

## Salvaging the Bead Manufacturing Area at Mahurjhari, Nagpur

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**Abstract:** A bead manufacturing area was found in the north-western area of the village of Mahurjhari, probably belonging to the Vakataka period. This assemblage was with all the stages of bead specimens from heating, primary chipping till the polishing. A variety of shapes are reported from the material along with, diversity in locally available crypto-crystalline stone raw material. Beads were for the purpose of ornamentation for humans and animals, also various belief systems associated with wearing stones was a part of their cognition. Bead making was one of the main occupations for the people of Mahurjhari and presence of foreign raw material at the site suggested that trade was also happening.

**Keywords:** Megaliths, bead, raw material

**Received :** 28 January 2022

**Revised :** 29 February 2022

**Accepted :** 19 March 2022

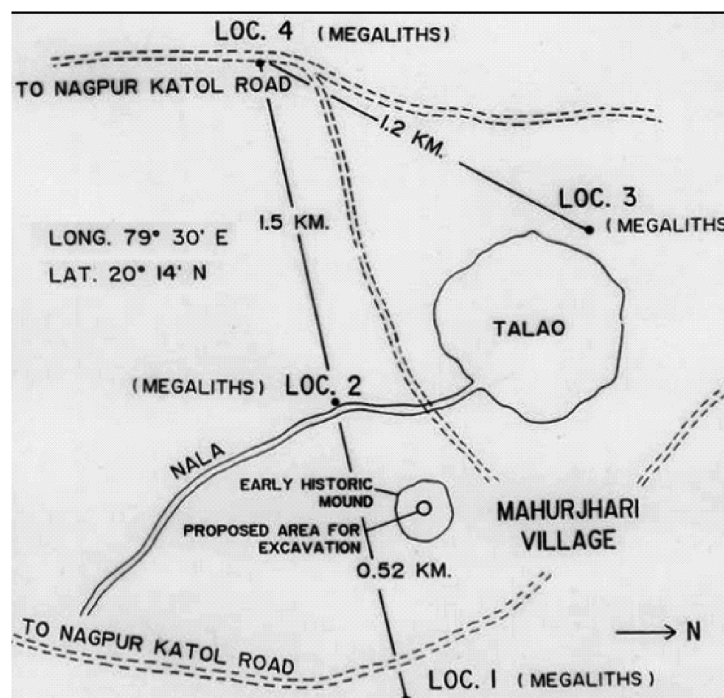
**Published :** 18 June 2022

### TO CITE THIS ARTICLE:

Manoj Kumar Kumri 2022. Salvaging the Bead Manufacturing Area at Mahurjhari, Nagpur. *Journal of History, Archaeology and Architecture*, 1: 1, pp. 17-23.

## INTRODUCTION

The site of Mahurjhari (LONG.79°30'E, LAT.20°14'N) is located 15 km away from the city of Nagpur in Maharashtra. This site was discovered for its megaliths by G. Hunter in 1933 and later N.R Banerjee (IAR, 1958-59) brought into light the finished and unfinished beads. A systematic survey and excavations were carried out by Dr. S.B.Deo in the 1970s. (IAR, 1970-72) The site was also known for its palaeolithic assemblage by C. Gupta. (IAR, 1979-80) During S.B.Deo's work, four localities of Megaliths were noticed towards the east, west and south of the village and a habitation area of the Vakataka dynasty was reported in the north-western side of the village.(Deo,S.B. 1973) Habitation area belonging to the Megalithic culture was not known till the discovery by Dr. R.K. Mohanty was done. (IAR, 2001-2004) After all these discoveries the site was visited by Dr. M. Kurmi who felt the need for salvaging, because of the road construction in the northwest area of the village in 2020. Pits were dug on either sides of the road and archaeological material was retrieved in the same year. Later in the year 2021 surface finds were salvaged from an area which is about 300 m from the road. The need for salvaging was because the land was being cultivated by the villagers. The salvaged material majorly includes finished and unfinished beads and this research focuses on their bead manufacturing stages and the raw materials used by the bead makers. It was identified as a factory site for beads. This factory of beads belongs to the Vakataka period.



(Vaidya, S. & Mohanty, R.K., 2015)

Fig. 1: Map of Mahurjhari

## BEAD MANUFACTURING STAGES

In the assemblage of beads at Mahurjhari stone beads dominate with traces of shell beads. The specimens found in the material were from all stages of bead manufacturing process. A total of  $n=1861$  specimens were classified and careful observations were carried out for the identification of raw material. Refer to table 1 for the raw material corresponding to the bead manufacturing stages. Refer fig. 2.

Table 1: Bead Manufacturing Stages and Raw Material

Stages/Raw Material	Core	Primary Chipping	Rough-outs	Debitage	Micro-chipping	Peck-ing	Grind-ing	Dim-pling	Drill-ing	Polish-ing	Total
Quartz/Quartzite	2	105	200	69	25	4	36	8	13	11	473
Carnelian		57	329	228	59		59	3	50	10	795
Banded Agate	6	25	184	9	8		51	2	4	4	293
Chalcedony		4	13	14	2		8	1		1	43
Chert	10	68	59	15	2		6		2	1	115
Jasper	1	23	15	3	1		4	1	1	1	50
Terracotta						1	3	1	5		10
Shell									3		3
Siltstone		1	1								2
Amethyst			2				1				3
Glass		3	2								5
Wood Opal		3		1							4
Garnet			1								
Agate-Carnelian			1								
Limestone		1	2								3
Unidentified	1	4	4	1			2				12
Total	20	294	813	340	97	5	170	16	78	28	1861

The stages in which they were classified in are the following:-

1. Procurement of raw material,
2. Heating,
3. Primary Chipping,
4. Debitage,
5. Roughouts,
6. Microchipping,
7. Pecking,
8. Grinding,
9. Dimpling,
10. Drilling,
11. Polishing.

**Procurement of raw materials** –The raw material is procured from nearby areas or traded from far for the manufacturing of beads based on their colour and fracture. At Mahurjhari the locally available raw material included quartz, quartzite, chert, jasper, chalcedony, carnelian, banded agate and glass, but material like amethyst and shell were traded. They were foreign to the site.

**Heating** - Heating of stones was performed for removing the moisture of stones and secondly, for changing their colour. For example agate becomes red when it is heated overnight at 250°C - 300°C and its terminology changes to agate-carnelian. The heating treatment facilitates flaking of the stones. Before the stone is primarily chipped it undergoes heating. A specimen of agate was found which has undergone this process. So it can be inferred that at this location of the site, stones were not heated they brought from somewhere, where they were heated. Also, all the stones do not undergo heating, like quartz and limestone.

**Primary Chipping**- This stage is the first stage of flaking the minerals for obtaining desirable rough outs. This process was definitely done on the site itself because n=294 specimens of this stage were found, belonging to various raw materials. The raw materials reported were quartz/quartzite, banded agate, carnelian, chert, jasper, chalcedony, glass, wood opal, obsidian, limestone and siltstone.

**Debitage**- Chips and chunks of stones were occurring at the site which cannot be processed further. A great number of chips were present, in total 340 specimens were known, this was also an indication that it was a factory site.

**Roughouts** -The flakes and cores which were primarily flaked are further chipped to reach a rough shape of the bead that the artisan has thought of. Major portion of the assemblage was roughouts. 813 roughouts of bead were documented from the area which is almost half the number of the whole assemblage.

**Micro chipping** -When a rough shape is attained further microchipping is carried out to proceed towards finishing of the bead. In this stage in which the tiny chips are removed were 97 in number.

**Pecking** - In pecking the roughouts are hammered with a pointed tool to make a perforation in the bead, this process is performed mainly on flat circular beads of quartz or terracotta because surface area is more to do pecking. It is executed with a soft hammer. Only five specimens were found.

**Grinding** – In this stage the beads are rubbed on a hard material to make the surface smooth. The beads are rubbed on either flat basalt or on bead polishers of quartz/quartzite, which was observed on

the site. Ground beads of various shapes were 170 in number which exhibit beads with less grinding and more grinding. The micro stages in grinding were evident from these beads.

**Dimpling** – Dimpling is when a perforation is not done but just a shallow depression is made either for a design, for inlay or a preliminary stage of drilling. This stage of beads are 16 in number which is less and as the beads become finished the number of specimens are descending as they were not discarded.

**Drilling** – The ground beads are drilled with a pointed needle like tool. A study from the beads at Khambat gives information about this process which must have been the same one used at Mahurjhari too. This can also be inferred based on the palm supporters recovered at Mahurjhari used for drilling. A total of 78 drilled beads occur in the collected material.

**Polishing** – This is the last stage of bead manufacturing process in which the bead is rubbed against a hard stone. A number of bead polishers were reported from the site which was used for this purpose. 28 specimens of polished beads were found from the material collected. Polishing is done at the last stage because then it is ready for use and it also consumes time.

## RAW MATERIALS USED

The site is rich in raw material including crypto-crystalline minerals comprised of silica group of minerals mainly. Beads were made from raw materials like quartz, quartzite, banded agate, carnelian, amethyst, jasper, chert, glass, siltstone, chalcedony, and limestone. All the stone beads had the same procedure for manufacturing, unlike the beads made from terracotta and shell. The raw materials other than amethyst were all locally available at the site.

**Table 2: Raw materials and shapes of beads**

Raw Material/Shapes	FC	C	Cy	B	H	G	S	A	T	FR	FO	FS	Total
Quartz/Quartzite	98	85	31	4	11	28	11		19	7	1	2	297
Carnelian	41	197	78	59	12	87	14		5	13	3	1	510
B.Agate	51	30	114	13		32	4		5	4			253
Chalcedony	6	13	2	1			2		1				25
Chert	8	12	30	3	1	10	1		2	3			70
Jasper	1	9	8	1	1	2				1			23
Terracotta	3	2						5					10
Shell	1		1					1					3
Siltstone	1												1
Amethyst			1			1						1	3
Glass	1	1											2
Limestone	2												2
Garnet									1				1
Agate-Carnelian			1										1
Unidentified	1	3	1								1		6
Total	214	352	267	81	25	160	32	6	32	28	5	4	1207

FC=Flat Circular C=Circular Cy=Cylindrical B=Bicone H=Hexagonal G=Globular S=Semicircular A=Areca nut T=Tapering cylinders FR=Flat rectangular FO=Flat oval FS=Flat square

## TYPES OF SHAPES

At the site of Mahurjhari a great diversity of shapes were reported. After a careful observation of bead material that was collected, 12 different types of shapes were known. The artisans of Mahurjhari were

very innovative in creating and thinking of multiple shapes. Refer table 2 for details on the types of shapes and associated raw material of the same.

Shapes which were discerned are as follows:-

1. Flat circular,
2. Circular,
3. Cylindrical,
4. Bicone,
5. Hexagonal,
6. Semicircular,
7. Arecanut,
8. Globular,
9. Tapering cylinders,
10. Flat rectangular,
11. Flat oval,
12. Flat square.

The one thing noticed at the site's bead material was that there was a relation between the shapes and their raw material. In other words a typical shape was made using a typical raw material. This was understood as for example cylindrical beads were frequently found made on banded agate, same is the case with other raw materials. The data developed suggests that 98 flat circular beads were made on quartz/quartzite; 197 circular, 59 bicone and 87 globular beads were on carnelian; 114 cylindrical beads were made on banded agate. Then arecanut shaped beads which were used for animals were mostly on terracotta and tapering cylinders were found made on quartz/quartzite.

## **GRINDERS AND POLISHERS**

The purpose of grinding was solved by rubbing the roughout on flat basalt pieces manually. The bead was held in the fingers and with a precision grip they were rubbed against hard material. The evidences from the site were about 3 inch circular smooth surfaces of basalt, which were probably for the purpose of grinding.

Bead polishers of quartz were concentrated in pockets at the site of Mahurjhari. These bead polishers must have been used for grinding which needs less labour than polishing and then after drilling, the beads were again polished using the same bead polisher to give a shiny lustrous finish.

## **MEASUREMENT**

Measurements were recorded after all the classifications were done. Ground, drilled and polished beads were measured with the help of a digital Calliper. The unit of measurements taken was in mm. The diameter of the circular beads was recorded and the length and width of the cylindrical and bicone beads was recorded. In the measurements of tapering cylinders two widths and one length was recorded, one of the widths was a maximum width and one was the minimum width. The maximum size of bead was 24 mm and the minimum was 2 mm.

## **DISCUSSION AND CONCLUSION**

The salvaged material of Mahurjhari represents all stages of beads which conclude that it was a bead manufacturing area. This workshop for bead manufacturing was possible because of the availability

of raw material and the knowledge of the technology. The variety of beads, raw material and different stages summarize that bead making was one of the main occupation of the people at Mahurjhari. They were aware of the technology of bead manufacture, although there are no concrete examples of traditional bead makers in the area. The basic purpose of beads was ornamentation for humans and animals. Other than this, there must have been belief systems attached to a particular stone worn by an individual. Unfortunately, drills were not found, which creates a void in making systematic inferences. Although a great variety of raw material was available at the site, amethyst was traded; hence trading was also in vogue.



**Bead manufacturing stages of Mahurjhari**

## ACKNOWLEDGEMENTS

The author thanks the field staff of Excavation Branch- 1 Nagpur and also thanks the students of Institute of Archaeology, Miss Shivani and Miss Arefa for the collection and classification of the materials subsequently from the site.

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