuration of the architecture itself (thin laterite slabs laid vertically) resulted in a very subtle signature of subsurface activity.

Excavations

Four excavation areas were undertaken in the 2013 field season to test the results of the geophysical survey, to provide information about subsurface cultural remains, and to evaluate the cultural sequence and chronology of the site.

Operation 1

Operation 1 consisted of a 2 x 16 m trench targeted to bisect the linear anomaly recorded by the geophysical survey at the top of the rampart (Fig. 2). At 40 cm below modern ground level, a compact surface that appears to be the core of the original rampart was found sloping downwards to the north. The excavation revealed that the anomaly identified by the geophysical survey did not belong to a supplementary wall or other feature at the crest of the rampart, but consisted of a dark brown, clayey and sherd-rich matrix adhering to a steep slope of compact yellow clay with calcareous inclusions. The clayey and sherd-rich matrix appears to have been dumped there in antiquity and lacked architectural coherence. The very steep angle of the yellow clay matrix was unlikely to have remained intact once constructed,



Fig. 2: Operation 1 excavations at top of southern rampart, view to south. Scale is 1 m

given the active monsoon climate of the region. Instead, it appears that the core of the rampart was carved away by the site's inhabitants and afterwards filled in by habitation deposits, resulting in the preservation of a steep angle of the yellow core. The trench was excavated to a maximum depth of 2.42 m below modern ground surface on the interior of the rampart and followed the rampart slope downward.

The artefacts of Operation 1 indicated an occupational sequence that included a lower stratum of materials similar to those seen in the lowest occupational levels at Sisupalgarh, such as knobbed ware and one fragment of rouletted ware. Some of the lower levels contained sherds with dark brown spots measuring 2-4 mm in size that appeared to be the result of waterlogging. The quantity of animal bones also increased as the excavations proceeded downwards, similar to the pattern at Sisupalgarh in which the lower deposits had a higher proportion of animal bones than the upper levels. The rampart revealed in Operation 1 did not show a successive augmentation of material in contrast to Sisupalgarh where the rampart received regular augmentation and maintenance over the occupation sequence. Once the rampart was built it may have had relatively little significance to the inhabitants at Talapada, such that it became a convenient source of building material while the site was still in its major phase of occupation.

Operation 2

Operation 2 was undertaken to investigate an area in the interior southeastern portion of the site where the geophysical survey and the presence of laterite blocks unearthed by villagers suggested the potential

for intact architecture (Fig. 3). The excavation was a 10 x 10 m square located in a former rice field. At 20 cm below modern ground surface, the excavators encountered the only stones in the entire trench, consisting of one laterite block measuring 34 x 57 cm along with a cluster of several smaller undressed laterites in the 30-40 cm size range along the western baulk. These laterite blocks did not suggest any coherent architectural configuration. Continued excavation in the trench revealed a thin (1-2 cm) layer of laterite gravel that appears to have crossed the trench from the southwest to the northeast at approximately 40 cm below modern ground surface. This feature may have represented a pathway through the area that was otherwise an unoccupied dumping-ground for adjacent residential areas and was likely to be the source of the magnetic signal recorded in the geophysical survey.

The soil matrix of Operation 2 was relatively loose and porous as indicated by the presence of roots 1-2 cm in diameter throughout the upper 80 cm of deposits although the nearest tree was 15 m away. The ceramics throughout this matrix consisted of low-fired, rapidly made vessels such as string-cut cups but at about 80 cm this began to transition to an assemblage consisting of higher-fired wares, graffiti on burnished exemplars, and a few fragments of knobbed ware. The transition and types of pottery from the upper and lower levels at Talapada corresponded to the sequence of forms and fabrics seen at Sisupalgarh. The lower portion of the Operation 2 deposit at Talapada also had bone fragments, cut antler fragments, and bone implements including a 7-cm harpoon fragment. As there were no intact architectural remains, the trench was



Fig. 3: Operation 2 excavations in progress (left: view to west; right: view to east)

successively reduced in size until natural soil was reached at 2.3 m below modern ground surface.

Operation 3

Excavations in Operation 3 consisted of a 2 x 12 m strip running north-south and perpendicular to the rampart (Fig. 4). At the upper levels (top 10-15 cm) the majority of the pottery was coming only from the northern 2-3 m of the trench, with little cultural materials in the remainder of the trench. At 16 cm below modern ground surface was the first appearance of a distinct linear feature with dark soil. In this linear feature (possibly a ditch or an ancient cut in the rampart substrate) were recovered large amounts of early-phase pottery which consisted of burnished wares including knobbed wares up to 20 cm in size indicative of deposits that had not been excessively broken up prior to discard. The V-shaped 'ditch' was a total of 82 cm in depth and at the bottom there was a large amount of heavily mineralized animal bones. The excavators did not report any stone or brick mixed in with the pottery, but there was *kankar* (calcareous nodules) mixed with cultural deposits. Some of the *kankar* nodules were relatively large (8 to 10 cm in size).

Excavation were terminated before reaching natural soil and it could not be determined whether the rampart was constructed over pre-existing

cultural deposits or whether the rampart was placed on natural soil as the first act of constructing the site of Talapada. As was the case in Operation 1, the presence of a substantial quantity of early-phase pottery suggests settlement in the vicinity of the rampart, though the pottery itself was redeposited and does not represent a primary use context. The slight differential indicated by the geophysical survey, roughly corresponding to the area of dark soil revealed by the excavations, may have been the result of an ancient ditch running interior to and parallel with the rampart.

Operation 4

Operation 4 was located in a small pocket of farmland flanked on the west by one of the site's three major ponds and on the east by a line of village houses. Investigation of this area was prompted by conversations with local inhabitants about subsurface lines of stones encountered in the course of farming activities. Excavations were conducted in an 8 x 12 m area with a maximum depth of 2.58 m below modern ground surface, reaching natural soil (Fig. 5).

Architectural remains were first encountered at 22 cm below modern ground surface, consisting of laterite blocks measuring 1.24 to 1.64 m long and 20 to 26 cm wide. The laterite blocks were laid upright to produce thin walls outlining a room measuring 3.4

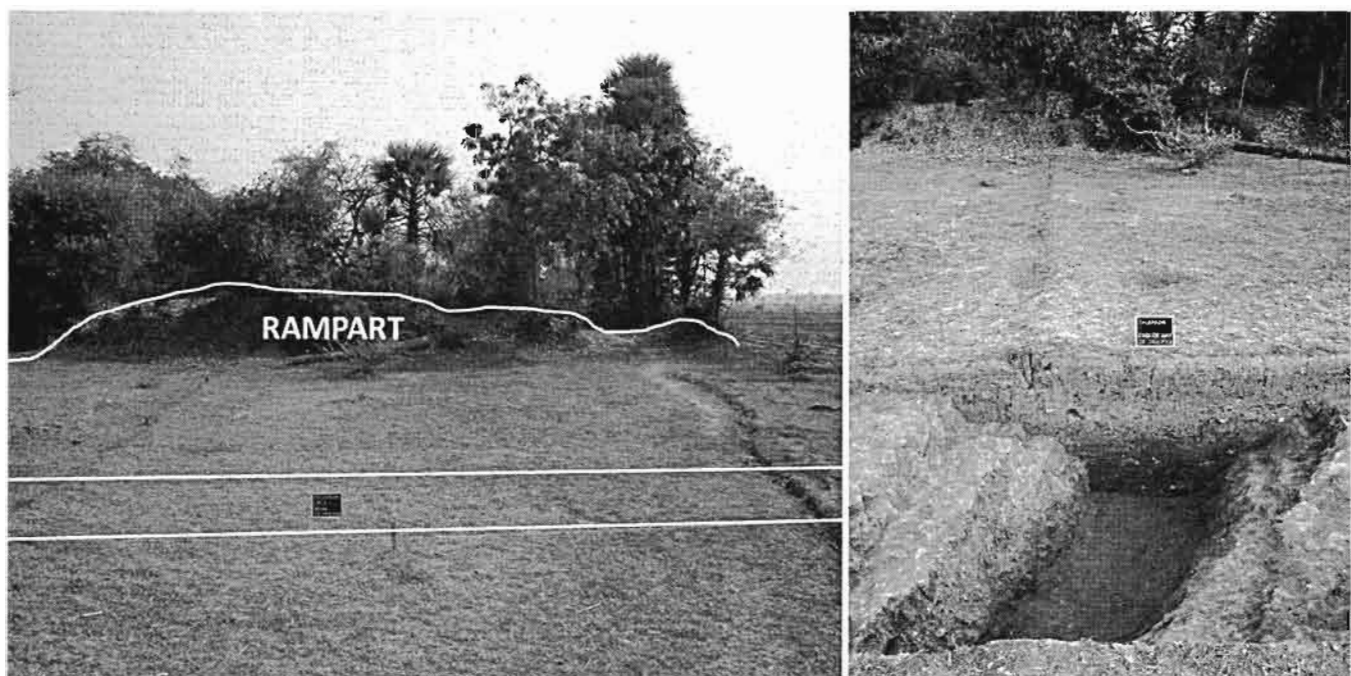


Fig. 4: Operation 3 excavations (left: tracings of rampart and trench measuring 2 m wide, view to east; right: "ditch" feature that held lower-assemblage pottery, view to east)

m east-west and 5 m north-south. Patches of laterite gravel and gray ash-like soil were common both in and around the architecture along with hundreds of kilograms of very abraded pottery.

Excavations proceeded downwards in a half-section of the laterite block room. The soil within the room contained occasional dumps of tile fragments measuring 2-3 cm thick and up to 10 cm size range, but lacking any coherent articulation in the form of a tile pavement or floor. There also was one upward-facing tip of a chisel-like iron object; the awkward position of its recovery does not suggest a use-context

but that the item was discarded after the room was abandoned. At 98 cm below modern ground surface and below the level of the upright laterite blocks that defined the excavation area, pottery of lower assemblage type (e.g. knobbed ware) was recovered in sizes up to 15 cm) suggestive of a distinct underlying cultural layer.

At 115 cm below modern ground surface, a second laterite block wall consisting of thin laterites laid upright was encountered. The pottery excavated from the adjacent areas appeared to be a coherent early assemblage: its 40% consisting of reduced

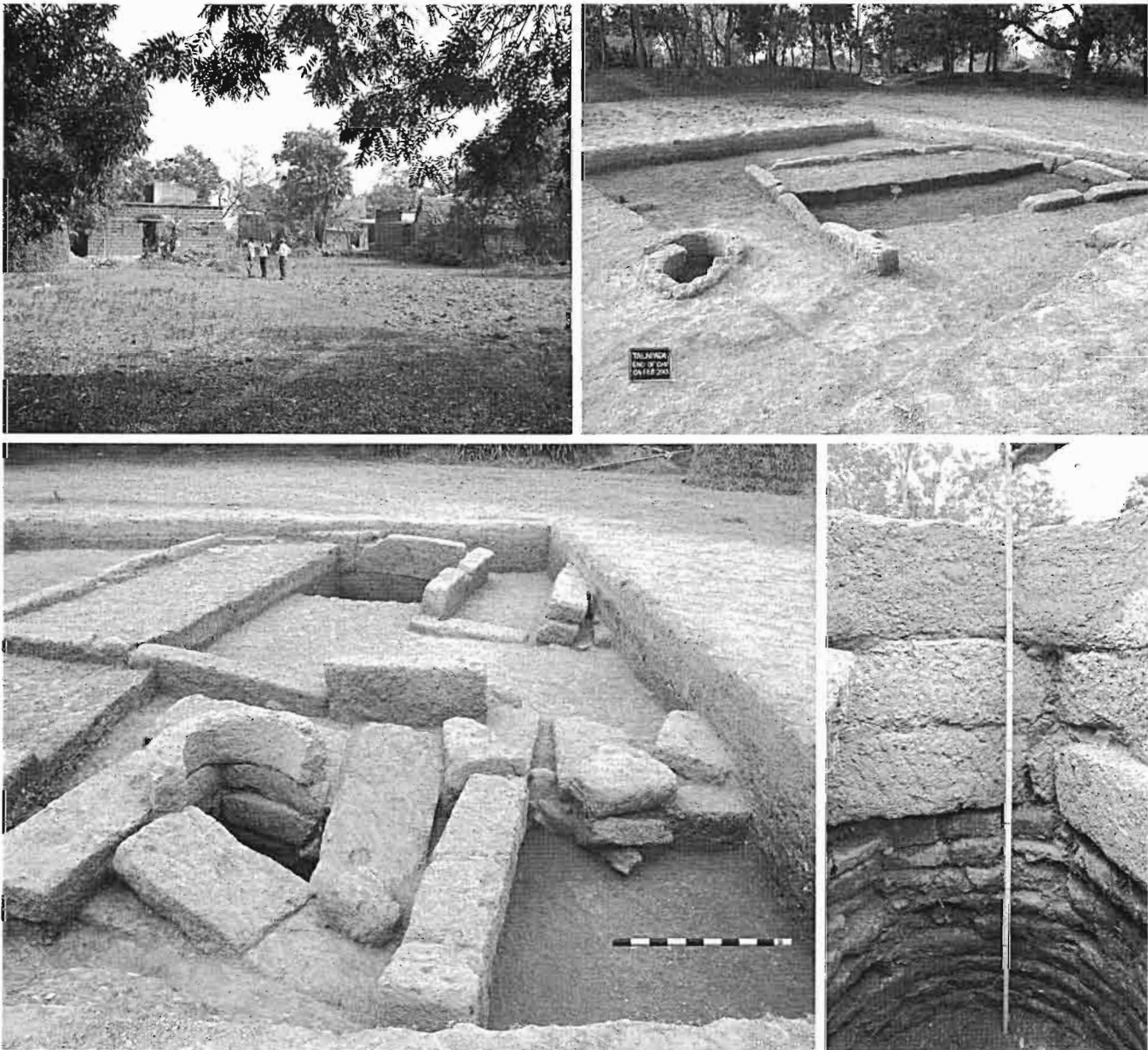


Fig. 5: Operation 4 excavations (clockwise from top left: field prior to excavation, view to east; initial stages of excavation, view to northwest; soak-pit with bricks and laterite blocks, view to northwest; final view of excavations, view to north). Scale is 1 m

(black) wares. The laterite wall was accompanied by a sloping set of deposits indicative of slow piling of sediments adjacent to the wall, and did **not** appear to have the function of being deliberately packed by level deposits on the interior as was the case with the Stupa-like structures edged with thin laterite blocks noted on the exterior of the ramparts at Sisupalgarh (Mohanty *et al.* 2013; Ota 2007). In Operation 4, no ceramics or other cultural materials were encountered below 2.3 m below modern ground surface, but excavation continued until natural soil was confirmed.

In the southern portion of the excavation area, a broken horizontally-placed ring of laterite was recovered with an original exterior diameter estimated at 90 cm. The laterite ring was placed over two courses of laterite blocks, each consisting of four interlocked laterite blocks with the entire construction measuring 2.4 m east-west by 2 m north-south. The laterite blocks had shallow holes pecked in them, perhaps as resting-places for poles or a canopy. Under the square aperture provided by the four interlocked laterite blocks was a brick-lined well or soak-pit in an irregular shape measuring approximately 0.8 m in diameter. The soak-pit was lined with broken bricks whose original sizes were in the range of 8 x 20 cm. It is possible that the laterite ring itself also was reused from an earlier context.

In the stratigraphic sequence of Operation 4, intact remains of the Early Historic period appear to be absent although there is an abundance of heavily abraded Early Historic pottery and terracotta ornaments. The proportion of grinding tools such as pestles and other grinding stones in Operation 4, was relatively low and although there is a considerable abundance of evidence for food handling and consumption there are few evident preparation tools. Further investigation at the site should evaluate whether there were provisioning patterns that involved centralized food preparation in other habitation areas, or whether the occupants of the Operation 4 area were distinct in having their food prepared elsewhere and brought in for consumption in this area.

Artefacts

The pottery at Talapada represented three distinct phases of activity that paralleled the pottery chronology of Sisupalgarh (Fig. 6). At the uppermost levels (essentially plowzone in most of the site, 15-20 cm below modern ground surface and continuing

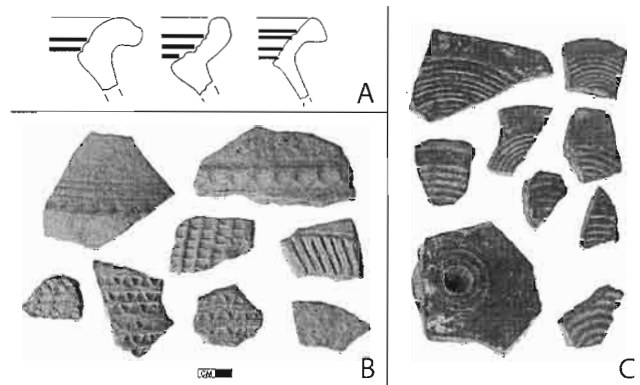


Fig. 6: Typical pottery from Talapada excavations from medieval (A), Early Historic (B) and lowest (C) levels

to 40 cm below modern ground surface in Operation 4) there are vessel fragments in gray fabric with elaborate grooved rims similar to medieval-period layers at other sites in Odisha such as Golbai Sasan and Manikapatana. In the remainder of the upper levels (i.e. the upper 1 m of deposit) the pottery consists of relatively low-fired unburnished oxidized (red) wares in shapes such as ledge-rim bowls, string-cut cups, and jars with grooved and stamped decoration. At the lower levels (starting approximately 1 m below modern ground surface) the pottery consists of high-fired, burnished vessel fragments in both oxidized (red) and reduced (black) ware with the distinctive knobbed ware decorative motif.

Talapada shows a significant transition between pottery traditions at approximately halfway through the site's occupation, paralleling the chronological sequence of Sisupalgarh. The inhabitants at Talapada also appear to have participated in the transition between the two pottery styles as we noted the presence of ceramics in new forms utilizing old techniques, such as rapidly-made and low-fired pottery with slip on them indicating that potters were initially adopting new forms using already-existing techniques of surface finish. Thus the phenomenon of style change and shift was not solely initiated at the urban center of Sisupalgarh but was undertaken by potters throughout the region.

The pottery at both Talapada and Sisupalgarh was used in the same fashion indicating a regional similarity of food preparation; for example, everted rims of oxidized (red) burnished ware in some small jar forms have abrasion at the top as though they were routinely scraped by the placement of a lid. In the

upper deposits, the dominant bowl forms consisted of string-cut cups and flanged bowls that were also recovered in large numbers at Sisupalgarh. There was a higher proportion of large vessels represented at Talapada, however, suggesting that there was more storage of foods at the household level in the town of Talapada than in the city of Sisupalgarh. Graffiti sherds were relatively numerous in the lower levels of Operation 2 (e.g. 10-15 sherds per locus) but the quality of the graffiti appeared to be less practiced than at Sisupalgarh. Whereas the graffiti sherds at Sisupalgarh appear to have been done by a steady and firm hand, the same at Talapada appears to skip and start indicating a more fledgling effort.

Although statistical evaluations of the pottery are ongoing, there appears to be a very low proportion of potential trade wares, limited to one piece of Rouletted Ware representative of the Early Historic period in the form of a 3-cm abraded decorated fragment from a middle level of Operation 1 and several abraded undecorated fragments of rouletted ware fabric from Operations 1, 2 and 4. From the medieval period, one piece of what appears to be non-local porcelain or celadon ware was recovered from an upper level of Operation 4.

Talapada has the same range of antiquities as seen at the contemporaneous Early Historic site of Sisupalgarh, including terracotta ear spools and pendants, as well as terracotta scrubbers. Two square lead objects, probably coins, were found from Operation 4 (loci M2 and R15) but they were very deteriorated and unreadable. Other ornaments included a 3-cm size fragment of a copper hook or pin from Operation 2 locus F7. Artefacts distinct to Talapada include one earspool in lead, recovered in Operation 4 locus S10. Local resources were clearly utilized for many daily-use goods at the site, including a broken gray sandstone pestle recovered in Operation 2 and three fragments of grinding stones each under 12 cm in size from Operation 4. Several hundred worked sherds or “hopscotches” (principally in round shape, measuring from 2.4 to 10 cm in diameter) also were recovered in the excavations.

Non-local raw materials and finished products included bowl fragments of steatite (one each from Operation 2 and Operation 4), in addition to a bowl fragment of other stone type (possibly gneiss) from Operation 4 in a middle level. A small number of iron implements were recovered from the excavation areas, although these consisted principally of nails

found in the upper levels and may be of relatively recent date.

Bricks and tiles at Talapada were infrequent compared to their relative abundance at Sisupalgarh; the lower amount of tiles at Talapada may indicate that the architectural use of tiles was mostly an urban rather than a rural phenomenon. Signs of manufacturing also are infrequent, suggesting that Talapada was not likely to have been the location of the production of durable goods.

Animal bones were recovered from all four of the excavation areas and are under study by Prof. P.P. Joglekar of Deccan College. Thus far the assemblage appears to include a significant amount of non-domestic animals including an elephant tooth found in the lower levels of Operation 2. Bones were utilized for the manufacture of tools including harpoons suggestive of active fishing and hunting on the part of the site’s inhabitants. Flotation utilizing the bucket method was undertaken on a small set of soil samples but was inconclusive and had relatively few botanical remains.

Conclusions

The use of the same recording methods and data-collection strategies for Talapada as for Sisupalgarh has provided a robust data set for comparing contemporaneous population centers of different sizes. The following observations were made on the basis of the 2013 fieldwork.

- 1) Unlike Sisupalgarh in which every portion of the rampart interior had evidence for settlement, Talapada was not completely “filled” by ancient occupation. Some areas had both architecture and ceramics (such as Operation 4) while other areas had ceramics but no architecture (Operations 1, 2, and 3). Even in Operation 4, however, architecture was not consistently evident in each of the occupational phases as the uppermost fill in this area consisted of a large quantity of re-deposited and quite worn ceramic material. A surface assessment of the site, observations of recent disturbances, conversations with local residents, and geophysical survey all provide the same interpretation: that areas of architecture within the site are isolated and relatively sparse. It may be that in some areas the occupants relied on organic architecture such as wattle-and-daub in which only the floor surfaces will be preserved as suggested by the ephemeral gravel “pathway”

- seen in Operation 2.
- 2) The geophysical survey suggests that in areas where architecture does appear, some structures are larger than others and may represent different types of labour investment. For example, the linear anomalies in Area A appear to be configured into a multi-roomed structure of a kind that would be larger than a single household, and the anomalies in Area B indicates a rectilinear configuration with large internal subdivisions that may represent a kind of “farmstead” or other specialized structure. The present configuration of ponds at Talapada, though they surely represent some modern modifications including government-sponsored work on an enlargement of the northern pond that we witnessed during the course of the field season, also occupy a much larger percentage of the area within the rampart compared to the ponds at Sisupalgarh. The ancient builders of Talapada may have over-planned for population sizes by emplacing large water bodies that were afterwards underutilized.
 - 3) The use of stone as architectural material in the early levels at Talapada had some parallels to the use of stone at Sisupalgarh. For example, the use of thin (15-20 cm width) laterite blocks up on edge was seen at Sisupalgarh in a number of lower contexts in the interior and exterior of the rampart (Mohanty and Smith 2011: 6). However, the very large blocks of laterite seen distributed throughout the interior of the rampart at Talapada suggest that blocks measuring up to 1.7 m in size were routinely used for structures inside of the rampart, whereas blocks of such a large size were reserved only for the gateways at Sisupalgarh.
 - 4) The presence of identical rampart construction at both Sisupalgarh and Talapada strongly suggests a formal relationship between the two sites. Talapada’s location between the large contemporaneous walled settlements of Jaugadh and Sisupalgarh means that the creation of square formal ramparts at Talapada must have been undertaken with knowledge of other sites’ configurations. It remains to be seen whether the development of the ramparts at Talapada was the result of a colonization effort from elsewhere or an independently-initiated construction project by Talapada’s own leaders and inhabitants seeking to emulate larger urban settlements such as Sisupalgarh where the ramparts date to at

least the fifth century BC (Smith and Mohanty in press). Of the four gateways at Talapada, the gateway that faced Sisupalgarh appears to be the most robust (keeping in mind however that the eastern gateway was removed long ago and does not provide any comparative material). Regardless of the impetus for its construction, the rampart at Talapada has only a small elevation and was unlikely to have served as an effective defensive perimeter. Excavations of the top of the rampart in Operation 1 did not indicate the presence of any superstructure such as a masonry wall or postholes indicative of a wooden superstructure that would have bolstered the rampart’s defensive capabilities.

- 5) The material culture of Talapada is virtually identical to the ceramics and artefacts from Sisupalgarh, with an abundance of pottery throughout the stratigraphic levels of the excavations. However, the occupational deposit is compressed into a much shorter stratigraphic sequence. At Talapada, the entire sequence of pottery is found within a maximum of 2.3 m of cultural deposits, whereas the same sequence at Sisupalgarh was expressed in continuous deposits up to 6.7 m thick within the ramparts. The volume of pottery at Talapada equals or surpasses the volume of pottery per m³ seen in the habitation deposits at Sisupalgarh, affirming that, at least in terms of portable material culture, Talapada was not an “impoverished” hinterland settlement. However, Talapada lacks the very florid, exuberant appliqué pottery seen in the upper levels at Sisupalgarh. Lacking absolute dates at this juncture, the site of Talapada may be estimated to have ceased major occupation by about the 3rd century A.D.

In sum, the 2013 investigations at Talapada provide significant insights on the configuration of a hinterland town associated with the Sisupalgarh, the Kalinga region’s largest urban centre in the Early Historic period. Further investigations would be warranted to investigate the range of architectural types and for the confirmation of the site’s chronology.

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