# UNIT 1 PRE-HISTORY AND SOURCES*

**Structure**


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## 1.1 OBJECTIVES

In this Unit, we will discuss about **Prehistory** and its sources. The period of history for which there are no written records is generally referred as Prehistory. After going through this Unit, you would be able to:

- Define the meaning of prehistory;
- Outline the difference between prehistory, **protohistory** and history;
- Identify the sources on prehistory;
- Identify the main branches of research on prehistory;
- Explain the meaning and methods of archaeological research;
- Discover the meaning and methods of anthropological research;
- Distinguish between archaeology and anthropology; and
- Discover the new developments in research on prehistoric period.

A study of prehistory and its sources is important to comprehend the nature of the past where there was no written documentation. This will also help you to identify and compare the transition from prehistory to the historical period.


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## 1.2 INTRODUCTION

The recovery of knowledge of the past is the central concern of historical research. In this Unit we will journey back to prehistory the period of human evolution and activities before the availability of written records. Prehistory is now recognised as a vast field of human experience. It gained serious academic recognition particularly from the publication of Charles Darwin's seminal works – *On the Origin of Species by Means of Natural Selection* in 1859 and *Descent of Man* in 1871 wherein the fossil record of human origins and the worldwide evidence of the origins of civilization was documented remarkably. Since then, significant research and methods have been developed to recover knowledge on prehistory. This Unit will discuss the major characteristics, sources and significant branches of research on prehistory.

## 1.3 WHAT IS PREHISTORY?

Prehistory, also called the prehistoric period, refers to the period extending back when there was no writing and no engagement with written documentation. The beginning of prehistory is indicated with the origin of the earliest representatives of genus Homo (comprising the modern humans and the group of their close extinct ancestors – detailed in Unit 2 of this course). This evidence is currently dated between 5-2 million years before present (BP) in Africa, approximately one million years ago in Europe and Asia, an estimated 40,000 years BP in Australia, and even less in America.

**BEFORE PRESENT (BP)**

- This dating scale originated after the invention of Radio Carbon dating method in the late 1940's (See Section 1.7).
- *c.*1950 is used as the reference point to indicate 'the present' in this method of dating scale.

The term 'prehistory' originated from the phrase *période anti-historique* which was coined by French archaeologist Paul Tournal in 1833 to refer to the period of human history before the emergence of written documents (Grayson, 1983). The French phrase shrank to 'prehistory' and was first used in 1851 by Daniel Wilson in his seminal book *The Archaeology and Prehistoric Annals of Scotland*.[1] The term 'prehistory' was initially coined to indicate the period during which humans were the contemporaries of animals now extinct, the remains of which were found by **geologists** (scientists who study the solid and liquid matter that constitutes the Earth) and **palaeontologists** (scientists who study fossils) in old geological deposits. Prehistory now encompasses the entire span of human cultural evolution before written documentation that extends back at least 2.6 million years. In the absence of written records from this period, **artefacts** or material remains form the primary source of understanding prehistory. The material remains are available mostly in the form of stone tools, the remains of animals, human fossils, biofacts and cultural landscapes, more on which is detailed in the later Sections of this Unit.

It is important to learn here that between prehistory and the earliest recorded history, researchers have identified a transitory period which is termed as protohistory. The term protohistory was coined to denote the period in a culture that occurred immediately before its recorded history begins. Protohistory is also used to indicate the history of a people or of a region in a period during which the people or the region's inhabitants were still illiterate but were written about in the texts of neighbouring peoples who were

[1] The term 'prehistory' was however given wider coverage by Sir John Lubbock in his *Prehistoric Times: As Illustrated by Ancient Remains, and the Manners and Customs of Modern Savages*, published in 1865 (London and Edinburgh: Williams and Norgate).

more advanced and already literate. For example, in the 4th century BCE, the Celtic tribes were written about by Greek and Latin historians while the tribe was still illiterate (*History of Humanity*, I: 95). The term 'protohistoric' is often also used for populations whose writing has not been understood so far (e.g. the language of the Etruscans, the ancient Italic people and the Harappans).

## 1.4 BRANCHES OF KNOWLEDGE ON PREHISTORY

The study of the evolution and development of the modern human has remained a central concern of many branches of modern knowledge. Different branches of the physical and biological sciences, medical sciences, linguistic studies, fine arts and the social sciences, to name a few. All these areas of study work upon with diverse methodologies to arrive at the knowledge of the human past. As the narration of all these fields and the nature of the sources they work upon is too vast to be covered in this Course, we will primarily confine the discussion here to two fields of social sciences – Archaeology and Anthropology. The Unit will elaborate the sources and research methods of these two fields to provide you with insights on the process of human evolution and their cultures.

## 1.5 AN INTRODUCTION TO ARCHAEOLOGY

Archaeology is a field of inquiry that provides the knowledge of the past through a study of the material remains. The oldest roots of the study of prehistory is to be sought in the activities of *antiquaries* (people, mainly elites, who collected antiques). The *antiquaries* paved way for the emergence of classical archaeology around the 14th – 15th centuries in Europe during the period of Renaissance (14-17th centuries CE) and Humanism (emerged in late 14th century CE).

Archaeology delves back into the time before written languages existed through an analysis of things made and left behind by the humans in the past. Through an analysis of such materials, archaeology provides us with a glimpse of the lives of people in the past. Archaeology is however not confined to providing knowledge of prehistory. It is in fact the only field of study that covers all time periods and all geographic regions inhabited by humans. With the developments in archaeological methods of research, archaeology informs us about the lives of individuals, families and communities that for lack of documentary evidence could have remained invisible.

## 1.6 SOURCES AND METHODS OF ARCHAEOLOGICAL RESEARCH

Artefacts or material remains from the past form the primary source of archaeological research on prehistory. An artefact is 'any portable object used, modified, or made by humans' (Renfrew and Bahn, 2008: 578). Artefacts come in many forms, such as those listed below:

a) crude or finely made tools of stone, bone and other remains which may be thousands or even millions of years' old

b) durable pot fragments of clay and stone vessels used by early farmers

c) bones and their fragments

d) wooden artefacts

e) textiles

**Figure 1.1 : Prehistoric stone tools**
found in Les Combarelles cave, in Les Eyzies de Tayac, Dordogne France.
Dated near 12,000 - 10,000 BP.
**Credit:** Semhur, 2009
**Source:** https://upload.wikimedia.org/wikipedia/commons/5/5f/Prehistoric_Tools_-_Les_Combarelles_-_Les_Eyzies_de_Tayac_-_MNP.jpg

**Figure 1.2 : Prehistoric cave paintings from Lascaux, Dordogne, France**
Dated over 17000 BP
**Credit:** Prof. Saxx, 2006
**Source:** https://upload.wikimedia.org/wikipedia/commons/1/1e/Lascaux_painting.jpg

Non-portable artefacts called 'features' are also important sources of information on archaeological sites. Features include things like soil stains that indicate where a storage pit, garbage dump, structures, or fences may have once existed. Similarly, biofacts (also called ecofacts) or natural remains found on archaeological sites also help archaeologists to understand the past. Biofact primarily include organic remains of animals and plants such as animal bones, pollen seeds and wood which particularly help in

determining the diet, food habits and subsistence patterns of the people. The availability of one or more kind of material remains on a site depends on the natural preservation conditions, viz. the climate and environment, of a region. Everything found on the site is however of relevance for the archaeologists as each provides an indication to human behaviour in the past. Reconstructing this behaviour from fragmentary records requires great scientific skill, insight, and creativity. For this purpose, archaeologists follow a series of research steps that are highlighted in the box that follows.

**Steps of Archaeological Exploration**

1) **Research**: to identify a site and by reading previous research, if any, understand the worth of a site for exploration. At this level, the archaeologist is primarily interested in the spatial aspect.

2) **Land Reconnaissance**: personal investigation of the field to find groupings/clusters of artefacts. This method is also followed to locate a site. Once at site, identify landmarks that indicate human presence and activity.

3) **Test Pitting**: in this step the excavators do a thorough survey of the site to locate the spot of maximum artefacts which is taken to indicate the heart of the site wherein full **excavations** (unearthing or digging a site) are begun.

4) **Full Excavation**: the entire site is excavated and alongside the archaeologists draw maps, take measurements and collect artefacts. The process also involves cleaning, sorting, counting and drawing samples of artefacts found.

   It is important to note here that the artefacts discovered in an archaeological deposit are always found within the context of a series of layers or strata. This constitutes what is called stratification of the site i.e. the superimposition of one layer or strata on top of the other. The study of stratification by archaeologists is called stratigraphy. The basic idea of superimposition is that in any series of undisturbed strata the bottom layers are older while the top most layers are youngest. When an archaeologist identifies the different layers of an excavated site it is called 'reading the section'. This is an important step in understanding a site and a prerequisite for its proper excavation. An archaeologist must also ascertain which layers are meaningful and chronologically viable. The identification of individual strata is based on a series of criteria such as colour of the layer, soil composition (pebbles, gravel, sand or silt), texture, cultural materials occurring within the layer, etc.

5) **Reconstruction and Cataloguing**: the archaeologists move to the lab with the artefacts where each of them is catalogued.

6) **Analysis**: this involves the scientific study of the collected artefacts. Such study then reveals one or more of the following information: age of the artefact, material of the artefact, its usage, how often was it used and so on.

7) **Reporting**: the main point of digging is to derive and spread knowledge of the past so at this stage the gathered wisdom from the artefact(s) is made available for public by way of publication or/and displaying the artefact(s) at a museum.

Partially adapted from: https://prezi.com/1plupeynwwpv/the-seven-stages-of-archaeology

For more details on excavation, see the following documentaries:

'The Excavation Process: How We Excavate' from https://www.youtube.com/watch?v=PcT1vGyJzyg

'Unearthing the Past' from http://www.egyankosh.ac.in/youtubevideo.jsp?src=P4LVNTL8egk&title=Unearthing%20the%20Past

As elaborated above, the selection of a site is the first and the most important step in archaeological research. Earlier the sites were selected based on information from oral tradition, mythological references, finds of certain items on the surface due to soil erosion or shapes of the mounds. Many important sites have also come to notice accidentally

or by chance, while digging through building construction, laying of roads, railway lines or in the process of cultivating a land. The Harappan Civilization, for instance, first came to light when some contractors who were laying a railway line nearby decided to procure bricks from the mound and exposed it. Subsequent excavations of the mound, as is well known, went on to reveal the earliest civilization of the Indian subcontinent.

In recent times, archaeologists employ many scientific methods to gather a proof or indication of human habitation on a site in past. Some of these recent archaeological methods of inquiry are:

1) **Aerial Photography**: This method involves taking of aerial photographs of a field either from an aircraft, a helicopter, a hot air balloon or with the help of a drone. Deployed with the help of highly accurate cameras, the aerial photographs are taken to record changes in the level of the ground surface. The photographs also help to record differences in the colouring of the soil (soil marks) or the development of vegetation (crop marks), which are often a result of buried archaeological remains. Owing to its nature, this method is more effective in open landscape and is not suitable for surveying a forested area. The method has been in use for archaeological research since 1919 (For examples of aerial photographs, see the photographs in Georg Gerster. 2005. *The Past from Above: Aerial Photographs of Archaeological Sites*. ed. Charlotte Trumpler. Los Angeles: Getty Publications).[2]

**Figure 1.3 : Aerial archaeological photograph of the "Nazca monkey" in Peru**
**Credit:** Maria Reiche,1953
**Source:** https://upload.wikimedia.org/wikipedia/commons/3/3b/Nazca_monkey.jpg

2) **Underwater Prospection or Marine Archaeology**: This method is employed to detect archaeological objects and submerged sites in marine and fresh water. The method has been particularly useful in recovering wrecks of ships. Formal systematic investigation in this field gained prominence with the availability of modern equipment and in particular by the invention of the aqualung (underwater breathing apparatus that has promoted scuba diving) by Cousteau and Gagnan around 1943. Tools such as underwater television camera and bathyscaphe (a deep sea submersible free-diving vessel) are other important instruments used for underwater surveys.[3]

[2] For more information on methods and tools of aerial photography, see, https://www.jstor.org/stable/pdf/277280.pdf?refreqid=search%3A18d0eebe497372b8716ba5ea76ed57f9

[3] For a detailed discussion on underwater and fresh water archaeology, see, https://www.jstor.org/stable/pdf/0562008.pdf?refreqid=search%3A7faa211567c6f4597417b3dfdaa2ce9b ; https://www.jstor.org/stable/pdf 20617994.pdf?refreqid=search%3A9edb4c1038d9fea98e2889501eb44e48

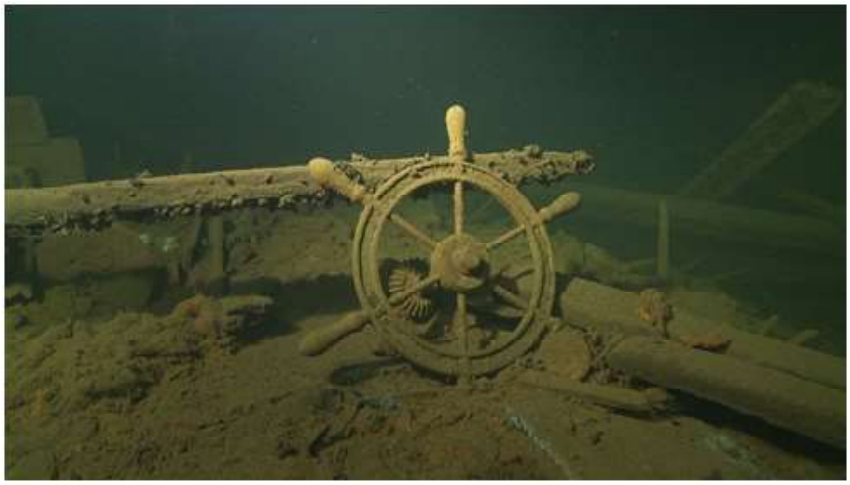

**Figure 1.4 : Wreck of British steel cargo ship *E. Russ* in Estonia, North Europe.**

**Credit:** Juha Flinkman, SubZone OY, 2013

**Source:**https://upload.wikimedia.org/wikipedia/commons/0/07/Kaubalaeva_%22E._Russ%22_vrakk.jpg

3) **Magnetic Survey**: This method, also known as magnetometry, involves a geophysical survey technique which helps in detecting and defining areas of past human activity. This is done by way of mapping spatial variations and contrast in the magnetic properties of soil, subsoil and bedrock. The technique is carried out over grasslands, crop fields and areas of open soil. The method is particularly helpful to detect and define metal objects, ovens, hearths, filled-in pits and wells, foundations, tombs and other structures. Caesium magnetometers and fluxgate gradiometers are currently the primary instruments used for magnetic prospection in archaeological research. These instruments help in ascertaining the magnetic waves and thereof help in indicating the date and associated knowledge about an artefact.[4]

**Figure 1.5 : Fluxgate Magnetometer**

**Credit:** Zureks, 2008

**Source:**https://upload.wikimedia.org/wikipedia/commons/5/5c/Magnetometr_transduktorowy_by_Zureks.jpg

[4] For details of this method, see A. Schmidt. 2007. 'Archaeology, Magnetic Methods'. In D. Gubbins and E. Herrero-Bervera (eds) Encyclopedia of Geomagnetism and Paleomagnetism: 23-31. *Encyclopedia of Earth Sciences Series*. Heidelberg, Springer : 23-31..

PDF Download Available from the following web link: https://www.researchgate.net/publication/228666190_Archaeology_magnetic_methods.

4) **Chemical Analysis of Soil**: This procedure is conducted to measure the content of phosphate and potassium in a soil which help to indicate the presence of human activity in early periods.[5]

5) **Detection of Anomalies in Subsoil**: In this method archaeologists use an electric device called potentiometer to measure the resistivity or resisting power of a subsoil. Variations in resistivity and the detection and extent of any anomalies/irregularities are used to deduce the possible presence of archaeological structures such as cultural layers, stone walls, ditches, graves, etc. For instance, the presence of foundations is deduced if the conductivity or the power of resisting electric current is seen to be reducing in the subsoil. Increased conductivity, on the other hand, indicates the presence of filled-in pits.[6]

6) **Prospection by Acoustic or Seismic Methods:** In this method, a ground is struck to record the resulting sound and vibrations. The method is executed by using instruments that register vibratory phenomena obtained by reflection, refraction or resonance following the sounding of the site or variable-frequency Hertzian wave transmission. The method is particularly helpful in identifying and investigating submerged sites and proves useful if combined with underwater prospection.

While all these modern techniques are significant contributors to archaeological research yet the result from such inspections are only indicative. Therefore, it is always imperative for archaeologists to make a physical inspection of the site before finalising its excavation.

When it comes to analysing the remains and artefacts found during excavation, one of the important aspect is to determine and preserve the location of the find, including to record, the layer at which it was spotted. Any artefact in isolation removed from its site and location serves very little purpose for the archaeologist.[7] To overcome this problem, archaeologist draw detailed maps and site plans of different portions of the site. Detailed records are kept in the form of diaries and markings on site plans of the location of finds. No excavation is of relevance unless records of these maps, plans and location of structures and artefacts have been maintained. The record of the shape, measurement of material and physical examination of each find is an essential element of excavation.

**Check Your Progress Exercise-1**

1) Explain Prehistory in about 50 words.

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2) What is the difference between Prehistory and Protohistory?

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[5] For details of this process, see, https://www.jstor.org/stable/pdf/276788.pdf?refreqid=search%3A3ee2e08b47a983f42563c9254349a44a

[6] For more information on this method, see Anthony Clark. 2003. *Seeing Beneath the Soil: Prospecting Methods in Archaeology, new edition*. New York: Routledge.

[7] Thousands of valuable objects have been lost to archaeologists and historians as they have been removed from their original settings and sold as artefacts by thieves and diggers.

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3) What is an artefact?

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4) List the steps of archaeological research.

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5) How has the field of archaeology progressed in recent times?

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## 1.7 DATING METHODS IN ARCHAEOLOGY

A crucial aspect of archaeological research is fixing the date of an excavated object and site. This part of the research process is termed as dating. Working without the aid of written records or calendars, in the days before accurate dating techniques were available, the early archaeologists often found that chronological ordering constituted an enormous but necessary undertaking. Therefore, a major focus of early archaeologists became the ordering of archaeological materials into space-time frameworks. Over the years, archaeologists have come to employ several methods to determine the actual or approximate period of an artefact and culture. Some of the most commonly used methods are as follows:

**Dendrochronology:** This method is based on the analysis of the number of annual growth rings on trees and the variations in thickness of those rings which incurs due to the influence of the climate. However, not all species of trees are equally affected by climatic variations and this poses a limitation for this dating process. Further, the data concerning a given region cannot automatically be transferred to another one with a different microclimate. Nevertheless, dendrochronology is increasingly used now because it enables the datingof actual wood samples going back as far as eight millennia. The

method has also gained importance since it can be used to check the accuracy of other dating methods, particularly, that of radiocarbon dating.

**Radiocarbon Dating:** Also called Carbon-14 or 14-C, radiocarbon dating is the most common scientific dating method. The method is based on the cosmic ray production of new atoms in matter, also known as the principle of radioactive decay. Carbon-14 lasts 8300 years on an average before reverting in radioactive decay to nitrogen-14 and during this time, it enters all living things as well as sea water and air. Chemically carbon dioxide which is a product of the combustion of carbon with air (which is 20 % oxygen) is the food of life and presumably the freshly produced radiocarbon is passed on uniformly to all living beings through carbon dioxide. Only when a plant or animal dies does the uptake of 14C begin to decline through radioactive decay. The American chemist Williard Libby first used this method to calculate radiocarbon dates and estimated that it took 5568 years for half the 14C in a sample to decay its half-life. Modern research suggests that the more accurate figure is 5730 years. However, knowing the decay rate or half-life of 14C, Libby recognised that the age of dead plant or animal tissue could be calculated by measuring the amount of radiocarbon left in a sample.

Libby's great practical achievement was to devise an accurate means of measurement. The traces of 14C are minute to start with and are reduced by half after 5730 years. After 23000 years, only one sixteenth of the original tiny concentration of 14C is available to be measured in the sample. Libby discovered that each atom of 14C decays releasing beta particles and he succeeded in counting these emissions using a Geiger counter. This is the basis of the conventional method which is still employed by many radiocarbon laboratories. Samples usually consist of organic materials found on archaeological sites, such as charcoal, wood, seeds, and other plant remains, and human or animal bones. While C-14 method is most effective in determining the dates of objects which contain carbon content like wood and charcoal, the method is also helpful in determining the dates of other objects (which do not have carbon content) found on the same site or layer.

The accurate measurement of the 14C activity of a sample can be affected by counting errors, background cosmic radiation, poor sampling techniques, and other unaccounted factors. Despite these limitations, C-14 is one of the primary dating tool for organic materials that go back to about 50,000 to 80,000 years ago. The dates so ascertained are generally expressed in Before Present (BP) **(See Section 1.3)**.

**Potassium-Argon Dating:** This method, also known as K-Ar dating, is based on the fact that a radioactive isotope of potassium (K40) which is present in minute quantities in rocks and volcanic ash, decays into the gas argon (Ar40) at a known rate (half of a given amount of K40 will change into Ar40 in about 1.3 billion years). Since Ar40 is a gas, it escapes when rock is molten (as in lava), but when the rock cools, the Ar40 gets trapped inside. By using sensitive instruments to measure the ratio of K40 to Ar40, it is then possible to estimate the time taken by a rock or ash to cool and solidify. Because of the long half-life of K40 (1.30 billion years), potassium-argon dating can be used to estimate dates of materials dating back to several million years.

**Palaeomagnetism**: This dating method was introduced to archaeology in the early to mid- 1960s by Dr. Robert Dubois. Magnetism occurs whenever electrically charged particles are in motion. This method relies on remnant magnetism on earth and is the study of the record of the Earth's magnetic field preserved in various magnetic minerals through time.

To elaborate, when clay is heated, the microscopic iron particles within it acquire a remnant magnetism parallel to the earth's magnetic field. These particles point toward

the location around the geographic north pole where the magnetic north pole was at that moment in its wandering. Once the clay cools, the iron particles maintain that magnetism until the clay is reheated. By using other dating methods (such as dendrochronology or radiocarbon dating) to obtain the absolute date of an archaeological feature (such as a hearth) and measuring the direction of magnetism and wander in the clay, it is possible to determine the location of the magnetic north pole at the time this clay was last fired. This process is called the virtual geomagnetic pole or VGP. Archaeologists assemble many of ancient VGPs and construct a composite curve of polar wandering (known as the VGP curve). The VGP curve is then used as a master record against which the VGPs of samples of an unknown age are compared to and assigned a date.

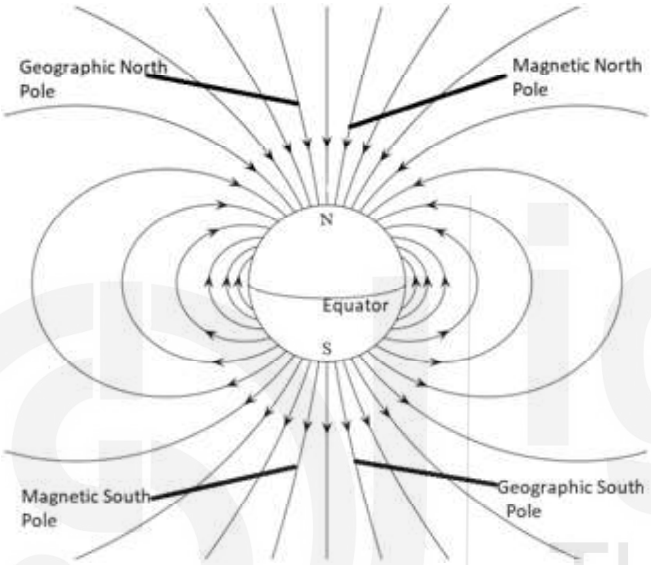


**Figure 1.6 : Representation of a virtual geomagnetic pole**

**Credit:** Geek3, 2010

**Adapted** from https://upload.wikimedia.org/wikipedia/commons/7/70/VFPt_Dipole_field.svg

**Thermoluminescence (TL)**: This method is used mainly for dating objects made of bakedclay. The soil, including the clay from which pottery is made, contains many natural isotopes mainly of uranium, thorium, potassium and rubidium, which irradiate certain minerals such as quartz causing displacement of electrons which then accumulate in 'traps' (or defects in the crystal lattice) at a regular rate. When such minerals are heated, the accumulated energy is liberated at 320 degrees Celsius or more in the form of light. Once they have cooled such minerals again accumulate energy owing to radioactivity. For instance, a piece of pottery when fired, releases the energy accumulated in the quartz it contains, but as soon as it cools down, the quartz again starts to accumulate energy. On the other hand, when potsherds are heated, extra energy is liberated with the emission of light. The intensity of this light depends on the quantity of accumulated energy. The light is measured by means of laboratory processes, and on that basis, the rate of energy accumulation is ascertained whereby archaeologists can calculate the time elapsed since the baking of a pot. This method can also be applied to flints that have been subjected to fire and therefore the method holds significance for dating prehistoric cultures which were familiar with the making of pottery.

There exist many other dating methods like the electron spin resonance, uranium series, fission-track dating etc, but we will not go into their details here primarily because in archaeology, the other methods either have a restricted field of application or are still in the experimental stage.

**Check Your Progress Exercise-2**

1) Name and describe the most common scientific dating method for organic materials in Archaeology.

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2) Which of the following methods for dating a feature relies on the position of geomagnetic field on Earth's surface to date a deposit:
   a) Thermoluminescence
   b) Palaeomagnetism
   c) C-14
   d) Potassium-Argon Dating

3) What is K-Ar dating?

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## 1.8 WHAT IS ANTHROPOLOGY?

Anthropology is a branch of knowledge that explores the biological evolution of humans and their culture. Anthropologists help in analysing the changes in the biological, and physical features and forms of various types of hominids i.e. any member of the group consisting of all modern and extinct humans and great apes including gorillas, chimpanzees, and orangutans and all their immediate ancestors, through millions of years. The cultural patterns, food habits, behavioural patterns and communication methods of early men are the other areas where anthropology helps us in understanding prehistory.[8]

Archaeology as the study of the ancient and recent human past through material remains is in fact a subfield of anthropology which is the study of all human culture. Therefore, when an archaeologist excavates a cemetery for instance, he or she is advised to collaborate with an anthropologist who can provide information of a demographic nature – the age, sex and stature of the dead. Like archaeology, anthropology involves several research steps:

1) The first step of anthropological research is to determine whether a discovered artefact is a bone or not.

2) Next comes the dating. Anthropologists can often determine the approximate date of a skeleton by the context of deposition.

[8] One must however remember here that in addition to prehistory, physical anthropology also deals with more recent times.

3) An analysis of the location, position, and condition of the body which gives clues to probable events that would have led to the burial.

4) In the next step, anthropologists attempt at developing a biological profile: age, sex, stature and ancestry through the recovered bone. By examining the size, shape, and structure of a bone, an anthropologist determines if the bone is of a human or an animal.[9] At times, this also helps to indicate the cause of the death.

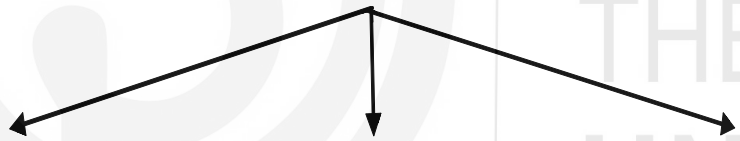
5) Further interpretation, such as what a bone seems to indicate, its importance and associated features are detailed in report writing. It might be added that the study of cremated bones can yield information similar to that obtained from studies of uncremated ones.

## 1.9 BRANCHES OF ANTHROPOLOGY

Anthropology comprises four major sub-disciplines biological anthropology, prehistoric anthropology, linguistic anthropology and ethnology which is also called cultural anthropology.

i) **Biological (or physical) anthropology** is a study of the non-cultural aspects of humans and near-humans. Non-cultural refers to all those biological characteristics that are genetically inherited, in contrast to learned aptitudes. The term near-human is used to indicate apes, monkeys, and the other primates and fossil ancestors of present humans. Biological anthropologists examine the process and mechanism of human evolution, genetic inheritance and human variation and adaptations to different environmental conditions.

**Subfields of Biological Anthropology**



| **Human Biology** | **Primatology** | **Paleoanthropology** |
|---|---|---|
| Concerned with human diversity, genetic inheritance patterns, non-cultural adaptations to environmental stresses, and other biological characteristics of *Homo sapiens,* the human species. | Principally interested in learning about the capabilities and behaviour patterns of primates – our closest living relatives-to understand the lives of our earliest human ancestors. | Study of fossil record of early humans and their primate ancestors to retrace the stages of anthropogenesis the process of emerging as the present-day human, also known as hominization. |

ii) **Cultural (or socio-cultural) anthropology** examines the cultural aspects of human societies all over the world. These aspects include social and political organizations, marriage patterns and kinship systems, subsistence and economic patterns, and

[9] All mammals share a generalized skeletal template, in the sense that they all have the same bones in roughly the same locations: a skull, spine (which ends in a tail), ribs (which support the internal organs), and four sets of limb bones. However, the shape of the bones and the way they relate to each other, differ between animals. Thus, by examining the size, shape, and structure of a bone, an anthropologist can determine if it is of a human or not.

belief system of different societies. While most cultural anthropologists study contemporary societies rather than the ancient ones but even in doing that, these anthropologists attempt to retrace the lost diversity and cultural practices of the past and that way contribute to an understanding of prehistorical period.

iii) **Linguistic anthropology** focusses on the human communication process. Linguistic anthropologists primarily study the physiology of speech and the social and cultural influences on speech and writing. They also examine nonverbal communication and the evolution of languages. In this context, some anthropologists attribute prehistory with a pre-language i.e. archaic body of words and proto-language i.e. archaic form of languages, now lost, but hypothesised as predecessors of several present languages. It is in the latter field that linguistic anthropology contributes to an understanding of prehistory – a period for which we have no written documents.

**Check Your Progress Exercise-3**

1) What is the difference between Archaeology and Anthropology?

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2) How do the different branches of anthropology contribute to an understanding of prehistory?

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## 1.10 SUMMARY

Through this Unit you would have understood that the knowledge of the past is not limited to information from written records alone. In fact, different forms of material remains form a significant source base for understanding prehistory. With diverse methods of research, archaeologists and anthropologists, are continually working to expand our knowledge about the past and more specifically about the prehistorical period.

Moreover, one must also note here that, apart from archaeology and anthropology, which we studied in detail in this Unit, fields such as palaeobotany (study of plant remains), palaeozoology (study of animal remains), medical science, molecular chemistry and genetics also contribute to understanding prehistory and the biological evolution of hominids through various phases. Amongst these various fields, the study of DNA (the deoxyribonucleic acid) present in cells and which is considered responsible for carrying the genetic characteristics from one generation to the other, is a major breakthrough in research of the past. Since the emergence of this research, scientists have been studying the DNA found in cells or bone marrow preserved in various human species found in different parts of the world. They have also worked out a certain pattern through which

DNA changes over long periods of time. In this method, the DNA of the present-day humans, living in different regions of the World, including some groups living in present day in isolation or in rare small pockets as hunter gatherers is compared with preserved DNA obtained from different cultures. Along with this, the study of blood groups, form and shape of skull, cranial capacity, bone structure, musculature and limb forms, has provided valuable insights into the process of biological evolution of modern humans (*homo sapiens sapiens).* The details of biological evolution are discussed in **Unit 2** of this course.

## 1.11 KEY WORDS

**Artefact** : material objects that have been used, modified or made by humans in the past.

**Excavation** : the process of unearthing or digging up an archaeological site.

**Geologists** : scientists who study the solid and liquid matter that constitutes the Earth as well as the processes that shape it.

**Hominin** : any member of the group consisting of all modern and extinct humans and all their immediate ancestors, specifically species more closely related to modern humans than to chimpanzees.

**Palaeomagnetism** : a study of the magnetism of rocks that were formed in earlier time periods. More broadly, the study of changes in the earth's magnetic fields during geological times.

**Palaeontologists** : scientists who study fossils to arrive at the history of the beginning and developments of life.

**Prehistory** : the period for which we do not have any written records and the source of knowledge are the archaeological remains.

**Protohistory** : the period between prehistory and history, during which a culture or civilization has not yet developed writing, but other cultures may have noted its existence in their writings.

## 1.12 ANSWERS TO CHECK YOUR PROGRESS EXERCISES

**Check Your Progress Exercise-1**

1) See Section 1.3

2) Period without any written records vs. period of transition. See Section 1.3

3) Material remains of past. See Section 1.6

4) See the information in the box in Section 1.6

5) Aerial photography, underwater prospection etc. See Section 1.6

**Check Your Progress Exercise-2**

1) C-14, see Section 1.7

2) Option b. See Section 1.7

3) Potassium-Argon Dating. See Section 1.7

**Check Your Progress Exercise-3**

1) Study of human past through material remains vs. study of human culture through bone remnants. See Section 1.8

2) Human evolution, cultural practices, understanding of pre/proto languages etc. See Section 1.9

## 1.13 SUGGESTED READINGS

Agrawal, D. P. and A. Ghosh (eds.). 1973. *Radiocarbon and Indian Archaeology.* Bombay: Tata Institute of Fundamental Research.

Barnard, Alan. 2016. *The Evolution of Language: An Anthropological Approach Language in Prehistory.* Cambridge: Cambridge University Press.

Clark, Anthony. 2003. *Seeing Beneath the Soil: Prospecting Methods in Archaeology*, New edition. New York: Routledge.

Clark, J. G. D. 1965. 'Radiocarbon Dating and the Spread of Farming Economy'. *Antiquity,* 39: 45–48.

Kulkarni, A.C. 2015. 'Offshore Technology and Marine Archaeology.' In A.S Gaur and Sundaresh (ed.). *Recent Researches on Indus Civilization and Maritime Archaeology in India.* Delhi: Agam Kala Prakashan.

Laet, S.J. de (ed.),A. H. Dani, J. L. Lorenzo Gieysztor and R. B. Nunoo (co-eds.). 1996. *History of Humanity, Volume 1: Prehistory and the Beginnings of Civilization*. UNESCO. London: Routledge.

Lubbock, John. 1865. *Prehistoric Times: As Illustrated by Ancient Remains, and the Manners and Customs of Modern Savages*. London and Edinburgh: Williams and Norgate.

Renfrew, C. and P. Bahn. 2008. *Archaeology: Theories, Methods and Practice*. 5th edition. London: Thames and Hudson.

Schmidt, A. 2007. 'Archaeology, magnetic methods'. In D. Gubbins and E. Herrero-Bervera (eds.) *Encyclopedia of Geomagnetism and Paleomagnetism*: *Encyclopedia of Earth Sciences Series.* Heidelberg, New York: Springer: 23-31.

PDF:

https://www.jstor.org/stable/pdf/20079007.pdf?refreqid=search%3Af78cba054579b0acebd3139146894353

https://www.jstor.org/stable/pdf/25801250.pdf?refreqid=search%3Af78cba054579b0acebd3139146894353

https://www.jstor.org/stable/pdf/3557110.pdf?refreqid=search%3Ab59fb18f38ce92f6c891da4a5d3d0a25

https://www.jstor.org/stable/pdf/40366435.pdf?refreqid=search%3A3358b0b6bd28ac026724dc6965d34953

https://www.jstor.org/stable/pdf/24950591.pdf?refreqid=search%3A1d0fc6dd47257518fe616ac6f2f904f7

https://www.jstor.org/stable/pdf/3024893.pdf?refreqid=excelsior%3A44638ad7fb36c31784cc9f708821de2b

https://www.jstor.org/stable/pdf/73915.pdf?refreqid=excelsior%3Af23c3833695fc94278db8240d22ba613

## 1.14 INSTRUCTIONAL VIDEO RECOMMENDATIONS

**Dating-The Radiocarbon Way**
https://www.youtube.com/watch?v=-xKvq6VLe4s

**The Excavation Process: How We Excavate**
https://www.youtube.com/watch?v=PcT1vGyJzyg

**Underwater Archaeology**
https://www.youtube.com/watch?v=qgCvnogeN2s

**Space Archaeology: A new frontier of Exploration**
https://www.youtube.com/watch?v=gxD32LRC1QE