
Report on the Dating of the Historical Period Site at Mahurjhari, Vidarbha

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Abstract: This article presents the AMS radiocarbon dating results of ten samples from the excavation of the site at Mahurjhari, District Nagpur, Maharashtra. The site is known for its proto-historic and early historic remains, and archaeological investigations have focused on the earlier megalithic, or early Iron Age, phases of activity at the site. Recently, it has been possible to analyse dating samples collected from excavation trenches in the later early historic area of activity at the site. This article presents the results of these radiocarbon determinations. The results allow us to place the early historical phase of the occupation and associated activities that took place at the site into a more secure chronological context, and facilitate the further study of historical periods in the wider region.

Keywords: Early Historic, Dating, Methodology, Radiocarbon, Vakatakas, Mahurjhari, Vidarbha

Introduction

The archaeological site at Mahurjhari was excavated between 2001 and 2003 by the Deccan College, under the direction of R. K. Mohanty (Mohanty 2005). The primary focus of these excavations was the megalithic remains at the site. Yet, at the same time, trial trenches were also laid in areas of early historic settlement that appeared to be associated with the long-term manufacture of semi-precious stone beads. The remains of these beads marked the site out as being an important regional centre of bead manufacture from at least as early as the early historic period (Vaidya and Mohanty 2015). Recently, it has been possible to scientifically date a limited number of the layers from the trenches in these areas using AMS dating. This article presents the results of these radiocarbon determinations. The results allow us to place the early historical

phase of the occupation and bead manufacture at the settlement at Mahurjhari into a more secure chronological context. As we will see, this is additionally important because it will enable us to establish a more coherent pottery typology for the site that will also be valuable for the study of historical periods in the wider region.

Background

The site of Mahurjhari is located 15 km west of Nagpur on the Nagpur-Katol road in Nagpur District, Maharashtra (long. 79° 30'E, lat. 21° 14'N). The site was first reported by G. Hunter in 1933 (Hunter 1933), and visited again by Alexander Robertson in the mid 1930s (Robertson 1935), for whom the site was characterised by the presence of abundant stone beads and a few sculptural fragments. On the basis of these, the site was dated to the Gupta period (Hunter 1933). Subsequent interest in the site concentrated on its prehistoric dimensions. In particular, the number of 'Megalithic' or early Iron Age remains at the site and its immediate environs (Deo 1973). The wider Vidarbha region in which we find Mahurjhari is known for its rich Megalithic heritage, with a number of cairns, standing stones, stone circles, and settlements known throughout the area (Deo 1973, Mohanty and Thakuria 2014). Yet, even within this context, it was clear that the concentration of Megalithic monuments at Mahurjhari marked the site out as something special. Recently, further excavation at the site became a pressing concern due to the expansion and encroachment of open cast manganese mining in the near vicinity, which threatened the archaeological heritage of the site.

Between 2001 and 2004, the wider site at Mahurjhari was excavated by a team from the Deccan College (Mohanty, 2003, 2004, 2005, 2006). Excavations were focussed primarily on the large number of megalithic monuments at the site. At the same time, excavations were also geared towards investigating the bead manufacturing at the site, and how it related to other settlement activities. That bead production took place at the site was indicated by a scatter of surface material comprising carnelian beads at various stages of manufacture, as well as materials associated with their manufacture such as debitage and fragments of bead polishers (Mohanty 1999). These remains, together with the density and widespread distribution of their scatter confirmed the identification of the site as a centre of bead production in the ancient past. Yet, understanding the chronology of this production, and how it was related to the continued habitation of the settlement at Mahurjhari remained an important concern. At the same time, the site at Mahurjhari is located close to other important historic sites such as Mansar, Nagardhan and Ramtek. Together, these were key nodes in the early historic landscape of Vidarbha, which ultimately came to be ruled by the Vakatakas in the fourth century CE and was the second largest kingdom in South Asia after the Gupta Empire. Mansar was the location of the royal palace, Ramtek the religious centre, and Nagardhan the capital city (cf. Bakker 1997; Shastri 1997). Given the proximity of Mahurjhari to these sites it was also deemed important to establish the chronology of the early historic settlement at Mahurjhari to place it more firmly in a

regional and historical context. It is these early historic layers from the excavations at Mahurjhari that have recently been dated and that will be discussed here.

Methodology

During the pre-excavation survey of the site, ten localities (labelled A to J) in the core area of settlement at the site were identified as having archaeological potential. For details of the wider archaeological dimensions of the site, see Deo (1973) and Mohanty (2005). Localities A to F were identified as areas most directly associated with the early historic settlement. This was indicated by both the character of the surface remains (which included pot sherds that could be broadly defined as ‘early historic’) and proximity to a habitation mound that was still visible to the South of the modern village. More recent explorations at the site carried out by Shantanu Vaidya have identified a possible area of megalithic settlement immediately to the South (Vaidya and Mohanty 2015). For the locations of these excavation trenches in relation to the area of early historic settlement, and other archaeological features in the immediate vicinity see Figure 1.

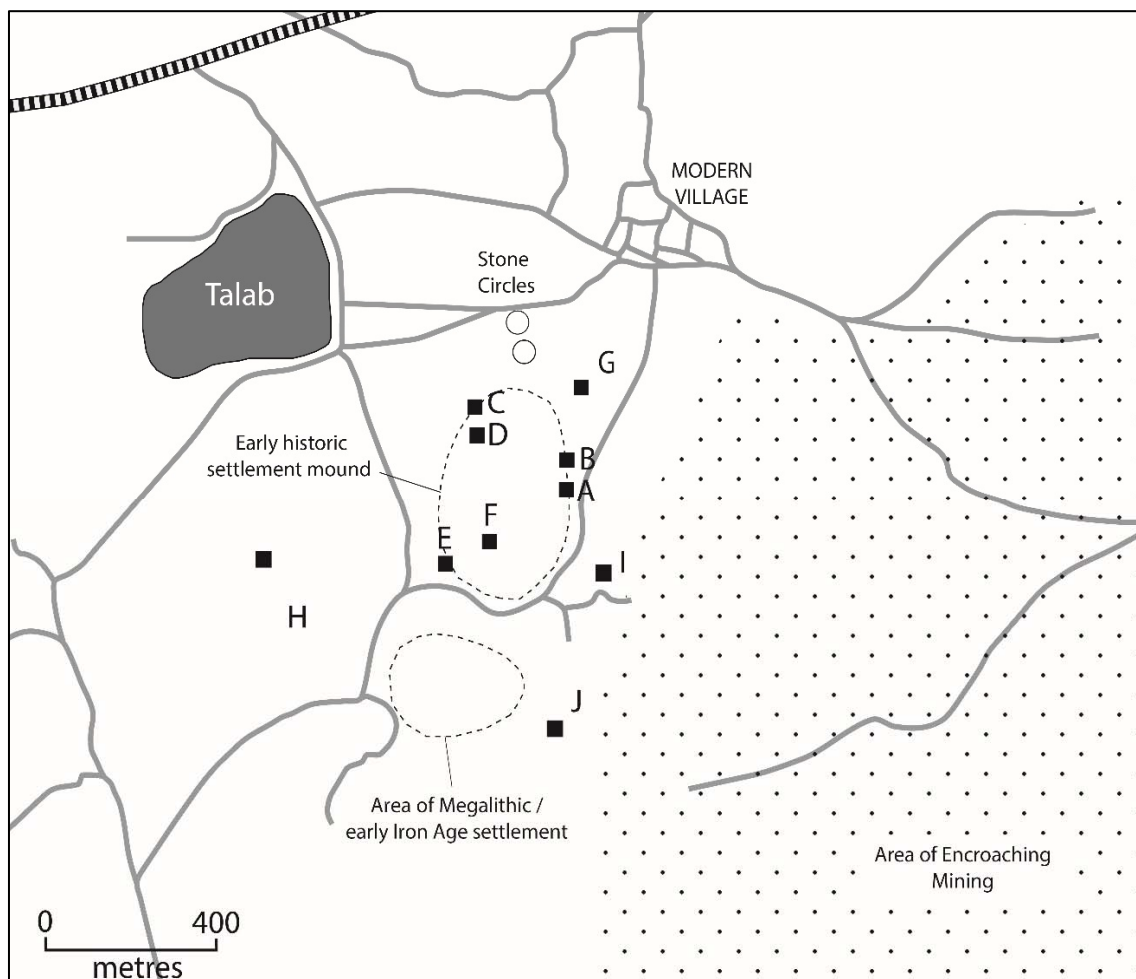


Figure 1: Plan of the archaeological site at Mahurjhari, indicating areas of archaeological investigation

Table 1: Descriptions of archaeological layers and presence / absence of artefacts recorded in Trenches A-D and F at Mahurjhari

Trench	Layer	Digs	Depth from surface (cm)	Description	PT	BD	BD-d	BR	BN	SH	MT	TC	ST	WS
A	1	1-3	0-30	Loose, greyish soil. Disturbed through modern ploughing activity	y	y	y	-	-	-	-	-	-	-
	2	4-6	30-45	Greyish soil, with layer change defined on the basis of the appearance of pot sherds and brick fragments throughout the trench	y	-	y	y	y	y	-	-	-	-
	3	7-9	45-80	Compact, light grey soil	y	-	y	y	y	y	y	-	-	-
	4	10-11	80-100	Compact, dark grey soil, with isolated finds including a stone 'Lajjagauri' plaque, as well as fragments of an animal head terracotta figurine	y	y	y	y	-	-	y	y	-	y
	5	12-13	100-115	Black clay soil	y	y	y	y	y	-	y	-	-	-
	6	14-15	115-120	Natural black soil, below which was a bed of lateritic gravels (or 'murrum')	y	y	-	-	y	-	y	-	-	-
B	1	1-2	0-18	Loose, greyish soil. Disturbed through modern ploughing activity	y	y	y	-	-	-	-	-	-	-
	2	3-5	18-40	Compact, light grey soil	y	y	y	y	y	-	-	-	-	-
	3	6-9	40-62	Compact, light grey soil. Special finds including bead polishers	y	y	y	y	y	-	-	y	-	y
	4	10	62-68	Ashy, loose soil	y	y	y	y	y	-	-	-	-	-
	5	11-14	62-90	Black soil, below which was a bed of lateritic gravels (or 'murrum')	y	y	-	-	-	-	y	-	-	-
C	1	1	0-10	Loose, greyish soil. Disturbed through modern ploughing activity	y	y	-	-	-	-	-	-	-	-
	2	2-3	10-20	Compact, grey soil	y	y	y	-	-	-	-	-	-	-
	3	4-7	20-50	Ashy, grey, loose soil	y	y	-	y	y	-	-	-	-	-
	4	8-15	50-110	Compact, brownish grey soil. Special finds including bead polishers	y	y	y	y	y	y	-	-	y	y

5	16-21	110-140	Dark brown blackish soil	y	y	y	y	y	y	-	-	-	-
6	22	141-142	Black soil, below which was a bed of lateritic gravels (or 'murrum')	y	-	-	-	-	-	-	y	-	-
D	1	0-7	Loose, blackish grey soil. Heavily disturbed.	y	y	-	y	-	y	-	-	-	-
2	2-9	8-60	Compact, grey soil	y	y	y	y	y	y	-	-	y	-
3	10-12	60-80	Light grey soil	y	y	-	y	-	y	-	-	-	-
4	13-14	80-	Thin layer defined by alignments of stones, indicating remains of possible structure or surface	y	y	y	-	y	-	y	-	-	y
5	15-17		Natural black soil, below which was a bed of lateritic gravels (or 'murrum')	y	-	-	-	y	-	-	-	-	-
F	1	1-6	Light grey, soft loose soil; heavily disturbed through modern ploughing	y	y	-	-	-	-	-	-	y	-
2	7-14	20-50	Dark grey soil, disturbed with animal burrows	y	-	-	y	-	-	-	-	y	-
3	15-24	50-75	Compact ash grey soil with stone beddings	y	y	-	-	-	-	-	-	-	-
4	25-29	75-95	Compact light grey soil	y	y	-	y	-	-	-	-	-	-
5	30-39	95-145	Compact brownish grey soil, with frequent gravels	y	y	y	y	-	-	-	-	y	-
6	40-48	145-185	Compact, brown clay soil with small gravelly inclusions. Very high frequency of beads, bead debitage and bead polishers	y	y	y	-	-	-	-	-	-	y
7	49-56	185-215	Dark brown compact soil	y	-	-	y	-	-	-	-	-	-
8	57-60	215-232	Natural black soil, below which was a bed of lateritic gravels (or 'murrum')	y	-	-	-	-	-	-	-	-	-
PT=pottery, BD=d=bead debitage, BR=brick, BN=bone, SH=shell, MT=metal, TC=terracotta, ST=stone, WS=worked stone													

Trenches varying in size from 2x2m to 5x5m were excavated in each of these localities using standard methods. Small (c. 5-10cm) digs were made horizontally across each trench, and 'lots' were defined by marked changes in the colour and/or composition of the soil, or else on the basis of changes in the nature of artefacts visible in the soil matrix. During excavation, very few archaeological features such as structures, pits, post holes or ditches were encountered in any of the trenches. Instead, most of the lots corresponded to stratigraphic layers, indicating the gradual aggradation of habitation deposits over time. The differences between each of these layers were defined on the basis of distinct changes in both the soils and the nature of the artefacts preserved within them. Brief descriptions of these layers in trenches A, B, C and F, as well as an indication of the categories of archaeological remains that were found within them are provided in Table 1.¹

Samples were collected for scientific dating from stratigraphic layers in two trenches: Trench C and Trench F.² Due to the expedient nature of the excavations (undertaken, as they were, prior to the expansion of mining in the area), the collection and flotation of bulk environmental samples for macro botanical remains was not included in the excavation strategy. As such, only charcoal fragments >5mm² were collected for dating. Of the twenty charcoal samples collected, ten were found to be unviable and could not be analysed. Of the remaining ten samples, two were from Trench C, and eight from Trench F. Schematic diagrams illustrating the stratigraphic position of all of these samples are shown below (Figure 2). All samples were analysed by BETA Analytic. Analyses were performed without charcoal species identification.

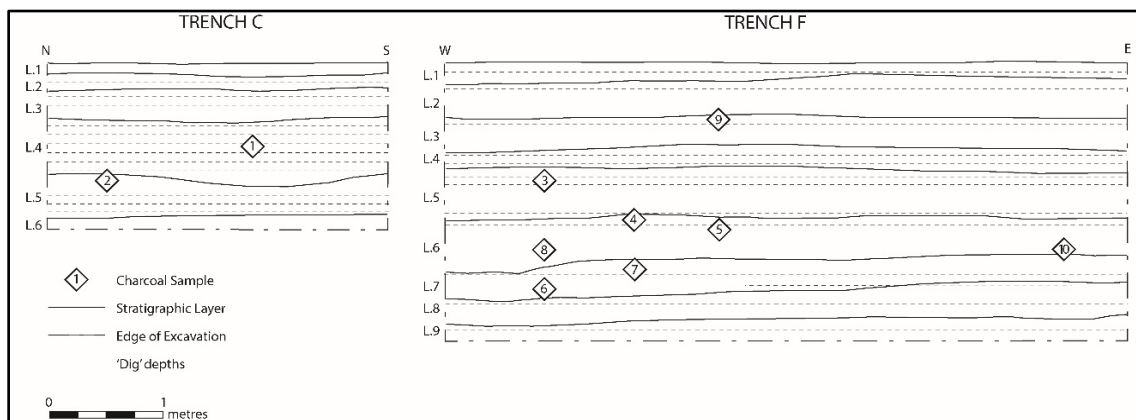


Figure 2: Schematic plans of stratigraphic sequences of Trenches C and F, indicating stratigraphic layers, dig depths and the depths of samples collected for dating

Results

The results of the radiocarbon dating of charcoal samples from Mahurjhari are presented in Table 2.

From the results, we can see that the distribution of dates obtained from samples 1, 2, 6, 7, 8 and 10 conform to their stratigraphic position. While we are unable to speak of 'secure' contexts in a situation where our defined lots relate to gradually accumulating

habitation deposits, the fact that these determinations respect the stratigraphic position in which they were found lend weight to the probabilistic chance that those dates can be applied to those layers.

Table 2: Results of AMS Radiocarbon dating analyses of samples from Mahurjhari Trenches C and F

Sample	Trench	Lot	Layer	Probable Date (AD)	OxCal (IntCal 13)
1	C	12	4	870-985	778-790 CE (1.7%), 809-815 CE (0.5%), 826-841 CE (1.4%), 863-995 CE (91.8%)
2	C	16	5	570-655	566-655 CE (95.4%)
3	F	134	5	18th/19th century	1691-1730 CE (24.3%), 1810-1924 CE (71.1%)
4	F	146	6	17th/18th century	1685-1733 CE (26.3%), 1807-1928 CE (69.1%)
5	F	145	6	17th/18th century	1669-1780 CE (43.1%), 1798-1891 CE (36.8%), 1909-1945 CE (15.5%)
6	F	155	7	340-400	256-299 CE (16.3%), 318-416 CE (79.1%)
7	F	150	7	425-540	426-588 CE (95.4%)
8	F	443	6	575-640	561-651 CE (95.4%)
9	F	124	3	17th/18th century	1664-1707 CE (16.7%), 1719-1826 CE (47.4%), 1832-1884 CE (12.6%), 1914 CE + (18.6%)
10	F	638	6	560-650	566-655 CE (95.4%)

However, the dates obtained from samples 3, 4, 5, and 9 require more explanation. It is extremely unlikely that the dates obtained for these samples reflect the age of the layers in which they were found. This is for two reasons. First, their stratigraphic position would make the resulting chronological sequence almost impossible. Two of these samples (4 and 5) were found in the same layer as two other samples (8 and 10) that yielded much earlier dates, while another sample (3) was obtained from the layer directly above them. Even accounting for the possibility that there was a depositional change in the layer containing samples 4, 5, 8 and 10 that might have been missed during excavation, it is unlikely that the product of more than one thousand years of human habitation would have been deposited in such a 'thin' archaeological layer. Second, all of the samples 3, 4, 5, and 9 have yielded broadly the same 'modern' date despite having been collected from widely different archaeological layers.

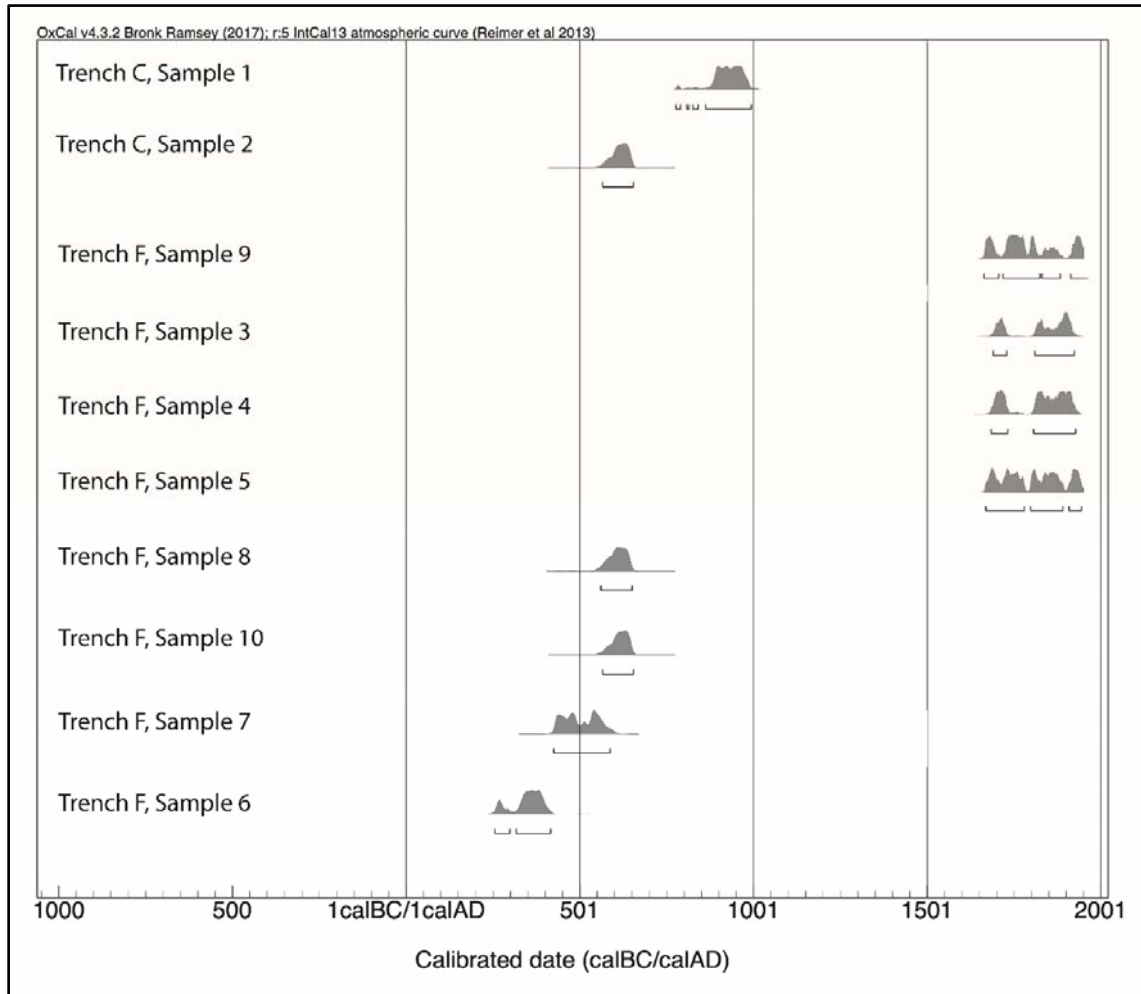


Figure 3: Stratigraphic distribution of calibrated dates from Mahurjhari Trenches C and F

As such, and in the absence of any additional data that could be used to interpret the stratigraphic distribution of these dates, we are left with three main possibilities (though others may exist). One is that samples 3, 4, 5, and 9 were contaminated during or after excavation. However, there is nothing in the record to indicate what this may have been. The second is that these samples are intrusive and found their way into these lots through some as yet unidentified action or process. For instance: falling into the trench from upper layers during excavation, perhaps through disturbances to edge of section. The third is that the stratigraphic position in which the samples were found is the result of bioturbation or some other post-depositional disturbance, such as root action or animal burrowing, that was neither recognised nor recorded during excavation. Of these three scenarios, we deem the latter two to be the most likely.

Assuming, therefore, that these samples are in some way intrusive, and not originally deposited in the layers in which they were found, we have instead to infer the chronology of the upper layers of Trench F. This can be done with reference to three relative dating measures:

- The stratigraphic distribution of radiocarbon determinations for the lower layers, which can be used to infer general periods of time for the aggradation of the archaeological deposits above them. Though this is with the caveat that in doing so we are assuming a degree of consistency in the taphonomic processes acting on the site; which, due to a lack of recovered environmental data cannot be reconstructed. On this basis, we note that with the exception of Trench F Layer 5, the radiocarbon dates for Trench C Layers 4-5 and Trench F Layers 5-7 each stratigraphic layer appears to indicate a two-century period of time. Trench F Layer 5 may indicate a three-century period of time.
- Compositional and typological changes in the material assemblages found in each layer, which can be used as an indicator of the rate of deposition over time. Here, the ceramic remains distributed throughout Trench C Layers 4-2 and Trench F Layers 6-4 showed only a gradual change, indicating a regular and even rate of deposition over time. While there was not further typological development evident in the ceramics found in the upper layers of either trench. Instead, overall quantities of artefacts were low, and these layers were found to be very disturbed. This would indicate an absence of habitation in this area of the site (though not necessarily across the whole site) during the period of time that these layers formed.
- Comparison of the ceramics from the upper (scientifically dated) layers in Trench C to those from the upper layers in Trench F. This comparison indicated that the ceramics from Trench C Layer 4 and Trench F Layer 5 were similar, and thus may date to a similar period.

Through applying these metrics, it has been possible to infer dates for the upper layers of Trench C (Layers 3-2) and Trench F (Layer 4) as belonging to the tenth or immediate post-tenth century AD—possibly up to the twelfth century if we assume a similar rate of deposition as that indicated by the chronological span of the dated layers immediately below. Then, Trench C Layer 1 and Trench F Layers 3-1 would appear to be modern in date. (Tables 3 and 4).

Table 3: Reconstructed chronological sequence for Trench C, based on 14C dates and relative dating

Layer	14C Date(s)	Range
1	—	19 th to 20 th century
2	—	10 th or post 10 th century
3	—	10 th or post 10 th century
4	870-985	8 th to 10 th century
5	570-655	6 th to 7 th century
6	—	4 th to 5 th century

Table 4: Reconstructed chronological sequence for Trench F, based on 14C dates and relative dating

Layer	14C Date(s)	Range
1	—	19 th to 20 th century
2	—	17 th to 18 th century
3	1719-1826	17 th to 18 th century
4	—	Post 10 th century
5	1810-1924	7 th to 10 th century?
6	560-650 / 575-640	6 th to 7 th century
7	340-400 / 425-540	4 th to 6 th century
8	—	Pre 4 th century
9	—	Pre 4 th century

Note Regarding the Ceramics

It is not the intention to provide a full report of the ceramics from Mahurjhari here. This will appear soon as a separate article (Lefrancq et al. 2019). However, a brief review of the main ceramic types (as they were recorded during excavation) and their distribution is provided here. Excavations did not reveal any diagnostic wares such as Northern Black Polished Ware, Satavahana Black Slipped Ware, or Red Polished Ware. Instead, we only encountered four main groups of pottery: Red Ware, Red Micaceous Ware, Black Ware and Black Micaceous Ware. Red Wares were the most common type of pottery found at the site. They included fine, plain and coarse varieties all of which were both slipped and unslipped. Red Micaceous Wares were generally coarser than Red Wares, with the inclusion of mica flakes as a temper and sometimes also in the slip. Black Wares were fine and plain, and often slipped. While Black Micaceous Wares were medium to coarse, with a high frequency of mica flakes in the fabric.

As mentioned above, each of these types occurred throughout the sequence, which exhibited no change in the range of wares (in as much as they were categorised on site). Instead, the ceramics exhibited only slight changes in vessel shape over time. This seeming uniformity in the ceramics from the site and absence of any of the usual diagnostic ‘fossil types’ that are usually used as dating evidence prompted us to carry out a thorough and in-depth analyses of the Mahurjhari pottery. Thus, specific details of the pottery and their classifications (the fabrics used to make them, their morphology and so on) is provided elsewhere (Lefrancq et al. 2019).

Discussion and Conclusion

In considering this chronological sequence, we recognise that the resulting dates for the phases of later (i.e. historical period) habitation at the site are still fairly broad, and our

handle on the chronology of the uppermost layers is constrained by the amount of top soil disturbance in those layers. Ideally, we would like to have been more sensitive to subtle changes in the soil matrix throughout the sequence and been able to impose a greater degree of stratigraphic control in order to both provide a framework for reconstructing the depositional processes visible in each trench, and identify more secure contexts from which to retrieve dating samples. However, no such changes were evident during excavation. Equally, we recognise that the implementation of a number of protocols and excavation techniques that were beyond the means of the facilities and resources available to us would have improved the accuracy with which we might be able to date the site.³ However, much as we are aware of the potential benefits that the application of such analyses might bring to the dating of the site, their absence does not undermine the dates that we present here, or our understanding of the chronological sequence of the site. As we have demonstrated, these are based on the results of six radiocarbon dates that can be reliably associated with their stratigraphic position, in conjunction with other archaeologically derived material and relative dating techniques. The resulting dates will remain the basis for our understanding of the chronological sequence of the site until more data can be brought to bear.

Notwithstanding these constraints, the dating of the historical layers and phases of occupation at Mahurjhari are significant for a number of reasons. First, they help enable us to put the bead industry at the site that has already been noted (Hunter 1933, Deo 1973, Mohanty 1999, Vaidya and Mohanty 2015) into a more secure chronological framework. Previously it had been recognised that the main phase of bead production at the site took place during the early historic period generally, probably building on an earlier smaller-scale production during the early Iron Age. Yet, exactly when this bead industry took place during the early historic period has remained uncertain. During the most recent excavations at the site, it was noted that the main phase of bead production at the site was associated with Layers 6 and 7 in Trench F. With the benefit of these dates, we now know that this expansion of the bead industry at the site took place between the fourth and seventh centuries AD. This is significant not only for our historical understanding of the continuity of this industry; but also, because having a firmer understanding of its chronology enables us to start examining these beads and investigating changes in craft production over time. Such studies have the potential to yield new insight into the socioeconomic dimensions of site and area. They will also be useful in contributing to the development of bead typologies that may help facilitate the identification and comparative analyses of beads found at other sites elsewhere in the region.

Second, rather than having the post-megalithic settlement attributed to and understood only with reference to a somewhat broad and loosely defined 'early historic' period, we now have clear dates that place the settlement firmly within the Vakataka and early medieval periods. This is particularly important because until recently there have been no other radiocarbon determinations for this later historical period from this area.

Though, in this connection, we await the results of recent large-scale excavations at the site at Nagardhan (Sontakke et al. 2016). As stated above, in being home to the eastern Vakataka dynasty this wider region was an important geographic area during this period. As such, having radiocarbon dates for this period means that the site and the artefacts that can be attributed to this period can provide a useful archaeological benchmark against which other sites in the area can be assessed.

Third, and connected with this, these dates allow us to begin interpreting the pottery from the site. Given the initial focus on the megalithic or early Iron Age remains at the site, much of the later post-megalithic ceramic material found during excavation was categorised simply, and in the interests of expediency, as ‘early historic’ (Mohanty 2003). During ongoing post-excavation analyses our ability to interpret this ceramic material has since been impeded by an absence of well-known diagnostic ‘early historic’ types, such as Northern Black Polished Ware and Red Polished Ware in the ceramic assemblage. Instead, we have been left with an assemblage that could only be identified as early historic on the basis of: (a) its morphological difference to the well-known and better documented early Iron Age pottery from the region, and (b) the presence of certain diagnostic ‘early historic’ rim forms amongst the sherds. With the benefit of the dates presented here, it is now possible to examine the ceramic assemblage from these trenches more closely and put them into chronological series.

Current research is examining the typological differences of the ceramics, and creating a typology and seriation of early historic, Vakataka and early medieval pottery as it appears at this site. This work is ongoing, and will be published in due course (Lefrancq et al. 2019). It is the hope that this work will enable us to identify later historic wares that fall outside the rubric of the usual familiar diagnostic marker types (i.e. NBPW, RPW, and so on); and in doing so, better equip us in attempts to identify and understand historical sites in the field. Here too, as in so many areas, we await the published results of the recent excavations at Nagardhan with eager anticipation, as they will only add to our growing understanding of this important period in this region.

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Notes

- ^{1.} During excavation, trench E proved not as viable and so is not included in this table.
- ^{2.} The resources that were available to the project did not allow for the collection of additional samples from other trenches.
- ^{3.} In this regard, it is clear that our understanding of site taphonomy would have been improved through geoarchaeological sampling and analyses; and that the collection of a greater number of dating samples would have improved our ability to establish scientific dates for the entire stratigraphic sequence. Connected with this, we also recognise that the implementation of a protocol for the systematic sampling of environmental remains in each dig, lot or layer would have potentially provided a greater selection of material from which to select samples for dating. Here, material such as charred seeds or collagen-rich bone, which are far more reliable than charcoal for radiocarbon dating, would have been particularly useful. In the absence of such material, we also realise that species identification of the charcoal samples would have helped with the interpretation of the radiocarbon determinations that were obtained.

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