



# Late-Pleistocene/Holocene Adaptation Strategies at Central India

(with Special Reference Chopanimando, Belan Valley)



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# The Study Area

## The Vindhyan Region

- **Comprises parts of Uttar Pradesh and Madhya Pradesh**
- **Bounded on the north by the Ganga valley, on the south by Son valley**
- **The region is divided into two parts**
  - 1. Kaimur (southern part): the hilly part**
  - 2. the Plateau (northern part): the evenly undulating area merging gradually with the Ganga alluvium**



# Stone Age Sequence of the Study Area & Adjoining Parts

**Neolithic**

**5500 B.C.:** Koldihwa

**Advanced-Mesolithic/Proto-Neolithic**

**8080 B.C.:** Mahagara

**Mesolithic**

**8365B.C. :** Sarai-Nahar-Rai

**Epi-Palaeolithic**

**23840 B.C., 17765 B.C.:** Chopanimando

**Upper Palaeolithic**

**39 kya:** Baghor (??)

**Microlithic:** 48 kya: Dhaba (??)

**Middle Palaeolithic**

**80-60 kya:** Dhaba

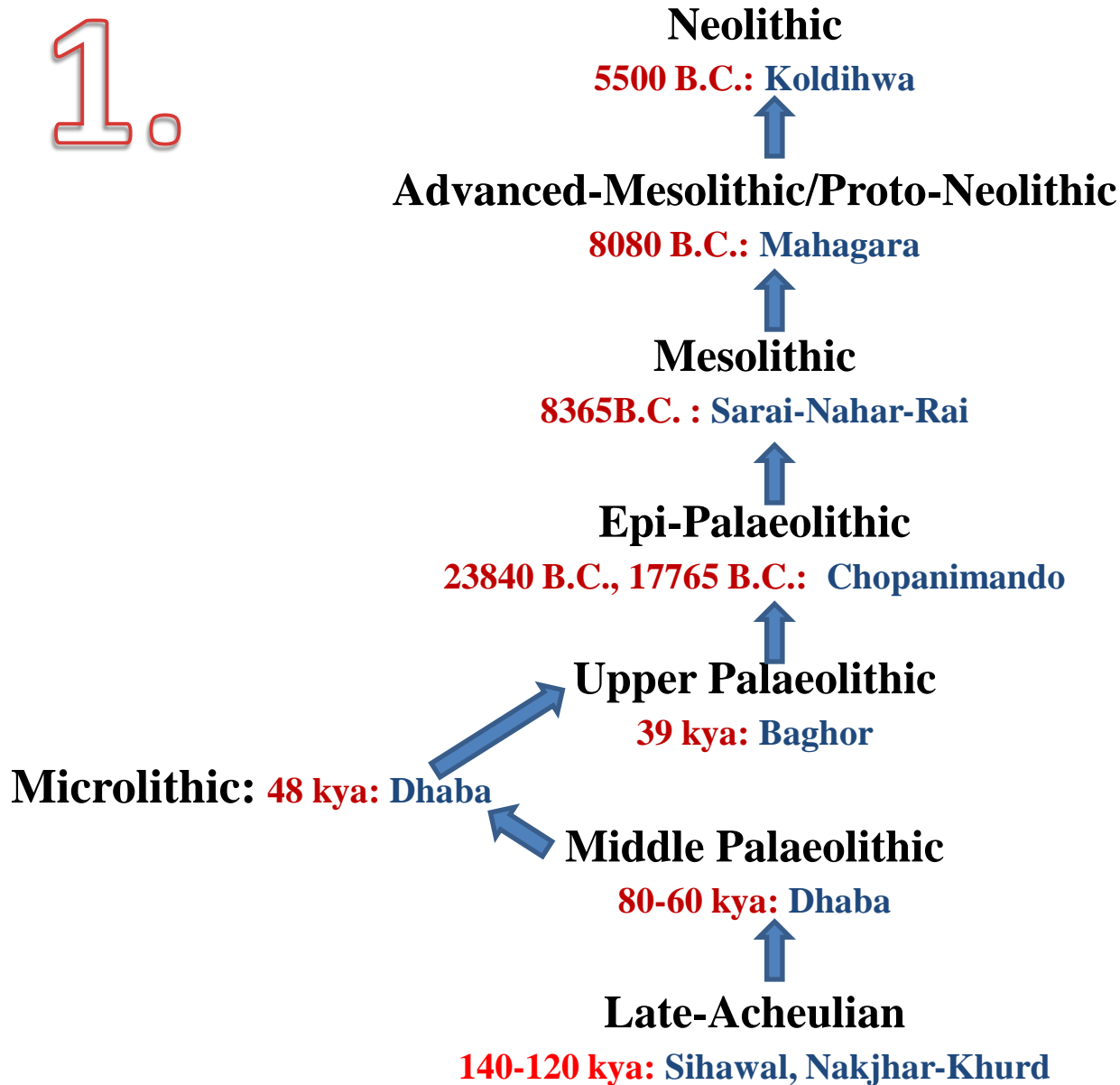
**Late-Acheulian**

**140-120 kya:** Sihawal, Nakjhar-Khurd



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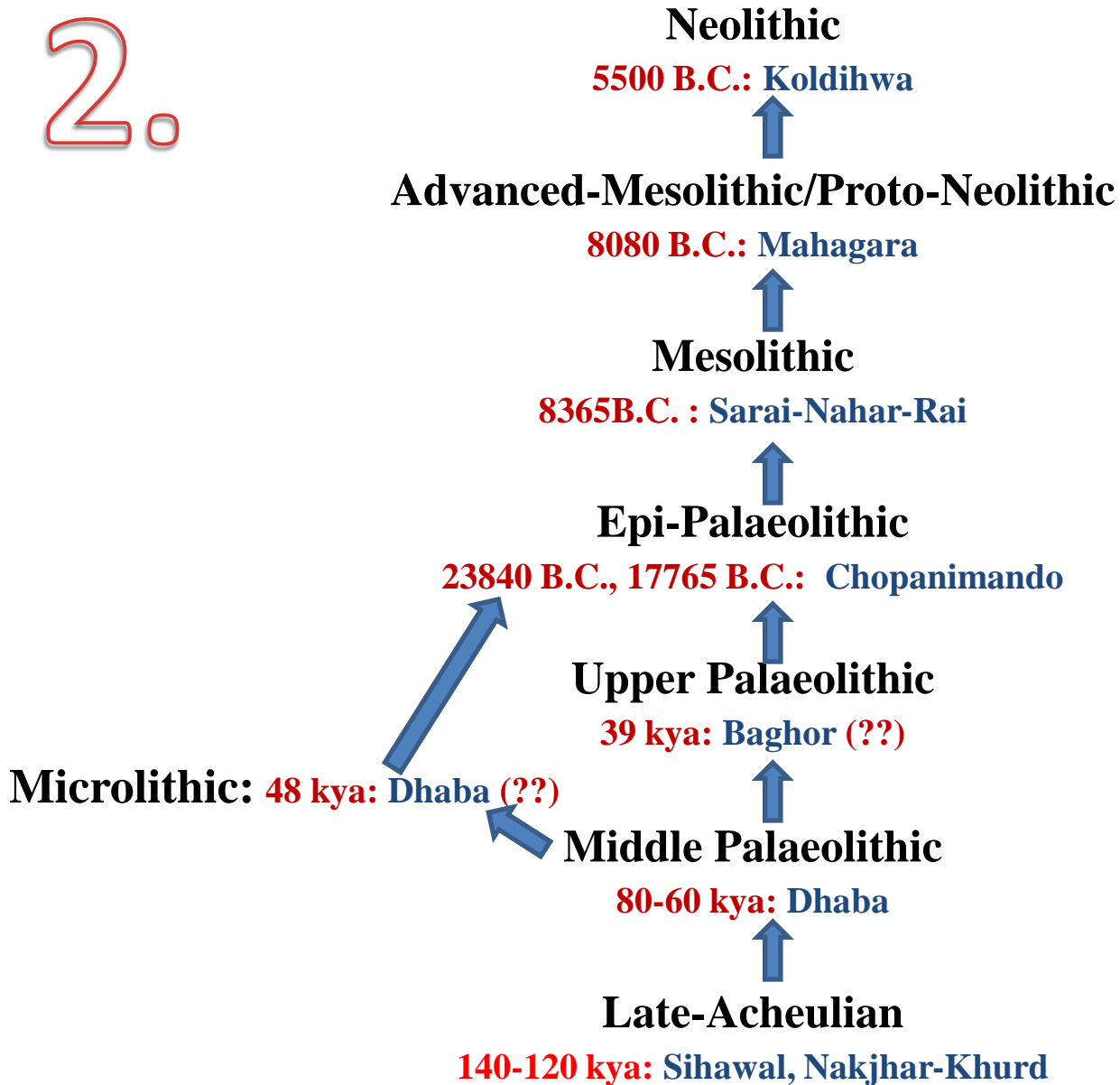
1.



# Stone Age Sequence of the Study Area & Adjoining Parts



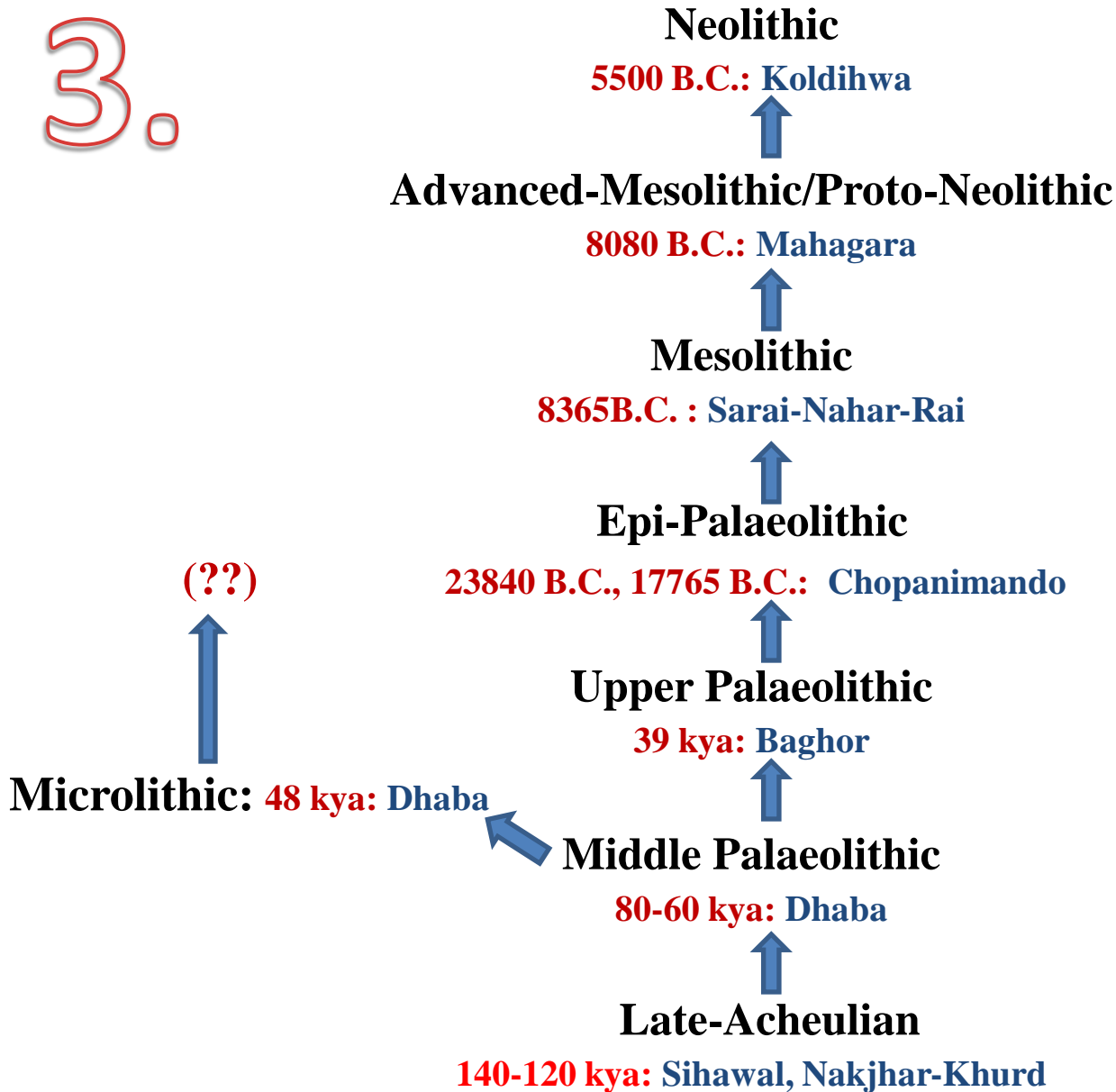
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# Stone Age Sequence of the Study Area & Adjoining Parts

3.





# Some Most Challenging Debates/Question

**Why** was such continuous Stone Age occupation in this region?

**How** did the Stone Age hominin manage to survive for such long?

**When** the region was occupied by different techno-cultural-groups? For how long had they survived (Parallel/Individual)?

**Who** were the authors of these?



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# Geographical Setting of the Region

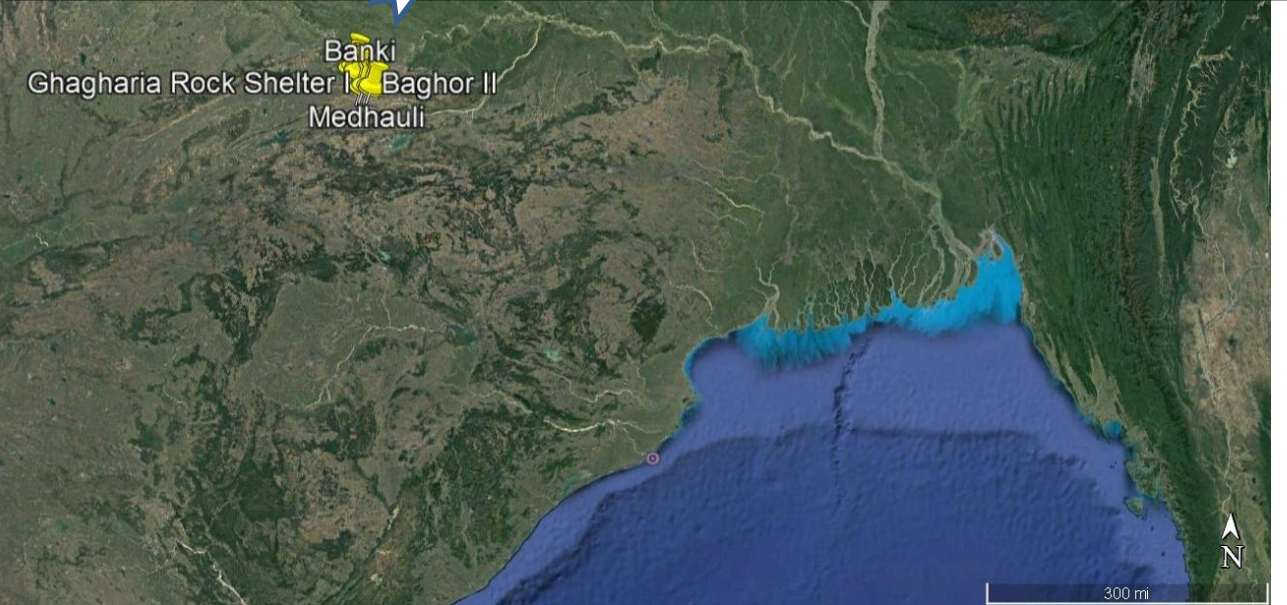
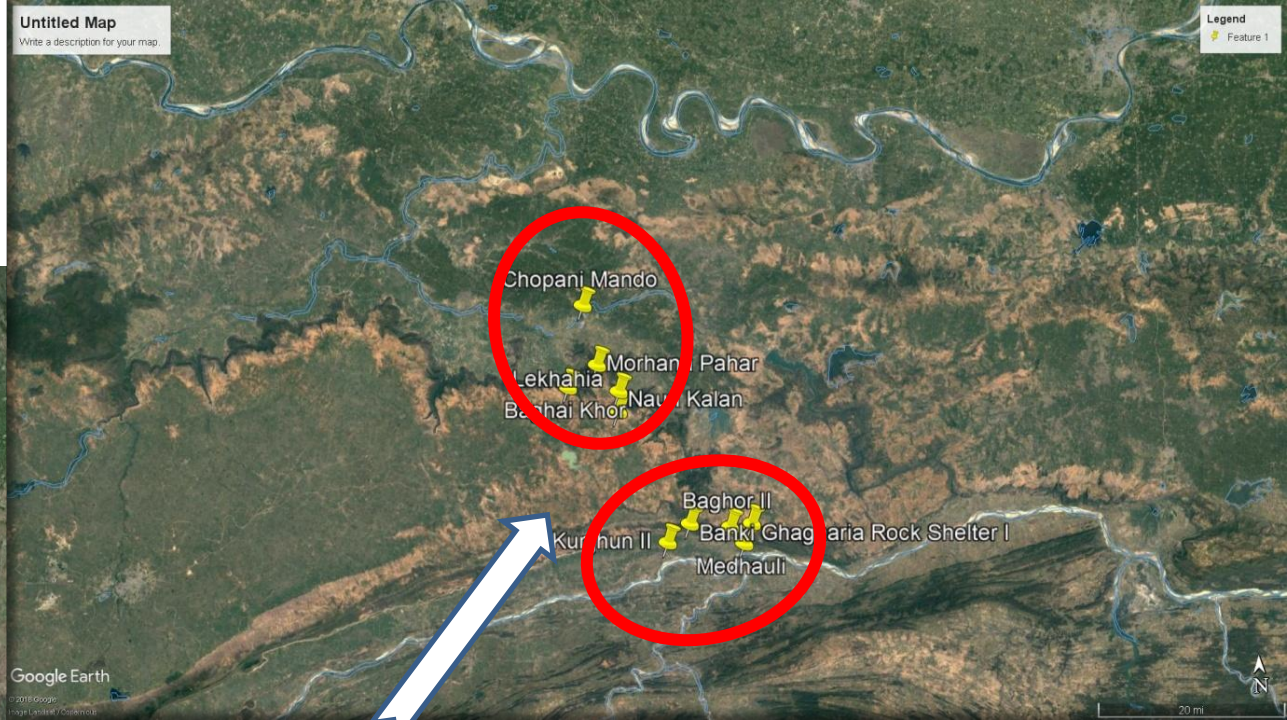
- **The hilly tracts of Kaimur (Vindhyas) in south**
- **The alluvial basin of River Ganga in north**
- **The area in between has been drained by several small rivers and channels like: Belan and its tributaries such as: Adva, Seoti, Lohanda, Nadoh, Tundiari, Gurma, etc.**
- **The southern part of this region is drained by River Son and its tributaries such as: Pandu, Kanhar, Rihand, Bijul, Gopad, Banas, Mahanadi etc.**



Untitled Map  
Write a description for your map.

Untitled Map  
Write a description for your map.

Legend  
Feature 1



**The Late-Pleistocene/Holocene Site Distribution Pattern at Vindhyan Region (After: Google Earth Image)**



# Chopani Mando: Location



- ❑ The site is situated on a terrace of old channel of the river Belan at a distance of 77km from Allahabad, Uttar Pradesh, India



**Daiya Section (section on the River Belan)**




# Chopani Mando: Stratigraphy and Cultural Sequence

Stratigraphy	Late-Pleistocene/Holocene Cultural Sequence
<b>Light brownish silty clay loam</b>	<b>Advanced Mesolithic or Proto-Neolithic</b>
<b>Brownish black loose ashy layer</b>	
<b>Debris</b>	
<b>Brownish black silty clay loam contains sporadic stone fragments</b>	
<b>Light brownish black coloured heavy silty clay loam contains small stone chips and very tiny kankar</b>	<b>Early Mesolithic: Geometric Microliths</b>
<b>Brownish black coloured heavy silty clay loam</b>	
<b>Heavy brownish black coloured silty clay loam with very small sized kankar nodule</b>	
<b>Hard and compact brownish black silty clay loam containing small kankar nodules</b>	
<b>Very dark grey brownish clay loam with sporadic tiny kankar nodules</b>	<b>Early Mesolithic: Non-Geometric Microliths</b>
<b>Dark brown clay</b>	<b>Epi-Palaeolithic</b>
<b>Fine sandy clay which is comparatively compact dark grey brownish deposit</b>	
<b>Bed rock</b>	<b>-</b>




# Chopani Mando: Epi-Palaeolithic Findings (Tools)

<b>Dominant raw material</b>	<b>Chert (Source: Son Valley)</b>
<b>The assemblage includes</b>	<b>core, flakes unfinished and finished tools and debitage</b>
<b>The percentages of finished and unfinished tools are</b>	<b>Finished: 69.55%</b> <b>Unfinished: 30.45%</b> 
<b>Finished tools comprise</b>	<b>blades, burins, parallel sided blades, blunted backs, borers, points and scrapers of various types</b>
<b>The dominant variety is</b>	<b>parallel sided blade(37.17%)</b>
<b>Second dominant type is</b>	<b>scraper (24.7%)</b>



# Chopani Mando: Mesolithic Findings (Tools) from II-A

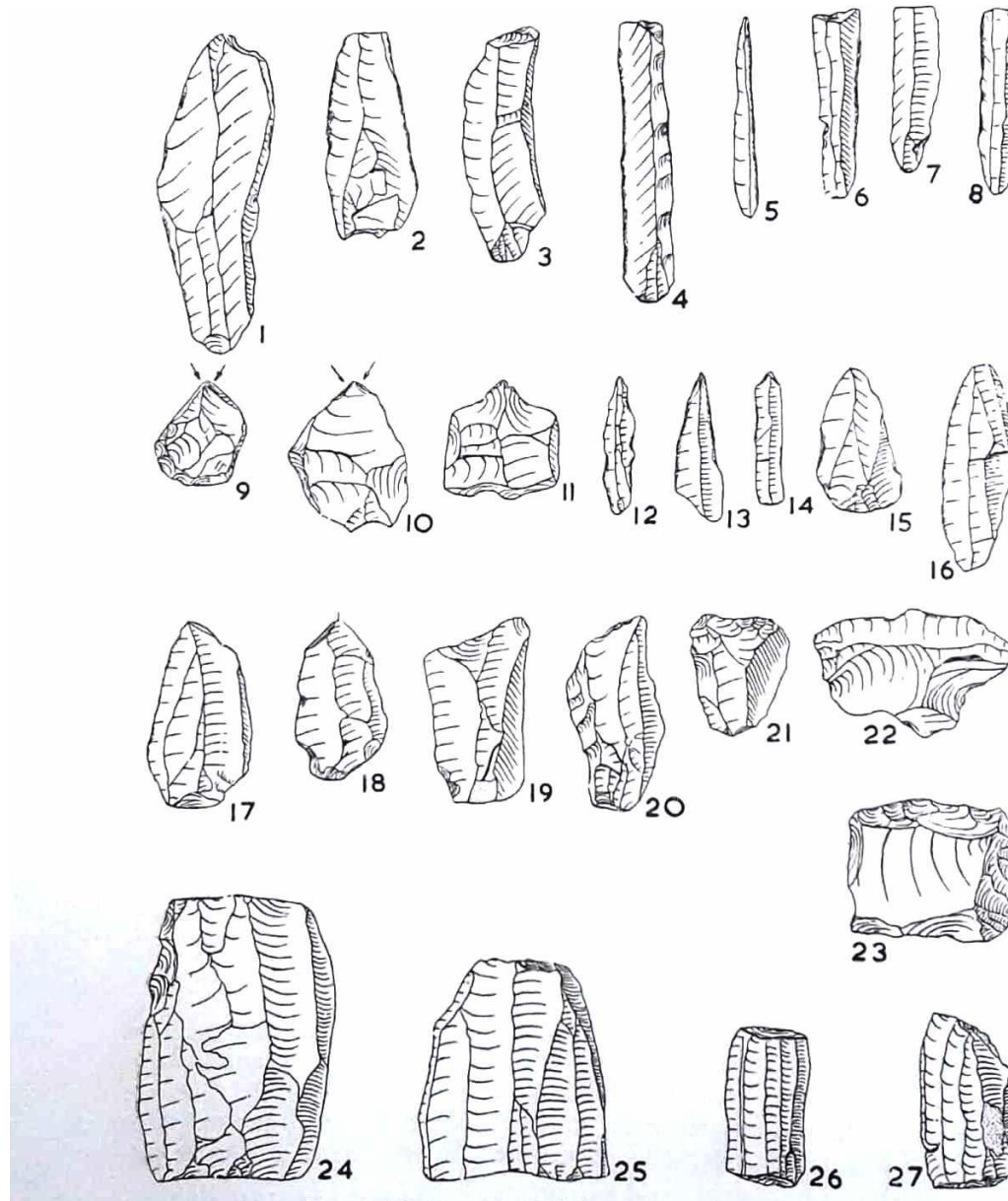
Dominant raw material	Chert (Source: Son Valley)
The assemblage includes	core, flakes, waste product and finished tools
The percentages of finished and waste products are	Finished: 12% Waste Product: 88% 
Finished tools comprise	parallel sided blade, blunted back blade, <b>penknife, notched blade</b> , borer, point, scraper, <b>broad and long blade</b> , burin
The dominant variety is	parallel sided blade (35.5%)
Second dominant type is	scraper (20.6%)



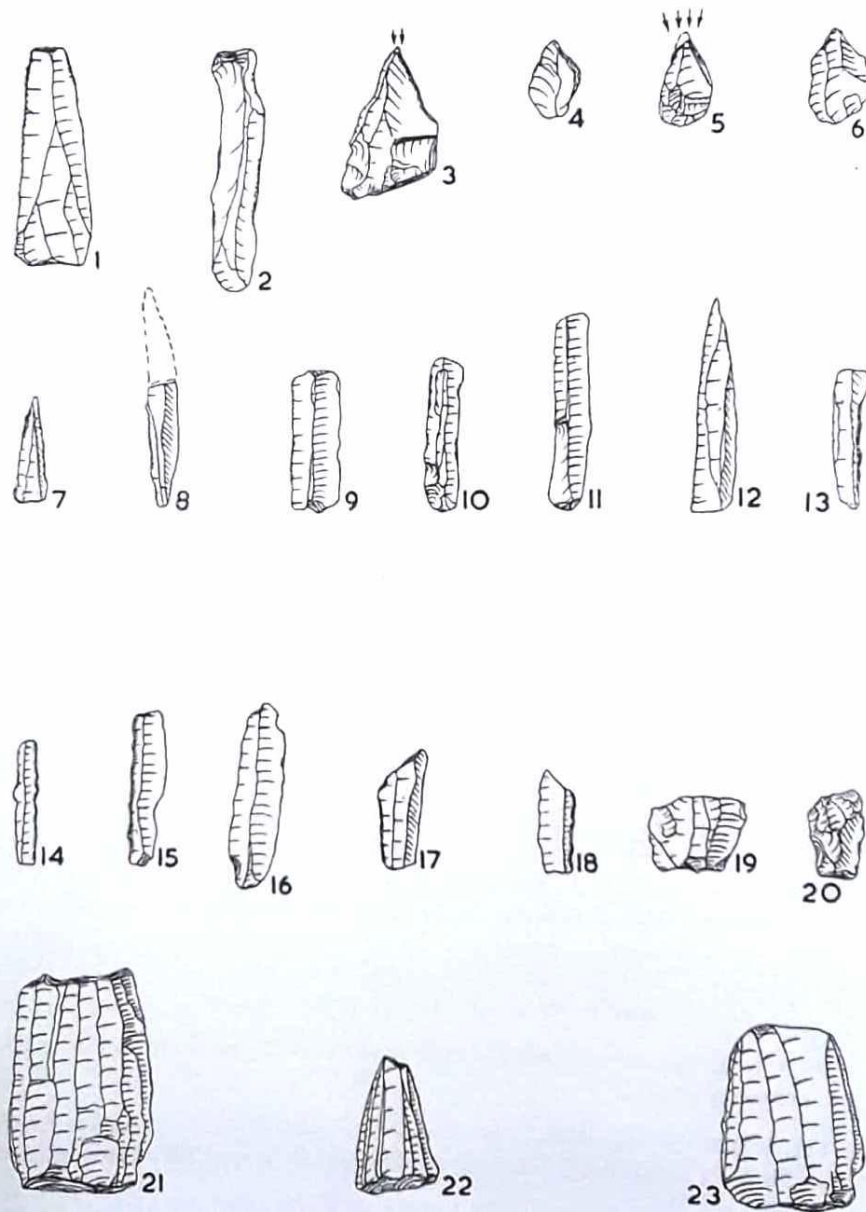
# Chopani Mando: Mesolithic Findings (Tools) from II-B

<b>Dominant raw material</b>	<b>Chert (Source: Son Valley)</b>
<b>The assemblage includes</b>	<b>core, flake and finished tools</b>
<b>The percentage of finished tools</b>	<b>decreases (10.26% of the whole assemblage)</b>
<b>Finished tools comprise</b>	<b>parallel sided blade, blunted back blade, notched blade, penknife blade, <b>serrated blade</b>, burin, <b>micro-burin</b>, borer, point, scraper, <b>lunate, triangular, trapeze</b></b>
<b>The dominant variety is</b>	<b>parallel sided blade (25.3%)</b>
<b>Second dominant type is</b>	<b>scraper (17.48%)</b>

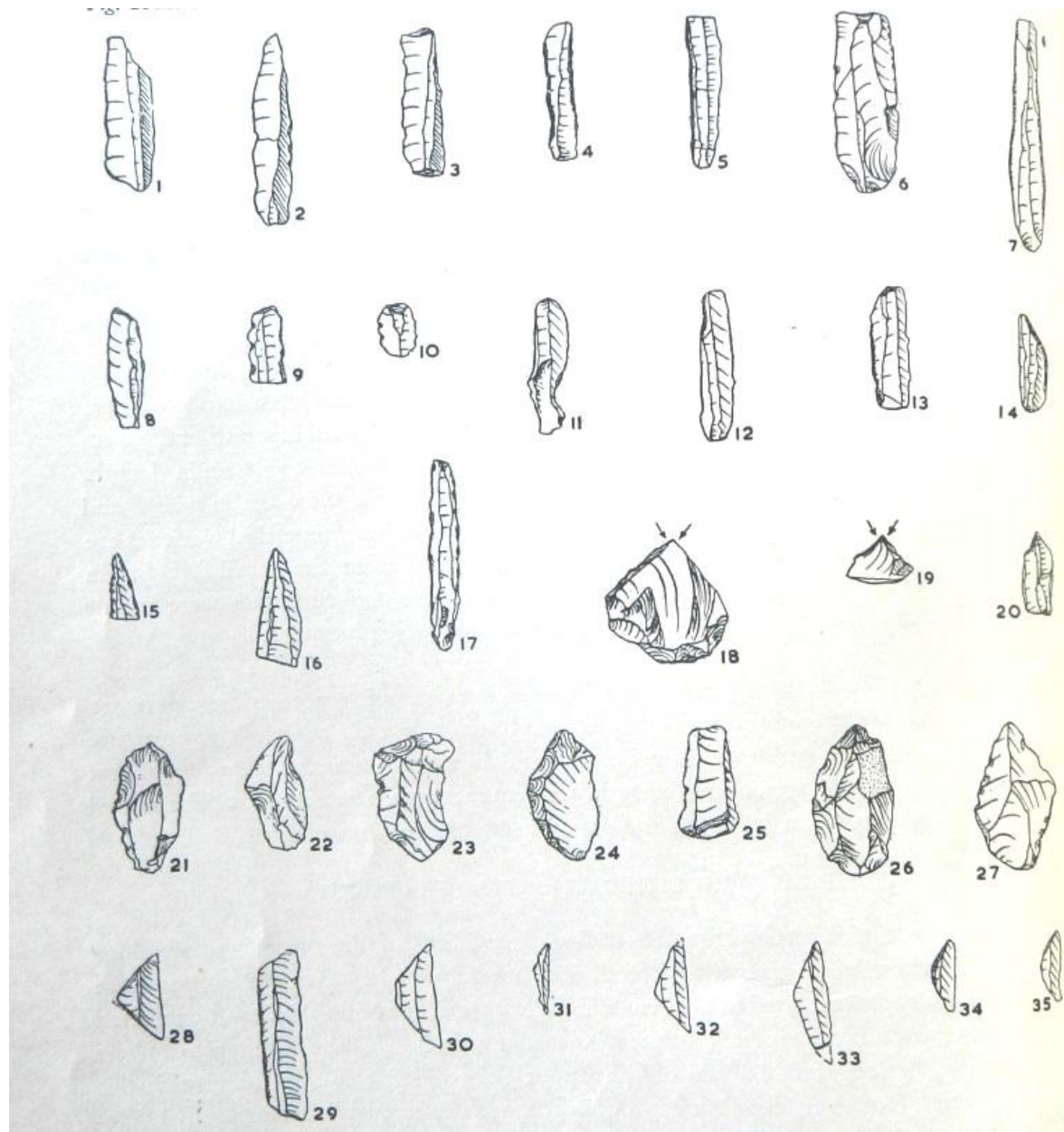




**Tools belong to Epi-Palaeolithic Phase (I) from Chopani Mando  
(After: Sharma, 1980)**



**Tools belong to Mesolithic Phase (II-A) from Chopani Mando  
(After: Sharma, 1980)**

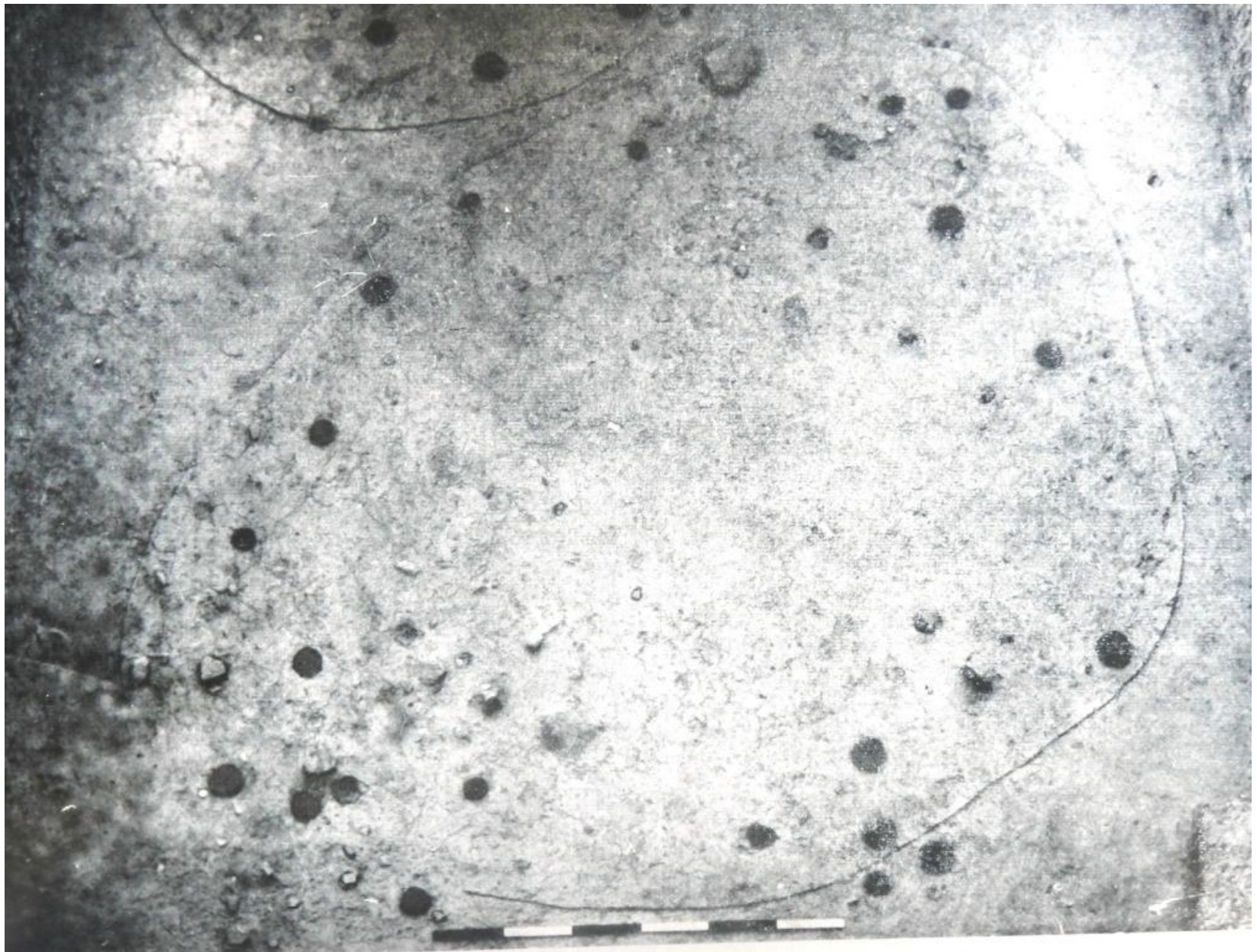


**Tools belong to Mesolithic Phase (II-B) from Chopani Mando  
(After: Sharma, 1980)**



# **Chopani Mando: Mesolithic Findings (Habitation) from II-A & B**

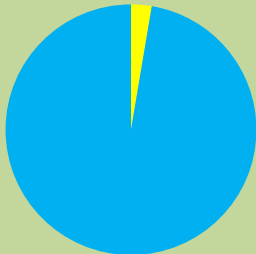
- **7 huts are found**
- **circular in shape**
- **having post holes/ stone fragments on the periphery**
- **These huts are usually having stone paved floors**
- **These floors are having the evidence of several stone pieces, pebbles, nodules, microliths, small pieces of bones, and burnt clay lumps with reed marks etc.**
- **Fire-place was also found**

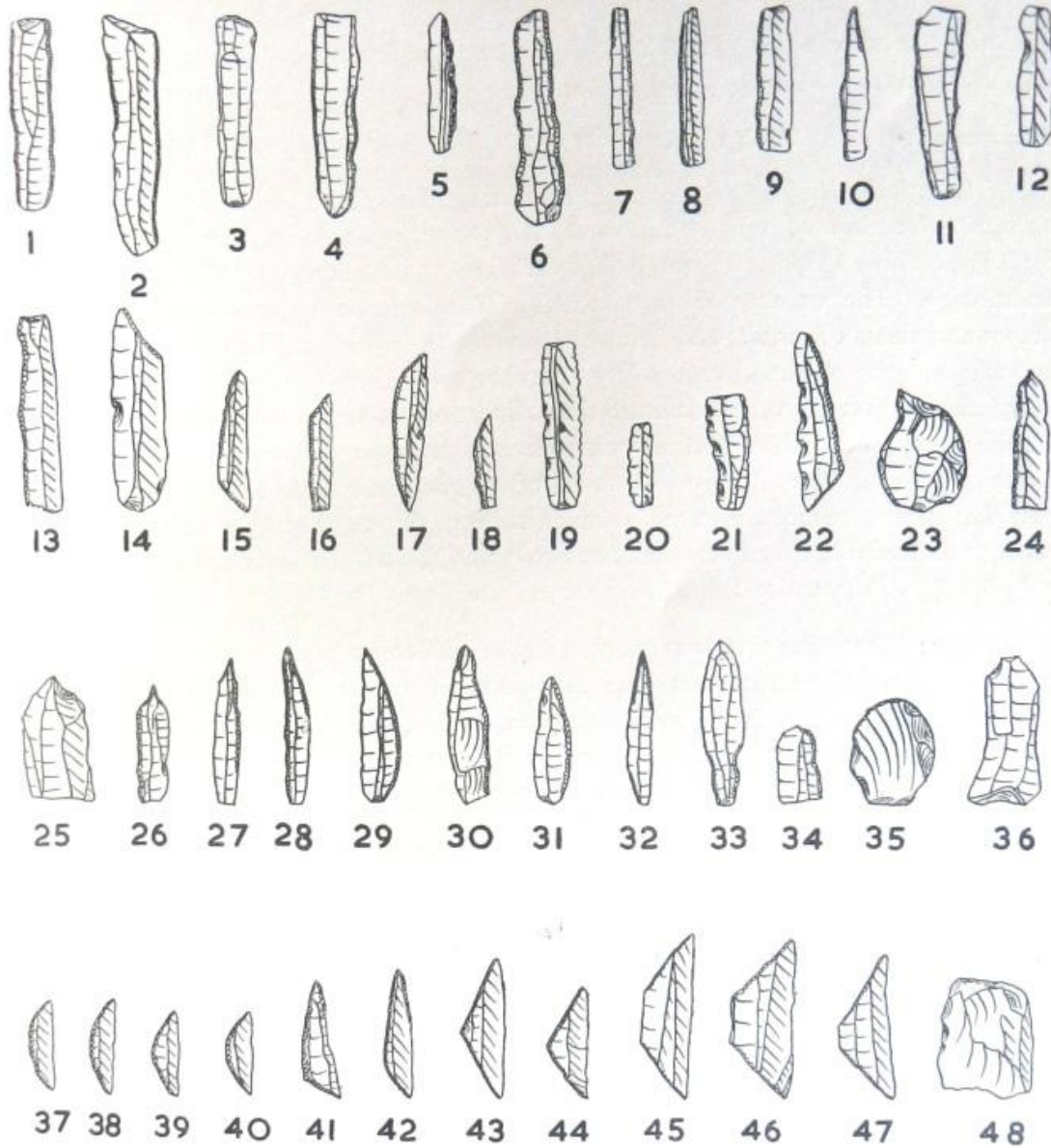


**Floor with Post Holes belongs to Mesolithic Phase (II-A) from Chopanimando  
(After: Sharma, 1980)**



# Chopani Mando: Advanced Mesolithic Findings (Tools)

<b>Dominant raw material</b>	<b>Chert (Source: Son Valley)</b>
<b>The assemblage includes</b>	<b>cores, flakes, finished and unfinished tools</b>
<b>The percentages of finished and unfinished tools</b>	<b>Finished: 8.74%</b> <b>Unfinished: 91.26%</b> 
<b>Finished tools comprise</b>	<b>parallel sided blade, backed blade, notched blade, penknife, serrated blade, micro-burin, borer, points and arrow-heads, scrapers, lunates, triangles, trapeze, tranchet or transverse arrow-head</b>
<b>The dominant variety is</b>	<b>parallel sided blade (35.5%)</b>
<b>Second dominant type is</b>	<b>scraper (20.6%)</b>
<b>Other</b>	<b>and hammer stones, sling ball, querns, mullers, ring stones etc.</b>

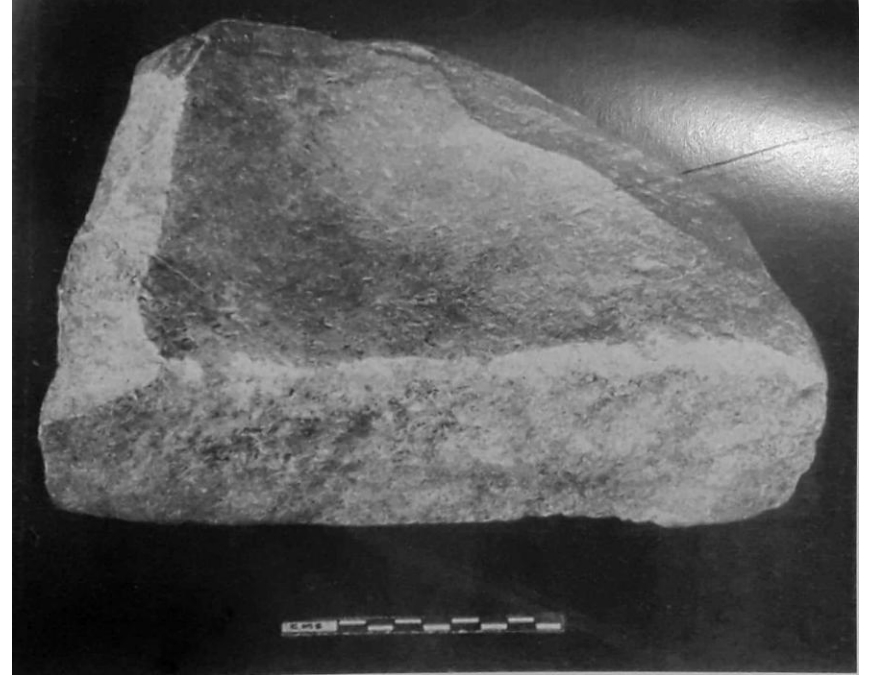


**Tools belong to Advanced Mesolithic Phase from Chopani Mando**

**(After: Sharma, 1980)**



**Ringstone (in *situ* position) belongs to  
Advanced Mesolithic Phase from  
Chopani Mando  
(After: Sharma, 1980)**



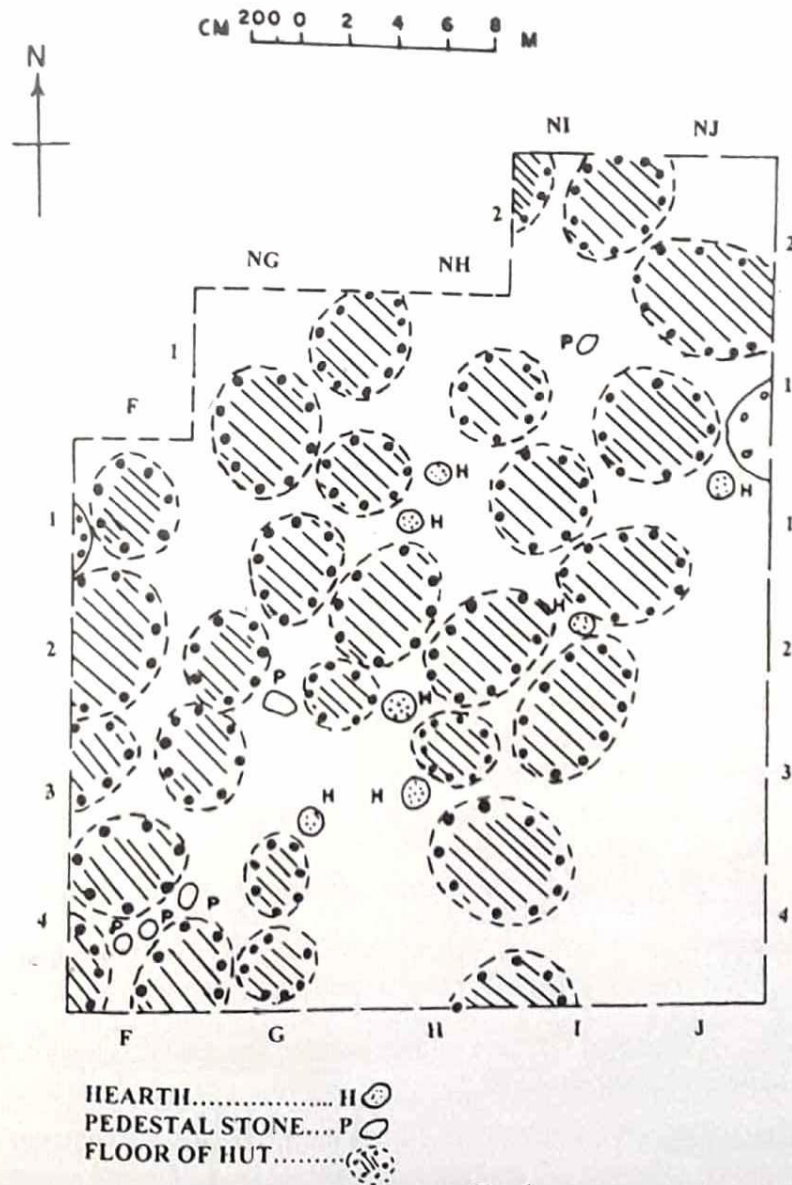
**Quern belongs to Advanced Mesolithic  
Phase from Chopani Mando  
(After: Sharma, 1980)**





# **Chopani Mando: Advanced Mesolithic Findings (Habitation)**

- **13 huts are exposed**
- **round and oval in shape and they are so closely situated to each other and look like bee-hive**
- **The floors of these huts littered with large number of stone pieces and microliths, numerous anvils and hammer stones, sling ball, pieces of flat querns, mullers, ring stones, burnt clay lumps, fragments of bones, pot sherds etc.**
- **4 circular pit-hearths have also been found contained loose ashy soil, fragmentary bones, charcoals, burnt clay clods and occasionally microliths and stone pieces**
- **Evidence of storage bins have also found**

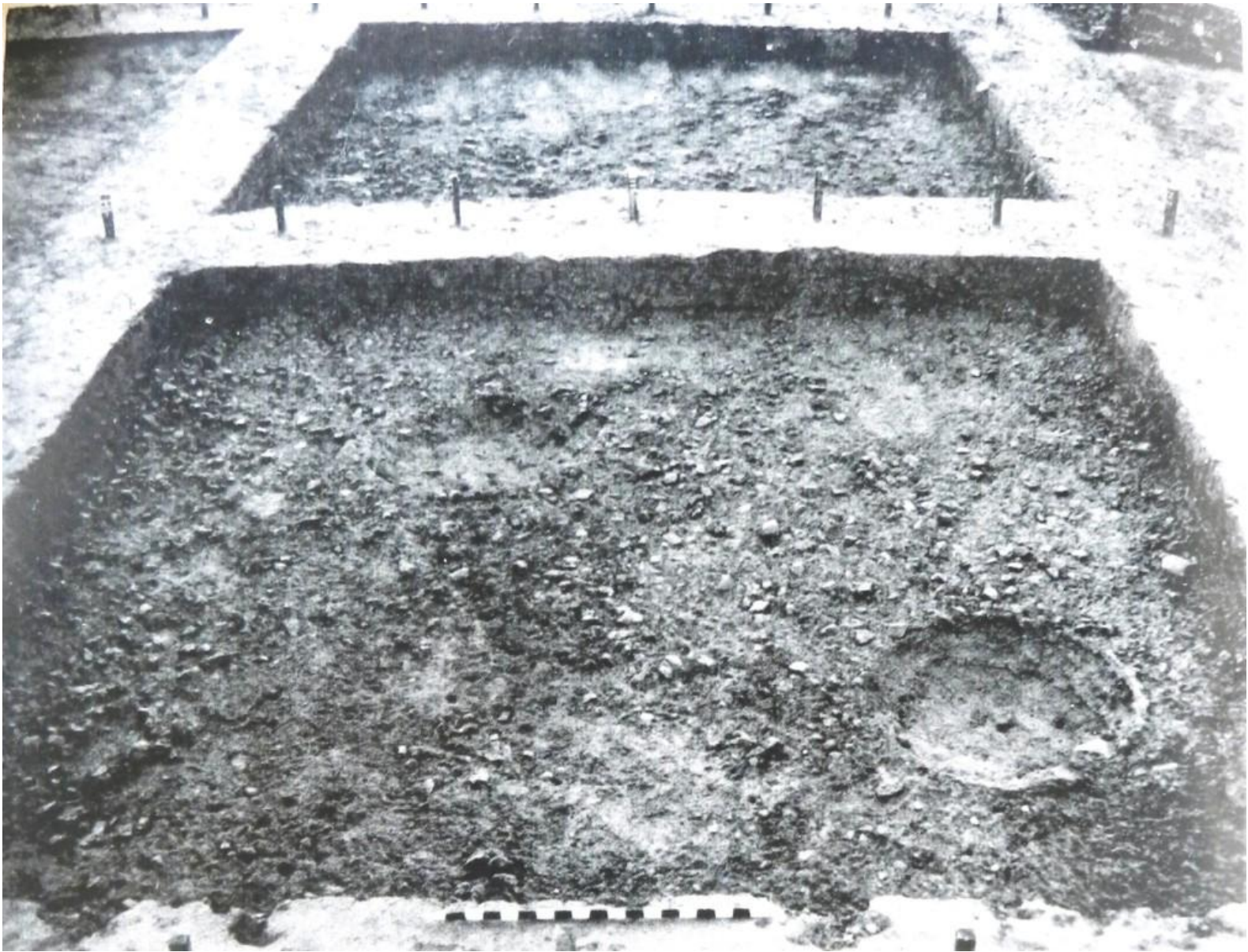


**Plan View of Settlement of Advanced Mesolithic Phase of Chopani Mando  
(After: Misra, 2002)**



**Hearth with Animal Bone Fragments from Advanced Mesolithic Phase of Chopani Mando**

**(After: Sharma, 1980)**

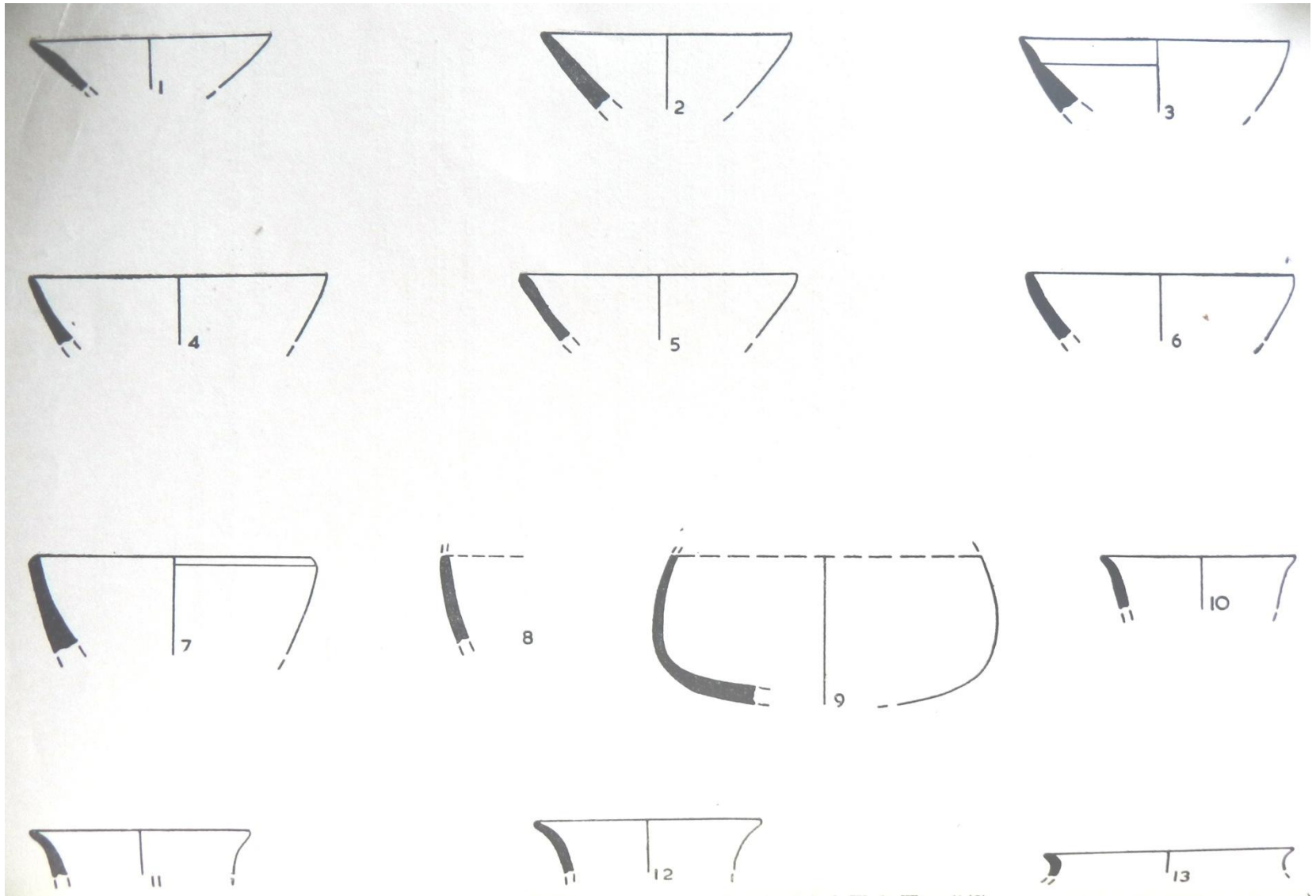


**Pit-Hearth from Advanced Mesolithic Phase of Chopani Mando  
(After: Sharma, 1980)**

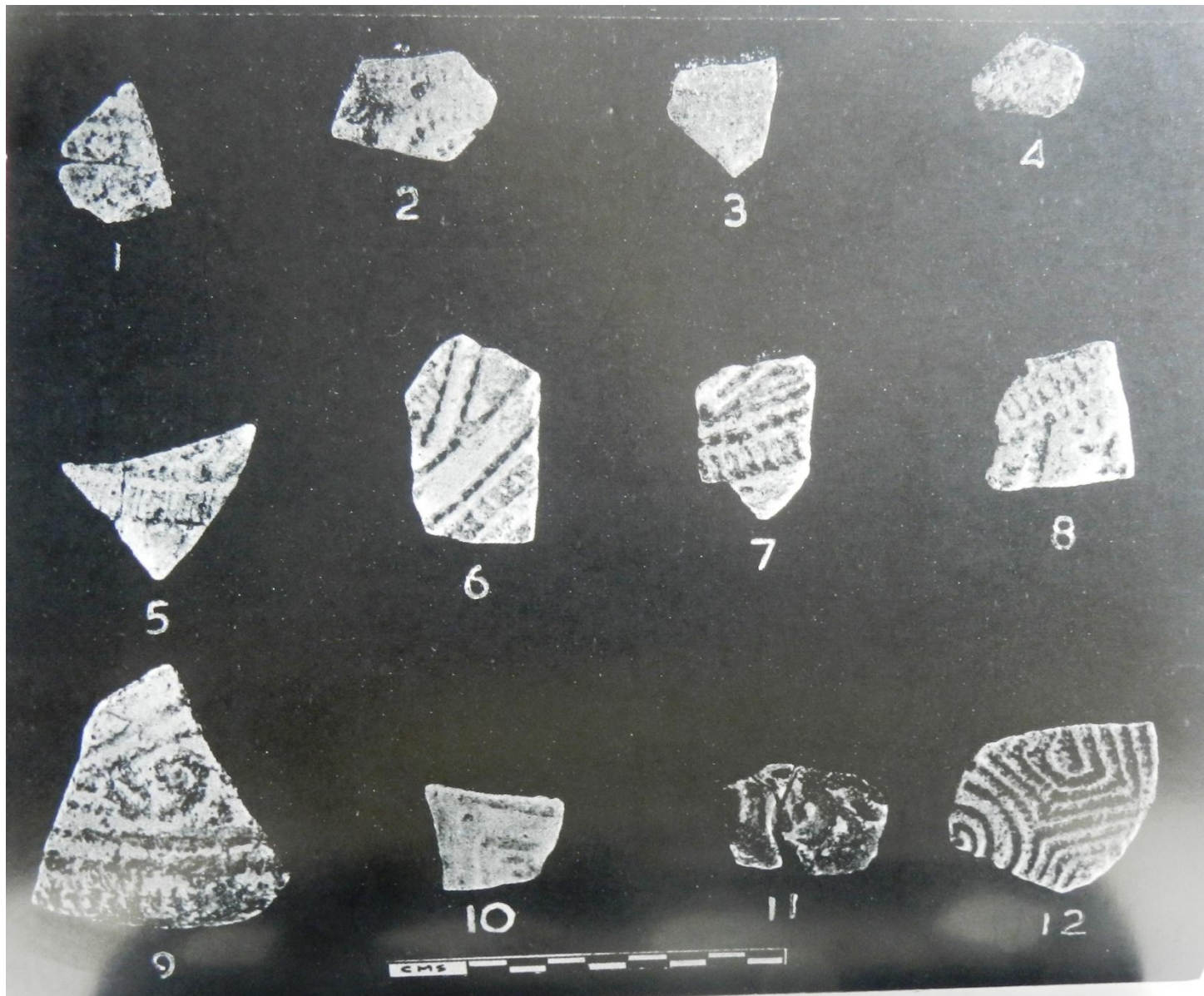


# **Chopani Mando: Advanced Mesolithic Other Findings**

- **Other stone objects like: ring stone, hammer stone, anvil, hammer-cum-anvil, rubber and muller, quern, stone ball etc.**
- **Handmade and very fragile potteries have been found**
- **The potteries are mostly red ware and brownish grey ware and some sherds are marked by impressed design**
- **The shapes of these potteries include: bowls, miniature vase etc.**
- **Remains of bamboo and charred or carbonised wild variety of rice have found**
- **Fragments of burn clay lumps have also been found**
- **Animal bones found**
- **Single barrel shaped stone bead has found**



**Pottery Shapes belongs to Advanced Mesolithic Phase of Chopanimando  
(After: Sharma, 1980)**



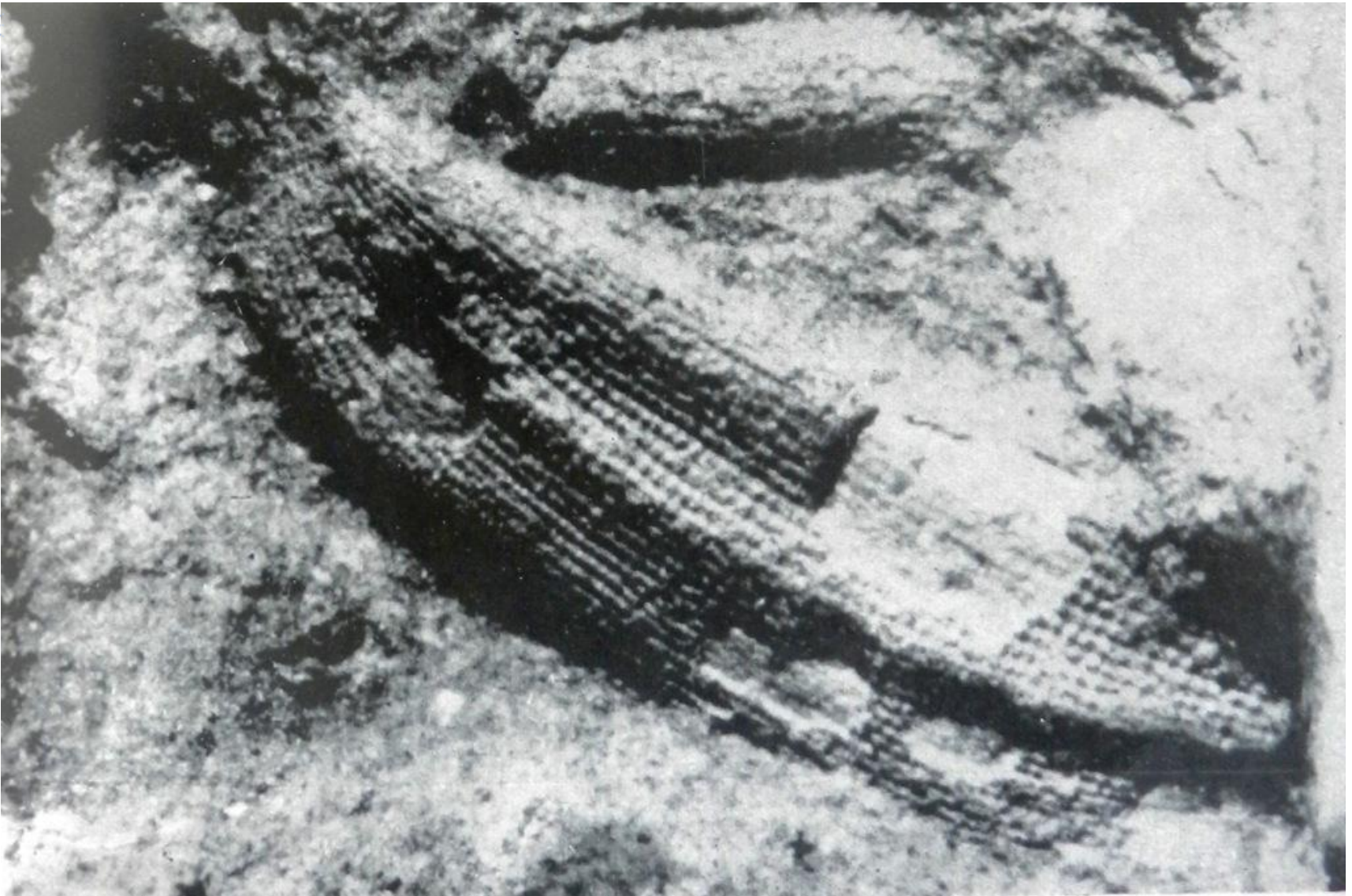
**Impressed Designs on Pot-Sherds belongs to Advanced Mesolithic Phase of Chopanimando**

**(After: Sharma, 1980)**



**Imprint of Rice on Clay Lump belongs to Advanced Mesolithic Phase of Chopanimando  
(After: Sharma, 1980)**





**Close-up view of rice husk belongs to Advanced Mesolithic Phase of Chopanimando  
(After: Sharma, 1980)**



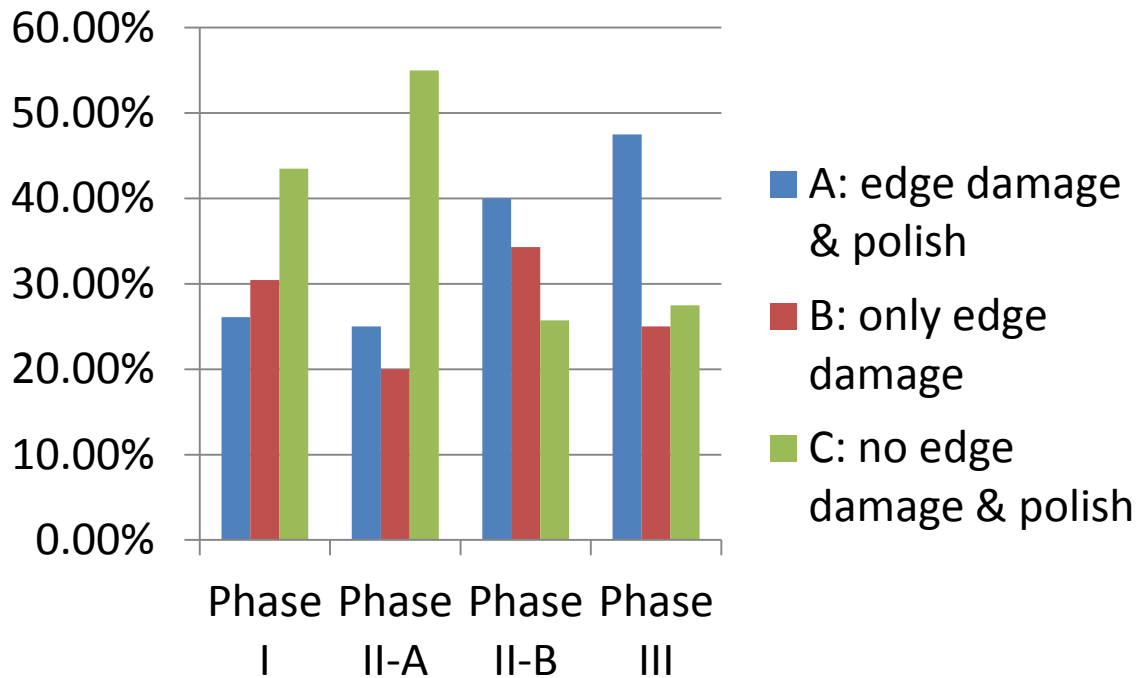
**Bone Object from Advanced Mesolithic  
Phase of Chopani Mando  
(After: Sharma, 1980)**



**Stone Bead from Advanced Mesolithic  
Phase of Chopani Mando  
(After: Sharma, 1980)**



# Result of Microwear Analysis on Chopanimando Tools



(After: Sinha, 2012)

- ❑ Among these only category 'A' has been taken under consideration for further study, as it shows the use of a particular artefact
- ❑ A gradual increase of the category 'A' could be observed from phase I to III
- ❑ This points towards a gradual increase in exploitation of vegetation
- ❑ In general, truncated & backed, retouched/modified & rectangle pieces have more edge damage & polish than geometrical truncated & backed artefacts



## Results of Phytolith Study of Chopanimando

- **Soil samples (total 6 samples) were collected up to 60cm depth from the present surface at a regular interval of 10cm**
- **Sample number 1-4 from top may be correlated with the Advanced Mesolithic (pd: III) and 5 to 6 with Geometric Mesolithic (pd: II-B) phases of Chopanimando**
- **The major observed morphotypes of phytoliths are: bulliform, bilobate, saddle, rondal, long elongate cell, short elongate cell, hair, denticulate, spherical-scalloped and some irregular morphotypes**
- **Frequency of bamboo phytolith increases from level 6 to 1**
- **Phytoliths of Cucurbita (*Luffa sp.*), bamboo, palm, *Cannabis sp.* Or hemp are present almost in all samples along with varying frequency of other grasses like: *Cymbopogon sp.*, *Cydon sp.*, *Sacchrum munj*, *Schemum robussum*, *Oplismensus sp. etc.***
- ***Phytolith of rice have been retrieved only in the sample no. 1 (top and 6 (bottom)***

**(After: Tulika & Sinha, 2014)**



# Vegetal & Environmental Reconstruction of Chopanimando through Phytolith Study

- **The vegetation of this region dominated by bamboo (both hollow & solid varieties), plum and variety of grasses**
- **The high percentage presence of saddle type and absence of rondal type of phytoliths in sample number 3 and 4 (lower level of Advanced Mesolithic phase) suggests warm and dry climate**
- **The rondal type of phytoliths are present in sample number 1, 2, 5 & 6. In Sample 1 & 6 saddle type of phytoliths are also present with rondal type but very few in quantity. This phenomenon suggests cool and moist climate during geometric Mesolithic and upper level of Advanced Mesolithic phase.**

**(After: Tulika & Sinha, 2014)**



# Inference

- **The site comprises a detailed Late-Pleistocene to Early Holocene sequence**
- **Dominant tool types: Parallel-Sided-Blade (microblades), Scraper**
- **It was experiencing cool and moist climate** at least during Pd: II-B and III with a small interval of warm and dry climate (according to the phytolith result)
- **The phytolith result and the microwear study of the tools suggest gradual increase in vegetation and their exploitation respectively** (specially bamboo both hollow & solid varieties, plum and variety of grasses).
- **It shows changes in subsistence strategies, which was now mostly depending on gathering grains over hunting**(e.g. rice, whose phytolith present in soil samples of earliest level of pd II-B & latest level of pd III), grasses etc. The existence of food processing artefacts and potteries in advanced mesolithic phase are the co-evidences of this fact
- **The presence of bamboo** (both hollow & solid varieties) **and plum suggest structural activities** and the evidence of post holes and floors strengthen the view
- **Late-Pleistocene/Holocene Adaptation of Chopanimando worth mentioning, as semi-sedentary life had introduced since the very beginning** which is evident by discovery of huts, hearths, floors, storage pits & bins, large quantity of food processing artefacts, pottery etc.



# Inference

(continued)

Late-Pleistocene/Early Holocene of entire  
Vindhya-Gangetic Region

Vindhyan Region

Gangetic Plain

Son  
Valley

- Open-air & rock shelter settlement
- Raw material source: Son Valley itself
- Microliths (geometric & non-geometric)
- Food processing tools
- **Pottery**
- Habitation (hut, floor)
- Other objects (stone beads, bone object etc.)

Belan  
Valley

- Open-air & rock shelter settlement
- Raw material source: Son Valley
- Microliths (geometric & non-geometric)
- Food processing tools
- **Pottery**
- **Evidence of Rice**
- Habitation (hut, floor, hearth)
- **Burial**
- Other objects (stone beads, bone object etc.)

- Open-air settlement
- Raw material source: Son Valley
- Microliths (geometric & non-geometric)
- Food processing tools
- **Evidence of Charred grain (from Damdama)**
- Habitation (hearth)
- **Burial**
- Other objects (bone, ivory & antler object etc.)



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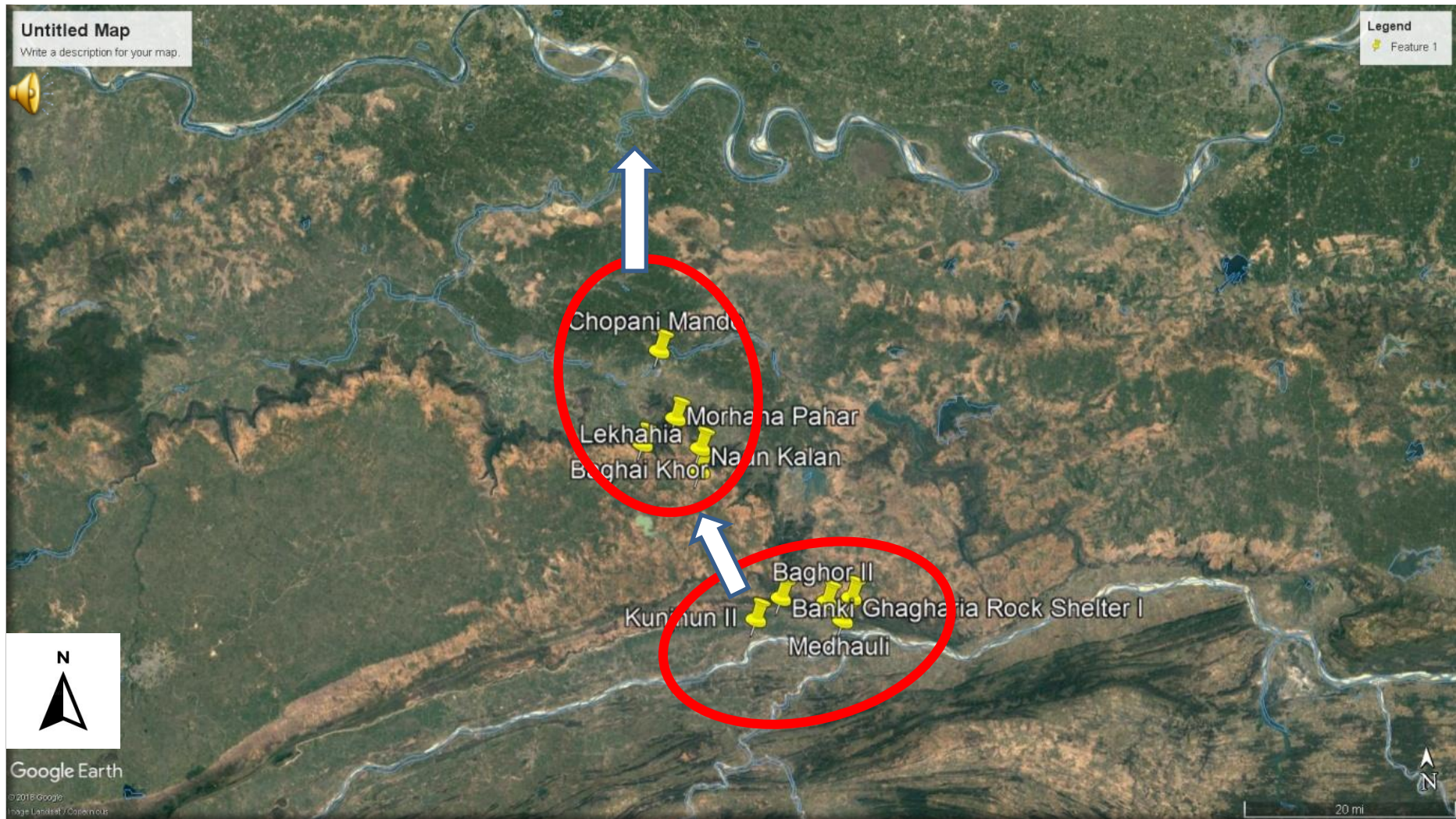
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**Northwards Shifting of Settlement-Centre**





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**Man gradually shifted northwards to the alluvial plain from hill and concentrated around water bodies far from raw material source**



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**WHY ??**



# Deduction

**Man gradually shifted northwards to the alluvial plain from hill and concentrated around water bodies far from raw material source**

## **WHY ??**

- **Change of Climatic Condition**
- **The landscape had got its present stable shape by the beginning of the Holocene epoch**
- **The existence of Savanna (along with wild crops) came in front**
- **Man started to exploring & concentrate next to the plant food resource and water bodies**
- **The Savanna grass land probably provides them wild crops**



# Deduction

**Man gradually shifted northwards to the alluvial plain from hill and concentrated around water bodies far from raw material source**

**BUT**

**HOW do they manage to get the courage to DISTANT themselves from the RAW-MATERIAL -Source??**

- **Probably they had a “raw material vs. crop exchange subsistence”**

**Son Valley: Raw Material Source**

**Belan & Ganga Valley: evidence of early crops have been found**



# Deduction

## Step of towards settled life

### HOW ??

- Started to stay in huts
- Consumed cooked meat and bone marrow
- Manufactured bone ornaments
- Started burial practice
- Probably the stable climate and change in life created a suitable environment for the growth of population
- Which further turned to the NEOLITHIC sedentary life



# Questions Left

**When** the region was occupied by different techno-cultural-groups? For how long had they survived (Parallel/Individual)?

**Who** were the authors of these?





# Acknowledgment



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**Professor**

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**Professor**

**Allahabad University, India**

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**Thank You**  
**Namaste**