INTRODUCTION TO THE STUDY OF ARCHAEOLOGY

B.A.(History) –First Year

Paper –II

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PONDICHERRY UNIVERSITY
(A Central University)
DIRECTORATE OF DISTANCE EDUCATION
R.V. Nagar, Kalapet, Puducherry – 605 014

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Course Writer

Dr [Mrs]. S.B. Darsana,
Assistant Professor
Post Graduate & Research Department of History
Holy Cross College, Tiruchirappalli – 620002, Tamil Nadu.

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PAPERII

INTRODUCTION TO THE STUDY OF ARCHAEOLOGY

UNIT 1: Definition & scope of Archaeology -Terms and Concepts in Archaeology- Prehistory – ProtoHistory and History; Artefact, Site, Culture, Exploration, Excavation. Sources of Archaeology:Monuments- Inscriptions-Coins; The dating problem- dates in Inscriptions.

UNIT2: Relationship of Archaeology with other disciplines - History, Anthropology and Archaeology- Contribution of Social sciences and Humanities to Archaeology- Impact of pure sciences onArchaeology

UNIT3: History of Archaeology - Origin and evolution of archaeological studies – Contribution of Archaeology for the study of the evolution of man.

UNIT4: History of Archaeology in India -Colonial archaeology - Institutional growth in field epigraphy and archaeology – Oriental Studies - Establishment of Professional organisations and institutions.

UNIT5: Important Archaeological sites in India -Palaeolithic sites: Bhimbetka, Attirampakkam, Bagor,Patne. Neolithic Sites: Paiyampalli, Nagarjunakonda, Tekkalakota. Proto–Historic sites: Mohenjodaro, Harappa, Lothal, Kalibangan, Dholavira - Iron Age/Early Historic sites: Kodumanal, Hallur,Dhulikatta, Pattanam.

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INTRODUCTION TO THE STUDY OF ARCHAEOLOGY

UNIT- I

Definition & Scope of Archaeolog**y-** Terms and Concepts in Archaeology- Prehistory – Proto History and History; Artefact, Site, Culture, Exploration, Excavation. Sources of Archaeology:Monuments-Inscriptions-Coins; The datingproblem-dates in Inscriptions.

UNIT 1: STRUCTURE

Lesson 1.1 Terms and Concepts in Archaeology

Learning Objectives

After reading this lesson, you should be able to

- Understand the definition of archaeology
- Know the various terms associated with archaeology
- Identify important sources for the study of archaeology
- Address the dating problem
- Understand the method of dating in inscriptions

Introduction

Humans across the world have an innate curiosity to know past events and create legends and myths about the unknown past. Each culture has its own past

stories that are passed on from one generation to another transcending time. `The past is reconstructed wherever possible from all the available sources by the human beings. With the invention of writing, reconstruction of the past became plausible. However for the very early period when there was no written evidence reconstruction of the past events becomes difficult.

Our human ancestors have left material evidence for their existence. While the discipline of history deals with the study of the past based on written evidence, a new discipline called Archaeology emerged to reconstruct the past based on material evidence.

Definition

Archaeology is the scientific study of the past based on material evidence. Archaeology deals with the various aspects of the past and helps in reconstructing the past activities of humans through material evidence left by them in various forms such as stone tools, pottery, beads, structures, and metal objects.

The term archaeology is derived from the Greek word *Archaeos*meaning ancient and *logos* meaning reason or science. Hence it is the study of the past through scientific means to reconstruct past human behaviour and cultural processes based on material evidence. The past is like a jigsaw puzzle wherein the archaeologists try to fit in missing clues to give a full picture.

Different Definitions

Many scholars have defined the discipline of archaeology. A few are discussed below.

In the early years of the twentieth century, William Flinders Petrie who was instrumental in bringing the scientific excavation method tothe forefront defined "archaeology – the knowledge of how man has acquired his present position and powers – is one of the widest studies, best fitted to open the mind, and to produce that type of wide interests and toleration which is the highest result of education."

David Clarke defines Archaeology as“the discipline with the theory and practice for the recovery of unobservable hominid behaviour patterns from indirect traces in bad samples." Here he emphasizesthe importance of theory and practice of the discipline to get a better understanding.

Suzie Thomas considers “archaeology as a term which can be interpreted in different ways, given the broad range of research methods, periods and activities that can constitute 'archaeology' and its research.".

Grahame Clarke noted that archaeology seeks to discover how we became human beings endowed with minds and souls before we had learned to write."

John C. McEnroe observes that "archaeology is not simply the finite body of artefactual evidence uncovered in excavations. Rather, archaeology is what archaeologists say about that evidence. It is the ongoing process of discussing the past which is, in itself, an ongoing process. Only recently have we begun to realise the complexity of that discourse”. This view has become more acceptable in recent years as many archaeologists are not only collecting and documenting the data but also interpreting the data to understand the cultural processes.

Mortimer Wheeler insisted that the “archaeologist is digging up, not things, but people”. This view was strengthened by Bruce Trigger when he commented that "Archaeology is the only discipline that seeks to study human behavior and thought without having any direct contact with either”.

Renfrew and Paul Bahn define Archaeology as “partly the discovery of the treasures of the past, partly the meticulous work of the scientific analyst, partly the exercise of the creative imagination” and further state that it is “both a physical activity out in the field and an intellectual pursuit in the study or laboratory”

Kristian Kristiansen defines archaeology as “the study and preservation of the material remains of past societies and their environment that nowadays also includes modern material culture. The objective is likewise twofold: to reconstruct past life-worlds in order to understand and explain the historical conditions that

governed peoples' life as it unfolded, both in their local settings and on a larger historical scale of prehistoric and historic societies; and to preserve the archaeological record in the landscape and in museums for future study and use".

Aims and Scope of Archaeology

The discipline of archaeology aims to reconstruct the human past through a scientific study of material evidences left by our human ancestors. It not only throws light on the human past but also on the human-nature interactions along with the impact of one another in the formation of their co-existence.

There are many questions that archaeologists tend to answer; when did human beings emerge in the world? How did they evolve into intelligent beings? Why and how they developed technological skills such as stone tool making, pottery making, etc? What belief system they had? How did they hunt animals? Why did they paint the rock shelters with paintings? How did they live? and goes on. The questions are long and new questions are raised every day and archaeologists strive to find answers for them.

The scope of archaeology is as diversified as the fields of study it tries to throw light on. From science to humanities, archaeology transcends in time and space. The temporal scope of the subject starts from the time when human ancestors appeared on earth and probably end when the human race becomes extinct. The spatial scope of the subjects covers almost everything on land along with the marine area. Almost all the countries in the world have some evidence of our past cultural ways. Archaeology becomes interdisciplinary in nature so as to understand the entire processes of human evolution and existence.

Terms and Concepts in Archaeology

It is imperative for the students to know various terms associated with the discipline of archaeology. They include:

Culture

As Archaeology deals with the reconstruction of the past culture, it is important to know what culture is! Culture can be defined as a set of shared ideas and practices of a particular group of people inherited from common ancestors. Edward Tylor defined culture as *'knowledge, belief, art, morals, law, custom and any other capabilities and habits acquired by a man as a member of the society"*. It is the extra-somatic means of adaptation by humans to survive in the natural world. In order to live with natural beings, humans adopted various social skills and emerged as cultural beings. The past cultures are distinct from one another which can be discerned through a thorough analysis of archaeological data by sieving the information carefully.

Sites

The place where evidence for past human activities is found is called a site in archaeological parlance. A site can be classified based on the function into various categories:

A habitation site is a place where humans had lived and left their traces as evidence. A burial site is a place where the dead were buried and cremated. In a factory site, the human ancestors made products such as stone tools and they usually have left materials produced in different stages of production.

A site can be as small as a site occupied by prehistoric hunters for a shorter period to a larger settlement existing for hundreds of years like Harappan cities. The sites can be found on various landscape forms such as hills, plains, coastal areas, under the sea, or pastoral lands.

- Site = Primary site, Secondary site
- Burial site
- Habitation site
- Factory Site
- Rock shelters or caves

A site can be either primary or secondary in nature. The primary context of the site denotes the undisturbed nature of the data without any human and natural alteration. The secondary context indicates the disturbance of the original site and deposition of materials in a different place. For example, if a coin is found in an archaeological excavation without any disturbance then it is in primary context (*in situ*). If the coins are found in hoards or in water bodies (depositing coins in water bodies such as rivers and wells is a common practice over a period of time as people believed this will bring them prosperity), then they are in a secondary context.

Mound

An archaeological mound is formed due to continuous human occupation in a particular site. A mound is an indication of human settlement in the landscape. It is known as *medu* in Tamil, *dhibi* in North India, *tell* in western Asia.

- Artifacts- (Human-made) Stone tools, pottery, beads, bricks, tiles, rock paintings, terracotta objects (TC), bangles.
- Ecofacts- Natural objects- wood, biological objects

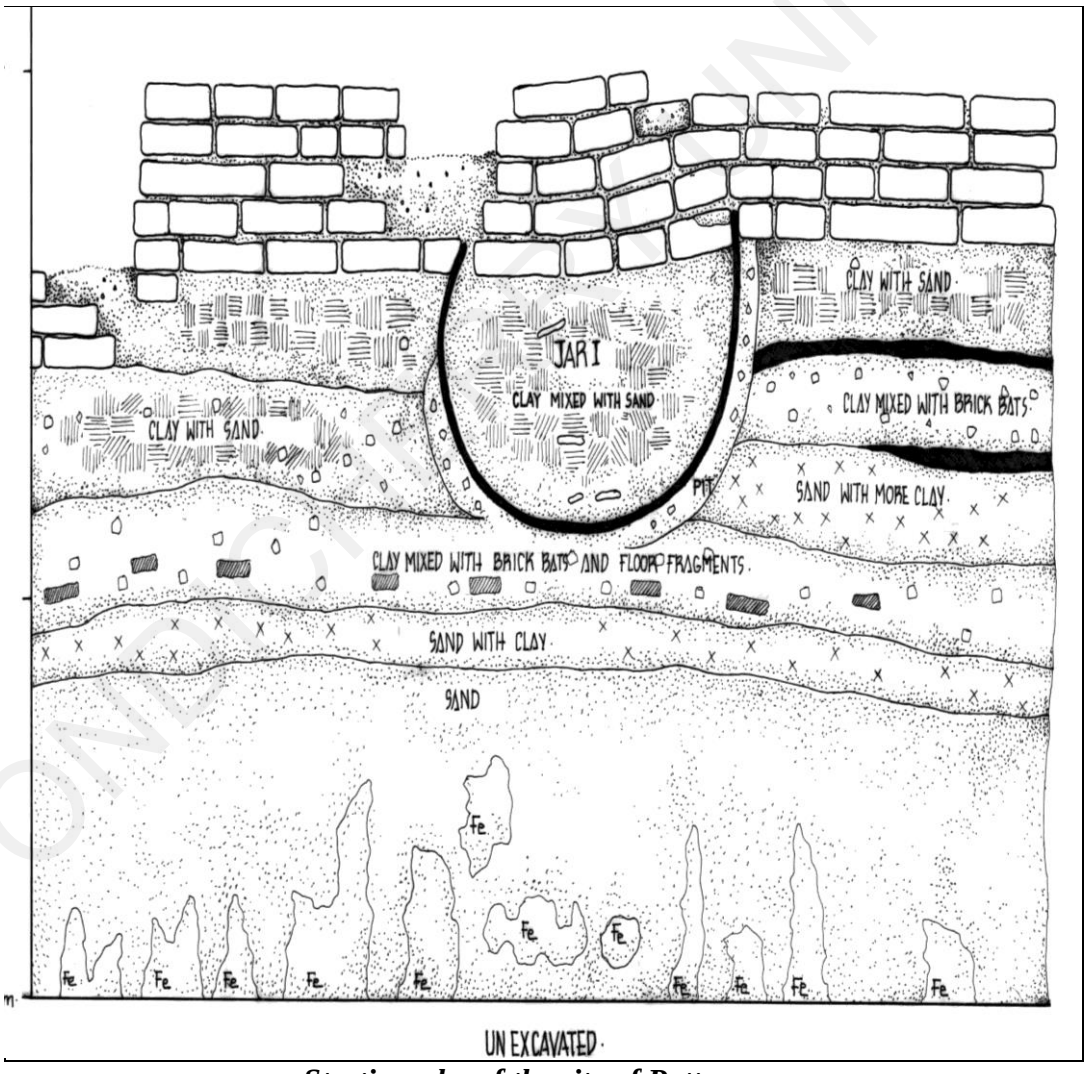
Artefact and Ecofact

An artifact is an object made and used by human beings and unearthed in the process of exploration or excavation. It includes everything from small needles to huge stone monuments. Examples include stone tools, pottery, beads, metal objects, brick structures, burial monuments, etc.

Naturally obtained materials that are used by humans such as plant and animal remains are ecofacts. Natural objects are part of human cultural evolution and processes over a period of time. Humans have effectively utilised natural objectssuch as wood, tree leaves, animal skin, and bones. The ecofacts are also found in a site along with the artifacts.

Stratigraphy

Stratigraphy is the study of layers or strata. The concept of stratigraphy is derived from the discipline of Geology. It is based on the law of superimposition wherein the lowest most layer is formed earlier and is the oldest and the subsequent layers are formed one after another. The topmost layer is the recent one. In archaeological excavation, the layers are removed in reverse order revealing the newest layers first and the oldest layers are exposed at the end. In an archaeological context, cultural layers are formed due to human occupation while natural layers represent the absence of human activities.



Stratigraphy of the site of Pattanam

Exploration

Also known as field survey, it is the method of identifying the sites with archaeological remains. Exploration is the basic step to identify the archaeological sites done through field walking. The survey method can be scientific and systematic. The exploration work is undertaken by the archaeologists from known sites to unknown sites.

There are many methods of doing explorations, important being through

- Field walking
- Ground Penetrating Radar- GPR
- Google maps
- Remote sensing photography

The potential of the site is known through literary references (as known from the early historic sites such as Kaveripumpattinam in Sangam literature and Buddhist sites mentioned by Hieun Tsang), previous works (fieldwork undertaken by early scholars including antiquarians and archaeologists), and significantly from the local people (Many sites are explored due to the villagers who have a thorough knowledge of the local areas).

As excavation is a time-consuming process and it is impossible to excavate all the sites, explorations replace them so as to get the relevant information about the archaeological sites.

Excavation

It is the method of digging a potential archaeological site by removing layer by layer. It involves the systematic removal of layers, and documentation of features. It is a time-consuming scientific process. It is done to understand the chronological and spatial extent of the site. Different techniques are adopted to excavate a site depending on the nature of the site and the expected outcomes of the excavation.

Pioneering Archaeologists such as Flinders Petrie, Pitt Rivers, Kathleen Kenyon, and Mortimer Wheeler have made significant contributions to the methods of scientific excavation.

The excavation team usually consists of the director of the excavation, site supervisors, trench supervisors, and student trainees or labourers.

The important tools required for conducting excavation are

- Wooden pegs
- Iron or wooden nails
- Trowels
- Cloth bags
- Measuring tape
- Camp equipment
- Stationery items
- Compass
- Sieve
- Shovel
- Pick axes

Trial Trench (Courtesy: V.Selvakumar)

Trial trenches are dug to know the potential of the site before excavating the site.It saves money and time and the excavator will know beforehandthe possible nature of the site and will guide the methodology to be adopted for excavation.

Vertical excavation is the method of excavating the site to know the time of the cultural periods. In order to understand the cultural period of the site, a site can be excavated using the vertical method. The grids are laid down in such a way it cannot be extended in lateral directions. However the number of trenches can be extended. This method is useful as it is time-saving and through this can get the cultural sequence of the site. It helps one to know the variations in periods and also the differences in the longer cultural periods. However, the spatial context of the site cannot be known from this method.

Pattanam- Vertical Excavation

Horizontal excavation is done to know the spatial extent of the site. The spatial organisation can be reconstructed through this method. It is generally used to excavate asite of huge proportions. It is also known as the Wheeler- Kenyon method. The grids are laid with balks that make the documentation and the excavation process easier.

Excavation at Arikamedu by Mortimer Wheeler

The quadrant method is used to excavate circular-shaped structures such as megalithic stone circles and Buddhist stupas.

Pottery

Pottery is considered as the ABCD of archaeology. Though the pottery made its beginning in the Neolithic period for the first time, it occupied the central stage in the study of archaeological materials. The pottery is classified according to the types, texture, and shapes. The earliest pots were handmade. With the invention of the wheel, the wheel turned pottery was made. Important pottery types include Ochre Coloured Pottery (OCP), Painted Grey Ware (PGW), Northern Black Polished Ware (NBP), Black and Red Ware (BRW), Red ware, Black ware, Russet Coated Painted Ware, Rouletted Ware. Apart from the indigenous pottery, due to overseas network, we have foreign pottery too such as Amphorae, Arretine ware, and Chinese celadon ware.

Questions

1. What is Archaeology and how do the scholars define Archaeology?
2. Explain the aims and scope of archaeology.
3. Explain the excavation and exploration methods
4. Highlight the features of a site
5. Explain the following terms:-

    a. Culture b. Pottery c. Stratigraphy

Lesson 1.2: Classification of Archaeology

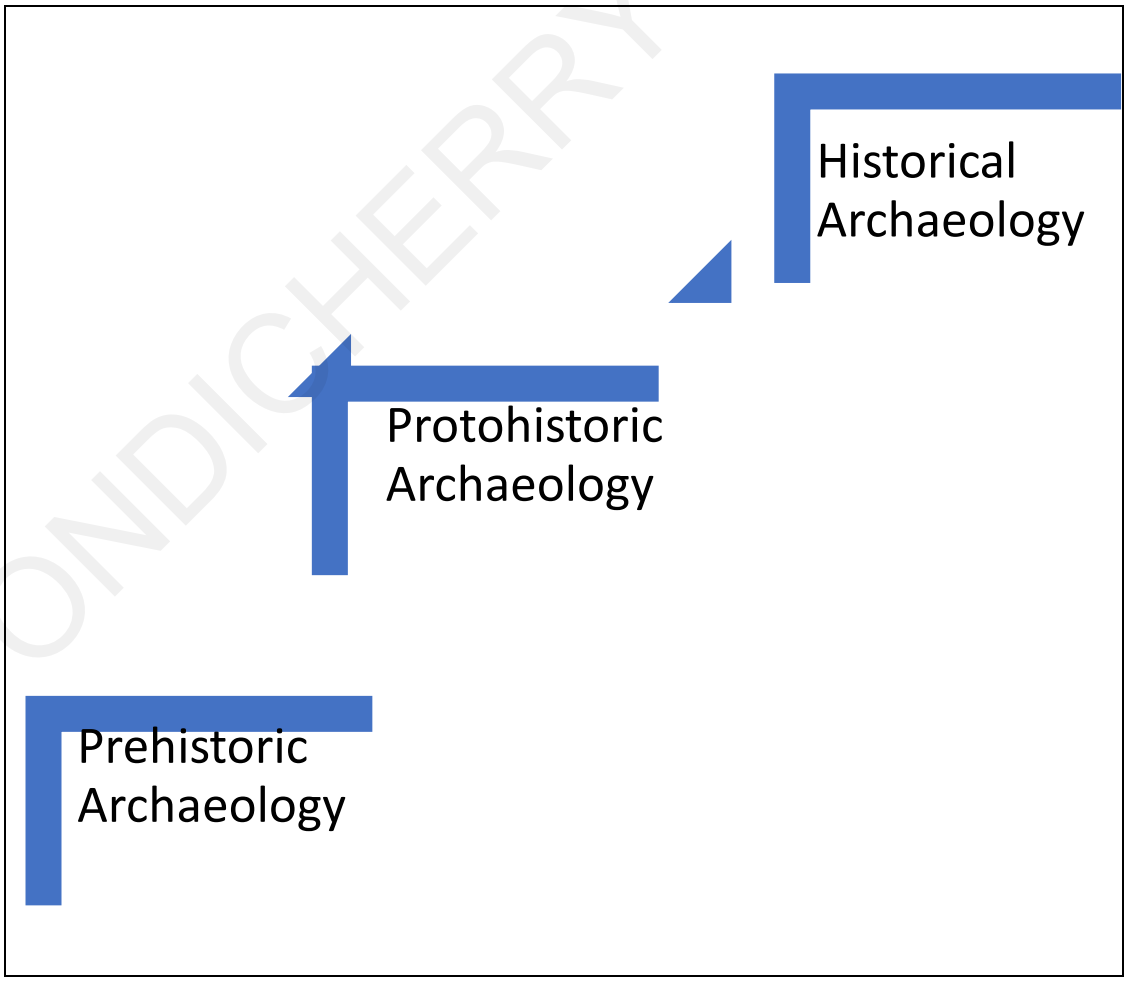
Learning Objectives

After reading this lesson, you should be able to

- Understand the classification of archaeology
- Know the aspects of Prehistoric archaeology
- Identify important features of protohistoric archaeology
- Understand the significance of historical Archaeology

Introduction

As archaeology deals with a massive human history transcending thousands of years, the archaeologists have classified it into three main categories namely:



Prehistoric archaeology:

'Prehistory' studies the human past before the advent of writing and is totally dependent on material evidence of the past. The term was first coined by Paul Tournal in France to describe the materials he found in the 1830s. It was Daniel Wilson who introduced the term Prehistory in the English world in the year 1851 when he published the book *The Archaeology and Prehistoric Annals of Scotland*.

The prehistoric period is marked by two major cultural periods namely Palaeolithic and Mesolithic.

Palaeolithic Period: It marked the beginning of the human past when human ancestors evolved and lived by hunting and gathering. The humans began to explore new regions, made stone tools, hunted animals, foraged the food from local flora and fauna, and lived in caves and rock shelters. The Palaeolithic period is further divided into three sub-periods each marked by technological developments in the stone tool technology.

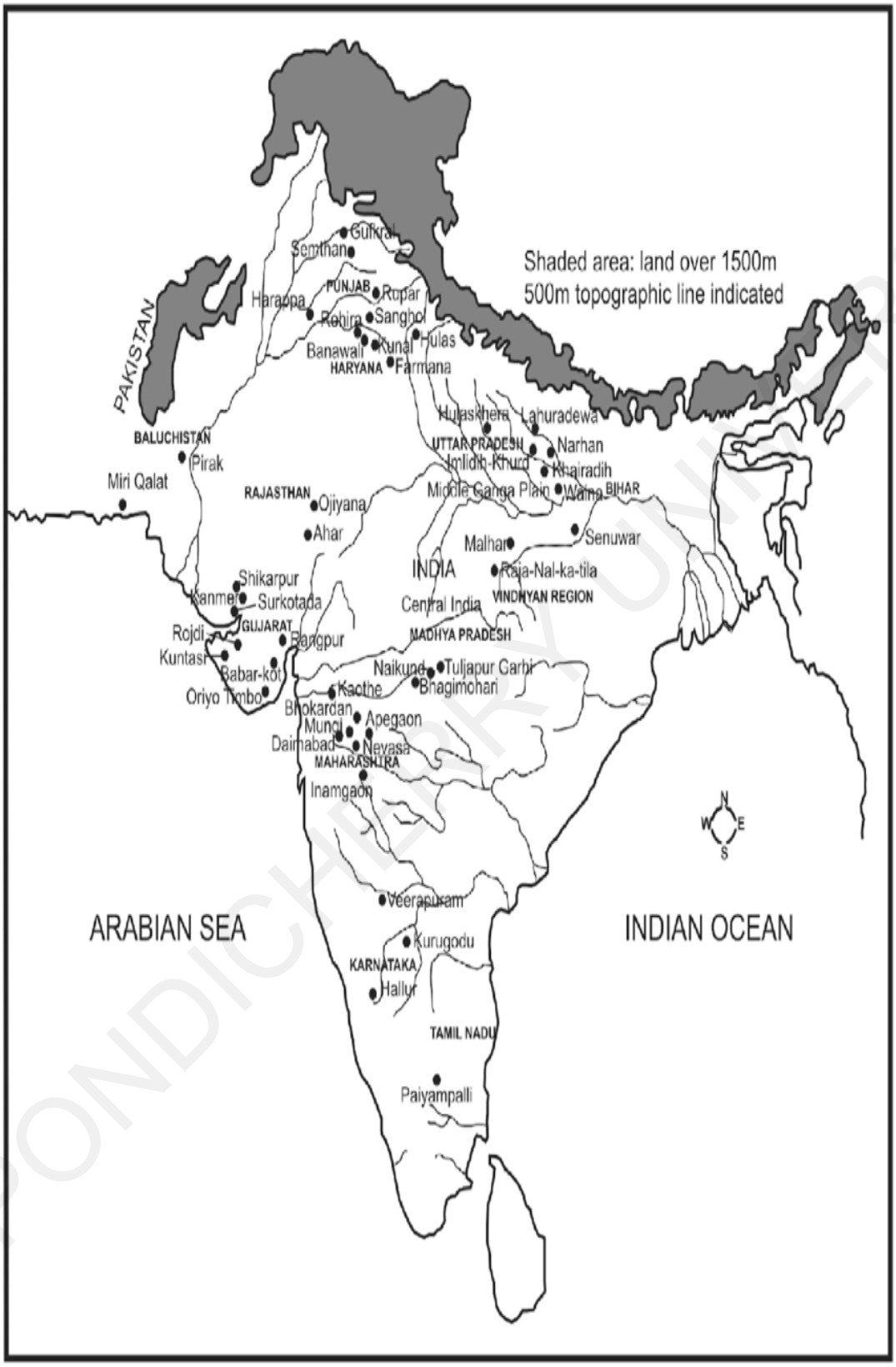
- ***Lower Palaeolithic period:*** This period witnessed the humans using stone tools such as hand axes, scrapers, choppers, and other tools with which they hunted the animals. The stone tools though rudimentary marked a significant milestone in human history. The earliest evidence for humans as tool makers emerged around 3.3 million years ago at Lomekwi in Kenya, Africa. In India evidence of palaeolithic culture was found in various places starting from 2 million years ago. The site of Athirampakkam has yielded a date of 1.7 million years. The skull of *Homo sapiens sapiens*, our modern human ancestor is found at Hathnora in the Narmada river valley.

- ***Middle Palaeolithic Period:*** This period succeeded the Lower Palaeolithic period. In the Lower Palaeolithic period, core tools were used widely. However, in the Middle Palaeolithic period, there was a change in the toolkit. Instead of core tools, flake tools were used more.

As this culture was first noticed in India at Nevasa in Maharastra by H.D.Sankalia, this culture is also known as Nevasian culture.

- Upper Palaeolithic Period: It succeeded the middle palaeolithic age. The technological advancement of our ancestors was well pronounced during this period. This culture is also known as Blade and Burin culture and osteo-Donto-Keratic Culture. Parallel-sided blades, Scrapers, Points occupied a major share of the Upper Palaeolithic tool kit, used for hunting and gathering and food processing. People lived not only in caves and rock shelters but also in open areas such as coastal zones. During this period, we have evidence for burials and artistic impressions in the caves and rock shelters. The decorated ostrich shells were one important feature of this period.

Mesolithic Period: The period between Palaeolithic and Neolithic is named as Mesolithic, which means Middle Stone Age. This marked the transition from old tool technology and subsistence pattern to a different method. The tool technology further developed and microliths replaced heavy-duty tools of the palaeolithic period. The people lived in caves as well as in open areas. Burial remains are found at few places and the presence of grave goods indicates a belief in life after death.



Protohistoric Archaeology

The period between prehistory and history is called as Protohistoric period. For prehistory, we rely on material evidence while for the historic period we rely on written evidence. For the proto-historic period, we have a writing system but it is not yet deciphered satisfactorily; hence we call this as the proto-historic period. In India, the Harappan culture is considered as proto-historic period as we have Indus script but till today it has not been deciphered.The cultures that were contemporary to Harappan civilization are also placed in the Protohistoric period.

The following subperiods are placed in the protohistoric period

- Neolithic period
- Harappan Civilization
- Chalcolithic Period
- Iron Age

Neolithic Period: This New Stone Age culture is placed in the protohistoric period (though some scholars place it in prehistory) as it was contemporaneous to the Harappan culture as well as it marked the beginning of new ideas in human history. The cognitive development of the human brain attained new heights. From hunting and gathering and nomadic lifestyle, the humans gradually became the food producers. Agriculture and animal domesticationwere practiced for the first time. The Neolithic people built houses, buried their dead, and made pottery for storage and eating. Though the stone tools are still used and metal was not used, there was a total transformation in how the humans interacted with nature, and improved their living conditions. In view of all these developmental aspects, Gordon Childe used the term 'Neolithic Revolution' as it witnessed a marked change in human adaptations.

The Neolithic period is found in various zones of India each with its distinct features. Based on the distribution of sites, the Neolithic culture is divided into the following subgroups:

- ***The Neolithic Culture of North-Western India***

The Neolithic culture in North-western India (a few sites are in Pakistan now) yielded evidence for one of the earliest beginnings of Neolithic culture in India. The site of Mehrgarh (now in Pakistan) has provided evidence for wheat and barley. The site is dated to 7000 BCE. It predated the Indus civilization. The Pre Harappan cultural period followed the Neolithic period. In the Neolithic period, the people of Mehrgarh lived in huts, used hand-made pottery, and produced grains. There is also evidence of trade with Afghanistan as known from the occurrence of Lapis Lazuli. Terracotta figurines and beads of faience are found in this site. The people buried their dead within the habitation area.

- ***The Neolithic Culture of Kashmir***

The most important site in Kashmir is Burzahom. The site is contemporary to the Harappan civilization. The interesting aspect of this culture is the presence of pit dwellings under the ground. The pits were dug and the floor was made and people lived in pits probably during the cold weather. There is evidence for the thatched roof above the pit dwellings in the form of post holes. We have both aceramic and ceramic assemblages in the site.

- ***The Neolithic Culture of Gangetic Valley and Central India***

The Neolithic culture in Ganga valley assumed significance as one of the sites Lahuradeva yielded the earliest date for rice. Sohagaura is another important excavated site in the Ganga valley.

- ***The Neolithic Culture of Eastern India***

The Neolithic culture in Eastern India shows similarities with East Asia and Southeast Asian cultures. The culture is characterised by a shouldered axe and pointed butt celts. Important sites are Chirand in Bihar

and Birbhanpur in Bengal.

- **Neolithic Culture of North-Eastern India**

The Northeastern Indian states of Assam, Arunachala Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura revealed evidences of the Neolithic period. The culture is characterised by shouldered axes, adzes, chisels, and hoes. Handmade pottery in grey ware and red ware is found. The sites of Daojali Hading, Selbalgiri have been excavated. One of the sites in Manipur has yielded a TL dating of 1650± 350 BCE.

- ***Neolithic Culture of South India***

The Neolithic culture in south India is contemporaneous to the Harappan civilization. Copious evidence for Neolithic culture is found in the states of Karnataka, Andhra Pradesh, and Telanganathan in Tamil Nadu and Kerala. Concentrated on the Deccan plateau region, the Neolithic sites are found situated on the foothill regions.

The most conspicuous aspect of the southern Neolithic culture is the ash mound. The ash mounds are formed due to the periodic burning of cow dung and consist of ash and vitrified ash. These served as cattle pens. They are noticed at Utnur, Kodekal, and Budihal. The period also witnessed agricultural production and animal domestication. Burials were made for the dead in the habitation area. Houses with post holes are noticed in the excavation.

Harappan Civilization

Known also as Indus Valley Civilization it covered a vast area in the Indian subcontinent. More than 1500 sites have been discovered in India and Pakistan. As early as the 19th century the two type sites of Harappa in the Punjab Province (presently in Pakistan) and Mohenjadaro in the Sind Province were noticed by the British and efforts were taken to excavate them. Over a period of time, Harappan

sites such as Chanhudara, Lothal, Kalibangan, Rakhigarhi, Dholavira, and many more sites have been unearthed and they all revealed fascinating information about this copper age civilization which was contemporaneous to Egyptian and Mesopotamian civilizations. The civilization belonged to the copper age where stone tools were also used and are commonly referred to as the Chalcolithic period ('Chalco' means copper and 'lith' means stone)

The Harappan sites have common town planning with roads and drainage systems. The towns had a citadel and a lower town with water management. The town is laid on a grid system with roads cutting at right angles. There is an overall common feature in the town planning with broad roads flanked by houses on both sides. Some of the houses are two-storied. The citadel or the upper town has elaborate housing facilities, while the lower town has quarters of the working population.

The Indus script is found in seals and sealings. The script is not yet deciphered. The sophisticated pottery, weights, and measures indicate the trade-oriented society that had a uniform pattern and a successful overseas trade as well as internal trade. The evidence for religious belief is noticed in the seals of the Harappan people. The burial practices also throw light on their belief system. An exquisite art and craft production indicates a high level of labour organisation. The civilization that had it beginning in the pre-Harappan period was dated between 3300 BCE and 1900 BCE. The civilization declined probably due to floods, drought, and invasion.

Other Chalcolithic Cultures

When Harappan culture flourished in the north-western part of India, in other parts of India the rural-based Chalcolithic culture made its presence. This marked the advent of the first metal i.e. copper in India. The pottery types found in

the various sites of Chalcolithic culture in Maharashtra, Madhya Pradesh, Gangetic regions are used as the significant feature and the cultures were named after the prominent pottery types such as Ochre colour Pottery Culture, Ahar culture, Jorwe culture, Malwa culture. It is not only the pottery that is distinct even other aspects of cultures are unique. The Chalcolithic period is marked by the use of copper as well as lithic tools and objects.

Iron Age

The Iron Age marked the beginning of iron usage in the Indian subcontinent. In the northern part of India, the Iron Age is associated with Painted Grey Ware culture while in southern India it is found with the megalithic burials. The megalithic burials are constructed to bury the dead in different types of burials. There was a distinction between the living space and the dead space.

The megalithic burial types include urns, cists, dolmens, sarcophagus, rock-cut chambers, umbrella stones, stone alignment, and hood stones. Usually, the Black and Redware pottery is found associated with megalithic pottery.

Historical Archaeology

The advent of writing marked the historical period. In India, the historical period can be divided into

- Early Historical: tentatively dated between 300 BCE and 300 CE it witnessed the rise of towns, emergence of trade, and use of scripts. In India, the rule of Mahajanapadas and the rise of the Mauryan power signify the early Historic period. Apart from the archaeological sources, literary sources also throw light on the early historical period.

- Early Medieval: From 600 CE and 900 CE, this period witnessed the rise and fall of various dynasties. The rule of dynasties with the political, socio-economic conditions is studied in the early medieval period.

- Late Medieval- Dated between 900 CE and 1600 CE, this period witnessed

the arrival of foreign powers and establishment of the rule by Delhi Sultans in the north and the rule by many kings in other parts.

- Modern: This marked the beginning of the emergence of European colonialism. The arrival of imperial powers such as the Portuguese, the Dutch, the French, and the English changed the course of history in India.

Questions

1. Bring out the salient features of Prehistoric archaeology
2. Highlight the various aspects of Harappan civilization
3. Explain the Neolithic culture in India
4. Assess the importance of historical archaeology in the reconstruction of the past.

Lesson:1.3:Sources for the study of Archaeology

Learning Objectives

After reading this lesson, you should be able to

- Understand the sources for archaeology
- Know the significant aspects of monuments in the study of the past
- Understand the significance of epigraphy as the source
- Know the importance of numismatics

Introduction

For studying the past cultures, archaeology has many sources that include monuments, epigraphy, and numismatics. In this unit, we will analyse the important sources that are useful for the reconstruction of the past.

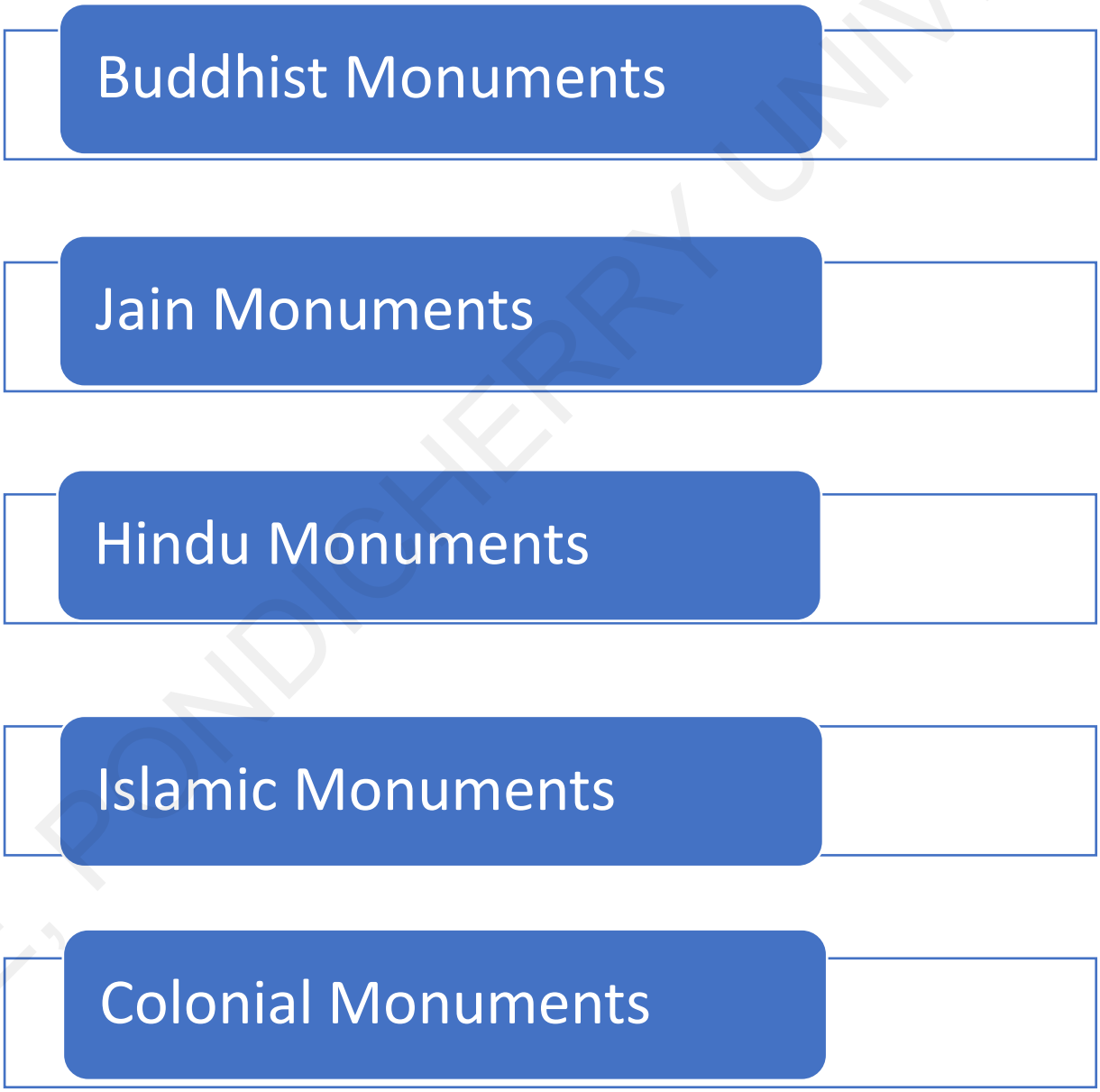
Monuments

Human beings started living in natural caves and rock shelters from very early times. There is evidence for them to have embellished their living quarters with paintings and engravings. With the increase in cranium capacity, the cognitive abilities of the people also developed that resulted in the construction of housing quarters.

Over a period of time, monuments were built by our ancestors. They include wharf, tanks as known in Harappan culture. With the rise of new religious belief systems, religious monuments were constructed. The Buddhists and Jains made pioneering work in carving rock-cut caves for monasteries and worshipping places. The Hindu architecture of building stone temples started emerging only from the Gupta time. Many temples for various Gods and goddesses were built by various patrons of art in all parts of the country. In India, the Guptas, Vakatakas, Palas, Senas, Chalukyas, Pallavas, Rashtrakutas, Cholas, Pandyas, and the Vijayanagar Empire created an indelible imprint of the temple architecture. With

the arrival of Islam and Christianity into India, palaces, forts, and official buildings were built assimilating local and foreign cultural elements.

Monuments are one of the important sources for the study of archaeology as it unravels not only the architectural elements but also other art forms such as painting, sculptures, jewellery, social and religious practices, dress and ornaments, along with land donations, the role played by the royal and ordinary people, invasions, etc.



Buddhist Monuments

Buddhists were the first to build stone monuments in India. The Stupas built over the remains of Buddha and his famous disciples were worshipped earlier by the followers of Buddhism. The Stupas are placed inside the Chaityas or the halls for the Buddhists to sit and meditate upon. The Viharas were built for Buddhist monks to stay during the rainy season. Hinayana Buddhism gradually gave way to Mahayana Buddhism when Buddha's images were made. The Buddhist iconography developed. One can see such Buddhist architecture at `Barhut, Sanchi, Saranath, Karle, Bhaja, Ajanta, Amaravati, and Nagarjunakonda.

Jain Monuments

The Jain monks too lived in rock shelters where the stone beds were carved and donated to them by their devotees. Such stone beds are found aplenty in the Madurai region of modern-day Tamil Nadu. Architecturally embellished with intricate carvings, the Jain monuments house the images of simple Jaina Tirthankaras. The Jain monuments can be seen at Mount Abu in Rajasthan and Sravanabelagola in Karnataka.

Hindu Monuments

The Guptas perfected the art of Hindu temples. The temples at Nachna Kuthara, Deogarh were the earliest evidence of Hindu monuments. The Chalukyas of Badami in Karnataka improved upon the architectural style and built many rock-cut caves and structural temples for Lord Shiva and Vishnu. The Pallavas and the Pandyas brought architectural technology to Tamil country which can be seen in Mamallapuram, Kanchipuram, and Madurai regions. During the Chola rule, the architecture reached its zenith. The Rashtrakutas made the Kailasa temple at Ellora, an architectural wonder in stone. The Vijayanagara Empire expanded and renovated many Hindu temples in various parts of South India.

Rajarajesvaram temple, Thanjavur

Islamic Monuments

With the establishment of Delhi Sultans and Mughal rule in India, Islamic architecture emerged as the popular one. The tombs, mosques, palaces, and forts found in and around Delhi speak volumes about the glory of Islamic architecture. The classic examples of Islamic architecture are the Qutb Minar complex, Ferozeshah Kotla, Humayun's Tomb, Taj Mahal, Agra Fort, Fatehpur Sikri, and Red fort, Delhi.

Taj Mahal, Agra

Colonial Monuments

The Portuguese were the first ones to come to India and establish their colony on the west coast of India. The other colonial powers such as the Dutch, the French, and finally the British established their colonies in India and contributed not only to the change in political, socio-economic conditions of the country but also in the architectural embellishments of India. The huge mansions built in Gothic style, and in Indo-Saracenic architecture contributed to the emergence of a new style of architecture. India Gate, Gateway of India, museum buildings of Bombay and Madras, many railway stations and terminals are standing examples of colonial architecture.

Epigraphy

Epigraphy is the study of inscriptions. It is made of two Greek words: 'epi' means upon and 'graphy' means writing i.e. writing upon a medium which could be a stone, a wall, a metal, etc.

Inscriptions are found in stone, metal, and other materials. The study of inscriptions is important as it marked the beginning of the historical period. It is the harbinger of a literate society that ushered into a historical period from the previous prehistoric period. The inscriptions throw light on the political, social, economic, and cultural conditions of the past.

Mauryan king Asoka's inscriptions in Brahmi script and Prakrit language found in various parts of India led to a better understanding of India's past. The decipherment of the Asokan Brahmi script by James Prinsep, an assay master in the mint of Calcutta opened up a new avenue in the reconstruction of Indian history. Following this, the decipherment of Gupta script, Kutila script or Siddhamatrika script, early Tamil script, Telugu and Kannada script was made. The Asokan inscriptions are found on the rocks and pillars through which he tried to spread the concept of dhamma. The earlier inscriptions were found on Buddhist stupas and Jaina stone beds.

The Besnagar Garuda Pillar inscription of Heliodorus, the Hathigumpha inscriptions of King Kharavela, the Allahabad Pillar inscription of Samudra Gupta II, the Aihole inscription of Chalukya king Pulakesin II to cite a few provide interesting and hitherto unknown information about the rulers.

With the appearance of many temples, land donations to the temples and the Brahmanas became more frequent and they were recorded in the temple walls. They became prolific during the time of the Cholas in southern India. For example, the inscriptions in the Rajarajeswaram temple at Thanjavur built by Chola King Rajaraja I are the repository of knowledge. It provides details about the political conquests of the Chola king, land surveys and measurement, land grants, taxation policies, people's occupations and social divisions.

Along with the stone inscriptions, the land endowments were recorded in the copper plates too. Known as *Tamrasasana*, they provide information about the socio-economic and political conditions of various dynasties. The Pre-Asokan copper plate found at Sohgaura in Uttar Pradesh is considered the earliest copper plate in India. It records efforts taken to face the famine. The Tarissapalli copper plates of the Cheras, Velvikudi copper plates of the Pandyas, Kasakudi copper plates of the Pallavas, the Tiruvalangadu copper plates, and Tiruvindalur copper plates of the Cholas are a few important copper plates that throw light on the history of south India.

Palaeography

Palaeography is the study of ancient scripts. The language is the spoken form while the script is the written form. The earliest known script in India is the Asokan Brahmi script. Each region in India had its own scripts suitable for the languages spoken in these regions.

Though the oldest script available in India in Harappan sites is not deciphered, scholars such as Asko Parpola, Iravatham Mahadevan have studied the Indus script and attributed Sanskrit and Dravidian origin to the script.

The Palaeography helps in understanding the origin and evolution of script along with the distribution of script. Some important scripts are Tamil Brahmi (also called Tamizhi), Kharaosthi, Devanagari. The modern language of Tamil has a script derived from Tamil Brahmi.

Brahmi Script: the Asokan edicts proclaiming dhamma are found engraved on rock surfaces and pillars in various parts of the Indian subcontinent from Afghanistan to Karnataka. The script was deciphered by James Prinsep in 1837 that led to a clear understanding of the Brahmi records.

Kharoshti Script: It is a script used by King Asoka in his inscriptions that are found in the northwestern part of India. It was noticed in the Greek coins too issued in the Indo-Bactrian region. James Prinsep was the one who deciphered the

Kharosthi script. Though found mainly in the north-western part of the Indian subcontinent roughly corresponding to modern-day Pakistan and Afghanistan, they are noticed in the eastern parts of India too.

Tamil Brahmi or Thamizhi: when Asokan Brahmi was becoming popular in the northern part of India, the ancient Tamil region developed a script of its own, commonly called Tamil Brahmi and recently called Thamizhi. The discovery of the first Tamil Brahmi inscription at Mangulam by Robert Sewell in 1882 and the reading of the inscription by Venkayya in 1906 opened up a new vista in the study of Tamil Brahmi inscriptions. The Tamil inscriptions were found at Jambai, Pugalur, Pulimankombai, and Thathapatti that throw more light on the political conditions of the early historic Tamil country.

Later Brahmi scripts: The Gupta Brahmi script, Kutila Script, and siddhamatrika were used in the early medieval period in India.

Vatelluthu: This script is derived from the Tamil Brahmi script and made its presence around the fourth century CE. It was used by the Pandyas and we have Pulankurichi inscription, Irulappatti inscription written in Vatelluthu script, and Tamil language. The script was used in the Kerala region till the 15th century CE and it gave birth to the modern Malayalam script with borrowings from Grantha script.

Grantha Script: Introduced by the Pallavas in the northern part of Tamil country to write Sanskrit and Prakrit languages, the script is in usage both in Tamil and Kerala regions to write letters of Sanskrit origin.

Telugu-Kannada and Malayalam scripts: These regional scripts originated from southern Brahmi scripts and were in vogue for the last one thousand years.

European scholars such as James Prinsep, Burnell, Fleet, Hultzsch, and Indian scholars such as A. H Dani, C. C Dasgupta, Venkayya, Iravatham Mahadevan, and many others have contributed to the study of palaeography.

Numismatics

Numismatics is the study of coins. Before the invention of coins, the buying and selling of goods and other economic transactions were conducted through the barter and exchange systems. Around the 6th century BCE, punch-marked coins (PMC) were introduced at the time of Mahajanapadas. The coins are made of different metals and different denominations, shapes, and sizes. The coins provide information about the geographical extent and economic condition of the janapadas. Along with literary evidence, the coins provide information about the historical period of our country.

These coins are mainly made of silver. They have the symbols of trees, sun, hills, and other natural objects. Each Janapada has a unique coin type and they were in circulation.

The Indo-Greeks, Sakas, Pahlavas, and the Kushanas issued coins in their respective regions of power. In Kushana coins one can see the images of deities of both Vedic and Iranian pantheon such as Siva, Vasudeva, Buddha, Ardoksho on one side and the images of the kings on the reverse. This tradition continued in the Gupta period also. The King is shown in various poses – lion slayer, horseman and with the queen, performing Ashwamedha sacrifice, etc. Gold coins are found in plenty during this period. The Post Gupta period also witnessed the use of coins in various sizes, shapes, and denominations. The Delhi Sultans and the Mughals issued coins that tell us about their political expansion.

In South India starting from the Sangam period we have evidence for coinage. The coins of Sangam Cheras, Cholas, and the Pandyas are found. Many of them are in copper. Apart from these coins, foreign coins are found in excavations as well as in hoards. The Roman coins found in Tamil Nadu and Kerala stand as a testimony to the overseas trade with the Romans in the early historic period. The Pallavas, the imperial Cholas, the Pandyas, and the Vijayanagara kings issued a variety of coins that throw light on the economic and political conditions of the past.

Questions

1. Bring out the significance of Buddhist and Jain monuments in Indian architecture

2. Highlight the features of Hindu architecture

3. Assess the importance of epigraphy in the study of the past

4. Write a note on numismatics

Lesson: 1.4: The Dating Methods

Learning objectives

After reading this lesson you should be able to

- Understand the dating methods in archaeology
- Explain the dating methods in inscriptions
- Describe relative dating methods.
- Highlight the features of absolute dating methods

Introduction

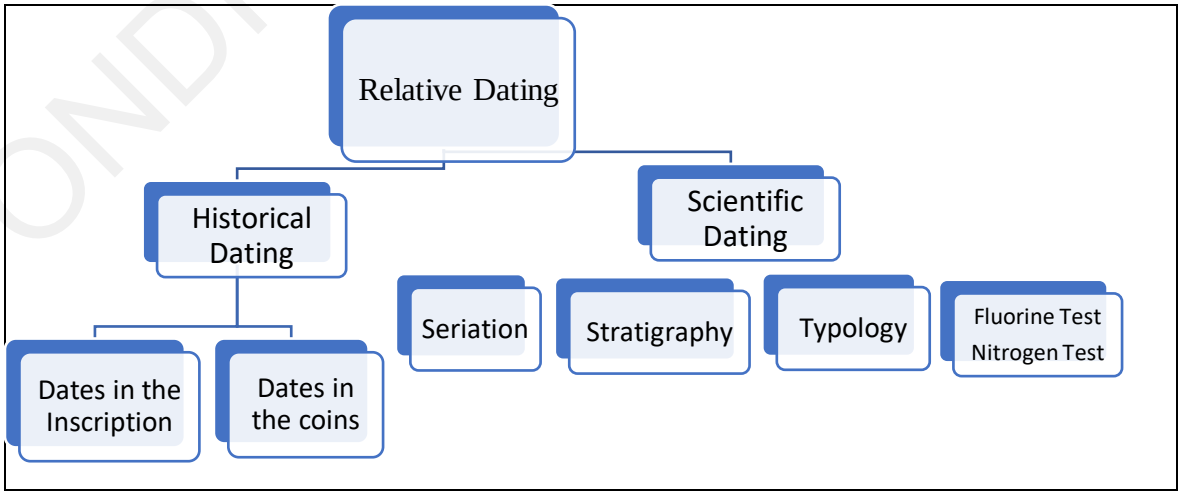
The question that arises in the minds of the readers will be how will the archaeologists know the antiquity of an object? What methods will be followed by them to know the dating of an object?

The dating of an archaeological object can be done in two different methods

- 1. Relative Dating
- 2. Absolute Dating

Relative Dating

It is a method by which the objects are dated in relation to another object. There are a few types of relative dating. They are given below.



Relative Dating Methods

Historical Dating

In Historical Dating, a site or an archaeological object can be dated based on the information found in the inscriptions. In India, there are more than one lakh inscriptions. They are dated based on the

- Based on Regnal Year of the king
- Based on the Era mentioned in the inscriptions

Based on the Regnal Year:

In this method, the inscription is dated based on the reigning year of the king. For example, the Rummindei pillar inscription of Asoka mentions that he visited Lumbini the birthplace of Buddha on his 20th regnal year. The inscription of Rajaraja I in Rajarajeswaram informs us that he built the temple in his 25th regnal year. Many inscriptions provide the regnal years of the kings.

Based on the Era:

There are a few Eras that are used in the inscriptions that help us to date the inscription.

The Vikrama era also called Vikramasamvat is dated to 58/57 BCE. It was earlier believed to have been introduced by Vikramaditya. However, it is now argued that this era was introduced by the Saka ruler Azes I. Earlier the era was mentioned as the Malava era and the Krta era. In the ninth century it was called as Vikrama era.

Saka Era is another widely used era in India. It was also known as Sakavarsa, Salivahanavarsa. It is dated to 78 CE. Scholars identify the date as the coronation date of the Kushana king Kanishka.

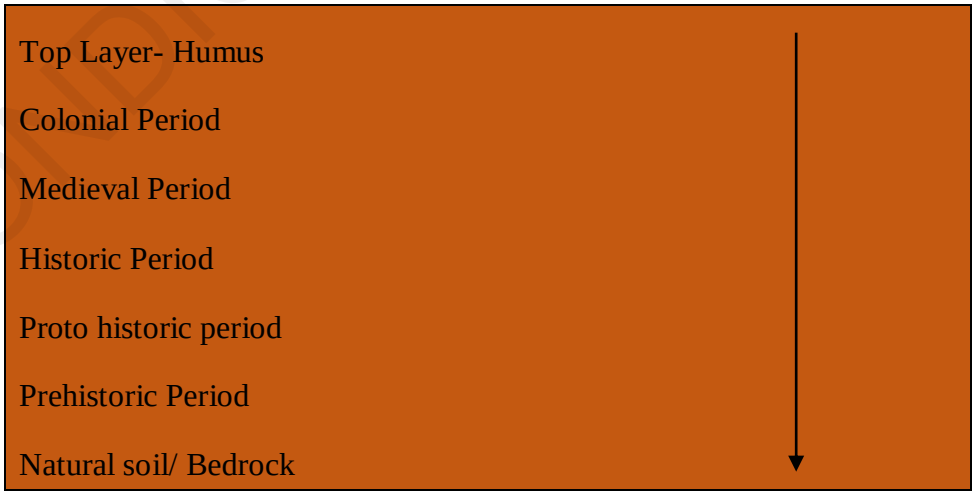
The language of the inscriptions is an important indicator of dating it. Palaeography and linguistic development play a role in relatively dating an inscription. Similarly, the dates in the coins also throw light on dating the object.

Scientific Dating

In scientific dating the foremost is stratigraphy. Stratigraphy is the fundamental principle in the study of the geological deposits. The layers found in the bottom are the oldest while the top layers represent the later period. This principle is used to study archaeological materials too. For example, the human ancestors who lived in prehistoric time had left behind material evidence which is formed as a layer and subsequent cultures add the material evidence.

The pioneering efforts on geological stratigraphy were made by Nicholas Steno as early as the 17th century and geologists such as James Hutton and William Smith contributed towards the further development of the concept. It was Sir Charles Lyell in 1830 that popularised the concept with the publication of the book Principles of Geology.

An archaeologist tries to dig the past evidence by unravelling the layers of deposition in a reverse way.In this way, the later culture will be unravelled first and the oldest culture will be unravelled last. By this principle, the cultures can be dated based on the position of the layers. The bottom-most layers represent earlier cultures and the topmost layers represent the later cultures. Similarly, if pottery is found associated with a coin that is datable, then the pottery can also be dated. Through relative dating, the objects can be dated.



Stratigraphic layers

A site excavation after Renfrew and Bahn 2016

Typology is another method of relative dating. By analysing the types of amphorae pottery from various periods, Henrich Dressel made a typology of the pottery and assigned a period for each type. This model of typology was attempted by other scholars in the study of stone tools and pottery. The Harappan pottery was classified and dated based on the typology.

Typology of Amphorae jar by Dressel

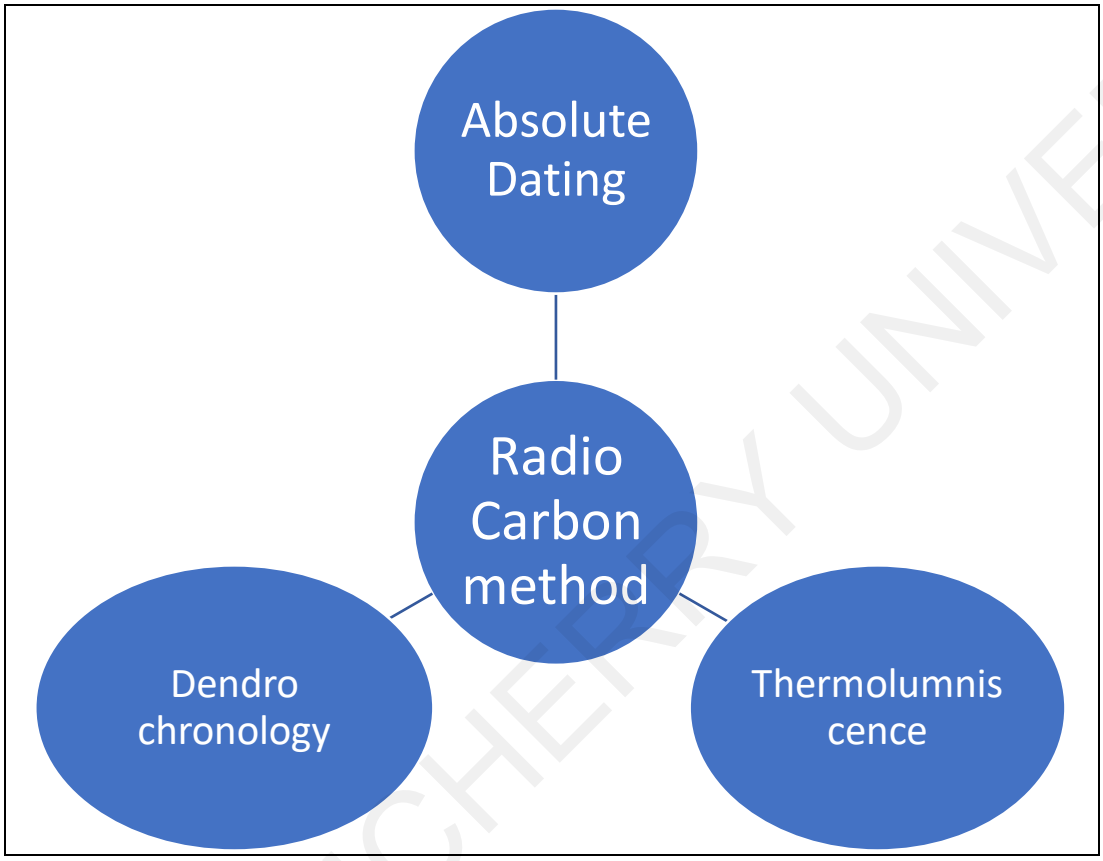
The seriation dating method involves the collection of data from a series of sites and arranging them in a chronological way.

The fluorine Test is used to date the bones. It works on the principle that groundwater contains fluorine that combines with the bones buried in the soil to form fluorapatite. By calculating the amount of fluorapatite, the date of the bone can be assessed. The longer it is buried it will have more fluorapatite content than the one that is buried for a lesser time.

The Nitrogen test is another relative method similar to the fluorine method. The collagen found in the bone once decayed turns into nitrogen. The rate of nitrogen present in the bone is assessed and the bone is dated.

Absolute Dating Methods

As opposed to the relative dating method, the absolute dating method gives a more accurate date of the object. There are more methods of absolute dating but the important ones are C14 dating, TL dating, and the tree ring method.



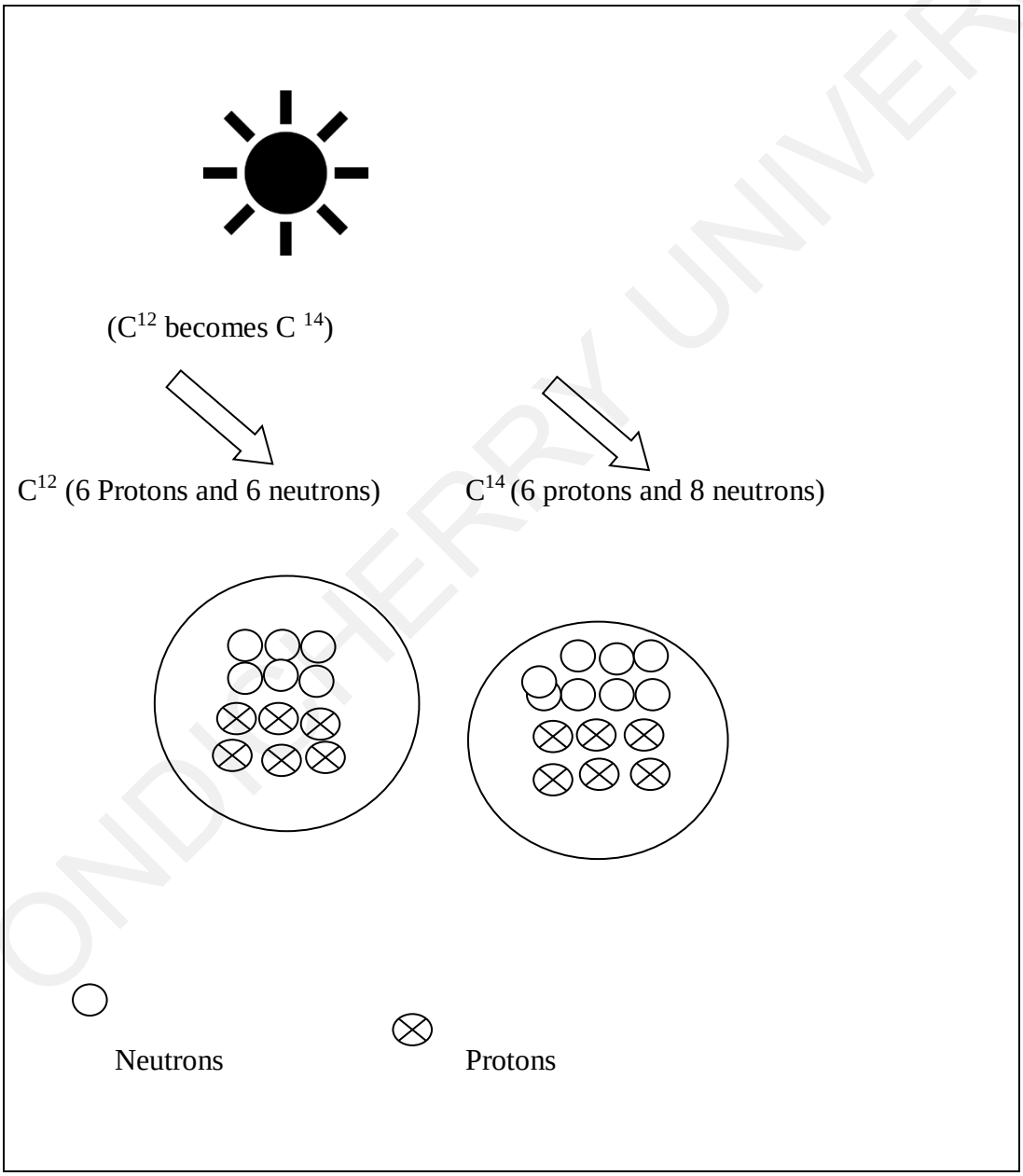
Important methods of Absolute Dating

Radio-Carbon Dating Method

Till the mid-20th century, scholars have been dependent more on relative dating. The new scientific changes that came to the forefront at the time of the Second World War enabled a new dating technique to date the archaeological objects more accurately.

Carbon ^{14} dating is one such scientific dating method discovered by an American physicist Willard Libby in 1946. Using these method carbon materials can be dated from 500 to 60000 years of age.

By this principle, all living organisms contain carbon 12. Due to the entry of cosmic rays intothe earth's atmosphere contain nitrogen that changes into carbon 14. A normal C^{12} contains 6 protons and 6 neutrons in its nucleus and 6 electrons outside the nucleus. Due to the entry of nitrogen 14's neutrons into carbon ^{12}, it makes it unstable by making 8 protons and 6 neutrons that become C ^{14}. C^{14} is the isotope of carbon ^{12}.



The C 14 is absorbed by all living beings. However, after death, the C ^{14} starts to decay at a fixed rate. The rate of decay is calculated at a half-life value. It decays by one percent every 83 years. The half-life value of carbon^{14} is fixed at 5730±40 years. By using this method, we can date organic materials such as animal and human remains, botanical remains, etc. Libby received a Nobel Prize for the discovery of the Radiocarbon dating method.

The Accelerator Mass Spectrometry is a new and efficient method of radiocarbondating in which the C ^{14} content is measured in relation to the presence of C^{12} and C^{13}. It measures the atoms and proportion of isotopes present. One can obtain a date with relatively fewer samples. The method was introduced in 1977.

However, the collection of samples should be done in a sterile condition. Otherwise, the sample will be contaminated and wouldgive a wrong date.

Dendrochronology

Also known as the Tree Ring method, this measures the rings formed in a tree seasonally and dates the wooden objects based on the calculation.Trees get rings annually that reflect the rainfall conditions of that area annually. During the less rainfall period, the tree rings are thinner while they are thicker when there is higher precipitation. By counting the tree rings found in a dead tree and comparing them with that of the living tree, different tree ring dates are ascertained and the master sequence of several trees is prepared.

This tree ring analysis developed by A.E.Douglass is helpful in calibrating radiocarbon dating. As the atmospheric radiocarbon is not constant as it was in the 1950s, it becomes important to calibrate the dating of radiocarbon with that of another method.

Thermoluminescence or TL Dating

Invented by Johnson in 1964, the TL method works on the principle that all crystalline materials like ceramics trap electrons. When it is heated it will release the previously stored electrons and set the clock at zero. It will then start trapping the electrons afresh. By reheating the sample above 400 to 500° C, the trapped electrons will be released as energy, and by calculating the light energy the sample can be dated.

The materials that are heated previously such as pottery, hearth, bricks, furnace, and kiln can be dated by this method. During sample collection, caution should be taken in not exposing them to sunlight, UV rays, and infrared rays.

Questions

1. How can we date the inscriptions?
2. Describe the absolute dating methods
3. In what way one can do relative dating?
4. Explain the Radiocarbon dating method.

UNIT - II

Relationship of Archaeology with other disciplines -History, Anthropology, and Geology - Contribution of Social sciences and Humanities to Archaeology- Impact of Pure Sciences on Archaeology.

Unit 2 Structure

Lesson 2.1: Relationship of Archaeology with History, Anthropology, and Geology

Learning Objectives

After reading this lesson, you should be able to

- Understand the relationship between archaeology and history
- Know the use of anthropology for archaeological studies
- Assess the importance of geology for the study of archaeology

Introduction

To reconstruct the past human behaviour, Archaeology takes the help of its sister disciplines both from Sciences and Humanities. This unit outlines the relationship of archaeology with other disciplines such as history, geology, anthropology, physics, chemistry, and biology.

History and Archaeology

Both history and Archaeology study the human past. However, history is based on written evidence while Archaeology is based on material evidence. As the historical period starts with writing, one can assume that history covers just a fraction of the human past and the remaining period is constructed only through Archaeological materials.

In the Indian context, History starts with the evidence of writing prevalent in the pre-Mauryan and Mauryan periods, especially from the time of Mauryan King Asoka who had extensively used writing all over the country. For the study of the period before history, we are entirely dependent on archaeological material evidence only as noted in unit 1.

How is Archaeology useful to the study of History? This question can be answered in different ways. As sister disciplines both history and archaeology complement each other. Whenever there is a lack of evidence in knowing the past either history or archaeology will supplement the data.

Though Buddhist texts talk about the rule of the Mahajanapadas, it was the archaeological explorations and excavations conducted at a few sites in the northern part of India that throw more light on this period. The Northern Black polished ware is associated with the rise of Mahajanapadas in the 6th century BCE. Chiefly found in the Gangetic fields the ceramics were seen at Taxila in northwest, Ujjain, and Vaishali in Madhya Pradesh. The normal kinds are bowls and dishes. This ceramic is additionally found at Korkai, Kodumanal, and Alagankulam in Tamil Nadu and Sri Lanka indicating probably a trade network.

An interesting site is Purana Qila, in Delhi which is identified with Indraprastha of the Mahabharata epic. The site had proof for NBPW levels datable to the fourth century BCE. Wattle and daub method of construction is noticed along with hearths, houses with channels, earthenware ring wells, and stamps with two names recorded on them.

Similarly, the archaeological excavations at Bulandibagh and Kumrahar situated close to Pataliputra, the capital of the Mauryas (present-day Patna, Bihar) uncovered parts of the fortress in wood, a wooden chariot with an iron edge, brick structures, punched mark coins, beads, and terracotta figurines.

The Asokan inscriptions, another archaeological source, talk vividly about the political conquest, administration, and dhamma (righteousness) followed by King Asoka. The excavation was conducted at Kanagalahalli stupa found three km east of Sannati, Gulbarga area, Karnataka. The stupa site is dated to the time of Satavahanas which yielded fascinating panels portraying the sculpture of the King with his royal consort. An inscription with the title *Rayo Asoka* is found indicating the king was Asoka.

Asoka's inscription refers to a place called Tosali and the Hathigumpha inscription of Kharavela refers to it as Kalinganagari. Identified as Tosali, the site of Sisupalgarh was excavated that yielded evidence for fortification walls rising to nine meters high with moats. The site also yielded evidence of water tanks, brick structures, and pottery.

In Tamil country, the beginning of the historical period coincides with the Sangam literature and the Tamil Brahmi inscriptions. Though the literature gives information about the socio-economic and political conditions of the early Tamils, it was the archaeological excavations conducted at some important sites that revealed the full aspects of the early Tamil cultural period. The excavations at the sites of Arikamedu (referred to as Virai in Sangam literature), Poompukar (mentioned in Pattinapalai as the port city of the Cholas), Kodmanal (identified with Kodumanam) have substantiated the literary evidence.

The *Padirrupathu*, a Sangam work, traces the genealogy of the Cheras. The inscriptions found at Pugalur near Madurai refer to the construction of a rock shelter for the Jaina monks at the time of the swearing-in ceremony of Ilam Kadungo, son of Perum Kadungo, and the grandson of Ko Athan Cheral Irumporai thus giving additional proof to the literary reference.

Muziripattinam the famous port city of the Cheras is mentioned both in Sangam literary works as well as in Greek works as the important emporium in the Indian Ocean region. However the excavation at Pattanam, located in Paravur in Ernakulam district, Kerala yielded evidence for a wooden canoe, brick structure, beads along with Indian and foreign potsherds. Thus the site of Pattanam could be identified with the Muziris of Sangam periods.

The Indo-Roman trade was mentioned in the Sangam and foreign literature. This written evidence was substantiated by the occurrence of Roman coins of the Augustus Period. The *aurei* (Roman gold coins) and *denari* (Roman silver coins) are found at various sites in India indicating a dynamic trade network between India and Rome in the early historic period. The discovery of Roman pottery such as Amphorae and Arretine in India and a pot containing seven and a half kilograms of pepper at Berenike in Egypt attest to the literary information regarding the exchange between ancient Tamil country and the Mediterranean region.

In some instances, the historical sources are complemented by archaeological evidence. At some other instanceseven when there is no literary evidence, the archaeological evidence throws light on the hitherto unknown aspects of the sites and cultures. The best example is Keeladi near Madurai the vibrant urban centre of hundred acres of land. The site yielded evidence of brick structures, skeletal remains, beads, and pottery.

Coins of Indo-Greeks

For reconstructing the history of the Indo-Greeks, the excavations conducted at Taxila revealed the material remains of the Bactrian kingdom. The numismatic evidence in terms of coins with the images of the kings and gods provides interesting information about the political and religious conditions. Furthermore, the sites of Mathura and Peshawar again throw more light on the Kushana history.

In South India, various dynasties flourished. One such important but not very popular dynasty was that of the Ikshvakus, who though Saivites patronised

Buddhism by donating for the construction of the Buddhist monuments at Nagarjunkaonda. The site assumes significance as this was the first site to be excavated as a part of salvage archaeology. The site was excavated to retrieve as much information as possible as the site was to be submerged due to the construction of the Krishna river dam.

While History throws light on kings and other elite sections of the society, Archaeology throws light on the material culture of common people. Together they would provide a holistic understanding of our past.

Archaeology and Anthropology

Anthropology is the scientific study of humans and various aspects associated with humanity. It aims to study the biological and cultural aspects of humans. Physical or biological anthropology deals with the evolution of human beings and also variations in the growth of human populations across the world.

The human evolutionary processes are explained in Anthropology. It helps Archaeologists in tracing the human remains and their evolutionary processes. Anthropology thus lends its helping hand to Archaeology in piecing together the prehistoric past.

Physical Anthropology

Charles Darwin in his work *Origin of Species* referred to the evolution of species from previous species and they develop into another advanced species due to natural selection and survival of the fittest. His arguments were corroborated by the collection of evidence in the field area, especially when they found various material evidences in Africa.

The earliest hominids were placed in the genus *Australopithecus.* Many sites having human fossils are found in African regions. Scholars have argued that humans migrated to various parts of the world and evolved in different regions according to the local conditions. The date for *Australopithecus* (southern ape) is pushed back to seven million years ago.

The fossils of human ancestors are found in Kenya, South Africa, Ethiopia, and Tanzania. Five species of Australopithecine of the genus Australopithecus are found, namely A. anamensis, A. afarensis, A. africanus, A. robustus, and A. boisei.

The fossil evidence found in Africa throws light on the human ancestors. In 1924, Raymond Dart discovered the fossil of Australopithecus africanus, considered to be the missing link between apes and humans.

Another major discovery by Mary Leakey in 1978 was the foot imprints of hominids species Ardipithecus at volcanic ash deposit at Laetoli in Tanzania, Africa dated to 3.5 Mya. This proved the bipedal nature (standing on two legs) of hominids.

The earliest one was that of Australopithecus afarensis. Found at Hadar region of Ethiopia, the most famous specimen belonged to a girl named Lucy. She was bipedal and a tree dweller. She was of small stature of 3 to 4 feet. She was hunting as well as being hunted.

The species of *Homo* (humans) were noticed for the first time at Olduvai Gorge in Tanzania by Louis Leakey. The *Homo habilis* could produce stone tools by selecting the necessary raw materials and shaping them into desired tools. They made tools known as Oldowan tools, the earliest tools made by hominids (named after the site Olduvai Gorge in Africa where the tools are found).

In recent years the site of Lomekwi 3 at Kenya had yielded stone tools dated to 3.3 million years ago and supposed to predate the Homo period. The stone tools which are quite heavy weighing 15 kilograms were probably made by *Australopithecus.*

Another major milestone in human evolution is the bipedalism of our human ancestors. The species *Homo erectus* (who stands erect with bipedalism and vertebrae standing upright) were found not only in Africa but also in other parts of the world such as India, China, and Europe. The migration could have taken place

during the Pleistocene period. It is believed that they evolved some 1.8 million years ago and migrated to Asian regions.

H. erectus was closer to the modern humans in terms of cranial size and capacity at 800-1300 CC (cranium capacity of modern humans is 1350 cc), the height at 1.6. to 1.8 m and weight between 53 and 63 kg. *H. erectus* is considered the ancestor of our modern human species *Homo sapien sapiens.*

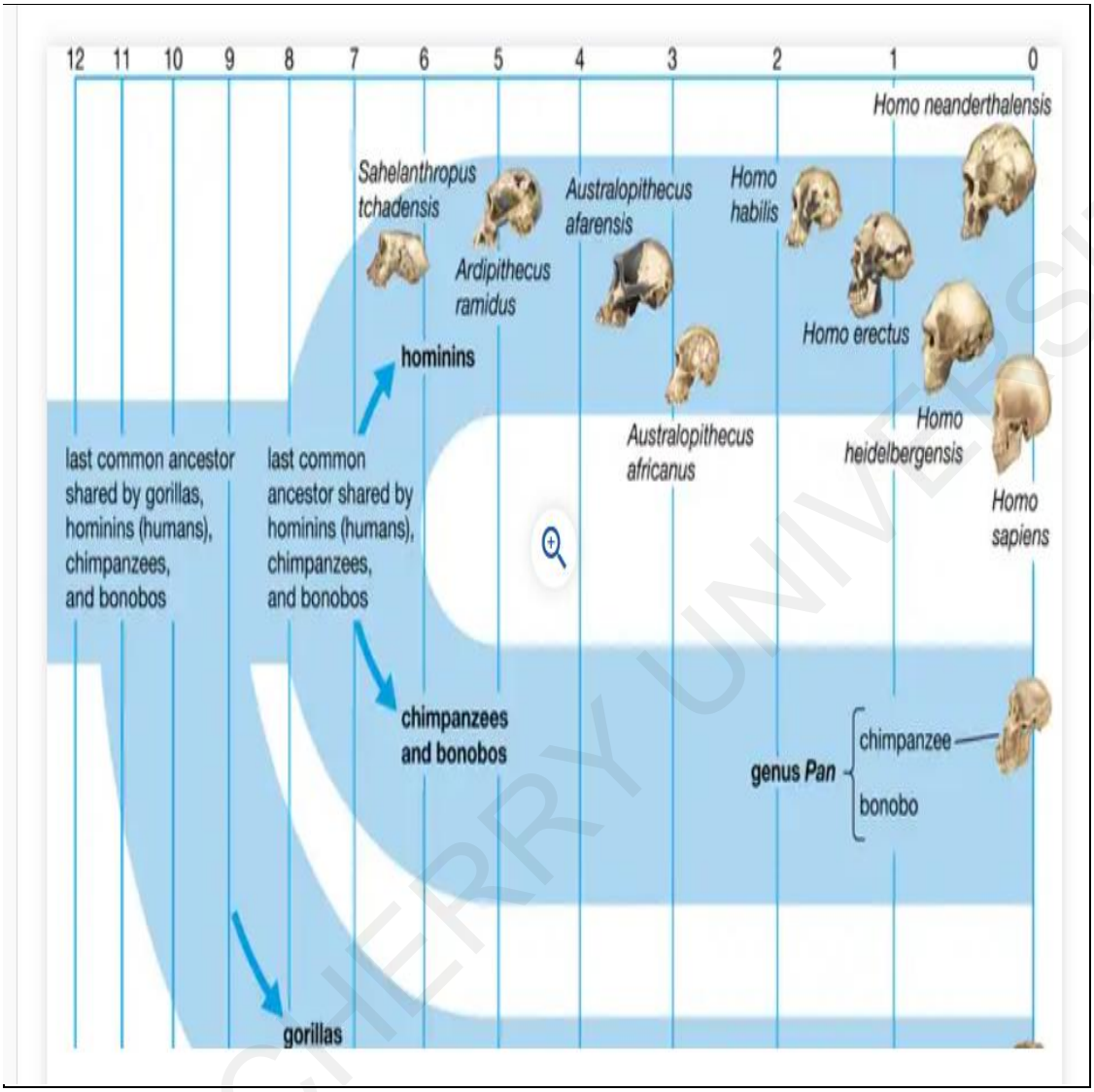
We have another interesting finding of human fossils at Neander Valley near Dusseldorf in Germany. Homo sapiens Neanderhalensis is considered a separate group or a subgroup of the human species. However, there was a marked change in the way the skull and the brain were shaped in both species.

The Homo sapiens Neanderhalensis lived in caves as known from the excavations at Shanidar cave Iraq some 60,000 years ago. The archaeological remains also point out that they have buried their dead with grave goods and offered flowers too to the dead.

Their successors were Cro-Magnons who lived in France and left evidence for artistic and technological skills as known from the paintings on the caves in France and Spain as well as tools used by them.

Many scholars believe in the "Out of Africa" theory when modern humans called Homo Sapiens appeared on the scene while a few believed in multi-regional origin. The archaic form of Homo Sapiens developed into the ancestors of modern humans and they replaced the older species such as the Neanderthals, Cro-Magnons, and Homo Erectus.

In India, the only fossil remains of a skull are found at Hathnora, on Narmada Riverbank, Madhya Pradesh by Arun Sonakia. The discovery of Homo Erectus found *in situ* position remains as the only evidence for human fossils in India and is datable to the middle Pleistocene period.



After Encyclopædia Britannica

Cultural Anthropology

While Physical Anthropology provides valuable information about our human ancestors, cultural anthropology gives data on the present and past cultural aspects. Cultural Anthropology deals with the study of cultures in past and present societies and tries to understand the similarities and differences between the cultures. One type of cultural anthropology is ethnology, the study of tribes. The study of present tribes is a useful tool for understanding the past cultural behaviour of humans. Ethnoarchaeology deals with the study of cultural and social behaviour patterns.

Archaeology takes help from Cultural Anthropology to interpret the archaeological material evidence. To cite an example, post holes are found in the excavation at Tekkalakotta in Karnataka. By observing the use of such post holes in the nearby villages by the indigenous population it was known that the post holes were used to support posts for a thatched roof.

Similarly, Lewis Binford in his work with Alaskan Nunamiut Eskimos tries to find out about the use of sites in the present period and apply that in the archaeological record. The study of the Dhangars, a pastoral community in Maharashtra is used to know the behaviour pattern of chalcolithic people. Ethnological comparisons are used to reconstruct the past unearthed in archaeological explorations and excavations.

Archaeology and Geology

Geology is the study of earth and it acts as a valuable source for the study of past culture. Geology supports and builds the discipline of archaeology by providing the necessary tools for a better understanding of the past. Geology with its subdivisions such as geomorphology, sedimentology, and stratigraphy contribute more to archaeology.

The history of humans is interconnected with the history of the earth. Humans are part of nature and their history is part of natural history. Evidence for all the organisms is found in the layers of the Earth.

Geological History

Due to the development of geology from the sixteenth century and the advancements in science and technology in recent years, the earth's history has been scientifically researched. The Earth is about 4.5 billion years old. The long span of Earth's history is divided into four eras:

Pre-Cambrian (when the earth was formed)
Paleozoic (when fish and amphibians appeared)
Mesozoic (when reptiles and dinosaurs appeared)
Cenozoic (when mammals and early humans appeared)

Each era is divided into periods. In human history, the Cenozoic Era's division of periods is important as the prototypes of humans made their appearance. Each period is divided into epochs.

The geological history of the world covers four eras spanning millions of years.They are:

a. Primary

b. Secondary

c. Neogene and

d. Quaternary

The Quaternary period is divided into two sub-periods: Pleistocene and Holocene. The classification is based on the stratigraphy of rocks. Out of the 4.5 billion years of the earth's history, it was only around 15 million years ago, the great apes made their appearance in the Miocene period, and around three million years ago only the ancestors of humans appeared.

GEOLOGICAL AGES			
Era	**Period**	**Epoch**	**Age**
	Quaternary	Holocene	10,000 years - present
		Pleistocene	2.58 MYA
	Neogene	Pliocene	5.3 MYA
		Miocene	23 MYA
	Palaeogene	Oligocene	33 MYA
		Eocene	56 MYA
Cenozoic		Palaeocene	66 MYA
	Cretaceous		145 MYA
	Jurassic		201 MYA
Mesozoic	Triassic		251 MYA
	Permian		298 MYA
	Carboniferous		358 MYA
	Devonian		419 MYA
	Silurian		443 MYA
	Ordovician		485 MYA
Palaeozoic	Cambrian		541 MYA
	Proterozoic		2500 MYA
Pre- Cambrian	Archaean		4000 MYA

Source: http://www.stratigraphy.org/ICSchart/ChronostratChart2020-01.pdf

To understand human evolution and changes in the landscape features and climatic conditions, geology plays a vital role. For the archaeologists, the study of the Pleistocene and Holocene periods is important as this marked the arrival of human ancestors and cultural activities of humans were getting recorded. An understanding of geological aspects is necessary to understand the archaeological data.

Geology plays a significant role in the selection of a site for exploration and excavation. The landscape features and land formation processes provide clues to the reconstruction of the past. The paleoenvironmental features can be understood by studying the geological components.

Geology describes the earth's crust and classifies the rock types into three categories, namely igneous, sedimentary and metamorphic rocks. To study the selection of suitable rocks for making tools in the prehistoric periodgeology is needed.

The significant contribution of geology to archaeology is Stratigraphy. Stratigraphy is the study of geological layers or strata. William Smith published a book on the principles of geology with an emphasis on stratigraphy. The principle of stratigraphy is based on the superimposition of layers by which the earliest layers are formed first and the recent layers are found in the topmost layers. Archaeology borrows this from geology and applies it to identify the layers in excavation.

Questions

1. Discuss the relationship between history and archaeology with suitable examples
2. "Archaeology and anthropology are two sides of the same coin". Justify!
3. How can one use Geology for a better understanding of Archaeology?
4. "Archaeology as a discipline developed due to the sister disciplines". Do you agree?

Lesson 2.2: Social Science and Archaeological discipline

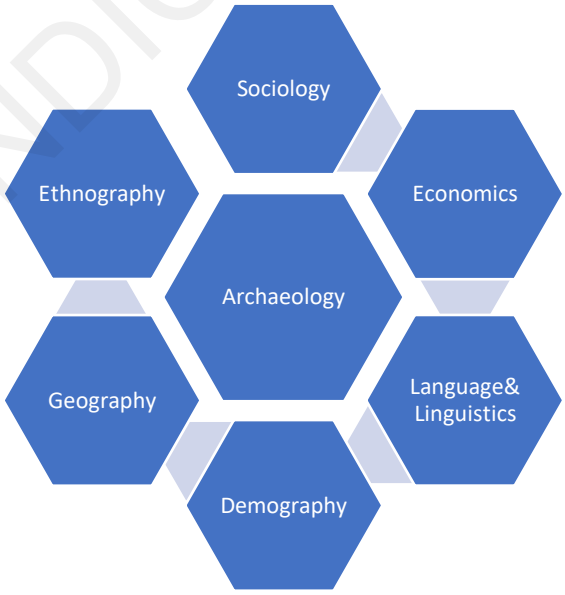
Learning Objectives

After reading this lesson, you should be able to

- Understand the relationship between archaeology and social science
- Know the significance of Sociology, and Economics for archaeological studies
- Assess the importance of Languages and Linguistics and Geography for the study of archaeology

Introduction

Both academicians and common people get excited about the rare and exotic discoveries that archaeologists bring to the forefront through explorations and excavations. The excitement associated with fieldwork and discovery of past remains can be noticed among academicians as well as common people. It is not only the material things that are important for the study of the past but also the meaning and interpretation of these material cultural objects. Archaeology not only yields pottery, stone tools, bricks, beads, ornaments, structures, industrial sites, paintings, inscriptions, and coins but also important information on the society, economy, and demographic distribution, and polity behind this material culture.



Archaeology and Social Sciences and Humanities

Social Science and Humanities deal with the interactions of humans with one another in a society. It tries to analyse human behaviour in social and cultural contexts. There are many sub-disciplines within social sciences and humanities such as history, geography, literature, political science, religion, law, sociology, psychology, and economics. This subunit traces the relationship between archaeology and social sciences such as sociology, demography, ethnography, economics, linguistics, and geography.

Archaeology and Sociology

Sociology deals with the human society shaped by human behaviour over a long period. In 1838 Auguste Comte coined the term 'Sociology' for a discipline that deals with the intricacies of human behaviour in a society. Sociology is closely linked to Social Anthropology. It overlaps with other similar subjects such as economics, geography, anthropology, education, political science, etc.

As archaeology is closely related to human behaviour in the past, Sociology provides the necessary methods and theoretical framework for a better understanding. The early humans who hunted and gathered food were creating a society that was probably a band. Over some time, the tribal society emerged. Simple to a complex society started developing which were reconstructed based on material culture left behind by various societies. It tries to answer how the societies were formed, the community contribution to the society like burials or palaces, and how the societal knowledge is passed on from one generation to another and how the ideals and ideas have changed over time.

Archaeology and Economics

Gary M. Feinman defines Economic Archaeology as the "study of the relationships between past populations and their natural and cultural resources, thereby encompassing production, distribution, consumption, and stratification". Economics deals with the production, distribution, and consumption of goods and

services which can be reconstructed from archaeological materials too. The agricultural production from the Neolithic period onwards is crucial in understanding the subsistence of our human ancestors. The transformation from food gathering to food production can be discerned from material evidence. From the Levant of the Fertile Crescent to Lahauradewa in Uttar Pradesh yielded evidence for food production. The surplus food production led to the emergence of arts and crafts production that indirectly led to internal and external trade practices.

The trade between India and the West is attested by various Archaeological records in the form of pottery, coins, and other material evidence. The Harappan's trade contacts with Mesopotamians, Early Historic Tamil region's trade with Rome to cite a few examples throw light on the extensive trade network that existed between regions. The occurrence of pottery such as Arretine ware, amphorae ware, Roman coins attests to the trade with the Roman world in the early historic period. The port cities that are located on the east and west coast of India further attest to the trade activities in the ancient period.

With the development of urban settlements, there was also a rise in the division of labour. The redistribution of wealth and circulation of goods and commodities resulted in a complex economic network in the later period. The consumption of goods in various periods is known from Archaeological records. The cycle of economic productivity can be understood with artifacts production and their distribution across the sites in a given period. In India, not much work on Economic Archaeology has been attempted.

Archaeology and Language & Linguistics

Archaeology deals with the material culture and History with written evidence. However, Archaeology is supported by evidence in terms of script and language. The inscriptional evidence is useful in interpreting history.

The development of a language and the spread of language are indicators of the growth of a society. The migration of people from one region to another is studied through the study of languages too. The languages of ancient India such as

Sanskrit, Prakrit, and Tamil have produced evidence about the past societies. The Sanskrit and Prakrit works written in ancient India guided the discovery and understanding of archaeological sites in North India. While in South India the Sangam literary works such as Pathupattu and Ettutogai have yielded evidence for various political kingdoms, socio-economic conditions in the early historic period in ancient Tamilagam. Using these literary references, archaeological explorations have been undertaken. The material evidence found in early historic sites of Kaveripumpattinam, Arikamedu, Korkai, on the east coast and Pattanam on the west coast (identified as Muziripattinam of Sangam literature) is corroborated in the Tamil literary traditions. Alexander Cunningham conducted a survey of Buddhist sites in the north and northwestern parts of India based on the accounts of Fa Hien and Hieun Tsang.

The decipherment of Asokan Brahmi script, Gupta Script, and Tamil Brahmi script created a revolution in the understanding historical processes and transformations. The literary and inscriptional evidence provide clues to certain authentic historical facts. The inscriptions of Asoka, Allahabad Pillar Inscriptions of Samudra Gupta, Aihole inscription of ChalukyaPulakesin II, Rajaraja Chola's inscriptions at Rajarajeswaram temple, Thanjavur provide valuable clues about important historical events and authenticate other evidence.

Archaeology and Geography

The International Geographical Union observes that "like archaeology, geography also follows an integrated or holistic approach to explore how environments emerge by natural processes, how societies produce, organize, use and misuse environments, and how societies themselves are influenced by the environments in which they are located". While Geography deals with the landscape features, topography, and environmental conditions, Archaeology tries to study the human interactions in the past with nature and within nature.

The past climatic conditions can be reconstructed with the materials obtained from Archaeological surveys. For example, the drying of river beds in

once-fertile areas, sea-level changes, changes in river courses, coastal and inland geomorphological changes that modify, alter and affect the human–nature interactions are studied in geographical archaeology. The reconstruction of palaeoenvironmental conditions is a key to understanding the prehistoric past. For this, the discipline of archaeology depends on geography.

Similarly, the population of a particular culture is getting important. Childe's concept of the Neolithic revolution and Binford's argument for the agricultural revolution take into account the population expansion during the period. By analysing the size of the houses, settlements, and the lands around the settlements, the size of a particular region's population can be estimated. One can get the demographic profile by estimating the burial records too. The demographic analysis from the burials is also attempted to know the number of people living in a particular culture. Palaeopathology or the study of diseases in ancient populations is useful in knowing the reasons for mortality and the health status of our ancestors.

The pattern of demographic profile in past cultures is essential to make predictions about future population trends.

Questions

1. Discuss the role of economics in the interpretation of archaeological data.
2. Assess the importance of geography for the reconstruction of past cultures.
3. In what ways social science is important for the study of archaeology.
4. Trace the significant role of sociology in archaeology.
5. Is archaeology a science or an art? Discuss.

Lesson 2.3: Impact of Pure Sciences on Archaeology

Learning Objectives

After reading this lesson, you should be able to

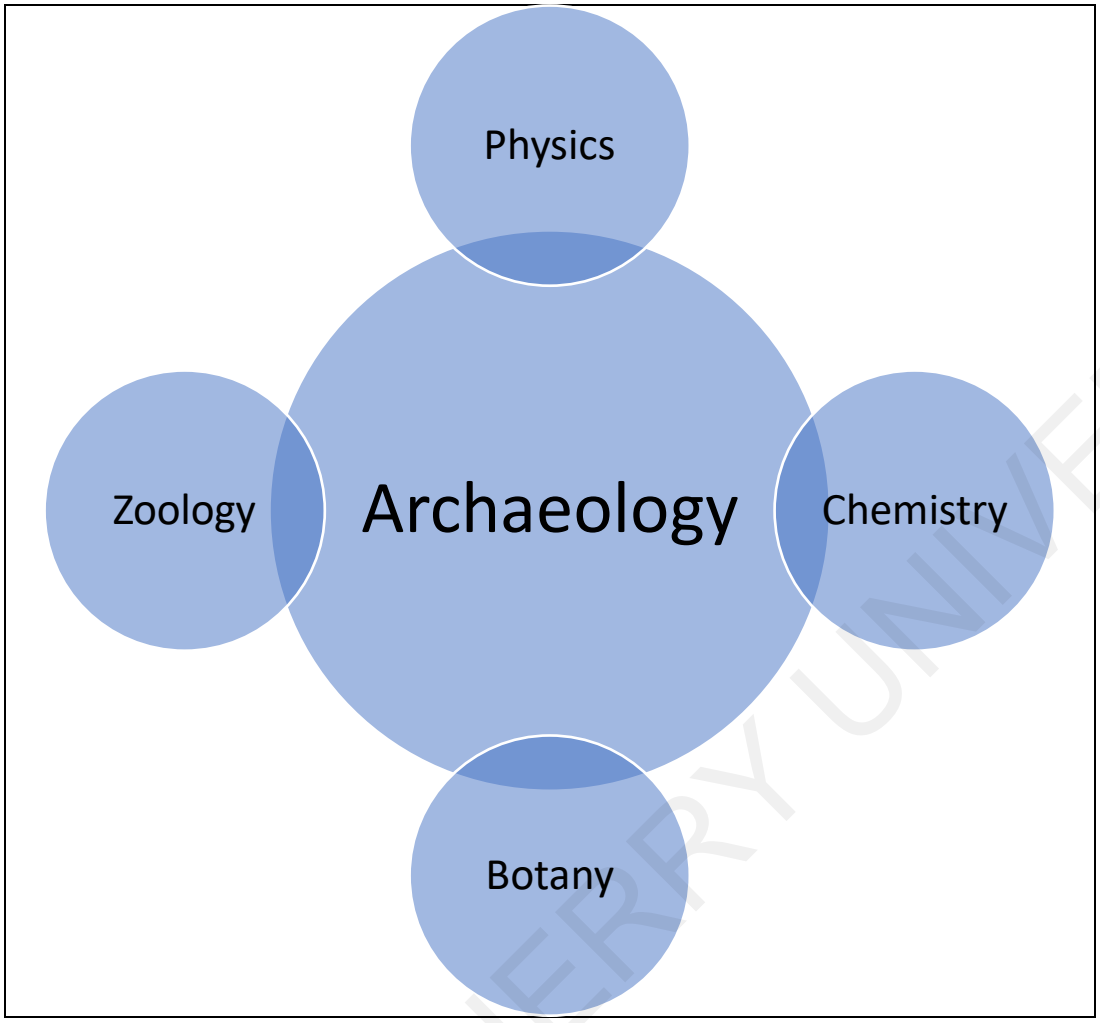
- Understand the importance of pure sciences in the study of Archaeology
- Know the contribution of Physics and Chemistry to Archaeology
- Assess the significance of Botany and Zoology

Introduction

There is a growing debate about whether archaeology is a science or art. Though it is a part of humanities as it deals with cultural remains of the human past, the techniques adopted to study the various evidence of the past are scientific. Science plays a crucial role in the better retrieval, documentation, and analysis of material evidence. The pure sciences namely Physics, Chemistry, and biology help in a better understanding of the human past.

Wheeler observed that *"Archaeology is increasingly dependent on a multitude of sciences and is itself increasingly adopting the methodology of Natural Sciences. As a science, it is pre-eminently a systematic process; if we prefer to regard it as an art, or even as philosophy we must still affirm that it is an integration of scientifically observed and dissected phenomena relating to a man; it is still a synthesis"*

In this unit, the role of pure sciences in the interpretation of archaeological data is analyzed.



Physics and Archaeology

The discipline of physics helps the field of Archaeology by dating the archaeological materials and fixing the chronology of the cultural periods. The Radiocarbon methods with AMS, TL dating and Potassium-Argon method help in fixing the chronology of Harappan sites, the beginning of agriculture in India, the introduction of iron in India, and the use of Tamil Brahmi script and many other cultural periods.

Apart from the dating methods, Physics also helps in the survey of Archaeological sites. The important survey methods include:

Ground Penetrating Radar

It is based on the concept of using electromagnetic energy from the surface that taps the anomalies found beneath the surface. By tapping the signal the structure can be traced. The signals are then digitally processed. With the data, 3 D images will be created and studied. The GPR study is gaining popularity nowadays to survey archaeological sites.

Magnetic Survey

The use of magnetometers to study buried structures was developed in the 1940s. At the Roman city of Cornoviorum in the United Kingdom now called Wroxter, the magnetometer survey was undertaken where three million magnetometer readings were taken. Using this city was recreated with plans of the building and roads in detail. Thus the magnetometer survey is useful in bringing to light the invisible structures if used effectively.

Side Scan Sonar and Echo Sounder

These methods are used to detect buried objects under the sea. For marine Archaeological sites and materials, the echo sound scan and side sonar scan are used. The submerged remains of shipwrecks such as The Titanic, coastal sites such as Poompuhar on the eastern coast of India, and Dwaraka on the western coast of India are detected using these methods.

It works when the Sonar (Sound Navigation and Ranging) sends sound waves and measures the echo reaching the sensor. In GPR radio waves are used but here sound waves are used to detect the buried objects under the sea. For providing absolute dating for the archaeological materials, physics plays a vital role.

Archaeology and Chemistry

Chemistry plays a useful role in the conservation and preservation of objects unearthed in exploration and excavations. In the field of numismatics, it plays a crucial role in the identification of metals, thestudy of properties of coins, and the preservation of them. Archaeo-Chemistry is used in the preservation of various materials such as metals, stone, and bone. It helps in the analysis of the chemical properties of objects. They in turn help in understanding the ancient techniques adopted by our ancestors in the production of such artifacts.

The study of anthrosols or the soils modified due to human activities throws light on the use of soil and the chemical changes it underwent such as the pH values, organic matters, and nutrients in the soil. The phosphate analysis helps determine the soil used by humans. Along with phosphate analysis, fluorine analysis of soil helps in the relative dating of bone samples from archaeological contexts.

The study of metals known as Archaeometallurgy is another tool for the study of artifacts. The stages of metal production such as smelting, alloying, and casting are studied under archaeometallurgy. The concentration of Harappan sites in the west and north-western regions of India and the concentration of iron in the southern part of India are based on the availability of raw materials in the form of ores. Archaeometallurgy studies how the ores are distributed, the strategies adopted to procure raw materials, and the method of making metal objects.

The conservation of past cultural materials is possible mainly through chemical methods.

Archaeology and Botany

Owen defines Archaeo-Botany as "the study of ancient plant remains with emphasis on reconstruction of the environment, climate, and resource availability". The plant remains from the excavated sites are studied in the discipline of Palaeo-Botany also called Archaeobotany. The pollen study is called

Palynology. Pollen, spores, and phytoliths collected from the Archaeological contexts are studied to get a clear idea about the past environment and reconstruct the palaeoenvironment, the diet preference of human ancestors, plants grown and nurtured, trade practices, etc.

The pollen analysis was developed by Lennart von Post, a Norwegian geologist in the early 20th century. The palynologists have constructed Pollen Zones that are characterised by specific botanical remains with which one can do a cross-reference.

The palaeoenvironment can be reconstructed based on the pollen analysis as known from the study by the French scientist Raymonde Bonnefille in the Hadar region of Ethiopia, a desert area. The pollen analysis revealed that the area some three million years ago was moist and green with grassland and water bodies. Pollen analysis is more useful to study botanical remains in the Holocene period.

Another branch of Archaeobotany is Phytoliths. They are tiny particles of silica found in the cells of plants and can survive even after the decomposition of plants. They can be noticed in hearths, pottery, stone tools. They, along with pollen, have thrown light on the past environmental conditions.

The samples from the buried contexts are collected through sieving methods and flotation techniques. As per the need of the research problem, the samples need to be collected.

Leharudewa in Uttar Pradesh yielded evidence for rice cultivation. The site yielded the earliest date of 8000 BC for the rice. The site of Mehrgarh too yielded evidence for the production of crops. At Berenike in Egypt, a jar containing seven and a half kilograms of pepper probably from Kerala was found in an excavation. It indicates the movement of botanical materials for trade purposes. The finding of cotton in excavations in the Tamil region is significant as it provides information regarding the dresses of ancient Tamils.

Archaeology and Zoology

Humans are a part of the animal kingdom. Their interaction with other animals is very important to know the human-animal relationship either positive or negative. Humans were hunting the animals and at times they were also hunted by other animals. This conflicting andcomplementary relationship is essential to understanding the importance of Archaeozoological discipline.

The animal remains or faunal remains are otherpieces of evidence that are found in archaeological sites. The study of animal remains in archaeology is called archaeozoology. The prehistoric people hunted animals and from the Neolithic period, domestications of animals started. Archaeozoology helps in identifying the animal bones, contrasting the bones of wild animals and domesticated animals. With the help of faunal remains, the dietary preferences of the past people, animal behavioural patterns, climate conditions, etc can be recreated.

The skeletal remains found in the Neolithic Kashmir and Karnataka, Chalcolithic Maharashtra, and Iron Age Tamil Nadu give information regarding the presence or absence of animals in a region and the importance given to certain animals. The Harappans gave more importance to the bulls as noticed by their seals. Horses are conspicuously absent in Harappan culture, while they played a significant role in Vidarbha Megaliths.

The Neolithic population in Karnataka and Andhra regions were dependent on cattle population and the presence of cattle bones in the Neolithic ash mounds attest to the significance of these animals. We find dog burials in Kashmir and Assam during the Neolithic period.

The footprints of animals are found in some sites as evidenced by footprints of our ancestors from Laetoli, birds and insects' imprints, and paw prints in Roman tiles provide clues about the animal world. Attirampakkam in Tamil Nadu yielded evidence for animal hoof prints.

Similarly, the study of paleo-faeces or ancient dung is attempted at a few places by which the scientists try to understand the diet of animals and the possible reasons for their extinction. It is noted by the scientists that dietary preference did not influence the extinction processes.

Both Botany and Zoology are very important to reconstruct the past environment and human interactions with nature. The excavation at Jarmo and Jericho by Braidwood in the mid-twentieth century is significant as the faunal and floral remains are studied. Hans Helbaek who studied the charred remains of cereals found the earliest domesticated evidence along with the transitional forms too. Charles Reed who studied the faunal remains was able to study animal domestication in the Levant.

The study of molluscs and shells is another area of study where scientists are trying to understand the palaeo-environmental conditions.

Archaeology and Molecular Biology

The study of genetics helps in reconstructing ancient DNA. DNA carries the genetic hierarchy of humans which is passed from one generation to another. The DNA can be extracted from bone, tissues, shells, and seeds of bio-organisms. Once extracted carefully without contamination, they are analysed using Polymerase Chain Reaction (PCR). The mitochondrial DNA (mtDNA) found only among the female species and Y chromosomes found only in the male species were used to trace the ancestry of our human ancestors. In Egyptian archaeology, the genealogy of the Pharaohs is reconstructed using DNA studies. The theories regarding human origins, spread, and migration of human ancestors from Africa to other parts of the world are tested through DNA studies. Colin Renfrew coined the term Archaeo-genetics which studies the genetics of our ancestors. DNA studies with more modern applications are crucial for a better understanding of the human past.

Questions

1. Analyse the role of physics in archaeological studies.

2. Discuss the significant contribution of chemistry to the field of archaeology

3. “Molecular biology helps in tracing human ancestry”. Elucidate

4.“Archaeozoology plays a vital role in understanding human-animal interactions”. Justify!

5. Assess the role of Paleobotany in the reconstruction of plant life in ancient periods.

UNIT - III

History of Archaeology - Origin and evolution of Archaeological studies – Contribution ofAarchaeology for the study of the evolution of man.

Unit 3: Structure

3.1. Origin and Evolution of Archaeological Studies in the world

3.2. Contribution of Archaeology for the study of the evolution of man

Lesson 3.1: Origin and Evolution of Archaeological Studies in the World

Learning Objectives

After reading this lesson, you should be able to

- Understand the origin of the study of Archaeology
- Know the evolution of Archaeological studies
- Analyze the important discoveries in World Archaeology
- Understand the theoretical developments

Introduction

All humans have the innate curiosity to know the past. This desire to know the past resulted in searching the evidence for the past as well as creating myths and legends about the past. Almost all the regions in the world have their legends about the beginning of the universe and the origin of human beings.

Myths and Legends

Hindu myths talk about the creation of the world by Lord Brahma, the creator, and the division of eras into four namely the Satya yuga, Dwapara Yuga,

Treta Yuga, and Kali Yuga each assigned with thousands of years. It also talks about Manu being the first progenitor of the human race. The story of creation with Adam and Eve as the human ancestors can be seen in Christianity. During 16th century CE, Archbishop James Ussher have stated in his work 'The Annales of the World" that God created the universe on 22nd October 4004 BCE. All the aborigines have different and interesting myths about the origin of the earth and human evolutionary stages.

The Speculative Phase

In the early period of historical writing, a few poets and writers speculated about past events and discussed them in their works.

A Greek by name of Hesiod was inspired by the nine Muses (daughters of Greek God Zeus and goddess Mnemosyne) and as early as the 7th century BCE wrote three important poems. One was the works and days, in which he traced human history through five successive stages namely the Golden Age, Silver Age, Bronze Age, the Age of Heroes, and the Iron Age. Hesiod graded these ages based on the level of development and innocence of human beings from best to worst.

Nabonidus, the king of Babylon who ruled in 6th C BCE, showed interest to recover the past remains that were laid down 2000 years before and he kept them in a museum.

The Roman poet Lucretius in his poem *De rerum natura* or better known as "On the Nature of Things" makes an attempt at the technological development of human beings. He was attributed to being the precursor for Thompsen's 'Three-Age System'. In it, he talks about three stages- one in which humans used hands, nails, and teeth as weapons followed by the use of stones, and later on followed by iron and copper. Though he placed iron before copper, he noted that copper was the primary tool for tilling the soil. He also mentioned the various stages in human life such as the building of huts, use of fire, clothing, beginning of language, and the formation of city-states. These views are not based on any scientific principles but more on speculation.

Renaissance Period

The renaissance period in Europe recreated the interest in knowing the glorious past and noble people started displaying their collections in cabinets of curios. They collected objects from the classical world. The colonial policies adopted by the European nations made them collect the best pieces of art works from their colonies.

The invasion of Egypt by Napoleon Bonaparte, the French emperor resulted in the discovery of the Rosetta stone that ultimately led to the decipherment of Egyptian Hieroglyphs by Jean-Francois Champollion. Similar attempts were made in the Near East and the sites of the Babylonian empire were excavated. Rawlinson deciphered the Cuneiform script. However, the surveys conducted at these places were not scientific.

Antiquarianism

During the 18th century CE, serious attempts were made to study the past remains that gave way to antiquarianism. "Antiquarian research tended to refer to studies of collections or the systematic classification and organization of objects and monuments rather than an examination of particular sites or regions. Antiquarians studied the material remains of the past much as the historian studied the textual documents of the past" defines Robin Boast.

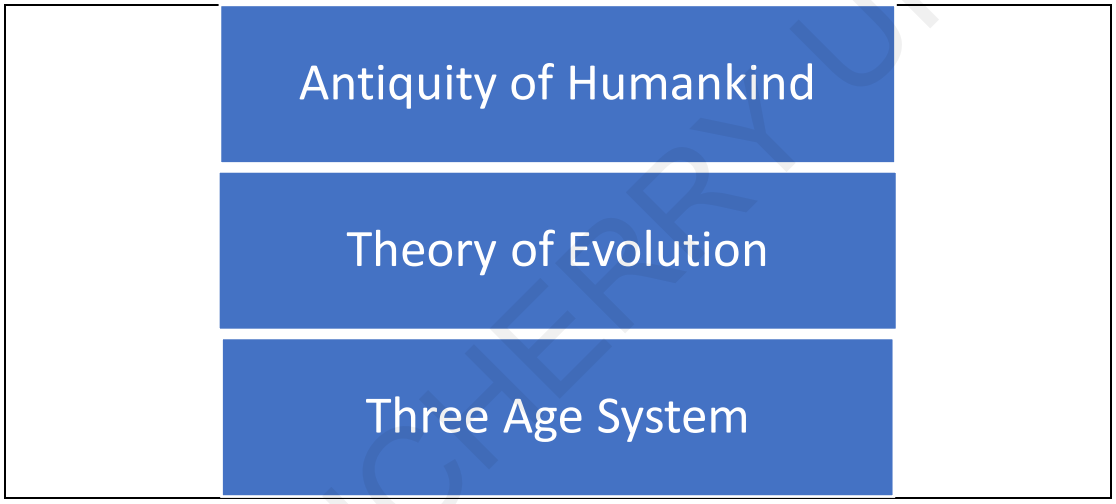
Impressive monuments at Stonehenge and Carnac were studied by William Stukeley who made detailed plans. His team proved that these monuments were made not by the giants but by people in the past. The first scientific excavation is said to have been conducted by Thomas Jefferson in 18th century CE on his farm in Virginia. He used scientific methods to test his hypothesis that the burials were built by the native populations and not by a different race called mound builders.

He found human bones in the burials and argued that they were built by the Native Americans for their ancestors. He had used logical deduction methods to study the burial evidence.

The sites of Pompeii and Herculaneum, located at the foothills of Mount Vesuvius in Italy attracted the attention of a few scholars. These sites were destroyed due to the eruption of the volcano at Mount Vesuvius in 79 CE. The event was registered by Pliny the younger. Due to the ash deposition, the sites were well preserved. As early as 1709, the Prince of Elboeuf undertook excavations though not in a scientific manner. Roman theatres, villas, roads flanked by houses, and bodies of victims in different postures were found in the course of many seasons of excavation.

Three milestones

The beginning of archaeology as a modern discipline is due to three major events.



Antiquity of Humankind

Though the sites were explored and excavated by many antiquarians the attempt to study the antiquity of humans started with the discovery of stone tools that predates the historical period. When the French customs inspector Jacques Boucher de Perthes (1788-1868) found stone tools (hand axes of the palaeolithic period) at Somme Valley, he observed that they were earlier than the biblical date. He published his findings in 1841.

His identification was authenticated by two British scholars namely John Evans and Joseph Prestwich. However, it was Daniel Wilson in 1851 that used the

term prehistory in his work "The Archaeology and Prehistoric Annals of Scotland". The term Prehistory became popular with the usage of the term by John Lubbock in his book 'Prehistoric Times' in 1865.

Theory of Evolution

Another milestone in the study of the past is the publication of the book by Charles Darwin "On the Origin of Species" in 1859. He argued that animals and plants developed due to evolutionary processes. Though earlier scholars have discussed this, Darwin demonstrated with proof how evolution happened. He argued that natural selection and the survival of the fittest are two main criteria that enabled the species to evolve. According to this theory, only those species that are strong enough to withstand the rivalry from other species as well from environmental changes can survive and the species that are not equipped to do this will perish. The successful species by passing it on to the next generation have evolved over a period of time and human beings are also not an exception to this evolutionary process. He also stated that there is variation among the species that the physical characteristics of each species are passed on from one generation to another through heredity alone. Darwin's work 'the Descent of Man" published in 1871 further attested to his theory.

Darwin's work had significantly influenced the works of Pitt Rivers, Arthur Evans who introduced the typology of artifacts. Darwin's views were further corroborated by Leslie White, Julian Steward, Lewis Binford, Kent Flannery, and many more. They tried to adopt Darwinian principles to study the cultural evolutionary processes.

Three Age System

Though Lucretius divided human history into three ages of stone, bronze, and iron, it was Christian Jurgensen Thomsen who was credited with the introduction of the Three-Age System. Thomsen was appointed as the curator Danish Royal Commission for the Collection and Preservation of Antiquities' first exhibition.

He had studied the collections and divided them into the following three cultural periods:

a. Stone Age

b. Bronze Age and

c. Iron Age

He did not classify the antiquities based only on the mere typological classification but also on the co-occurrence of the artifacts in a context. He and his team undertook extensive fieldwork to collect the objects and classify them based on the context and the relationship of one artifact to another.

C.J. Thomsen's letter to his friend highlighted the need to maintain documentation of the artifacts. He stated that 'No less important is that the antiquarian should observe which objects are found together - we have been neglectful in this respect. I hope the careful inventory we keep on everything that comes into our museum will be of some help'.

Categories	Stone age	Bronze age	Iron age
Stone	x		
Bronze		x	x
Iron			x
Copper		x	
Gold		x	x
Silver			x
Amber	x		
Pottery	x	x	x
Glass bowls			x
Glass beads	x	x	x
Bronze lurs		x	
Tutuli		x	
Stone-chamber tombes	x		
Stone-cist graves		x	
Chamber tombs in barrows			x
Uncremated corpses	x	x	x
Cremated corpses		x	x
Cinerary urns		x	
w. awls tweezers and knives			
horse buried in grave			x

(***Co-occurrence of Artifacts- after Graslund 1987:21)***

He established his chronology in 1825 and the museum visitors were guided in his methods. C.J.Thomsen published research articles based on this

typology and chronology. In 1836, he published an illustrated Guideline to Scandinavian Antiquity which was translated into English in 1848.

This meticulous classification of artifacts based on the concept of co-occurrence stood the test of time, though the scientific dating methods have replaced his idea of dating the objects in the modern-day. Glyn Daniel defined the Three-Age system as an "antiquarian revolution".

Discovery of Ancient Civilizations

In the 19th century, archaeology as a subject assumed significance due to the discovery of ancient civilizations. During the time of Napoleon Bonaparte's invasion of Egypt in 1798, he took scholars too to study the ancient relics of the country. Due to the painstaking work of them along with the artists, a detailed work called Description de Egypt was published between 1808 and 1825. The 'Rosetta Stone' is inscribed with the same text in Egyptian and Greek scripts. By studying the bilingual inscription, Francois Champollion after fourteen years of work in 1822 deciphered the ancient Egyptian script. A museum was set up by the French Auguste Mariette at Cairo housing the collections of ancient Egyptian civilization.

The work on Egyptian civilization was further carried out in the 20th century too by Flinders Petrie. The discovery of Tutankhamun's tomb by Howard Carter was another important milestone in the history of Egyptian Archaeology.

Another important ancient civilization that came into the limelight due to the efforts of colonial rulers was the Mesopotamian civilization. Paul Emile Botta (1802-1870) and Austen Henry Layard (1817-1894) conducted unsystematic excavations in Mesopotamia and brought to light Assyrian sculptures of winged bulls. The excavations also yielded a library with cuneiform tablets at the site of Kuyunnjik, which was later identified as the biblical Nineveh.

Henry Rawlinson in 1835, who was the British East India Company officer, studied the inscriptions at Behistun, Persia, which belonged to the rule of King

Darius of 6th century BCE. The inscription is inscribed with three scripts namely old Persian, Babylonian, and Elamite. Rawlinson spent twenty years deciphering the cuneiform script successfully. This discovery throws more light on the Mesopotamian civilization and guided future archaeologists.

Leonard Wooley's excavation at Ur, identified as the birthplace of Abraham mentioned in the Bible added a significant chapter on Sumerian civilization.

The Bible has references to certain old settlements and a few scholars have shown keen interest to study the sites associated with the Bible. Edward Robinson published a book on the *Biblical Researches in Palestine* as early as 1852. The site of Jericho dated to 7000 BCE with the evidence of its destruction by the Egyptians in 1500 BCE. Cuneiform texts from Ras Shamra placed the site to 15th century BCE. The Dead Sea Scrolls discovered in 1947 are the oldest manuscripts of the Biblical age.

Henrich Schliemann (1822-1890) was a German who became an American citizen. He was in search of the cities mentioned in the legendary epic works by Homer, *Iliad, and Odyssey*, and he tried to locate Troy. He proved that the Iliad and Odyssey were not fictions but accounts of real happenings including the Trojan wars. In his attempt to find Troy, he excavated the site of Hisarlik in Asia Minor. He also excavated the site of Mycenae in Greece that revealed a new cultural phase in classical archaeology. He maintained stratigraphic details of the excavation, though the excavation methods were rudimentary.

Sir Arthur Evans' discovery of Minoan civilization preceding the Mycenaean civilization pushed the antiquity of the Greek civilization.

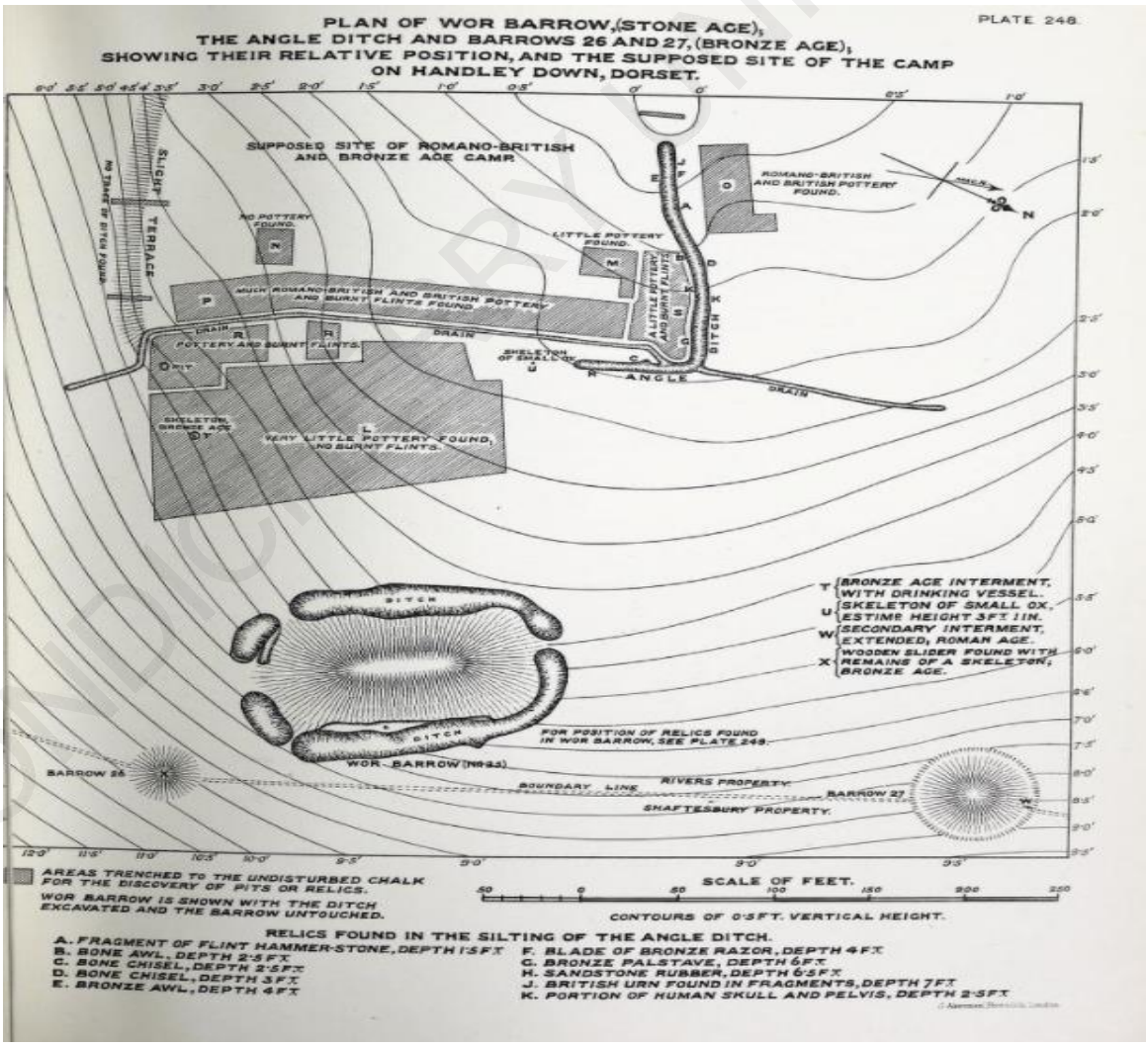
Pioneers in Field Techniques

Though the 19th century witnessed many excavations and discoveries of past cultures, the excavation lacked scientific methodology and most of them are rudimentary. It was due to the efforts of a few field archaeologists such as Pitt

Rivers, Flinders Petrie, Mortimer Wheeler, etc, the excavation methods became more scientific and systematic.

General Augustus Lane-Fox Pitt-Rivers

As a person trained in military training, Pitt Rivers imbibed his military precision in survey and excavation methods. He adopted a systematic digging method when he excavated in his estate in England. His excavation report of Cranborne Chase was meticulously made and every object was documented. He collected all the objects – both exotic and simple- and recorded all of them. It is said that his report was very precise and it is still useful for interpreting the site.



Meticulous Drawing by Pitt Rivers

Pitt Rivers' lectures on The Principles of Classification, The Evolution of Culture, Primitive Warfare, and Early Modes of Navigation proved to be useful even today. His collections are kept in Oxford Museum and at Farnham.

Sir William Flinders Petrie

William Flinders Petrie was also known for his meticulous excavations. He had recorded every object that he found in the excavations at Egypt and Palestine. He created a new technique of sequence dating called seriation. Through this, the objects were dated in a relative way. He was known for care for monuments, excavation techniques, collection and documentation methods, planning of excavation, and publication of the excavation results. He wrote the book *Methods and Aims in Archaeology*.

Kathleen Kenyon

She was a British archaeologist and was trained under Mortimer Wheeler. She excavated the sites of Jericho and Jerusalem. She called Jericho "the earliest town in the world" The site was dated to the end of the Ice Age.

Mary Leakey

Along with her husband Louis, she conducted excavations at Olduvai Gorge, in Africa that brought to light evidence for human evolution. She found the skull of australopithecine and at Laetoli the footprints of hominins were datable to 3.7 million years back. She worked on the rock art sites in Tanzania and documented them.

Sir Mortimer Wheeler

A renowned archaeologist as well as an army officer, Mortimer Wheeler served in Britain as well as in India was known for his meticulous excavation method that he adopted in England and introduced in India. He excavated the site of Maiden Castle in the United Kingdom. As the Director-General of Archaeological Survey of India, he conducted excavations at Harappa, Brahmagiri,

Taxila, and Arikamedu and prepared detailed excavation reports. Though some of his assumptions and interpretations are not accepted in the present context, his work stands as a testimony to the accuracy of report writing. The grid system of excavation was named after Wheeler-Kenyon, a tribute to his skills. He had started a training centre at Taxila where he trained the young archaeologists of India. As the last British Director General of the Indian Archaeological Survey, he left a legacy behind by training the Indians who were ready to take up the responsibility of doing archaeological research in a systematic and scientific way.

New Approaches to Archaeology

The antiquarians and the early archaeologists had shown interest in the collection of objects and documenting them. However, associating the artifacts with the theoretical framework had a modest beginning in the 19th century. Thomsen's Three-Age System was not merely a classification but also a method to understand the evolutionary processes of humankind. In this way, we can say that Thomsen made pioneering work in the analysis of the archaeological data. Following this idea was Lewis Henry Morgan who had studied many tribal cultures and concluded that humans had passed through evolutionary stages from savagery through Barbarism and to civilization. He published his work *Ancient Society* in 1877. He believed in the law of uniform development across the world.

This was refuted by those who propounded diffusion theory who argued that culture gets developed due to its contact and interactions with already a developed culture. The impact and influence of higher civilization play a role on smaller cultures according to the diffusionists. The Egypt-centric theory propounded by Perry and Elliot Smith is an example of diffusion theory. However, this theory was contested with the discovery of civilizations in other parts of the world.

Gordon Childe

An Australian settled in Britain, Childe was instrumental in looking at the archaeological data from a different perspective. He served as a professor at the

University of Edinburgh and as the director at the Institute of Archaeology in London.

He had contributed to the study of archaeology by asking the right questions and trying to get answers for them. He opposed the diffusionist theories and asserted that there was indigenous development of cultures too.

Influenced by Marxist ideology, he had coined the term 'Neolithic Revolution' to denote a period that saw the change in economic conditions. The settled life along with the introduction of agriculture, domestication of animals, the invention of pottery, art, and craft production have altered the way humans lived. The next stage of change occurred due to the advent of civilizations in the Nile river valley, Indus Valley, and the Near East. Childe called the change from the cultural period to the civilization the "urban revolution" associated with the Bronze age. His works include *The Dawn of European Civilization, The Danube in Prehistory, Man makes Himself,* and *What Happened in History*.

Ecology and Archaeology

Robert Braidwood's excavation at Jarmo in the mid-20th century assumed importance as it was multi-disciplinary in nature. The excavation team consisted of a geologist, botanist, and zoologist. By collecting the plant and animal remains, attempts were made to reconstruct the palaeo-environmental conditions. Thus Braidwood's work broke the traditional historical-cultural approach and introduced the ecological perspectives to study the past.

The work of David Clarke at Skara Brae was another landmark excavation that analyzed the site from a multi-disciplinary perspective. The evidence from the site yielded that the people in Skara Brae had eaten deer and wild plants. His work "*Prehistoric Europe: Economic Basis"* written in 1952 traces the human adaptations in prehistoric Europe.

Sciences in Archaeology

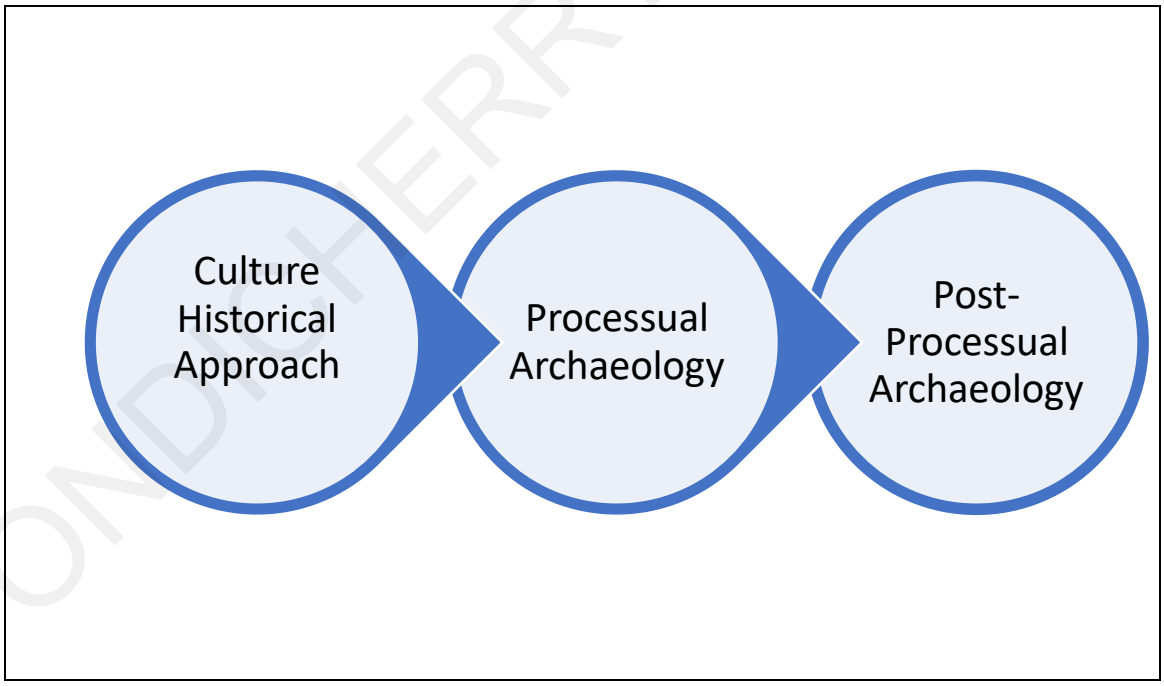
The Second World War paved way for the technological advancement in

many fields. One such field was Archaeology where due to the discovery of the radiocarbon dating method by Willard Libby many cultural periods could be dated precisely. Till the 1950s many of the sites were dated relatively, and now due to scientific advancement, the objects were dated based on C^{14} method, Thermoluminescence, and tree ring methods.

The scientific precision in exploration and excavation methods such as aerial photography, Ground Penetrating Radar method, satellite images, remote sensing, and underwater exploration methods added to the better understanding of the past.

Recent Theoretical Trends

The 20th century witnessed the emergence of new approaches to the study of the past. The historical description of the artifacts and the sites gave way to newtheoretical ideas, notable being processual and post-processual archaeology.



Theoretical Trends in Archaeology

According to Mathew Johnson "theory encompasses the way archaeologists choose to present the archaeological facts at their disposal; the choice of interpretations of those facts, from the very simple level ('this was a rubbish pit',

'that is a different layer') to the very complex ('the course of history is best explained in dialectical terms'; 'archaeology is a natural science'), through what some would describe as a 'middle-range' level (models of optimality; understanding of the formation of the archaeological record; characterization of settlement hierarchies)".

Culture-Historical Approach

In this approach, the objects found in a site or a settlement are grouped together, and based on the common traits, they are placed within a cultural context.

Sir Edward B. Tylor defines culture as a "complex whole which includes knowledge, beliefs, arts, morals, law, customs, and any other capabilities and habits acquired by [a human] as a member of society."Boas defines culture as "the totality of the mental and physical reactions and activities that characterize the behaviour of the individuals composing a social group . . ."

Leslie White defines culture as a "class of things and events, dependent upon symboling, considered in an extra somatic context". Cultural reconstruction is considered as the main objective of this approach, where the common traits are grouped together and uncommon traits are sometimes attributed to the "outside influence".

The main characteristic features of cultural history reconstruction include:

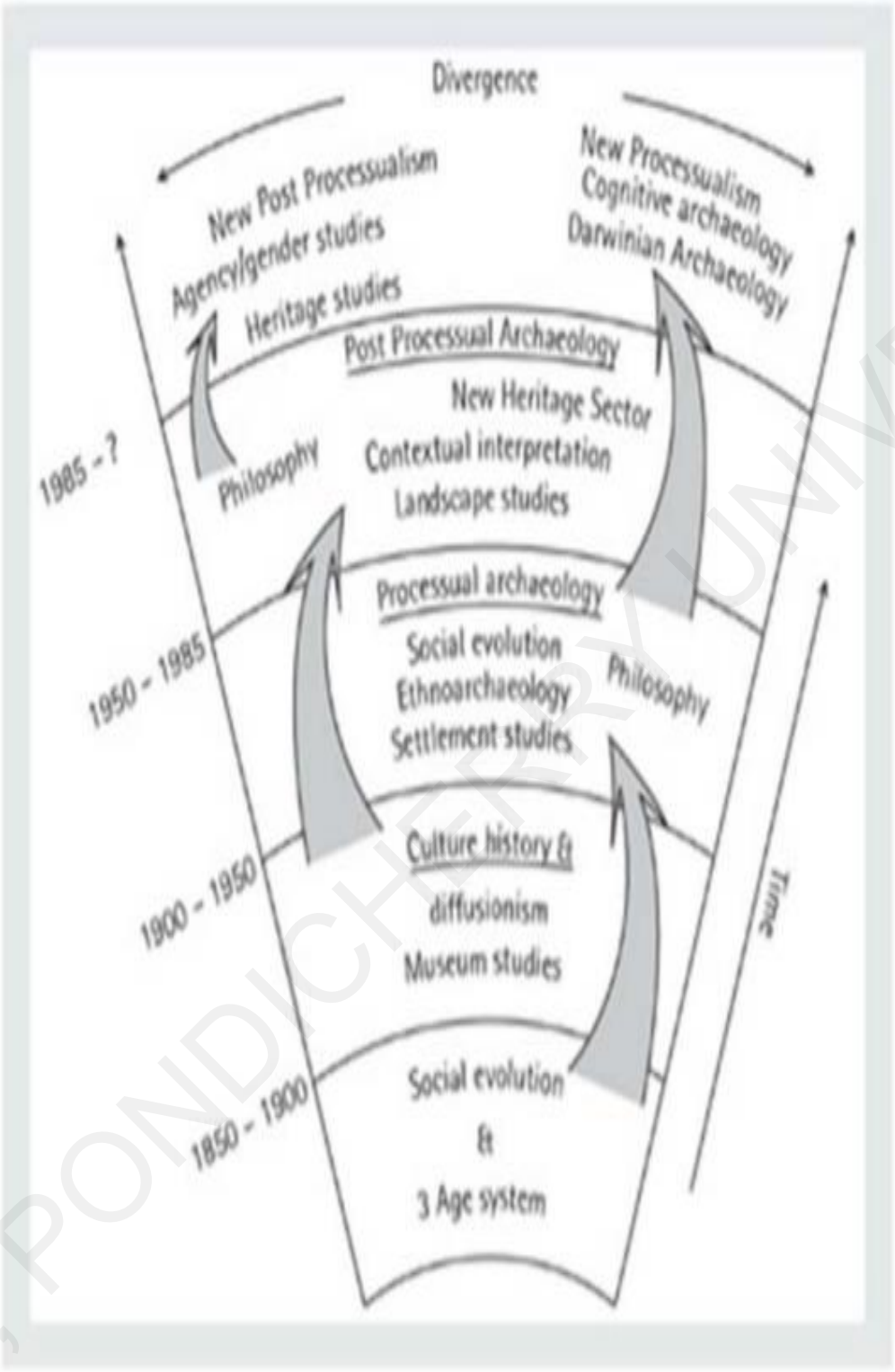
- ***Components:***The artifacts of similar nature are grouped together to show variations from one culture to another in a particular time and space
- ***Phases:*** Common cultural traits are placed in cultural phases
- ***Traditions***: Traditions such as customs, beliefs, rites, and rituals that happen in a particular place over a period of time and that mark the tradition of a particular culture.

Traditionally the archaeological objects were unearthed, studied, and described and the archaeologists tried to answer the following questions:

- What happened
- Where happened and
- When happened.

The detailed description of objects found in a site, with a chronological framework never revealed the real nature of the site with all its nuances and dynamics. The archaeologists in the world especially in India followed this approach through which they try to reconstruct the past cultural periods and describe the artifactcollection. The detailed plans of the trenches, site plan, pottery drawings, and illustrations of other cultural objects are produced in the first half of the 20th century CE. The cultural chronology based on the correlation with other cultural assemblages is fixed.

A few scholars propounded the diffusion theory by which they attributed cultural changes to the influence from other cultures that occur either due to cultural interactions. Migration is another aspect that causes the movement of people and goods from one place to another.



Historical development and diversification of archaeological theory after Kristian 2009

Processual Archaeology

Beyond this, no explanations were provided for the cultural changes, causes for the change processes behind the changes, and the cultural dynamics. The answers to the questions of 'why' and 'how' were not attempted earlier. With the development of scientific dating methods, the problem of dating an object or culture was solved. Now the archaeologists turned their attention to providing explanations for the material assemblage and tried to address the 'how' and 'why' questions. The social and economic aspects of the past cultures were assessed based on the material remains.

The ecological approach wherein the palaeo-environmental reconstruction was attempted is one such example where the archaeological data was used to provide an explanation for the human-landscape interactions over the ages.

The dissatisfaction over the culture-historical approach was expressed by a few scholars in the early 20th century too such as Walter Taylor in his work 'A Study of Archaeology and Gordon Willey and Philip Phillips in the work *Method and Theory in American Archaeology* who argued for the interpretation of social and economic complexities of the past cultures.

The 1960s witnessed a new wave of young archaeologists who did not only want to describe the material culture but also explain them and their interrelations and the processes behind the formation of the archaeological record.

Lewis Binford was an American Archaeologist who propounded a new theoretical framework to look at the archaeological data. Through his writings, *Archaeology as Anthropology*, *New Perspectives in Archaeology*, and *An Archaeological Perspectives*, he argued that archaeologists should have a scientific approach while explaining and interpreting the past cultures. This new concept is named as *New Archaeology* and as it studies the processes of cultures, it is also known as Processual Archaeology.

The differences between traditional and processual archaeology can be explained in the following method

Culture- Historical Approach	Processual Archaeology
It describes the past events	It explains the past events
It is based on a historical explanation	It is based on cultural processes
It tries to fix the missing pieces of a jigsaw puzzle	It proposes hypotheses, constructs models, and deducts the effects
It should provide answers to explicit questions	It should provide more data on various aspects and need not provide exact answers
The data is analyzed quantitatively	It is done through qualitative analysis through systematic sampling
It is not possible to interpret the social and cognitive aspects of the past	An effort can be made to study the cognitive and social conditions

(Modified after Renfrew and Paul Bahn 2016:41)

Binford asserts that "the practical limitations on our knowledge of the past are not inherent in the nature of the archaeological record; the limitations lie in our methodological naïveté, in our lack of development for principles determining the relevance of archaeological remains to propositions regarding processes and events of the past".

He also proposed middle range theory in archaeology that links the static archaeological data and the dynamic behaviours and processes. He stated that the

dynamics of human behaviour can be discerned through the study of present-day tribes. He studied the Nunamiut hunters of Alaska and based on the observations he tried to answer the variability found in the archaeological data of prehistoric hunter-gatherers. Through the ethnographic studies, which he calls 'actualistic' studies, he was able to find clues to the behaviour pattern of the past culture. Instead of concentrating only on bigger and popular sites and artifact assemblage, the stress is on the reasons behind the magnificence of the sites such as resources areas, geomorphology, and infrastructural aspects. Michael Schiffer considered middle-range theory as a link between the data and theory and called it behavioral archaeology.

Binford classified culture into subsystems and through the material evidence, the technology, society, and ideology of the past can be interpreted. By studying the system behind the artifact, the new archaeologists try to find the behavioural pattern of the past cultures.

Subsystems	**Material**
Technology	Technofacts
Social organization	Sociofacts
Ideology	Ideofacts

In Britain, David Clarke attempted to study the past culture through scientific methods such as quantitative analysis, computer-aided techniques, etc. In his book Analytical Archaeology, he emphasized that subsystems conditioned by the immediate ecosystem constitute a culture. He stated that the questions are significant than the answers.

The use of jargon and difficult terms used in processual archaeology is criticized by its opponents. The scientific approach adopted in the early years of new archaeology was functional in nature. It was called the functional-processual phase. The cognitive aspect needs to be analysed from Archaeological records.

Post Processual Archaeology

As New Archaeology concentrated mainly on the functional aspects such as trade practices, subsistence patterns, social organizations, technology and ecology other human behavioural traits such as belief systems, religious practices, human emotions, sentiments, etc are not given importance. Ian Hodder who propounded Post-Processual Archaeology argued that the study of the material remains and the historical development of the Archaeological records are more important than the scientific analysis of data.

To cite an example, the Post-Processualists argue that in the study of megalithic burials, it is not only essential to understand the functions of the burials, but it is equally important to interpret the human emotions, feelings, and sentiments associated with the building of burials for the departed. The proponents of post-processual archaeology believe that the symbolic meaning and ideologies of the people in the past can be reconstructed by reading the archaeological data properly. It also stresses the study of the cognitive aspect of the past culture.

The advocates of post-processual archaeology are influenced by various approaches given in the following table.

Approaches	**Propounded By**
Post-positivist	Feyerabend
Neo-Marxism	Althusser
Structuralism	Claude Lévi-Strauss
Phenomenological approach	Ernst Cassirer and Martin Heidegger
Hermeneutic (interpretational)	Dilthey, Collingwood
Post-structuralism	Barthes, Foucault
Feminist Approaches	

(After Renfrew and Paul Bahn 2016: 499)

Though there are many different theories to study past cultures, all of them aim to bring as much information as possible about the human past. Whatever be one's theory, the archaeological data needs to be collected, documented, and interpreted in an unbiased manner.

Questions

1. Discuss the origin of the discipline of Archaeology

2. Bring out the salient features of Three Age System

3. Highlight the three milestones in the study of Archaeology

4. Trace the importance of the Culture-Historical approach in Archaeology

5. Assess the significance of Processual and Post-Processual Archaeology

Lesson: 3.2: Contribution of Archaeology for the study of the Evolution of Man

Learning Objectives

After reading this lesson, you should be able to

- Understand the importance of the evolution of man
- Know the contribution of archaeology to the study of humans
- Analyze the important discoveries

Introduction

Humans have the innate curiosity to know about their origins. Though the myths and legends provide interesting information about human origin, the scientific study was made possible only through Anthropological Archaeology. In this unit, we will study the evolution of humans based on the evidence found in the explorations and excavations. Archaeological Anthropology provides information about the evolution of humans.

Human Evolution Theories

The age of the earth is 4.5 billion years old, while the modern human species emerged only 10,000 years back. Our ancestors are hominids and hominoids, while humans are Hominins.

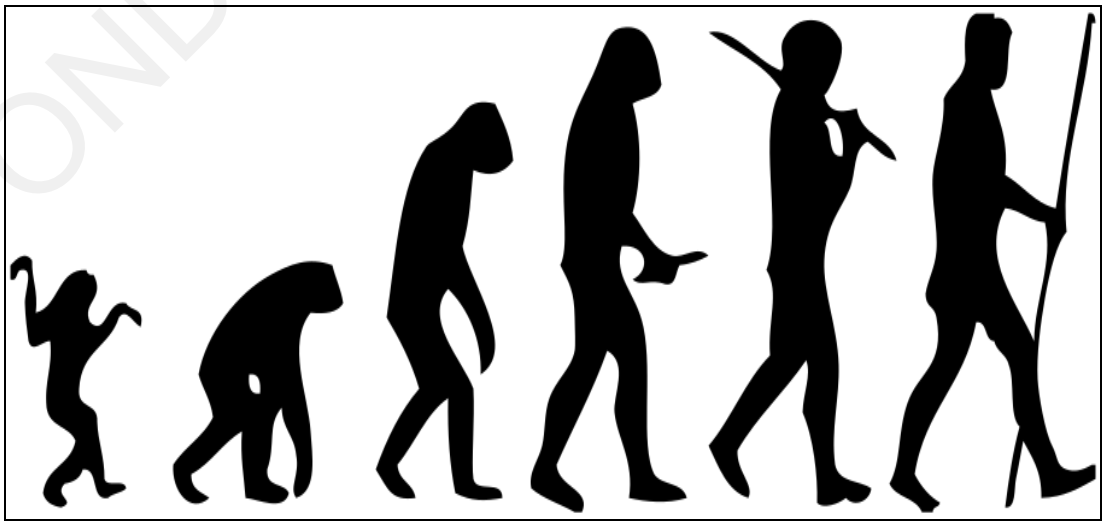
Hominoids- The term includes gibbons and orangutans
Hominids- The term hominids include humans along with gorillas and chimps
Hominins- The humans belong to the subfamily of hominins

It was Lamarck who made an earlier attempt to study the evolution of species and suggested that the environment played a crucial role in evolutionary processes. He believed that the traits acquired by a species due to environmental determinants can be passed from one generation to another through hereditary traits.

However, it was Charles Darwin, who described in detail how the evolution took place in various species in his famous book "On The Origin of Species", published in the year 1859. While travelling on a ship for a voyage he had collected specimens from various places like South America, and islands in the South Pacific. He spent many years studying the collections and propounding the theory of evolution. Based on the fossil records and the distribution of animals and plants in the world, he argued that only those species that could survive in the environment could endure living in the world. The survival of the fittest was also postulated by Alfred Russel Wallace, a British naturalist. When there is a competition for natural resources among the species only those species that are strong enough can survive. This 'Natural Selection' and 'Survival of the Fittest' are two guidelines that made evolution possible. Charles Darwin in his work "Descent of Man" argued that man had evolved from the apes. He also speculated that the human ancestors had originated in Africa. He noticed the similarities between the apes, chimpanzees and the Gorillas, and humans.

Human Ancestors as Fossil Remains

The evidence for the evolution of humans comes from fossil records. Geologically the evidence of primates started appearing from the Eocene of the Tertiary period, some 60 to 75 million years ago, and continued in Oligocene.



The Primates

The earliest evidence of Propliopithecus, the first known ape was found in Egypt at Fayam deposits. The fossil belonged to the Oligocene. The fossil includes jaws and teeth. One set of scholars believed that from Propliopithecus, Ramapithecus evolved. While another set of scholars opined that Propliopthecus evolved into Dryopithecus which gave rise to apes and our human ancestors.

The fossil remains of Proconsul also known as Drypithecus D. Africanus are found in Miocene. They are considered as the common ancestor for humans and apes. Remains of the Sivapithecus are found in the Siwalik region.

Ramapithecus fossils with teeth and jaw are found in the Siwalik Hills in India. It is considered the earliest human ancestor. It is dated to the Miocene period some 15 million years ago. The anthropologists found similarities in the diet pattern (nuts and seeds) between Ramapithecus and modern humans.

Australopithecus

Five species are found under the genus Australopithecus/

- A. *anamensis*
- A. *afarensis*
- A. *africanus*
- A. *robustus*
- A. *boisei*

They are bipedal hominids with a brain size of 500-700 CC. They were probably bipedal, walking on two legs. The teeth are similar to that of modern humans, though slightly bigger. The face was prognathous and there was no chin.

Australopithecus anamensis is found in Kenya in 1995. Lucy is the name given to the fossil remains of the species *Australopithecus afarensis*. It was discovered by Donald Johnson in Ethiopia. She was bipedal. She was three to four feet in height. She must have consumed fruits, nuts, as well as meat. She was the

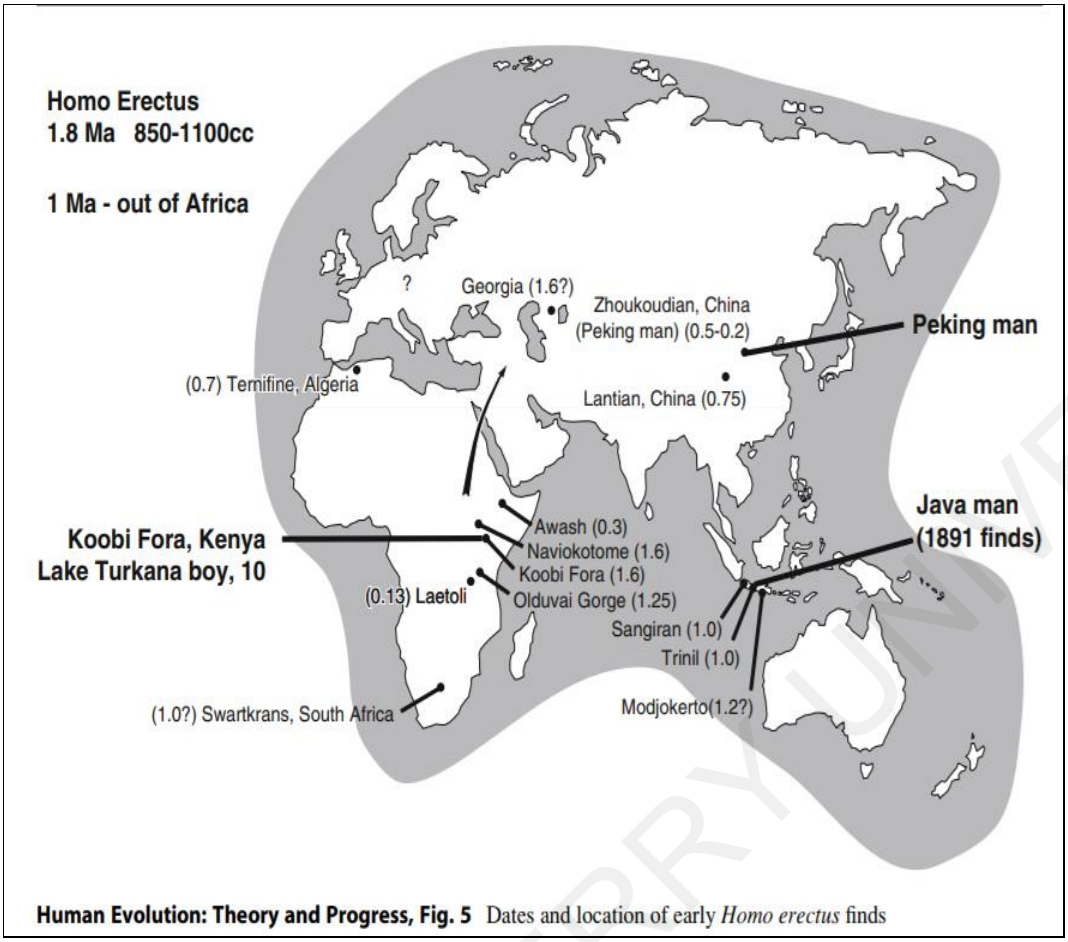
hunter as well as the hunted. The fossil remain of *Australopithecus africanus* is named Tung child and it was found by Raymond Dart in 1922.

Homo habilis

Living two million years back, Homo habilis made their presence in the early Pleistocene with a cranial capacity of 700-800 CC. They were meat-eaters and they hunted animals with crudely made stone tools. Homo habilis means handyman due to their ability to make tools. The stone tools they made are choppers by removing the flakes. They might have probably lived in small groups and hunted animals. The evidence for Homo habilis was discovered by Mark Leakey and Richard Leakey in Kenya. Homo habilis is considered to be the direct ancestor of humans. Both Australopithecus and Homo habilis might have lived around the same time.

Homo erectus

The fossils of Homo erectus are found in many places- Africa, China, Java, and Germany. In 1891, the fossil remains were found at Java, which was named Pithecanthropus. In China, it is named Pithecanthropus pekinensis and later as Homo erectus Pekinensis. They look similar to modern humans. They hunted and gathered food by using crude stone tools such as hand axes, chopping tools, and scrapers. They are identified with Abbevillian culture. Animals such as deer, antelope, bears, and elephants were hunted. The evidence for use of fire is found in China. There is evidence of them living in caves and wearing skin dresses.



(After Veldhuis et al 2014: 3529)

Homo sapiens

The Homo sapiens succeeded the Homo erectus. There are subgroups of them known as Homo neanderthelensis and Homo heidelbergensis. At Steinheim in Germany, a complete skull was found in Germany with 1000 cc cranial capacity. The skull was rounded.

The remains of Heidelberg man were found in Heidelberg in Germany. Considered as the ancestor of Neanderthal man, he had a thick jaw, and teeth like the modern human.

The Neanderthal man's fossil remains are found at Neanderthal Valley, Germany. Known as Homo sapiens neanderthalensis, their remains are found in Asia, Europe, and North America. With a cranial capacity of 1450 cc, the

neanderthal man had a thick forehead and deep jaw. The stone tool technology became advanced having moved from Abbevillian to Acheulian and then to Mousterian. The stone tools became more symmetrical and flake tools were made for hunting. As a group, they might have hunted the animals and with the knives, they had butchered the animals. Interestingly they buried their dead and offered flowers too to the dead as known from the Shanidar Cave in Kurdistan.

Cro – Magnon man

The Homo sapiens from Europe are known as Cro-Magnon man. The modern humans called wise men appeared around 45,000 years ago. They were advanced than the Neanderthal man. They are 6 feet tall with a cranial capacity of 1600 cc. They were living in caves and were able to decorate the caves with cave art. The stone tool technology became more advanced. Ivory ornaments were found, probably used to adorn themselves.

They introduced agriculture and the domestication of animals. The first civilization appeared with the introduction of metals such as Bronze and iron. Three major races – Caucasoid race in the Mediterranean region, Mongoloid race in China, and Black race in Africa are found in this group.

Social Organisation

Archaeology helps in understanding the social organisation of our ancestors. Humans being social animals tend to live in groups. Our human ancestors had lived in groups, probably as bands and hunted and gathered together. There is archaeological evidence for social interactions among the people. The presence of beads, burial practices, rock paintings indicate to the existence of a social network. Probably people from a particular area lived and hunted together.

With the introduction of agriculture and domestication of animals in the Neolithic period, people lived in houses and developed skills in the production of arts and crafts along with small-scale trade practices. This warrants people to live in social groups probably with hierarchy in levels.

The discovery of metals further improved the technological innovations of various cultural phases. This led to the development of complex social networking. As known from the Harappan architectural plan, the division of town planning into two levels namely citadel and lower town indicate a hierarchy-based social organisation. The megalithic burials with varied types found in the Iron Age- Early Historic period in southern India point out to social cooperation and involvement in the making of burials. Archaeologists from Europe studied the megalithic monuments in Europe and argued that the burials could have functioned as territorial markers and the society was clan-based and in some context, there could be chiefdom too. In the historical period, we have more evidence of society getting divided based on labour came into existence.

Through archaeological records, the social organisation that played a role in the evolution of humans as social animals can be reconstructed.

Technological Development

The evolution of humans is not only biological in nature. It is also cognitive-based. The ability to think is a human trait and it developed over a period of time. From small cranial capacity, our human ancestors developed bigger capacity. The cranium capacity of modern humans is 1500 cc. With the developed cognition, there was an evolution in the technology adopted by the ancestors.

Homo habilis, also known as 'handyman' made and used stone tools effectively for hunting and gathering. The crude core tool technology gave way to the flake tools and microliths in subsequent periods. The variety of stone tools includes hand axes, cleavers, scrapers, choppers, chopping tools, flake tools, blades, burins, celts, and awls indicating perfection in stone tool making according to the needs of the people in different cultural periods.

The technique of making rock art (painting, engravings, bruising) can be seen in the Palaeolithic period. The selection of materials for making rock art involves the knowledge of plants, rocks, and minerals. The themes of rock art include animals, hunting scenes, humans, and dancing scenes. The human

ancestors were good at replicating the real images of the animals in all its nuances that indicate the higher level of cognition.

The pottery techniques introduced from the Neolithic period underwent many changes. The hand-made pottery became wheel-made. Many types of pottery such as black ware, red ware, black and red ware, black on red ware, rouletted ware, Northern black polished ware, Painted grey ware pottery, Russet coated pottery, etc came into practice. The selection of clay, pottery-making technique, use of slip, and production of designs indicate our ancestors' intellectual development.

Dietary Pattern

Human evolution is possible only through the changed and developed dietary options. Through archaeological records, the food practices of our ancestors can be discerned. From hunting-gathering to food production through the introduction of agriculture, human ancestors had come a long way in the selection and consumption of food.

Based on the micro wear analysis of fossil remains of australopithecines, it was found out that they had consumed cereals and grasses. The change in the biological form of our ancestors such as the change in mandibular, enamel, and teeth led to the change in the dietary pattern. A large number of animal remains and the hunting tools in prehistoric sites indicate the consumption of animal food.

The use of fire was attributed to the time of Homo erectus some 1.4 million years ago. The control of fire led not only to protect but also to access to processed food. The earliest evidence for controlled fire is found in Israel 8,00,000 years ago by Goren Inbar.

The Neolithic revolution brought in its train both agriculture and the domestication of animals. This revolutionised the dietary preferences of our ancestors. More plant-based food was consumed and that altered the dietary nature of humans. The site of Lehuradewa in Uttar Pradesh yielded the earliest date for

rice (8000 BCE). The site of Mehrgarh (now in Pakistan) has provided a date of 7000 BCE for the early agricultural phase.

Examination of hominid skeletal evidence (especially teeth and jaw remains) and archaeological sites (yielding animal bones and stone tools) provide crucial evidence which helps to infer the dietary pattern of the ancestral population in course of human evolution. Thus the comprehensive understanding of nutritional evolution can be achieved with the study of fossil evidence and archaeological records along with an assessment of morphological consequences.

The dietary practices of human ancestors depend on their interaction with the environment and their biological evolution. The archaeological sources such as the stone tools, the study of coprolites (fossilised faeces), and the skeletal evidence mainly the teeth and jaw provide necessary clues to the dietary pattern of humans.

Date (Yrs.BP)	Development
2,000,000	Primates – vegetables and fruits along with meat
30,000	Control use of fire, animal, and plant food
10,000	Pottery, grinding equipment, cooked food
2000	Agricultural products, diversification of food
Present	Use of fossil fuels, fast food, wide choices of food

Human evolution is a long story and archaeology helps in understanding the past human behaviour along with human-nature interactions.

Questions

1. Trace the evolution of humans.
2. Discuss the social organisation of our ancestors.
3. “The human evolution helped in technological development”. Justify!
4. Describe the dietary pattern of our ancestors.

UNIT - IV

History of Archaeology in India - Colonial archaeology-Institutional growth in field Epigraphy and Archaeology -Oriental Studies-Establishment of Professional organizations and institutions.

Unit Structure

4.1 Indian Archaeology- the Beginning -Colonial Archaeology- Oriental Studies
4.2. Development of field -epigraphy, and archaeology
4.3. Establishment of Professional organisations and institutions

Lesson 4.1: Indian Archaeology: the Beginning -Colonial Archaeology- Oriental Studies

Learning Objectives

- To understand the beginning of Archaeology in India
- To study the British initiatives in the discipline of Archaeology
- To know the contribution of colonial officers to Indian Archaeology
- To understand the importance of oriental studies

Introduction

Archaeology, which studies the human past through the use of the material remains, has an interesting history of its development and evolution as a scientific discipline. While the History of Archaeology in the global context began with the Renaissance Movement and the subsequent growth of antiquarianism and foundations of scientific inquiry in Europe, in India Archaeological studies and research began to emerge around the 17^{th} and 18^{th} centuries primarily due to the activities of the Europeans. Archaeology took its roots in India as part of Orientalist attempts to reconstruct the Indian past.

In fact, one cannot strictly distinguish between the history of Archaeology and History during the pre-colonial period. It was observed that the Indians did not have historical sense and argued that no attempts have been made to document or write history in ancient India. Such notions were colonial constructs where partisan views of various subjects existed.

The history of Archaeology in India could be divided into multiple phases of development. The earliest phase in the development of history is generally the Pre-Colonial period. The colonial system negated the existence of history writing in India. Hegel considered India as a land without recorded history. Kalhana's Rajatarangini was considered the only source of historical work in Indian history by William Jones. Many of the Indian scholars accepted the view that the Indian society was ahistorical, according to Romila Thapar who has researched the perceptions of the past in the context of Indian history in her book "*The Past before Us"*. While it cannot be argued that history writing as practiced in the contemporary period existed in ancient India, the ancient Indians had a particular way of viewing the past and writing about the past.

Archaeology as a modern discipline emerged in India due to colonial initiatives. However, the traditional Indian society had preserved its history of the past. The past is defined by myths and legends. Human beings have the innate desire to unravel the mysteries of the past and Indian Notion of past.

Historical Traditions in Ancient and Early Medieval India

Several elements of historical traditions existed in ancient India, but they cannot be compared to the contemporary histories. The ancient Indians used the knowledge of the past for various purposes in their day-to-day existence. A sense of past and its construction existed in many societies and it need not be in the modern sense as pointed out by Romila Thapar.

Perception of Time in Ancient India

In fact, very limited attempts have been made in ancient India to document the events of the past in India in a systematic manner. However, we cannot argue that the Indians completely lacked historical sense. Although one may not find attempts to write history in ancient India as practiced in the contemporary period, there is evidence for the perception and use of the knowledge of the past. The Itihasa-Purana traditions, genealogies, and various other traditions existed in ancient India. *Itihasa* means 'thus indeed it was', and it is used in the sense of history and *Purana* means old and also meant myths.

History has two important dimensions, space and time. Time was conceived, measured, and recorded in ancient India. Indians had their own eras such as the Kali Era, Vikrama Era, Salivahana Era, Gupta Era, Kollam Era to record the events of the past in chronological order. Indians had developed their own sense of time. The four yugas of *Krita, Treta*, *Dvapara,* and *Kali*, which lasted for 17,28,000, 12,96,000, 8,64,000, and 4,32,000 years, respectively. The Kali-yuga is considered to have begun in 3102 BCE. The calculation mode of time in terms of *appears* occurs in the inscriptions of the medieval period. These instances clearly suggest that the Indians had their own conception, use, and narration of time and it is not correct to observe that Indians did not have any sense of history.

Historical Traditions in Ancient and Early Medieval India

In ancient and medieval India attempts were made to document the events of the past. *Danastutis* mentioned in Vedic texts describing the fame of the donors is considered as part of the historical traditions. Such eulogies preserved only certain versions of the donors. The *prasastis* or *meykirtis* of the inscriptions, *itihasas, puranas,* and other literary traditions do suggest the existence of historical traditions in India. *Mahabharata* is considered an *itihasa* and Ramayana a *Mahakavya* and they are dated to the early centuries of the Common Era although the stories therein could date back to an earlier period. While the stories of the

epics and their historicity are difficult to establish, they do have information useful for understanding the history of the early period. These epics have information on the genealogies. When state formation took place in the early medieval period these lineages were claimed by many of the political powers.

Puranas

Puranas serve as an important source for history. Although these texts have myths and legends they do have the information necessary for the reconstruction of the past. The *Puranas* record history in the future tense. Despite their style of narration which has exaggeration, they do have information useful for the reconstruction of history. The history of Guptas, Vatsagulmas (Vakatakas) and Satavahanas are recorded in the Puranas.

***Prasastis* as History**

In the royal decrees, the traditions of recording the geologies and conquests became a means of legitimization. The inscription of Samudragupta at Allahabad narrates the conquests of the king in various parts of India. Similarly, the Aihole inscription of Pulakesin II is an important document. During the Chola period, we have detailed *Prasastis* of the kings in the inscriptions.

Charitas

Charita is another important genre of historical traditions of India. *Charitas* deal with the history of great personalities. *Buddha Charita* composed by Aswaghosa and *Harshachartita* composed by Banabhatta are the best examples of these genres.

Preservation of Old records

During the construction of temples reconstruction of old temples, inscriptions of the ancient periods were carefully preserved, and sometimes they were re-engraved in the medieval period suggesting the attempts to preserve the past. They had understood the importance of recording the old records. The

Saraswati *Bhandaras* acted as the storehouses of records. The old plam leaf manuscripts were re-written in the ancient period. The mending of the image of Vishnu in the Mamallapuram temple is another example of traditional conservation. This is one important example of conservation.

Kalhana's *Rajatarangini*

Kalhana's *Rajatarangini* is an important text related to history. It deals with the history of Kashmir kings. It is dated to the 12th century CE.

Approaches to History in Late Medieval India

The late medieval period witnessed attempts to chronicle historical events and the impact of Islamic traditions is seen in such attempts. The chroniclers of the Mughal period such as *Babur Nama, Akbar Nama, Shajahan Nama,* and the texts such as Gangadevi's *Madura Vijayamu* record the history of the medieval period. The Upanishads were translated into Persian by Dara Shukoh, son of Mughal Emperor Shah Jahan.

Documentation of Archaeological Remains

In the period of Tuglaq, Feroze Shah Tuglaq attempted to read the inscriptions of Asoka with the support of Pundits. He moved an Asokan pillar to Delhi. It was an important attempt to study the script during the Late Medieval period. Though the script could not be deciphered during his time, he placed it on a raised platform at Feroze Shah Kotla.

The kings who ruled various parts of India also showed interest to preserve the past as known from the reference of a Sudarsana lake in present day Gujarat state.. The lake was originally built in the time of Chandragupta Maurya, the founder of the Mauryan dynasty, and the lake was subsequently repaired by Asoka, his grandson. We have inscriptional evidence of Kshatrapa King Rudradaman and Gupta King Samudragupta repairing the same lake during their rules too.

Colonial Initiatives

The activities of colonial administrators and scholars and others led to the foundation of a branch of academic research called Indology. The discipline of Indology includes Philosophy, Literature, Archaeology, Art history, and other traditional knowledge systems.

History of Research

The history of Archaeology in India has been studied by several researchers. A few of the key publications, which indicate the trends and patterns in the development of Indian Archaeology are listed below:

- *The Story* of *Indian archaeology*, Sourindranath Roy, Ancient *India* volume 9.
- *Archaeology in Post-Independence India,* H D Sankalia. India International Centre Quarterly.
- *Fifty Years of the Archaeological Survey of India,* A. Ghosh
- *Indian Archaeology and Postmodernism: Fashion or Necessity?* Ajay Pratap
- *The Development of Archaeology in the Indian Sub-Continent* by D.K Chakrabarti
- *Discovery of Ancient India: Early Archaeologists and the Beginnings of Archaeology* Upinder Singh (2004)
- *Marshalling the Past: Ancient India and Its Modern Histories,* Nayanjot Lahiri
- *History of Indian Archaeology: The Beginning to 1947,* Dilip K Chakravarti
- *Fifty Years of Indian Archaeology (1960-2010): Journey of a Foot Soldier,* Dilip K. Chakrabarti
- *India - An Archaeological History: Palaeolithic Beginnings to Early*

History , Dilip K Chakrabarti

- *Archaeology in the Third World: A History of Indian Archaeology,* Dilip K. Chakrabarti
- *Multiple Approaches to the Study of India's Early Past: Essays in Theoretical Archaeology,* K. Paddayya
- *Recent Studies in Indian Archaeology,* K. Paddayya
- *Revitalizing Indian Archaeology: Further Theoretical Essays,* K. Paddayya
- *Essays in History of Archaeology- Themes, Institutions, and Personalities,* K. Paddayya
- *Colonial Archaeology In South Asia: The Legacy of Sir Mortimer Wheeler,* Himanshu Prabha Ray
- *Orientalism,* Edward Said
- *The World of India's First Archaeologist, Upinder Singh*

Colonial Documentations of Indian History and Archaeology

The earliest documentation of the Europeans can be seen in the accounts of the sailors and travellers John Huighen van Linschoten and Pietro della Valle who documented the temples of South India. Linchoston made negative remarks on the temples of South India. Pietrodella Valle made positive remarks on the monuments. John Huighen van Linschoten (1563-1611) was a Dutch trader and researcher and he published the book *Itinerario* and it was published later as *Discourse of Voyages into the East & West Indies* in English. Pietro della Valle was an Italian composer who visited many parts of Asia. His travel accounts have been published as *The travels of Pietrodellavalle India*.

According to D.K. Chakrabarti, systematic studies on the architecture of Indian began after the middle of the 18th century. Anquetil du Perron documented the Ellora caves, Elephanta and Kanheri. Anquetil du Perron (1731-1805) who was a French Indologist made a visit to India. He collected documents related to Zoroastrianism. He published books such as *Législation Orientale* (1778) and *Historical and Geographical Research on India* (1786). Carsten Niebuhr'

visited the monuments of Elephanta and documented the caves. M. D'Anville was an important author who worked on historical-geographical aspects. He identified the sites of India mentioned in Classical Sources. James Rennel published on the historical geography of India.

Impact of the Asiatic Society and the Developments from Late 18th Century to 1860.

The development in Indian archaeology from the founding of the Royal Asiatic Society to the founding of the Archaeological Survey of India could be treated as the second phase of development. The colonial administrators and officers began documenting Indian history and culture in order to govern the people.

William Jones and Asiatic Society of Bengal

An important phase in the development of archaeology and orientalism was the founding of the Royal Asiatic Society of Bengal on 15th January 1784 at Kolkata by William Jones, who was a British Lawyer and Orientalist. The Royal Asiatic Society was founded to study *"...geology and pure mathematics, ethnography and mechanics, geography and religion, mineralogy and politics, grammar and rhetoric, music and agriculture, architecture and medicine."*

Jones who was at Oxford University in the UK came to India in 1783 when he was appointed as the Judge of the Supreme Court. Warren Hasting who was the Governor-General of Bengal supported the activities of the Royal Asiatic Society of Bengal. William Jones was a polyglot having knowledge of Latin, Greek, Hebrew, Arabic, and Persian and he could speak 20 languages. He was a prolific writer. He published *The Grammar of Persian Language* in 1771. He learnt Sanskrit and began to work on Hindu and Muslim law. He published the works *Muhammadan Law of Inheritance* in 1792 and the *Hindu Law* in 1794. In 1786 he proposed a theory that Sanskrit, Latin, and Greek had a common ancestry. This led to the development of Comparative Linguistics as a field of research.

William Jones identified *Sandrakottos* mentioned in the classical works as Chandragupta Maurya. He also found out that Pataliputra mentioned as Palibothra is located at the place where the rivers Ganga and Son. The most remarkable contribution is the finding of affinities between the Greek, Latin, Celtic, and German language groups with Sanskrit and Persian language groups.

Asiatick Researches

The Asiatic Society published a journal titled *Asiatick Researches* from 1788. Asiatick Researches or, Transactions of the Society was instituted in Bengal for inquiring into the history and antiquities, the arts, sciences, and literature of Asia. The journal was published up to 20 volumes and was discontinued in 1842.

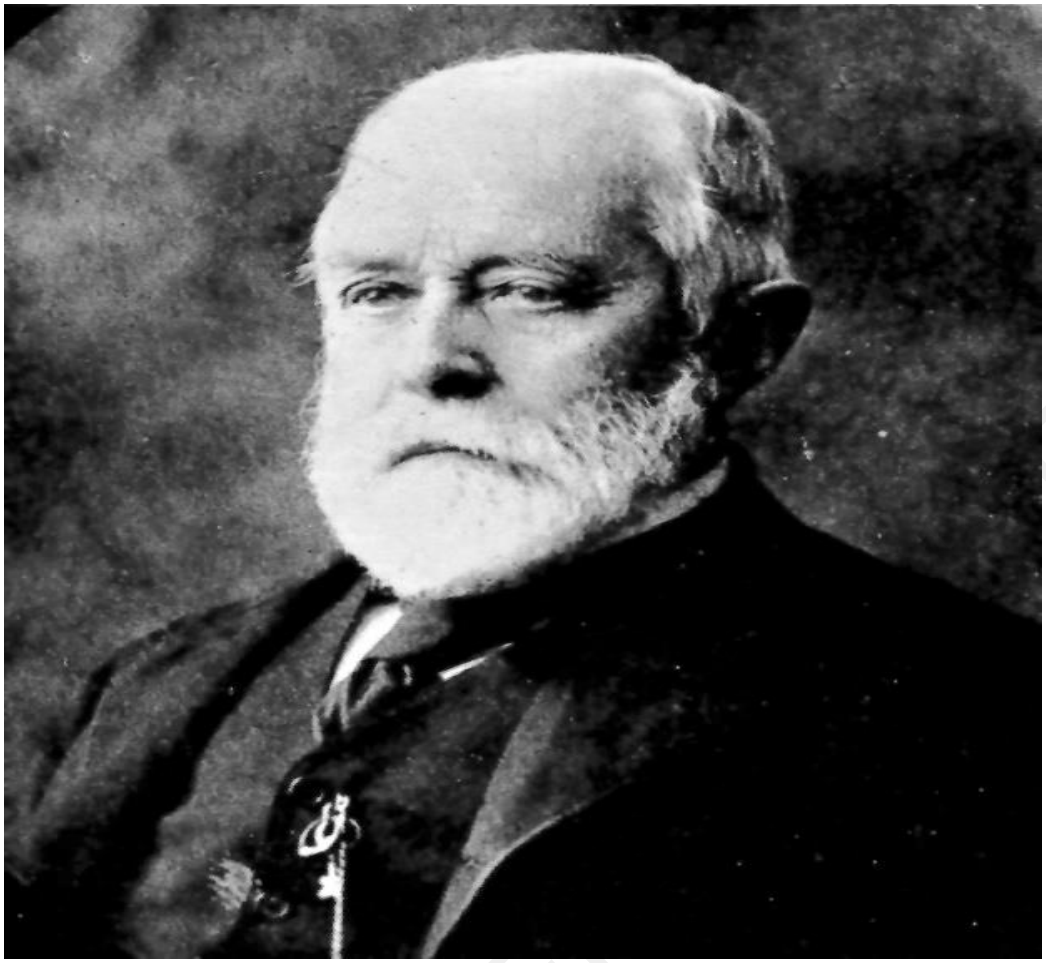
***Royal Asiatic Society* of Great Britain and Ireland**

The *Royal Asiatic Society* of Great Britain and Ireland was established by Henry Thomas Colebrooke, on 15th March 1823. This society published a journal that contains information on the history and archaeology of India.

Robert Bruce Foote

Robert Bruce Foote who is considered as the Father of Indian Prehistory contributed to the study of the prehistory of South India. He made detailed documentation of prehistoric sites in South India. He explored many parts of South India and identified prehistoric and historical sites. His main contribution has been the discovery of the handaxe from Pallavaram near Chennai in 1863. He was instrumental in documenting the geological formations across South India and his surveys have been published in Memoirs of Geological Survey of India.

His work *The Foote Collection of Indian Prehistoric and Protohistoric Antiquities* describes his collections in a detailed way. His observation about the destruction of archaeological sites by natural and human interventions still stands true today.



Robert Bruce Foote

Indian Treasure Trove Act 1878

Indian Treasure Trove act was an important legal measure taken by the Colonial government. The Indian Treasure Trove Act was enacted in 1878. It offered a legal framework for the preservation of ancient treasures which were melted for the metal value. This act made provisions for compensation to the owners of the land in which treasures are found and the finder of the treasures.

Madras School of Orientalism

A word coined by Trautmann, this word implies the knowledge production by the individuals and the institutions in the southern parts of India. The colonial officers along with the Indians produced many works, notable being Robert

Caldwell's book on *A Comparative Grammar of the Dravidian or South Indian Family of Languages* in 1856. This was a path-breaking work as it showed that south Indian languages are distinctly different from the languages of North India.

The Madras School also contributed to the study of ancient laws as well as to religious history. Notable contributions are made by Ellis on Hindu law. The influence of Jainism in south Indian history was highlighted by Colin Mackenzie and Francis Buchanan.

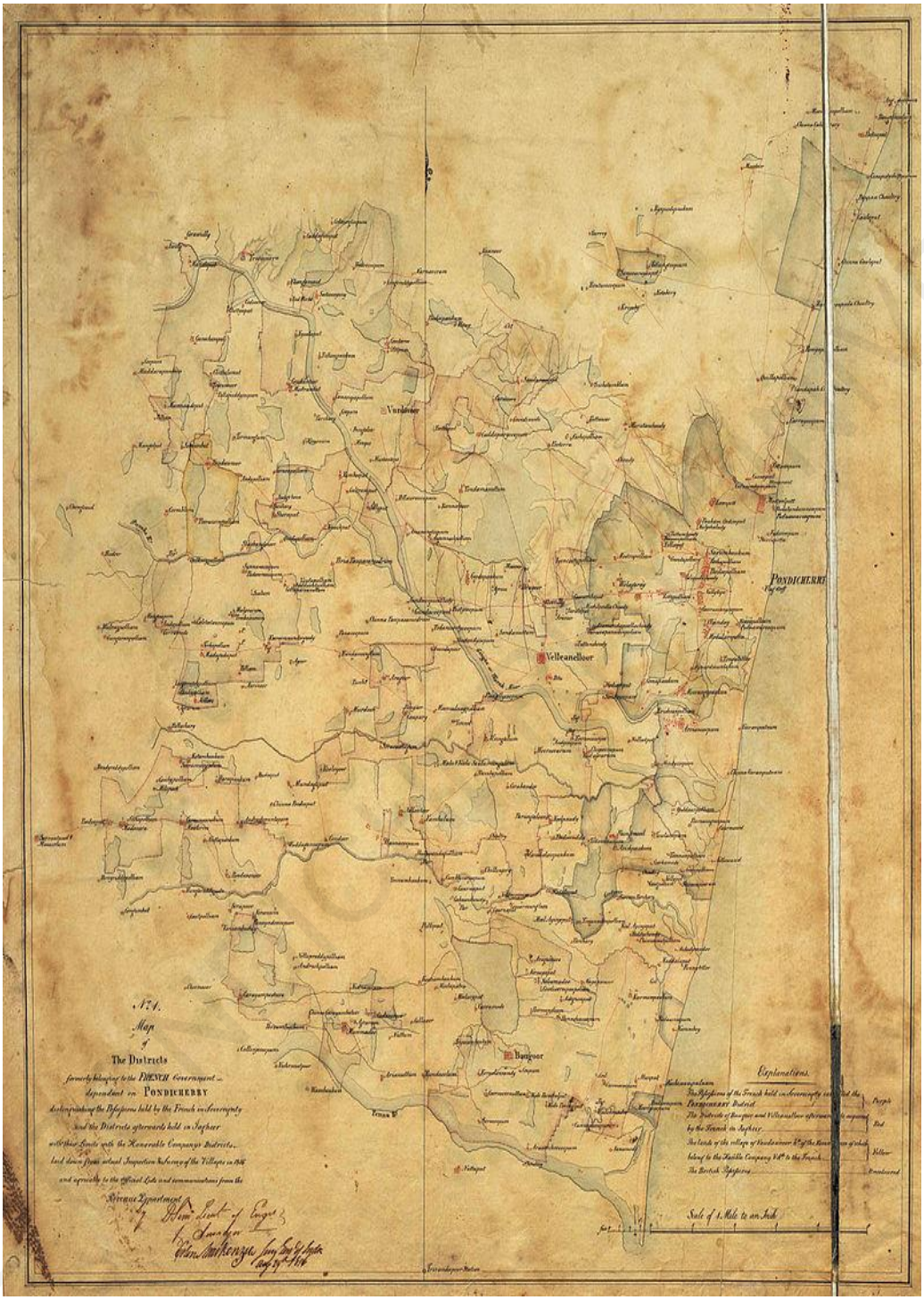
Colin Mackenzie

Colin Mackenzie's survey of documents and historical records is considered an important development in the colonial period. Colin Mackenzie was Scottish in origin and was an army officer of the East India Company. He was born in 1754 in the UK and died in Kolkata in 1821. He became the first Surveyor General of India. He was active in the British campaign against Tipu Sultan. He was a collector of antiquities and an orientalist. He documented information related to local history, archaeological remains, epigraphical materials, and local traditions. He also made a collection of manuscripts. He was assisted by local pundits Boraiah and Lakshmanaiah (popularly known as Kavali brothers) in the collection of Information. His archive consisted of "1568 literary manuscripts, 2070 local tracts, 8076 inscriptions, 215 translations, 79 plans, 2630 drawings, 6218 coins, and 146 images". He documented the remains of the Vijayanagar Empire at Hampi. He made sketch images of the monuments at Amaravati and Mamallapuram.

Francis Buchanan-Hamilton

Francis Buchanan Hamilton a surgeon by profession contributed richly to the study of antiquarian remains of India. He was commissioned by Marquis of Wellesley to survey the Mysore region in 1800. He surveyed the southern regions of India and produced a voluminous work *A Journey from Madras through the Countries of Mysore, Canara, and Malabar,* published in 1807. His work is

known for its details, and ethnographic studies based on his meticulous and keen observation.



Map of Pondicherry by Colin Mackenzie (National Archives of India)

James Babington

James Babington was the first one to write a detailed report on the excavation of megalithic burials at Chattaparamba in modern-day Kozhikode in Kerala he conducted in 1819. The report is known for its detailed documentation and illustrations of artifacts.

James Fergusson

While many Indologists showed interest in Buddhist stupas and megalithic burials, James Fergusson's monumental work on the *Illustrations of Rock-cut temples of India and Picturesque Illustrations of Ancient Architecture in Hindustan* and *Handbook of Architecture* greatly influenced the future studies of rock-cut temples and structural temples.

Meadows Taylor

An administrator in the Hyderabad State, Meadows Taylor was a versatile scholar. He was an Engineer, a novelist, an archaeologist, and also a historian. While serving as the political agent for the British government at Shorapur, he had explored many megalithic sites and made detailed documentation of such sites. The information on the sites with the maps, excavation report of the burials including illustrations of artifacts and human remains, and the knowledge of stratigraphy made Meadows Taylor's contribution to Indian archaeology a remarkable one. He published his work as *Megalithic Tombs and other Ancient Remains in the Deccan.*

Alexander Rea

Alexander Rea came to India as Assistant Archaeologist in the Archaeological Survey of India. During his tenure, he was credited with the survey and excavation of important sites including Bhattiprolu, a Buddhist Stupa site, Perumbair, and Adichanallur. The excavation conducted at Adichanallur, a megalithic site assumed significance in the archaeological map of India as the site yielded urn burials along with iron implements as well as bronze images. His book

"Catalogue of the prehistoric antiquities from Ādichanallūr and Perumbāiris" was written with all the meticulous details.

Development of Museums

The development of Museums is another important milestone in the Colonial period. Although *Chitrasalas* and SaIraswathi *Bhandars* and the copies of manuscripts existed in the ancient and medieval periods, the concept of museums was new to India. The Indian Museum at Kolkata was developed out of the collections of the Asiatic Society of Bengal. The proposal for this museum was accepted in 1796 and was established in 1814. This museum had Archaeological and Ethnological sections along with the Geological and Zoological sections. It was renamed as Indian Museum in 1866. The Madras Literary Society which was established in 1812 developed a museum of Economic Geology in 1828. The Government Museum and Art gallery was established by the Madras Literary Society in 1851 at Fort St.George. The Museum of Lucknow was established in 1863 and Mathura Museum was established in 1874. The Madras Museum was started in 1851. The Bombay Presidency had created a museum named after Prince of Wales and it was opened to the public in 1921. Now it is known as Chhatrapati Shivaji Museum.

The colonial officers not only collected and documented the objects from various parts of India but also made provisions for building museums to house them.

Questions

1. Trace the history of Archaeology in India
2. Assess the contribution of William Jones and the Asiatic Society of India to Indian Archaeology
3. Analyse the contribution of the British colonial officers to the development of Indian Archaeology.

Lesson 4.2. Development of field Epigraphy and Archaeology

Learning Objectives

- To understand the development of Epigraphy in India
- To study the growth of Archaeology as a discipline in India

Introduction

Archaeology not only studies the material remains but also contributes to the study of Epigraphy - the study of inscriptions. To understand the historical period, the inscriptions play a vital role. To study the inscriptions and understand the development of scripts and languages, epigraphy and palaeography are important.

From an antiquarian perspective, the study of the past has shifted its focus to scientific Archaeological research. In this sub-unit, we will study the development of Epigraphy as well as the further development in the field of Archaeology.

Indian Epigraphy

As the inscriptions written in various ancient scripts and languages are found in various parts of India, a few people showed interest to understand the inscriptions. The pillars of Asokan inscriptions from Topra and Meerut were brought to Delhi by Feroze Shah Thuglaq who encouraged the native Sanskrit scholars to study the inscriptions engraved on them.

However, it was only during the emergence of Indological studies under the aegis of Asiatic Society of Bengal, that the study of inscriptions also assumed prominence.

Charles Wilkins

Charles Wilkins, an Indologist made the first publication of an inscription found at Mongueer in 1781 in Asiatic Researches. Charles Wilkins was a writer

and Printer employed by the British East India Company. He was appointed as the translator from Persian to Bengali in 1781.He assisted William Jones to establish the Royal Asiatic Society of Bengal. He began to translate Mahabharat and translated Bhagavad Gita and it was published as *Dialogues of Krishna and Arjun.* Charles Wilkins deciphered late Brahmi inscriptions, Gopika Cave Inscription which was also known as the Nagarjuni Hill Cave Inscription II of Anantavarman.

The establishment of the Royal Asiatic Society of Bengal by the efforts of Sir William Jones gave an impetus to the study of Epigraphy.

James Prinsep and the Decipherment of Brahmi.

James Prinsep (1799-1840) an assay master in Calcutta Mint, made a significant contributions to Indian epigraphy when he deciphered Brahmi as well as Kharoshti scripts in 1837. He is the first European to decipher the Asokan Brahmi and Asokan edicts.

Brahmi Script

He documented and published the Indian Coins. He has prepared illustrations of temples, *ghats*, and quotidian life of Varanasi. He helped in standardization weights and introduced a uniform coin system. He was the Editor of the Journal of Asiatic Society of Bengal. Unfortunately, he died in 1840 at a young age. A Ghat was named after him at Kolkata.

Eugen Julius Theodor *Hultzsch*

Eugen Julius Theodor *Hultzsch* (1857 –1927) was a German scholar who had learnt Sanskrit. He was appointed as Chief Epigraphist of India in 1886. He documented and deciphered the inscriptions from many temples of South India. The *Epigraphia Indica* volumes 3 to 8 were edited by him. In 1903 he left the Archaeological Survey of India.

Journals on Epigraphy

The Journal of the Asiatic Society of Bengal

Thanks to the efforts of James Prinsep,*The Journal of the Asiatic Society of Bengal was published by the society in 1832. The aim of the journal was "to give publicity to such oriental matters as the antiquarian, the linguist, the traveller, and the naturalist may glean, in the ample field open to their industry in this part of the world, i.e. Asia, and as far as means would permit, to the progress of the various sciences at home, especially such as are connected in any way with Asia"*. This journal crossed several stages and is published as the *Journal of the Asiatic Society.*

Indian Antiquary

In 1872, another landmark was reached in the study of epigraphy with the publication of the *Indian Antiquary*: *A Journal of Oriental Research in Archaeology, History, Literature, Languages, Folklore & C* edited by James Burgess. *Buhler, Fleet, and others were published in this journal.*

Corpus Inscriptionum Indicarum

Another important journal that added value to the epigraphy study is *Corpus Inscriptionum Indicarum* started by Alexander Cunningham of the Archaeological Survey of India in 1877 who observed in his editorial that the journal's main objective was to "*bring together in a few handy and accessible volumes all the ancient inscriptions of India which now lie scattered about in the journals of our different Asiatic Societies.".* He also outlined the content for the first three volumes of the journal.

The first three volumes contained

- Inscriptions of Asoka on Rocks and Pillars.
- Inscriptions of the Indo-Scythians, and the Satraps of Surashtra.
- Inscriptions of the Guptas, and other contemporary dynasties of North India.

Epigraphia Indica

As an ancillary to *Corpus Inscriptionum Indicarum, Epigraphia Indica* was started in the year 1888. However, in due course of time, the journal maintained its standard through quality publications by scholars such as James Burgess, Hultzsch, Fleet, Buhler, and Kielhorn and contributed a lot to the study of inscriptions. James Burgess edited the first and second volumes.

South Indian Inscriptions

The volumes of *South Indian Inscriptions* were published by the Archaeological Survey of India. The first volume was published in 1890 and it dealt with Tamil and Sanskrit Inscriptions comprising of Stone and Copper-plate Edicts from Mamallapuram, Kanchipuram and other parts of the Madras Presidency. They were collected during 1886-87. The second volume published the Tamil Inscriptions of Rajaraja, Rajendra-Chola, and others in the Rajarajesvara Temple at Thanjavur.

In subsequent years, the publications of Mysore Inscriptions by Lewis Rice, Epigraphia Carnatica, by Hultzsch made their appearance adding more details about India's past.

Epigraphical Survey

A proposal for the Epigraphical survey was submitted by Alexander Cunningham in 1881. In 1883, John Faithfull Fleet was appointed as Government Epigraphist for three years.

Studies on Tamil Brahmi Inscriptions

The earliest inscriptions in the Tamil region belonged to the Tamil Brahmi script. It was Robert Sewell who discovered in 1882 the Tamil Brahmi (also called as Tamili) at Mangulam near Madurai. The inscription was subsequently deciphered by Venkayya in 1906 and Iravatham Mahadevan in 1966.

The Brahmi inscription found at Pugalur is vital for the reconstruction of early historic Tamil country as it gives the names of three Chera rulers which are corroborated by the Sangam literary work *Padirrupathu*. The full credit of deciphering the Tamil Brahmi inscription goes to K.V.Subramanya Iyer, who is hailed as the Father of Tamil Brahmi. Iravatham Mahadevan made a path breaking study of Tamil Brahmi inscriptions. K.Rajan based on the occurrence of Brahmi script from Kodumanal and Keeladi attributed an early date of 6th century BCE for the Tamil Brahmi in south India.

Archaeological Survey of India and Alexander Cunningham

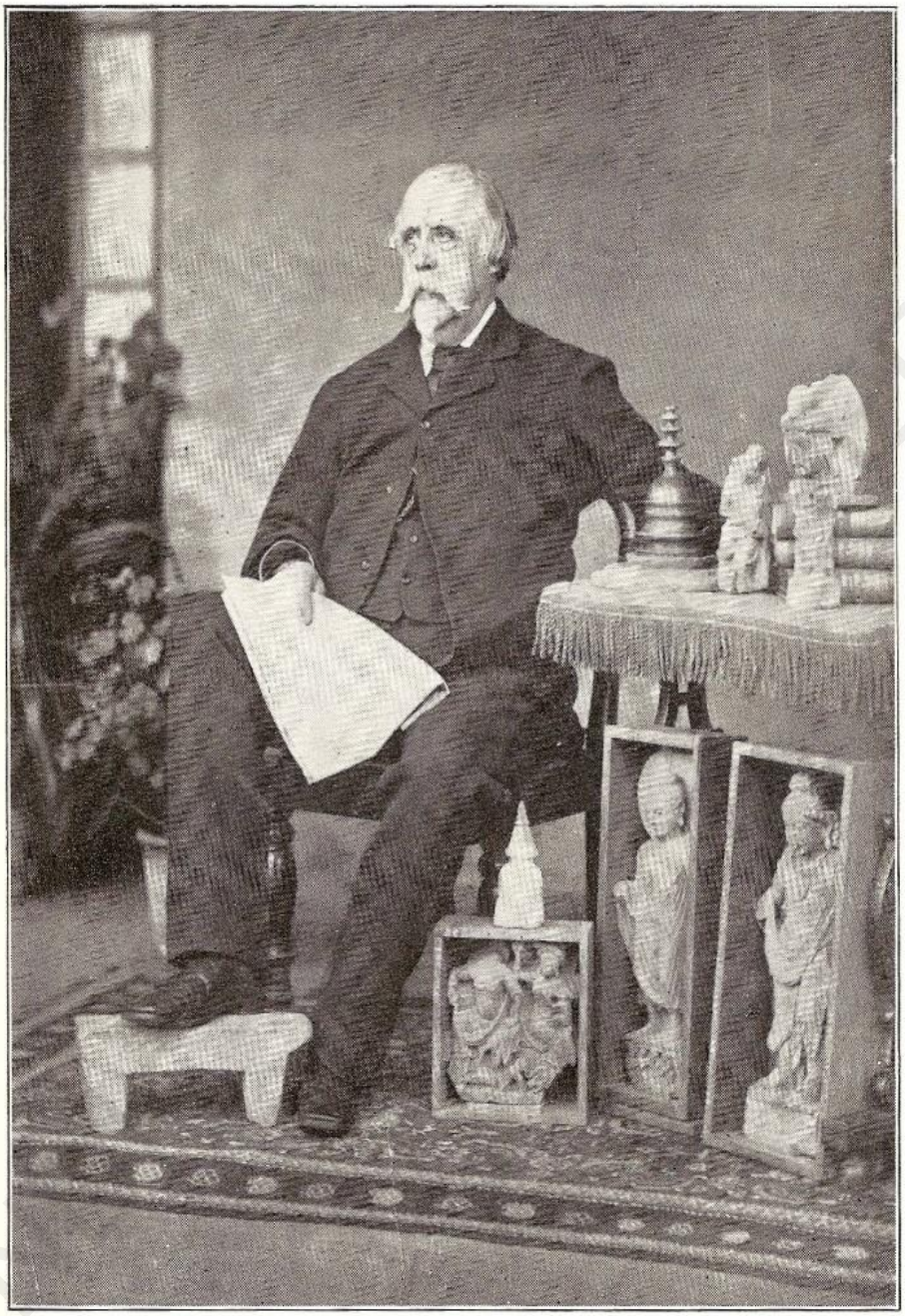
The most important establishment of the British government for the systematic study of the Archaeological wealth of India was the Archaeological Survey of India. The need to have a national institute for the study of Archaeological relics was felt by Alexander Cunningham in the mid-19th century as known from his article on proposed Archaeological Investigations.

Though he made a detailed proposal to the British government, it took a long time to materialise. It was only in the year 1861 that Lord Canning passed a law and approved the creation of the Archaeological Survey of India with Alexander Cunningham as the first Archaeological Surveyor.

Archaeological Survey of India began its history in 1861 with the appointment of Alexander Cunningham as the first Surveyor General of India. At first, Alexander Cunningham sought to identify the holy places mentioned in the accounts of Fahien and Xuan Zang. Based on the information provided in these Chinese works, he was able to trace and locate many Buddhist sites in the northern part of India. He was able to do an extensive survey of sites in Bihar, Bengal and Uttar Pradesh regions.

The activities of the Archaeological Survey of India however were stopped in 1866 by Lord Lawrence. The activities of the Survey were revived in February 1871 by Lord Mayo who understood the importance of "investigating, describing and protecting the ancient monuments of a country". The ASI was restored with Alexander Cunningham reappointed as its Director-General. The government also encouraged "intelligent natives" to become part of the Survey of India.

Alexander Cunningham had two assistants namely J.D. Belgar and A.C. Carlleyle. Alexander Cunningham worked on the publication of The *Corpus Inscriptionum Indicarum*. Cunningham travelled to various parts of India to collect sculptures and also he came across a Harappan Seal. He visited Harappa but could not understand its significance. He retired from the Archaeological Survey of India in 1885 and is considered the Father of Indian Archaeology for his significant contributions. At the end of Cunningham's directorship, the ASI was divided into smaller circles.



MAJOR-GENERAL SIR ALEXANDER C. CUNNINGHAM, K.C.S.I., C.I.E.,
LATE BENGAL ENGINEERS.

Alexander Cunningham

James Burgess

During the tenure of his successor James Burgess, importance was given to Epigraphical studies also. The regional surveys conducted in various provinces of India were compiled. However, the power of the Director-General was curtailed. He also surveyed many sites. He also made a legal directive that debarred the government officials to dispose of the antiquities without the permission of the ASI. During Burgess's tenure *Epigraphia Indica* was started.

Surveyors of West and South

After the tenure of Burgess, ASI was abolished and two superintendents namely Cousens and Rea were appointed for western and southern circles.

New Circles

The British government mulled the idea of closing the Archaeological Survey work in India. However, after due considerations, it was decided to create five circles at

- Bombay and Sindh
- Madras and Coorg
- Punjab, Baluchistan and Ajmer
- NW provinces and Central regions
- Bengal and Assam

There was a shift in the policies of the government too. These circles were given the *responsibility to preserve and conserve the antiquarian remains rather than undertaking explorations and excavations*.

Lord Curzon and Sir John Marshall

The appointment of Lord Curzon as the governor-general saw the revival of ASI. He appointed Sir John Marshall, a young archaeologist as the director-general of ASI with a view to *"to secure that the ancient monuments of the country were*

properly cared for, that they were not utilised for purposes which were inappropriate or unseemly, that the repairs were executed when required and that any restoration which might be attempted were conducted on artistic lines…assist the Regional Surveyors in ascertaining and formulating the special requirements of each province and to advise the Government of India…visit all the circles in succession, succinctly reporting the general results of his tour to the Government of each province…"

Lord Curzon combined smaller circles and placed them under Punjab circle, Bombay circle, Madras circle, and Bengal circle.

The most important contribution of Lord Curzon to Indian Archaeology was the enactment of the Ancient Monuments Preservation Act 1904. This act forms the backbone of legislative measures that are taken in the post-independence period too.

Sir John Marshall on assuming the role of DG of ASI, explored important sites such as Nalanda, Vaisali, Patalipura, Taxila, Harappa, and Mohenjo-Daro. He conducted meticulous excavations at Sanchi stupa and brought out its salient features in the form of publications.

One of the noteworthy excavations of John Marshall was the one he conducted at Harappa from 1921 and Mohenjodaro from 1922. The discovery of the Harappan civilization pushed back the antiquity of India. Many Indian and British scholars discovered and excavated the Harappan cultural sites and brought out the importance of this Bronze Age civilization. He also excavated the site of Taxila and published the excavation report.

He understood the importance of preserving the archaeological remains in a museum. He encouraged the setting up of museums in various parts of India. The archaeological survey of India took up the responsibility of maintaining the archaeological sections of various museums.

John Marshall patronised the publication of journals such as *Epigraphia Indo-Moslemica, New Imperial Series, Annual Reports of the Director-General of Archaeology, Memoirs of Archaeological Survey of India.*

Post-Marshall Period

Marshall was succeeded by Hargreaves, who in turn was succeeded by Daya Ram Sahni, the first Indian Director-General. An amendment made in 1932 to the 1904 Act made it possible to allow foreign institutions to explore and excavate sites in India. This resulted in the excavation of Chanhudarao by a foreign team from the US. Daya Ram Sahni was succeeded by Balkiston. K.N.Dikshit became the DG in 1935. He allowed the universities to conduct excavations that made many universities participate in the excavation of important sites.

The Yale-Cambridge joint expedition by De Terra and Paterson revealed the Stone Age industries of south Asia.

Robert Eric Mortimer Wheeler

In 1944, Robert Eric Mortimer Wheeler became the director-general of Archaeological Survey of India. He was instrumental in bringing the scientific excavation method (also known as Wheeler-Kenyon Method). He created an excavation branch and also a unit for the conservation of sites and monuments.

Excavations conducted at Taxila, Arikamedu, Harappa, and Brahmagiri are known not only for the importance of sites in India's past but also for meticulous excavation and systematic publication.

He conducted training for Indian archaeologists in the field of archaeology at the Taxila School of Archaeology, 1944 was another milestone in the career of Mortimer Wheeler. His important publications include *Archaeology from the Earth, Still Digging*, and *My Archaeological Mission to India and Pakistan* apart from several excavation reports.

Post -Independence Period

After independence, ASI was reorganised with more circles added for easy administration. The University departments equipped themselves for archaeological surveys and excavations.

The Ancient Monuments and Archaeological Sites and Remains Act 1958, and The Ancient Monuments and Archaeological Sites and Remains (Amendment) Bill, 2011 are noteworthy legal frameworks for the preservation of sites and monuments.

Questions

1. Assess the contribution of James Prinsep to Indian epigraphy.

2. Discuss the role of Alexander Cunningham in ASI.

3. Trace the history of ASI.

4. Bring out the significance of the Curzon-Marshall era in Indian Archaeology.

Lesson 4.3: Establishment of Professional Organisations and Institutions

Learning Objectives

- To understand the role of professional organisations
- To study the professional institutions

Introduction

Apart from the governmental organisations, there are many educational institutions and non-governmental professional organisations that also contributed to the development of Archaeology in India. This subunit will give an idea about the institutes of higher learning that offer the subject of archaeology at UG, PG, and doctoral levels.

Educational Institutions

Archaeology Departments were started in the universities of India and they initiated Archaeology programmes and trained many students. They have also undertaken research and brought out publications.

Deccan College Deemed to be University, Pune

Deccan College is one of the oldest colleges in India and a pioneering institute for advanced studies in Archaeology. Established in the year 1821 (as a Hindoo College), the college was renamed in 1851 as "Poona College" and in 1864 it became "Deccan College". The college had a brief closure in 1934 but reopened in 1939. It celebrated the bicentennial year in 2021. The Deccan College became the deemed university. It has its focus on ancient History and Archaeology. Under the tutelage of Prof. Hashmukh Dhirajlal Sankalia, the College was involved in the exploration and discovery of many archaeological sites and their excavations. The College had conducted excavations at many important sites such as Nevasa, Buidhal, Isampur, Balathal, and Kuntasi. It has contributed mainly to the research

on Harappan sites. The material evidence gets analysed in various scientific labs set up in the department such as Archaeozoology, Archaeobotany, Palynology, etc.

The college has a very good collection of books related to Archaeology. It also houses an Archaeological Museum that exhibits materials from many sites across the country.

Department of Ancient History and Archaeology, The University of Madras, Chennai.

In 1959 the department of Ancient History and Archaeology was set up with Dr.T.V.Mahalingam as the head. The department grew to be an important centre for learning in Archaeology in Tamil Nadu. The department conducted excavations at Appukkallu, Alagarai, Tirukampuliyur, Uraiyur, Kanchipuram, Tiruverkadu and Arikamedu in Pondicherry in association with Pennsylvania University. The department conducts PG and research programmes.

Maharaja Sayajirao University, Baroda

Emerging from the Baroda College established in 1881, the Maharaja Sayajirao University of Baroda acquired a place of prominence from its inception in 1949. The department of Archaeology and ancient history was founded in 1950. It offers the UG course in archaeology along with PG and research degree courses.

The department conducted surveys in the western regions of India and brought to light many prehistoric, protohistoric and historical sites. Scientific analysis of data and the study of ancient technologies are also undertaken in the department. The department has a museum to preserve and display the artefacts.

Department of Ancient History, Culture, and Archaeology, University of Allahabad, Prayagraj

The Department of Ancient History, Culture, and Archaeology of the University of Allahabad was set up in the year 1955. The department was given the license to excavate a site from Sir Mortimer Wheeler. Kausambi, an important

early historical site was excavated by the department. The department in subsequent years explored and excavated sites in the Ganga valley and the Vindhya regions. In 2001, the department got the status of "Centre of Advanced Studies".

Tamil University

Tamil University has the Department of Epigraphy and Archaeology, Maritime History and Marine Archaeology departments. The University has excavated sites such as Vallam, Kodumanal, Periyapattinam, and Nagapattinam. These excavations have shed light on the prehistoric and historic phases in the Tamil region.

Department of Ancient Indian History culture and Archaeology, Shantiniketan

A brainchild of Rabindranath Tagore, Shantiniketan is now the central University. The department of Ancient Indian History culture and Archaeology is the outcome of Indological studies. The department offers PG and research degrees. It has a museum that houses the models of human skeletal remains and stone tools.

Institute of Archaeology, Archaeological Survey of India, New Delhi

Under the auspices of the Archaeological Survey India, the Institute of Archaeology was established in 1951. This Institute trains young post graduates in archaeology. This institute was recently renamed as Pandit Deendayal Upadhyay Institute of Archaeology. The institute admits students for two year Post Graduate programme. Now, this institute has been shifted to Greater Noida. Students aspiring for a career in the Archaeological Survey of India join the Diploma course in this institute. The government has planned to start this as a University for Heritage studies.

Birbal Sahni Institute of Palaeobotany, Lucknow.

The Birbal Sahni Institute was set up in the year 1946 at Lucknow, Uttar Pradesh. Under the control of the Department of Science and Technology of the Indian government, the institute provides the necessary support for the study of Palaeo-botanical remains collected from the excavated sites. The tree ring method, the study of palaeoclimatic conditions, and DNA studies of the population in Harappan civilizations are some of the few contributions of BSIP to Archaeology.

Professional Societies

ISPQS- Indian Society for Prehistoric and Quaternary Studies

This premier academic body of Archaeologists and allied disciplines was started in the year 1977. Having more than 500 life members the society was created to create a platform for archaeologists, anthropologists, geologists, and others related to the same subject matter. The three main objectives of ISPQ are

- To conduct periodic seminars and conferences
- To publish articles
- To patronise research activities

Society brings out the bi-annual International Journal called *'Man and Environment'* that publishes research articles on prehistoric and quaternary studies.

Indian Archaeological Society

In 1967 the Indian Archaeological Society was founded by the Department of Ancient Indian History, Culture, and Archaeology, Banaras Hindu University, Varanasi. The IAS was started with the main objective of promoting the discipline of archaeological studies in India. It also conducts seminars annually. Its journal *Puratattva* publishes articles on the various aspects of archaeology.

Tamil Nadu Archaeological Society

Tamil Nadu Archaeological Society was started in Thanjavur. It conducts seminars annually to provide a platform for the archaeologists of Tamil Nadu to present their new findings. It publishes new discoveries especially in the field of epigraphy periodically in the journal called *Aavanam*.

State Archaeology Departments

Apart from the Archaeological Survey of India, which is a central body, there are state departments of archaeology in each state. These departments take necessary care about the monuments in their respective states and also conduct excavations. The site of Keeladi is an important site that was excavated by the ASI and subsequently by the state department of archaeology of Tamil Nadu. These state departments bring the publication of excavated remains periodically.

Archaeology in the 21st Century CE

A lot of developments have happened in the 20th century in Archaeology. Heritage is becoming an important componentin Archaeological study and research. The financial support for site museums and heritage management is increasing in recent years.

Of late, Archaeological Sciences have become important subjects of study in Indian Institutes of Technology also. The Indian Institute of Technology at Gandhinagar offers a course in Archaeological Sciences and conducts explorations in the Gujarat region apart from the scientific studies of artifacts such as pottery and beads.

The Mumbai University also is provided with radiocarbon facility centre with Accelerated Mass Spectrometry. Archaeology forms a part of history courses both at UG and PG levels in many colleges and universities.

With people's participation, archaeology is becoming popular and has more potential to develop into a scientific discipline.

Questions

1. Assess the contribution of university departments in the development of Archaeology
2. Bring out the salient features of
   a. Deccan College, Pune b. M S University, Baroda
3. Discuss the role of professional organisations in the growth of Archaeology.

UNIT V:

Important Archaeological sites in India - Palaeolithic Sites: Bhimbetka, Attirampakkam, Bagor, Patne - Neolithic Sites: Paiyampalli, Nagarjunakonda, Tekkalakota - Proto Historic Sites: Mohenjadaro, Harappa, Lothal, Kalibangan, Dholavira.- Iron Age/Early Historic Sites: Kodumanal, Hallur, Dhulikatta, Pattanam.

Unit 5 Structure

5.1. Palaeolithic sites: Bhimbetka, Attirampakkam, Bagor, Patne.

5.2. Neolithic Sites: Paiyampalli, Nagarjunakonda, Tekkalakota.

5.3. Proto Historic sites: Mohenjadaro, Harappa, Lothal, Kalibangan, Dholavira

5.4. Iron Age/Early Historic sites: Kodumanal, Hallur, Dhulikatta, Pattanam

Lesson 5.1 Palaeolithic sites: Bhimbetka, Attirampakkam, Bagor,Patne

Learning Objectives

After reading this lesson, you should be able to

- Understand the importance of Prehistoric Archaeology
- Know the significance of Bhimbetka as a rock art site
- Assess the importance of Attirampakkam, Bagor, and Patne in the reconstruction of past

Introduction

The period before history is known as prehistoric period in which we do not have any written records. This part of the human past before history is reconstructed mainly on the basis of material evidences left by our human

ancestors that include stone tools, rock art, habitation sites, factory sites, artistic and ritualistic objects. The prehistoric period is divided into two major cultural phases namely

a. Palaeolithic Period
b. Mesolithic Period

Palaeolithic period: The word '*Palaeolith'* is derived from the Greek word *Palaeo* which means old and *lith* which means stone. Also called as the Old Stone Age, this period marked the emergence of human beings as stone tool makers. For the first time, our human ancestors made experiments with stones and made stone tools that are used for hunting, gathering, chopping and scraping activities. This showed that there was a cognitive development in the human evolutionary process that enabled our ancestors to choose the right kind of raw materials, conceptualise the stone tool forms and adopt a technique of making it and master it to make necessary tools that were useful for their survival.

The Palaeolithic period is divided into three phases- Lower Palaeolithic, Middle Palaeolithic and upper Palaeolithic based on evolution and development of stone tool typology and technology. When Robert Bruce Foote discovered the first hand axe in Pallavaram in 1863, it marked the beginning of the study of Palaeolithic culture in India. The stone tool technology is characterised by two methods namely Achuelian culture and the Sohan culture. The Acheulian culture had more hand axes and cleavers while Sohan industry produced more chopper and chopping tools. The human ancestors belonging to Homo erectus lived in caves and rock shelters. A few of them lived in open area also. They were hunting animals and gathering roots and fruits from natural habitat.

The lower Palaeolithic period is found in various parts of India. Important sites are Attirampakkam, Gudiyam in Tamil Nadu, Kurnool caves, Hunsgi valley, Isampur in Karnataka, Bhimbetka in Madhya Pradesh. At Hathnora, near Narmada river, a hominin skull was found identified to be that of Homo erectus, was found. This is the only human fossil found in India. The Middle Palaeolithic period is

characterised by the development in stone tool technology. At Nevasa, located on the banks of river Pravara, a Middle Palaeolithic site was found by H.D.Sankalia. The period saw the use of flake tools a radical departure from Lower Palaeolithic tool kit. The people indulged in hunting and gathering activities. Didwana, Chirki, Nevasa, and Kupi are some important sites. The Upper Palaeolithic period is marked by advanced stone tool technology. A new tool technique of making microliths emerged making it easier for the humans to hunt the animals. Blade tools appeared along with burins, lunates, and geometric tools. The modern humans Homo sapiens sapiens made their presence. They not only used stone tools but also bone tools. They occupied various ecozones.

The Mesolithic Period is the period between the Palaeolithic and Neolithic cultural phases. It is characterised by further advancement of tool technology. The tools became smaller in size and they replaced the heavy-duty tools. The Mesolithic people were able to occupy various landscapes and the sites are found in various parts of India. Important sites include Langhnaj, Baghor I, Meralbhavi, Kurnool, Patne, and Kurnool caves.

A few sites of Palaeolithic period are discussed below:

1. Bhimbetka, Madhya Pradesh

Bhimbetka is located in Raisen district of Madhya Pradesh. It is lying 45 km south of Bhopal and 30 km north of Hoshangabad. The site of Bhimbetka is known for its world-famous rock paintings. More than 700 rock shelters are found here out of which more than 400 have rock paintings. The group of caves is located two kilometres from the village Bhiyanpur. The word Bhimbetka according to the local legend is associated with the sitting place of Bhima, an important character in Mahabharata. It is inscribed as the UNESCO world heritage site.

The Discovery and excavation

The site was noticed first by Vishnu Shridhar Wakankar in 1957, when he noticed the sandstone formations in the train journey. Some of the caves were

excavated by Deccan College, Pune and Vikram University, Ujjain during 1971-77 which brought to light material evidences of the people who inhabited these caves from the prehistoric period till medieval period. A systematic and scientific study was attempted on the rock paintings by Mathpal in 1977. Further excavations were carried out by the Archaeological Survey of India in 1981-82.

Cultural Chronology

The excavations revealed evidence for various cultural phases. They include

- Lower Palaeolithic period
- Middle Palaeolithic period
- Upper Palaeolithic period
- Mesolithic Period
- Chalcolithic Period
- Early Historic Period
- Medieval Period

The Lower Palaeolithic period is characterised by hand axes and other Acheulian tools. The tools are made of sandstone and quartzite. The Middle Palaeolithic period had evidence for flake tools, points and borers. The Upper Palaeolithic period saw the emergence of blade tools. This area also witnessed the painting of rock shelters with themes ranging from hunting and gathering scenes, a variety of wild fauna and human figures involved in various activities.

The Mesolithic period yielded stone assemblages such as blades, burins, lunates, trapezes and other geometric tools. Semi-precious stones such as chert and chalcedony were used for making these microliths. The site also yielded burial of an adult and a child. The painting theme included hunting scenes, dancing, animals and humans.

The Chalcolithic culture is characterised by copper tools along with stone tools. The stone assemblage mainly consists of microliths such as flakes and blade

tools. Painted pottery probably of Malwa Ware type was found in the site. The excavation yielded faunal remains of deer, peacock and boar.

An inscription of Maurya/Sunga period is found here. Painted inscriptions in *Shankhalipi* are also found in the rock shelters. The Paintings include horses and horse riders. Small stupas are also found here. Pottery includes red ware and grey ware. Iron crucibles, iron implements, and beads were noticed from this period.

In the Medieval period, redware is found. Paintings of Ganesha and Nataraja are found in the caves indicating the emergence of Brahmanical deities. Apart from these, hunting scenes with bow and arrow is also depicted.

The various cultural periods indicate that the site of Bhimbetka was in continuous occupation and human beings knowing the potential of the site inhabited the site from the prehistoric period onwards. Even today the hills are inhabited by the tribes such as Gonds and Pradhans.

Paintings and Techniques

Rock art is found in more than 400 rock shelters. The walls and ceilings of caves are painted. No specific areas were selected for the paintings. They are drawn both in closer areas as well as in inaccessible areas of the rock shelter. Natural minerals are used for making the paint. Usually, red and white colours are used. The green colour was probably used in the earlier period. The early paintings show animals and humans in outline and later filled with wavy and lattice patterns. Most of the animal and human depictions are drawn in profile.

Mathpal classified the rock paintings based on the themes such as paintings of humans, animals, scenes depicting hunting, dancing, mythology, natural and cultural themes. He has observed that there are more than 2000 representations of humans (including men, women, and children) and more than 1000 representations of animals that include lion, tiger, deer, boar, horse, elephant, bulls, buffaloes etc. The dancing scenes usually depict a group of dancers performing dance with interlocking hands. They are shown accompanied by musicians. The hunting scene

is another popular theme. At some places super imposition of paintings are noticed in the later period.

Athirampakkam, Tamil Nadu

The site of Athirampakkam is located near Kortallaiyar river, 60 km north west of Chennai. It is an open air Palaeolithic site. The site was originally discovered by Robert Bruce Foote and William King in 1863. Further, the site was explored by T.T.Paterson, V.D.Krishnaswami and K.D. Banerjee.

Excavation

In 1999, Shanti Pappu of Sharma Centre for Heritage Education, Chennai excavated the site to study stratigraphy and cultural assemblage. The systematic and scientific excavation has established the cultural sequence of the site from the Lower Palaeolithic to Middle Palaeolithic periods. The excavation is significant that it yielded a date of 1.7 million years for the Acheulian period. The excavation has yielded various stone tools such as hand axes, blades, flake tools, hammer stones and anvils. During the excavation, seventeen animal footprints were found along with five hoof marks and four faunal teeth. They become significant as they place the Palaeolithic site in India on par with the sites in Africa and Europe. The data from the excavation throw light on the vegetation composition in the Pleistocene period based on pollen analysis and phytolith studies.

The post-Infrared-Stimulated Luminescence (pIR-IRSL) dating method was used to date more than 7000 artifacts and the archaeologists could fix the date for the site and tool technology for more than 2,00,000 years back. The Levallois technology found in Attirampakkam made its appearance around 385000 years ago in the Middle Palaeolithic period.

2. Bagor, Rajasthan

The site of Bagor lies on the banks of the river Kothari and is located 25 km west of Bhilwara in Rajasthan. The site was discovered by V.N.Misra and Leshnik in 1967. The site is on the sand dune formation locally called as Mahasati

in the Mewar plains. It assumed significance as it showed cultural occupation for nearly 5000 years from Mesolithic period to early historical period. The site covers an area of 10,000 square metres.

Excavation

The site was excavated by Deccan College for many seasons from 1967 onwards. In 2001 the site was re-excavated by Deccan College. The excavation yielded evidence for three cultural phases.

Phase I was dated between 5000 BCE to 2800 BCE. It is marked by Mesolithic period. It yielded stone tools. The Mesolithic people were hunters and gatherers. Domestication of animals was also known to them The people lived in simple huts. Dead were buried in east west direction in extended position.

Phase II was dated between 2800 BCE and 600 BCE is marked by the presence of handmade pottery and copper objects. Dead were buried in the habitation area in a flexed position in east west orientation. Grave goods were found in the burials.

Phase III was dated between 600 BCE and 200 CE. Iron tools and wheel made pottery were found. Microliths were found in less number. Along with stones, bricks and tiles were used to build houses. Beads were also found.

The most significant aspect of the site is the burials found associated with Mesolithic culture. Grave goods include pottery with offerings arranged near the head and feet of the body, spindle whorl, copper implements, and beads probably arranged as a necklace.

The site of Bagor yielded evidence for the domestication of animals such as cattle, sheep, goat, black buck, deer, and boar.

The site yielded five radio carbon dates and placed the site between 4480 BCE and 2110 BCE.

3. Patne, Maharashtra

The site of Patne is located 13 km south of Chalisgaon, district Jalgaon in Maharastra. The site was explored and excavated by S.A. Sali who noticed the cultural phase succeeding the Middle Palaeolithic period and preceding the Mesolithic period. This Upper Palaeolithic phase yielded interesting information.

Excavations

The site was excavated by S.A. Sali in 1972-73. It had yielded evidence for Middle Palaeolithic, Upper Palaeolithic and Mesolithic phases. The important cultural period is Upper Palaeolithic in which we have evidence for stone tools such as scrapers, blades and burins. They are made of chert and chalcedony.

The site is known for the discovery of artistic decoration on ostrich shells. This marked the early evidence for the ornaments used in the Upper Palaeolithic period. Cross etchings are found on the egg shell which provided evidence for artistic activities of our ancestors..

The ostrich eggshell was dated to 25000 years BP. The site was carbon dated and it was placed between 36000 years BP and 10000 years BP.

Questions

1. Bring out the salient features of Palaeolithic Culture
2. Highlight the importance of rock art in Bhimbetka
3. Assess the significance of Attirampakkam
4. Discuss the site of Bagor and its importance.
5. Describe the importance of the site of Patne

Lesson 5.2: Neolithic Sites: Paiyampalli, Nagarjunakonda, Tekkalakota.

Learning Objectives

After reading this lesson, you should be able to

- Understand the importance of Neolithic culture in human history
- Know the significance of Paiyampalli in Tamil Nadu Neolithic
- Assess the contribution of Nagarjunakonda and Tekkalakotta to Neolithic culture in Andhra and Karnataka regions respectively

Introduction

In the evolution of humans, the Neolithic period is considered as one of the most important stage of cultural advancement. The human ancestors shifted from the food-gathering stage to the food production stage. Along with this, other forms of settled life started emerging such as residential structures in the form of thatched mud houses, settlements, pottery, arts and craft production, trade practices etc.

Neolithic Culture

The Neolithic culture also known as New Stone Age. It is marked by technological advancement in stone tools production. The crude hand axes were replaced by polished and ground axes that were used for agricultural activities. The hunters and food gatherers became food producers during this period. Agriculture and domestication of animals have emerged. The people started living in the settlements and made pottery for storage, cooking and eating. All these developments were considered as revolutionary. The Neolithic sites are found in almost all parts of India with regional variations. The earliest Neolithic site of Lehuradeva yielded evidence for rice which is dated to 8000 years.

The following are the important Neolithic Sites: Paiyampalli, Nagarjunakonda and Tekkalakota.

Paiyampalli

It is located in the Northern part of Tamil Nadu. It lies on Bangalore-Chennai road and is located five km east of Barugur in modern-day Vellore district (erstwhile North Arcot district). This Neolithic site is at the foothills of Talatappamalai.

Excavation

The site was excavated by the Archaeological Survey of India in 1964-65 and 1967-68. The excavation yielded two cultural periods. The first Period is dated to the Neolithic phase and the second one to the megalithic phase. The Neolithic period has carbon dates ranging from 1725 ±110 B.C and 1390±100 BCE; while the megalithic period has a date of 315±100 BCE.

The Neolithic period is marked by the presence of grey ware pottery, polished Celts and simple house settlements. The Neolithic people practiced agriculture and produced horse gram and green gram as known from the charred remains collected from the excavations.

It is also noticed that the site of Paiyampalli yielded evidence for pit dwellings comparable to the ones found at Burzahom in Kashmir and Nagarjunakonda in Andhra. The pits are cut into natural soils and at times the dwellings are divided into two parts marked by a row of stones. The post holes found in the excavation probably indicate the presence of a thatched roof.

The evidence for the overlapping of the Neolithic and Iron Age is also found here. The Neolithic period coexisted in the later period with the Iron Age population and later the Iron Age culture became dominant.

Nagarjunakonda

The site of Nagarjunakonda, or the Nagarjuna hill is located in Guntur district, Andhra Pradesh. It is situated 160 km southeast of Hyderabad in the flood plains of the Krishna River.

Excavation

The site for a long time was in oblivion, and came to limelight due to the work conducted by Longhurst in the early 20th century. As the main centre under the Ikshvakus it flourished as an important Buddhist centre. The excavation conducted by Longhurst between 1927 to 1931 yielded a wharf that could have been used as a bathing front as known from inscriptional evidence. The Buddhist site with a stupa flourished under the patronage of Ikshvaku queens and princesses.

The site is associated with the Buddhist monk Nagarjuna who is said to have lived on a hill located nearby called Sri Parvata.

The Maha stupa excavated by Longhurst yielded the evidence of Buddhist relic placed in the corner of the Maha stupa. The teeth fragment is believed to be that of Lord Buddha himself. The relic casket made in simple pot is currently kept in a Stupa at Bodhgaya. The remains of the stupa include *pradakshina patha*, and *ayaka* platforms. The marble friezes portray the various stories from Jataka tales.

However, it is interesting to note that the site had yielded evidence for human culture from the Lower Palaeolithic period onwards. K.V. Soundarajan explored the region and discovered the prehistoric sites in the Krishna valley. The exploration and excavation yielded various stone tools such as stone celts, dzes, chisels, and hammers made in basalt. The site assumed significance as the salvage archaeological work was conducted here. Due to the construction of the Nagarjuna Sagar dam, the site had the risk of submergence. The first site to conduct salvage archaeological excavations, Nagarjunakonda housed the remains collected from the excavations in a site museum. The excavation has yielded evidence for the site occupation from the Paleolithic period.

The Neolitic site was excavated by K.V. Soundararajan from1954 to 1960. The excavation though limited to a smaller area yielded handmade coarse grey ware and redware. A few decorated potteries were also found. Pit dwellings like structures were noticed at the site. The animal bones of buffalo and deer were found. The microliths are also noticed in the excavation.

Tekkalakota

The site lies on the banks of the river Tungabhadra in Bellary district, Andhra Pradesh. It is located 75 km from Bellary. A prominent hill called as Hudeda Gudda located in the south eastern part of Tekkalakotta was a home to the Neolithic population.

Excavation

M.S. Nagaraja Rao excavated the site in 1964 and brought to light two important cultural phases in the Neolithic period. Nearly 19 localities have yielded evidence for the Stone Age settlements. The first phase yielded evidence for polished celts, and pottery. In the second phase black and red ware was found along with the stone celts, copper objects and beads. The burials are found associated with this cultural phase.

In both the phases we have evidence for agriculture and domestication of animals, wheel made pottery. They also had artistic traits known from the beautiful designs such as peacock, snake and bull on the pottery. The hills of Tekkalakota were also decorated with cave paintings. The chalcolithic period paintings depict the themes of bull and humans.

The Neolithic population had a belief in life after death as gleaned from the burials. The burials are provided with grave goods to be used by the departed souls in the after -life.

The Neolithic people lived in huts supported by post holes. Even in modern day the present day indigenous population known as Boyas built huts by planting post holes. By observing the contemporary practices, the archaeologists could understand the material remains left by the early people. The cultural continuity from ancient period till the present can be seen here.

The site was carbon dated and a date ranging from 1700 BCE to 1000 BCE is assigned to this site.

Questions

1. Bring out the salient features of Neolithic culture of South India
2. Assess the importance of Paiyyampalli
3. Describe the site of Nagarjunakonda
4. Discuss the significance of Tekkalakota.

Lesson 5.3: Proto Historic sites: Mohenjodaro, Harappa, Lothal, Kalibangan, Dholavira

Learning Objectives

After reading this lesson, you should be able to

- Understand the importance of Harappan civilization
- Know the significance of Mohenjodaro and Harappa
- Assess the contribution of Lothal, Kalibangan and Dholavira to Harappan cultures.

Introduction

The period between prehistory and history is called Proto Historic period. Prehistory is characterised by the Stone Age cultures when humans hunted and gathered food. The evidence for this period is found in material remains that are studied by the archaeologists to reconstruct the past human behaviour. History is characterised by the emergence of writing. The material remains as well historical records are available to study the historical past.

Proto History is a period where we have written evidence but the writing is not yet deciphered satisfactorily. Though scholars attribute Dravidian, Sanskrit origins for the script, till today there is no scholarly consensus on this. The Harappan civilization and its contemporary cultures till the advent of script are placed in Proto historic period.

Harappan period

The Harappan culture is characterised by massive urban planning. The Harappan cities are laid on a grid pattern. The city is usually divided into citadel and a lower town. The citadel had lofty buildings, while the lower town had houses of common people. The people had used both mud bricks and burnt bricks to build the structures. The cities are provided with well-planned drainage system with public and private wells. The roads cut at right angles and are in grid system. An

efficient sewage system is found in almost all the Harappan sites. The use of copper as well as stone objects placed this culture in chalcolithic period. The seals and sealings are found in large numbers. They are made of steatite, faience, terracotta etc. The pottery is well decorated and black paintings on red ware are found.

The culture is divided into three phases namely

1. Early Harappan Phase
2. Mature Harappan Phase
3. The Late Harappan phase

Early Harappan Phase

The early Harappan phase is dated from 3200 BCE to 2600 BCE. It is characterised by the cultures at Amri-Nal, KotDiji, Damb Sadaat (in present day Pakistan) and Sothi-Siswal (Rajasthan, India). It saw the beginning of village settlements, uniform planning, trade links with neighbouring areas, and defence constructions.

Mature Harappan Phase

This urban phase is dated between 2600 BCE and 1900 BCE, which witnessed phenomenal growth in terms of the rise of cities, town planning, uniform measures and weights, foreign and internal trade, painted pottery. seals, arts and crafts.

The Late Harappan phase

It is dated from 1900 BCE to 1000 BCE. This period saw the degeneration as well as modification of flourishing Harappan culture and assimilation with regional cultures.

In this section, you will study important sites of Harappan culture in the Indian subcontinent.

Mohenjodaro

The renowned site of Mohenjodaro derives its name from a Sindhi word meaning the 'mound of the dead'. The site is located in modern day Larkana in Sindh district, Pakistan.

Exploration and Excavation

While the type site Harappa was discovered and studied from 19th century CE, Mohenjodaro was discovered by D.R. Bhandarkar in 1912. He however claimed that the site was not very significant though he mentioned that the site is spread over a vast area. The conspicuous nature of the site was the Buddhist remains including a stupa.

The disproportionately preserved site was first excavated by R.D. Banerjee in 1921-22. In subsequent years the site saw the excavation by many archaeologists. The excavations conducted here revealed many important features about town planning, art and craft production, trade networks and water management systems.

The excavations have revealed the presence of two sections of settlement, one built over an artificial mound known as the citadel, and the other which lies to its south known as the lower town. The citadel is protected by fortification walls and towers made out of baked bricks. The lower town is divided into several blocks that resemble a chess board, consisting of houses of different sizes. Each house had a bathroom that connects with the main drain of the street. The lower town is also surrounded by walls.

The citadel houses the Great Bath which measures 11.88 x 6.01 x 2.43 meters. The tank is rectangular in shape bordered by corridors on all four sides. Bathrooms were built on the south eastern side of the great Bath. This would have been built for the upper class people or for ritual purposes. The tank is surrounded by rooms to keep it warm during the winters. The base of the rooms would produce

hot air which makes the wall of the tank warm. This technique is known as the hypocaust system.

A granary is present to the west of the great bath. Intersecting channels made of timber were found below the granary for ventilation purposes. A lodging platform is also located near the granary for unloading the goods.

Mohenjodaro is known for its exceptional standards in town development, water supply networks, drainage system which are better than the modern day facilities. The streets run wide, connected by lanes that cut at 90 degrees. Buildings stood by the street, some of which were for residential while some were for commercial purposes. Houses in the citadel were built on a mud platform that would serve the purpose of protecting it from flood. It is presumed that only the rich could afford such houses as building the platform could have been an expensive affair. Houses were equipped with wells and bathrooms. Some of them even had toilets connected to a centralised drain. On an average each house had three to four rooms circumscribing a courtyard. It is estimated that the site had 700 wells. Both private wells and public wells made of burnt bricks are found in the site.

Some houses had staircases meaning that they could have been double storeyed houses. The courtyard also had an oven for making bread. A building identified as the priest college was found in the main city. It has rows of rooms in it.

The famous idol of the dancing girl was found here. She is made of bronze using the lost wax technique. The nude dancing girl is adorned with bangles covering three fourth of her left hand. Her hair is intricately braided. She stands with one of her hands positioned on her waist. She measures less than 15 cm in size.

Another notable finding from Mohenjodaro was the sculpture of the priest-king. This measures 18 cm in height. Only the face with the torso is shown. He is shown with a trimmed beard and a shaven upper lip. He had a headband on his

forehead. He wears an upper garment decorated with a trefoil pattern. He is shown with half-closed eyes as if in meditation.

Harappa

The most important site of Indus Valley civilization is Harappa. Though noticed in 19th century, it was brought to light by an Indian archaeologist Daya Ram Sahni. It was the first site to be discovered of this civilization; hence the entire civilization is named after this first type site. Indus Valley Civilization and Harappan Civilization are used as synonymous.

Location

The site is located 24 km west of Sahiwal town in the Punjab province in Pakistan. The river Ravi runs eight km away from the site. The river could have flown closer to the site in the ancient period.

Excavation

The site of Harappa was excavated for more than 25 seasons starting from Dayaram Sahni till the later time by a joint of American scholars and Pakistan department of Archaeology and Museums notable being Gregory Possehl, Richard Meadow and Mark Kenoyer.

The site was first noticed by Charles Mason, a British army deserter. He noticed the ruins of the site and identified it with the capital of Porus, who was defeated by Alexander the Great. The site received further attention when Alexander Cunningham, the first Director General of ASI visited the site thrice. Interestingly though he found an Indus seal with a bull symbol on it, he considered it as foreign.

The real nature of the site was brought to the notice when Dayaram Sahni excavated the site from 1920s onwards. He noticed the bricks from the site have been robbed by local people. M.S.Vats excavations from 1927 onwards yielded evidence about granary, workmen quarters, and cemetery H.

In 1946 Mortimer Wheeler excavated the cemetery H as well as Cemetery R 37. He found a link between these two cemetery cultures. He also proposed the site was destroyed by the Indo-Aryans.

In post 1980s the American University scholars along with the department of Archaeology and Museums of Pakistan government jointly started the project called HARP (Harappa Archaeological Research Project) that aimed to excavate, document as well as to preserve the site of Harappa.

Chronology

The site of Harappa with a deposit of 13 metre had five distinct cultural periods namely

Chronology (in Circa)	**Cultural Phases**
3300- 2800 BCE	Ravi Aspect of the Hakra
2800-2600 BCE	KotDijian (Early Harappan)
1600-1900 BCE	Harappan
1900-1800 BCE	Transitional
1800- 1300 BCE	Late Harappan

(After whc.unesco.org)

Important Features

The site of Harappa unlike the site of Mohenjadaro is not well preserved. The bricks were robbed by the people and the natural causes created further problem to the site. The site is not as impressive as Mohenjadaro.

The site covering an area of 150 hectares is divided into a fortified citadel and a workmen's quarters. The citadel is in the shape of a parallelogram measuring 415m N-S to 195m E-W. The citadel is enclosed by mud brick fortification wall. On the northern part of the citadel is a group of structures identified as workmen quarters based on the evidence of craft production in various stages. The quarters also yielded a wooden mortar to pound the grains. The building around the area is

considered as granary though no archaeological evidence points to the existence of grains. The granary building housed six blocks in two rows.

The site's excavations in mid 1950s yielded evidence for a cemetery at Harappa called as R.37 and Cemetrey H. The burials are both fractional as well full. The black on red pottery was found prominently as grave pottery.

Lothal

An important site in the region of Gujarat, Lothal is located 80 kilometres south west of Ahmedabad between the rivers Sabarmati and its tributary Bhogavo in Saragwala, Ahmedabad district. Due to its location near the rivers, the site was exposed to frequent floods. However, the strategic location made the site a sought after port.

Excavation

The site was excavated by S R Rao from 1955 to 1961. It yielded evidence for five cultural phases: the first four phases are Harappan while the last phase was late Harappan

Important Features

Streets cutting at right angles, covered drains, workshops of copper smiths, among the others can be found here. Many industries such as shell bangle makers, bead makers, semi-precious stones, and coppersmiths existed. The workers lived in the main street of the lower town. This is known as platforms for working, furnaces, copper objects, an anvil can be found. The merchants also lived in the lower town. Due to the existence of craft industries, the trade flourished. The excavation unearthed stone weights, seals, beads, gold ornaments, etc.

Burnt bricks can be found which were used in constructing manholes, warehouses, covered drains, and the famous dockyard. The houses were made of mud. There is evidence of frequent floods and reconstructions. Floods would have destroyed the city around 1900BCE.

Lothal Dockyard

The township was divided into blocks. The market occupied the central area, the fort covered the majority of the town which had a granary, dockyard and a

warehouse. Presumably the central part of the fort belonged to the ruler. Houses were built on raised platforms with drains running under. The streets were wide. Most of them had six rooms, a courtyard and verandah.

The significant part of Lothal is a structure identified as dockyard covered by burnt bricks. It is provided with a sluice gate and spill channel to regulate water. A platform found on the western side of the dockyard is identified as wharf where the loading and unloading of goods would have taken place.

The site of Lothal had evidence of micaceous red ware and the black-and-red ware. They are decorated with paintings. The reserved slip ware in Lothal indicates similarity with the same type found in Mohenjadaro.

Kalibangan

The site of Kalibangan is situated on the banks of the dried Ghaggar river in Hanumangarh district Rajasthan. The site with three mounds is significant as it is the major Harappan city that was excavated after independence in India that yielded evidence for grid pattern of a metropolis similar to that of Harappa and Mohenjodaro. The site got its name Kalibangan after the 'black bangles' that are found in large numbers in the site.

Excavation

The site was first noticed by James Tod who described this as '*Kalibeng'* in early 19th century. A.Ghosh of ASI surveyed the site.

The site was excavated by B.B.Lal from 1960 to 1970 for nine seasons. He was assisted by B.K. Thapar, M.D.Khare and K.M.Srivastava. The excavation revealed the typical town planning with a citadel on an elevated area and the lower town. The citadel extends 120m in EW and 240 m in NS directions making it a parallelogram. A wall divides the citadel into two parts. It is surrounded by fortified walls made of mud bricks. The walls were made in two phases. Heavy fortification can be seen on the southern side of the citadel. Within the citadel are found six raised platforms that can be reached through a flight of steps. It is

believed that the one that survives probably is the fire altars with the remains of cattle bones. A row of seven rectangular fire altars is found here which were identified as fire altars.

A burial area was found near the fire altar that yielded grave goods including pottery and a bronze mirror. Circular pit burials along with extended burials are noticed here. The burials are in different shapes such as oval, rectangular and circular. In the skull of a child, trepanning is found in the form of six holes.

The lower town consists of streets, houses along the streets made of bricks. Fire altars are found in the houses. The drainage made of burnt bricks was noticed in the citadel while in the lower town, the sewage water was collected in large jars kept under the ground in front of the houses. The bricks were built in header and stretcher method usually called English Bond.

The pottery is well decorated with different themes such as triangles, animals and criss-cross designs. The pottery types include bowls, jars, lids, and vases.

An important discovery of the site was the ploughed field with plough markings. The sewage water is collected in soakage jars found buried in the streets.

The site of Kalibangan yielded many artifacts namely terracotta bangles, shell bangles, steatite bangles, and bangles made of other materials indicating that the site was a prominent bangle manufacturing centre during the Harappan period. A copper mirror, ivory comb, and stone phallus along with an engraved horned image in terracotta are other important finds from this site.

The site was radio carbon dated that gave a time range of 2400 to 2200 BCE for pre-Harappan phase and 2200-1700 BCE for Harappan phase.

Dholavira

Dholavira is one of the most important urban cities in the Harappan civilization. It is located in Khadhirbet, Kutch district, Gujarat.

Excavation

The site was discovered by J.P.Joshi and excavated by R.S. Bisht. Various strata of settlements are found atop the previous settlements indicating that the city was reconstructed for about 1000 years. The different layers of the settlement are called the cultural stages. Seven cultural stages have been documented which explain the birth and the end of the urban city.

The city was well planned with an excellent water management system and marvellous architecture. The city is a parallelogram in shape and divided into three parts, the citadel, middle town and the lower town. The infrastructure unearthed was impressive as it had drains to wash away storm water, about 16 reservoirs. There are also two stadiums. The citadel has two parts.

Dholavira

The whole city is fortified and was renovated after earthquakes. The fortification made of mud bricks has two sections, the castle and the bailey. The castle has thick walls, gates, and towers to protect itself from external forces compared to the bailey which has only thin walls. The castle had four gates. The eastern and the northern gates were enormous and decorated. They also had elevated rooms on the side and the front of the gateway. The northern gateway yielded a wooden signboard with ten Indus letters on it. The pillars have a good

finish showcasing the craftsmanship of the Harappans. The pillars in the northern gateways are polished and in the shape of two-headed drums.

Many houses were not found on the site but an exposed house had a courtyard, kitchen, bathroom, and four other rooms. Small drinking water wells were available. Dholavira has the biggest well which could be used by more than two people. Water was lifted in leather bags with the help of a rope using a pulley.

Dholavira is located between two rivers, Manhar and Mansar. Both were seasonal rivers that ran into the greater Kutch. Dams were built as the groundwater was low in this area. Harappans initially lived by the river Manhar, but as the population grew, they started to harvest water from the river Mansar.

The site with its unique settlement system as well as the water management plans is recognized in 2021 as the world heritage site by UNESCO.

Questions

1. Discuss the salient features of Harappan culture
2. Assess the importance of Mohenjodaro and Harappa
3. Bring out the significant aspects of town planning in Harappan cities
4. Water management in Dholavira is ingenious". Justify!
5. Describe the Harappan sites in Gujarat.

Lesson 5.4: Iron Age/Early Historic sites: Kodumanal, Hallur, Dhulikatta, Pattanam

Learning Objectives

After reading this lesson, you should be able to

- Understand the importance of Early Historic Archaeology
- Know the significance of Kodumanal and Pattanam
- Assess the importance of Hallur and Dhulikatta in the reconstruction of past

Introduction

The early historic period marked the beginning of urbanization in India. It is characterized by the advent of the script, internal and external trade practices, small kingdoms, the rise of social stratification, industrial clusters, the development of towns and port cities, etc. In northern India, the early historic period is characterized by the rule of Mahajanapadas, the Pre-Mauryan period as well as the Mauryan rule. The use of iron further accelerated the development processes.

In southern India, the early historic period encompasses urban development, the spread of Buddhism and Jainism, use of iron, literacy, trade networks, and political and social divisions. In this unit, we will study four important sites from four southern states.

Kodumanal

Known as Kodumanam in Sangam Tamil literature, the site of Kodumanal is located 20 km southwest of Chennimalai in Perundurai Taluk, Erode district. It lies on the banks of the river Noyyal, a tributary of River Kaveri.

Excavation

The site was discovered by Srinivasa Desikan in 1961 and was subsequently excavated by R. Nagasamy. The excavation by Tamil University, Thanjavur, along with the State Department of Archaeology and the University of Madras revealed many interesting finds.

The archaeological site of Kodumanal lies one km east of the town. It consists of both habitation and burial sites. Covering an area of 20 acres of land, the habitation site is called as Nathakkadu, and Sambalakkadu by local people. The megalithic burials are found in the northern and eastern parts of the habitation and it is spread over 50 acres.

Chronologically two cultural phases are found

1. Megalithic period from 300 BCE to 100 CE

2. Early Historic Period from 100 CE to 300 CE

In the megalithic period, more than 150 burials are found in the site. The main type is cist burial covered by stone or cairn circles. A few cists are seen with menhirs too. Some of the stones are taken away by the local people and used for domestic purposes. The cists contain one or more than one burial. The bigger cist measures 2.4x1.6x2.2 metres. The main burial faces the eastern direction. The cists are provided with a passage and the portholes are found too. The transepted cists have two rooms with port holes and a passage connecting both the cists. The real nature for port holes is not known and probably they were made for making burial offering periodically.

The grave goods include iron implements such as sword, shield, arrow head, and stirrups. In one of the burials above the sword a human skeleton is found. Apart from this, gold and silver objects are kept the skeletal remains. Copper bowl and a bead are also found. An image of tiger in carnelian along with floral pot with petals is a noteworthy find from the burial area. A large number of carnelian beads are found here. The burial pottery includes black ware, red ware

and black and red ware. A ring stand holds a pot with a handle. Hundreds of pots are kept around the burials.

From the burial type and the grave goods it is clear that the burials are not made for all the people in the society and they are meant for socially or politically important people. It is observed that carnelian beads are absent in those burials that yielded copper objects and vice versa. The graffiti marks and the Tamil Brahmi script are noticed on the pottery.

In the historical period, there was a gradual decline of the use of graffiti and Tamil Brahmi scripts on the pottery along with the decline in bead manufacturing industry and iron metallurgy. They stored the grains in huge pots under the ground (silo).

The people lived in houses built in NS direction. Evidence for post holes is noticed. A large number of iron nails found here indicate they are used for keeping the doors closed. The main occupations were bead making and iron metallurgy, though agriculture also was practised. They had maintained trade relations with faraway lands including Rome, as attested by the occurrence of Roman pottery at the later levels. Apart from this, Russet Coated painted Ware and black and red ware was used.

The most important aspect of Kodumanal is the evidence for bead manufacturing. The availability of beryl from Padiyur, Sapphire from Sivanmalai, Quartz from Vengamedu, and Arasampalayam all located in and around Kodumanal made it as a significant bead manufacturing centre. Apart from these locally available stones, carnelian from Gujarat and lapis lazuli from Afghanistan are brought here. Beads in varying degrees of production are found.

Another significant aspect is the presence of graffiti marks and Tamil Brahmi scripts found in pottery. The graffiti marks are identified as potter's mark, owner's mark, clan's mark, and tribal mark. The Tamil script reads Visaki, KananAadan, KuviranAadan. The occurrence of Tamil Brahmi script in pottery points out to a literate society.

Hallur

Hallur lies on the left bank of the river Tungabhadra in Hirekerur Taluk of Dharwar district. It is situated 11 km south of Honnali. The town of Hallur is identified as Vijayapura or Vijayasamudra of Hoysala period. The Hoysala king Ballala II made this town as his war capital.

Excavation

The real significance of the site lies in its prehistoric past. The Stone Age vestiges were noticed and explored by M.S. Nagaraja Rao, who excavated the site in 1965. The excavation yielded the following cultural periods.

Period I is assigned to the Neolithic period. In the earlier phase, polished and ground axes were rare and the pottery is mainly burnished grey ware. This early Neolithic phase also did not reveal any microlithic tools. The later phase had distinct pottery types such as black and brown ware, black on red ware, similar to Jorwe Ware, and coarse dull red ware. The pale grey ware was absent in this phase. This period witnessed many stone tools, including microliths such as blades and lunates. The polished stone tools are made of dolerite while the microliths are made from black quartzite. In this phase copper objects such as fish hooks, and axes are found. Structural remains and urn burials are noticed in the site. The urns are placed mouth to mouth. It contained the bones of children. This phase can be called as Neolithic- Chalcolithic phase.

Period II is characterised by the transition from Neolithic/ Chalcolithic to Iron age period. A new pottery assemblage with black and red ware, white painted black ware, red slipped ware made its appearance. Iron tools include arrowheads and spearheads. The megalithic burials associated with Iron Age period such as dolmenoid cists, cairn circles are noticed here.

Apart from the beads, molluscan shells from fresh water are used for making pendants. The animal remains of cattle, sheep, horse and dogs.

The chronology of the cultural period proposed by the excavator is as follows

Period 1:	Phase 1	1800-1500 BCE
	Phase 2	1500-1100 BCE
Period II:	1100-800 BCE	

The radio carbon dates from the site gave an earliest date of 1710± 105 BCE and for the Iron Age it is 1105± 105 BCE. The dates for the Iron Age is significant as it yielded one of the earliest dates.

Dhulikatta

The site of Dhulikatta, an early historic site is located ten kilometre west of Peddabankur. It lies on the bank of river Hussaini Vagu. The name of the village is considered as a corrupt form of Dhulikota, literally meaning mud fort.

Excavation

The Department of Archaeology and Museums of the government of Andhra Pradesh excavated the site of Dhulikatta from 1975.

The excavation yielded evidence of mud fortification and brick wall structure. The bricks measure 53x30x10cm. Two rectangular halls found in the excavation are identified as guardrooms. The flooring of the guardrooms is made of bricks. The rampart with an elevation of five meters was found here. Indication for the existence of moat around the rampart was known. Traces of a brick fort wall are seen.

In the middle of the mud fort, excavation was conducted that revealed a palace complex with many construction phases. In the older level, a Buddhist stupa was found with a height of 2.60m. The structure underwent many changes in the subsequent periods.

The palace complex had many chambered rooms. A square well is also noticed with a platform nearby with two post holes. Two granaries are found made

of brick. Interestingly from the granary, coins of Satavahanas, gold beads, pottery, and animal bones are found. The granaries are in an inverted pyramidal shape. An ivory seal with a Brahmi script is found in the site. It reads '*ajanisiriyagame*'.

The later phase of construction showed the use of lime. The lime plastered walls are noticed. For elevated parts of the city, flights of steps are provided and a *chandrasila* stone is placed at the entrance of the temple.

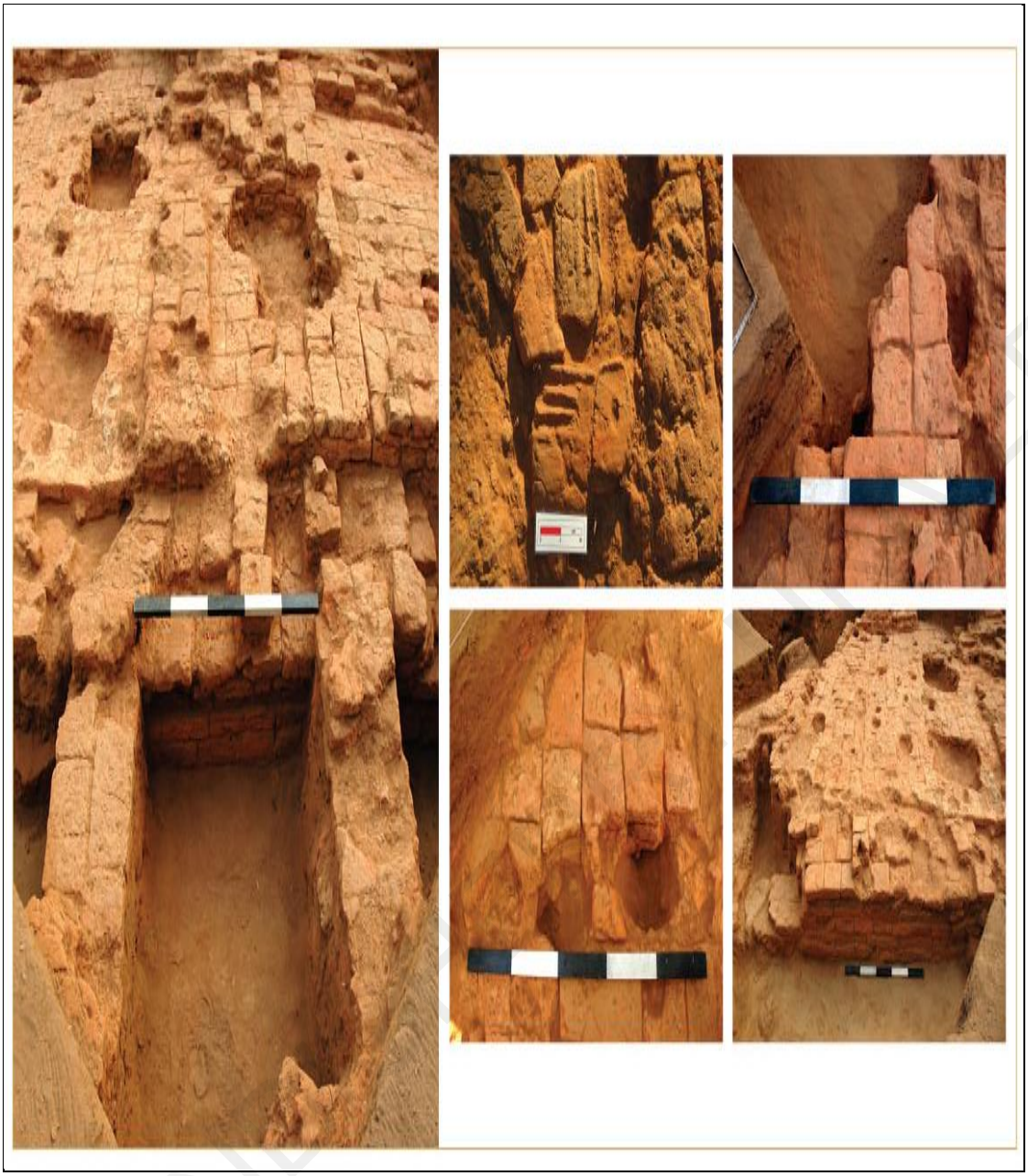
The prominence of the site ended in the medieval period and the city lost its glory. In the later period, the site became the workmen's quarters.

Pattanam

The site of Pattanam, believed to be a part of the most important port town of early historic period Muziris on the west coast, is located 25km north of Ernakulam. It is in Paravur Taluk and lies near the ParavurThodu, a tributary of river Periyar. Towards the west of the site is Arabian Sea and the Munambam Kayal or backwaters.

Excavation

The site of Pattanam was explored by K.P.Shajan in the early 21st century. Subsequent surveys revealed the potential of the site. It was excavated for many seasons by the Kerala Council of Historical Research, Tiruvananthapuram. The excavations conducted in collaboration with foreign universities were multi-disciplinary in nature.



Excavated Structures at Pattanam

The site assumed significance as it is identified as *Muziris* mentioned in Sangam literature as well as the foreign literary works. The Sangam literature talks about the port city of *Muziris* where the *Yavana* ships load and unload goods. *The Periplus of Erythrean Sea*, written by an anonymous author refers to *Muziris* as a prime emporium.

The site's excavation provided information about five main cultural phases.

- Iron Age (c. 1000 BCE – 500 BCE)
- Iron Age-Early Historic transition (c. 500 BCE – 300 BCE)
- Early Historic (c. 300 BCE – 500 CE)
- Medieval (c. 500 CE – 1500 CE) and
- Modern (c. 1500 CE onwards)

The carbon dating with AMS gives a date of 1000 BCE for the Iron age phase. The main historical period can be placed between the 1st century BCE and the 3rd century CE.

The seasons of excavations revealed many structures and artifacts. The most interesting find is the wooden canoe made of a single log of wood in waterlogged condition. Along with it the wharf and a warehouse were also found. The wharf is a high-raised platform made of lime, laterite, and bricks. The waterlogged area had yielded evidence for palaeo-botanical remains too that include coconut shells, black pepper, bamboo, areca nuts etc. Chera coins were also in the excavations. The cameos made of semi-precious stones along with beads and brick structures are also found.

The excavation produced a large number of terracotta objects such as spindle whorls, discs, hopscotches etc. The site of Pattanam has yielded pottery of both local and foreign varieties. Apart from red ware, black and red ware, Indian rouletted ware, Roman pottery such as amphorae, Arretine ware and west Asian torpedo jars are also found in the excavation.

Questions

1. Assess the role of Kodumanal in the Iron Age/Early Historic cultural phase of Tamil Nadu
2. Bring out the salient features of the site of Dhulikatta
3. Describe the importance of Pattanam in the in early historic maritime trade.
4. "Hallur played an important role in the Iron Age of Karnataka". Discuss!

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