



**SONOPANT DANDEKAR ARTS, V.S. APTE COMMERCE
AND M.H. MEHTA SCIENCE COLLEGE, PALGHAR**

Department of History

PROJECT REPORT

TYBA- History

Academic Year 2022-2023

Prepared by

Department of History

**Sonopant Dandekar Arts, V.S. Apte Commerce and
M.H. Mehta Science College, Palghar**

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**Sonopant Dandekar Arts, V.S. Apte Commerce and M.H. Mehta
Science College Palghar**

Department of History

Academic Year – 2022-23

TYBA History SEMESTER V

NOTICE

All the students of **TYBA History** are hereby informed that their project submission of paper VI for Semester – V, will be conducted from **12/10/2022 to 15/10/2022**, at time of your history lecture. Submit your project in the prescribed format as per the guidelines of the University of Mumbai.



A handwritten signature in black ink, appearing to read "Kiran J. Save".

**(Dr. Kiran J. Save)
Principal**

Principal

Sonopant Dandekar Arts College
V. S. Apte Commerce College &
M. H. Mehta Science College
Palghar (W.R.)
Dist Palghar Pin 401 404.

Revised Syllabus

Semester V and Semester VI

Programme: B.A.

Course: History and Archaeology

(Choice Based Credit System with effect from the Academic year 2018-2019)

As per University rules and guidelines for Faculty of Humanities

Faculty of Humanities

TYBA

(Choice Based Credit System, CBCS)

Semester V and Semester VI

Guidelines

With Effect From 2018-2019

Syllabus Structure:

1. In TYBA (CBCS) in Sem V and Sem VI, the Core Courses will be Core Courses IV, V, VII and VIII.
2. The Elective Courses will be Elective Courses VI and IX which will be partially Project Based Courses. The Boards of Studies may offer choices in the Elective Courses VI and IX.
3. In Sem V and Sem VI, each Course namely Core Courses IV, V, VII and VIII and Elective Courses VI and IX will carry 4 Credits per Course per Semester.

Evaluation:

1. **Core Courses:** The Core Courses IV, V, VII and VIII will be theory based Core Courses. The University of Mumbai will conduct the Sem V and Sem VI examinations of 100 marks per Core Course. In Sem V and Sem VI for all the above Core Courses, the student will have to secure a minimum of 40% marks in aggregate per Core Course.
2. **Elective Courses:** The Elective Courses VI and IX will be Electives and Choices of Electives may be offered by the various Board of Studies. The University of Mumbai will conduct the Sem V and Sem VI examination for Elective Courses VI and IX of 80 marks per Elective Course. The Elective Courses namely Elective Courses VI and IX will be partially Project Based Courses. In Sem V and VI, for Elective Course VI and for Elective Course IX, the Colleges will conduct the evaluation of a Project of 20 marks

each and will send the marks to the University of Mumbai as per University of Mumbai guidelines.

3. The total marks of the Elective Course VI and Elective Course IX will be 100 marks each that is 80 marks for Theory Examination conducted by University of Mumbai and 20 marks for Project evaluated by the concerned college Faculty in the subject.
4. In Sem V and Sem VI, the student will have to submit a Project for Elective Course VI and Elective Course IX in the College before appearing for the University Examination. The last date of submission of the Project will be officially declared by the College.
5. In Sem V and Sem VI, the Project topic will be based on the Syllabus of the respective Elective Courses that is Elective Course VI and Elective Course IX. The students will be given the choice of choosing the topic of the project in consultation with the Faculty Member teaching the respective Elective Course. The list of students along with the topics chosen by the students will be displayed by the College in the beginning of the Semester.
6. The Project work will be carried out by the student with the guidance of the concerned Faculty Member who will be allotted to the student as the Guide for the Project.
7. In Sem V and Sem VI, for Elective Courses VI and IX, the student will have to secure a minimum of 40% marks in aggregate and a minimum of 40% in each component of assessment i.e. 08 out of 20 marks in Internal Evaluation of Project in Elective Course VI and Elective Course IX and 32 out of 80 marks in University Examination of Elective Course VI and Elective Course IX.

Note: All other rules regarding Standard of Passing, ATKT, etc., will be as per those decided by the Faculty of Humanities passed by the Academic Council from time to time.



Project Submission Student List TYBA sem-5 October 2022

Paper
6

Count of Student: 69

(Max Mark: 20 Min Mark: 8)

Sr. No.	Student Name	Project Name	Signature
1	BHAGAT GIRIJA RAMSHAKAL	नवाशमयुग	Girija
2	BHAGAT POONAM RAJENDRA	प्राशमयुगीन कालखंड	Poonam
3	DANDEKAR SHRUTI DATTATRAYA	Indian coinage during various Empire.	Shruti
4	DHANGADA ANKITA VAJYA	धोत्रीय उखनन, उखननाच्या पद्धती व कालमापन पद्धती	Ankita
5	DHAPSHI MANISHA VILAS	प्राचीन भारतीय नाणी	Dhapshi
6	GADAG SANJAY SURESH	इतिहासीक कालखंड	Satata
7	GAHALA SURAJ BABU	सिंधू संस्कृतीतील सामाजिक, आर्थिक व धार्मिक जिवण	Suraj
8	GAIKWAD YOGESH GOPAL	नवाशमयुग	Yogesh
9	GOWARI JAYESH RAJENDRA	संसाध अशीक यांच्या राजव्हा	Jayesh
10	KAMADI VIPUL SUNIL	प्राचीन भारतातील प्रशासकीय व्यवस्था	Vipul
11	KURHADA JOSNA SUNIL	प्राचीन भारतीय नाणी	Josna
12	KUVARA NATHUNI BISTUR	धोत्रीय उखनन, उखननाच्या पद्धती, कालमापन पद्धती	Nathuni
13	MALIK JAHANGIR KARAMHUSSAIN	Prehistoric Period	Jahangir
14	NIKAM SUVARNA BABU	प्राचीन भारतातील नाणकशास्त्राचा विकास	Suvarna
15	PATIL SRUSHTI KIRAN	प्राचीन भारतीय लिपी	Srushti
16	PATIL TANVI SURESH	नवाशमयुग	Tanvi
17	PATIL VAISHNAVI SHARAD	प्राचीन भारतीय लिपी	Vidhi
18	PATIL VIDHI BHARAT	तम्रपाषाण युग	Piyush
19	PAWADE PIYUSHA RANJESH	कोरीव लेखांचे प्रकार	Piyush
20	RAVATE DEEPAK CHINTAMAN	नवाशमयुग	Deepak

21	SURYAWANSHI SALONI MARUTI	Indian coinage during various Empire.	Dufur
22	DHADAPE MANASI VASANT	सम्राट अशोक याच्या शिलालेख (शीतलेख)	Dhadape
23	GATHE VAISHNAVI NANDKUMAR	नवाशमयुग	Gathe
24	KAWTHE PUJA SHIVAJI	सिध्द संस्कृतीचा - एत	Kawthe
25	KHAN MUSKAN RAHIM	नवाशमयुग	Khanmus
26	KHANDAGALE RASIKA SANTOSH	Detail study of Inscriptions	Rasika
27	KHANDAGALE SAMMEK SANTOSH	Science of studying History	SammeK
28	LADAVI MADHURI MADHUKAR	पुराशमयुगीन कालखंड	Imu
29	MANE PRATHAMESH PRASHANT	study of Pre-historic period	Mane
30	PATIL KIRTI SANJAY	पुराशमयुग	Kirpat
31	SURTI DEV MUKESH	भारतातील नव्या	Desur
32	BIRARI YATISH JAYARAM	प्राचीन भारतातील नाव्याय महत्व	Yatish
33	DHIKAR DHEERAJ RATAN	A science of studying history	Dhikar
34	GADAG AMIT CHANDRAKANT	प्राचीन भारतातील नाव्याय महत्वाचा विकास	Gadag
35	GOLIM SUGANDHA PANDU	प्राचीन भारतातील लिपी	Gugandha
36	HEMADA DARSHANA MADHUKAR	सिध्द संस्कृती काळीन सामाजिक, आर्थिक व धार्मिक संस्कृती	Deesh
37	KORDA PRAMILA DATTATRAY	नवाशमयुगातील मानवी जीवन	Prako
38	MANDHARE RAJAS DNYANDEO	सम्राट अशोकाचे शिलालेख व आणगापत्रे	amre
39	UMTOL SHUBHAM RAJU	इत्कवन शास्त्र	Umtol
40	VAVARE MAYURI CHANDRAKANR	प्रागैतिहासीक कालखंड	Yavare
41	YADAV ARVIND SUBHASH	पुराशमयुग	Yadav
42	CHAUDHARI ABHAYRAJ PANKAJ	अजिंठा वेळूची लेणी	Choualehi
43	CHAVAN MUKESH ABHANSINGH	नाव्याय महत्वाचा विकास	Chh
44	CHURI HARSHIT RAMESH	भारतातील नाव्याय महत्वाचा इतिहास व विकास	Churi
45	MOHITE DIVYA LAVESH	सम्राट अशोकाचे शिलालेख	White
46	TARE VIDHI SANTOSH	प्राचीन भारतातील विविध लिपी	V.S. Tare
47	AAJAGAVKAR ANURADHA PRAVIN	ताम्रपाषाण युग	Anuradha

48	SUDHNYESH AMBURE	Study of Pre-Historic period.	Sambure
49	ANSARI MOHAMMAD ASHIF KAMAL	पुरातमयुग	Anssarim
50	BARAD RAHUL BALU	प्राचीन भारतातील नाणकशास्त्राचा विकास	Radha
51	BHAVAR MANGESH PRAKASH	प्राचीन भारतीय नाणी	Bhar
52	CHAUHAN ANJALI AJAY	प्राचीन काळातील ग्रामीण व खरोखी लिपीचा विकास	Chauhan
53	CHAUHAN NANDINI RAMASHISH	Archaeological sources During Ashoka Period	Chauhan
54	GAIKWAD AVINASH MANJULA	पुरातमयुगीन कालखंड	Wadekar
55	HADAL ROSHANI JETHU	प्राचीन भारतीय नाणी	Hadsad
56	KHATALI KUNAL SADANAND	पुरातमयुगीन कालखंड	Khatolikite
57	KOM ANKITA KALYA	प्राचीन भारतीय नाणी	Khe
58	MUNJAMKAR ARTI DEVYA	तम्रपाषाण युग	Amu
59	BHOYE NANDKUMAR JAYRAM	कोरीव लेखशास्त्र	Wadekar
60	PATANKAR PRATHMESH RAVINDRA	प्रागैतिहासिक काळ	P.P.R
61	PATIL TANAYA ANIL	पुरातमयुगीन कालखंड	Tanpa
62	PUNJARA POONAM NAVSHYA	मूर्तील अक्षरी करणाऱ्यांनी समाजसुधारकांचे कार्य	Punpara
63	SUTAR NILAM GOVIND	कोरीव लेखांचे प्रकार	Nislu
64	SUTAR PRIYANKA GANGARAM	कोरीव लेखांचे प्रकार	Ponsu
65	TANDEL GANESH SHANKAR	सिध्द संस्कृती	Ganpatk
66	TANDEL SAMIDHA DILIP	भारतीय नाणकशास्त्राचा इतिहास	Sadhe
67	TIWARI RADHA ABHAY	History of Indian Epigraphy	Rajwa
68	TIWARI SHIVAM ARVIND	Detail study of history of INDIAN Epigraphy	Juwar
69	VISHWAKARMA RAVI RAJESH	पुरातमशास्त्राचा इतर शाखाशी असलेला संबंध	VishRam

Rambas yeole

COLLEGE NAME : SONOPANT DANDEKAR ARTS, V.S.
APTE COMMERCE AND M.H. MEHTA SCIENCE COLLEGE,
PALGHAR

ACADEMIC YEAR : 2022-2023 (SEMESTER V)

NAME : JAHANGIR KARAM HUSSAIN MALIK

CLASS : TYBA (ENGLISH MEDIUM)

ROLL NO : 610

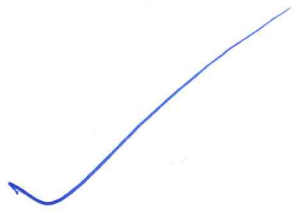
TITLE OF PAPER : HISTORY PAPER -6
INTRODUCTION TO ARCHAEOLOGY

PROFESSOR NAME : ASST. PROF. RUTUJA RAUT

R.S. Raut
17/10/22

TOPIC:

*Prehistoric
Period*



ACKNOWLEDGMENT:

I would like to express my sincere gratitude to my Professor Rutuja Raut whose valuable guidance help me patch this project and make it success. Her suggestion and instruction has served as the major contributor towards the completion of project. I am very thankful for the guidance and encouragement in finishing this project and teaching us in this course. Thank you because her guidance helped me in all time of writing this project. I also place on record, my sense of gratitude to one and all who indirectly or directly have lend there helping hand in this project.

Thank you



INTRODUCTION:

In this project I covered the earliest stage in the history of man's biological and cultural evolution. This is the stage when creatures ancestral to Humans began to branch off from their ape-like cousins. This journey covers a time span of 2.5 million years. It involved improvements both in aspects of the biological make-up like bipedal posture and brain enlargement. In cultural behaviour the critical factor was the intentional preparation of tools out of natural materials like stone and wood.

I will be studying the the Paleolithic and mesolithic culture. Archaeological evidence which has been used to reconstruct tool typology and Technological



aspects; different sites of these cultures, their regional setting and Salient features.

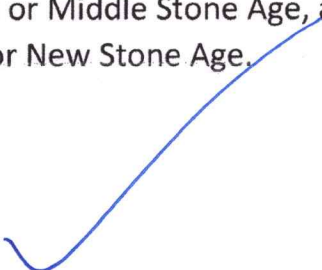
NOMENCLATURE:

The branch of archaeology which deals with the study of the initial stage of human history is called Prehistory. Stated in other words, Prehistory deals with the origins and growth of human societies before the advent of writing systems. This stage is succeeded by Proto-history which is a transitional stage between Prehistory and History in India. The Proto-History stage covers the third and second millennia and early half of the first millennium before the Common Era. It is characterized by the rise of many early agro-pastoral Neolithic-Chalcolithic Communities characterized by settled village life, domestication of animals like cattle and sheep/goat, cultivation of crops like wheat, barley, rice and millets, and the emergence of various crafts and arts. In the Indus valley, this phase eventually led to the growth of an urban civilization based on town planning and Bronze technology.

Another way of classification is that of the division of human past or History into three main periods, namely:

- a. Stone Age,
- b. Bronze Age, and
- c. Iron Age.

These are not simply technological stages. They do not just imply that tools and implements were made of stone during the Stone Age, of bronze during the Bronze age and of iron during the Iron Age. These Ages imply much more than technology. They imply subsistence economy or the ways of acquiring food, social organization, including caring for the weak, sick and old, modes of disposing of the dead, art and other aspects of life. Stone Age is divided into three periods, namely:

- a. Palaeolithic or Old Stone Age,
 - b. Mesolithic or Middle Stone Age, and
 - c. Neolithic or New Stone Age.
- 

The word 'lithic' is derived from the Greek word 'lithos', meaning stone. Palaeolithic means Old Stone Age, Mesolithic means Middle Stone Age and Neolithic means New Stone Age.

BIRTH OF PREHISTORY:

The birth of prehistory took place in 1859 when the findings of primitive stone implements in association with fossilized bones of extinct species of wild cattle and other large mammals were ratified before the Royal Society in London in Northern Europe. It became clear that northern Europe was occupied by humans much before its landscape assumed its present form. A long phase of infancy was, thus, prefaced to human history. In his book Prehistoric Times (1865) Sir John Lubbock announced the birth of a new science called Prehistory. He divided the Stone Age into Palaeolithic (Old Stone Age), Neolithic (New Stone Age) Ages. And by the end of the 19th century, not only an intermediate stage called The Mesolithic was introduced between the Palaeolithic and the Neolithic, but several stages were identified within the Bronze and Iron Ages. Furthermore, thanks to the cultural sequence obtained from cave and open-air sites in France, three phases were recognized within the Palaeolithic: Lower, Middle and Upper.

GEOGRAPHICAL FEATURES OF INDIA:

India (or South Asia, for general geographical and cultural purposes) is a distinct geographical entity at the sub-continental level. The Indian landscape is endowed with all the prerequisites for a successful hunting-gathering way of life: suitable landforms permitting free movement of hunter-gatherer groups; occurrence of a variety of basic rocks and siliceous stones for making tools; existence of perennial water bodies in the form of large and small streams and springs; and availability of a large variety of wild plant and animal foods. It is, therefore, not surprising that, barring the Himalayan tract proper and the Indo-Gangetic alluvial tracts, Stone Age groups occupied the whole of the Indian landmass.

PHASES WITHIN THE INDIA:-

1. PALAEOLITHIC PERIOD

Indian Palaeolithic is divided into three developmental stages:

- i. Lower,
- ii. Middle, and
- iii. Upper.

The Lower Palaeolithic has two cultural traditions:

- i. Soanian pebble-tool tradition, and
- ii. The Peninsular Indian handaxe-cleaver tradition.

Lower Palaeolithic traditions involved the use of large pebbles or flakes for making choppers and chopping tools, hand-axes, cleavers, knives etc. The Middle palaeolithic is based on the use of a variety of flakes struck from cores for preparing scrapers, points, borers and other tools. Further refinements came in the Upper Palaeolithic stage. Now, implement types like blunted and penknife blades, blades with serrated edges and arrow points were made on long parallel sided blades struck in a series from cylindrical cores by punch technique. Besides relative dating, it has been possible, in recent years, to date some of the sites in absolute terms by means of scientific dating techniques such as the Radiocarbon, Palaeomagnetism, Thermoluminescence, Potassium-Argon, Argon-Argon and Uranium-Thorium.

ARCHAEOLOGICAL RECORD OF THE PALAEOLITHIC

Palaeolithic sites are of two principal types:

- i. Open air sites, and
- ii. Caves or rock shelters.

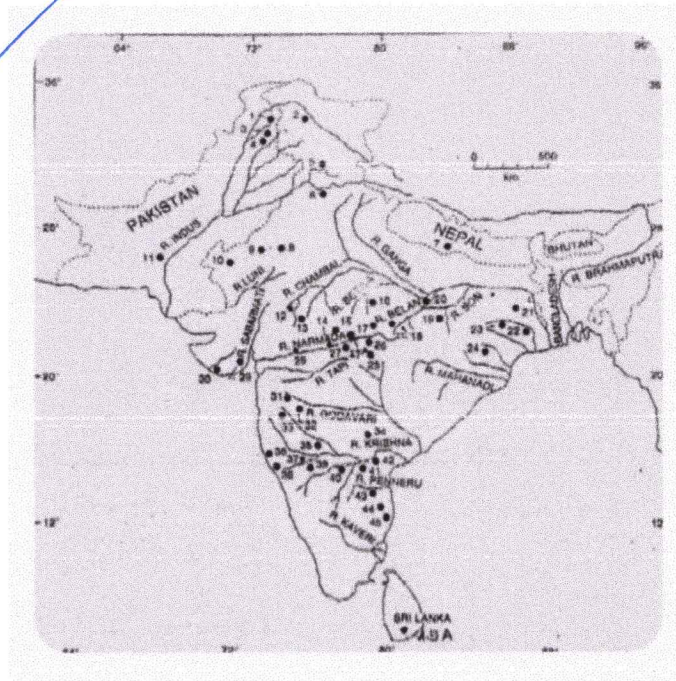
Open air sites are more common in all parts of India and occur on or close to large and small rivers and also in interior basins or valleys and foothill zones of the hill ranges. They represent various formation processes ranging from true in situ or undisturbed sites found on weathered bedrock or else in soft silts to occurrences in colluvium and river-borne gravels. Cave and rock shelter sites occur in hilly areas covered with sedimentary rocks (sandstones and limestones). Bhimbetka complex in Madhya Pradesh and Kurnool caves in Andhra Pradesh are well-known examples.

a) LOWER PALAEOOLITHIC STAGE IN INDIA

As I have noted earlier, the Lower Palaeolithic phase in India consists of two principal tool-making or cultural traditions, viz

1. The Soanian tradition forming part of the East and Southeast Asian chopper chopping tool tradition, and Lower Palaeolithic Sites in India. Source: MAN-002, Block 5.

Important Lower Palaeolithic sites in South Asia: 1) Riwat; 2) Pahlgam; 3) Jalalpur; 4) Dina; 5) Beas-Banganga complex; 6) Sirsa-Ghaggar complex; 7) Dang-Deokhuri complex; 8) Didwana; 9) Jayal; 10) Jaisalmer-Pokaran Road; 11) Ziarat Pir Shaban; 12) Berach complex; 13) Chambal complex; 14) Bhimbetka; 15) Raisen complex; 16) Lalitpur; 17) Damoh complex; 18) Son complex; 19) Sihawal; 20) Belan complex; 21) Sisunia; 22) Singhbhum complex; 23) Paisra; 24) Brahmans complex; 25) Wainganga complex; 26) Mahadeo Piparia; 27) Adamgarh; 27A) Hathnora; 28) Durkadi; 29) Samadhiala; 30) Umrethi; 31) Gangapur; 32) Chirki-Nevasa; 33) Bori; 34) Nalgonda complex; 35) Hunsgi and Baichbal basins complex; 36) Mahad; 37) Anagwadi; 38) Malwan; 39) Lakhmapur; 40) Nittur; 41) Kurnool complex; 42)

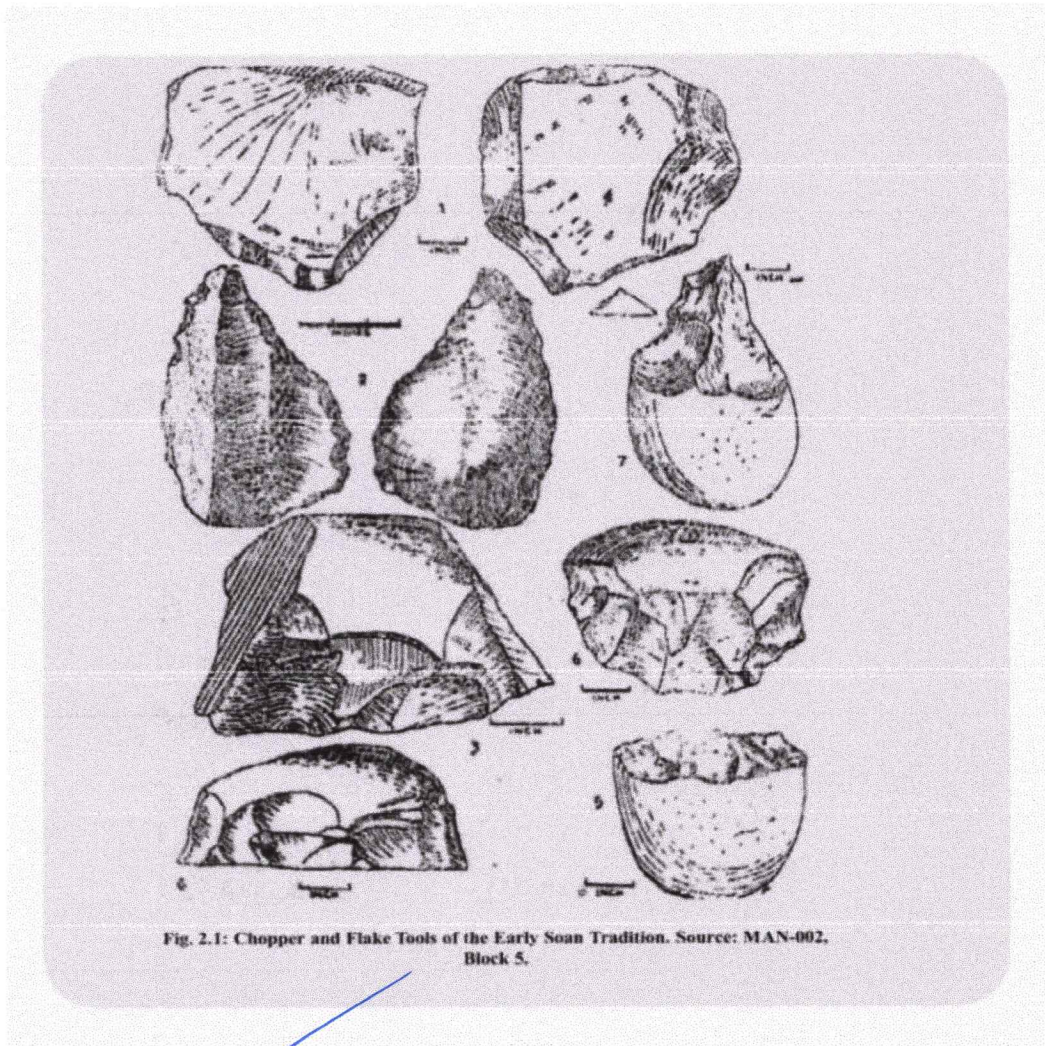


Nagarjunakonda complex; 43) Guddapah complex; 44) Rallakalava complex; 45) Kortallayar complex; 45A) Ratnapura complex.

2. The Handaxe-cleaver or biface assemblages constituting the Acheulian Tradition, which is widely known from the western half of the Old World (African, Western Europe, West and South Asia).

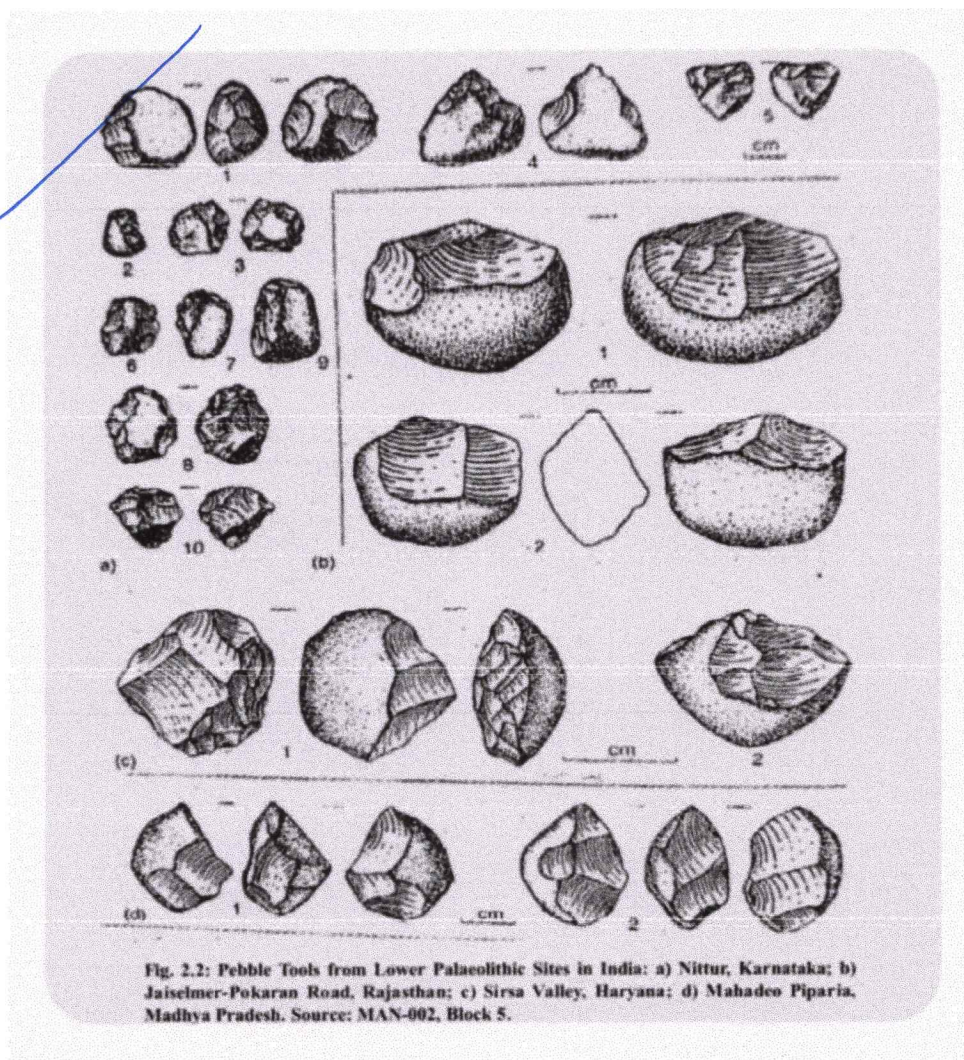
The term "Old World" is a term that is used in the West to refer to Africa, Europe, and Asia (Afro-Eurasia, or the eastern hemisphere), regarded collectively as the part of the world known to its population before contact with the Americas and Oceania or the "New World" (Western Hemisphere).

The Soanian Cultural Tradition the existence of this tradition was recognized in 1939 by H. de Terra of Yale University and T. T. Paterson of Cambridge University



in the north-western part of the subcontinent. On the basis of their field studies in the area, they identified

A series of five terraces on the river Soan, forming part of the Indus drainage System. They correlated these terraces with glacial and interglacial events of the Kashmir valley, and, on stratigraphical and typological considerations, put up what has been called the Soan culture-sequence. The tools consist of pebbles with working edges on their sides or ends, obtained by means of flaking from one or both surfaces (producing choppers or chopping. Robin Dannel, who worked in this area (now in Pakistan) in the 1980s, raised serious doubts about the palaeoclimate interpretations and cultural sequence put forward by Terra and Paterson. But the term "Soan culture" has stuck on in Indian Prehistory. From the Indian



side of the border, pebble tool assemblages were found in the Sirsa and Ghaggar valleys of Haryana, Beas and Banganga Valleys of Himachal Pradesh, and Hoshiarpur-Chandigarh sector of the Siwalik Frontal Range

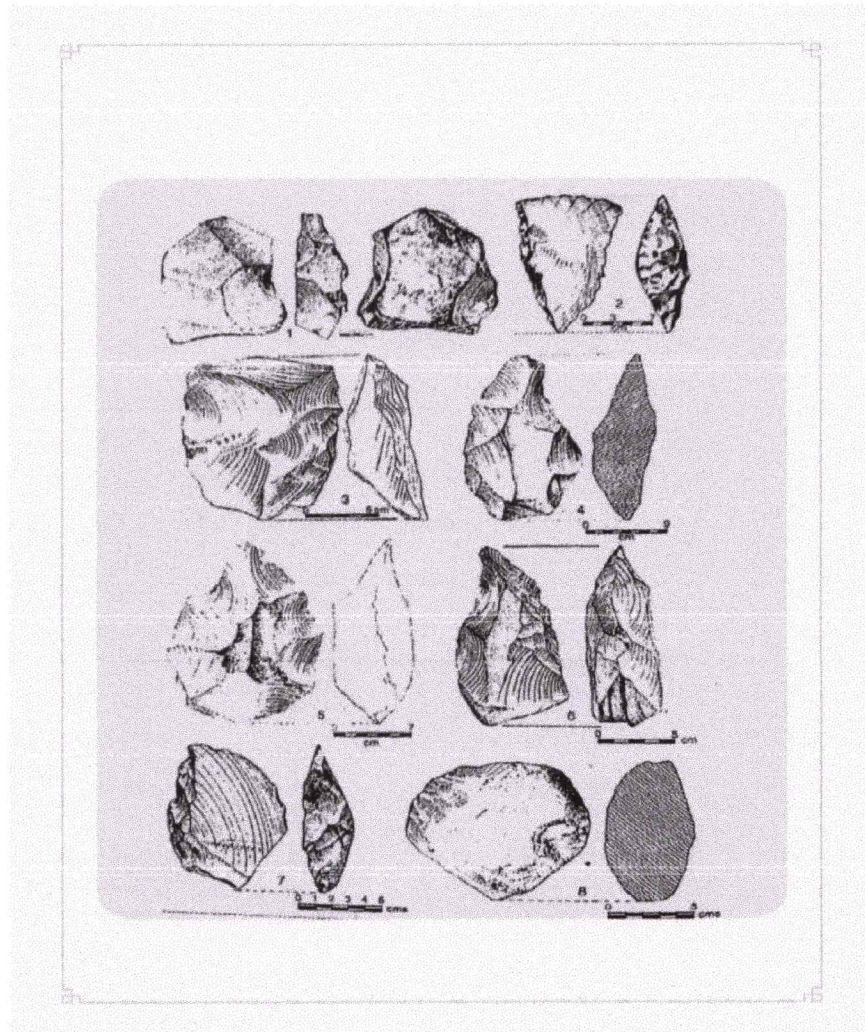
The Soan assemblages from Punjab have been assigned by some workers to the Middle Palaeolithic tradition. The Acheulian Cultural Tradition the term 'Acheulian' is used for hand-axes and cleavers found as tool assemblages and representing advanced and increasingly symmetrical shapes. Quartzite was the preferred rock for tool-making. Where it was not naturally available, the Acheulian groups made use of other available rocks like limestone in the Bhima Basin, dolerite and basalt in Maharashtra, and fossil wood in Bihar and Bengal. Stone hammer, soft hammer and prepared core techniques were employed for detaching flakes and shaping them into implements. Stone tools are the main evidence through which an understanding of the Prehistoric people's lifeways is arrived at. Archaeologists use certain terms to define stone tools. If a large piece of rock is intentionally broken into two or more pieces, the largest piece is called core and the tool made out of it called a core tool. The smaller pieces detached from the parent rock are called flakes and tools made on flakes are called flake tools.

Time Range:- Lower Palaeolithic in India: 600,000 years BP to 150,000 years BP, Middle Palaeolithic in India: 165,000 BP to 31,000 years BP, Upper Palaeolithic in India: 40,000 years BP to 12000 years BP

Important Sites of the Lower Palaeolithic:-

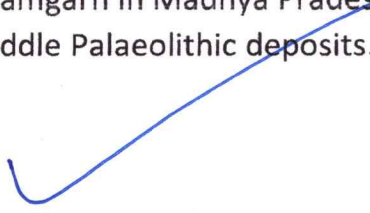


- 1) Singi Talav in western Rajasthan has yielded an assemblage comprising of choppers, polyhedrons, bifaces, scrapers and points.

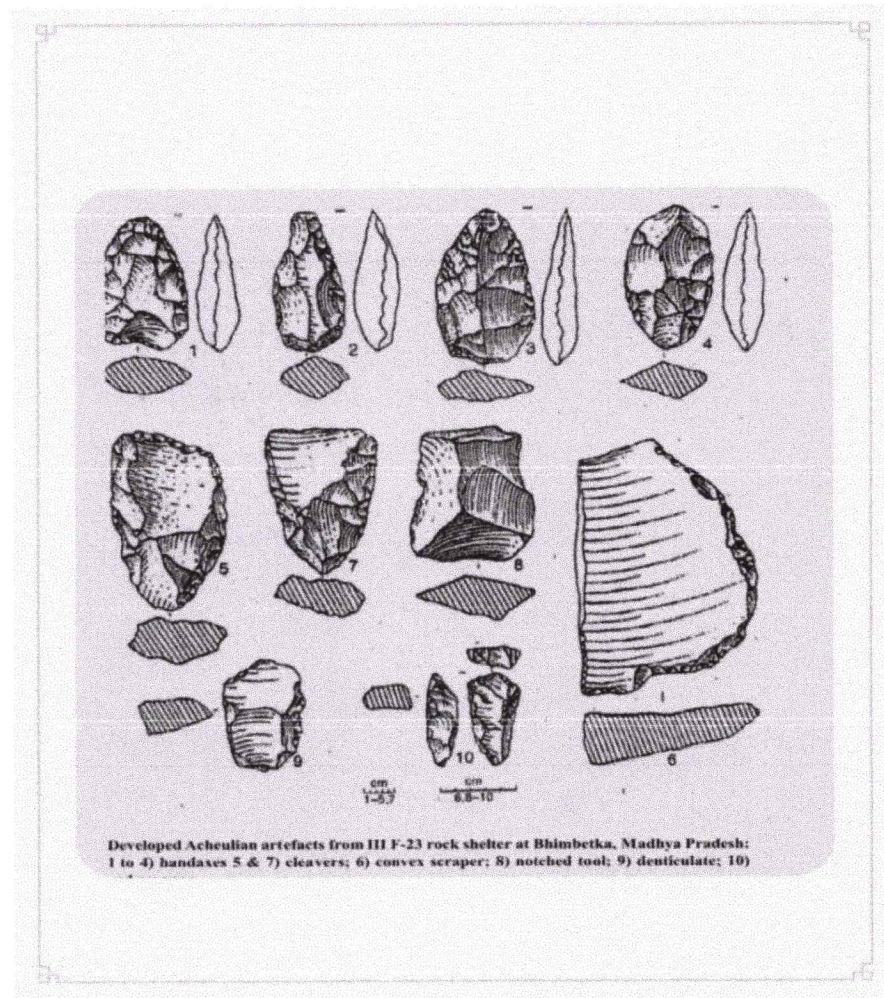


Lower Acheulian Artefacts from Isampur, Karnataka:

1. Core; 2&3) Cleavers; 4 & 5) Handaxes; 6) Perforator; 7) Knife; 8) Hammers
tone. Source: MAN-002, Block 5.
2. Rock shelter III F-23 (Figure 2.5) at Bhimbetka in Madhya Pradesh has
Yielded Acheulian, Middle and Upper Palaeolithic and Mesolithic levels.
3. Adamgarh in Madhya Pradesh has exposed an Acheulian level below
Middle Palaeolithic deposits.



4. Lalitpur in Jhansi district of UP produced an early and in situ assemblage made up of granite tools. 5) Paisra in Munger district, Bihar has yielded early Acheulian assemblage.
5. The excavation exposed hut-like dwelling structures in the form of Alignments of post-holes and a circular arrangement of stone blocks.
6. Chirki-Nevasa in Maharashtra has yielded dolerite artefacts along with fossil Bones of wild cattle and other animals. The site was a seasonal camp used for multiple purposes. The artefactual collection included hand-axes, cleavers and knives as well as a small-tool component made up of flake-tools of chert and chalcedony.
7. Morgaon, a site from Deccan basalt landscape in the Bhima drainage basin has yielded an assemblage of 162 specimens including cleavers and Handaxes.
8. Hunsgi in the Hunsgi valley and Yediyapur in the Baichbal valley in north Karnataka have in situ cultural levels. They have yielded scores of artifacts.



b) MIDDLE PALAEOLITHIC CULTURES:

Middle Palaeolithic culture succeeded the Lower Palaeolithic culture. As stated earlier, Lower Palaeolithic culture is characterized by heavy tools like the handaxes and cleavers. The Middle Palaeolithic culture, on the other hand, consists of a variety of tools made on flakes; and these flakes are produced by specialized techniques. Therefore, it is widely referred to as flake tool industry. The Middle Palaeolithic culture of Europe, South-west Asia and Africa is called as Mousterian culture, named after the rock shelter of Le Moustier in France. The human species associated with Mousterian culture is the extinct *Homo neanderthalensis*. The popular name of this hominin is Neanderthal man. He lived during the period of Upper Pleistocene.

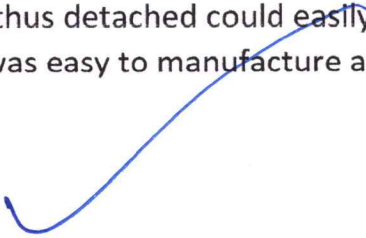
Hand-axe: generally a core tool. It is a bifacial tool since it is worked on both sides. It is roughly triangular in shape, broad at one end and pointed at the other. It is meant to be held in hand by the butt and sometimes hafted onto handles.

Cleaver: a flattish tool made on a broad rectangular or triangular flake, on one end of which is a broad and straight cutting edge.

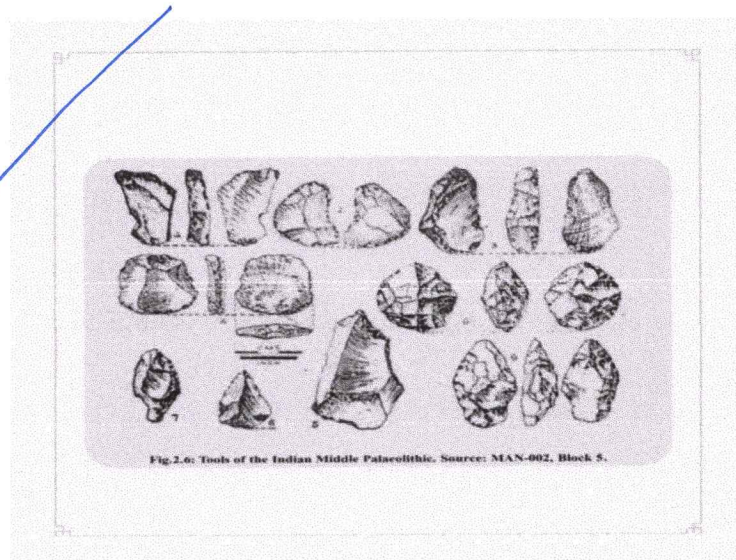
Chopper: Large, unifacial tool, i.e. worked on one side only.

Chopping tool: a tool made on a core or a pebble and flaked alternately on both sides to produce a wavy cutting edge.

Mousterian Industries: The Mousterian industry is a Middle Palaeolithic tradition of tool making used by Neanderthals in Europe, South-west Asia and Africa. The widespread occurrence of stone tool industries in which flakes are predominantly used, in contrast to the hand-axes and cleavers of the previous cultural phase, begins at the close of the Middle Pleistocene period. The production of flakes heralds a technical change in the manufacture of advanced hunting tools. In this new technique, the development is the production of a complete implement, at a single blow, from a core previously prepared so as to ensure that flakes when detached conformed to specific pattern of tools. Moreover, it was possible to strike off a series of flakes by reworking (or rejuvenating) the same core; therefore, the technique was economical both of labour and raw material. Further, the flakes thus detached could easily be shaped by simple retouch into a variety of tools. It was easy to manufacture a range of tools to perform various functions.



Middle Palaeolithic in India: The Middle Palaeolithic culture phase in India is characterized by flake tool industries. In 1956, H. D. Sankalia for the first time recorded and demonstrated these flake tools occurring in Pravara at Nevasa (Maharashtra) and then later in The Godavari valley in north Karnataka. He called this industry Nevasian (like Mousterian). Soon, his subsequent surveys revealed that Nevasian was not a local phenomenon but a generalized feature of Indian Stone Age cultures. In the beginning the term Middle Stone Age was adopted for this phase in Indian prehistory. Subsequently, the term Middle Palaeolithic has been accepted. The Middle Palaeolithic tools are made on flakes and flake-blades produced by flake core, discoid and the specialized Levallois technique. In some regions, there is a continuity of Late Acheulian lithic tradition with refinement in bifacial flaking, and second marginal retouch, and Inclusion of small sized hand-axes and cleavers. In many regions there is a switch over in the use of raw material from coarse grained rocks like quartzite of the preceding phase to fine grained rocks like chert Jasper, chalcedony, agate etc. The tool types of the Indian Middle Palaeolithic are scrapers of various types: single side, double side, side-cum-end, straight, oblique, concave, convex, concavo-convex, notched, and core scrapers; awls; borers; simple unilateral or bilateral points; Levallois points; tanged or shouldered points; miniature handaxes and cleavers; and utilised flakes. Anvils and Hammers are also found at some of the manufacturing sites.



Anvils and hammer stones are also found at some of the manufacturing sites. The techniques used for tool manufacture are stone hammer, cylinder hammer, and

Levalloisian. The raw materials used for the manufacture of stone tools are medium to fine grained quartzite, chert, jasper and chalcedony.

c) THE UPPER PALAEOLITHIC CULTURE:

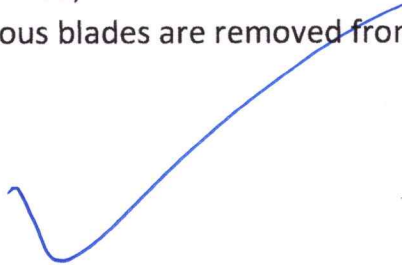
The Upper Palaeolithic is the third and last subdivision of the Palaeolithic and it is characterized by the first great climax of human achievements. Upper Palaeolithic cultures flourished in Europe, South-west Asia, Africa, South Asia and Southeast Asia during the later stages of the Upper Pleistocene, often referred to as Late Pleistocene.

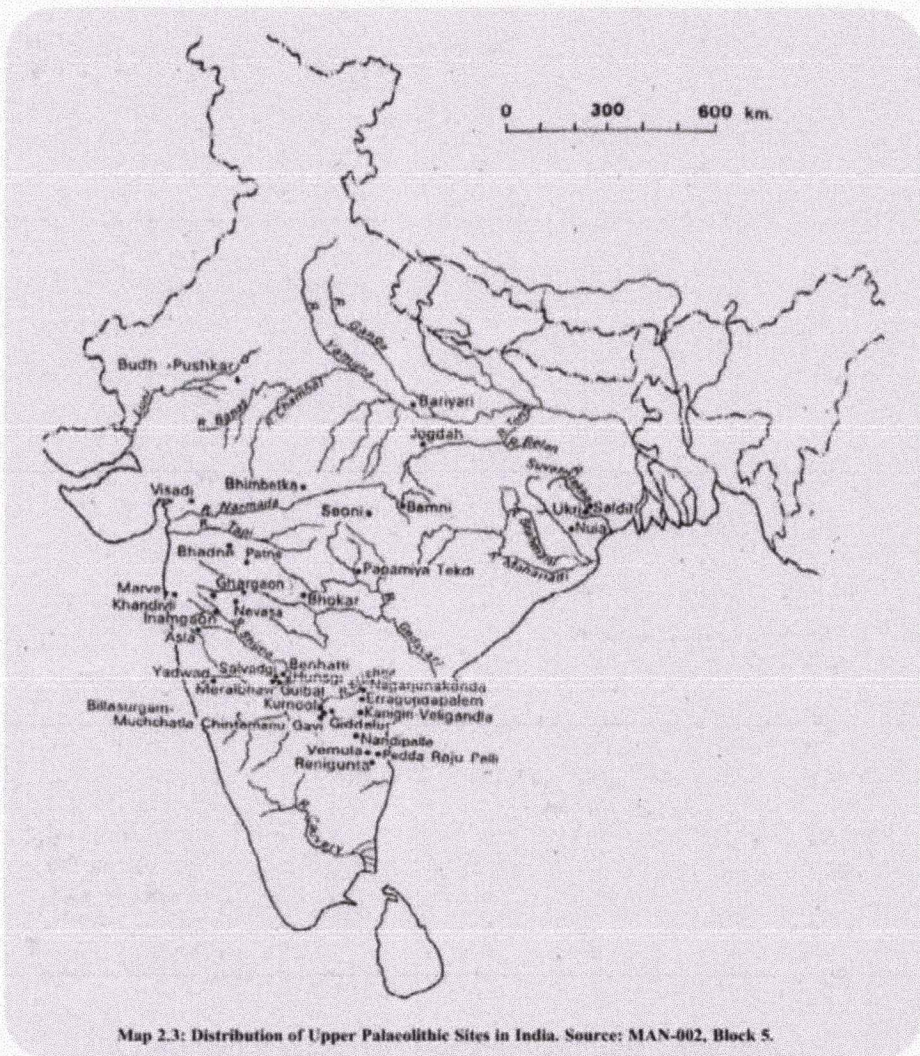
Very broadly, the age of the Upper Palaeolithic falls between 40,000 and 10,000 years ago. The human species associated with this cultural phase is Anatomically modern *Homo sapiens* (AMHS), the extant and the only surviving human species. I belong to this species. Upper Palaeolithic cultures succeed the Middle Palaeolithic Mousterian or other flake tool cultures in different parts of the Old world.

The Upper Palaeolithic is marked by technological advances in stone tool manufacture by the production of parallel sided blades which are finished into a variety of tools by blunting one side or by backing.

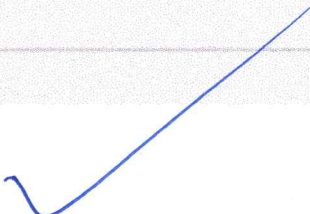
Blades are flakes, but very refined flat narrow ones, elongated in shape and having parallel sides. For producing blades, the cores are first trimmed all around to remove the roughness. Then, by striking along the circumference of the core, using a punch, a series of Blades are removed. That means blades are produced by indirect percussion but not by direct percussion.

After the removal of the first series of blades, a second, third and fourth series and so on are removed, until the core is exhausted. Thus, in this blade production technique, numerous blades are removed from a single.





Map 2.3: Distribution of Upper Palaeolithic Sites in India. Source: MAN-002, Block 5.



2) **MESOLITHIC CULTURE**

The Mesolithic Age began around 8000 BCE. It was a transitional phase between the Palaeolithic Age and the Neolithic Age. There was a rise in temperature and the climate became warm and dry. The climatic changes affected human life and brought about changes in fauna and flora. The warmer climate was associated with the onset of the Holocene Age. Holocene followed the Pleistocene. Holocene is known as the Recent or Neo-thermal phase. I are living in the Holocene period. Holocene began around 10,000 BCE.



The Mesolithic people, in their subsistence level were much like the Palaeolithic hunter-gatherers, however their mode of hunting-gathering became more intensified. Their long experience and interaction with plants and animals made them species-specific hunters and gatherers. This means that they favoured some species of plants and animals over others. Culture that was produced in Europe

during the post Pleistocene period, that is early Holocene, is known as the mesolithic culture.

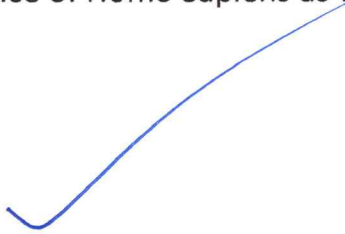
Terminology

C. Carlyle, an Assistant to Alexander Cunningham, founder Director-General of the Archaeological Survey of India, found a large number of small stone implements from the caves and rock shelters of Vindhyan hill regions of Central India. The assemblage comprised of small stone tools in form of crescents, Trapezoids, triangles and delicate knife-lets. No tool was more than 1.6 cms in length. The tools were never found in association with polished or ground implements. Carlyle found enough stratigraphic evidence to suggest that these small implements were lying in an intermediate position between the Palaeolithic and Neolithic stages. The accompanying culture connected with both the ages. Carlyle termed this intermediate stage as the Mesolithic. The end of Pleistocene is conventionally placed around 10,000 BCE. The date for Mesolithic in Europe is around 9,500 years BCE. Mesolithic is considered to have ended with the introduction of agriculture around 6000 and 5000 BCE (Price, 1991). Tool Types and Technology Microliths are the predominating and the most common tool types of this cultural phase. Technologically, this is a continuation of types from the Upper Palaeolithic period. Microliths start occurring in the last phase of the Palaeolithic culture but they predominate in the Mesolithic culture. Three cms. Is taken as the limit for the length for determining a microlith. Moreover, the microliths of Mesolithic period were made by highly skilled tool making techniques. This is mainly reflected in retouching of the working edge of the tool or blunting of the hafting edge of the tool. The technique employed was punch and pressure, which developed during the Upper Palaeolithic period. For this reason, identification of Mesolithic microliths largely depends on the context of its finding and dates. Microliths are described in terms of geometric and non-geometric shapes. Geometric ones are types such as trapeze, triangle, lunate or crescent. The nongeometric types are named by the nature of blunting of the back, such as partly, fully or obliquely blunted blades or after their functions such as scraper, point, knife, blade, awl, burin and borer. Microliths were used as composite tools for plant gathering and harvesting, slicing, grating, plant-fibre processing; for lines, snares, nets and traps; shell openers;

CONCLUSION:

Hence I can conclude by saying that Prehistoric culture refers to human evolution and development that occurred before the discovery of writing. For a short cut, this period is sometimes called the Stone Age. As the sciences of Geology, Paleontology, Anthropology and Archeology have developed, they have, by our time produced a vast, complex body of knowledge about the dawn of the human mind. If I correctly evaluate modern discoveries and proposed hypotheses, it can help us understand human nature and shed light on modern human problems.

The major sites for the Iron Age were found in present-day Northern India. These were the prehistoric ages in India. The prehistoric age of India consisted of the Stone Age, the Copper Age, and the Iron Age. Prehistoric India witnessed the Ice Age and the emergence of Homo Sapiens as well.



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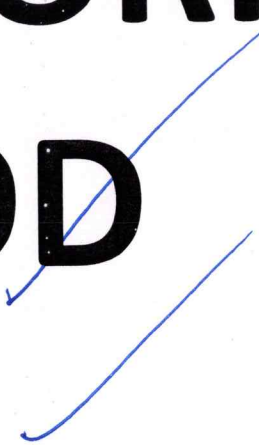
SUBJECT : HISTORY.

PAPER VI : INTRODUCTION TO ARCHAEOLOGY

SEMESTER : V .

R.S. Raut
17/10/22

STUDY OF PREHISTORIC PERIOD



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Thank You !

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INTRODUCTION

Prehistory, also known as pre-literary history,[1] is the period of human history between the use of the first stone tools by hominins c. 3.3 million years ago and the beginning of recorded history with the invention of writing systems. The use of symbols, marks, and images appears very early among humans, but the earliest known writing systems appeared c. 5000 years ago. It took thousands of years for writing systems to be widely adopted, with writing spreading to almost all cultures by the 19th century. The end of prehistory therefore came at very different times in different places, and the term is less often used in discussing societies where prehistory ended relatively recently.

In the early Bronze Age, Sumer in Mesopotamia, the Indus valley civilization, and ancient Egypt were the first civilizations to develop their own scripts and to keep historical records, with their neighbors following. Most other civilizations reached the end of prehistory during the following Iron Age. The three-age division of prehistory into Stone Age, Bronze Age, and Iron Age remains in use for much of Eurasia and North Africa, but is not generally used in those parts of the world where the working of hard metals arrived abruptly from contact with Eurasian cultures, such as Oceania, Australasia, much of Sub-Saharan Africa, and parts of the Americas. With some exceptions in pre-Columbian civilizations in the Americas, these areas did not develop complex writing systems before the arrival of Eurasians, so their prehistory reaches into relatively recent periods; for example, 1788 is usually taken as the end of the prehistory of Australia.

Regions

- History of Africa begins with the first emergence of modern human beings on the continent, continuing into its modern present as a patchwork of diverse and politically developing nation states.
- History of the Americas is the collective history of North and South America, including Central America and the Caribbean.
- History of North America is the study of the past passed down from generation to generation on the continent in the Earth's northern and western hemisphere.
- History of Central America is the study of the past passed down from generation to generation on the continent in the Earth's western hemisphere.
- History of the Caribbean begins with the oldest evidence where 7,000-year-old remains have been found.
- History of South America is the study of the past passed down from generation to generation on the continent in the Earth's southern and western hemisphere.
- History of Antarctica emerges from early Western theories of a vast continent, known as Terra Australis, believed to exist in the far south of the globe.
- History of Eurasia is the collective history of several distinct peripheral coastal regions: the Middle East, South Asia, East Asia, Southeast Asia, and Europe, linked by the interior mass of the Eurasian steppe of Central Asia and Eastern Europe.
- History of Europe describes the passage of time from humans inhabiting the European continent to the present day.
- History of Asia can be seen as the collective history of several distinct peripheral coastal regions, East Asia, South Asia, and the Middle East linked by the interior mass of the Eurasian steppe.

Religious

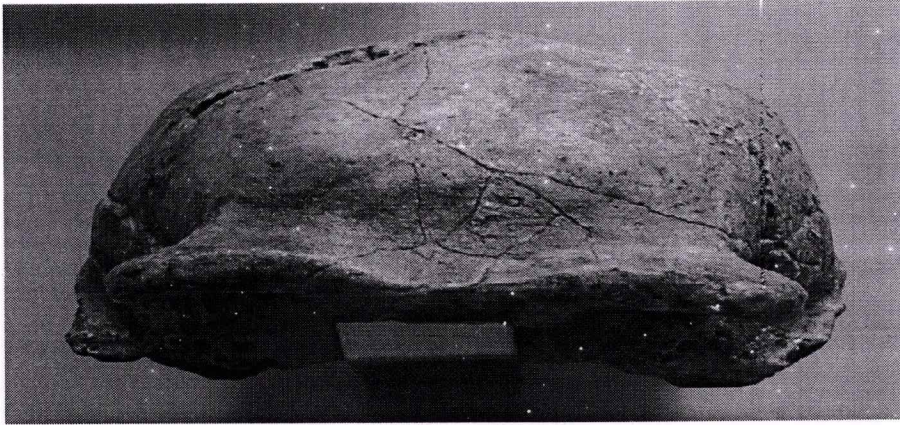
- Main article: History of religion
- The history of religion has been a main theme for both secular and religious historians for centuries, and continues to be taught in seminaries and academe. Leading journals include Church History, The Catholic Historical Review, and History of Religions. Topics range widely from political and cultural and artistic dimensions, to theology and liturgy.[62] This subject studies religions from all regions and areas of the world where humans have lived.

Social

- Main article: Social history
- Social history, sometimes called the new social history, is the field that includes history of ordinary people and their strategies and institutions for coping with life.[64] In its "golden age" it was a major growth field in the 1960s and 1970s among scholars, and still is well represented in history departments. In two decades from 1975 to 1995, the proportion of professors of history in American universities identifying with social history rose from 31% to 41%, while the proportion of political historians fell from 40% to 30%.[65] In the history departments of British universities in 2007, of the 5723 faculty members, 1644 (29%) identified themselves with social history while political history came next with 1425 (25%).[66] The "old" social history before the 1960s was a hodgepodge of topics without a central theme, and it often included political movements, like Populism, that were "social" in the sense of being outside the elite system. Social history was contrasted with political history, intellectual history and the history of great men. English historian G. M. Trevelyan saw it as the bridging point between economic and political history, reflecting that, "Without social history, economic history is barren and political history unintelligible

Geographical locations

- Particular geographical locations can form the basis of historical study, for example, continents, countries, and cities. Understanding why historic events took place is important. To do this, historians often turn to geography. According to Jules Michelet in his book *Histoire de France* (1833), "without geographical basis, the people, the makers of history, seem to be walking on air".[58] Weather patterns, the water supply, and the landscape of a place all affect the lives of the people who live there. For example, to explain why the ancient Egyptians developed a successful civilization, studying the geography of Egypt is essential. Egyptian civilization was built on the banks of the Nile River, which flooded each year, depositing soil on its banks. The rich soil could help farmers grow enough crops to feed the people in the cities. That meant everyone did not have to farm, so some people could perform other jobs that helped develop the civilization. There is also the case of climate, which historians like Ellsworth Huntington and Ellen Churchill Semple cited as a crucial influence on the course of history. Huntington and Semple further argued that climate has an impact on racial temper



Cast of the Homo Erectus fossils found in Zhoukoudian

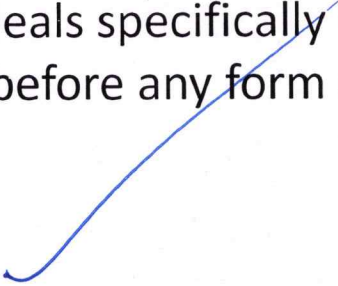
Cast of the Homo Erectus fossils found in Zhoukoudian

Outside of these individuals, each continent began to host excavations and field schools to explore their own prehistory across a wide spectrum of dates. Several examples, though not a complete list of every country, are listed below by continental area. Within Europe exploration began in England with several individuals such as amateur archaeologist William Pengelly who studied the Kent Cavern in approximately 1846, and within Turkey excavation into specifically prehistoric archaeological sites did not begin until much later between the 1980s to the 1990s into the region of Anatolia. In Asia and Australasia, prehistoric archaeology began in China in the 1920s with the work of amateur Swedish archaeologist Johan Gunnar Andersson who uncovered Homo Erectus fossils in the Zhoukoudian cave in southwest Beijing and excavated Yangshao in Henan, in India excavation began with the works of Captain H.

Congreve in 1847, in Japan prehistoric archaeology as it is defined by European standards began with the works of German collector Heinrich von Siebold in 1869 – though there had been an internal interest in prehistoric archaeology since the 1700s, in Vietnam excavation began in 1960 and in Australia the discipline of archaeology was solidified in the 1960s and 70s which allowed it to begin to expand and include Indigenous peoples and their heritage. In North America exploration began in the United States in the mid-1800s with the collective excavation interests being led by the works of the American Philosophical Society, the American Antiquarian Society, and the Smithsonian Institution and in Canada excavations started in 1935 though it was not until 1965 that it fully took off as an important field of archaeology. In South America within Argentina excavations began between 1880 and 1910. In Africa investigations into prehistoric civilisations began in roughly the 1960s and 70s and further prehistoric archaeology began Explorations into the Middle East in areas such as Iran in 1884 with excavations by the French at Susa.

SCIENTIFIC STUDY OF PREHISTORIC PERIOD

- The only way to study and gather information about the prehistoric period is by taking a look and examining the archaeological remains of that period. The archaeological remains become the primary source of study about the prehistoric period.
- There was no human documentation in that period, therefore there are no literary sources available to study the prehistoric period. Also, during that time, humans did not know the use of coins and other similar materials. Hence, the only option left for studying the prehistoric period is the archaeological remains.
- Archaeologists and physical anthropologists are the major researchers into human prehistory, and they employ excavation, geologic and geographic surveys, and other scientific analyses to expose and understand the character and behaviour of preliterate and nonliterate peoples. Human population geneticists and historical linguists are also contributing to these discussions.
- Cultural anthropologists aid in the context-setting of social interactions in which items of human origin travel between individuals, allowing for the examination of any article that originates in a prehistoric human context. As a result, a vast range of scientific and social sciences, including anthropology, archaeology, archaeoastronomy, comparative linguistics, biology, geology, molecular genetics, palaeontology, palynology, physical anthropology, and many more, give information on prehistory.

- The archaeological remains become the primary source of study about the prehistoric period
 - There was no human documentation in that period, therefore there are no literary sources available to study the prehistoric period. Also, during that time, humans did not know the use of coins and other similar materials.
 - Prehistoric archaeology is a subfield of archaeology, which deals specifically with artefacts, civilisations and other materials from societies that existed before any form of writing system or historical record.
- 

METHODS TO STUDY PREHISTORIC PERIOD

❖ Methods of investigation and analysis

Archaeologists use many different methods to research the artefacts and materials that may be found during an excavation. Within early excavations dedicated to treasure hunting little to no care was taken when removing soil covering artefacts or when removing the artefacts and materials themselves from sites which may have led to the destruction of materials and has placed some recovered artefacts at risk. Often the digs were conducted by amateurs and treasure hunters who did not have the knowledge we do now about how to remove artefacts safely. Some of the main techniques used to gently recover artefacts or to ensure the integrity of the site remains for future exploration and the preservation of the site are; aerial photography to survey the site, stratigraphic measurements which document the layers of soil to aid in site dating, fieldwalking which involves walking the ground and looking for objects and making site plans to record the locations of objects and remains on a site.

Mesolithic Deeside found while fieldwalking

Within aerial photography several important markers of archaeological sites can be revealed such as; shadow marks, crop marks and soil marks. Archaeologists also use a range of techniques when excavating a site to uncover materials including; digging test pits, creating trenches and using the box-grid or quadrant method to keep track of different areas of the site. Some of the technology used to assist in looking for and uncovering materials in prehistoric archaeological sites are; electrical resistivity meters which help locate objects

underground non-disruptively, laser theodolites to help map the site layout, satellite survey which uses satellites to get an aerial view of the site, lidar which uses lasers to scan for objects underground and sonar which uses soundwaves to scan the earth for objects. None of these techniques are solely practised within prehistoric archaeology, most archaeological techniques may be used across many of the different subfields of archaeology.

❖ Issues in the field

There are a vast amount of difficulties faced within prehistoric archaeology including; site degradation,[31] which makes understanding a site very difficult as it erases evidence that may have been useful for gaining insight into the civilisation. Degradation of a site may be exacerbated by climate change as often prehistoric sites are delicate due to the nature of their age, for example, material evidence such as textile fabric which may have survived from antiquity in rare contexts due to being buried may be lost due to the top layers of the site being uncovered. However, as cosmologist Martin Rees and astronomer Carl Sagan have said 'absence of evidence is not evidence of absence' which is highly relevant within the field of prehistoric archaeology as often archaeologists must work with missing pieces and theorise in order to understand a site. Due to the substantial gaps that exist in the prehistoric record, there are many periods of time, inventions and materials – particularly those that were made out of perishable materials such as wood or textile fabrics, that have been lost to time or that are incredibly difficult to locate due to the conditions that must exist in order for them to survive. It is because of these gaps that in order to understand the physical evidence that has been recovered prehistoric archaeologists, as well as their counterparts in the sibling fields of archaeology, must make educated guesses as to what is there and what should be there based on the finds that they have. The variety of theories regarding the purpose of objects or sites for example obliges archaeologists to adopt a critical approach to all evidence and to examine their own constructs of the past. Structural functionalism and processualism are two schools of archaeological thought which have made a great contribution to prehistoric archaeology. Other issues within the field of prehistoric archaeology which also affect every other branch of archaeology is the ethics of removing artefacts and or storing finds in museums.

This moral question is a delicate balance within prehistoric archaeology as all finds and bodies must be treated with respect but archaeologists also wish to study them in order to further their understanding of the different origins of humanity.

❖ Main types and locations of sites

Cave painting of Rhinoceros grotte in the Chauvet Cave

Some of the main types of sites include early proto-city and proto city-states, settlements, temples and sanctuaries of worship and cave sites. To define each of these terms archaeologically; a proto city-state is a large town or village that existed in the Neolithic era, it is also categorised by its lack of central rule or deliberate city organisation of infrastructure.

A settlement is an area where individuals lived either permanently or semi-permanently, conversely temples or sanctuaries were areas of cult practice or worship to the gods or beings associated with the specific people,[27] areas of worship in early prehistoric sites or periods can also include spiritual areas of prominent religious importance without the presence of a directly associated deity.[27] Cave sites are sheltered areas, usually in rock formations where individual members of a society may have gathered together in either semi-permanent or permanent basis to create art, to dwell or to prepare food.[27] All prehistoric archaeology sites must contain evidence of humans – even if they did not actively live on the site or visited it occasionally, and a lack of historical record within the society. Sites that feature the ability of the inhabitants to record information about themselves are not considered prehistoric.

Prehistoric archaeological site of Catalhoyuk

Prehistoric settlements are scattered all over the world, they vary in age and size. The period in which prehistoric archaeology covers is most often the Stone, Bronze and Iron ages, within each of these ages periods such as the Neolithic within the Stone age are explored deeply. In Western Europe the prehistoric period ends with Roman colonisation in 43 AD, with some non-Romanised areas the period does not end until as late as the 5th Century AD. Although in many other places, notably Egypt (at the end of the Third Intermediate Period) it finishes much earlier and in others, such as Australia , much later. Some of the main sites that are being studied are; Catalhoyuk in Turkey, the Chauvet Cave in southern France, Bouldnor Cliff Mesolithic Village in the United Kingdom and Franchthi in Greece among many others. New sites are being uncovered regularly and their importance to understanding prehistoric peoples continues to further our knowledge of the past.

VIEWS OF NOTABLE ARCHAEOLOGIST

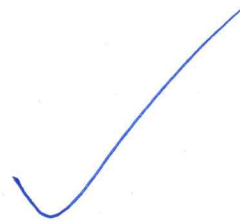


Boucher de Perthes - a French archaeologist

There are multitudes of credible past and emerging prehistoric archaeologists who have dedicated time and effort into honing their craft in order to accurately understand the lives of the individuals and societies they are studying. Some of the important foundational archaeologists are; Daniel Wilson a Scottish-born Canadian archaeologist who first brought the term prehistoric into an archaeological context, Paul Tournal a French amateur archaeologist, Christian Jürgensen Thomsen a Danish antiquarian who classified the three age system important to aiding early European archaeological works,[8] Boucher de Perthes a French archaeologist who uncovered handaxes in the Somme River, Jens Jacob Worsaae a Danish archaeologist who studied stratified assemblages in Denmark, Giuseppe Scarabelli an Italian archaeologist who studied stratigraphy in Italy, and William Pengelly – an English archaeologist. They each fundamentally contributed to beginning the field of archaeology through defining how the subfield is different to archaeology.

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ARCHAEOLOGY :
A SCIENCE OF STUDYING HISTORY.

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INTRODUCTION

Archaeology or archeological is the scientific study of human activity through the recovery and analysis of material culture. The archaeological record consists of artifacts, architecture, bio facts or Eco facts, sites, and cultural landscapes. Archaeology can be considered both a social science and a branch of the humanities. In Europe it is often viewed as either a discipline in its own right or a sub-field of other disciplines, while in North America archaeology is a sub-field of anthropology.

Archaeologists study human prehistory and history, from the development of the first stone tools at Lomekwi in East Africa 3.3 million years ago up until recent decades. Archaeology is distinct from paleontology, which is the study of fossil remains. Archaeology is particularly important for learning about prehistoric societies, for which, by definition, there are no written records. Prehistory includes over 99% of the human past, from the Paleolithic until the advent of literacy in societies around the world. Archaeology has various goals, which range from understanding culture history to reconstructing past lifeways to documenting and explaining changes in human societies through time. Derived from the Greek, the term archaeology literally means "the study of ancient history.

The discipline involves surveying, excavation, and eventually analysis of data collected, to learn more about the past. In broad scope, archaeology relies on cross-disciplinary research .

Archaeology developed out of antiquarianism In Europe during the 19th century, and has since become a discipline practiced around the world. Archaeology has been used by nation-states to create particular visions of the past .Since its early development, various specific sub-disciplines of archaeology have developed, including maritime archaeology, feminist archaeology, and archaeoastronomy, and numerous different scientific techniques have been developed to aid archaeological investigation. Nonetheless, today, archaeologists face many

ARCHAEOLOGY : DEFINITION AND AIMS

The term 'archaeology' comes from the Greek word *Archaios* means *Arche* or ancient or the beginning. *Logos* means theory or science A simple definition of archaeology is "Archaeology is essentially a method of reconstructing the past from the surviving traces of former societies." Archaeology is mainly concerned with the material vestiges of man, which means everything made by human beings from simple tools to the machines and from simple houses to splendid palaces. All these material remains are studied under the archaeological study. Some of the definitions of the term archaeology are as follows:

(a) "Archaeology is a technique by which facts are obtained for the construction of history and pre-history, like history, is humanity a way of looking at man and his work."

(b) "The archaeological excavator is not digging up things, he is digging the people"- Sir Mortimer Wheeler.

(c) "Archaeologists are students of material evidence surviving from past of tangible and visible products, and achievements of the extinct communities" - Stuart Piggot.

(d) "Archaeology is that branch of science which is concerned with past phases of human culture" - O. G. Crowford.

(e) "Archaeology deals with everything from Eoliths to time capsule and covers such an enormous field that much of it is dealt with in specialist studies such as history of art or architecture" - Glyn Danial.

(f) "Archaeology is the way in which the actions of human beings may be understood through the study of that human beings did rather than simply through what they said of themselves - R. J. Braidwood.

An archaeologist mainly aims at the study of past. He focuses his attention on the material aspects of culture. These material objects are tangible and visible, which provide us valuable information about the socio-economic and cultural life of the past people. Thus archaeology plays an important role as a source of the history of mankind. It serves as the prime source of knowledge for the long saga of man in the pre-historic times. Pre-historic archaeology has revealed the various stages of evolution of human cultures in the different parts of the world.

Artefact: The smallest cultural unit is called as artefacts in the field of archaeology. An artefact is a product of human workmanship.

Industry: Collection of one category of artefacts at a site is called an industry. For instance, the potteries at a site can together be called as ceramic industry. Similarly, terms like bead industry, stone tool industry etc. are often used.

Culture: In brief several similar assemblages found in several sites and covering a reasonably full range of human activity constitute a culture according to an archaeologist.

ARCHAEOLOGICAL SCIENCE.

What is archaeological science?

Simply put, archaeological science is the development and application of scientific techniques to the analysis of archaeological materials. The classic example is the use of radiocarbon decay to provide a robust chronology enabling us to examine the timing of different cultures across the globe. Many other scientific methods, from imaging to physical, chemical and biological analysis have been enthusiastically embraced by archaeology, as they often provide the best means to understand the date, geographic origins, manufacture and use of the artefacts we study, as well as the ancestry, diet and life-histories of past humans, animals and plants. The dramatic success of these approaches has meant that the interface between archaeology and other sciences is increasingly fluid, and at Cambridge we strive to lead this integration of cutting-edge archaeology with novel scientific methods. Archaeological science is therefore at the forefront of interdisciplinary research highlighting ethical challenges and practicalities of shared knowledge creation. Archaeological science now reaches into almost every area of the discipline and explores big themes: how we have shaped the world and our resilience to catastrophe, the deep history of technological inventions, domestication, and migrations which define our modern world. As analytical precision and speed of measurement increase and datasets expand (fueled by the open science movement) an increasingly important element of archaeological science is the interrogation and analysis of data using advanced computation.

What do archaeological scientists do?

Archaeological scientists face both the challenges and the opportunities of working at the interface of humanities and hard sciences. They have to understand the theories and questions that guide archaeological research as well as the foundations and uses of the scientific techniques they employ. Some archaeological scientists spend most of their time in the lab, for example conducting genetic analyses or optimizing calibrations for chemical analyses of

archaeological materials; others spend much time in the field, for example collecting soil samples for micro morphological analyses or advising on conservation and restoration of freshly excavated materials; archaeological scientists are also often found in museums and archives doing scientific analyses with portable spectrometers and other equipment. Some specialists develop new methods and exploratory projects whereas others prefer the use of more established techniques that may demand less scientific background, or specialize in the computer-based modelling and analysis of data generated by others. Many archaeological scientists involve experimentation too, from small-scale laboratory tests to full-blown reconstructions of ancient technologies.

Archaeological scientists come from all kinds of backgrounds: from biology and physics through to archaeology and classics. They all share an interest in finding synergies and solving puzzles, fully aware that some of the parts may have been lost along the way, and that collaborative teams are essential to use our knowledge to its full potential. This is also reflected in our student cohorts, including students with a wide range of interests and skill-sets that often learn from each other as much as from their teachers. We teach archaeological science at undergraduate level but also through our specialist MPhil in Archaeological Science and PhD programs.

What are the applications of archaeological science?

Archaeological science works in concert with other branches of the discipline, both within Cambridge and through an extended network on national and international collaborations. We advocate the integrated use of relevant scientific methods often combining organic and inorganic materials in order to enrich archaeological interpretation from single objects, to site contexts, societies and their global connections. For instance:

- spatial analysis from field walking surveys to satellite images is used to examine organization and patterning of human activities, and their interaction with past landscapes
- analysis of soils and sediments provide insight into site formation and spatial variation over a range of scales

- remains of plants and animals provide evidence of past environments and contain isotopic, genomic and proteomic records of diet, health and disease
- we investigate the raw materials and production methods of ancient technologies to understand their organization and change
- at museums and archives we find a rich treasure trove of artefacts, but they must be understood in the context of the methods of past conservation and the current state of decay
- large datasets of scientific data are increasingly available, and through an understanding of their mode of production we can integrate them to explore broader questions over greater length scales

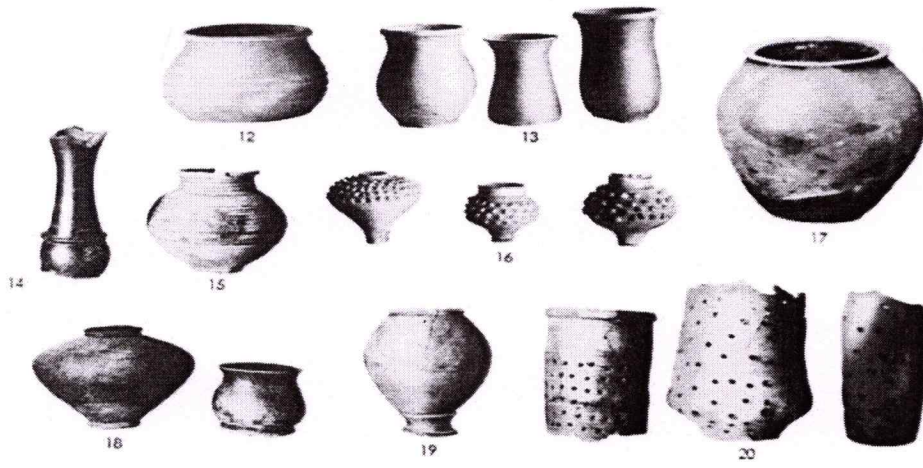
Archaeological science trains you to apply scientific methods and tools to remarkable materials from our past.

ARCHAEOLOGY AND OTHER SCIENCES.

1. SOCIOLOGY :

This is a science which deals with the sociological aspect of human civilizations. Archaeology has considerably contributed to the development of sociology. So far as the primitive societies are concerned, archaeology is the only source for their study. In the course of excavations we come across lot of material which helps us for the study of the social conditions of different periods. In the same way we also get sufficient material which helps to throw light on the development of social institutions during different periods. The greatness of a particular civilization is judged from the development of social institutions. Consequently archaeology is the only source to know about the developments of societies during ancient times. Based on the material remains only we can judge the social structure of the Pre and Proto historic cultures. For example, we can study the social conditions of the Indus Valley (Harappan) civilization on the material remains only.

Scholars and the public typically think of archaeology as an endeavor to find earliest examples of such things as the domesticated horse or writing or cities. All too often, articles with archaeological themes in the popular media focus solely on our recovery of things associated with the particularities of history. This emphasis misrepresents archaeology, a scientific discipline that has advanced greatly in recent decades. We argue that archaeology can now make significant contributions to the broader social sciences. This advance results from two major trends: the accumulation of considerable new fieldwork data from around the world and the development of new methods and concepts that transform our evidence into reliable reconstructions of past social dynamics. In recent decades, scientifically minded archaeologists from both the anthropological and the classics traditions have found common ground in the rigorous analysis of past human societies and their changes through time.



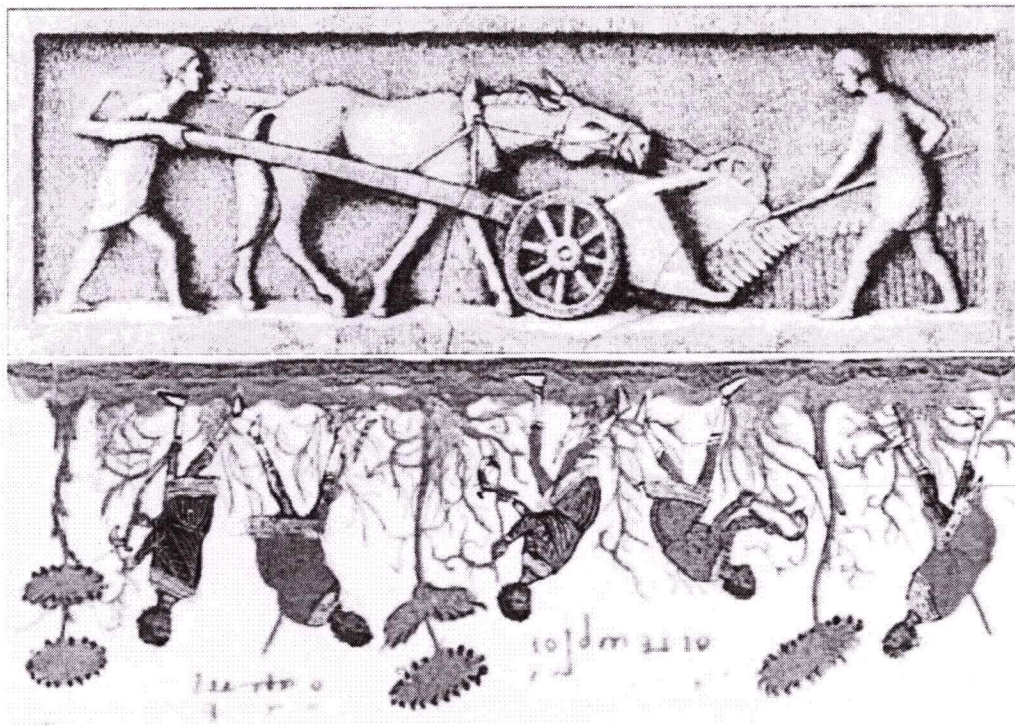
2. ECONOMICS :

The relationship between archaeology and economics is also very close because for a systematic study of present economy, the study of ancient economy is necessary. The knowledge about ancient economic factors is gathered through archaeological sources. For example, in most of the inscriptions belonging to the early centuries of the Christian era we come across frequent references to the guilds of traders and industrialists known as Shrenis. These guilds enjoyed pre-eminent position in the economic life of ancient India. They served as the bankers of the time, received deposits and paid interests. There were fixed deposits entrusted with these guilds. The industrialists of the time could get loans from them and paid the interest. The rate of interest varied from 9% to 12% per annum.

Through these guilds export and import trade was carried. During ancient times India had brisk trade relations with the western world, particularly the Roman Empire. As a result of which several Roman and Greek traders paid frequent visits to India. These were known as Yavana traders. Names of several Yavana traders in contemporary inscriptions have been mentioned in the inscriptions from western India such as from Karle, Nasik, Junnar etc. A large number of Roman coins have been discovered in different parts of India. It was also the result of this rich trade. It was because of this foreign factors about ancient Indian economy are revealed through the wealth that India became a rich country in the world. Many such archaeological material with regard to the economic condition in ancient India.

A new exciting economic literature has recently emerged that goes back to ancient history to explain current differences in culture, institutions, and economic development across the globe. The scarcity of written records to study this period has pushed economists to look at dataset and methodologies developed in archaeology and paleoanthropology. As an illustration of the importance of archaeology to understand persistent differences in economic prosperity, we will review a series of empirical works in economics covering: (1) the onset of regional

difference during the Paleolithic and Neolithic, (2) the exceptional persistence of economic disparities across regions and countries, (3) the origin and the role of the first states in explaining the emergence and the persistence of these disparities, (4) the role of ancient trade. The last section provides a primer of some relevant archaeological databases providing important sources for economic studies.



3. GEOGRAPHY :

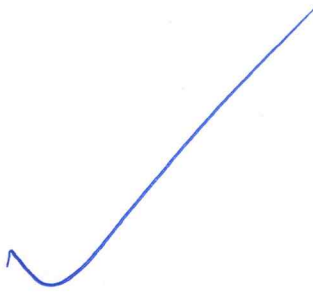
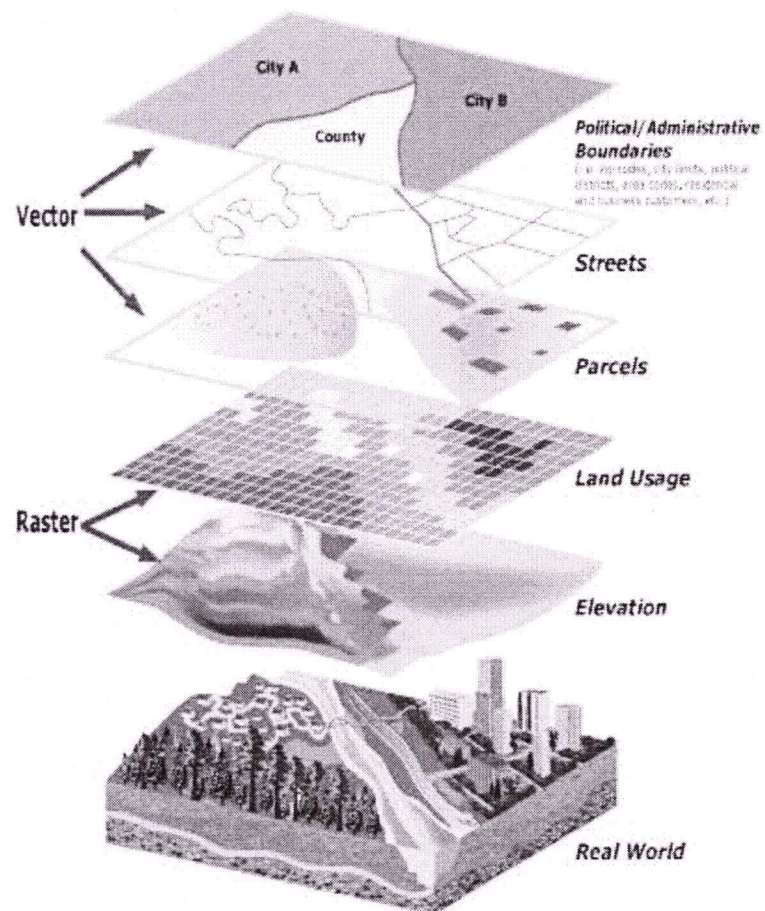
Geography can be well studied with the help of Archaeology. We know about present geography on the basis of the present material But for the study of ancient geography we have to rely upon archaeology. For example, several changes have taken place on the surface of the earth during ancient times. We don't possess the knowledge of these changes recorded anywhere. For example, the city of Dwaraka was submerged under water. The mythological legends used to inform us about the glory of this city. Due to geographical changes on the earth, it was submerged under water But now, with development of marine archaeology, the material remains of lost Dwaraka have been discovered and with this knowledge, we can study the changes that have taken place on the surface on the western coast of India.

Another example can be cited here about lost river Saraswati. During ancient times there was a river named Saraswati as a contributory of the Ganga but now we don't have any trace of the Saraswati. Archaeological explorations have proved that the Saraswati disappeared due to the formation of desert in Rajasthan. In ancient India several important cities were there which have now been disappeared. For example, Dwarka was an important port and city on the western coast of Gujarat, but due to the sea erosion the city was drowned in the sea. Recently, archaeological excavations have established the existence of Dwarka near Somnath in Saurashtra.

Thus archaeology is very much useful for understanding of every social science as well as aspects of social life. We come across evidences in archaeological sources which shed a light on the political conditions of ancient India. Based on material remains we can interpret the political conditions of the Indus valley civilization. Similarly, inscriptions also provide valuable information which shed light on ancient Indian languages, literature, religion, philosophy and such other subjects.

This shows as to how archaeology is closely related with almost all the social as well as various aspects of human life.

Geographic information system :



ARCHAEOLOGY AND NATURAL SCIENCES.

1. ECOLOGY :

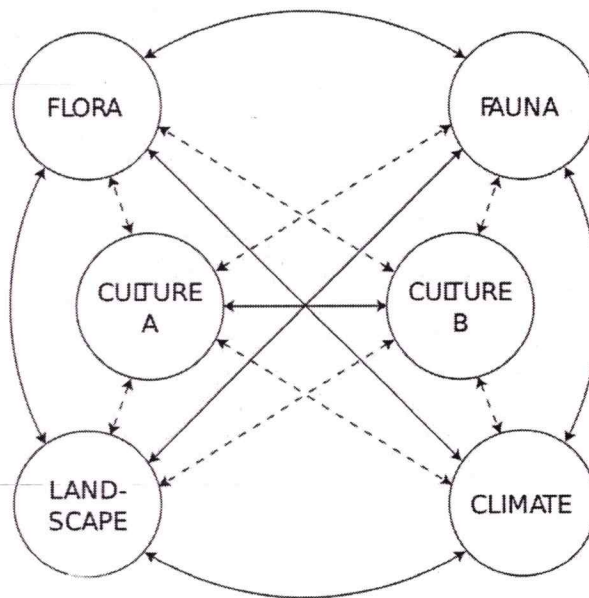
Archaeology is very closely related with the environment of the earth. The changes in the environment affect the growth of archaeology. Because of this, through the archaeological changes we come to know about the ecological changes of the past about which we have no other source. Since the emergence of the earth its environment has undergone frequent changes during different The evolution of human civilization is dependent on the environments. So we come across deep impact of the environments upon the social and economic life of the people. For example, the Konkan region of Maharashtra has come up due to the process of sea erosion. Once upon a time the Arabian Sea touched the feet of the Sahyadri, but due to the process of erosion the sea level went on lowering down as a result of which the present western coastal region of India was exposed. Gradually it came under human settlements. But as this belt came into existence later than the other parts of the main land, the development of human civilization also began here at a later stage. Consequently, we come across the emergence of human civilization in this area at quite a later stage than the upland peninsular region of India.

As a result of the sea erosion several ports like Sopara, Kalyan, Chaul and Puri (Elephanta Island) came to prominence as flourishing ports through which import and export of commodities was carried on a large scale. As a result of this external trade during ancient times India developed close commercial contacts with the western world and a continuous flow of wealth from the western countries started towards India which made our country economically rich and thus prepared the

background of the golden age of ancient India. These facts are recorded in the writings of the Greeks like Plinny.

This economic prosperity did not last for a longer time mainly because of ecological changes. From the fifth century onwards India's trade relations with the western world were on the decline because due to environmental changes the proportion of rainfall went on diminishing. This affected the agricultural production and there was a decline in trade and commerce. In this way ecology or environment is closely related with archaeology. Recently environment or ecology has been introduced as a separate branch in the study of archaeology named as Palaeo ecology.

Archaeology as ecology diagram :



2. ANTHROPOLOGY :

Anthropology is the study of the origin and development of human societies and cultures. Culture is the learned behavior of people, including their languages, belief systems, social structures, institutions, and material goods. Anthropologists study the characteristics of past and present human communities through a variety of techniques. In doing so, they investigate and describe how different peoples of our world lived throughout history.

Anthropologists aim to study and present their human subjects in a clear and unbiased way. They attempt to achieve this by observing subjects in their local environment. Anthropologists then describe interactions and customs, a process known as ethnography. By participating in the everyday life of their subjects, anthropologists can better understand and explain the purpose of local institutions, culture, and practices. This process is known as participant-observation.

As anthropologists study societies and cultures different from their own, they must evaluate their interpretations to make sure they aren't biased. This bias is known as ethnocentrism, or the habit of viewing all groups as inferior to another, usually their own, cultural group.

Taken as a whole, these steps enable anthropologists to describe people through the people's own terms.

To understand how humans evolved from earlier life forms, some biological anthropologists study primates, such as monkeys and apes. Primates are considered our closest living relatives. Analyzing the similarities and differences between human beings and the "great apes" helps biological anthropologists understand human evolution.

Other biological anthropologists examine the skeletal remains of our human ancestors to see how we have adapted to different physical environments and social structures over time. This specialty is known as human paleontology, or paleoanthropology.

3. GEOLOGY :

Geology is the science which deals with the condition and structure of earth as well as the evidence afforded through various forms of the layers. Archaeology is an inter-disciplinary science which seeks help from various other disciplines like Geology, Anthropology, Physics, Chemistry and Biology. At the same time archaeology also contributes for the study and development of these sciences. The geological aspect of archaeology is one of the most important aspects because the study of archaeology mainly depends upon geology.

The soil (with which the archaeology has to deal considerably) is the combined result of natural weathering forces, decayed and decomposed plants and animals and the activities of living creatures. In archaeological excavations and explorations sometimes human or animal fossils are discovered. The fossils are formed due to the hardening of bones which is again the result of a geological process. From this we can understand the close relationship between archaeology and geology. Geology is the only medium for the study of pre-historic archaeology.

Archaeology-Geology relationship can be stated as:

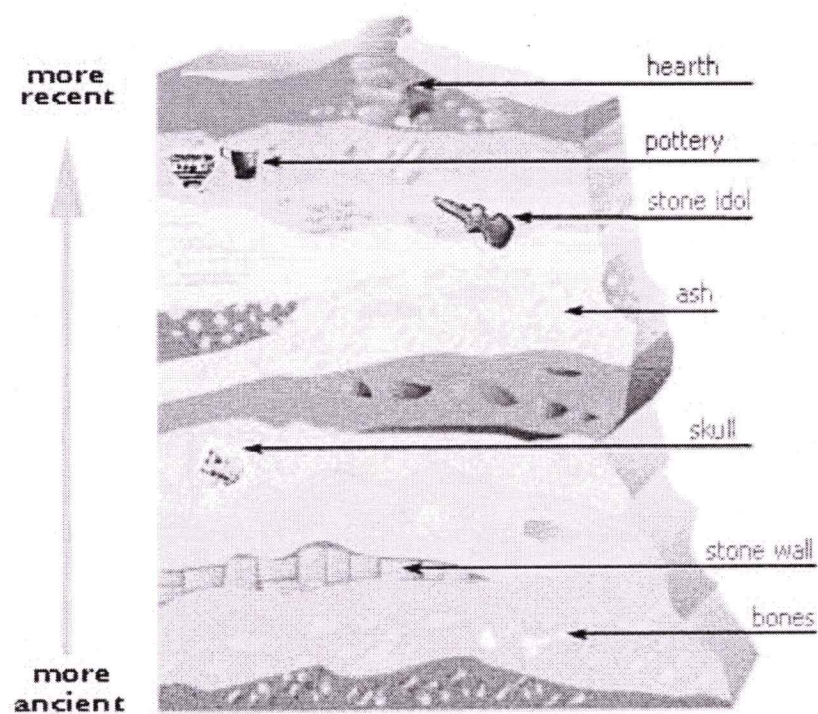
-In geology the different stages of the evolution of the earth such as formation of rocks, minerals, soils, climatic changes and their effects on land formation are studied.

-The geological law of stratification has become a major source for the archaeological excavations.

-Geology has its own methods of dating which is known as glacial verve chronology. The science of the formation of soil is another aspect of geology which

also helps for the study of archaeology. For example, when an archaeologist undertakes the excavation the layers are differentiated from each other on the basis of the colour of the soil. Generally, the colour, of the earth of an ancient mound is whitish (which in Maharashtra is known as Pandhari) whereas the colour of the natural soil is either blackish (Kali) or reddish. The whiteness of the soil is resulted out of human habitation on that site.

-Whenever an excavation is undertaken this factor helps for stratification meaning the differentiation of the layers.



ARCHAEOLOGY AND PURE SCIENCES.

1. PHYSICS :

Archaeological investigations are largely supported by scientific methods. Physics has contributed in many ways to such archaeological investigations. For example, physics provides scientific apparatus in archaeological survey. These are:

Proton Magnetometer is used for detecting buried iron and kiln sites.

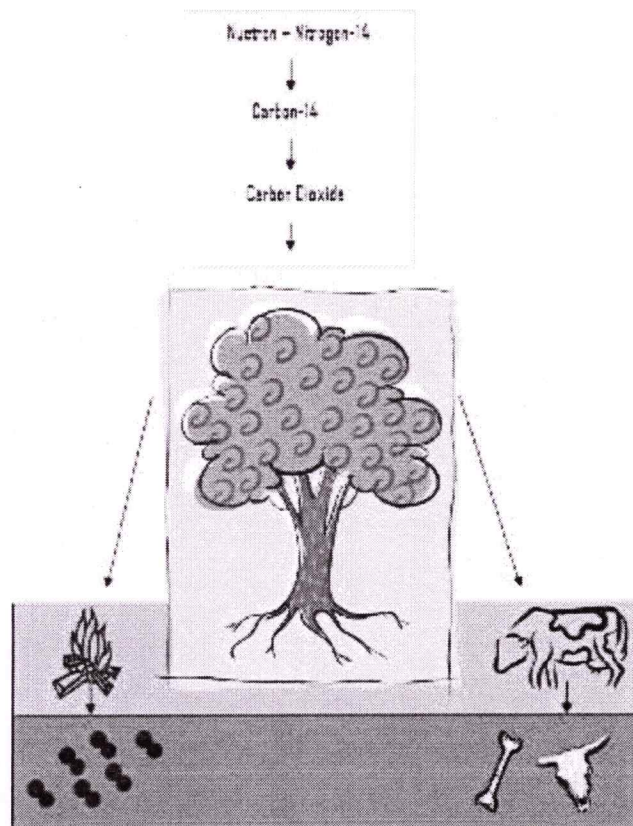
Thermo Remnant Magnetic Survey to detect burnt objects such as clay objects, artifacts and brick structures.

Electricity Resistivity Metric Survey: To study the buried soils rocks, Pits etc. These instruments have made a valuable contribution in developing modern archaeological techniques.

Physics also helps in dating different cultures discovered during the course of exploration and excavation. For example, the method of dating such as:

A) Radio carbon dating.

As long as there is organic material present, radiocarbon dating is a universal dating technique that can be applied anywhere in the world. It is good for dating for the last 50,000 years to about 400 years ago and can create chronologies for areas that previously lacked calendars. In 1949, American chemist Willard Libby, who worked on the development of the atomic bomb, published the first set of radiocarbon dates. His radiocarbon dating technique is the most important development in absolute dating in archaeology and remains the main tool for dating the past 50,000 years.



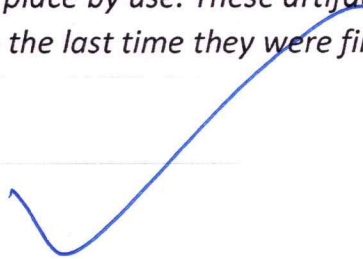
B) Thermo Luminescence Dating :

Thermoluminescence can be used to date materials containing crystalline minerals to a specific heating event. This is useful for ceramics, as it determines the date of firing, as well as for lava, or even sediments that were exposed to substantial sunlight. These crystalline solids are constantly subjected to ionizing radiation from their environment, which causes some energized electrons to become trapped in defects in the molecular crystal structure. An input of energy, such as heat, is required to free these trapped electrons. The accumulation of trapped electrons, and the gaps left behind in the spaces they vacated, occurs at a measurable rate proportional to the radiation received from a specimen's immediate environment. When a specimen is reheated, the trapped energy is released in the form of light (Thermoluminescence) as the electrons escape. The amount of light produced is a specific and measurable phenomenon. If the specimen's sensitivity to ionizing radiation is known, as is the annual influx of radiation experienced by the specimen, the released Thermoluminescence can be translated into a specific amount of time since the formation of the crystal structure. Because this accumulation of trapped electrons begins with the formation of the crystal structure, Thermoluminescence can date crystalline materials to their date of formation; for ceramics, this is the moment they are fired. The major source of error in establishing dates from Thermoluminescence is a consequence of inaccurate measurements of the radiation acting on a specimen. The complex history of radioactive force on a sample can be difficult to estimate. However, Thermoluminescence proven acceptable in providing approximate dates in the absence of more exact measures.

C) Archaeomagnetism Dating :

Archaeomagnetic dating is the study and interpretation of the signatures of the Earth's magnetic field at past times recorded in archaeological materials. These paleomagnetic signatures are fixed when ferromagnetic materials such as magnetite cool below the Curie point, freezing the magnetic moment of the material in the direction of the local magnetic field at that time. The direction and magnitude of the magnetic field of the Earth at a particular location varies with time, and can be used to constrain the age of materials. In conjunction with techniques such as radiometric dating, the technique can be used to construct and calibrate the geomagnetic polarity time scale. This is one of the dating methodologies used for sites within the last 10,000 years. The method was conceived by E. Thellier in the 1930s and the increased sensitivity of SQUID magnetometers has greatly promoted its use.

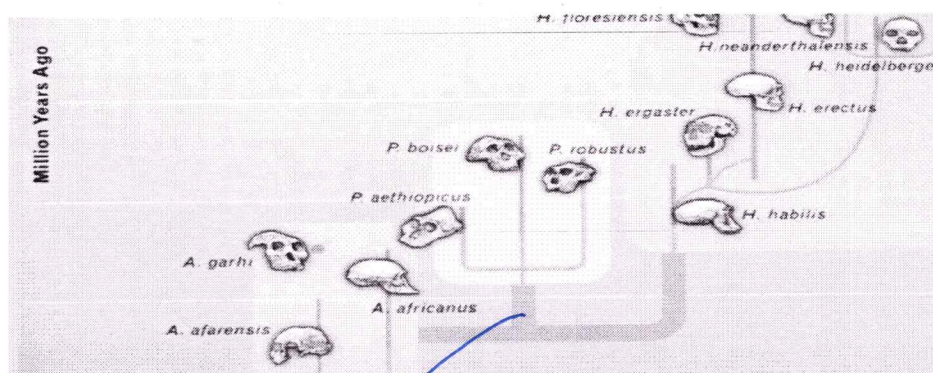
The Earth's magnetic field has two main components. The stronger component known as the Earth's poles, reverses direction at irregular intervals. The weaker variations are the Earth's magnetic map. Within these weaker areas the local directions and intensities change gradually (secular variation). A compass does not point to the true North Pole but to a direction that is a function of the North Magnetic Pole and the local secular variation to yield a magnetic declination. The magnetic declination at any given time can be frozen into a clay formation that contains magnetite and is heated above the Curie point. In general, many cultures used long-term fire hearths made of clay bricks, or a space lined with clay, that were baked into place by use. These artifacts of occupation can yield the magnetic declination from the last time they were fired or used.



D) Potassium – Argon Dating :

potassium-argon dating, method of determining the time of origin of rocks by measuring the ratio of radioactive argon to radioactive potassium in the rock. This dating method is based upon the decay of radioactive potassium-40 to radioactive argon-40 in minerals and rocks; potassium-40 also decays to calcium-40. Thus, the ratio of argon-40 and potassium-40 and radiogenic calcium-40 to potassium-40 in a mineral or rock is a measure of the age of the sample. The calcium-potassium age method is seldom used, however, because of the great abundance of nonradiogenic calcium in minerals or rocks, which masks the presence of radiogenic calcium. On the other hand, the abundance of argon in the Earth is relatively small because of its escape to the atmosphere during processes associated with volcanism.

The potassium-argon dating method has been used to measure a wide variety of ages. The potassium-argon age of some meteorites is as old as 4,500,000,000 years, and volcanic rocks as young as 20,000 years old have been measured by this method.



E

2. CHAMISTRY :

Archaeology is indebted to Chemistry to a great extent. It is the closest natural science to archaeology. Till the middle of the present century the carbon dating method was the only scientific method available for ascertaining the chronological sequence of cultures discovered through excavations. Therefore, the C-14 method continued to be the main method of dating for a pretty long time.

Chemistry has offered many new methods and techniques which have helped for the further development of archaeological studies. For example, the cleaning and preserving the pottery, coins and other antiquities has become possible only with the help of chemicals. Metal objects like iron, copper, bronze and silver yielded from the excavations are to be treated chemically for removing incrustations.

Chemistry has played a vital role in the conservation of antiquities and monuments. Because of this several important antiquities such as the ancient paintings at Ajanta caves have been preserved and their degeneration has been stopped. Several chemical methods and techniques are adopted in archaeological works such as the electro chemical and electrolytic reduction methods for cleaning the objects. Recently, chemistry has provided a new dating method which is known as the Fluorine, Uranium and Nitrogen dating of Bones.

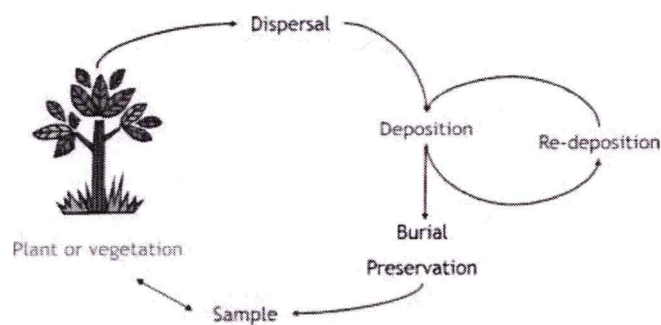
3. BOTANY :

The Study of the Flora and Fauna is necessary for understanding the ancient environmental setting and human ecology of cultures.

During the course of excavations certain remains of plants corns are found which provide us information about the flora of that particular site during ancient times. It also reveals the crop patterns For example at Mohen Jo Daro and Harappa a large quantity of wheat was noticed in the building known as the Great Granary From this the archaeologists came to know about the cultivation o wheat by the Indus valley people..

Botanical antiquities reveal the climatic and environmental conditions of ancient times. The study of ancient plants can be made the with the help of archaeological finds. This subject has been developed as an independent branch in archaeological study which A is known as Phlebotomy. This study provides information Re regarding the nature of vegetation, cultivation of crops and foo habits of ancient times.

Archaeobotany : overview diagram.



4. ZOOLOGY :

Zoology (sometimes called archaeozoology), also known as faunal analysis, is a branch of archaeology that studies remains of animals from archaeological sites. Faunal remains are the items left behind when an animal dies. These include bones, shells, hair, chitin, scales, hides, proteins and DNA. Of these items, bones and shells are the ones that occur most frequently at archaeological sites where faunal remains can be found. Most of the time, a majority of these faunal remains do not survive. They often decompose or break because of various circumstances. This can cause difficulties in identifying the remains and interpreting their significance.

Zooarchaeology serves as a "hybrid" discipline: combining the studies of archaeology and zoology, which are the study of past human culture and the study of animals respectively. Therefore, zoo archaeologists may also be: anthropologists, paleontologists, archaeologists, zoologists, ecologists, etc. However, the main focus of Zoo-archaeology is to not only find remnants of past animals, but to then identify and understand how humans and their environment (mainly animal populations) coexisted. Zooarchaeology allows researchers to have a more holistic understanding of past human-environment interactions, thus making this topic a sub-field of environmental archaeology. Whether it is diet, domestication, tool use, or ritual; the study of animal remains provides a great amount of information about the groups that interacted with them. Archaeology provides information on the past which often proves invaluable for understanding the present and preparing for the future. Zoo archaeology plays a valuable part in contributing to a holistic understanding of the animals themselves, the nearby groups, and the local environments.

ARCHAEOLOGY AND STATISTICAL METHOD .

With the development of archaeology as an independent discipline several new methods and techniques came to be employed in its study. The statistical method is one of them. Statistical formulations serve as a tool for the easier handling of complex and voluminous data.

On the basis of the statistical data the conclusions about the nature, forms and conditions of ancient cultures are accurately studied. Therefore statistics has become inevitable in archaeological study. Recently, computer has become an important tool for archaeological analysis. It provides an up to date statistical data which helps for the analysis of artifacts discovered in excavations.

Statistics in Archaeology¹ presents the particular statistical methodologies which can be used to address specific issues and problems in archaeology. Through in-depth case studies, the author illustrates how such techniques can be employed in the archaeological context. These examples are taken from a wide range of different countries and reflect the international nature of archaeology, and its students and practitioners. The technical level of the book is intermediate and is for the academic and professional archaeologist needing to know more about the statistical techniques available to them. The structure and content of the book mean that it will also appeal to applied statisticians interested in how statistical methods can be used in different application areas.

ARCHAEOLOGY AND COMPUTER SCIENCE.

Recently computer science also has become an important aspect of archaeological analysis. Especially it is necessary for artefact analysis on sites. It helps us in controlling, indexing and storing information and also the classification of the data in the archaeological method.

In this way archaeology is related to several natural sciences. Through this relationship archaeology as well as the sciences are helpful to each other. Archaeology provides fresh data with regard to natural sciences of ancient period, whereas the natural sciences provide techniques and methods for the study of archaeology.

Thus it is clear that archaeology is very much dependent on a multitude of sciences and is itself increasingly adopting the methodology of a natural science. In last decades of the 20th century, a school of archaeologists led by Binford and David Clerk has been strongly advocating that archeology is a scientific discipline. This approach is known as 'New Archaeology'.

Archaeology studies a wide variety of artefacts or material remains of human civilization from the earliest to modern times. It can be studied in many branches which are classified on the basis of geographical areas, periods, subjects and methods. For example, Archaeology on the basis of geographical divisions i.e. archaeology of India, America etc. can be studied. Archaeology in the Chronological context is divided in many divisions like pre-historic, archaeology, proto historic archaeology and historical archaeology.

Conclusion.

Archaeology is the study of past cultures. Archaeologists are interested in how people of the past lived, worked, traded with others, moved across the landscape, and what they believed. Understanding the past may help us better understand our own society and that of other cultures.

The goal of archaeology is to understand how and why human behavior has changed over time. Archaeologists search for patterns in the evolution of significant cultural events such as the development of farming, the emergence of cities, or the collapse of major civilizations for clues of why these events occurred.

For this archaeology use scientific studies of Sociology, Economic Geography, Ecology, Anthropology, Geology, physics, Chemistry Botany, Zoology, Statistical methods and computer science.

And with the help of this science, Archaeologists gives us information about history of human evolution , culture , languages, art etc.

Therefore, the Archaeology is the science of studying history.

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