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## Sisupalgarh: An Early Historic Fortress in Coastal Orissa and its Cousins

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## Śisupālgarh: An Early Historic Fortress in Coastal Orissa and its Cousins<sup>1</sup>

### Summary

Renowned in the context of Ashokan India (4th century BCE), Śisupālgarh, the largest early historic fortress in the eastern part of the Subcontinent (with exception of Pāṭaliputra, present-day Patna), plays a role in virtually all discussions about this period. Its symmetrical plan and great size (130 ha, 1190 m × 1150 m measured at the top of the glacis) reveal an architectural ideal for its day. South Asia experts usually discuss it as an example of defensive early historic architecture, largely omitting any relation to predecessors, relatives, or successors. Recent research conducted by a team from the University of Kiel, Utkal University in Bhubaneswar and the University of Applied Sciences in Mainz has rekindled the research largely of the 1940s, revealing the uniqueness of Śisupālgarh and its role in the eastern part of the India. To our knowledge this is the first application of this kind of scanning in the archaeology of the Subcontinent.

### Introduction

Without a doubt, the eastern coastal Orissa is the economic, historic and cultural centre of the region especially *vis à vis* the interior. But was this always so, or was it just a development from the medieval period onward? A team centred at the University of Kiel challenged the perceived subaltern role attributed to western Orissa from

the iron age into early medieval history by virtue of a series of attributes such as the distribution and size of early historic fortifications (Fig. 1). Despite Orissa's broad area (two thirds that of present-day Germany), until recently the number of known archaeological sites in this state was pitifully small. Entire archaeological periods were unrepresented or documented in such a way, often in mere site lists, that the character of a given site or period remained hopelessly intangible. Woefully lacking were maps, plans, and photos of any kind. But in an age of the GPS (Global Positioning System) and advanced surveying techniques, such weaknesses readily can be remedied.

Carried out long ago in 1948 and briefly the following year, the excavation of Śisupālgarh was to remedy partially the undeveloped state of archaeology in eastern India. Its excavator, B. B. Lal, was strongly influenced and supported by Sir Mortimer Wheeler, as the excavation report bespeaks in its form, style, thoroughness, and simple excellence (B. B. Lal 1949, 62–105). The excavation report remains for all purposes the first mention and treatment of the site.

<sup>1</sup> A grant from the German Research Society (SPP 1066) made this study possible. Project patron was H. Kulke of the University of Kiel. We thank M. Brandtner for information at various points. The authors also should like to thank B. K. Rath, director of the Orissa State Archaeology, for his support over the years. A vote of thanks goes to the Archaeological Survey of India and the Orissa State Archaeology for their help.

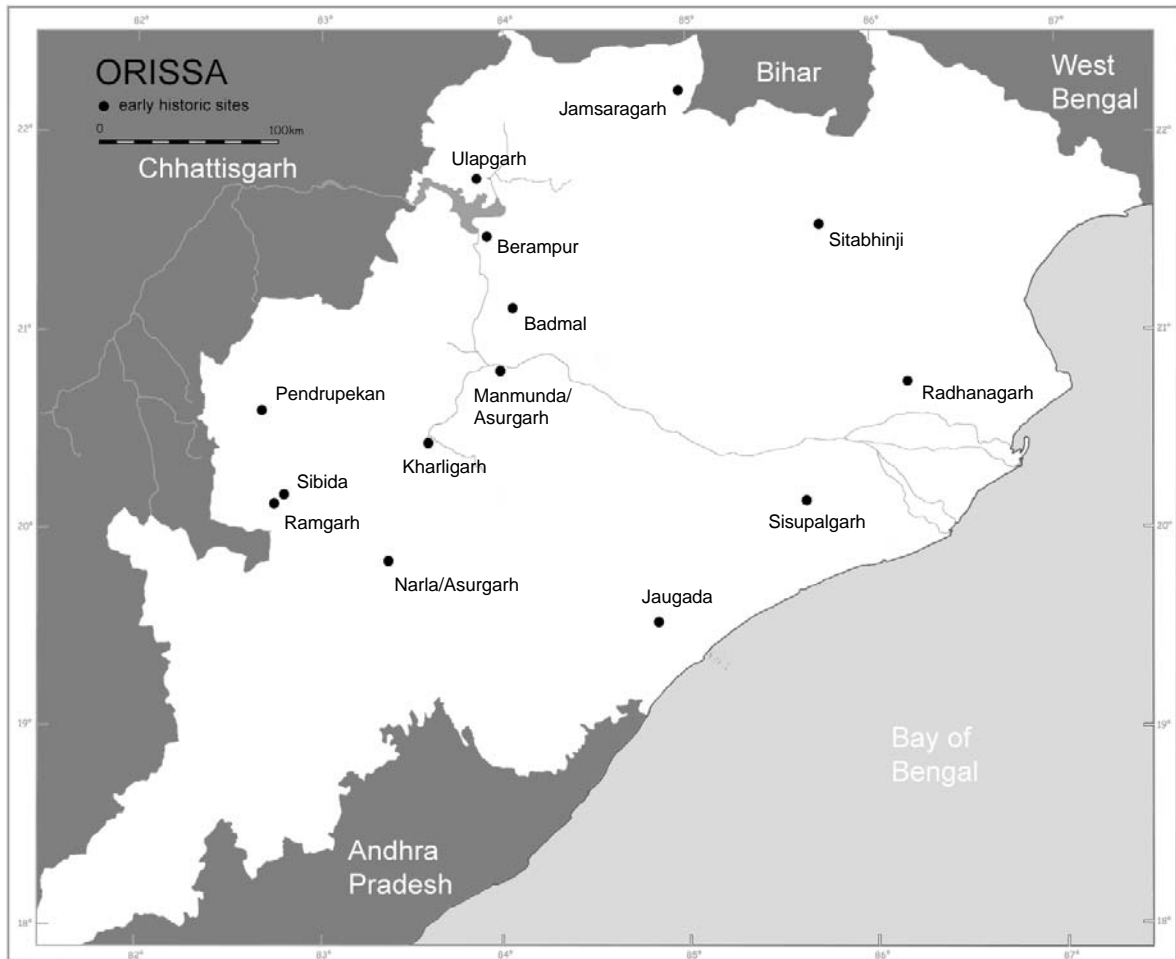


Fig. 1. Early historic ruined forts in Orissa.

### Early Historic Forts in Orissa

In fact, Śisūpālgarh (Fig. 2) devolved from a long line of defensive architecture which archaeologists have only begun to trace back, and none too soon as India's archaeological monuments come under increasing pressure by an ever-expanding population. In the face of attrition, the question arises about local rights, duties, and real possibilities with regard to "their" cultural property. In the late 1960s an excellent study attempted the contexting of Śisūpālgarh with contemporary settlements and fortificatory architecture, as well as with reference to relevant ancient texts<sup>2</sup>. But for all its

merit, given the fewness of South Asian archaeologists and indologists with a reading knowledge of German, this study went on essentially unheeded.

While at first glance, the Śisūpālgarh fortress seems the only one of importance in the area, in fact it is by no means unique. Its slightly smaller relative at Jaugada (ancient Samāpā) in the Ganjam District, some 170 km to the south-

<sup>2</sup> D. Schlingloff 1967; idem 1970. F. R. Allchin 1995, 222ū 273. Even here one reads disconcertedly that regarding early historic fortifications, "... but so far no comparative study has been made of them" (p. 223).

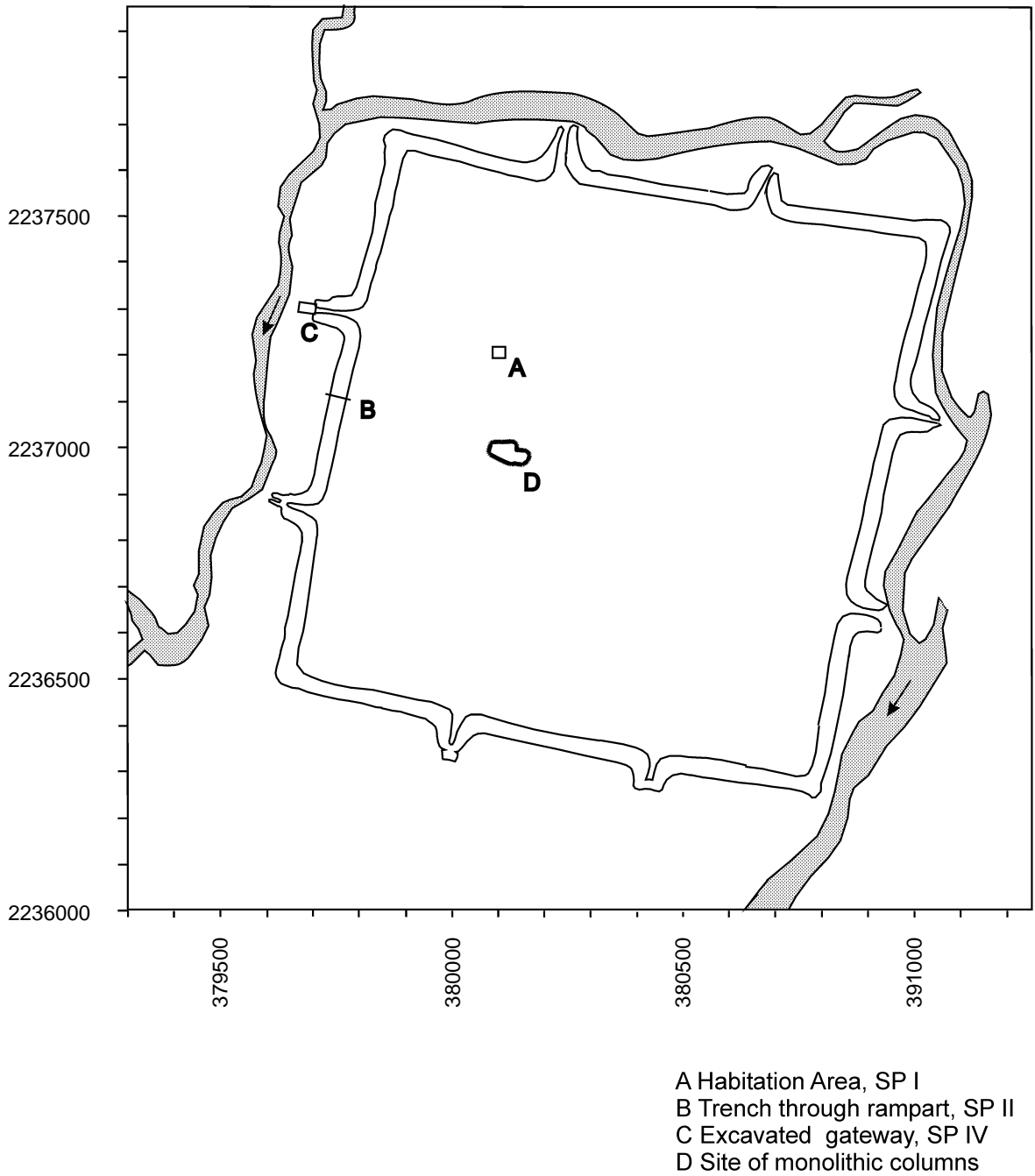


Fig. 2. Plan of Śiśupālgarh fortress (after Lal 1949 + GPS data, 2003, University of Kiel Expedition; UTM 45Q 380251E/2236983N).

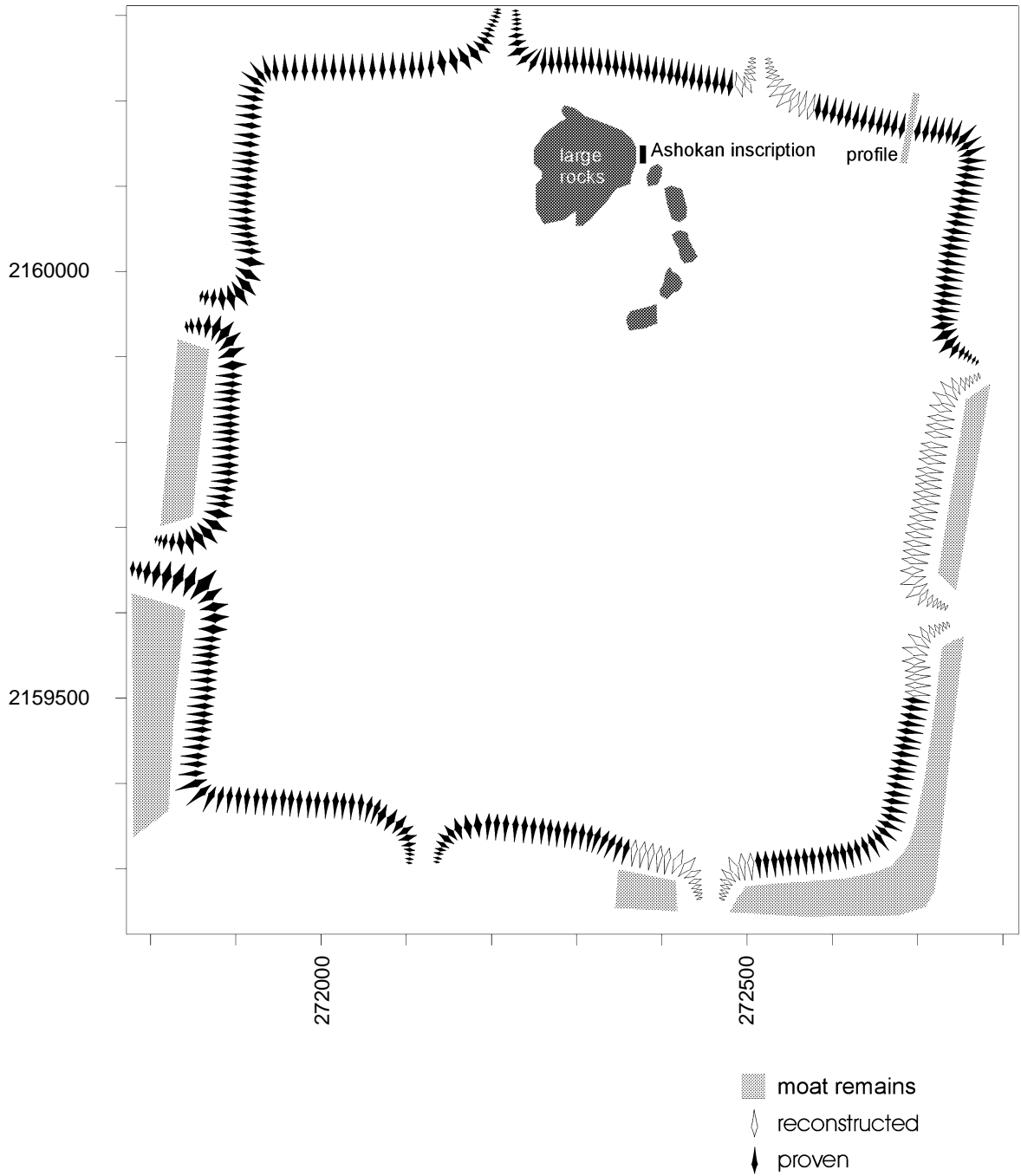


Fig. 3. Plan of Jaugada/Samāpā fortress (GPS-assisted plan: D. Modarressi, T. Rosarius, P. Yule; University of Kiel Expedition, 2002–2003; UTM 45Q 0272181E/2160244N).

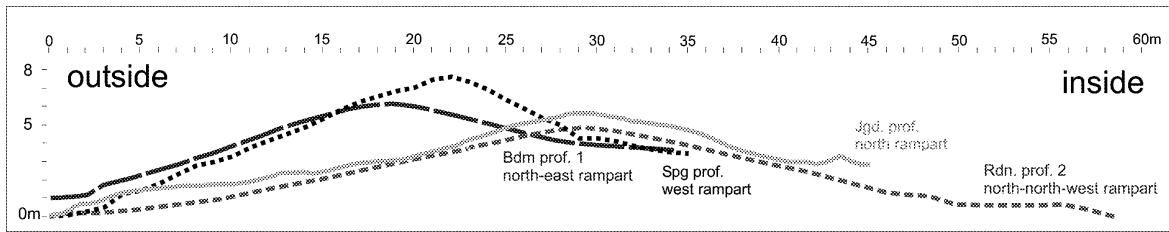


Fig. 4. Profiles of the Jaugada, Śiśupālgarh, Radhanagar, and Badmal glacis superimposed on each other.

west, is noted for its version of Ashoka's rock edicts. On inscriptional and archaeological grounds, the two seem to have developed at about the same time. The similarity between the plan of Śiśupālgarh and that of Jaugada (80 ha, 900 m × 1050 m, exterior) is such that they are indistinguishable, except to the trained eye (Fig. 3). Similar are the quadrangular shape, two entrances on each of the four glacis, and their orientation, tipped a little clockwise of north. The profiles of the glacis resemble each other in their preserved form, the higher interior than exterior, and their similarity in size (Fig. 4). But, as preserved, the glacis at Jaugada are broader and flatter.

To illuminate the history of early historic fortifications we turn to Jaugada, where in the 19th century J. D. Beglar described the rampart, moat, towers which all were still clearly visible. Debala Mitra excavated certain points there in 1956 for the Archaeological Survey of India (ASI)<sup>3</sup>. Without drawings, these descriptions of the site are difficult to comprehend let alone visualize. Her now collapsed trench appears to have lain east of the eastern gate in the northern glacis. While about 40% of the quadrangular rampart are obliterated, with careful study they are still discernable. Farmers have plowed the rampart, turning much of it into a threshing surface for their main crop: rice. To map this slowly disappearing site and others like it, we paced the inner and outer perimeter of the glacis three times, taking a readings with a hand-held GPS on its height and width every 30 m. This instrument was not intended for this kind of measuring, but gives a surprisingly good two-

dimensional plan at least of large fortifications. The vertical data are of no real use in such magnitudes. Since the gates are smaller and more complicated, here we took a reading every 3 m. Jaugada's preservation is best on its west side and worst on the now inhabited south-eastern and eastern sides. Remains of the antique moat are still visible in spots outside the glacis. Those of the eight gates still exist to varying degrees. Aside from the ASI's protective building around the Ashokan rock inscription, no other preservation measures took place. In 1956 the glacis reportedly measured 23 m × 4.75 m extant maximal width to height (Fig. 4). Recent measurements exceed these figures with a maximum of 45 m × 6 m on the surface, naturally in its weathered and eroded state. Originally, the glacis was both narrower and higher than today; its size being a matter of interpretation.

Some 50 km north-east of Bhubaneswar in the Jajpur Dist. lies a third contemporary ruined rampart (80 ha, 780 m × 1040 m) of which Radanagarh village occupies the north-western

<sup>3</sup> J. D. Beglar 1882 [1970], 112. Excavation report: D. Mitra 1957.

<sup>4</sup> We thank B. K. Rath and H. von Stietencron for this oral information. Regarding this site see also J. Mishra 2000 also for further sources.

The stratigraphy between the glacis and the trenches will be investigated in the near future.. Organic material that came into being between 750 and 400 cal BC accumulates usually the same <sup>14</sup>C content. A dating 750±400 BCE is possible. Our first two determinations predate this and require further study.

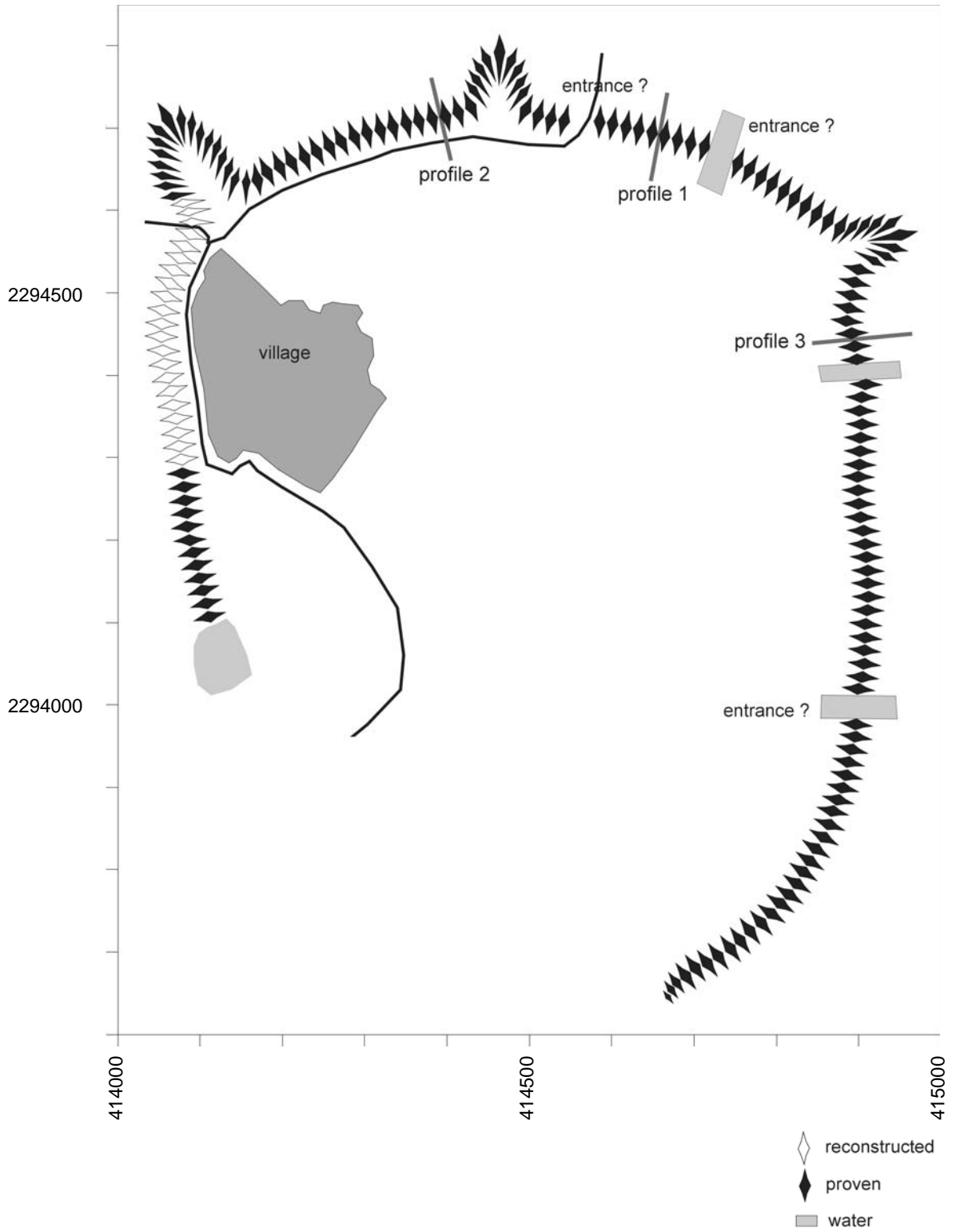


Fig. 5. Plan of Radhanagar fortress (GPS-assisted plan: M. Blumenroth, D. Modarressi, T. Rosarius, P. Yule; University of Kiel Expedition, 2002–2003; UTM 44Q 414050E/2294950N).

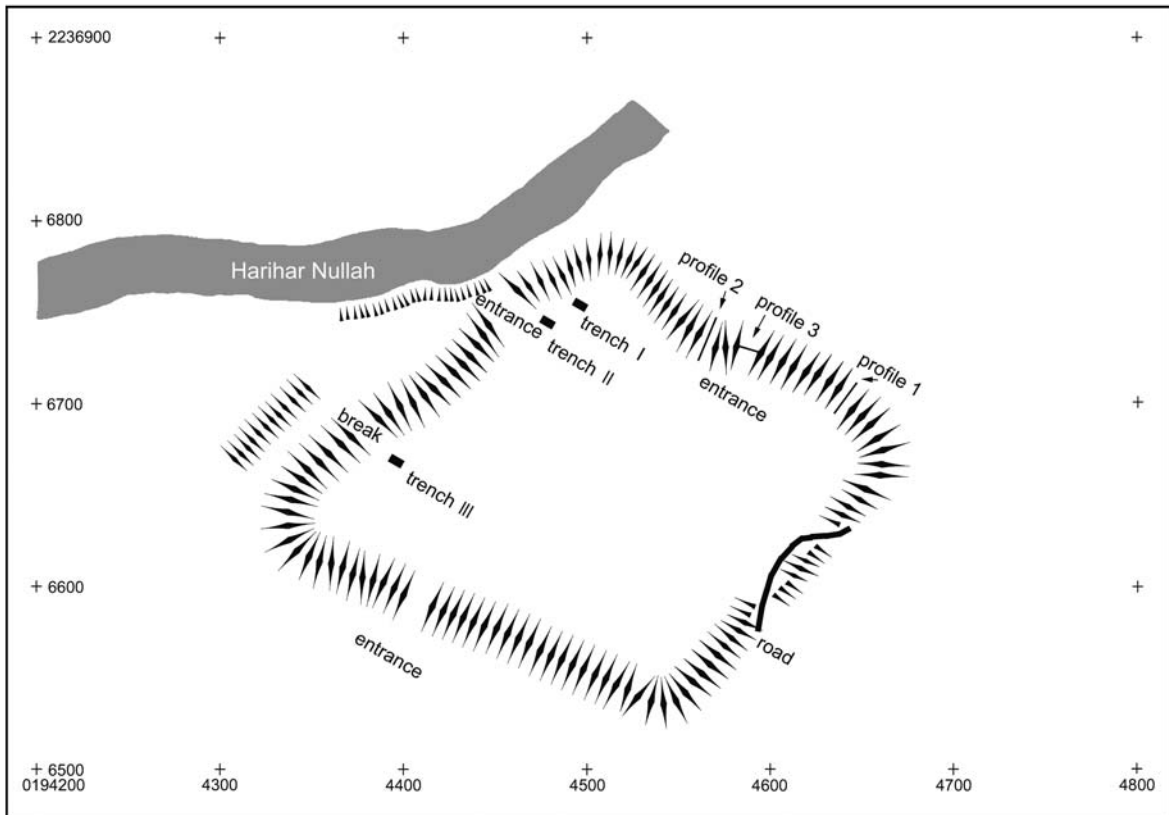


Fig. 6. Plan of Badmal fort (GPS-assisted plan: P. Behera, M. Blumenroth, D. Modarressi, T. Rosarius, P. Yule; University of Kiel Expedition, 2002; UTM 44Q 194586E/2336718N).

corner (Fig. 5). K. S. Behera, prior to retirement from the Utkal University, was the first to mention this site publicly, in the local newspaper in the mid 1980s<sup>4</sup>. The irregular ground plan differs from that of Mauryan Jaugada. Unfortunately, its south-west corner is completely destroyed. Despite the erosion of the glacis, in the north they still stand prominently. Unusual is that the interior and exterior of the glacis are of nearly the same height. Till now, this large fortified settlement has hardly been discussed in the context of early historic building foundations. Diagnostic finds suggest a dating in the 1<sup>st</sup> centuries BCE/CE, postdating that for the main building phases in Śiśupālgarh and Jaugada (J. Mishra 2000, 507–550). But within 6 km of the site at Languri lies a large Ashokan stupa which suggests a possible importance for the site *en gros* during the Mauryan Period.

Turning to the north-west, in mid 2002 P. K. Behera of the Sambalpur University discovered yet another fort at Badmal (4 ha, 180 m × 220 m) in the Sambalpur Dist. and made three small trenches near the glacis (Fig. 6). On the basis of radiocarbon and the pottery from these trenches, which are under study, the site was first built in the iron age and continued in use into the early historic period<sup>5</sup>, making

<sup>5</sup> Radiocarbon calibrated assays:

- 1 Badmal trench BDMII Stratum 5 ÷ 125 cm b.s.  
σ1 standard deviation 799±766BCE KIA20153
- 2 Badmal trench BDMII Stratum 5 ÷ 115 cm b.s.  
σ1 standard deviation 799±766BCE KIA20154
- 3 Badmal trench BDMII Stratum3 ÷ 50 cm b.s.  
σ1 standard deviation 640±588BCE KIA20155

The stratigraphy between the glacis and the trenches will be investigated in the near future. Organic material that came into being between 750 and 400 cal BC accumulates usually the same 14C content. A dating 750±400 BCE is possible. Our first two determinations predate this and require further study.

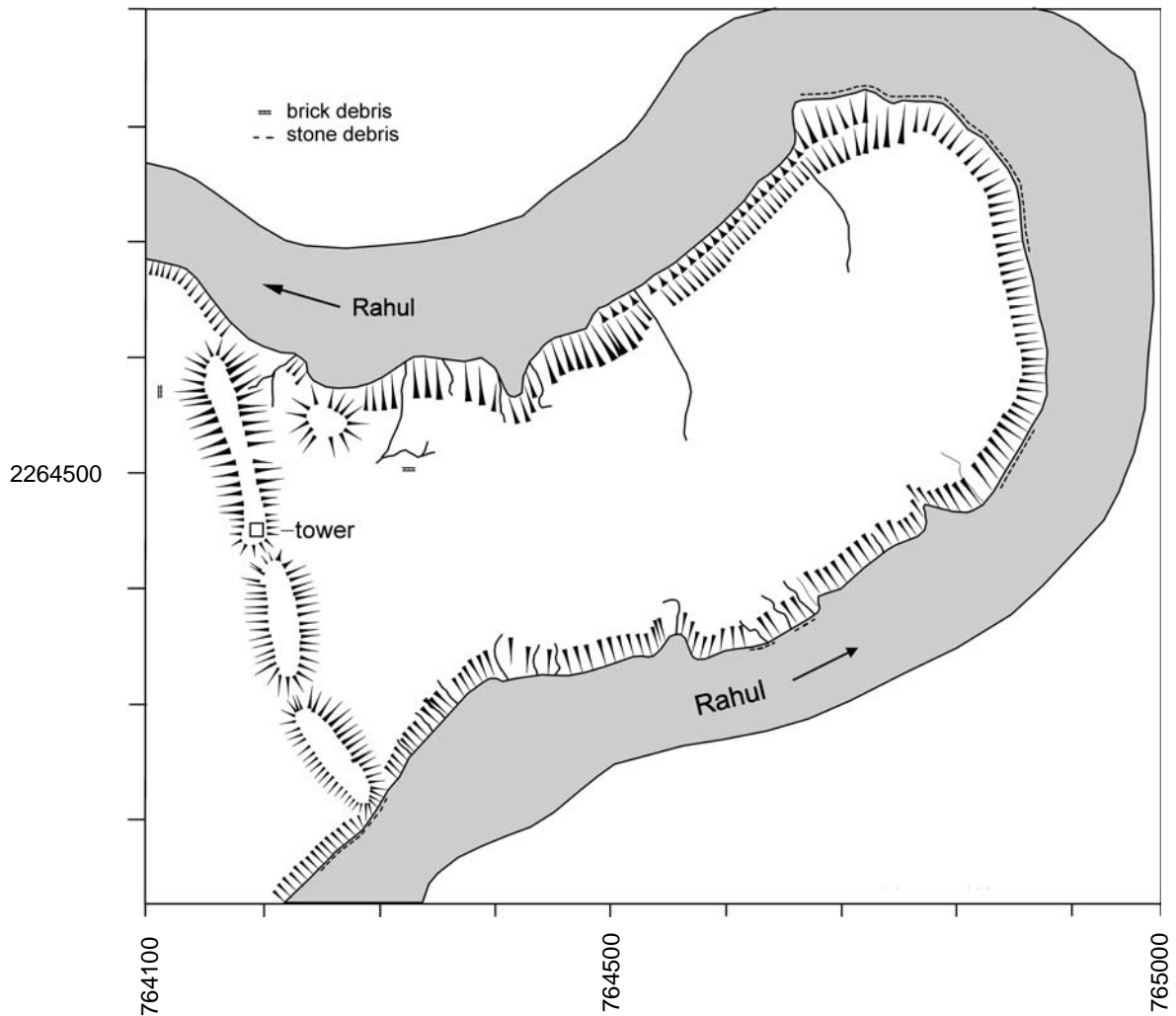


Fig. 7. Plan of Kharligarh fortress (GPS-assisted plan: P. Yule, 2000; UTM 45Q 764600E/2264500N).

it the earliest known fort of its type. Badmal's four fenestrated sides, were strengthened by a flanking defensive trench, best visible on the western side. Typically with such early forts, the interior is elevated relative to the exterior (Fig. 4). P. K. Behera proposes a dating from the 2<sup>nd</sup> century BCE to the 4<sup>th</sup> century CE for Badmal on the strength of surface finds and those from test trenches.

In 2000 and 2001 by means of photos and GPS-plots we began the mapping of the little-known > 600 m long, 28 ha Kharligarh fort in Dist. Balangir, which in fact turns out to be the largest early historic fortress known in western

Orissa (Fig. 7; P. Behera et al. in press). But for this, it is typical in South Asia at this time in its heavy reliance on the topography (the terrain and river) for defensive purposes, such as neighbouring Vidiśā (Besnagar, Madhya Pradesh; D. Schlingloff 1970, 15, 133 fig. 4).

Thus, there seem to be two main early historic fort types in India: those formed in river meanders (Kharligarh, Jamsaragarh) as well as anthropogenic ones quadratic in plan. Those of Kharligarh type, date to different points in early historic India. Badmal, which represents the earliest of the second type, dates well into the iron age by virtue of carbon

dating. Others include Narla/Asurgarh, Śiśupālgarh, Jaugada, and Mahasthan (Bangladesh). Radhanagar belongs in a class of its own.

### Śiśupālgarh the Fortress

In light of the foregoing research, one may turn in greater detail to Śiśupālgarh, which illuminates and is illuminated by contemporary forts. While most writers address the symmetry of the eight city gates, closer scrutiny reveals differences in their individual size, shape, and details of construction. The western gate of the northern glacis appears to be the largest of all. But as year for year the encroaching rice paddies increase in size, it and the other gates so decrease in size. A newly measured plan of the excavated gate in the western glacis shows the fortifications to be somewhat asymmetrical in plan.

The moat was certainly not the present-day Ganguā Nālā in its present form. This stream meanders around Śiśupālgarh, and anciently fed as well as drained the moat. For a moat to be an effective defense, it should be simple and afford attackers no protection from defending archers. Turning to a handbook for administrators, the original version of which was written in the 4th century BCE, the *Arthaśāstra*, a chapter on fortificatory architecture prescribed triple defensive trenches should measure 25.20 m, 21.60 m and 18.00 m (= together 64.8 m), not archaeologically verifiable for early historic South Asia fortifications. Furthermore, their depth should come to between 1/2 and 3/4 of the breadth. The moats are to be lined with gravel or bricks. They are to be fed from (spring-)water, or are to be filled and drained with water from a river. Lotus and crocodiles give the final touch. Again the *Arthaśāstra*, the earth displaced from the moats served as the material for the glacis, which was tamped by elephants and cattle. Atop this glacis a brick or stone wall was erected twice as high as wide.

A published aerial photo in the preliminary report shows the shape and size of the glacis and that of the Ganguā Nālā, also enabling a

first glance at the defenses (B. B. Lal 1949, opposite p. 66, pl. 27). A zigzag water course on the southern and south-eastern sides, which has been proffered as a remnant of the moat, vaguely similar to European ones built from the 16<sup>th</sup> century onward, seems a most unlikely form. Today the borders of fields especially on the north-western and north-eastern corners parallel the ancient glacis. Several of the borders of the plots may be fossils reflecting the positions of the moats. The interior was not densely inhabited, but rather it also was possible to cultivate, graze and carry out functions in a low-population environment.

Aside from the moat, other features are lacking in the context, as known from the original excavation report, which certainly existed, including galleries, merlons, towers, and/or uppermost fortifications, which can be simulated with the help of a computer. At its historic apex, the city defenses measured some 35 m width and 16 m in height. Two strands of information illuminate the question of the reliability of the simulation: First, other excavated early historic forts and secondly, the *Arthaśāstra* as the main textual source. The size and shape of the glacis of Śiśupālgarh have been compared to other early historic fortifications in India, whereby presumably also widespread is a stone wall without a glacis, as at Rājagrha<sup>6</sup>. Moreover, regarding the original appearance of the fortifications, we must consider the oft-cited description of Megasthenes, ambassador of Seleukos Nikator, in reference to the wooden fortifications of Pāṭaliputra (present-day Patna), once the largest city in the world, which were excavated in the early 20<sup>th</sup> century. This certainly contradicts the ban on wood for fortifications suggested in the *Arthaśāstra*. Conceivably wood was used for the upper part of the fortification.

The excavations at Śiśupālgarh included a city gate, the glacis and a part of the settlement. A further area designated “D”, while photo-

<sup>6</sup> D. Schlingloff 1967, 53, fig. 11, citing Rājagrha as typical. R. E. M. Wheeler 1948, 93, fig. 2, for the plan and section drawings.

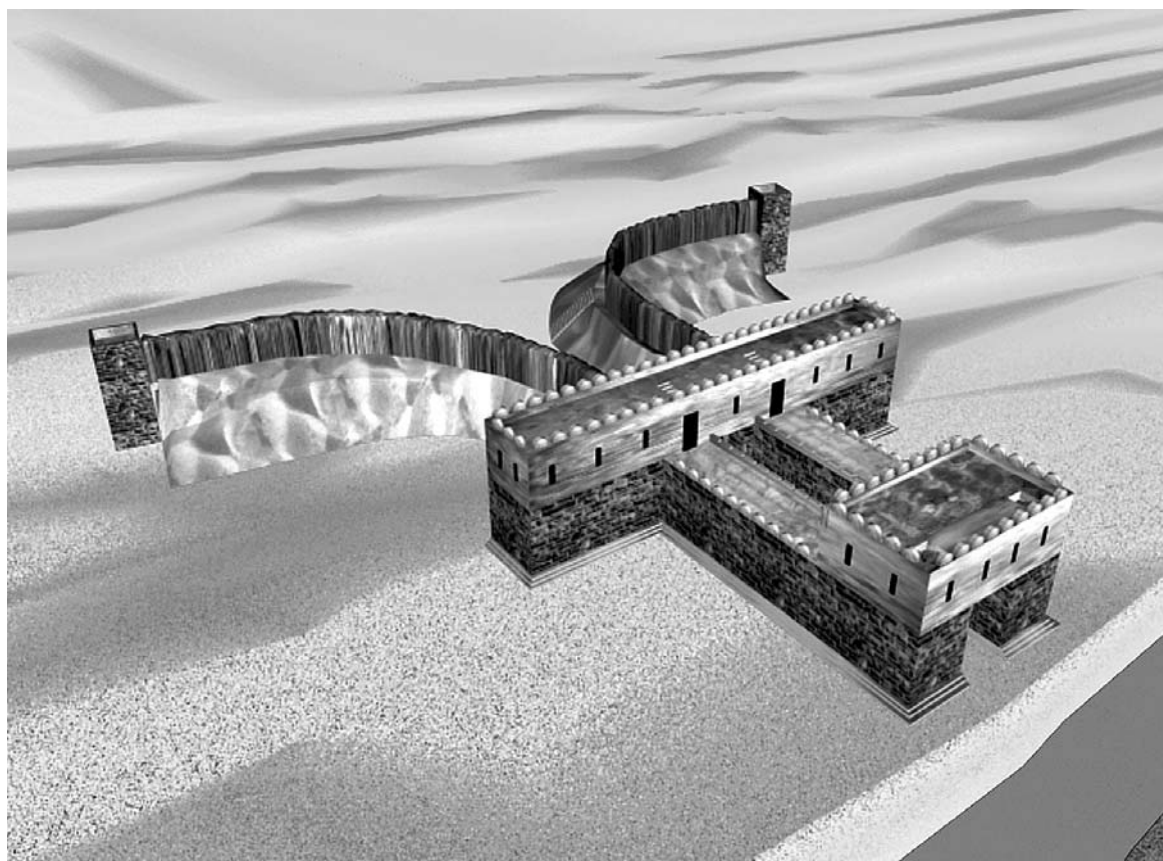


Fig. 8. Śiśupālgarh, isometric simulation of the northern *pratoli* gate type gate of the western rampart [SP IV].

graphed, thereafter was never seriously investigated. The northern gate of the western glacis at Śiśupālgarh has been compared with other early historic examples, and in relation to the descriptions in the *Arthaśāstra*, reveals a rather good correspondence with the written source (D. Schlingloff 1967, 62ū77; M. Brandtner 2000, 338ū362). As the weakest point in the fortification, both the attackers and defenders focussed attention to the gates. They must both successfully serve as a platform from which the archers could hold the enemy far at bay and also be defenseable at close quarters. Kauṭīliya's description of an ideal gate can be simulated despite certain problems in the dimensions which he gave (Fig. 8). The gate at Śiśupālgarh differs in its form from that which Kauṭīliya

described, but the various termini still can be readily identified there. Three computer simulations successively built on each other which culminated in the final version shown in Fig. 8 and in *animation1.avi* on the accompanying CD. An early roofed version of the gate was corrected to be open. Later, the gate was drawn with hemicircular “monkey head” merlons and then its upper reaches were rendered as painted white<sup>7</sup>. According to the *Arthaśāstra*, the gate should be recessed behind the line of the glacis and have a square rather than an long chamber,

<sup>7</sup> The colour of the wall on rampart according to a text by Kālidāsa in which he compares fortifications with a snow-capped mountain. Personal communication D. Schlingloff 12.08.2003.

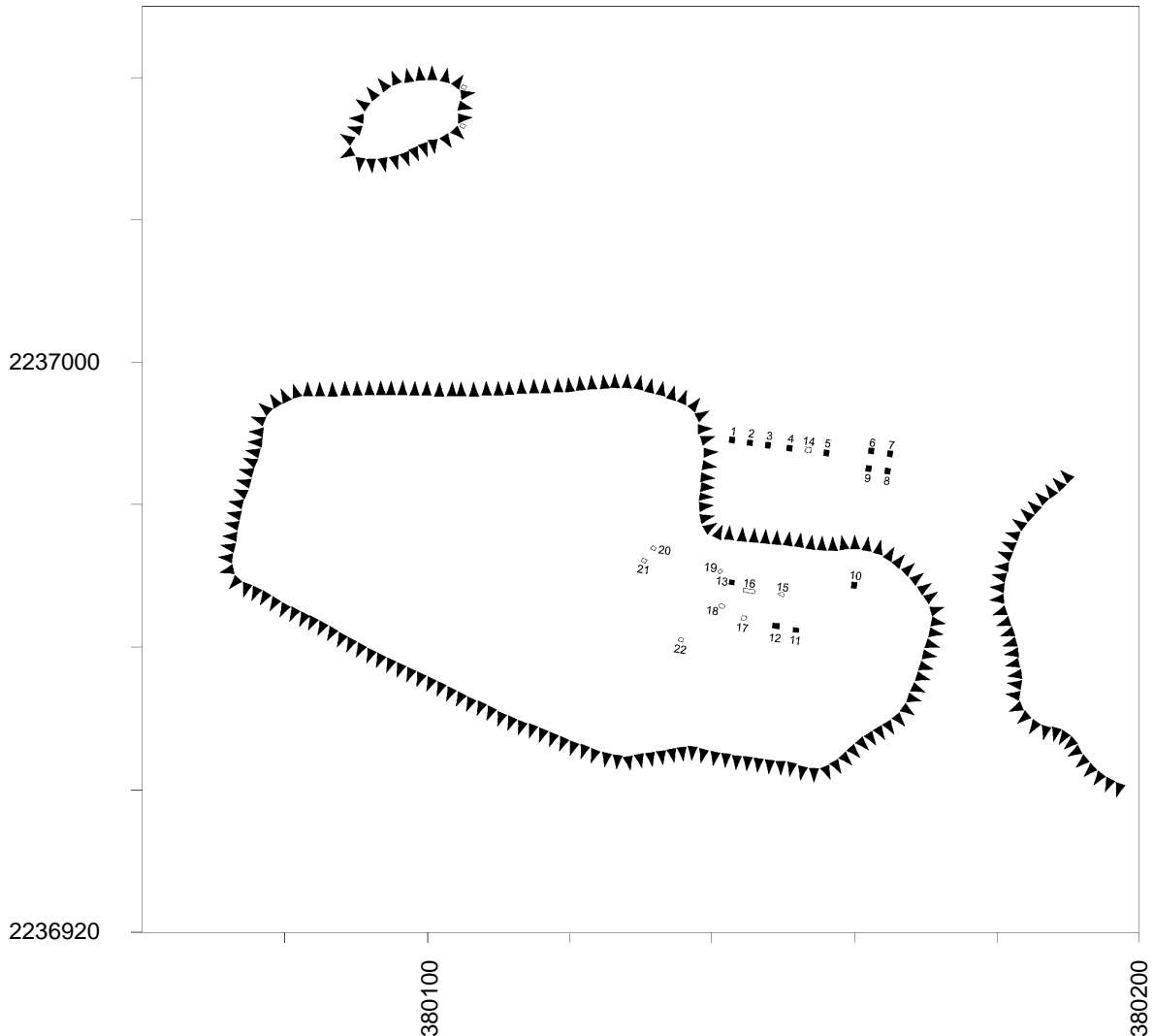


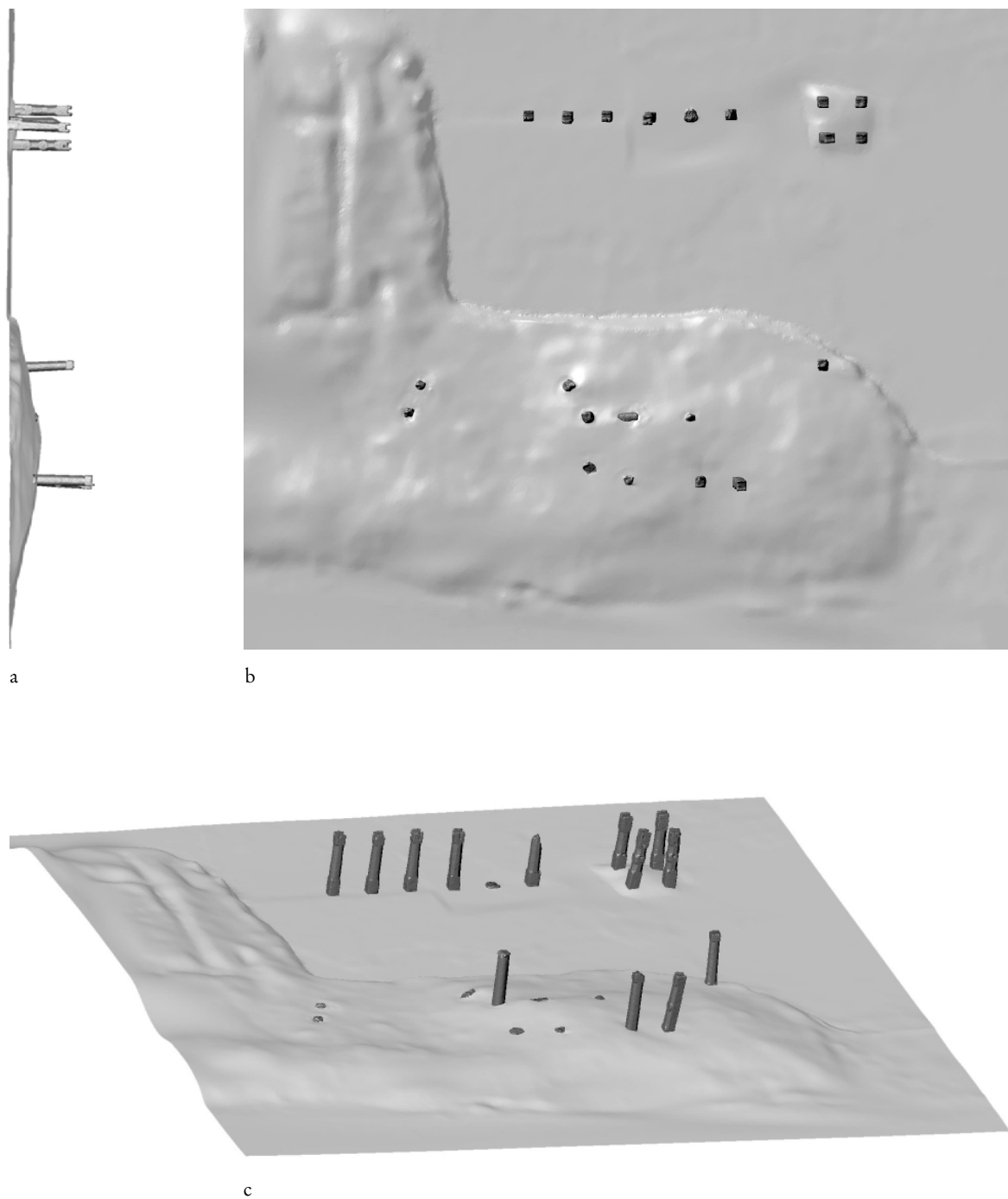
Fig. 9. Sketch map of Śiśupālgarh Area D and its surroundings (measured plan: D. Modarressi, T. Rosarius, P. Yule; University of Kiel Expedition, 2003; UTM 45Q 380130.4E/2236985.5N).

as actually exists at Srāvastī. In addition to a ground floor, Kauṭīliya’s gate has an upper storey, raising the height of the gate to that of the wall on glacis. This gives the archers a tremendous advantage over assailants.

#### Śiśupālgarh, Area D: “16 Columns”

A mysterious complex belonging to Śiśupālgarh of some 13 laterite columns first became known from a single published photo and descriptions

from the late 1940s onward (B. B. Lal 1949, pl. Xlb opposite p. 75). In the Oriya tongue the locals designate this complex “16 columns” (*shola khamba*). Other similar antique columns stand in the immediate area. Obviously, it is an important ruin within Śiśupālgarh, perhaps the palace of the ruler, to judge from the Arthaśāstra, which prescribes such to be in the centre of a given settlement. For all their rarity and importance, a group of some thirteen stone columns nearly 5m in height were essentially unrecorded (Fig. 9). A lack of information about their true



*Fig. 10.* Śísúpálgarh Area D, horizontal (a), vertical (b) and oblique (c) views.

appearance hindered discussing their number, state of preservation and original purpose.

The Institute for Spatial Information and Surveying Technology (i3mainz) of the University of Applied Sciences in Mainz came up with a solution for this task the use of a laser scanner to record the topography and architectural complex three-dimensionally. The institute has examined the accuracy of laser scanners (Böhler et. al. 2004) and proved their suitability for those cultural heritage documentation tasks where complex spatial surfaces have to be recorded with high accuracy and resolution (Böhler 2004). In this way the columns could be recorded three-dimensionally and their preservation monitored. The second aspect is important, for the encroachment of the rice fields on the archaeological remains is otherwise impossible to monitor over time. On the enclosed CD the columns (the files *col01* to *col13*) are reproduced from the scans individually. In addition, the scene can be viewed as a high resolution animated simulation (CD file *animation3.avi*) with the PC or Mac software which is generally available at no extra cost. Selected perspective views of the entire site (Figs. 10a-c), give a more concrete idea of the appearance of this monument than thusfar possible. Lal's original published photo of 1948 can be superimposed with an animated computer simulation (on the enclosed CD *animation2.avi*).

The scanner documented not only the size and position of the columns and their relation to each other, but also their appearance more exactly than measured drawings which we made. To the north a row of columns terminates to the east with a group of four. Some 15 m to the south a second parallel row of columns stands on a ground some 5 m higher than the northern row. The scanner revealed the columns in their context, namely that they originally lay together with walls, the stone of which now has been robbed. The robbed walls are visible in the scan in an axis parallel and perpendicular to the column group.

The recording of the column complex and topography rests on some 15 million measure-

ments recorded at a rate of nearly 1000 points per second ù a veritable cloud of laser ù measured points. In order to achieve a complete coverage, 20 scans were taken from different observation stations. The single scans were registered to form a common point cloud and thinned to the necessary resolution, resulting in 3 million points which were connected by 6 million small triangles which actually describe the surface. A final step was to render and animate the recorded data in order to make it "come to life" and to convey render its spatial appearance more vividly than possible simply with elevational lines. For this kind of representation special software is required (Fig. 11). With the impetus of a concrete documentation of the condition at the time of the recording, the authorities will be able to more readily protect this site, which in any case has been declared to be a national monument.

The position of the northern and southern rows of columns of Area D requires explanation. If the complex were originally of a single building phase, one would expect the columns to stand on the same height and be identical in appearance. But this is not the case. Circular, octagonal and oval cross sections of the columns occur. Nor are all finished. Perhaps anciently the columns were taken from other monuments. Two in the north-east have circular medallion-like fields on four sides. Those in the northern row are notched vertically and horizontally at the top in the "capital". The horizontal notching suggests secondary building and use *in situ*. Why some of the columns have medallions on four sides is a further matter for speculation. The laterite is rough and now is weathered. Were one to use it as a field for decoration or writing, then it must first have been smoothed with a fill material.

Further research should investigate whether only two rows of columns existed or a chess board pattern of many columns existed. Perhaps some of the columns originally were of other materials such as wood. Whether or not foundations exist must also be determined.

There is no way at this time to determine from whence the two above-mentioned types of building structures originate. To postulate

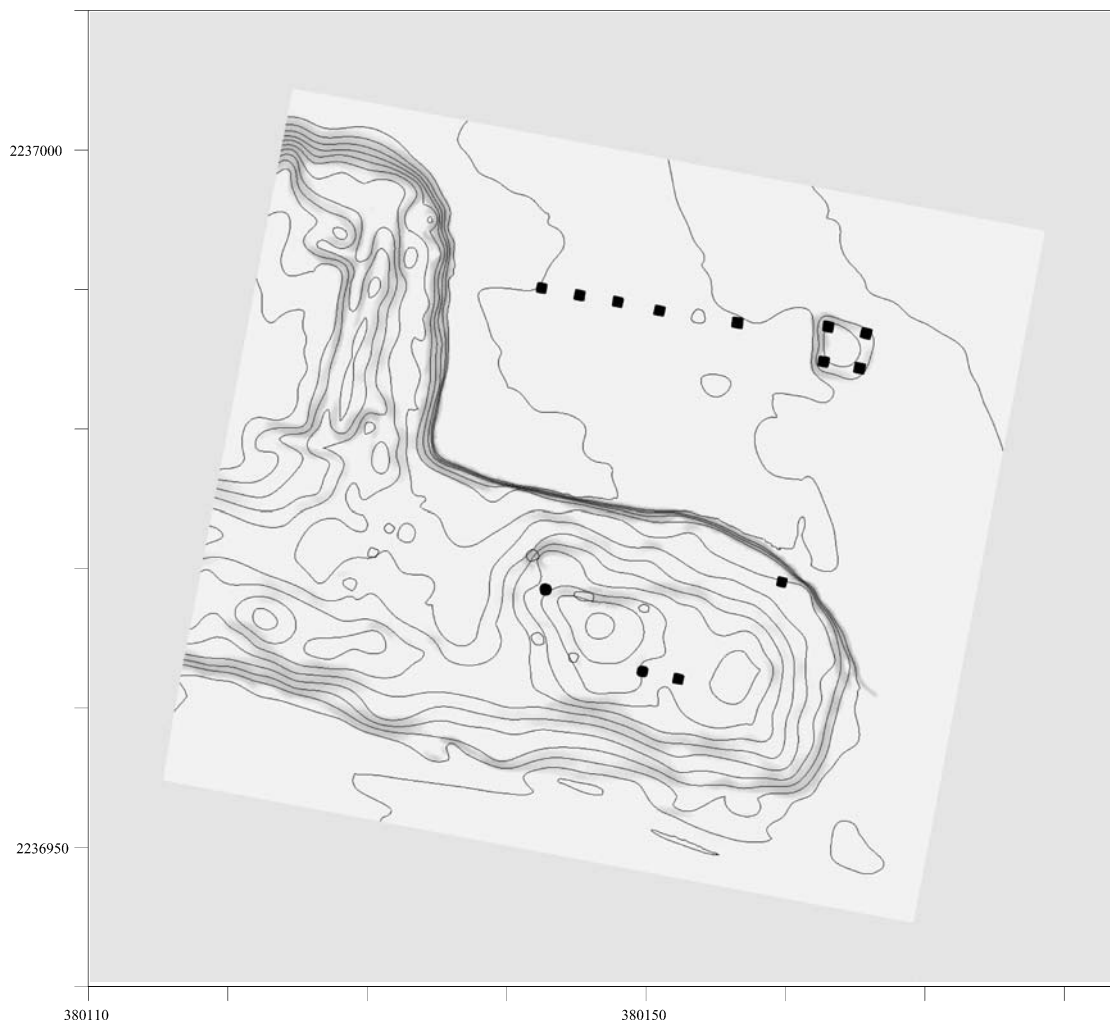


Fig. 11. Śisupālgarh Area D, early historic ruined fortress “Shola Kahmba” (“16 columns”) (plan rendered with elevational lines: M. Bordas Vicent, P. Yule; 2003, 2004; scale 1:250; UTM 45Q 380130.4E/2236985.5N).

precedence in western *or* in eastern Orissa for the one or the other, would to be too simple and too good to be true. Curiously, four of the

seven known and datable early historic forts lie in the West, perhaps a political and cultural geminal area in what has become Orissa.

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