# Prehistory Of The Chotanagpur Region, India, Part 1: Making Sense Of The Stratigraphy

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**Abstract**

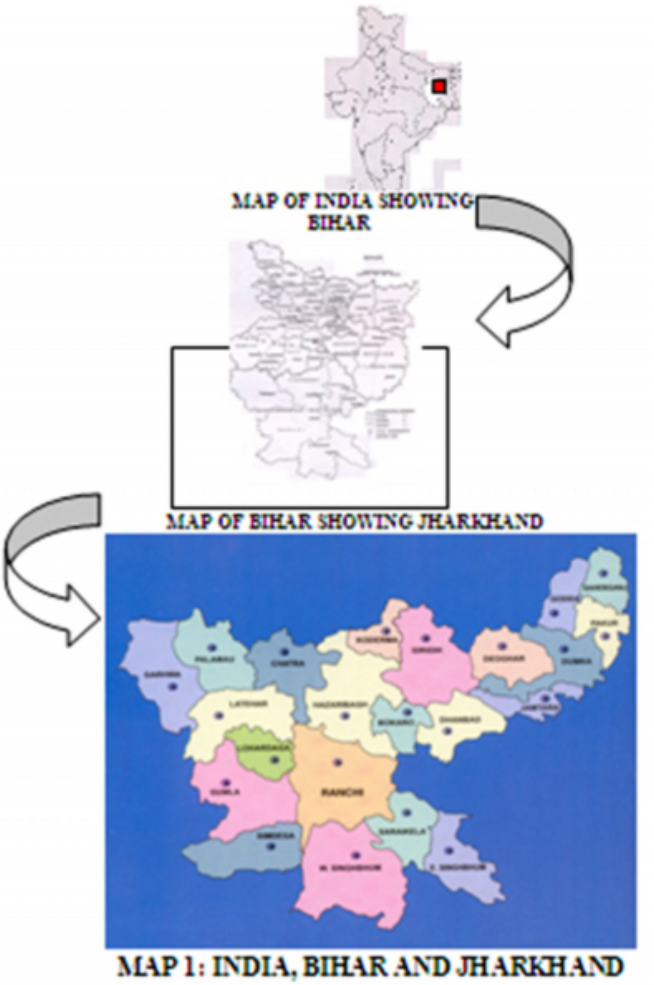
This paper, the first of a series, attempts to review the literature available on the various sites in the entire Chotanagpur region. The reason for this is the fact that even though this region is spread out over the states of Orissa, Madhya Pradesh, Bihar, Jharkhand and West Bengal, it has its own specific kind of topology and topography. Very few archaeologists, geologists and anthropologists have dealt with this entire range though all those who have worked here have made comments on this issue. Hence, in this paper, I shall look at attempts to unify the stratigraphic data of the region in order to find commonalities in this region. With such an overview one may then be able to check out and find the reasons for the pattern of archaeological records of this region and have an idea of the early prehistory of this region.

## INTRODUCTION

The Chotanagpur region includes the Indian states of Bihar and Jharkhand. Parts of it extend out into the states of Madhya Pradesh, Orissa and West Bengal also. For the purposes of this paper, the earlier borders of the Chotanagpur region would be used as a marker for the study since it simplifies the discussion of this area. It lies between 22° and 25° 30' N latitudes and between 83° 47' and 87° 50' E longitudes covering an area of about 86,239 sq. km. The average height of this region is about 2,000 feet (see maps 1, 2 and 3). Further, its geographical region, though may again be subdivided into other zones, seem to have similar overall characteristics. As a result of this extension, many sites of the surrounding areas have also been discussed to look for continuity and spatial distributions.

A second disclaimer, if you will. It is not possible to include in a brief research article the entire encyclopaedic panoply of sites. I have thus selected and chosen in order to gain an idea of the region as well as to reach certain conclusions. A preliminary outline of sites in the region and communities studied for the purpose has been given in the appendices.

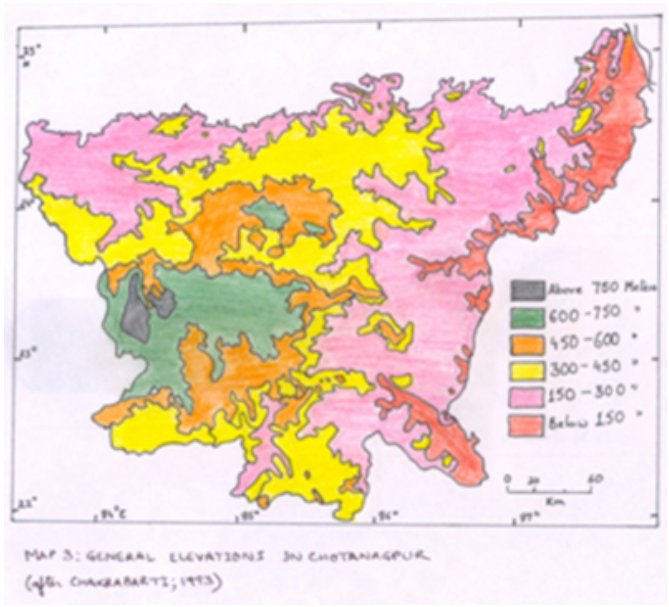
**Figure 1**




MAP 1: INDIA, BIHAR AND JHARKHAND

**Figure 2**


**Figure 3**




## STRATIGRAPHY

The Chotanagpur region is mostly composed of Archaean granite and gneiss rocks with patches of Dharwar series. Tertiary deposits are found in patches. Quaternary deposits cover a wide area.

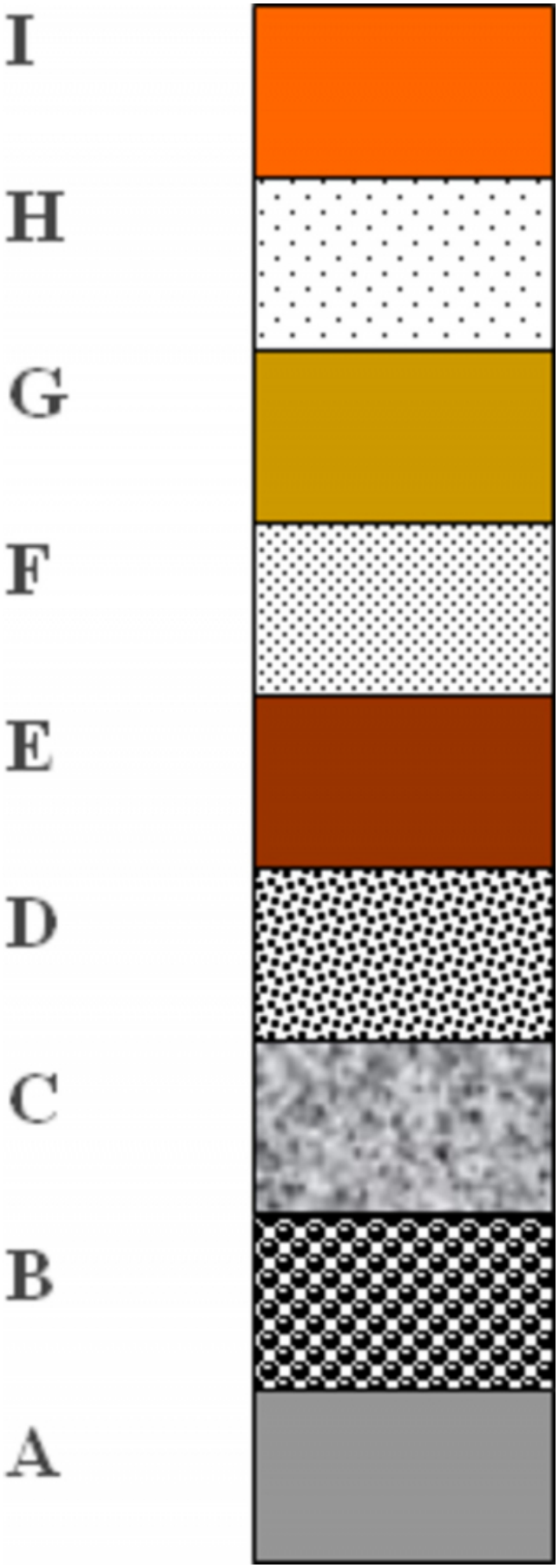
It has been seen by some authors that Acheulian occurrences are well-known in India, ranging from more than 350 to c. 150 kyr. “Although both Early and Late stages of the Acheulian have been identified…stratigraphic profiles showing the sequential development are absent, and the role of other factors, such as raw material variability for stone tool manufacture, has not been thoroughly examined.”… “Given the location and characteristics of hominid settlements in the Hunsgi-Baichbal Valley, and an inferred palaeo-monsoonal and semi-arid landscape on the subcontinent, a model of dry season aggregation and wet season dispersal has been hypothesized…Analysis of artefact assemblages has shown that the formation of Acheulian localities was influenced by a variety of geomorphological processes, but that certain technological and spatial distributions were the product of hominid behaviours…” (Korisettar and Petraglia; 1998: 8-9).

“Most Acheulian occurrences in India have been placed using relative age estimates in the later phases of the Acheulian, most presumably dating to the second half of the Middle Pleistocene and to the Late Pleistocene. A set of uranium series dates places Acheulian sites comfortably to above 350 kyr to c. 150 kyr” (Singhvi, Wagner and Korisettar; 1998: 71).

While the inhospitable terrain deters many, it is a surprise that this mineral rich zone has seen too few detailed geological surveys in the past few years. Due to the mining areas, Singhbhum, Dalbhum and surrounding areas have been surveyed recently but not other areas (see, for instance, Sarkar; 1982, Bose, Mazumder and Sarkar; 1997, Mazumder and Sarkar; 2004 and Mazumder; 2005 for some recent surveys). Urgent work is needed to be carried out in all these areas in order to confirm the stratigraphies seen here. Of course, the nature of funding is often dependent on the minerals thought to be found in the region.

A brief overview of the archaeological context of the region might help us to understand the pattern and nature of human colonization in this area from the earliest days. I begin with a brief summary of the layers found, as described by one author. Then, I shall show some of the variations found. It is impossible to explain here the total extent and range of the variations found. Finally, some authors have tried to link these variations into an overview. One of these shall be discussed here.

**Figure 4**



The bedrock is of archaean age, and has granite, gneiss and micaceous schists (A).

Over this lies a layer of compact pebbly secondary laterite (B). This layer is not represented everywhere. It is a product of the weathering of the laterite at higher levels and being deposited at a lower level. The bed has pebble-sized fragments of laterite, often consolidated into hard conglomerate, considered to have been formed at the beginning of Pleistocene, when the climate became wet.

On this lies a thin bed of mottled clay, formed as a result of decomposition of Archaean rock (C). In Singhbhum and Dhenkanal, a few choppers and hand axes were found at the junction of this bed and the overlying bed of gravel conglomerate. Hence, prehistoric cultures started after this period of mottled clay.

A layer of cemented gravel is laid with unconformity over this layer of mottled clay from 1m to 5m (D). On the banks of the main rivers, it may be lying directly on the bedrock. The bed may have pebbles of local origin. After deposition, calcareous and ferruginous cement causes their conglomeration. Along the riverbank this part is in complete submersion and is thus eroded in high floods. Lower Palaeolithic tools, distinct in colour from their surrounding matrix from this bed, then become heavily rolled. Those tools dug out are not rolled. Thus, perhaps, early man has evolved co-evally with these gravels. The Toba ash deposit found a few kms. southwest of Khamar has been dated to 0.3 myrs B.P. for the lower Palaeolithic culture from this bed.

The gravel conglomerate is overlaid by a bed of brown silt of about 1m 20cm thick. It is mixed with sand, grit and calcareous concretions. Secondary carbonates show that it was formed in a dry period and yields lower Palaeoliths (E).

On top of this is a layer of upper loose gravel bed, of about 1.5m to 2m thick, with the gravels smaller in size, angular in nature compared to those in the lower gravel beds (F). They are mixed with silt, sand, grit and lime concretions and again yield lower Palaeoliths.

Over this is a silt bed which is yellowish brown in colour and about 2m thick. It is finer in texture than the lower silt. It is rich in lime and sticky when wet (G). It is supposed to have been derived from the local ferruginous rocks and deposited during a dry period. Flake tools rich in Levalloisean technique are found from this zone.

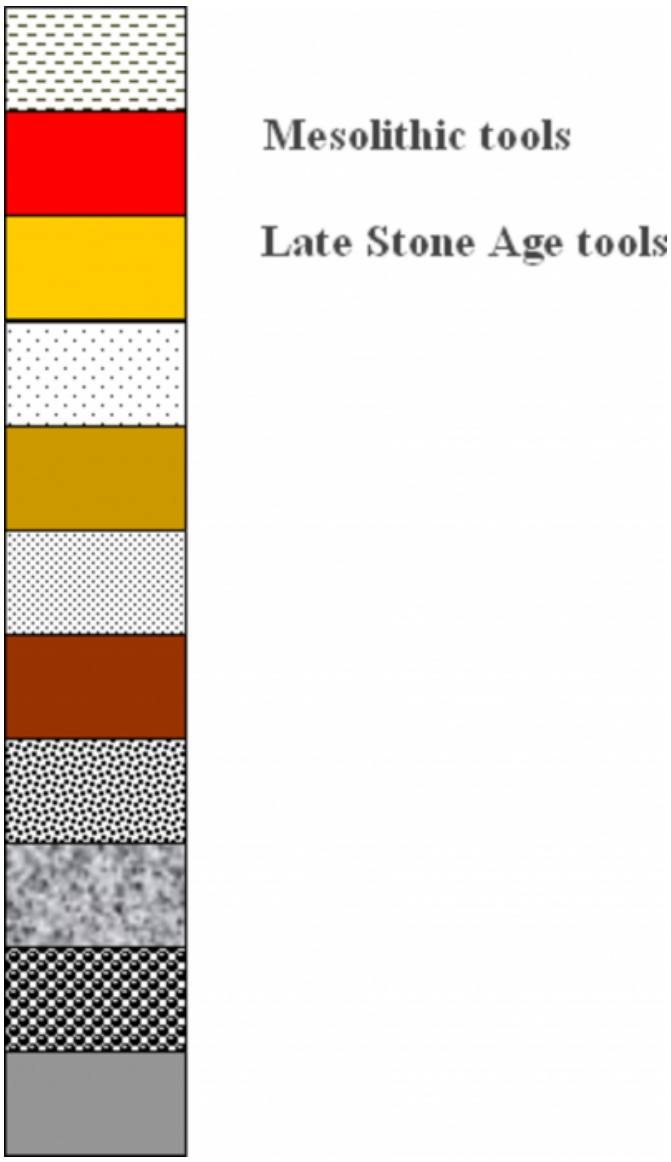
Further, on top are thin discontinuous layers of small gravels found in a complete section. These are angular and about 1 cm in diameter. They are mixed with lime concretions, perhaps formed at the shorter oscillations between wet and dry phases at the end of the Pleistocene period, the Late Pleistocene being dated to about 19,000 years B.P. (H). It contains the last phase of the Palaeolithic, rich in flake-blade and blade tools.

The final layer is a deposit of silt which is reddish brown in colour and is considered to be recent in origin (I). It yields Mesolithic tools from its lower parts, Neolithic from its middle part and chalcolithic culture from the surface (based on Ray; 2004).

Mohapatra in 1962 suggested a climatic background of the quaternary on the basis of stratigraphy, with three climatic cycles of alternating wet and dry conditions. The formation and deposition of lateritic gravel forms the starting point at the beginning of Pleistocene, going on to the alternating beds of gravel and silt marking alternating wet and dry climates. Some regional variability is present in the entire region (in Ray; 2004).

The account given by Ghosh in 1965-66 claims a slightly different stratigraphy. The red lateritic secondary gravel is missing and a yellow and brown sticky clay take its place. In these layers are found Late Stone Age tools. On top of this is a layer of red soil topped with recent alluvium (Chakrabarti; 1993: 52).

**Figure 5**




Roughly, however, the boulders in a lateritic matrix yield lower palaeolithic tools. The lateritic secondary gravel yields upper and middle palaeolithic industry and may be tentatively dated to about 20,000 B.P. The yellow soil layer, sometimes inter mixed with gravel, may be expected to yield mesolithic tools of the Early Holocene period.

At Bhimbandh, in the Kharagpur hills, the river sections of the Man were found to be as follows (Singh; 1959):

(a)Bed Rock

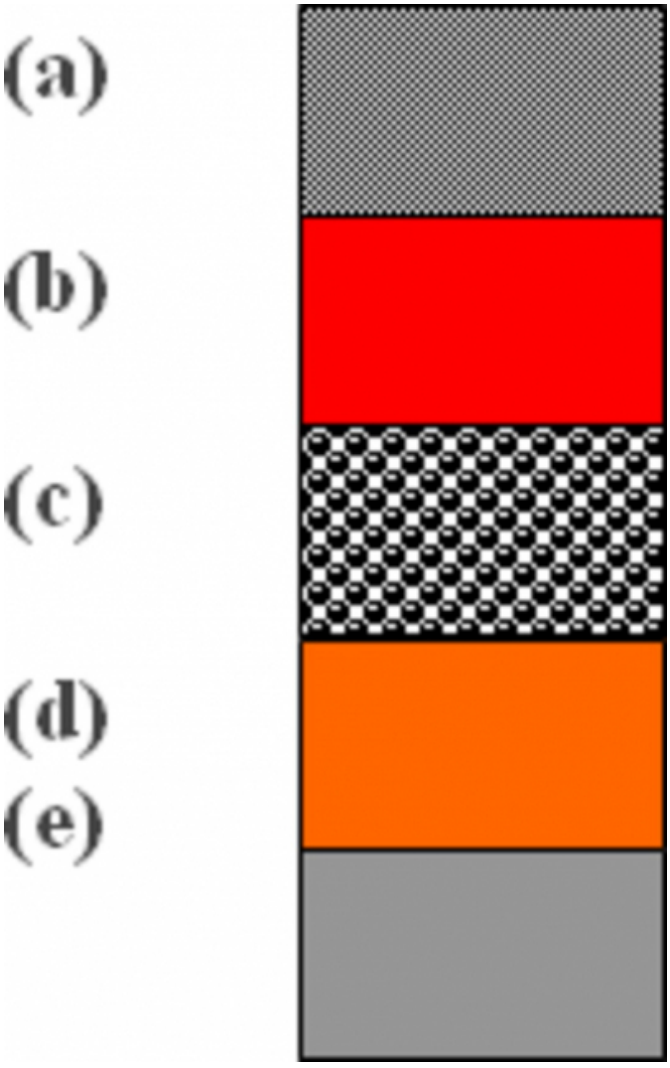
(b)Yellow and sometimes Red soil. Cementations are present at some places. This layer was formed in a period of less humidity. One tool was found in between the two layers, redeposited in the rainy season.

(c)Boulder deposit. This layer was formed in a period of intense humidity.

(d)Red soils. This is the second phase of less humidity. This contains Middle Palaeoliths and non-geometric microliths.

(e)Gray soils with ashy character mixed with gravels. This was laid in a dry period. Its grayness was due to the vegetation which dried and burnt in the summer. It is associated with some tools and potteries of later period.

**Figure 6**




At the Khiching region of Mayurbhanj district in Orissa, the following stratigraphy was observed by Chakrabarti in 1990:

(a)Surface soil with coarse red sand.

(b)The upper layer grades to reddish brown silty clay.

(c)Pebbly gravel, well-sorted, poorly cemented, iron oxide coating on sand grains and pebbles.

(d)Pebbly-cobbly gravel, moderately sorted, cemented by hydrated oxides of iron, implementiferous.

(e)Clay beds found under laterite layers of varying thickness, not fully exposed.

Near Burla, in Sambalpur District, Orissa, a two level stratigraphy was proposed by H.C. Sharma (1994):

(a) a calcareous fissured clay (grey in colour) containing only pebble tools (chopper and chopping tools).

(b) A lateritic boulder/pebble conglomerate containing handaxes, cleavers, choppers and a few chopping tools.

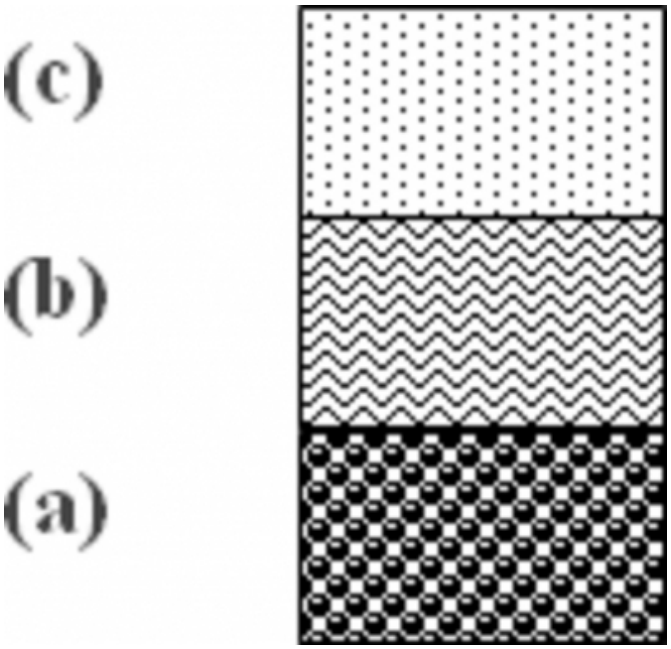
On the other hand, Chattopadhyay and Saha (2004) propose a similar context for all surface finds in the West Bengal region as follows and may be dated to the late Upper to Middle Pleistocene:

(a)Bed rock, mainly Archaean,

(b)Depositions of secondary or detrital laterite, and

(c)Alluvium.

**Figure 7**




Basak (1997) had sited a succession of layers in the following manner at Dhuliapur, at the Quaternary fill on the banks of the river Tarafeni:

(a)Thick reddish brown silt at the top, a terrace. On the surface one finds iron slag. Within 30 cm are found ash lenses, burnt soil and bone fragments.

(b)Microlith yielding colluvial gravel.

(c)Calcrete nodules and tubules (rhizoconcretions) in a grayish brown silty loam. Calcrete nodules are lag concentrates. Fragmentary and slightly abraded animal fossils are associated with this, on top of the calcrete. This was dated by Fluorine/Phosphate ratio for 10 bone samples and found to be 3-5 thus being close to Terminal Pleistocene. Fossils from Dhuliapur include black buck (Antilope cervicapra), spotted deer (Axis axis) and Bos namadicus. Such specimens have been found also from several river basins in parts of Bankura, Burdwan and Purulia districts of West Bengal. Thus, the microlithic context was correlated with the semi-arid grassland situation in the Terminal Pleistocene (18,000 – 10,000 B.P.). Thus, the authors confirm a Late Pleistocene aridity existing in the region.

(d) A thick brownish yellow clayey loam, mottled and oxidized by the development of desiccation cracks.

(e)Moderately consolidated gravel consisting of rounded to sub-rounded cobbles, pebbles of vein quarz, quartzite, sandstone and some metamorphosed basic rocks. It is moderately sorted clast supported gravel, cemented by calcareous material.

(f) Upper Lalgarh Formation. A few Lower Palaeolithic artifacts were recovered from here.

However, Chattopadhyay and Saha (2004) claim that in the Chotanagpur region the stratigraphy is varied and the context dictates the one to be used. They give the geological succession of the region as:

- Archaean
- Newer Dolerite
- Vindhyans
- Gondwana
- Rajmahal Trap
- Late Tertiary Gravels
- Laterite, and
- Alluvium.

A composite stratigraphy of Birbhum was seen from the following (Chakrabarti; 2002-2003: 24):

1. A thin veneer of humus
2. Yellowish brown to reddish brown silt and fine grained sand with grits of quartz and chert (slope wash material)
3. Yellowish red silt and medium grained sand with iron oxide granules and grits of rock fragments constituting mainly of vein quartz and chert (slope wash material), Holocene
4. Old surface built by alluvial and fluviatile fan Pleistocene sediments
5. Unconformity
6. Laterite bed comprising of nodules, quartz pebbles, fossil-woods in a clayey matrix
7. Plio-Pleistocene boundary
8. Unconformity
9. Yellowish felspathic mottled clayey bed
10. Conglomerate bed with pebbles of different rock types, fossil-woods, agate in a clayey matrix
11. Yellowish-greyish mottled horizontally bedded sand and mud
12. Unconformity
13. Jurassic volcanic rocks of the Rajmahal Traps
14. Subsurface basement ridge of Gondwana rocks
15. Basement granitoid Precambrian rocks, at places intruded by dolerite dykes.

In 1982 Asok Kumar Datta tried to create a unified stratigraphy of the West Bengal region as follows (p. 85):

**Figure 8**

TABLE SHOWING THE CORRELATION OF DEPOSITION OF DIFFERENT RIVERS OF WEST BENGAL ALONG WITH LITHIC INDUSTRIES

| QUATERNARY STAGES | SEDIMENTARY UNITS | | INFERRED CLIMATE | INDUSTRIES |
|---|---|---|---|---|
| | TRIBUTARIES | MAJOR RIVERS | | |
| HOLOCENE | RECENT DEPOSITS | | RELATIVELY WET | MICROLITHS |
| UPPER PLEISTOCENE | UPPER SILTY CLAY | | DRY CONDITION | UPPER PAL. MIDDLE PAL. LOWER PART A B C HEIGHT III II I |
| | DETRITAL LATERITE | UPPER LOOSE GRAVEL | WET CONDITION | |
| MIDDLE PLEISTOCENE | DETRITAL LATERITE | SILTY CLAY | DRY CONDITION | |
| | DETRITAL LATERITE | LOWER GRAVEL CONGLOMERATE | WET CONDITION | |
| LOWER PLEISTOCENE | MOTTLED CLAY | | DRY CONDITION | ? ? |
| | LATERITE MIXED WITH GRAVELS | ? ? | WET CONDITION | ? ? |

In spite of all these attempts, it must be acknowledged that there are problems with the fixing of the Plio-Pleistocene boundary itself, even after all the evidences have been taken into account (Ganjoo; 1990).

Having put all of these issues into context, it may be seen that the Chotanagpur region has many inherent complexities with regard to stratigraphy and the context of many of the sites found. A majority of these sites are surface finds, showing that early human populations may have existed here perhaps well into the historical period. Our present knowledge in these areas definitely needs to be upgraded. So far, the geologists working here have been attracted by the monetary worth of the minerals that are to be extracted from this mineral-rich zone. Their aims and objectives for checking out the stratigraphy were different and guided by a certain kind of political economy. Now, perhaps, a large number of them need to check out the areas mentioned above to clarify the range and location of the strata that may house the artifacts of early human beings. It is only then that we may begin to have an objective chronology of the region's rich archaeological heritage.

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