1

INTRODUCTION AND METHODS OF ARCHAEOLOGY

Unit Structure

1.0 OBJECTIVES

After going through this unit, the students will be able:

- To understand the Introduction and methods of Archaeology
- To know the actual meaning of Archaeology
- To learn about the important sites of Archaeology

1.1 INTRODUCTION

The study of archaeology in history is much important in the world to understand and to tress the origin of the cultural backgrounds through the archaeological sites in a particular country. It is learned about the early Indian sites through the archeological excavation the early Indian cultural sites are made available for the study of ancient India.

Therefore, for the scientific study of the early history in India the study of archaeology and its tool are much important to study the early sites.

1.2 MEANING OF ARCHAEOLOGY

The Concise Oxford Dictionary (7th end, 1985), for example, states that archaeology is the. study of human antiquities, especially of the prehistoric period and usually by excavation. It is a good traditional view of the subject! Webster's International Dictionary (3rd end, 1986) Archaeologists are therefore dealing with the remains of past peoples, societies and cultures.

Aim- Remains have a tendency to be lost, buried and forgotten, so Archaeology has developed a range of methods to recover partial remains. It has borrowed and adapted techniques, methods and theories from other disciplines but made them very much its own. In addition, it has developed its own methods of studying palimpsests in the landscape and its own unique methods of excavation. Archaeological excavation has its own theoretical basis, often passed by word of mouth from excavator to excavator rather than formally set down in textbooks. In addition, archaeology has adopted, adapted and evolved its own theoretical basis for the interpretation of the past through the study of material remains.

Scope - If we consider archaeology to be the study of the past through the study of material remains, clearly archaeology becomes an enormous subject with time-depth back to the dawn of human existence and up to just before now.

Geographically it covers the whole of the world surface, the surface of the moon and all those scraps of failed hardware lost in space.

Archaeology, however, is not just rubbish-collection. Not all material remains left by humans have the same value to archaeologists. Archaeology is the study of human activity through the recovery and analysis of material culture. The archaeological record consists of artifacts, architecture, biofacts or Eco facts, sites, and cultural landscapes. Archaeology can be considered both a social science and a branch of the humanities. In Europe it is often viewed as either a discipline in its own right or a sub-field of other disciplines, while in North America archaeology is a sub-field of anthropology.

Archaeologists study human prehistory and history, from the development of the first stone tools at Lomekwi in East Africa 3.3 million years ago up until recent decades. Prehistory includes over 99% of the human past, from the Paleolithic until the advent of literacy in societies around the world. Archaeology has various goals, which range from understanding culture history to reconstructing past lifeways to documenting and explaining changes in human societies through time. Derived from the Greek, the term archaeology literally means "the study of ancient history. The discipline involves surveying, excavation, and eventually analysis of data collected to learn more about the past. In broad scope, archaeology relies on cross-disciplinary research.

Archaeology developed out of antiquarianism in Europe during the 19th century, and has since become a discipline practiced around the world.

Archaeology has been used by nation-states to create particular visions of the past. Since its early development, various specific sub-disciplines of archaeology have developed, including maritime archaeology, feminist archaeology and archaeoastronomy, and numerous different scientific techniques have been developed to aid archaeological investigation. Nonetheless, today, archaeologists face many problems, such as dealing with pseudoarchaeology, the looting of artifacts, a lack of public interest, and opposition to the excavation of human remains. also, ahead of his time in the analysis of his findings. He attempted to chart the chronological stylistic evolution of handwriting, medieval architecture, costume, and shield-shapes.

Excavations were also carried out by the Spanish military engineer Roque Joaquín de Alcubierre in the ancient towns of Pompeii and Herculaneum, both of which had been covered by ash during the Eruption of Mount Vesuvius in AD 79. These excavations began in 1748 in Pompeii, while in Herculaneum they began in 1738. The discovery of entire towns, complete with utensils and even human shapes, as well the unearthing of frescos, had a big impact throughout Europe.

However, prior to the development of modern techniques, excavations tended to be haphazard; the importance of concepts such as stratification and context were overlooked. Archaeology is the study of the ancient and recent human past through material remains. Archaeologists might study the million-year-old fossils of our earliest human ancestors in Africa. Or they might study 20th-century buildings in present-day New York City. Archaeology analyzes the physical remains of the past in pursuit of a broad and comprehensive understanding of human culture.

Archaeology is a diverse field of study. Most archaeologists focus on a particular region of the world or a specific topic of study. Specialization allows an archaeologist to develop expertise on a particular issue. Some archaeologists study human remains (bio archaeology), animals (zoo archaeology), ancient plants (paleoethnobotany), stone tools (lithics), etc. Some archaeologists specialize in technologies that find, map, or analyze archaeological sites. Underwater archaeologists study the remains of human activity that lie beneath the surface of water or on coasts. Cultural Resource Management, known as and refers to the work archaeologists do to follow federal and state laws.

Around the world, archaeological methods are similar. But archaeology in the Americas is a subfield of anthropology—the study of humans. In other parts of the world, archaeology is an independent field of study or part of historical research.

1.3 ARCHAEOLOGICAL SITES

An archaeological site is any place where there are physical remains of past human activities. There are many types of archaeological sites. Prehistoric archaeological sites are those without a written record. They may include villages or cities, stone quarries, rock art, ancient cemeteries, campsites, and

megalithic stone monuments. A site can be as small as a pile of chipped stone tools left by a prehistoric hunter. Or a site can be as large and complex as the prehistoric settlements of Chaco Canyon in the American southwest. Historical archaeology sites are those where archaeologists can use writing to aid their research. Those could include densely populated modern cities, or areas far below the surface of a river, or the sea. The wide variety of historical archaeological sites include shipwrecks, battlefields, slave quarters, cemeteries, mills, and factories.

Artifacts, Features, and Eco facts Even the smallest archaeological site may contain a wealth of important information. Artifacts are objects made, modified, or used by humans. Archaeologists analyze artifacts to learn about the people who made and used them. Non-portable artifacts called features are also important sources of information at archaeological sites. Features include things like soil stains that show where storage pits, structures, or fences once existed. Eco facts are natural remains related to human activity. Plant and animal remain can help archaeologists understand diet and subsistence patterns.

Context

Context in archaeology refers to the relationship that artifacts have to each other and to their surroundings. Every artifact found on an archaeological site has a defined location. Archaeologists record the exact spot where they find an artifact before removing it from that location. In the 1920s, archaeologists found a stone spear point lodged between the ribs of a species of a North American bison that went extinct at the end of the last Ice Age. It settled an argument that had gone on for decades. The spear point established once and for all that people had inhabited North America since the late Pleistocene. It is the context or association between the bison skeleton and the artifact that proved this. When people remove an artifact without recording its precise location, we lose that context forever. At that point, the artifact has little or no scientific value. Context is what allows archaeologists to understand the relationships between artifacts and between archaeological sites. It is how we understand how people in the past lived their daily lives.

1.4 BRANCHES OF ARCHAEOLOGY

The field of study called archaeology combines the excitement of treasure hunting with the investigative labor of detective work. Archaeology is the scientific study of the material remains of humankind's past. Its discoveries are the principal source of knowledge about prehistoric cultures.

The materials of archaeological study are both the things made by people and the things used by them. All the things fashioned by people—including settlements, buildings, tools, weapons, objects of ornament, and pure art—are called artifacts. Non artifactual materials—things that were used but not made or fashioned—include the unworked bones of the animals that were eaten, the traces of the plants that were either grown or collected for food, and the charcoal from ancient hearths.

The word archaeology is derived from two Greek terms—archaios, meaning "ancient," and logia, meaning "science" or "study of." Thus, archaeology originally meant the study of ancient things. By the beginning of the 20th century, however, archaeological study had expanded to include the reconstruction of the arts, technology, societies, religions, and economies of past cultures. Since the mid-20th century there has been another shift in the emphasis of archaeological study: from finding out how cultures change to trying to understand why they change. Some modern archaeologists are trying to establish archaeology as a true science from which generalizations or laws can be made about the causes of cultural change.

1.5 BRANCHES AND TRAINING

There are two main branches of archaeology: classical, or historical, archaeology and anthropological, or prehistoric, archaeology. The education and training of an archaeologist are divided along these two lines, though the general sequence of each is similar. Usually a student of archaeology obtains a Bachelor of Arts degree and then pursues a doctorate in a chosen field of archaeology. In addition to classwork, the graduate student must complete work in the field and in the laboratory. The student often uses this work to support a thesis—an original dissertation outlining and supporting the solution of some specific archaeological problem of the student's choosing. Once students have earned their Ph.D. degrees, they are ready to look for a job in archaeology.

Archaeologists are employed in museums, colleges and universities, government agencies, and private research foundations.

1.6 CLASSICAL ARCHAEOLOGY

Classical archaeology is the exploration of the records and artifacts of ancient civilizations. Classical archaeologists are particularly interested in the early cultures of the Mediterranean and the Near East-especially Greece, Rome, Persia (now Iran), Egypt, and Mesopotamia (now part of Iraq)—and also in the civilizations of ancient China, of the Indus River valley in modern Pakistan, and of Southeast Asia. The field of classical archaeology has become prominent in many countries interested in preserving their national heritage.

Naturally the curriculum for classical archaeology includes the basic principles and methods of archaeology. However, it also emphasizes historical studies-including art history and the study of classical civilizations-as well as philology (the study of literature and linguistics), ceramics, architecture, mineralogy, and other subjects.

1.7 ANTHROPOLOGICAL ARCHAEOLOGY

Anthropological archaeology focuses on prehistory—the time before written records were kept. The curriculum emphasizes such studies as physical and cultural anthropology and linguistics as well as archaeology

itself. The anthropological archaeologist is involved in interdisciplinary studies—with particular emphasis on the way such fields as paleontology, human evolution, geomorphology, geology, and aerial photography relate to archaeology and how their principles and methods can be used by the archaeologist.

1.8 FUNCTIONS OF ARCHAEOLOGISTS

The great majority of archaeological work involves collecting, analyzing, and synthesizing data. The process of collecting data is divided into two parts: reconnaissance—locating and recording a site and studying the geography of the area—and excavating, or actually digging at the site. Once materials are collected, they are analyzed to determine the time period and the civilization from which they came and to reconstruct the people's way of life. Then the information obtained from this analysis is synthesized, or collected in reports that provide histories, sometimes called cultural-historical integrations.

Most archaeological research ends here. Some archaeologists, however, may go on to analyze the histories themselves in order to produce hypotheses, or tentative explanations, about why particular cultural changes took place. Then they test those hypotheses against archaeological data to see whether that data supports their hypotheses. If it does, the archaeologists believe they have arrived at a law or generalization that explains the development of the human race and why certain changes took place thousands or even millions of years ago.

1. The Archaeological Team

The size of an archaeological team depends on the financial resources available. Teams range from a solitary digger to the kind of military like organization that Mortimer Wheeler directed at Mohenjo-Daro in Pakistan. A team as large and well-funded as the latter may have three branches: administrative, laboratory, and excavation. Under the administrative director or chief are the quartermaster corps, accountants, secretaries, and mechanical and non-skilled staff that keep the whole organization going. The laboratory chief supervises artists, draftsmen, scientific analyzers, repairers, and specimen numberers, as well as computer staff. The excavational, or digging, branch includes various crew chiefs and their assistants, recorders, photographers, artists, and the diggers themselves, who are often students. The diggers may work at a variety of jobs or they may specialize in certain jobs such as troweling, screening, or removing dirt or refuse.

2. Preliminary Fieldwork

The first stage of collecting archaeological data—the discovery and recording of sites and their superficial examination—is called preliminary fieldwork. Many sites have been found by pure luck. The famous 20,000-year-old wall paintings in Lascaux, France, for

example, were discovered by boys who climbed into a hole to find their missing dog. Some sites have been uncovered in the course of preparation for construction projects or as the result of bombing. Today, however, most sites are located by careful and well-planned survey programs.

3. Reconnaissance Techniques

The exact methods of finding archaeological sites vary, primarily because there are so many different types of sites. Some sites—such as mounds, temples, forts, roads, and ancient cities—may be easily visible on the surface of the ground. Such sites may be located by simple exploration: by an individual or group going over the ground on foot, in a jeep or car, or on a horse, mule, or camel. This kind of survey can be comprehensive—that is, the entire area may be covered—or it can involve the technique of sampling. In sampling, a limited number of strategic spots in the region are checked for signs of an underlying archaeological site. Sampling was not widely used in the United States until passage of the Archaeological Resources Protection Act of 1979. This act, designed to protect the archaeological heritage of an area, has encouraged archaeological sampling of areas in which archaeological remains might exist that are in danger of being destroyed by construction or by the growth of cities.

To find sites that have no surface traces, archaeologists may use aerial photographs taken from balloons, airplanes, or satellites by cameras with remote sensors, infrared film, or other devices. The archaeologist checks these photographs for clues such as variations in soil color, ground contour, or crop density that may indicate the existence of a site.

Archaeologists may simply probe the ground with sound to check for variations in reflection of sound that would indicate the presence of structures or hollows in the ground. A probe, or periscope, may be inserted into the ground to locate walls and ditches. The archaeologist Carlo Lerici used such a probe, called a Nistri periscope, to locate and photograph Etruscan tombs in Italy in 1957.

Other modern devices use electricity and magnetism to locate buried structures. Electron or proton magnetometers or even mine detectors may be used to force currents through the earth and record any unusual features, such as a large, solid object, that lie beneath the soil. Similar magnetometers are dragged through the water to locate sunken ships or structures. The 20th-century archaeologist George Bass and the explorer Jacques Cousteau both had considerable success using this technique.

4. Reconnaissance Records

All survey programs must be properly recorded and the sites designated—that is, given some sort of name or number. The simplest

ways of designating a site are to name it after its discoverer, after the owner of the property on which it was found, or after its location. Another simple method is to give the site a serial number: site 1 for first site found, for example, or Fo v 1 to mean the first (1) village (v) in Fulton County (Fo). More complex systems of identification may involve grid coordinates such as latitude and longitude, township and range, or geographic blocks.

Although there is no universally accepted system for recording the discovery of a site, most survey records include the site's designation, its exact location, the date it was found, the discoverer, the size of the site, and some sort of description of the site itself and what was found there. Of particular interest are structures such as mounds, temples, and houses and artifacts such as pieces of pottery and stone tools.

5. Excavation

Perhaps the most important idea for an archaeologist to keep in mind during excavation is that any archaeological digging is, in fact, destroying a non-renewable resource. Careful excavation and scrupulous record keeping and specimen preservation are therefore critical.

6. Preparation

The first step in excavation is to make a record of the site before it is dug or changed in any way. This preliminary record often involves making a contour map and taking photographs of the site. To make such maps and photographs meaningful, some mechanism must be set up to measure locations on the site. Vertical measurements—depths and heights—are often taken with respect to an agreed-upon base point, called the datum point, and are recorded as so many centimeters below or above the datum. The site may also be divided into horizontal units so that the provenience, or original location, of artifacts may be exactly recorded. Often the site is gridded, or staked out into squares. Then a system is devised for designating the location of each unit or square.

Before major digging actually begins, some sort of test is generally performed to determine the best part of the site in which to carry out the main part of the excavation. (Large sites are usually not dug out entirely.) One way to do this is to dig test holes called sondages. These may be spaced throughout the site at random, or they may be dug in certain strategic locations or in a checkerboard pattern. Crosswise, parallel, or crisscross trenches may be dug through the site instead.

7. Digging

Although the stereotypical tool of archaeology is the spade, the archaeologist's real tool is actually the trowel, which is used to scrape, slice, or clean away soil. Other tools of the trade include spoons, picks, paintbrushes, and dissecting needles. There are a wide range of

excavational techniques, and the method that an archaeologist uses depends very much on the type of the archaeological site. Usually the dirt is removed by stripping off horizontal layers to expose the artifacts and other materials. The layers may either be of an arbitrary thickness or they may correspond to natural strata, or layers of sedimentary rock or earth. Sometimes excavation is done vertically by slicing down through the different strata. Sometimes a combination of both techniques is used. The excavator must scrupulously record and preserve all archaeological materials as they are uncovered.

8. Record Keeping

Archaeologists use various methods for recording data from a dig. Traditionally, they have made field notes and kept diaries describing what was being done and what was found. These records were generally accompanied by maps and drawings to show both the horizontal units dug from the site, called floor plots, and the vertical units, called cross sections, and indicating the artifacts and other materials found in them.

Photographs or films might also accompany these records. Other methods for recording specific data include square- description forms, diary forms, soil forms, pollen forms, and similar kinds of recording aids. In the mid- to late 20th century, archaeological recording has increasingly been done using computers, digitizing cameras, and various other advanced devices.

9. Preservation

As with most other steps in the excavation process, the methods used for preserving archaeological specimens depend on the nature of the site. A less delicate specimen may be placed in a bag with a label and number. In some cases, artifacts are coated with preservative chemicals. The advances in technology and chemistry made since the 1950s have enabled archaeologists to perform remarkable feats of preservation that would probably have been impossible a few decades ago.

1.9 INTERPRETING ARCHAEOLOGICAL FINDS

Ideally, analysis of the materials found on a site begins in the field laboratories while excavation is still in progress. Often, however, reconnaissance and excavation are completed in a relatively brief period of time, and the records and preserved remains are taken back to a museum, university, or laboratory for more analysis. This analysis has many aspects, which include describing and classifying objects by form and use, determining the materials from which they were made, dating the objects, and placing them in environmental and cultural contexts. These aspects may be grouped into two broads categories: chronological analysis and contextual analysis.

1.10 CHRONOLOGICAL ANALYSIS

Chronological analysis of archaeological materials—identifying their time periods and sequence in time—is often done first. Archaeologists use two general kinds of dating methods: relative dating, or establishing when the various materials found at a site were made or used in relation to each other, and absolute dating, or assigning a fairly precise, chronometric date to a find.

The oldest method of establishing relative dates is by analyzing stratigraphy—the arrangement of strata in a site. This technique assumes that the oldest archaeological remains occur in the deepest strata of the excavation, the next oldest in the next deepest strata, and so on. By following this assumption, archaeologists can place the materials collected from the various strata into a rough chronological sequence.

If archaeologists digging in an undated site find a distinctive type of pottery for which the date is known, they may conclude that the other materials found in the site along with the pottery bear the same date as the pottery. This is an example of a relative-dating technique called cross dating.

Similarly, archaeologists may assign a date to an artifact based on the geologic region or strata with which the artifact is associated. For example, archaeologists may conclude that hand axes found in the high terrace of the Thames River in England are older than arrow points and pottery found in the lower terrace because they know that the high terrace was formed earlier than the low one. The association of artifacts with animal or fossil remains can also be used for relative dating. For example, it is known that super bison became extinct in the Great Plains of what is now the United States and were replaced by modern bison. Thus, if archaeologists discover one site in which Folsom fluted points (the distinctive tips of a kind of prehistoric man-made weapon) are found imbedded in supervision remains, and they discover a second site in which a different kind of points, called Bajada points, are sticking in the remains of modern bison, they may conclude that Folsom points were made before Bajada points. This kind of relative dating may also be done using plant remains, particularly plant pollen, which is often preserved in archaeological strata.

If archaeologists know how certain types of artifacts—styles of pottery or burial objects, for example—evolved over time, they may be able to arrange groups of these artifacts in chronological order simply by comparing them. This method is called seriation.

Archaeologists can judge the relative dates of bones by analyzing their fluorine content, since the amount of fluorine in buried bones increases over time. In the 1840s Dr.Montroville Dickeson proved that a human pelvis found in Natchez, Miss., dated from the same time as mammoth bones found with it because both had accumulated the same proportions of fluorine.

There are many other methods of relative dating. None of them is as accurate as the absolute-dating methods, however, because the assumptions on which many relative-dating techniques are based can be misleading. Nevertheless, sometimes relative dating is the only method available to the archaeologist.

In absolute, or chronometric, dating, a definite age—in numbers of years before the present—is assigned to an archaeological specimen. When applied correctly, the methods of absolute dating can yield highly accurate dates. The remains found by classical archaeologists—coins or written records, for example—may have dates already written on them, but this is not always the case. It is never the case for anthropological archaeologists, who study prehistoric materials.

One system of absolute dating, called varve dating, was developed in the early 20th century by Gerard de Geer, a Swedish geologist. He noted that the mud and clay deposited by glaciers into nearby lakes sank to the lake bottom at different rates throughout the year, forming distinct layers, called verves, on the lake bottom. Because each year's layer was different, the researchers were able to establish dates for artifacts or sites associated with a specific varve.

A similar absolute-dating method—dendrochronology, or the dating of trees by counting their annual growth rings—was first developed for archaeological purposes in the early 1900s by the American astronomer Andrew Ellicott Douglass. If an ancient structure has wooden parts, archaeologists can compare the number and widths of the growth rings in those parts with sequences from other samples to find out when that structure was built. Other techniques yield absolute dates based on the thickness of the patina, or residue, that forms over time on certain stone artifacts.

Advances in the physical sciences during the 20th century greatly improved absolute-dating methods. One of the best-known and most valuable techniques is radiocarbon dating (also called radioactive carbon dating, carbon dating, and carbon-14 dating). All living things contain small amounts of carbon-14, a radioactive form of carbon. After death, this carbon-14 changes, or decays, into a more stable form of carbon. Archaeologists can determine the age of once-living things such as bones, wood, and ash by measuring the amount of carbon-14 remaining in the specimen.

Radiocarbon dating cannot be used to make accurate age measurements of very old materials—materials more than about 70,000 to 100,000 years old. For such objects, archaeologists can use similar techniques involving other chemical elements. Potassium-argon dating, for example, can be used to date rocks millions of years old. A related dating method called fission-track dating can be used on certain stone samples of almost unlimited age. Another modern dating method, thermoluminescence dating, can be used to find out when ancient pieces of pottery or other fired-clay objects were made.

1.11 CONTEXTUAL ANALYSIS

Determining the chronology of an artifact is only half of the archaeologist's task; the other half is reconstructing the ancient culture from which the artifact came. This process is called contextual analysis. The lowest, or most basic, level of contextual analysis consists of analyzing a culture's systems of subsistence and technology—that is, the ways in which ancient people adapted to their environment. The next level involves reconstructing their social structures and settlement patterns. Finally, archaeologists try to reconstruct a culture's ethos, or guiding beliefs.

Each of these levels requires different analytical methods. Archaeologists may start reconstructing an ancient subsistence system by determining what the people ate. They may do this through coprology, the examination of fossilized feces, or by analyzing human bones for the presence of certain forms of carbon and nitrogen. The study of the plant remains found in a dig can also provide clues to a people's diet.

By studying ancient tools—such as arrow tips, butcher knives, and grinding stones—archaeologists can find out how people obtained and prepared their foods. Archaeologists may also be able to determine how ancient people made and used their tools. Studying the work of a modern flint knapper, for instance, may show an archaeologist how ancient people made flint tools. (In archaeology, this type of reasoning or interpretation is called ethnographic analogy.)

When archaeologists attempt to reconstruct ancient social structures, they often use data gathered by ethnographers, social anthropologists, and historians. The excavated materials themselves may also provide hints of ancient social organization. Specialized artifacts that are found concentrated in certain areas may indicate that the ancient culture had full-time craft specialists, and different types of burial arrangements may indicate that social classes existed.

Reconstructing the highest level of a culture, including its values, ethos, or religion, is the most difficult type of contextual analysis. Such items as statues or paintings of figures that appear to be supernatural, buildings that may have been temples, and evidence of religious ceremonies can all be used to help reconstruct ancient systems of beliefs.

The goal of chronological and contextual analysis is to write and publish records of ancient history. Excavated material shave value only if the information gained from them is disseminated through books, magazines, and other publications. Such publications not only keep track of how techniques have changed but also record great archaeological discoveries.

Stratigraphy is the analysis and interpretation of depositional layers or strata in excavated area.

In archaeology, stratigraphy involves a careful consideration of the characteristics of individual soil layers in order to understand how these layers relate to one another.

There are geological strata and archaeological strata.

The relation between the top most humus layer and natural layer in archaeological site explains the continuity or rupture, and changes occurred in the site during the past. Edward Harris strongly advocates that archaeological stratigraphy differs from geological stratigraphy. There are certain basic laws and notions that are followed in identifying the archaeological stratigraphy.

They are Law of Superimposition, Original Horizontality, Original Continuity and Stratigraphical Succession.

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CHECK YOUR PROGRESS:

1. What is Archaeology?

2. State the important archaeological sites in India.

1.12 CONCLUSION

After studying the history of archaeology and its methods the students will be able to understand the ancient tools—such as arrow tips, butcher knives, and grinding stones— the students and scholars or archaeologists can find out how people obtained and prepared their foods. Archaeologists may also be able to determine how ancient people made and used their tools. Studying the work of archaeologist, the students can learn about their ancient culture

and its archaeological sites. Therefore, the study of archaeology and its methods and tools are very essential for the study.

1.13 UNIT END QUESTIONS

1. Explain the meaning and scope of Archaeological study?
2. What are the important tools for the excavation of archaeological sites?
3. Why Archaeology is an important subject in the world history? Explain in your own words.

1.14 ADDITIONAL READING

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2

PALAEOLITHIC AND MESOLITHIC CULTURES

Unit Structure

2.0 OBJECTIVES:

- To trace the origin of Prehistoric archaeology
- To understand the different prehistoric traditions found in India
- To make students aware of the geographical spread of the Prehistoric cultures
- To analyze the development of stone tool technology.
- To observe and understand the environmental conditions and the location of sites during the Prehistoric period.
- To develop an understanding of the lifeways of the various Prehistoric cultures found in India

2.1 INTRODUCTION

Archaeology is the study of past human behaviour and cultural changes through the study of material remains. In other words, it's a scientific study of the past cultures and lifeways of the people based on things made, used, and left behind by them. So, archaeologists study people by examining the tools they used and places they lived. Prehistory is referred to the period in human history when there was no written record or before writing was

known. Dr. Sankalia (Sankalia, 1962), mentions that Prehistoric archaeology refers to that period in human history for which we have no legend, no tradition, but only stone tools and bone tools and remains of animals. Prehistory also refers to that period when man was evolving biologically through its various extinct species to its present form. This evolution of human species to modern man took millions of years spanning most of the Stone Age.

2.2 BEGINNING OF STUDIES ON PREHISTORIC ARCHAEOLOGY

The beginning of prehistoric archaeology was laid by the findings of stone tools (hand axes) in association with fossil animal bones in the cliff over the river Somme in France by Boucher de Parthes in 1836. This was followed by the discovery of Pengelley in cave at Brixham, South Devon, England in 1863. These discoveries led to the realization of the antiquity of human past which was not only millions of years old but also associated with a very different climatic and geographical condition. Then came the discovery of skeletal remains of man. In 1857, a human skull was found on the river Dussel in Germany. This was identified later as skull of a Neanderthal man (now extinct). Herein lay the foundation of the beginning of association of past environment and changes that it underwent, with prehistoric studies. The finds of skeletal remains made it an important part of the prehistoric archaeology.

Paleolithic records span from the Pliocene through the Pliestocene. The Paleolithic period is dated to the glacial age. This entire period underwent frequent climatic changes. Climatic conditions varied from Glacial or Ice Ages to similar conditions like present day. During the Ice Ages, there was significant increase in ice cover. It increased by 30 percent. Sea level also reduced by 100 metres. Areas located in higher latitudes were covered by continental glaciers. This led to abandonment of sites and relocating during favourable periods in these regions. In the Indian subcontinent, though the climatic changes were significant, conditions remained favourable for humans through all fluctuations in weather conditions. Climatic studies have also given evidence of evolution of tropical grassland condition in the late Miocene in the Indian subcontinent.

The site of Dikika (Ethiopia) has yielded skeletal remains of an Australopithecine child dated to 3.3 million years old. This skeletal material was found along with animal bones showing cut marks, probably made by stone artifacts (Padayya, 2017). The earliest hominid *Australopethicus* (4.4 and 1.8 mya) lived in Africa. Some of the oldest stone tools are found at Gona in Ethiopia (2.5 million years old). Also, Omo valley and Afar valley of the Hadar region have yielded stone tools dated between 2.3 and 2.4 million years. These stone tools made on pebbles are called Oldowan because they were first found at the site of Olduvai Gorge, Tanzania and are associated with a later species known as *Homo habilis*. *Homo erectus* appeared 1.7mya and are found in Europe and Asia apart from Africa. He is traditionally associated with the discovery of fire. Important changes

occurred in human evolution between 2.5 and 1.8 million years ago. Not only the stone tools first appeared, brains expanded, bodies enlarged, limb proportions also developed significant differences. Added to this there was a reduction in size of cheek teeth. The changes in crania resulted in it sharing more unique features with later *Homo* (McHenry and Coffing, 2000). The evolutionary tract of modern humans leaves a very complicated trail. Research is still ongoing as to the relation of the various extinct species with one another and their role in the eventual evolution into the modern *Homo Sapien* genus.

In Indian context, the evidence of hominid fossils are extremely rare. The site of Hathnora in Madhya Pradesh has produced archaic form of *Homo sapiens* skull. *Homo Sapiens* fossil in well stratified context were also found at the site of Jwalapuram, Andhra Pradesh. Its dated to 20,000-12,000 cal BP.

Prehistory of India, as elsewhere, is divided into three broad periods- Paleolithic (paleo-old, lithic-stone, i.e., Old Stone Age), Mesolithic (meso-middle, lithic-stone, i.e. Middle Stone Age) and Neolithic (neo-new, lithic-stone, i.e. New Stone Age). Each of these periods is marked by different features as well as gradual improvement in tool making skill and technology. The Paleolithic period is further divided into Lower, Middle and Upper Paleolithic followed by the Mesolithic. Mesolithic period gives evidence of domestication of plants and animals and eventual move towards settled life in the form of temporary settlements. These sites are found all over the Indian subcontinent.

The prehistoric period in India is divided into the following timescale

Paleolithic

a) Lower paleolithic 1.5 to 0.2 million years

b) Middle paleolithic 0.2 million to 40,000 years

c) Upper Palaeolithic 40,000 to 10,000 years

Emergence of microlithic tradition 10,500 years to 48,000 years based on blades (Jwalapuram in Kurnool area and Mehtakheri in central India)

Mesolithic 10,000 to 6,000 years

Check your Progress:

1) Give a short account of the beginning of Prehistoric archaeology

2.3 LOWER PALEOLITHIC

The discovery of the first stone tool by Robert Brucefoot in Pallavaram, Tamil Nadu in1863 was the starting point of Indian prehistory. This was followed by three decades of work by Robert Brucefoot in which he further discovered sites in Gujarat and South India. Numerous studies focusing on the prehistoric archaeology of India has been conducted since then. Sites

have also been found all over the country in arid, semi-arid, dry deciduous, moist deciduous zones. Though most of the finds are open air sites, there's also evidence of cave sites.

The period when the Paleolithic occupation took place is marked by significant changes in climatic and environmental conditions. Mighty rivers, originating from the Himalayas, flowed during the Early Pleistocene in the semi-arid region of Rajasthan. Due to tectonic movements, these were replaced by pools and lakes. It was near these lakes, pools and exposed gravel beds where Acheulian remains are found. The climate during this period fluctuated between warm wet and cool dry periods. Semi-arid climate prevailed. In Madhya Pradesh, Bhimbetka rock shelter, chemical analysis has shown existence of humid climate like today. Faunal remains like, cattle, hippopotamus, wild boar, rhinoceros, horse recovered from riverbeds suggests existence of forests and grasslands and availability of plentiful water round the year. The Acheulian hominin adapted themselves to a variety of ecological niches.

Acheulian -The beginning of Indian Lower Paleolithic is marked by the acheulian cultural tradition. It is so named after the site St. Acheul in France where these tools were first discovered. It is a phase of the Lower Paleolithic. Earliest dates from the Indian subcontinent come from the sites of Isampur and Atirampakkam which have produced dates of 1.2million years and 1.5 million years respectively (Padayya,2017). It flourished in the Indian subcontinent from 1.5 to 0.5 mya. It is typified by assemblages of large cutting tools, hand axes, knives, and cleavers. The hand axe occupies a significant position. It was produced by knocking off flake systematically from several directions most probably with the help of large stone hammers. It is a heart or pear-shaped piece with a thick blunt butt or holding hand and tapering working end to form a point. Cleaver is another important tool which is flat and made from a big rectangular flake and has a broad axe like cutting edge. These tools are primarily bifacial, i.e., worked on both sides. Handaxes and cleavers could have been used for cutting, chopping, animal bones. Handaxes could also have been used for digging in the soil for roots or mollusk shells. Large flake tools are associated with this tradition. Some of the sites yielding Lower Paleolithic acheulian tools include Morgaon, Chirki-on-Pravara, Bori, in Maharashtra, Isampur in Karnataka, Jwalapuram in Andhra Pradesh, Attirampakkam in Tamil Nadu etc. Cleavers with sharp edges on the end of the tools and handaxes with a pointed end are the handheld tools found at these sites. Hammerstones are also found, though they are less in number.

The Indian Acheulian is closer in date to African Acheulian(1.8mya). Acheulian tradition is also divided into early and late Acheulian. Early Acheulian is marked by the large flake tools. Late Acheulian sees earliest evidence of prepared core and Levallois technology. In Levallois technique the core is prepared by giving centrally directed blows on the surface of the core. A platform is created, so it's no longer convex but flattened. Then perpendicular blows were struck at that point. This was done either directly or with the use of an intermediary tool. The flake detached in this way would need very little further working because its edges were already sharp. In this

technique the core is totally reduced, and numerous flakes are produced. Beginning of production of large blades are also recorded at different sites., e.g., Bhimbetka during this period

Peninsular region is rich in Lower Paleolithic sites. The site of Morgaon located in Deccan plateau, the central part of Indian peninsular region is charcterised by acheulian stone tools. Morgaon excavations yielded large number of tools (handaxes, cleavers, knives, hammerstones) made on basalt which is found as bedrock in that part of the country. Large weathered nodules or core were utilized weighing as much as 20 kgs and more than 30 cm in dimension. An anvil stone seem to have been utilized to split the core stone into two. Flakes were than detached. These kinds of flakes are also called Kombewa flakes. Kombewa, named after a site in Kenya..

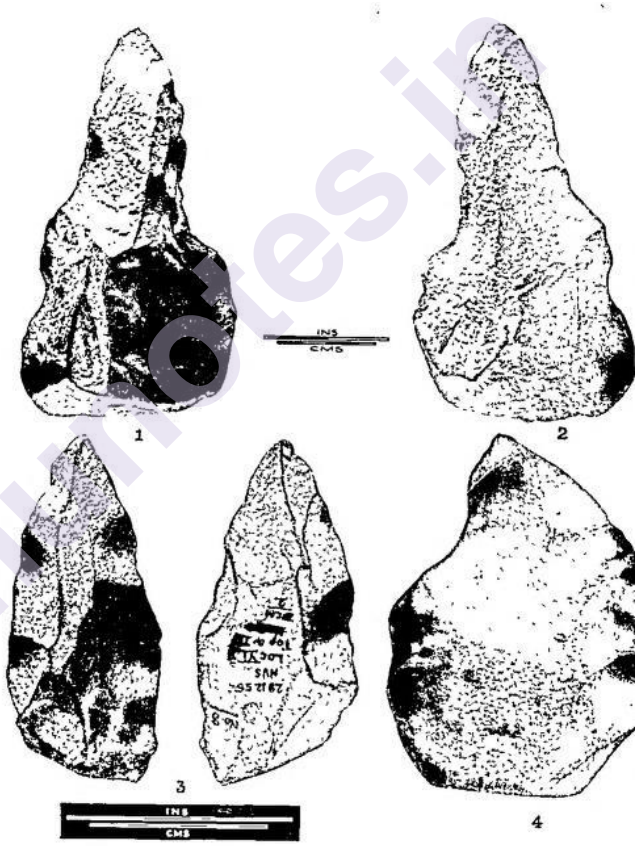
The excavations at the various sites have given us a lot of evidence of the Lower Paleolithic Acheulian tradition in India. In the southern peninsular region of India, excavations at the site of Isampur in Hunsgi Valley Karnataka has given evidence of different activity area. It's a quarry cum workshop associated with a weathered outcrop of silicified limestone. Limestone blocks, finished tools, debitage, hammerstones of chert, basalt and quartzite highlight the nature of the site as a tool processing workshop. Finds of fossilized dental and bone remains of bovids and cervids show that the site was also used for food processing and consumption. Isampur has also given evidence of perforators and steep sided hollow scrapers indicating woodwork according to the excavator. Acheulian hominin is also associated with the carrying of tools. The earlier tool makers made and discarded tools at one place. The Acheulian hominin made tools at one place and discarded at other places. Although manufacturing of tools occurred near the source of raw material, the finished tools were discovered at other places. The site of Isampur and its surrounding area give evidence for the same.

In western Rajasthan, Didwana region has given evidence of Acheulian localities. Excavations at the site of Singi Talav has yielded evidence of early Acheulian. Its thought to be more than 800 ka on regional chrono stratigraphy. The tools here are made on quartzite, quartz. Handaxes, cleavers, scrapers, denticulates, also a fair amount of debitage are part of the assemblage. Nearby, at another site named 16R (fossilized sand dune site), Lower Paleolithic to Mesolithic is recorded.

Rohri hills in southern Pakistan acheulian industry is also noted. This falls in the late Acheulian category. Here the Lower Paleolithic industry is based on chert. Late Acheulian Lower Paleolithic occurrences made on quartzite were also observed in the Siwaliks.

The raw material used for tool making was quartzite, basalt, limestone, dolerite, and granite. Local variations depended on the available raw material. In Maharashtra, basalt was commonly used and in Hunsgi, Karnataka, limestone was used. Handaxes, cleaver, knives, picks, chopping tools could have been used for variety of purposes. Procurement and processing of plant and animal foods, clearing of vegetation, from patches

selected for occupation, creation of shelter, woodwork etc. Evidently structural remains of hut were also found in the excavation of Lower Paleolithic sites like, Chirki-on-Pravara (Maharashtra), Paisra (Bihar), Hunsgi (Karnataka). Recent focus on the settlement pattern of these early hominins has shown selection of sites with accessibility to water resources (ponds, lakes, paleochannels, floodplains) and as well as a wide variety of wild flora and fauna and the raw material (bedrock outcrops) for making tools. The sites were located close to the higher riverbanks or the hill terraces. Hunsgi Baichbal Valleys, Kortallayar valley of Tamil Nadu, Tirupati Hills of Andhra Pradesh, Kaladgi basin of Karnataka, Pravara valley of Maharashtra, Raisen area of Madhya Pradesh, Belan and Son Valleys of the middle Ganga basin and Paisra valley of Bihar were intensively surveyed and have yielded similar evidence of prolonged Acheulian occupation. The monsoon regime of the Indian subcontinent, which was present since the Miocene times played an important role in the evolution and development of the Indian stone age.



Handaxes,Nevasa(After Sankalia,1960)

Check your Progress :

1) Describe the nature of Indian Lower Paleolithic.

2) Comment on Lower Paleolithic assemblages found in the site of Isampur

2.4 MIDDLE PALEOLITHIC

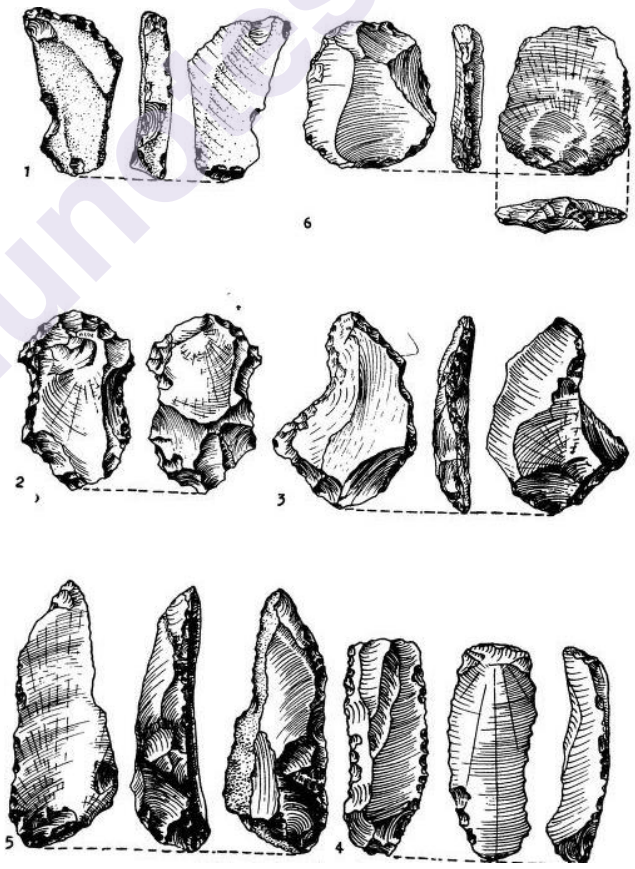
The Indian Middle Paleolithic culture was first identified by H.D. Sankalia at the site of Nevasa during his excavations (1954-56). There he came across flake industry comprising scrapers, points, borers. Subsequent excavations at other places revealed that the Middle Paleolithic culture comprising of tools, similar to those he found in Nevasa, was spread over different regions in India. The acheulian culture slowly evolved into the Middle Paleolithic. New forms, new tool types and techniques of making them are found here. The earlier hand axes and cleavers continue but more refined tool making technology becomes predominant. During the Middle Paleolithic phase tools were made on flakes, cores, and nodules. Tools made on flakes being predominant, it's also termed as flake industry These flake tools are smaller and thinner and mostly made on siliceous material like chert, jasper, agate, chalcedony. The flake-based industry uses mostly prepared core technique. Levallois technique is commonly employed. Progressive diminution in the size of the stone tools are observed. The main types include points, borers, and scrapers. Though quartzite, basalt continued in use, agate, chert, jasper was commonly used. Acheulian sites have given evidence of gradual evolution of Middle Paleolithic stone tool technology. The excavations at Attirampakkam have given oldest dates for Middle Paleolithic of India.

In other parts of the world Middle Paleolithic is associated with the Neanderthal man and at the same time India is conspicuous by the absence of physical remains of the Neanderthal man. But the tools associated with the remains of Neanderthal man is the same as those found in Indian Middle Paleolithic. The Middle Paleolithic culture developed during upper Pliestocene. During this time areas in northern latitudes were facing severe cold and glaciation. India was not facing the same. But the areas bordering these areas were facing severe aridity. This is why there are less sites in Middle Paleolithic than the Lower Paleolithic. The Middle Paleolithic population is generally found in the areas occupied by the acheulian population. They are found in western Rajasthan, Son and Belan valleys of Uttar Pradesh, Central India Narmada valley and its tributaries, Chotanagpur plateau, Deccan plateau and the Eastern Ghats. Atirampakkam (Tamil Nadu), Jwalapuram (Andhra Pradesh), Patne (Maharashtra), Bhimbetka, Samnapur (Madhya Pradesh), Hunsgi, Devapur (Karnataka)are among the sites giving evidence of Middle Paleolithic phase.

The Middle Paleolithic sites gives evidence of extensive workshops like the preceding Lower Paleolithic. But now they obtained siliceous stones as nodules from veins or cobbles or pebbles from the river gravel. Sites like Samnapur in Central India and Kovalli in Ghataprabha valley in the Kaladgi basin are two elaborate workshops of the Middle Paleolithic hominin. The chert occurred as veins or bands in the limestone formation They procured the chert nodules to make tools. Kovalli has given evidence of scrapers, points, burins, borers and knives. Scrapers dominate the assemblage here. Levallois technique is absent here. The assemblage is both core based and flake based. Similarly, Samnapur has also given evidence of use of chert as raw material. Fossil fauna was also associated with this level. Jwalapuram

site has given evidence of limestone as dominant raw material during this phase. Limestone is followed by dolerite, chert, quartzite, chalcedony, quartz etc. Prepared cores discoid cores, retouched flakes, scrapers are found in the assemblage here. Also, micro blade core start appearing in Middle Paleolithic assemblage at this site. Production of blades, though few, is observed in sites, e.g. Bhimbetka, Patne, Thar desert, Attirampakkam. During this phase bone tools also start appearing. The site of Kalpi (Uttar Pradesh) on the southern bank of the Yamuna has also given evidence of bone tools. Cattle were used for manufacturing large number of bone tools. These artifacts included end scrapers, burins, points found along with stone tools. This phase is dated to 45,000 years ago.

The Middle Paleolithic hominin were using cores of different types to shape single sided scrapers, double sided scrapers, denticulate with saw like edge, notched tools, points, borers. Scrapers are retouched flakes, formed by chipping the end of a flake to keep one sharp side. Both sides are retouched are double sided scraper. Burins are made on blade like flake. It has a screwdriver edge equal to the thickness of the blade. It is thought to be used to engrave on bone. Notch is a flake on which lateral incurve is made. More than one notch in the same border or contiguous to each other is denticulates. Flakes with lateral incurves made and has a projected part is borer. Borer was used on leather or animal skin for making holes.



Scrapers Maharashtra (After Sankalia, 1962)

Check your Progress:

1) Analyse the Middle Paleolithic tool industry at the site of Jwalapuram.

2) Critically evaluate the role played by the Middle Paleolithic phase in human cultural development.

2.5 UPPER PALEOLITHIC

The Upper Paleolithic succeeds the Middle Paleolithic and precedes the Mesolithic. In geological timescale, it developed during the later part of the Late Pleistocene. This period is marked by a dry and arid climatic condition. This is further substantiated by the finds of ostrich (bird adapted to arid climate) eggshells in many sites of Maharashtra, Madhya Pradesh, Rajasthan during the later part of the Pliestocene. There was a decrease in rainfall and poor vegetation cover in many parts of the country. Paleoclimatic research in different parts of India shows that there was intense cold in high altitudes and severe aridity in much of the country. In northwest India, including Rajasthan, Gujarat, Punjab, Harayana, extensive sand dunes formed and there was a westward shift of rivers during the Late Pleistocene. The vegetation cover reduced significantly throughout the country as is suggested by the geomorphic data. Lowering of sea level is recorded in coastal Tamil Nadu, Saurashtra and Kutch. Fossil fauna evidence of elephant, buffalo, cattle, hippopotamus comes from Godavari, Ghod, Manjra and Krishna valleys of the Deccan, the Mahanadi valley in Central India, southern part of Allahabad, the Mahanadi valley in central India. This implies the existence of grassland environment with pockets of swamps and forests.

M.L.K. Murthy's discovery of blade and burin assemblages at Rallakalava complex in the Chittoor district in 1960s established the Upper Paleolithic in South Asia. Subsequent discovery of several blades, burin assemblages in Uttar Pradesh, Gujarat, Maharashtra, Bihar, Andhra Pradesh, Karnataka and Jharkand established the Upper Paleolithic presence in Indian context. Upper Paleolithic sees further reduction in size and weight of the tools. This phase is dominated by production of parallel sided blades and burins. Quartzite continued to be used alongside siliceous materials like chert, chalcedony. Bone tool technology emerges as an important aspect. Working on bones, antler, ivory for both tools and ornamentation is observed during this phase. Characteristic feature of Upper Paleolithic also includes cave paintings, engravings, female figurines 'Venus'.

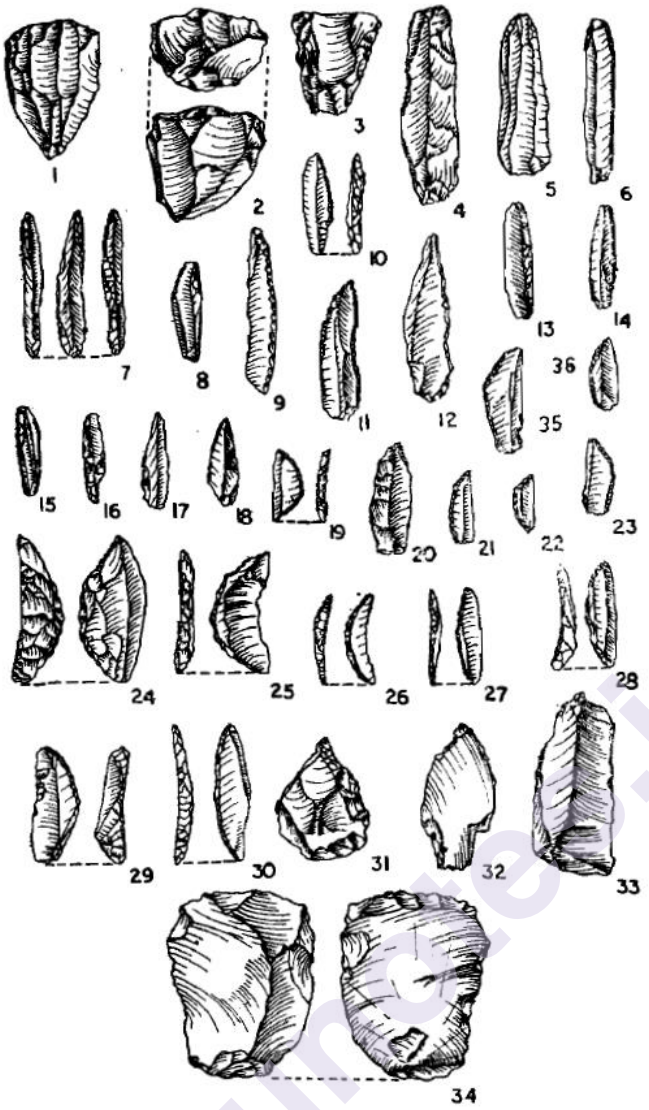
Jwalapuram (Andhra Pradesh), Metakheri (Madhya Pradesh), Patne Maharashtra, Baghor (Madhya Pradesh), Muchchatla Chintamanugavi (Andhra Pradesh), are a few sites yielding Upper Paleolithic artifacts. The Upper Paleolithic sites gave evidence of mass production of blades and

blade tools, backed blades, flake blades etc. Blade is a flake tool, the length of which is more than twice its width. A blade with parallel sides is known as parallel sided blade. The knife blade is the elongated flake with deliberately worked sharp edge. The technique used in Upper Paleolithic is also known as pressure flaking. Pressure was applied by chisel like stone, which removed parallel sided blades with regular width and thickness. Backed blades are made by retouching one side to make it blunt. Lithic tool repertoire of this period also included scrapers (End scrapers, single side scraper, double sided scrapers, notched scrapers), points, knives, burins, borers, denticulate, small choppers. Chert and chalcedony were preferred. The Muchchatla Chintamanugavi, bone tool assemblages consisted of scrapers, perforators, chisels, spatulae, tanged and shouldered points, splinters apart from several worked bones, bone blanks, broken and cut bones were also found. These formed important components of Upper Paleolithic kit. Evidence of faunal remains like gazelle, deer cattle, horse, rhinoceros, hyena, freshwater fish etc. from the above-mentioned site suggests humid conditions prevailed in this area. The presence of fossilized cattle bones, at the Upper Paleolithic site of Maralbhavi, shows food processing activity also happened.

The use of various types of scrapers were probably used for woodwork. Thrusting spears, barbed fishhooks, fishing arrows, spear points, arrow points, knives could have been made by using simple blades and backed blades as inserts. Grinding stones could have been used for food processing.

Muchchatla Chintamanugavi has also given evidence of fireplace (Nambi and Murty,1983). The structure of the fireplace is between 1.50 to 1.85m. It was made by arranging limestone boulders in a horseshoe shape. Its evident that it was used for roasting meat and would have been used for fire treatment of chert nodules for further production of artifacts.

Patne has given evidence of beads of ostrich eggshell and marine shell along with the lithic tool implements. These beads of ostrich eggshells have engraved designs on them. Forty or more sites in India have given evidence of beads of ostrich eggshell. The site of Baghor II in Son Valley Uttar Pradesh, has given evidence of a shrine identified with the worship of mother goddess associated with the Upper Paleolithic periods. Here, a rectangular rubble platform was exposed with a triangular stone with natural concentric circle installed in its centre. The present-day traditional hunter gatherer of that region worships similar stones installed on stone platforms as mother goddesses. So, the archaeologists concluded that this practice may have begun in the Upper Paleolithic and showcases continuation in cultural practices. Decorative beads of ostrich eggshells were also found at the site.



Patne Upper Paleolithic (PC:Sali,,1989) 1-3 cores,4 notched blade, 5 simple blade,6 minutely retouched blade, 13,14 backed blades, 12 backed point, 10 and 16 tanged blades,8 truncated blade, 9 blade with retouched ridge, 11,21-23 pen knife blades, 7 and 33 borers on blades, 31 borer on flake, 15, 17, 18 and 20 points, 32 tanged arrowhead,19,24-30 lunates, 34 scraper on flake

Check your Progress:

1) What changes were noticed in the Upper Paleolithic tool industry?

2) Examine the development of art and religion in the Upper Paleolithic

3) Discuss the role of paleo-environment in the development of the Paleolithic in the Indian subcontinent.

2.6 MESOLITHIC

Mesolithic was first identified by ACL Carlyle (1867-68) an assistant of Alexander Cunningham. He found microliths in the caves and rock shelters of Kaimur range in Mirzapur district of Uttar Pradesh. Next important work

was in 1950s at Langhnaj and few other places in Gujarat, where excavtions were undertaken by H. D. Sankalia. This was followed by V.N. Misra's work in Central India and Rajasthan. Eventually numerous sites of Mesolithic were explored and excavated.

Mesolithic succeeds the Upper Paleolithic. It connects the Old Stone Age and the New Stone Age. It further represents the transition from the previous hunting gathering stage of the Paleolithic to the agricultural stage of Neolithic. Mesolithic phase is generally identified with warmer and a very favourable climatic condition in the beginning of Holocene. Lakes were formed and sea levels rose. The increase in rainfall led to an abundance of plant and animal life. This also led to significant growth in population. This abundant supply of water, food also led to the increasing number of Mesolithic sites. This growth of population manifested in the presence of Mesolithic sites in almost every part of the Indian subcontinent. This phenomenon can be well understood by substantial increase in the number of Mesolithic sites in areas previously inhabited by the Paleolithic population. Mesolithic artifacts are present on the thousands of sand dunes present in western Rajasthan and Gujarat. Similarly, in the case of rock shelters in Central India, earlier when few of them were occupied, now all of them, amounting to several thousand yielded evidence of Mesolithic occupation. A small district in Odisha, Koraput, yielded more than one hundred Mesolithic sites. First human colonization of the Ganga plains happened during this period which is evident from over 200 archaeological sites found in the districts of Prayagraj, Jaunpur, Mirzapur, and Varanasi districts. Effective colonization of deltaic West Bengal and parts of West coast (around Mumbai), Kerala took place.

The Mesolithic is dated to early part of Holocene 8,000 BP to 10,000 BP. But the antiquity of microlithic tradition based on absolute dates from sites like Metakheri in Madhya Pradesh, Jwalapuram in Andhra Pradesh, goes back to 48,000 BP. Though the Mesoithic way of life began from the early part of Holocene, the microlithic tool tradition evolved way back in the Pliestocene.

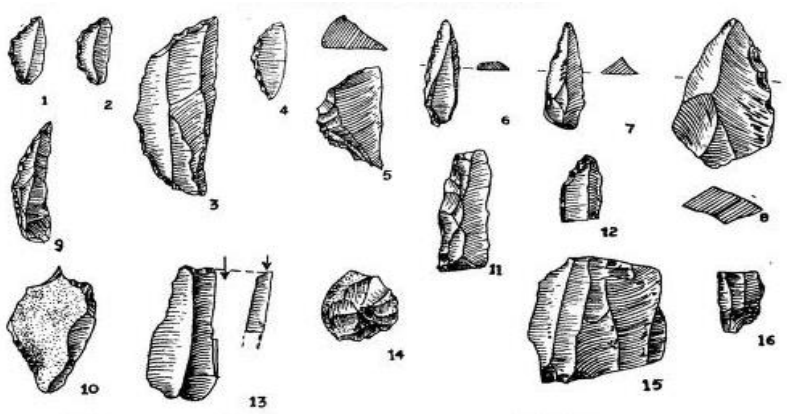
Microlithic tool tradition was marked by the use of mass production of microliths or blades. Nodules of siliceous stones like chalcedony, chert were used to produce these tiny tools or microliths which were 1cm to 5cm in length. Microliths were produced from prepared rectangular or cylindrical core with help of a bone or wooden hammer. A variety of blades were made including triangles, trapeze, lunates, backed blades, points, etc. These microliths were hafted in wooden rods or bone and used as a composite tool like knife, barbed harpoons, spearheads, arrowheads. Such composite tools are reported from some of the Mesolithic sites in Europe and some later sites in India. Mesolithic tool kit also included querns and mullers used for food processing. Querns, mullers, give evidence of domestic activities like increased exploitation of wild food plants. Perforated stone discs or rings-stones would have been used as weights for digging sticks. Also, some sites from Odisha have given evidence of choppers, chopping tools, picks etc. These would have been used for clearing forests.

Exacavations at various sites have given us lot of information about the Mesolithic life. Some of the excavated sites include Sarai Nahar Rai, Mahadaha, Damdama (Uttar Pradesh), Adamgarh, Bhimbeka, Metakheri, (Madhya Pradesh), Bagor (Rajasthan), Billa Surgam cave, Jwalapuram (Andhra Pradesh), Patne(Maharashtra), Hunsgi, Maralbhavi, Mudnur(Karnataka), Ayodhya hill sites(West Bengal) etc.

It is thought that increased food supply would have led to decrease in nomadic lifestyle. This is evident from the large size of sites, thickness of habitation deposits and the presence of burials specifically in the Gangetic Valley. Mesolithic people lived in semi-permanent habitations. Evidence of structures are obtained from stone alignments, postholes, rubble wall, paved floors etc. Intentional disposal of dead for the first time appears during this period from different sites. Langhnaj in Gujarat, Damdama in Uttar Pradesh, Bhimbetka in Madhya Pradesh are some of the sites giving evidence of burials. Detailed studies on the skeletal remains of the Mesolithic and protohistoric sites have been done with focus on paleopathology, palaeodemography etc. Robust health of hunting gathering societies is evident from these studies. Grave goods like microliths and bone ornaments were also placed in the burials.

Mesolithic sites are also associated with rock art. It includes paintings and engravings made on rock surface. Rock paintings are found in different parts of the country but the most prolific is in Madhya Pradesh in sandstone hills of the Vindhyas. Bhimbetka is one of the most important site associated with rock art. It has around 600 painted rocks in an area of 10sq. km. Red is most common, followed by white. Green is also used but rarely. .Haematite seems to have been used for colours. Depiction of wild animals and hunting scene is quite common. Wild animals like deer, nilgai, wild buffalo, boar, rhinoceros, tiger etc are depicted. Fishing and gathering activities like collection of plant foods, honey is also portrayed. Social life, religious life is also depicted.

Beads of jasper, agate have also been found in Bagor, Bhimbetka, Adamgarh. Pottery also makes its appearance in the late Mesolithic sites such as Bagor dated to fifth millennium BCE as it came in contact with the neighbouring agriculturist communities.



Microliths from Birbhanpur (After Sankalia,1962)

Check your Progress:

1) Trace the evolution of semi sedentary lifestyle during the Mesolithic phase.

2.7 SUMMARY

The Paleolithic period is the longest phase in human history. Decades of research in Stone Age archaeology has enabled the reconstruction of Stone Age settlement with reference to accessibility of raw materials for making stone tools, availability water bodies and food resources like wild animals and plants. Stratigraphical cultural sequences are also available from Lower Paleolithic to Mesolithic in most of the sites. Paleoclimate studies has helped in understanding Stone Age sites and its available resources during the different periods of time. Evolution of tool technology is traced from the Lower Paleolithic itself which over time evolves into finer technology. Wood work seems to have begun from the later part of Lower Paleolithic itself. The advent of Holocene sees the emergence of semi sedentary lifestyle and the expansion of art forms. Rock arts depicting various aspects of life is an important development. Micro wear analysis of microliths along with associated features like hearths and grinding stones point to increase exploitation of plant foods during the Mesolithic phase. Apart from variety of wild animals, domesticated animals like sheep, goat, cattle are present. This move towards partially settled life and more exploitation of plant foods paves the way for the emergence of agriculture.

2.8 UNIT END QUESTIONS

Q1. Discuss the importance of settlement pattern studies in understanding Lower Paleolithic sites with reference to Isampur.

Q2. Write a note on the Upper Paleolithic site of Muchchatla Chintamanugavi

Q3. Critically examine the site of Jwalapuram with reference to Middle Paleolithic phase,

2.9 ADDITIONAL READING

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3

NEOLITHIC CULTURES

Unit Structure

3.0 OBJECTIVES:

- To trace the origin and growth of Neolithic
- To understand the different Neolithic Cultures found in India
- To understand the spread of domestication of plants and animals
- To analyze the development of tool technology in the New Stone Age.
- To observe and understand the environmental conditions, location of sites and the development of agriculture

3.1 INTRODUCTION

In the nineteenth century, it was the Danish archaeologist Thomsen who first divided his museum artifacts into Stone, Bronze, and Iron. Subsequently, prehistorians further expanded the divisions into Paleolithic, Neolithic, Copper, and Iron. This was further modified to include the three stages of the Paleolithic. Neolithic or New Stone Age is the last phase of Stone Age. Chronologically and stratigraphically, it follows the Chalcolithic phase but it's also contemporary with the Chalcolithic in Indian context. Ground polished stone tools, having smooth and round surface, are the chief characteristic feature of this period. Added to that is the beginning of settled life with introduction of agriculture. It also marks the use of handmade and wheel made pottery.

V. Gordon Childe used the term Neolithic revolution to highlight the importance of the change in lifestyle during this phase. It's identified with a new subsistence economy based on farming and stock raising. And marks a major turning point in the progress of mankind. So, the Neolithic phase led to the emergence of sedentary living and small village communities. Some of the earliest Neolithic Cultures in the world are also located at Jericho, Ain Ghazal in Jordan, Catal Huyuk in Turkey, Spirit Cave in Thailand. These are dated to 8000-6000 BCE.

Identification of Neolithic stone tools or celts started in nineteenth century. Le Mesurie identified a celt or a Neolithic stone tool in 1842 in Raichur district, Karnataka. This was followed by many more such identifications including by John Lubbock, Meadows Taylor etc. Eventually hundreds of such tools were discovered in various parts of the country. Robert Brucefoot, pioneer in Stone Age studies, is also associated with the identification and interpretation of the Neolithic sites in India. Mortimer Wheeler's excavation of the site Brahmagiri led to the identification of the Neolithic cultural remains below the Megalithic. Neolithic cultural material like pottery, stone tools were found below the Iron Age Megalithic. This established the cultural sequence of the South Indian Neolithic. Further research carried out in the last few decades has brought to light many Neolithic and Chalcolithic Cultures located in a variety of ecological zones across the country. They were the pioneers of settled life in most part of the country.

Interestingly, the Neolithic phase in India developed in different regions at different time periods. In the Ganga Valley, its dated to 7th to 6th millennium BCE. The rest mostly fall in the range of 3rd-2nd millennium BCE. The variation in time and space in the Neolithic Cultures was also a result of adaptation to different ecological zones. Most of these Neolithic Cultures have also given evidence of indigenous development from previous Mesolithic phase. Some of these cultures were also contemporary to the copper using Harappans and other Chalcolithic Cultures.

Check your Progress:

1) What is the importance of Neolithic phase?

3.2 INDIAN NEOLITHIC COMPLEX

The Indian Neolithic is spread across the Indian subcontinent. The Indian Neolithic was divided into four zones by V.D. Krishnaswami (1962). These were, A – Central and Western India, B – southern India, C- East Indian Neolithic and D– Kashmir Neolithic. East Indian Neolithic was further divided into two regions, i.e. Assam and Bengal-Bihar-Odisha.

B.K. Thapar (1978) divided the Neolithic of India into six geographical zones, (i) Northern covering the Kashmir valley, (ii) Belan valley covering the Vindhyan Plateau in districts Allahabad, Mirzapur, Rewa and Sidhi, (iii) Northern Bihar or Mid-eastern covering district Saran, (iv) North-eastern covering Assam and the adjacent sub-Himalayan region, (v) Central-eastern

covering Chotanagpur plateau extending in West Bengal and Odisha and (vi) Southern, covering the Peninsular India.

So, broad division of the Neolithic- The Northern India with Kashmir Neolithic, Central India with the Vindhyan and the Gangetic valley Neolithic, Eastern India Neolithic with Bengal, Odisha, Northeast and the Southern Indian Neolithic.

As noted earlier the site of Jhusi in the Gangetic valley, Koldihwah in the Vindhyan region have given dates going back to 7^{th}-6^{th} millennium BCE. So, it precedes the Early Harappan in some case, but it is also contemporary to the Chalcolithic and the Harappans (eg. South Indian Neolithic). The difference between the Chalcolithic and Neolithic mainly lies in the appearance of copper in the former and the presence of polished stone tools in the latter.

3.3 NORTH INDIA (KASHMIR NEOLITHIC)

The Kashmir valley has revealed the remains of Neolithic habitations at a large number of sites. Gufkral and Burzahom are two most important excavated sites. One typical characteristic of Kashmir Neolithic are dwelling pits. Here people lived in underground dwellings with wooden roof covers most probably as protection from cold. Hearths and storage pits were found outside the dwelling pits. At Gufkral there is also a double chambered dwelling pit the first phase is without pottery but stone celts, querns, pounders, were found. Next phase sees the evolution of ill fired grey ware some of which had mat impressions and the following phase has wheel made pottery. It is also notable for its bone tool industry made of bones of sheep, goats and ibex. It included scrapers, chisels, awls, harpoons, antimony rods, needles with eyes, daggers and points. Kashmir Neolithic sites have given evidence of rectangular stone knives with two or more holes on the blunt side also known as harvesters. Associated faunal remains have given evidence of dog, sheep, goat, cattle, ibex, wolf, deer and bear. It comprised of both domesticated and wild animals. Flora remains included wheat, barley and lentil. An interesting feature of Kashmir Neolithic was burial of animals like deer, wolf, humped cattle. Dog burial associated with human burial is also found here. Ancient surgical practices or trepanning of skull was found on one human skull.

The subsistence economy consisted of both incipient agriculture and hunting. An interesting artistic depiction is found on a stone slab. The engraving shows a hunting scene and also two sun and a dog.

Check your Progress:

1) Analyse the importance of Kashmir Neolithic.

2) Write a note on the different zones of Neolithic found in India.

3.4 CENTRAL INDIA (VINDHYAN AND THE GANGETIC VALLEY)

The Neolithic evidence comes from various sites in Uttar Pradesh in the Vindhyan and the Gangetic Valley region. Explorations and excavations by the Allahabad University, Benaras Hindu University also the State Department of Archaeology, have led to the discovery of a large number of sites in this region. Vindhyan region has given evidence of transition from hunting gathering to sedentary agriculture. Huts, microliths, handmade pottery, food processing equipment's suggests cultural continuity from the earlier Mesolithic. Among the important excavated sites are Koldihwa, Mahagara, Jhusi, Lahudewa, Sohagaura, and Chirand. Some of the sites like Jhusi, Lahurdewa, Chirand have given evidence of continuous development from Neolithic to Iron Age.

The Neolithic people lived in circular or semicircular huts with postholes. (Wattle and daub) houses associated with hearths and storage pits. Irregular water channel was exposed at the site of Lahurdewa. The lithic component was composed of querns, mullers, hammerstones, ring stones, microliths and polished axes. The handmade cord impressed pottery of the Neolithic is found here in the early phase. Eventually wheel made pottery, are also found.

One of the most important features of the Vindhyan and Gangetic Valley Cultures is the association of rice. Wild varieties of rice are found in abundance in Mesolithic sites. Neolithic sites give evidence of both domesticated and wild rice from the earliest phase. Associated with rice are also the finds of wheat, moong. masur and barley. The crop package also incorporated millets, legumes and pulses. Domesticated fauna included cattle, sheep, goat, buffalo and pigs. The site of Mahagara has also given evidence of cattle pen. Aquatic fauna fish, mollusks and turtle were also recovered. Wild animals included deer, antelope, elephant and rhinoceros. Bones of birds were also recovered. Bone tools formed an important part of Neolithic economy. Chirand is known for profuse amount of bone tools. It consisted of both weapons and ornaments. Scrapers, chisels, borers, awls, hammers, points arrowhead were the tool component whereas the ornaments consisted of pendants, earrings, bangles, combs etc. Steatite beads were found from the Neolithic levels of Lahurdewa.

The site of Sonepur in Bihar is the only Neolithic site to give evidence of burial. Food for the dead would have been given in the form of animal and bird bones found buried in the burial pits.

Check your Progress:

1) Discuss the evolution of Neolithic Cultures with reference to the site of Koldihwah and Chirand

2) Assess the importance of faunal and floral remains in the economy of the Central Indian Neolithic Cultures

3.5 EASTERN INDIA

Explorations and excavations at the sites of Hikudi, Golbai Sasan, Kuchai, Baidyapur(Odisha), Pandurajar Dhibi, Mahisdal (West Bengal), Daojali Hading, Sarutaru(Assam) have yielded data regarding the Neolithic of Eastern India. Eastern Indian Neolithic specially the sites in West Bengal has sites with surface collection of Neolithic celts. The excavated collection of Neolithic polished axes is generally associated with Chalcolithic phase. The site of Kuchai in Odisha has yielded evidence of transition from Mesolithic to Neolithic. The other sites in the region have also yielded evidence of food production and also the production of Neolithic polished stone tools in large numbers. The site of Lahanda has a large number of debitage, showing evidence of stone tool preparation. Large sized flake blade blanks, dolerite boulders with marks of core preparation on their surfaces, hammers, alongside, semi-finished specimens of adzes, axes and chisels. This was a typical characteristic of a Neolithic manufacturing site which produced semi-finished specimen. The finishing processes like micro chipping, pecking and grinding is done by the people who finally used them. There are other sites giving similar evidence like the site of Hirakud.These were established for production of polished stone axes which were produced on the raw materials like dolerite. These quarrying and production sites were located near the outcrop. The end product was then traded.

Eastern Neolithic is associated with the presence of rice. The sites like Golbai Sassan, Harirajpur, Khamreshwaripalli have all given evidence of rice. The crops package also include pigeon pea, urad, millets, horse gram

Evidence of domestic faunal species include pig, domestic cattle, buffalo, goat, cattle and sheep. Hunting was also practiced. Wild fauna alongside birds, turtles, fish were also recovered from these sites.

They lived in wattle and daub houses with handmade cord impressed pottery and wheel made pottery, used a variety of bone tools.

The Neolithic of the Northeast is dominated by shouldered celts. Excavation at the site of Selbalgiri in Garo Hills, yielded hoe blades and shouldered celts. The raw material used was sandstone. It seems that modern iron hoe blade is an exact copy of the flat celt or hoe blades. They have also yielded cord impressed pottery, butt end axes and microliths. Presence of querns and mullers provide indirect evidence of plant food. Sandstone, quartzite, were used to make lithic tools. Fossil wood was also used to make Neolithic tools.

Check your Progress:

1) Comment on the variation within East Indian Neolithic.

3.6 SOUTH INDIAN NEOLITHIC

South Indian Neolithic is one of the best studied Neolithic. It includes the states of Karnataka, Tamil Nadu and Andhra Pradesh. Robert Brucefooot was one of the earliest workers on South Indian Neolithic. Excavations at Brahmagiri by Mortimer Wheeler, Piklihal by Raymond Allchin and work of K.Paddayya (Paddayya, 2002) at Budihal are important contributions to South Indian Neolithic . Excavations at the sites of Piklihal, Maski, Budihal, Hallur, Sangankallu, Nagarjunakonda, has helped in understanding the South Indian Neolithic.

Ashmound sites are characteristic feature of South Indian Neolithic. They are mostly associated with habitation sites yielding rich Neolithic cultural material. Ashmound sites are located in areas more suited to pasture and less suited to agricultural activities. The excavation of the site of Budihal has given us a comprehensive idea about the lifestyle of the Neolithic. The entire site consists of ashmounds and habitation deposits. It has different areas marked for chert workshop, butchering activity (where stone tools in association with faunal remains were found), cattle penning area and living area and burials. Specified area for polished stone axe grinding was also located. The Neolithic people lived in circular huts made of low walls of stone supported by conical thatched roofs. Similar dwellings are also found at other sites like Brahmagiri, Piklihal, Palavoy, Hallur,etc. Hearths and storage jars were found in all the huts at Budihal. The dwelling structures in the South Indian Neolithic were invariably accompanied by mullers, querns, and storage pits, and ground stone axes. Manufacturing of ground axes was another important characteristic feature of Neolithic South India. Manufacturing centres have been found profusely across the South Indian Neolithic horizon.

Ashmounds were formed of burnt cow dung. It's been postulated that this activity was initiated to keep the cattle penning area hygienic. It could also have held ritualistic significance. As cattle was very important in the pastoral economy.

Hill sites like Sangankallu were commonly found. They were located close to water springs. At the site of Sangankallu, a Mesolithic phase preceded the emergence of Neolithic stone axes. Neolithic phase structural remains are associated with circular huts and hearths. At Sangankallu Neolithic complex, manufacture of polished stone axes was carried out by quarrying the dolerite dykes. Here, like in Odisha Neolithic the axes were traded to other sites where the grinding activity was carried out. Sites in Tamil Nadu also gave evidence of axe manufacture. Typically, in all these sites the, the factory sites did not yield finished products. Dolerite was commonly used

for manufacturing chisels, adzes, axes. Querns and mullers were mainly made of quartzite.

The Neolithic people of Tamil Nadu also lived on hills, slopes of hills, and foothills. Rock shelters are associated with the sites though they were not used for dwelling purposes. Rarely they settled on riverbanks. Terrace cultivation would have been practiced. The sites here give evidence of Neolithic followed by Megalithic. Associated with the Neolithic sites are ground stone tools, pounders, mullers and querns. The Neolithic pottery included handmade grey ware, buff and brown ware. Sites like Paiyampalli, Appukallu, Bargur have given evidence similar to the rest of South Indian Neolithic. Appukallu is an ashmound site which is located at a foothill. Neolithic ground stone tools were recovered from the excavtions here.

The sites of Andhra Pradesh have yielded evidence similar to the rest of South Indian Neolithic. It also is characterized by ashmound sites associated with the granite-gneiss hills. Gamalapadu and Budada were Neolithic habitational cum manufacturing centre of axes. These sites have also given evidence of spouted pots, dish on stand, in the pottery repertoire. Presence of steatite disc beads provides evidence of trade or exchange. Raw material for manufacturing steatite beads is not available locally. Excavations at some of the sites have yielded evidence of pale grey ware in the earlier phase and ill fired brown and buff ware in the later phase. Palavoy finds includes profuse amount of bone tools. Some sites like Nagarjunakonda, Palavoy have given evidence of microliths before the appearance of Neolithic cultural materials. Apart from that, most of the sites have given evidence of Megalithic Iron Age following the Neolithic.

The sites like Hallur, Tekkalkota have given evidence of two types of millets, horsegram, mung bean, wheat, barley, legumes, black gram, green gram. Among the fauna, cattle predominate, though there is presence of sheep and goat. Wild animals like nilgai, deer, gazelle, tortoise were found. Frequent depiction of cattle and bull as rock art further emphasizes the importance of cattle. Pastoralism was the most important part of subsistence economy which also consisted of incipient agriculture, hunting and fishing Copper fishhooks were found at some sites. Matt impressed pots suggests presence of weaving. Chisels, adzes, axes would have been used for woodwork

Beads of semi-precious stones and steatite become quite common. Appearance of copper show contact with the Chalcolithic cultures to the north. Spouted pots show contact with the Chalcolithic Jorwe culture of Maharashtra. The pottery was handmade grey or reddish pottery. Later stages saw the emergence of wheelmade sturdy pottery.

Burial was practiced. Burial in jars was also observed. They also practiced extended burials and secondary burials

Rock art is most profusely found in rock shelters, boulders around hill sites. They are either engraved or painted in white and depict figures of cattle, deer and hunting scenes.

The South Indian Neolithic seems to emerge out of a earlier Mesolithic phase. Sites like Nagarjunakonda, Sangankallu give evidence of a Mesolithic phase. The South Indian Neolithic is succeeded by the Iron Age Megalithic.

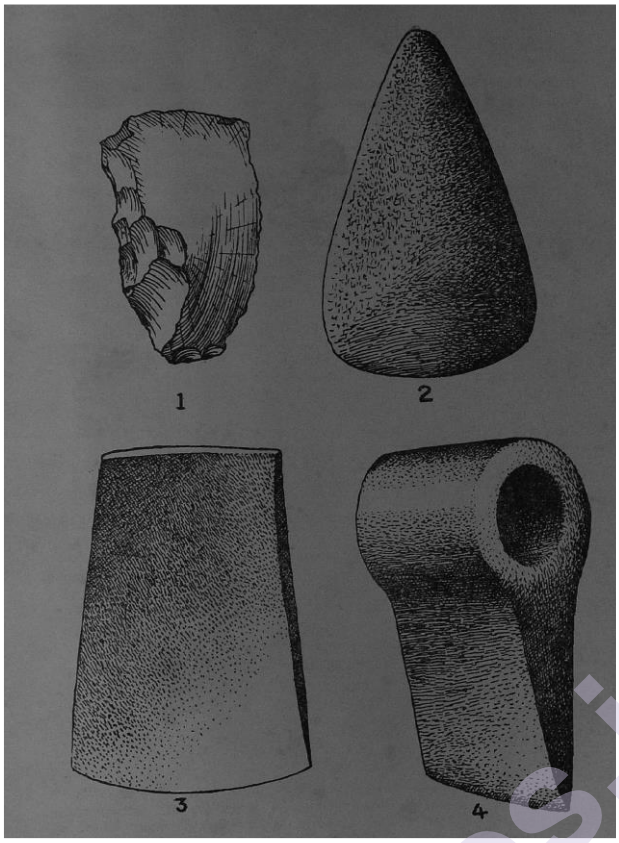
Check your Progress:

1) Assess the importance of cattle in the Neolithic economy of the South.

3.7 SUMMARY

Neolithic is the period identified with a major change in world economy. Pastoralism and agriculture emerge as mainstay of the Neolithic economy. Hunting continues as associated activity along with fishing. As observed earlier these sites were located in very different ecological zones and occupied very different time periods. Inspite of this, they shared the common traits of polished stone axes, use of bone tools, continued use of microliths and in many cases cord impressed pottery. Burials are also found at many sites. Subsistence activity differed according to the locations. The early dates of presence of rice coming from the Vindhyan and the Gangetic regions, is of immense importance. This marks the earliest phase of beginning of cultivation, the antiquity of which can be dated to 7^{th} to 6^{th} millennium BCE.

Exchange economy was active both locally and regionally. Introduction of wheat and barley, presence of steatite beads in South Indian Neolithic throw light on the regional exchange network. The emergence, growth and spread of Neolithic way of life laid the foundation of Indian rural economy. The local or indigenous development is visible in the evolution of these cultures from the earlier Mesolithic phase traced at many sites.



Axes-Stone Age to Iron (After, Sankalia, 1962)

3.8 UNIT END QUESTIONS

Q1. Discuss the importance characteristic features of Kashmir Neolithic.

Q2. Write a note on the Eastern Indian Neolithic with reference to the site of Golbai Sassan

Q3. Critically examine the Neolithic practices of Central India.

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4

CHALCOLITHIC CULTURES

Unit Structure

4.0 OBJECTIVES:

- To study the evolution of Chalcolithic
- To understand the different Chalcolithic traditions found in India
- To assess the salient points in the appearance of copper technology.
- To make the students aware of the settlement pattern studies in the context of Chalcolithic archaeology
- To observe and understand the development of agriculture and trade activities

4.1 INTRODUCTION

Chalcolithic came from the two terms, *chalco* meaning copper and *lithos* meaning stone. It denotes a culture using copper and stone. This was the first stage in the history of mankind when man started using metal technology. Copper was the first metal introduced. Stone tools continued to be used. The introduction to metal technology was a big leap in the history of mankind. So, this phase denotes a society using copper and stone tools, wheel made painted pottery, practicing agriculture, pastoral activities, hunting and involved in long distance trade. Chalcolithic cultures symbolize the end of the Prehistoric period and beginning of Protohistoric period in the Indian subcontinent.

Protohistoric period includes the Harappan cultures and the Chalcolithic cultures. Protohistory denotes a phase when writing was known but the script is not deciphered unlike the historic phase when the written

documents become available. The presence of script signifies an advanced economy from the previous stage. A large number of regional and local cultures evolved and for the first time, the rise of urbanization (Harappan) and proto urbanization is observed. Protohistoric period bridges the gap between the Prehistoric and the Historical periods.

The nineteenth century saw a lot of work regarding Stone Age archaeology and Historical Archaeology. But the archaeological evidence connecting the Prehistoric period with earliest archaeological period was missing. Only after the discovery of the Harappan Civilization in the 1920s, that we find the missing link between the Stone Age archaeology and Historical archaeology. H.D. Sankalia speaks about the sixteen janapadas mentioned in the Sanskrit literature, Buddhist literature, which were dated to 6th century BCE. These sixteen janapadas stretched from Malwa (Avanti) in the west to Mithila (Bihar) in the east. He also says that the later Vedic texts mentioned Saurashtra, Vidarbha, Narmada Valley. Basically, from these texts we come to know of kingdoms from Uttar Pradesh, Madhya Pradesh, Assam, Saurashtra (Gujarat), Rajasthan, Vidarbha (Maharashtra). We also didn't know of any archaeological cultures where these sites were located It was only after the discovery of the Harappan Civilization, intensive explorations and excavations were carried out, especially after independence, by various Universities, Archaeological Survey of India and various State departments of Archaeology. This resulted in the discovery of numerous unknown cultures in the Gangetic Valley, Rajasthan, Saurashtra, Central India, peninsular region. These cultures were eventually related to either Harappan or the Neolithic, Chalcolithic phases of Indian history. Subsequently, many cultures located in these areas saw the advent of Iron Age and eventual development of the flourishing janapadas of the Early Historical period.

4.2 CHALCOLITHIC TRADITIONS

Chalcolithic was first identified at the site of Jorwe, in Ahmednagar district of Maharashtra. Further explorations revealed hundreds of Chalcolithic settlements in the Deccan, Central India, Rajasthan, Gangetic doab, Gujarat. These were mostly regional and rural in character. So, the Neolithic Chalcolithic cultures in the Indian subcontinent were found in Baluchistan and adjoining regions, Indus Valley, Padri and Prabhas Patan tradition of Saurashtra, Ganeshwar Jodhpura cultural complex, Anarta tradition of North Gujarat, Ahar culture of Mewar, Neolithic Kashmir, Kayatha and Malwa traditions, OCP Copper Hoard traditions of North India, Savalda and Jorwe traditions. The excavations at Brahmagiri had already identified Neolithic Megalithic cultural sequence in South India. The excavation at the site of Jorwe and Nasik by H. D. Sankalia and S.B. Deo in 1952 gave stratigraphic evidence of these early farming communities.

Chalcolithic traditions -

- Centra Indian Chalcolithic: Ahar, Kayatha, Malwa
- Deccan Chalcolithic-Savalda and Jorwe

- Eastern India – Bengal, Odisha
- North India- OCP-copper hoards, Vindhyan, Middle Ganga Valley
- Ganeshwar Jodhpura Cultural Complex

Check your Progress:

1) Discuss the beginning of Protohistoric archaeology.

4.3 CENTRAL INDIAN CHALCOLITHIC

Central India a distinct geographical unit, forms a link between the Indo-Gangetic plain to the north and the peninsula to the south. It consists of Malwa plateau, and the Chambal Valley. South-eastern Rajasthan is a part of the Chambal Valley. Ahar culture of Rajasthan and Malwa, Kayatha cultures of the Malwa region of Madhya Pradesh are in this region. The excavations at the sites of Balathal, Ahar, Gilund, Kayatha, Navdatoli have given evidence of early farming cultures in this region. The dates from the sites of Balathal go back to 3700 BCE whereas the dates from the Malwa region is later between second to third millennium BCE.

Ahar culture sites flourished on the banks of the river Banas. Later, it also extended into the Chambal Valley in Malwa region. Kayatha and Malwa culture sites evolved a little later than the Ahar culture of Rajasthan. The sites of the Malwa culture and Kayatha culture were located on the banks of the river Narmada, Chambal and their tributaries. Central Indian Chalcolithic cultures were located in a region with semi-arid climate and fertile black cotton soil.

The Ahar Chalcolithic is also known as Ahar Banas Chalcolithic complex. Excavations at the site of Gilund, Balathal have given evidence of local development of this culture. Mesolithic phase was found at the earliest level in Gilund before the beginning of Chalcolithic. The origin of the first farmers of Ahar culture was rooted in the earlier Mesolithic phase. The continuous growth and development of the Chalcolithic is observed at these Ahar culture sites.

The sites of Ahar, Gilund Balathal have given evidence of structures of mud, mudbrick and stones. These sites gave evidence of evolution from flimsy round structure to multi room structure of mud and stone and mudbricks. Baked bricks were also used. Malwa culture sites have given evidence of huts either rectangular or circular made of mud and wattle and daub. Some sites like Nagda have also given evidence of use of mudbrick. These chalcolithic sites have also given evidence of public architecture. The sites of Ojiyana, Balathal and Gilund have given proof of outer fortification or defence walls. Balathal had a fortification within the settlement. Gilund has a parallel wall structure identified as warehouse. The Ahar culture sites have yielded details of well-planned layout of the settlement developed by the middle Chalcolithic phase. The Malwa culture sites have also given evidence of mud ramparts. The domestic structures generally have hearths and storage pits or jars for storing grains associated with them. The site of

Gilund sees the earliest evidence of the use of burnt brick for construction, dated to the beginning of 4th millennium BCE. The craft manufacture area of Gilund have structures of burnt bricks.

Burnt bricks were not common in Chalcolithic settlements. It was rarely used, like the sites of Nagda and Eran yielded evidence of such bricks in the construction of fortification wall.

Archaeo botanical remains have given evidence of wheat, barley, rice, mustard, pea, lentils, millets, black gram, green gram among others. Remains of domesticated animals like cattle, sheep, goats and buffalo were found. They practiced a mixed economy of farming and animal husbandry. Hunting continued as is evident from the remains of wild animals like nilgai, blackbuck, four horned antelope, elephant, among others. Turtle, fish and molluscs remains were present. Fishing was also practiced.

Efflorescence of art and craft activity is witnessed during this phase. Navdatoli has produced beautiful painted pottery, which included channel spouted cup, pedestalled goblets etc. The Ahar culture sites produced many beautiful pottery but its dominated by Black and Red Ware with white paintings. Stone blade tools including blunted backs, lunates, trapezes, and points made of chalcedony have also been found. Terracotta objects include skin rubbers, ear studs, votive tank, crucibles, bull figurines, pottery discs, wheel miniature pot, pendants, lamps, bangles, human figurines., gamesman etc. Lithic components also included querns and muller and microliths.

Copper craft is developed, as the smelting and melting of metal begin and thereby obtaining the desired shape. Copper tools include copper dagger, axes, chisels, fish hooks, swords, arrowheads, and copper ornaments like rings, bangles, kohlsticks. Some of these sites were producing copper. This is evident from the sites of Balathal and Ahar in the form of crucibles, slags. The site of Kayatha has produced two copper axes, twenty-eight bangles and one chisel. which had been cast in moulds showed the advances in copper technology achieved by these people. Beads of semiprecious stones were found at many of these sites. Carnelian, agate, jasper among others were reported. It is believed that these Chalcolithic people acquired copper from western Rajasthan, gold from Karnataka in South India, semi-precious stones from Gujarat and the Deccan, marine fish and conch shell for manufacturing bangles from the Saurashtra coast. Beads of terracotta were also manufactured. 100 clay seal impressions from 10 different seals were found at the site of Gilund. The presence of these suggest long distance trading network existed in the Chalcolithic communities.

Religious beliefs of the Chalcolithic people are reconstructed based on the artifacts found at the site and ethnographic parallels. Numerous terracotta bull figurines have been found at Kayatha, Ahar, Marmi, and Gilund indicating the probable existence of a bull cult. Fire worship seems to have been practised as evident from the site of Navdatoli. A rectangular fire altar, 2.30 by 1.92 m and 1.35 m deep, with its sides and bottom plastered, was located here. A shrine depicted in applique pattern on a storage jar from

Navdatoli has a female worshiper on the right and a lizard on the left, with the former being associated with Parvati, the consort of Siva. Burial was not practiced. Only Balathal has given evidence of few burials in the fortified ash deposits. These three skeletons seem to have been buried due to exceptional circumstances.

Settlement pattern studies have shown that the Chalcolithic farmers located their settlements on the availability of natural resources and viability of communication. Sites such as Eran and Kayatha were emclosed by river bends. Such sites were chosen because of the natural protection provided as well as the presence of water pools at such locations. The availability of good pasture in proximity to the settlement was also important in the location of sites. Identification of regional centre was done on the basis of the size and location of the settlements. Gilund and Navdatoli were identified as regional centres because they were the largest site and also based on their location. Multiple smaller sites were located around the regional centre. These would be camp site, pastoral sites or small agricultural sites for planting and harvesting seasons or exploitation of raw material resources. The presence of a chief or the existence of chiefdom society is evident. The presence of public architecture shows mobilisation of labour. This requires the presence of chief. Division of labour would also have existed as so many different craft activities were practised. A complex society was emerging during the Chalcolithic phase.

Check your Progress:

1) Analyse the Chalcolithic economy of the Ahar culture

2) Write a note on the different types of rituals or religious practices.

4.4 DECCAN CHALCOLITHIC-SAVALDA, JORWE

The Deccan Chalcolithic sites are located in the semi-arid belt of the contemporary states of Maharashtra and northern Karnataka, east of the Western Ghat escarpment. It encompasses archaeological sites from the second millennium BCE. The region is drained by three major river systems, Tapi, Godavari, and Bhima. Highest concentration of Chalcolithic sites are in the Tapi basin. The number of sites reduces as one moves farther south to the Godavari and Bhima basin. The location of Chalcolithic settlements along these river valleys, ensured plentiful water, arable land, and pasture.

One of the best studied areas of the Chalcolithic is the Deccan Chalcolithic. Inamgaon, Daimabad, Bahal, Chandoli, Kaothe, Nevasa are some of the sites of this culture. The beginning of settled life in Maharashtra can be dated to the Savalda culture in the second millennium BCE. Based on intensive research at various sites its now known that the Savalda culture originated indigenously. Savalda culture was identified on the basis of unique pottery discovered at the site of Chinchoda and Savalda. These potteries have unique weapon motifs, apart from plant like motifs,

geometrical motifs, animal motifs painted on them. Usually black on red painted pottery. Jorwe culture first found at the site of Jorwe is dated to 1400 BCE. The Jorwe culture is spread all over Maharashtra except the coastal strip on the west and Vidarbha in the North East. (Dhavalikar, 1970). A. Sundara's (1968; 1969-70; 1970-71) extensive field surveys have revealed that the region of Jorwe culture could be extended upto Karnataka. These sites have been identified by Dhavalikar (1989a) as Late Jorwe settlements But the most intensively researched site of this culture is Inamgaon. First inter disciplinary scientific studies was conducted here. This helped in the reconstruction of various kinds of structures, social organisations, economic activity and religious practices.

The Savalda culture flourished in the Tapi valley, though its also found at the site of Daimabad in the Pravara Valley. Jorwe culture are found throughout Maharashtra except the coastal zone. The fertile black cotton soil of the Tapi Valley would have attracted the first farmers of the Deccan. Settlement pattern studies have led to the identification of regional centres. Prakash in the Tapi Valley, Daimabad in the Godavari Valley and Inamgaon in the Bhima Valley have been identified as the regional centres. Smaller sites have been identified as seasonal camps, factory sites, farmsteads etc.

Excavations have revealed circular pit dwellings. It was observed that three to four pits formed one complex. Shallow storage pits for keeping poultry and deeper pits for keeping grains were also unearthed in the courtyards. Hearths are a common feature At Daimabad, the houses were made of mud walls, with two or three rooms, a circular hearth, and a common main entrance. The house floors were decorated with shells. At Inamgaon, 130 structures of the Jorwe phase were exposed during excavation. Space was left between houses in this phase, a linear type of arrangement that suggests the negative spaces served as lanes. Early Jorwe people built lived in rectangular structures, with low mud walls and wattle and daub construction. Small oval fire pits or armed hearth built of clay were found inside the houses. Storage was important as storages pits were found in the courtyard and round mud platforms for storage units were found in the corner of the house. Evidence of extended family living together is observed, additional rooms were attached later and up to three storage pits and *chulha* (ovens) built in the courtyard. The crafts people's houses were also identified like potter's house, house of coppersmith, lime maker, lapidary or bead worker. Granary and irrigation channel give evidence of public architecture.

The early farming communities in the Deccan also practised farming and stock raising, along with hunting and fishing. Barley, wheat jowar, ragi, bajra, black gram, green gram, lentils peas, horse gram, kulith were grown here. The rich plant economy suggests a congenial environment of these

early farmers. Cattle, buffalo, goat, sheep, pig, and dog form part of the Chalcolithic economy. Wild animals include nilgai, deer, fox, langur, birds, fish, reptiles, and molluscs.

They were using stone and copper tools like all other Chalcolithic cultures. Kaothe has given evidence of bone tools. The presence of ground stone objects such as mullers, querns, and grinding stones indicates that grain and other vegetal foods were processed at the sites. The stone tool assemblages are dominated by blade/flake industries. Heavy duty stone objects include a bead polisher, ringstones, hammers, saddle querns, mullers, stone balls, pestles, sharpeners, polishers, polished semi-precious stones, and stone sculptures. Material remains include copper artifacts and terracotta objects. Terracotta objects included terracotta bull figurines, skin scrubbers, cakes, balls, pendants, perforated discs, and many more such objects. But the Chalcolithic phase was dominated by copper objects. Metal technology was rudimentary. Boat shaped copper furnace was found at Inamgaon.Copper objects included bangles, pendants, rings, fishhooks, spear heads, antimony rods, chisels etc.

Trade was an important activity. Conch shell present here shows contact with Gujarat. They would have obtained gold and ivory from the Karnataka. Copper ore from Rajasthan or Gujarat. In exchange they were also supplying copper to Karnataka and to local hunting gathering communities.

Religious belief included finds of female figurines who would have been venerated as mother goddesses. Small figurines of mother goddess were placed in storage pits and are thought to be associated with fertility. Another interesting find was at Inamgaon of a clay box containing a female figurine and over the box was another female figurine without head and a bull and all of these are unbaked Ethnographic parallels show that a tribe near Mumbai, the Warlis, also worship a headless figurine. She relates to fertility. Deccan Chalcolithic cultures are also characterised by burials in all phases. In the Jorwe phase in the adult skeletons, feet below the ankle was chopped off. Adults were buried in pits. Child burials were in urns. Food was provided. A unique burial in Inamgaon is of an adult in the courtyard of a five roomed house. The feet was not chopped and the entire body was placed in a four legged jar in a seated position. It is thought because of this special treatment, it must be the burial of a person of importance. This has led the archaeologist to identify him as the chieftain.

Check your Progress:

1) Analyse the socio religious structure of the Deccan Chalcolithic.

2) Write a note on the Jorwe culture

4.5 NORTHERN -OCP, COPPERHOARDS, MIDDLE GANGA VALLEY, VINDHYAN, EASTERN INDIA-BIHAR, BENGAL, ODISHA

The Chalcolithic cultures of Middle Ganga Valley and the Vindhyan encompasses eastern Uttar Pradesh. Lower Gangetic region also includes Bihar and Bengal. Eastern Uttar-Pradesh extends from Allahabad and Kaushambi districts in the west to the Bihar-Bengal border in the east and from the Nepal tarai in the north, to the Baghelkhand region of Madhya Pradesh state in the South. The entire region may be divided into three distinct geographical units – The Ganga Plain, the Vindhya-Kaimur ranges and the Saryupar region. This region is one of the early centers of agriculture which paved the way for the development of the Neolithic-Chalcolithic. Eastern Uttar Pradesh, Bengal, Bihar, Odisha come under similar ecological zones. These regions occur in a region where there is plentiful availability of water and dense forests.

Some of the important excavated sites of this region are Koldihwa Lahurdewa, Imlidih khurd, Sohgaura, Hetapatti, Jhusi, Chirand, Taradih, Senuwar, Mangal kot, Mahisdal, PanduRajarDhibi, Gobai Sasan, Khamreshwaripalli,

They lived in houses made of wattle and daub and mud. Partition walls separated the house into multiple rooms. Lahudewa has given evidence of a number of armed clay or hearth and earthen storage bins. The site of Oriup has given evidence of circular, semi-circular ovens. Floors paved with lime plaster, postholes and ovens are also found at the site of PanduRajar Dhibi. Here, the earliest inhabitants made their huts with floors of pellety laterite sometimes burnt. The earliest level at Chirand revealed a circular hearth and post-holes and floors of burnt earth. The exposed lime floors at Sonpur had circular pits representing circular huts, with varying diameters of 1.84 to 2.44 m. and with bones of animals and birds inside. Bharatpur had two habitational floors along with open hearths containing pottery and animal bones. Golbai Sasan has also given evidence of circular huts with partition walls and post holes.

Bone tools and microliths were important part of Chalcolithic economy of this region. Khamreshwaripalli in Odisha has also given evidence of quite a few bone tools. Antler tools were found. Bones of cattle, sheep, goat, tusk of wild boar were used to make burins, chisels, scrapers, adze, needles, arrowheads, blades, harpoons, etc. At Sonpur and Chirand finds include tanged and socketed arrowheads having circular or square section and pins of bone, arrowheads of ivory and styli of both materials. Earrings made of fish vertebrae were recovered at the Chalcolithic settlement of Global Sassan.

Khairadih, Narhan and Sohagaura yielded evidence of beads of agate, chalcedony, carnelian, jasper, steatite which were also found in other sites of the region. Teracotta beads, also incised variety, were found at various sites like Khamreshwaripalli, Lahurdewa etc. Terracotta human figurines

and animal figurines were also recovered from these sites. Shell beads were also found. The ceramic industry was associated mainly with Black and Red Ware.

Copper objects are scarce but present. They include spiral bangles, fish hooks, antimony rods, fishhooks, beads, chisel, recovered from different sites.

Agriculture was the mainstay of the economy supplemented by hunting and fishing. Rice is the most important crop. Other archaeo botanical remains include cotton, barley, wheat (club wheat, dwarf wheat, bread wheat) pea, green gram, chickpea, khesari mustard oilseeds, millets, kodo millet, flax or linseed, castor, safflower, jackfruit, watermelon seeds, mango. Cattle, goat, sheep dog, pig were domesticated and the wild faunal remains show the continuation of hunting.

Compared to the preceding Neolithic culture, there was a dramatic increase in the number and size of the Chalcolithic sites. This would have been due to a sharp increase in population. Not much work has been done on the social structure of the Chalcolithic period. The presence of various types of ceramic wares and small objects of stone, bone, ivory, etc. indicates the specialization of crafts and beginning of emergence of complex society.

The Copper Hoards are a variety of copper tools found in caches. Most of these have been chance discoveries, discovered while ploughing a field, making a road. Typical copper hoard objects included harpoons, rings, swords with mid ribs, anthropomorphs, flat celts, shouldered celts, bar celts, antennae and hooked swords and axes. These tools could be typically used for cutting trees, mining, digging, killing wild animals or fish. The copper hoard tools display superb craftsmanship. As the copper hoards are not found in stratified context, it's difficult to exactly date them. But sometimes if they are found in association with objects in stratified context, it's easier to trace their antiquity. Like at Lothal a lugged axe found in Mature Harappan levels, a harpoon at the Late Harappan levels at the site of Mitathal. These point to a period contemporary with the Mature Harappan and Late Harappan pottery. Some more such associations are recorded from Jorwe level at Maharashtra

Excavations at the spot where copper hoards were found was excavated by B.B. Lal at Bisauli and Rajpur Parsu. This revealed Ochre Coloured pottery. Upper Ganga plains were originally inhabited by the Late Harappans and Ochre Coloured Pottery using people immediately before the beginning of the 1st millennium B.C E. OCP succeeds the Late Harrapans Excavations at Saipai (Lal and Wahal,1971) and at many other sites by scholars demonstrate that this OCP was associated with Copper-Hoards.

Check your Progress:

1) Comment on the Chalcolithic cultures of Odisha

2) Explain the cultural development of the Chalcolithic cultures with special reference to Lahurdewa.

4.6 GANESHWAR JODHPURA CULTURAL COMPLEX

Ganeshwar Jodhpura Cultural Complex is in northeastern Rajasthan. It's a collection of Chalcolithic sites having similarities in material culture, production of copper tools, and geographic proximity to copper mines. It is situated within the regions of the Northern Aravalli Hill Range. The Ganeshwar-Jodhpura Cultural Complex (GJCC) is the largest copper producing community in Chalcolithic South Asia. The GJCC demonstrates an indigenous development which was the result of a larger regional economic need for copper products.

The excavations at the sites of Ganeshwar Jodhpura have given information about this culture. They belong to the OCP culture. Ganeshwar located in Sikar district of Rajasthan was excavated by R. C. Agarwala and Vijay Kumar. During the excavation almost 1000 copper objects in association with the OCP was found. Copper objects include celts, chisels, balls, rings, bangles, spearheads, copper arrowheads etc. Here the earliest phase is the Mesolithic which is followed by the OCP.

Jodhpura, is situated on the banks of the river Sabi in the Jaipur district of Rajasthan. It has OCP associated with the Black and Red ware and later Painted Grey Ware. The findings of microliths along with the copper objects suggest that they developed metallurgical technology while still in the foraging stage. The economy is based on mining, extracting and supplying to the neighboring Chalcolithic cultures and the Harappans.

Check your Progress:

1) Underline the importance of Copper Hoards

2) Discuss the growth of Ganeshwar Jodhpura Cultural Complex

4.7 SUMMARY

The Chalcolithic Cultures laid down a firm foundation of sedentary village life in India. Emergence of settled life is observed at about 7th millennium BCE in the Indian subcontinent. By third millennium BCE, these agro-pastoral settlements practicing a number of craft activity become prosperous settlements. Settlement pattern studies has clearly shown the evolution of a chiefdom society. Most of these settlements show a natural progression towards the next phase with the appearance of Iron. Due to change in climatic conditions there's a decline in the lifestyle of the Chalcolithic and many of the settlements in Western India are abandoned. But most of the sites continue their progression into the next stage. The development of Early Historic cities or the Janapadas is the result of the internal growth of these sites

4.8 UNIT END QUESTIONS

Q1 Critically examine the role of settlement pattern studies in understanding Chalcolithic archaeology with special reference to Deccan Chalcolithic

Q2. Assess the importance of the Ahar culture site of Gilund.

Q3. Explain the different facets of Copper Hoards

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5

RISE AND DIFFERENT DEVELOPMENTAL STAGES OF HARAPPAN CIVILIZATION

Unit Structure

5.0 OBJECTIVES:

- To trace the origin of the Harappan Civilization
- To make students aware of the beginning of Harappan studies.
- To understand the various regional cultures which developed into Harappan Civilization
- To analyze the reasons for the development of Early Harappan Cultures
- To observe and understand the varied technology practiced by the Harappans
- To develop an understanding of the reasons for the integration of various Early Harappan Cultures to become Harappan Civilization

5.1 INTRODUCTION

The most significant discovery in Indian archaeology constitutes the discovery of the Harappan civilization. Before the discovery of the Harappan civilization, it was thought that the settled life in the Indian subcontinent begun after 6^{th}-5^{th} century BCE. The discovery of the Harappan civilization not only pushed back the antiquity of settled life but also proved to be the missing link between the Stone Age and Historical period in the Indian subcontinent. It flourished during third to second millennium BCE and was the largest civilization in the ancient world. It's

contemporary to the Egyptian, Mesopotamian civilizations. More than 2,500 sites are known spread over a very diverse geographical zone.

It was in the nineteenth century that Charles Masson first came across Harappa. He thought it an ancient site but did not recognize the nature and antiquity of the site. Later, the site was visited by archaeologist Alexander Cunningham in 1853 and 1857. But the antiquity of the site was not realized. The accidental discovery of Mohenjo-Daro in 1920 which yielded similar material to Harappa and the subsequent excavations at both the sites revealed a civilization previously unknown. The northernmost site is Manda on the river Beas in Jammu, Bhagtrav on the banks of Tapti in Maharashtra is the southernmost limit. The easternmost limit is the site of Alamgirpur on the river Hindon and Sutkagendor on the Arabian seashore is the westernmost boundary. Also, there's the industrial site of Shortugai in Afghanistan.

1920s was the period when Harappan Civilization was discovered. John Marshall was the director general of Archaeological Survey of India at that time. He not only studied the stamp seals collected and published by Alexander Cunningham and two others but also decided to begin excavating Harappa. So, Rai Bahadur Daya Ram Sahni began the excavations at Harappa. In the meantime, R. D. Banerjee, who visited Mohenjo-Daro in 1919-20, had an inkling that the site was very old. He had noticed a flint scraper at the site. He decided to excavate Mohenjo-Daro. In these excavations stamp seals were being found at both sites. John Marshall knew that something important was happening at both the sites. He published the findings of the excavations in the *Illustrated London News*. As a result of this publication, archaeologists working in the sites of Mesopotamian civilization, recognized the similarity between artifacts found in Harappa, Mohenjodaro and those found in the sites of Mesopotamian Civilization. This was of tremendous importance. A Bronze Age Civilization contemporary to the ones in Egypt and Mesopotamia was discovered in the Indian subcontinent for the first time.

5.2 BEGINNING OF HARAPPAN ARCHAEOLOGY

Explorations revealed many more sites of the Harappan civilization. Many archaeologists worked at the sites of Mohenjodaro and Harappa. Pre-independence workers include M. S. Vats, Mortimer Wheeler, K.N. Dixit, Ernest Mackay and Mortimer Wheeler. Chanhudaro, was first excavated by N. G. Majumdar in 1930. Another site in Sindh, Amri and some other sites were also o excavated by him. He was the first person to identify a pre-Harappan level at the site of Amri in Sindh. The site of Nal in Baluchistan was excavated by Harold Hargreaves.

After independence a lot of explorations were carried out which further revealed a huge number of Harappan sites. A combination of workers from Archaeological Survey of India (ASI), various Universities were involved in this enterprise. A. Ghosh (Archaeological Survey of India) discovered twenty-five Harappan sites in his explorations of the Ghaggar river in Rajasthan. Y.D.Sharma(ASI), excavated Ropar in Punjab from 1952-1955,

and found the remains of the Harappan culture in the layers below the Painted Grey Ware (PGW) This proved that the Harappan culture was stratigraphically earlier than PGW. The explorations by A.Ghosh, B.K. Thapar, Suraj Bhan, S.R. Rao, J P Joshi, K. N. Dikshit, R. S. Bisht, G. L. Possehl and many more such archaeologists added a large number of Harappan sites in Punjab, Haryana, Gujarat and Uttar Pradesh. In Pakistan F.A. Khan, A.H. Dani, R. Mughal, F.A. Durani discovered many sites. It was observed that the highest concentration of these sites is on the banks of Ghaggar-Hakra also identified with ancient Saraswati river. Excavations were carried out at various sites. Prominent among them are Lothal, Dholavira, Surkotada, Kalibangan, Kunal, Bhirrana, Banawali Manda, Alamgirpur, Mitathal, Padri, Rakhigarhi, Rangpur, Rojdi, Ropar, etc. In Pakistan also a large number of such sites has been excavated, the prominent are Balakot,, Gumla Jalilpur, Kot Diji, Las Bela, Mehargarh, Rehman Dheri Allahdino,etc. It was also noticed that many of the sites were related to Mature, Early and Late Harappan phases.

It is interesting to note that John Marshall had used the term Indo Sumerian, to describe the finds at the sites of Mohenjodaro and Harappa prior to 1926. This was more so because he felt they were most closely related to the Sumerians. Then the term Indus Valley Civilization was used as large number of sites were discovered in the Indus Valley. Its also referred to as the Harappan Civilization, named after Harappa, the first discovered site. Due to finds of countless sites on the banks of ancient Saraswati identified with the river Ghaggar, and its tributaries, it's also known as Indus-Saraswati Civilization.

The origins of village life in South Asia were first documented at Kile Ghul Mohammad in the Quetta valley, Baluchistan. This was followed by excavations at the site of Mehergarh at the foothills of the Bolan pass. Both these sites and countless others in the region have given evidence of settled life beginning from seventh millennium BCE. They record a continuous cultural development from then, till the appearance of the Mature Harappan phase in the third millennium BCE. The excavations at Mehergarh (Baluchistan) by a French team led by Jean Francoise Jarrige played a very important role in the Harappan studies. The site of Mehergarh excavated between 1974-1985, for the first time gave evidence of beginning of the settled life going back to seventh millennium BCE. It also demonstrated the continuous development from a Neolithic community to the full-fledged Harappan civilization. At the site of Mehergarh, the beginning is marked by appearance of square structures made of loaf shaped mud bricks and divided into rooms. Also, documented is the cultivation of domesticated wheat, barley and presence of domesticated cattle, sheep, goat. They also practiced burials and ornaments of semiprecious stones like turquoise, lapis lazuli, shell, limestone was found among the grave goods. Querns, pestles, chert blades, ground stone tools were also recovered. The site of Mehergarh was aceramic in the earliest phase and we see the eventual introduction of pottery in the next stage. The use of copper and manufacture of terracotta human figurines is also attested. Over a period of time, in the next two thousand years, there's gradual introduction of more crops and increase in domesticated animals. There's a shift towards more complex society. The

complexity emerged due to the long-distance contacts and trade, multifaceted nature of subsistence economy (e.g., pastoralism, agriculture, hunting/gathering, fishing etc.), also to the appearance of crafts specialisation such as lapidary craft. These changes are associated with the introduction of elaboration of mud brick structures, ceramic assemblages, metallurgical skills, sickles, grinding stones, hearths and ornaments made on semiprecious stone, paste, shell, bone, stone and terracotta.

The entire developmental phase of the Harappans have been divided into a number of phases. Jim Shaffer came up with an Era system and Mark Kenoyer (2008) proposed a revised version of Jim Shaffer's Era system. It included Mesolithic Tradition (10000 B.C. – 6500 B.C.), Early Food Producing Era (6500 B.C. – 5000 B.C.), Regionalization Era (5000 B.C.– 2500 B.C.), Integration Era (2600 B.C. – 1900 B.C.), and Localization Era (1900B.C. – 1300 B.C.). The earliest Neolithic phase, also termed the Early Food Producing Era is dated to 6500-5000BCE, (Kenoyer,1998).

Check your Progress:

1) Give an account of beginning of Harappan studies and the importance of its discovery

5.3 REGIONALIZATION ERA (5000 BCE-2600 BCE) OR THE EARLY HARAPPAN PHASE

The Early Harappan Era can be broadly divided into two phases. Beginning from 5000 BCE or earlier to 3200 BCE. 3200BCE to 2600 BCE when the Mature Harappan phase begins.

Around a similar time, frame as Mehergarh, 7th to 8th millennium BCE is also site like Bhirrana, in Haryana. The first agricultural community of the upper Saraswati basin was contemporary to the Early Baluchi cultures. These sites of Bhirrana, Rakhigarhi, Girawad have yielded pottery, which is known as the Hakra ware, found in the sites located on the Ghaggar Hakra river system (also identified with Saraswati), Swat valley and the Indus plain.

Hakra ware culture appeared first time during the survey in Cholistan region of Pakistan, which was conducted between 1974-77 by Prof. M. Rafique Mughal. The catchment area of Hakra river, was surveyed, both side of the Hakra river in the Cholistan desert, which is a dry course known as Ghaggar in Rajasthan and Haryana region, India. During the survey, ninety-nine sites revealed a distinct cultural assemblage which is known as Hakra culture. The ceramics found here were different from the others found in the region. Mostly handmade, this pottery is red in colour and has incised lines.

As noted previously, Bhirrana, Rakhigarhi, Girawad, Kunal in India along the ancient Saraswati, Drishadvati gave evidence of association with the Hakra ware phase. Hakra ware phase at these sites were associated with the pit dwellings. Excavations at Bhirrana, Girawad have yielded pit dwellings,

associated with hearth and pottery. Living pits, storage pits, refuse pits, are some of the different categories of pits excavated. Each pit-dwelling complex consisted of a dwelling pit, a fireplace, a cooking pit, a storage pit, a refuse pit and a pit for collecting dirty water. In Kunal, the evolution in this pit building sees the appearance of brick lined pits alongside some mud brick structures. Expansion of the settlement and elaboration of these pit dwellings is reflected in the increase in size from half to 1m. These pits were now lined with finely moulded mud bricks.

The cultural assemblage associated include beads of semi-precious stones, steatite and terracotta, querns, chert blades, bone tools, copper objects like copper arrowheads. During excavations at Kunal a big amount of bone tools, microbeads of chalcedony and copper objects like fish-hook and arrowheads were found. Terracotta animal figurines were also reported. Evidence of copper smelting comes from the sites like Bhirrana. At Bhirrana antiquities recovered included disc shape micro steatite beads, laps lazuli beads, carnelian and jaspers beads, fragments of copper crucible with molten copper, one copper bangle, sling balls of terracotta, mud triangular cakes, quern, and pestle made of sandstone, chert blades and bone points. The presence of copper and some semi-precious stones like turquoise points to the existence of trade activity.

Further, microliths, ring stone of the Neolithic traditions, pestles, pounders and rubbers were recovered from early farming community settlements in the region. These types of microliths were also common at the earlier period of Mehergarh. The clay figurines of Bhirrana are similar to the earlier figurines of Mehrgarh which can be dated to the 6th millennium BCE. Some sites like Kalibangan, Kunal belongs to the 5th and 4th millennium BCE. At, Mehergarh from 4th millennium BCE beads of new materials like carnelian, calcite, garnet beads were found. Drill bits for perforating stone beads, start appearing alongside the beads. The drills along with debitage of many semi-precious stones like chalcedony, agate, carnelian is present at these levels. Unfinished drills made of a stone identified as phthanite are also found.

Potter' marks or post-firing graffiti appear in the early phases of the Harappan as early as 4500-4000 BCE. The origin of the Harappan scripts specially in the post firing graffiti is noted. Archaeologists working at the site of Harappa traced the development of the scripts from the earliest occupation dated to 3900 BCE-2900 BCE to the Mature Harappan phase 2600 BCE -1900 BCE. Similarly, the site of Kunal in all its phases has given evidence of graffiti marks and eventual evolution of Harappan scripts.

Archaeobotanical studies show that barley, lentil, wheat, rice, field pea was cultivated. Agriculture was an important part of the economy Faunal

assemblage included cow, buffalo, goat, sheep dog, pig from the earliest levels. Bull head motifs from pottery in Kunal, cattle and bull terracotta figurine were also recovered. Wild animals remain included spotted deer, antelope, nilgai, hare, birds, fishes, molluscs.

Check your Progress:

1) Analyse the origin and development of the Hakra Ware phase.

2) Discuss the Hakra phase with reference to the site of Bhirrana

5.4 REGIONALIZATION ERA (5000 BCE-2600 BCE) OR THE EARLY HARAPPAN PHASE-AMRI, KOTDIJI, DAMB SADAAT, SOTHI

The gradual development from this early farming stage led to the expansion of sites and settlements. By, this time numerous small and medium sites are found all across the Harappan Civilization and only some of them later become cities (Kenoyer,2008). As put by Possehl (2002), the valley of Indus, Saraswati, Drishadwati, Ravi, Gomal, Bolan, Quetta rivers and Piedmont regions of Balochi hills were dotted with sites of the Early Harappan Culture. Early Harappan levels are found in many sites like, Mehergarh (Baluchistan, Pakistan), Harappa (Punjab, Pakistan), Rehman Dheri (Khyber Pakhtunkhwa, Pakistan), Balakot (Makran coast, Pakistan), Kalibangan (Rajasthan), Kunal (Haryana) etc.

The expansion of the area occupied by the Early Harappans also lead to diversity in material culture. On the basis of regional differences in the material culture and geographical conditions, it is divided into various regional zones. But there are also common traits present in the ceramics, stone tools, technology, terracotta objects, architecture., which continue into the Mature Harappan. (Mughal, 1970). Early Harappan Culture is divided into different regional divisions: Amri-Nal, Kot-Diji, Damb-Sadaat, Sothi-Siswal, Padri-Anarta

Amri-Nal- The site of Amri is located in western Sindh, Nal in southern Baluchistan. The sites of Amri Nal culture occupies southern Baluchistan, western Sindh, and North Gujarat. There is a thought that these regions were bound together by the seasonal movement of agropastoralists and other itinerants. The presence of Kot Diji ceramics at Amri- Nal sites reflect intense interactions between these people.

Damb Sadaat- This phase is found in Quetta Valley and surrounding regions in North Baluchistan. Damb-Sadaat is a site near Quetta. The number of the sites are much less than compared to the other divisions. Its also known for communication between the Indus Valley, Quetta Valley and Afghanistan, due to shared pottery motifs.

KotDiji- The site of KotDiji is in Northern Sindh situated on the eastern bank of Indus River. Its spread in Northern Sindh, Punjab, the Khyber

Pakhtunkhwa, Kirthar piedmont and also in a small area in Cholistan. The size of the sites belonging to this phase are relatively larger and large area point to the fact that it played an important role in Harappan urbanization.

Sothi-Siswal- Sothi is a site in Rajasthan and Siswal is a site in Haryana. They are situated on the river Chautang or the ancient river Drishadwati. These sites are found in Indian Punjab, Haryana and northern Rajasthan and also a single site Navbans, has been located on the banks of the river Yamuna. The pottery is catalogued on the basis of pottery found in Kalibangan. The ceramic repertoire of Sothi-Siswal culture has broad similaraties to Kot Diji culture sites.

Anarta- Padri – Anarta tradition is a distinctive ceramic group from North Gujarat. The excavation at the site of Loteshwar in North Gujarat recognised the importance of this culture as pre–Urban Harappan or Early Harappan of Gujarat. It is also found associated with Amri Nal pottery in some sites like Motipipli and Datrana. Padri. The excavations at the site of Padri, in Bhavnagar district, Saurashtra, Gujarat brought to light the Early Harappan culture of Gujarat.

Together these cultures were spread across, Sindh, Baluchistan, Khyber Pakhtunkhwa, Punjab all in present-day Pakistan and Gujarat, Indian Punjab, Haryana, Rajasthan and western Uttar Pradesh on the banks of the Yamuna. Many of the ceramics of these different region, were also found associated with each other at different sites.

This period represents a phase of formative urbanism or proto-urban features start appearing. As noted earlier, the increase of site and settlements grow into large clusters and transform into prosperous settlements. Regarding chronology, radiocarbon dates suggests that the Early Harappan Culture flourished during the later phase of fourth millennium BCE to half of third millennium BCE. This phase is characterized by the evolution of new technology in pottery, architecture, and other craft activities. Painted decorations on pottery become more complex. The beginning of pipal leaf, horned deity as painting motifs begin during this phase and become an important motif during the Mature Harappan period. The various pottery shapes include dish, jar, bowl, canister, dish on stand, lids, canisters, tall vases etc. The painted motifs include geometrical and a variety of animal and plant motifs. The pottery generally red in colour had paintings in black and sometimes also in white. Monochrome, bichrome, polychrome is present.

Advancement in copper metallurgy, bead manufacturing technology are some of the developments that take place. Seals made of terracotta, jasper, steatite, shell ivory were also attested to in this period. These seals have mostly geometrical (concentric circles) motifs and some animal motifs (a Rehman Dheri seal depicts two scorpion and a frog on one side and two ibexes or deer on the other) have also been recovered. Animal figurines like humped bull, bird figurines are also found. Elaborate head dresses of female figurines also start appearing.

The trade routes further expand to connect various distant sites of the Harappans and other regions. The different regional cultures were supplying surplus production and raw material to each other. Also, the exchange with neighbouring Chalcolithic cultures within India and in West Asia increases. Pertinent to note is also the finds of clay fragments of toy carts at various sites of the Harappan civilization.

In structural advancement, the transformation from pit dwellings to mud brick structures are noticed. The beginning of town planning and fortifications were observed in the sites of the Early Harappans like Kalibangan, Dholavira, Rehman Dheri, Gamanwala, KotDiji etc. Different types of structures like fortification walls, house complexes, drains (public drains, house drains), start appearing at sites in diverse geographical regions. Stones, mud bricks of 1:2:3 was used for construction. Burnt bricks were also used. Houses had multiple rooms, courtyard as unearthed in the excavations of Early Harappan levels of sites like Mitathal, Balu etc. Hearths, storage pits with lime plaster and saddle querns were common finds in the houses. At the site of Kalibangan, Rakhigarhi, burnt bricks were used for the construction of drains.

Increasing variety of metals, copper tools and ornaments, gold beads, silver jewelry etc, show increase in complexity of metal tool technology. The use of copper in large scale, can be seen in the weapons, tools, ornaments. Ladles, balls, bangles in shell number among the antiquities recovered from these sites. Bone tools like needles, stylus, pointers are present. Bone tools were also used profusely at many sites. The increased variety of semiprecious stones like carnelian, jasper agate, amazonite, turquoise, lapis lazuli, faience apart from metal beads showcases the increased sophistication in bead drilling technology Presence of such variety of artifacts indicate the growing prosperity and the growing number of specialized craftsmen. Many of the settlements had kilns, indicating the rise in craft activities.

Advancement in agricultural technology saw increased varieties of crops, and well-developed irrigation system. The discovery of a ploughed field in Kalibangan remains one of the most exciting finds. It is important to understand that one of the reasons for the increasing prosperity during the Early Harappan phase was the huge alluvium plains of the Indus and Ghaggar Hakra basins, which provided the agricultural surplus. The archaeobotanical remains recovered included musk melons, watermelon, grapes, lemons, jujube, melons, dates were cultivated alongside wheat, barley, rice, green-gram, horse-gram. Faunal remains include both domestic and wild animals. Hunting and animal husbandry continued from the earlier phases.

Check your Progress:

1) Discuss the various Early Harappan cultures.

2) Analyse the changes that took place during the later half of the Early Harappan period.

5.5 INTEGRATION ERA OR MATURE HARAPPAN PHASE (2600 BCE-1900 BCE)

The synthesis and integration of all these local cultures gave rise to the Harappan Civilization. It flourished from 2600 BCE to 1900 BCE. This phase is marked by big and small sites with both inner and outer fortifications, division of sites into two or more parts of citadel, and lower town, evidence of town planning, proper drainage system, standardization of weights and measures, seals, scripts, well planned water management system, standard brick size of 4:2:1, black or red painted pottery, similarity in craft products and techniques of etched carnelian beads, huge quantity of copper-bronze artefacts, parallel sided blades and presence of elaborate long distance trade mechanism. The mature phase is also marked by the existence of elaborate burials found in sites like Rakhigarhi, Farmana, Dholavira etc. Cities, towns, villages, factory sites, various kinds of sites dotted the Harappan landscape. The cities of the Harappans, like Harappa, Mohenjodaro, Dholavira, Rakhigarhi, Ganweriwala located in different regions were all supported by craft centers, and smaller village settlements practicing agriculture which formed the support base for this urban and international trading economy.

5.6 SUMMARY

Harappan archaeology has come a long way after its beginning in 1920s. The indigenous development from the early 7th millennium BCE to the Mature Harappan period is now well recorded. Numerous explorations and excavations revealed a culture which was spread across the Indian subcontinent. It included the highlands and plateaus of Baluchistan to the west, mountainous regions of northern Pakistan, north and northwest India and Afghanistan and the flood plains of the Indus and the Ghaggar-Hakra.

The internal developments within the various Early Harappan cultures led to the growth of the Harappan Civilization. Located in various geographical settings. They also brought into the Mature phase certain regional variations which is why terms like Sorath Harappans, Sindhi Harppans were coined.

The settlement pattern that developed during the Early Harappan culture continued into the Harappan phase. Functional categorization of sites, during the Early Harappan settlements are important. They are divided into camp sites, permanent settlements, industrial and multi- functional settlements which continued into the Mature phase with a manifold increase in the number of sites.

The evidence found during excavations revealed that the Harappan civilization evolved from local culture that had its roots, extending back thousands of years to the earliest farming and pastoral communities

5.7 UNIT END QUESTIONS

1) Comment on the contributions by the pre-independent archaeologists to Harappan archaeology.

2) Critically analyse the growth and spread of Hakra Ware Culture.

3) Evaluate the role of Kot Diji Culture and its contribution in the development of the Mature Harappan phase.

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6

THEORIES REGARDING THE DECLINE OF THE HARAPPAN CIVILISATION

Unit Structure

6.0 OBJECTIVES:

- To understand the beginning of decline and abandonment of the Harappans sites
- To make students aware of the different theories behind the Harappan decline
- To analyze the reasons for the transformation of the Harappan Civilization from once prosperous society to a rural one

6.1 INTRODUCTION

The Harappan Civilization enters a decline or degenerate phase in the Late Harappan period which follows the Mature Harappan. It is also termed the Localisation era or the post-Urban phase. Non-urban in nature, this phase is marked by the degeneration of the lifestyle led by the people during the Mature Harappan phase. The urban centres cease to exist, and sites become much smaller. There is a decrease in size site and increase in site number. A break down in the urban civilization integration leads to appearance of several local cultures. Thus, the Mature Harappan culture sees a transformation into several provincial cultures like Jhukar culture in lower basin of Indus river in Sindh, Cemetery-H in Punjab and northern Sindh. Then eventual abandonment of these sites and migration mostly to Haryana, Punjab, western UP, Gujarat has been observed.

The Post-Urban phase or the Late Harappan phase in Gujarat is marked by Rangpur (IIC, III), Lothal (V). In Gujarat, MS Vats (ASI) excavated Rangpur in 1936, and noticed the presence of a Late period after the Mature

Harappan phase. This was followed by the excavations by Dr. GS. Ghurye (ASI) and Dr. M. G. Dixit (Deccan College). S. R. Rao during his excavations in Rangpur from 1953-56 established a Rangpur sequence. The Mature Harappan phase is followed by a degenerate phase, and this is followed by the evolution of the Lustrous Red Ware phase. It was observed that the pottery shapes of the Mature Harappan period underwent changes and developed into Lustrous Red Ware Culture. This provides ample testimony to the gradual transformation that the Mature Harappan culture went through at many sites instead of ending abruptly.

Mitathal IIB, is the Late Harappan found in Harayana. Bara culture is also categorised as Late Harappan. Some of the well-known sites with Late Harappan levels include Mitathal, Banawali, Balu, Bhagwanpura and Mirzapur. Excavations at the site of Bhagwanpura highlight the fact that the Late Harappans were succeeded by the PGW. The first appearance of PGW coincidies with the continuous occupation of the Late Harappans.

Many of the classical Harappan ceramic forms fell out of use. Some of the typical Harappan shapes continued in the later phase, such as perforated jars, cylindrical jars, beakers, goblets continue but some shapes such as 'S' shaped jars are not produced. The paintings on black on red continues such as animal, birds, pipal and fish scale. The ceramics show degeneration in fabric, form and design during this phase.

Site hierarchy was a feature of Mature Harappan. The Harappan Civilization had a number of site types, like, agricultural centre, regional centre, capitals, industrial centre etc. But the Late Harappan phase degenerated into rural economy. It did not have a site hierarchy and practised mixed economy. Architectural features also underwent changes. The structures were made by using mud and mudbrick. Reuse of earlier mudbricks happened. Decrease in use of bricks and reuse of mudbricks was evident during Late Harappan period. Monumental structures, huge granaries are not found in this time period. Drainage system was not maintained like the earlier time period.

Reduction in the use of copper and also semi-precious stones. Carnelian, agate ornaments are very few. Faience objects start increasing along with terracotta. Seals, sealings become very less in number and in much deteriorated conditions devoid of either scripts or pictographs. Breakdown in trade, hampered economic progress. This evident degeneration bears testimony to the transformation of the Harappan Civilization into a rural economy.

There are a variety of reasons advocated for the overall decline in the Harappan Civilization. Different scholars working in the field have come up with plausible reasons, the most accepted being changes in climatic conditions. Here, we review the theories advocated for the decline of the Harappan Civilization.

Check your Progress:

1) Briefly discuss the changes that led to the transformation of Mature Harappan to Late Harappan.

6.2 ARYAN INVASION THEORY

This was one of the earliest theories advocated for the end of the Harappan civilization and has now been discarded. Mortimer Wheeler was one of the main proponents of this theory. According to him, Rig-Veda describes conflict between the newly arrived Aryan invaders and the indigenous people of the Indus. He used the epithet *purandra* or fort destroyer given to the God Indra in the Rig-Veda and the references to attacks on walled cities to describe the Aryan invasion of the Harappan cities.

To further his argument, Wheeler used the skeleton remains found in Mohenjo-Daro as proof of Aryan massacre. The Cemetery-H culture according to him was the culture of the Aryan invaders. These skeletons were found in the lower town area, disorderly disposed and some in contorted positions.

Analysis of these remains has shown that these skeletons belong to different cultural phases and thus cannot be connected to a single cultural event. Further analysis of skeletal remains by K. A. R. Kennedy (1997) does not show any actual wound marks but it does show continuity in the skeletal record of the Harappans. It's also proven archaeologically that Cemetery H culture was a late degenerate phase of Harappan culture and not a separate culture. Further no trace of any kind of military assault is found in the archaeological records.

6.3 ECOLOGICAL REASON

This theory is also discarded. Ecological based reason included the hypothesis, that the Mature Harappans were using too much bricks and exhausting their resource base. Millions of bricks were used in the construction aspects at Mohenjodaro. These would have required a huge quantity of firewood. Widespread deforestation would have happened. This theory was not sustained by facts and came in for a lot of criticism.

6.4 ABANDONMENT OF MOHEJODARO AND ROLE OF RIVER INDUS

In this theory Indus river had an important role to play in the decline of one of the main cities of the Indus, Mohenjodaro. Robert Raikes found layers of silt in a survey in the vicinity of Mohenjodaro. It was hypothesized that as a result of tectonic activities, the bed of the Indus was tilted up and the flood water instead of flowing down towards the Arabian sea, began receding backwards. As a result, the people began to increase the plinth of their

houses as a measure of protection. Raikes is of the opinion that this this is a possibility as a similar event which occurred in 1829, a natural bund was created near the deltaic region (Allah bund). The probability is that disastrous floods occurred intermittently slowly destroying the city and the countryside. As Mohenjodaro was a very important part of the Harappan Civilization, its decline eventually effected other parts of the Harappan Civilization.

Check your Progress:

1) Give an account of the Aryan invasion theory and why it was discarded

6.5 DETERIORATION IN CLIMATIC CONDITIONS AND THE DECLINE OF THE HARAPPANS

Among the various reasons advocated for the decline of the Harappans, deterioration in climatic conditions seem to be most probable. Numerous studies on past climate have been done by scholars.

Based on various studies, it has been observed that, various parts of the world were affected by the climatic change that happened around 4000 BP or 2000 BCE. In Syria, the results of pollen analysis from the Ghab valley and El-Rouj basin, show that the climate became dry after around 2000 BCE. This dry climate caused a drought and reduced the production of olives, wheat, and barley. People in northwest Syria abandoned their habitation sites completely in the Late Bronze Age because of drought (Yasuda, 2001). The excavation at several Akkadian sites in Mesopotamia also gave evidence of this climatic change. Soil layers from Tell Leilan were analysed and it was found that the climate had become severely arid from 2200 BCE. The collapse of the Akkadians would also have affected the Harappan economy. Similar situations prevailed in other sites and settlements too. The site of Mundigak in Afghanistan was reduced to a small village. Altyn Depe and other urban centres in Central Asia also collapsed.

Palynological studies by Gurdip Singh on the lake sediments of Rajasthan suggest onset of drier climate from the beginning of second millennium BCE. This had an adverse effect on the Harappan Civilization. Drying up of the Saraswati or the GhaggarHakra is considered as one of the most important causes in the decline of the Harappans. Maximum number of Harappan sites were located on the banks of Saraswati and its tributaries and drying up of this river (around 2200 BCE) would have caused deterioration in the living conditions of the Harappans. This is archaeologically evident from the presence of numerous Early and Mature Harrapan sites, and the absence of later sites located on the banks of the Saraswati (Ghaggar-Hakra).

M. R. Mughal during the exploration of the Cholistan region along the banks of ancient Saraswati (Ghaggar-Hakra) in Cholisatn, region, found 50 Late Harappan sites compared to 174 Mature Harappan sites. Simultaneously it was noticed that Late Harappan sites had more than

doubled in Haryana, and Yamuna valley in western UP. Many of these were Late Harappan (Cemetery-H) sites. This clearly indicated that the Harappans started migrating when Saraswati started drying up. The site of Mitathal was the first sites where the remains of Cemetery-H culture was found. Eventually many other sites like Banawali, Balu and many more sites have revealed their presence.

Drying up of Saraswati also meant loss of a big agricultural base which was the backbone of Harappan economy. The surplus production of food grains and a favourable climatic condition was one of the main reasons for the development of Harappan Civilization. Among the most fertile regions with perennial rivers, the Indus and the Ghaggar Hakra, were the mainstay of Harappan agricultural economy. A large number of Harappan sites were located here. Lose of this agricultural base would have adversely affected the Harappan economy.

At the beginning of Holocene, the sea level had begun to rise. The Harappan ports in Kutch and Makran coast were able to function successfully due to rise in sea levels. Geomorphological studies carried out by S.K. Gupta (1977) in the Rann of Kutch, have amply demonstrated this fact. The fall in sea levels around 1900 BCE would have adversely affected Harappan ports, such as Lothal, Sutkagendor etc. They became inland sites due to fall in sea levels This would have also contributed to the decline of the Harappans. It was during this period that the Nile levels were also very low.

This would have led to decline in international trade as the same would have been the case with Mesopotamian ports. So, this collapse of the economic system led to a deurbanization phase. As a result, there was breakdown of integrated Harappan settlements into degenerate local culture. There was a shift in settlement pattern as observed earlier. Focus of new settlement pattern was Gujarat, western Uttar Pradesh. Migration also starts towards river Ganga and Ganga basin also becomes an important centre.

Check your Progress:

1) Critically analyse why climatic deteriotion was one of the main reasons behind the decline of the Harappans

6.6 SUMMARY

The decline of the Harappan Civilization led to changes in the settlement pattern as already noted above. N. G. Majumdar was the first archaeologist to locate 'a degenerate and therefore a late phase of the Indus' civilization at the site of Jhukar in Sindh. Here, he noted the ceramic changes in the layers stratigraphically postdating the Harappans. This was called the 'Jhukar Culture', characterized mainly by differences in the ceramic assemblage. Mohenjodaro saw a decline in the Late Mature phase itself. During this time period, although the typical Harappan pottery, weights and measures, seals and sealings, steatite, silver, carnelian, lapis lazuli and the script were found to be present, structures and potter's kilns appeared on the streets.

Mudbricks, brickbats, mud were used for wall clearly indicate a deterioration in the building material. Similarly, in Baluchistan, “Kulli complex A' of Baluchistan is contemporary to the 'Jhukar' phase of Sind. and its simultaneously found in southern Iran and across the Gulf to Umm an-Nar and Hilli. In Gujarat it is represented by Rangpur IIB and IIC related sites. The transformation to Late Harappan in Gujarat also saws degeneration as evident from the excavations at Padri, Rojdi, Rangpur, Lothal. Decrease in the quantity of stone beads, drastic reduction in copper working, shell working, similar to other sites in the Harappan zone was observed. Along with it, standard forms of weight, ceramic styles underwent a change towards localization. Decrease in site size, clustering of structures, abondment of workshop was as noticed in the excavations of Kuntasi Local cultural traits were increasingly incorporated at these Harappan settlements during the Late phase of Harappan occupation.

It is noted by Possehl that around the time Mohenjodaro was abandoned, at the site of Rojdi in Saurashtra, people were expanding and rebuilding their settlement. Copper artifacts are common in some of these Late Sorath Harappan sites unlike the other Late Harappan sites. Similar, prosperity during the Late Harappan phase is also noticed at the sites of Prabhas Patan, Padri. Some other sites like Kanewal, Ratanpur have given evidence of hunting gathering economy. The transformation from the Mature to the Late Harappan stage, in Gujarat, saw deterioration in some major craft centres, simultaneously with evident prosperity in other sites. The dispersal of population from the degenerated sites manifested in pastoral, agicultural, hunting gathering sites.

The reason for such a difference within the Late Harappan phase in Gujarat is rooted in the different paradigm of classical Harappan and Sorath Harappan sites in Gujarat. Classical Harappan sites like Dholavira, Nageshwar displayed the characteristics of typical Mature Harappan site. They were large, multifunctional settlements, with system of writing, weights and measures, and long-distance trade. The Sorath Harappan sites were different in character. They were relatively small in size with simpler material culture repertoire. The collapse of the uban structure of the Harappan Civilization, severely effected the classical Harappan sites and they were no longer able to continue their earlier lifestyle. This resulted in the degeneration and depopulation of these sites. As this was not the case with the Sorath Harappans, the transformation to Late Harappan phase was different.

Here, its pertinent to note that Saurashtra Harappans were a key factor in the evolution of early farming communities in the Deccan region, specially in the Tapi basin (Shinde, V. S). Late Harappan presence is also found here.

Late Harappan sites start appearing in western Uttar Pradesh during this time. Archaeological explorations in the Upper Ganga Valley have revealed more than 100 sites of the Late Harappans. The earliest occupants of this region seem to have been the Late Harappans as revealed by the explorations and excavations. The urban centres of the Harappans had ceased to exist and at most of the Harappan sites due to economic disintegration, the population scattered and migrated. This led to the formation of a number of new sites as they crossed the Yamuna and stepped into the Ganga plains. Interestingly, a comparison of grave goods from the Late Harappan cemeteries of Haryana and western Uttar Pradesh revealed richer grave goods were found in western Uttar Pradesh.

Ochre Colour Pottery (OCP) culture succeeds the Late Harappans in many of the of the sites here. It was observed that OCP pottery found in sites specially in the upper Ganga-Yamuna Doab were very similar to Late Harappan pottery. Copper Hoard tools were also found at various Late Harappan sites. On the basis of this , it's assumed that the OCP here has its antecedents in Late Harappan and later it transformed.

In Harayana, the increase in Late Harappan settlemts is manifested in two main cultural strands. One is an extension of degenerated Harappan tradition and the other presents a continuation of the Siswal-Harappan also known as Late Siswal tradition. Haryana, Late Harappan settlements, the continuation into OCP and PGW are noted in many sites. The observation by Suraj Bhan that OCP culture at Atranjikhera had its antecedents in the Late Harappan Siswal. Then there are sites like Alamgirpur, Bhagwanpura which have given evidence of Late Harappans succeeded by Iron Age culture of Painted Grey Ware (PGW).

Climatic deteoriation being one of the main reasons behind the decline of the Harappan Civilization resulted in the transformation of an urbanized Civilization into a rural one. Associated effects of climate change like fall in sea levels, drying up of rivers led to a change in the economic prosperity of the Harappans as international trade, which was very profitable for the Harappans, collapsed. This led to a change in the lifestyle of the Harappans. The economic decline would have caused a decline in the social fabric, political structure of these people. As a consequence, an increase in local cultural contacts and variation in subsistence practices is noted. Change in settlement pattern and subsistence, as there's ample evidence of them having shifted to more conducive localities, an increase in local interaction and gradual emergence of the next phase of protohistory showcases the continuity in cultural traditions.

6.7 UNIT END QUESTIONS

1) Discuss the various reasons for the decline of the Harappan Civilization?

2) Comment on the decline of the Harappan Civilization and its impact on the Harappan sites in Gujarat.

3) Critically evaluate the role of river Ghaggar Hakra in the decline of the Harappans., especially with reference to Late Harappan phase in Haryana

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7

RELIGION, ECONOMY AND TECHNOLOGY OF THE HARAPPAN CIVILISATION

Unit Structure

7.0 OBJECTIVES:

- To observe and understand the Harappan religion through the material remains found at various sites
- To make students aware of the various aspects of Harappan studies focusing on reconstruction of economy, society and religion
- To understand the variety of subsistence practices of the Harappans
- To analyze the reasons for the flourishing economy of the Harappans
- To trace the various technology developed during the Harappan Civilization

7.1 INTRODUCTION

Harappan Civilization is the first urban Civilization of the Indian subcontinent. It flourished from 2600 BCE to 1900 BCE. The development and integration of the various Early Harrapan cultures led to the evolution of Harrapan Civilization. It flourished in the west and north-western part of the Indian subcontinent. The sites of Harappan Civilization provide evidence of systemic town planning, fortifications, elaborate drainage system, warehouse, standardization of brick size and pottery, weight and measures, geometric instruments, linear scales, seals and sealings, ornaments of various metals and stones, advanced copper metal workings various tools of copper and stones, shell working and also terracotta beads and figurines.

The Harappan Civilisation covers a vast area and diverse ecologilcal setting. This includes highlands and lowlands, mountains and river valleys, coastal regions, and plateaus. As a result, regional variations were observed in the socio- economic structures within the Harappan region. It's been observed by archaeologists working at various Harappan sites the diversity of the Harappan Civilization, especially on the basis of ceramic typology. The Ghaggar Basin, regional variations is observed in the ceramic assemblages of the Harappan sites (such as continuity of the Sothi-Siswal ceramic tradition even in the Harappan phase along with the Harappan pottery), whereas the sites located in the Sindh - Balochistan region yield classical Harappan elements and form one cultural region which is distinct from the typology of the Ghaggar Basin. Similarly, Sorath Harappan is a regional variation in Gujarat.

J. P. Joshi (1984) was the first scholar to point out this distinction within the Harappan Civilization. Possehl has identified more than 7 domains i.e., Harappan Domain, Eastern Domain, Cholistan Domain, Sindhi Domain, Kulli Domain, Sorath Domain, Northwestern Borderlands and Anarta Chalcolithic on account of geography, settlement pattern data and cultural material. One of the earliest scholars to notice the regional variation was also Y.D. Sharma who based on his work in eastern Punjab came to the conclusion that the Bara culture of eastern Punjab continued from the Early Harappan period to the Post Harappan period (Sharma 1982). This work by Sharma suggested that the diversity of Harappan Civilization resulted from the regional cultural traditions in the Early Harappan period. The Mature Harappan phase developed from the Early Harappan cultures. The regional variation of these Early Harappan culture were reflected in the variations within the Harappan Civilization.

In order to understand the political economic social structure of the Harappans its necessary to understand the religion, economy, technology developed by them. The story of the Harappan Civilization is recreated by the study of material culture remain.

7.2 RELIGION

In the Harappan context, certain artifacts, features, architecture has been thought to be representing the religious belief of the Harappans. The definition of religion is based on artifacts and features found at various Harappan sites.

In 1931, John Marshall for the first time identified two buildings that were thought to be constructed for religious purpose. These two buildings were in Mohenjodaro. One in HR-A area, House V and the other in HR B area House XVIII and were identified based on interior features and relative sizes of structures. These houses were large and contained many courtyards and rooms. According to Marshall, these could have functioned as temples. Other buildings such as House L, were thought to be possible shrines. House L contained two rooms with a corridor on the side. Chapels or shrines with this ground plan were also known from Minoan palaces and also from contemporary Hindu houses where shrines are kept.

The Great Bath is also thought to be associated with ritual activity. The elevation and location away from the Lower Town makes it a place for ritual bathing. Mortimer wheeler identified house I in HR-A as a potential temple because of its massive architecture, stairways.

Fire altars have been found in various sites in Kalibangan, Lothal, Rakhigarhi and has led scholars to speculate on a fire cult. The site of Banawali has yielded a brick structure apsidal on plan with a fire pit. The worship of fire seems to have been important. Also, some scholars also identify the receptacle in front of unicorn as fire receptacle.

Terracotta female figurines have been also thought to be mother goddesses Marshall identified three types of female figurines-toys, objects of magic and mother goddess.

The seals and tablets depict manifold iconography and can be related to rituals. There are a variety of narrative seals. Marshall was the first to identify a steatite seal with a seated human figure in yogic position wearing horned headgear and surrounded by animals as Pashupati or Proto-Siva. Another narrative imagery depicts worship of a horned deity standing in a Pipal tree and is being worshipped by another horned deity kneeling in front of the tree. A composite animal (horns of a goat, a human face and the body of either goat or bovid) is standing behind the kneeling horned deity. Bottom portion of seven figures are thought to be saptamatrikas. In another narrative tablet, a ritual water buffalo sacrifice using a trident is depicted and a deity seated in a yogic pose. Its reminiscence of later Hindu sculptures of goddess killing a water buffalo demon with a tiger. The seals depict various kind of motifs including composite animals, human figures with parts of animals among others. Horned figures of humans depicted on seals are thought to be deity.

Several TC masks depicting faces were discovered at Mohenjodaro and Harappa. The masks produced in moulds, are hollow and contain holes on each side. Their faces combine human and animal like features including horns evoking supernatural creatures.

Ritual beliefs is also reflected in the funerary practices. Funerary practices of the Harappans had diversifications. Burials were found in many of the Harappan sites. There is evidence of extended supine burials. In Kalibangan individuals were placed in supine position in oval or rectangular pits. Some burials in Kalibangan are devoid of human remains. Dholavira one typical Harappan burial was found but the rest of the graves were symbolic. Here, they also employed stupa like architecture in the construction of graves. Fractional burials were some of the bones were buried, were also observed at some sites. Urn burials were also recorded at sites. Pots and jewelries were found buried along with the dead. This shows their belief in afterlife. Burials was not a common practice, so other after death rituals would also have been practiced.

Check your Progress:

1) Critically analyse the imagery on Harappan seals

7.3 ECONOMY

The Harappan economy was mainly based on agriculture and animal husbandry. Trade (both internal and external)was a very important part of Harappan economy.

The fertile tract of the Ghaggar Hakra and the Indus provided the agricultural base of the Harappans and proved very effective in the production of agricultural surplus. This is also evident from the dense network of sites in the Indus and the Ghaggar Hakra valleys. The terracotta plough found from Banawali shows the importance of agriculture. They grew two crops a year. Wheat, jowar, barley, ragi, cotton, lentils, field peas, dates, melons, bananas etc, were grown by the Harappans.

Large number of faunal remains from the Mature Harappan sites like sheep, goat, pig, cattle, bull etc. were found. This and the depiction in seals and terracotta models show the importance attached to them in the economy of the Harappans. Domestic animals were used for the milk, meat, wool. Cattle would have played an important role in agricultural activities. Findings of toy bull cart show that bull was used for transportation. Wild animal remains like antelope, nilgai, deer show that hunting was also part of the economy. Hunting and fishing formed part of the subsistence economy.

The numerous craftsmen employed in manufacturing varied artifacts for domestic consumption and trade would have been an important part of the economy. The craftsmen involved in pottery making, manufacturing of beads of semiprecious stones, various artifacts of terracotta, metal (copper, silver, gold) working which includes manufacturing of ornaments, tools, vessels, art objects, seal manufacturing, brick making, building houses and other structures, shell working were part of the Harappan economy.

Trade both internal and external played an important role in sustaining the Harappan Civilization. They established industrial units at different zones for mass production.

Las-Bela on the coast of Baluchistan, Chanhudaro(Sindh, Pakistan), Nageshwar (Gujarat), Balakot(Khyber, Pakhtunkhwa, Pakistan) and Bagasra (Gujarat) were centres for shell working and bangle making. Lothal, Dholavira(Gujarat) and Chanhudaro were centres for the manufacturing of beads of carnelian. Chanhu-daro was the centre of seals and copper objects manufacturing. Shortugai, a lapis lazuli mining and processing center. Stoneware bangles were made at Mohenjo-daro and Harappa.

The raw materials used for manufacturing were sourced from different zones within the Harappan orbit. Chert from Rohri and Sukkur belt, Copper could have been sourced from Khetri deposit of Rajasthan. Tin is available in the Tosam area of Haryana. Kolar mine in Karnataka seems to be the

most likey source of gold. Most varieties of semi-precious stones were obtained from Gujarat except for Lapis Lazuli. which was probably obtained from Afghanistan, Shells were imported from Gulf of Kachchh and Saurashtra.

The Harappans had a very elaborate trading network. Mesopotamia, Afghanistan, Turkmenistan, Iran, and Gulf countries. Mesopotamian cuneiform inscriptions mentions the lucrative trade with three regions viz. Dilmun, Magan and Meluhha. during the period of Sargon of Akkad. These three regions have been identified as Bahrain and adjacent coast of Arabia, Oman, South Eastern Iran and Harappan Civilization respectively Mesopotamian cylindrical seals found from Mohenjo-Daro, Kalibnaga and Rakhigarh while Bahrain seals at Lothal, demonstrate the trade contact between Mature Harappans and West Asia.. The cuneiform inscriptions document the material which was imported from Harappan civilization. These inscriptions mention copper, tin, lapis lazuli and carnelian coming from Meluha as well as gold. Ratnagar (1981) has given a list of objects imported from Meluha which are mentioned in the Mesopotamian texts such as carnelian, lapis lazuli, pearls, wood and plants, bird, dog, cat, monkey, copper, gold, ship of Meluhan style, Meluhan furniture and Meluhan bird figurines.

Etched carnelian beads and long barrel carnelian were much in demand. They were found in royal graves at Ur apart from many other sites like Kish, Tell Asmar, Tell Abu, and Nippur. The site of Kish also produced unicorn seal with Harappan signs, long-barrel and etched carnelian beads. Tell Bark has a Swastika seal which is similar to the swastika seals found from Harappa, Lothal and Tepe Cialk (Possehl 2002).

Shell was imported from Harappan civilization to Mesopotamia. Heart shaped shell or bone inlay has been found at Tell Asmar which has an Indus origin. Shell ladles like that found from Mohenjodaro has been duplicated at Ur and Kish.

At the site of Altyn Depe in Turkmenia two Harappan style square stamp seals have been found out of which one is a swastika seal. Along with the swastika seal certain other Harappan objects were also found such as gold disc bead, ivory sticks, flat copper bronze blade without mid rib, frying pan and fish hook. At the site of Gonur Depe in Margiana, they have bowl with pipal leaves and Harappan type stick dice.

The imports into the Harappan Civilization were identified at some of the sites. The barrel shaped weights from Harappa and Mohenjodaro are of Mesopotamian origin. In Harappan civilization some figurines have been found which have close similarity with Mesopotamian civilization such as a recumbent bull without hump made in bronze and terracotta head from Lothal has Mesopotamian origin.

Steatite or chlorite vessels are found in very limited quantity at Harappan sites. There are 3 such vessel fragments found from Mohenjo Daro, one is a vessel while two are boxes. These have parallels from Mesopotamia, Susa,

Gulf and southeast Iran. In Iran, Yahya has been identified as the production centre of these vessels.

The presence of terracotta mummies in Mohenjodaro and Lothal and etched carnelian beads found in Egypt show trade contact. The blue colour used by the Egyptians is said to have come from Indigo cultivated in India, the evidence of which is found at Rojdi.

Check your Progress:

1) Agriculture and trade formed the backbone of Harappan economy. Discuss

7.4 TECHNOLOGY

The Harappans attained unparallel expertise in technology, stone, metal terracotta included. This is evident in every aspect of Harappan life. In the case of metal working, its seen in lost wax technique, in production of high-quality ceramics, production of seals, drilling etching of long carnelian beads, all required sophisticated technological achievements. Added to that is the brilliance achieved in monumental architecture. Though the town planning of Harappan cities were not quite similar but same pattern was followed at most of the cities. This required mastery in engineering. These are only some among the many technologies that were developed by these people.

A brief survey of the different technologies of the Harappans is given below.

Ceramics production : The Harappans used a very advanced technology in the production of variety of ceramics. The ceramics comprise of red and grey colours had medium fabric in most of the cases. They were well fired and painted with black colour and treated with red slip. Incised decorations were also found. The main shapes of this period include perforated jars, goblets, dish-on-stands, vases, storage jars, 'S' shaped jars, dishes and basins. The paintings included geometrical, faunal and floral motifs. These motifs included sun, birds, fish, fish scales, pipal leaves, neem leaves, banana leaves, palm leaves, horizontal band, checkerboard pattern, triangles, loops, intersecting circles and linear designs.

Some of the large pottery during the Harappan age like huge storage jars were made in three separate parts. - base, body and rim and were joined together. This would also have required specialization in manufacturing technique. Overall similarity in pottery making techniques, pottery forms was achieved in the Harappan Civilisation. This standardisation throughout the Harappan region speaks of high level of specialization that was achieved in pottery making.

Architecture: During the Mature Harappan phase, the construction of fortifications, houses, and other structures at different sites of the Harappan civilization showcase the advanced building technology of the Harappans. At Mohenjodaro, the houses were built over huge platforms of mud bricks

to save the structures from floods. The buildings at many other sites like Kalibangan, Banawali etc. were built on massive platform of mud or mudbricks. At sites where stones were more easily available, it was profusely used in construction like Dholavira, Rojdi etc. The Harappan cities were equipped with numerous wells (both public and private) and an elaborate system of drains. Variety of drains such as open drains, covered drains, public drains, private drains were used to maintain sanitation of the cities and towns. Usually, baked bricks were used in the construction of drains. Small drains carried water away from wells or living area to larger street drains. The houses in the Harappan cities were constructed with mud and mudbricks. In some houses baked bricks and stones were used. The houses had two to five rooms, kitchen, bathroom, veranda and courtyard. The wells and bathing platforms were lined with bricks. Elaborate fortifications with bastions and gateways were the hallmark of Harappan architecture. Division of sites into citadel and lower town was a common feature. In some cases, there were more than two fortified divisions. One of the important characteristics of the town planning of the Harappan sites was the streets network. Most of the streets were in the cardinal directions and cutting one another at right angles. Many of the rural settlements were also similarly planned.

The hydraulic structures built by the Harappans were beyond compare. It included the dockyard at Lothal, Great Bath at Mohenjodaro, dams and reservoirs at Dholavira. Hydraulic engineering of the Harappans played a major part in the setting up of the site of Dholavira. Numerous wells were constructed at various sites. Wells in public places and within the house are typical of a Harappan site.

Faience: Faience technology implied an ability to reach a controlled temperature of 1200 degrees Celsius.

Metallurgy: The Harappan sites are conspicuous by the abundance of metals. It is documented that they not only utilised copper but also worked with tin, arsenic, lead, gold, silver, antimony. The metals found at the Harappan sites give evidence of smelting. Further Casting and fabricating techniques were used. Casting requires pouring of molten metal in moulds to achieve desired shapes. Fabricating-at this stage copper needs to be alloyed to increase its hardness and tensile strength. Smelting stage leads to copper absorbing gases and thus becomes porous. Thus the requirement for alloying with tin or arsenic, without which complex castings are impossible. Lost wax technique is a developed technique by the Harappans. The wax model is prepared over a clay core. The wax layer is of the thickness of the desired object. An outer mould of clay is built over this. Two holes were

left as the inlet and outlet for the molten metal. The wax was heated to melting point. It was followed by pouring of molten metal into the inlet and the wax could run off through the other hole. Along with the wax, surplus metal also flowed out. It was then allowed to cool. The mould had to be broken to retrieve the objects.

Copper vessels (pots, pans, jars, dishes, lids), mirrors, ornaments, tools (knives, arrowheads, spearheads, projectile points etc.) were produced by the Harappans. Similarly, beautiful carved gold and silver jewellery were also found at Harappan sites. Silver vessels were also used by them. The bronze dancing girl from Mohenjodaro is quite noteworthy. Animal figurines like dog, elephant, swan, bull was also cast in copper-bronze. The bronze industry also produced swords with mid rib, spears with bent head, leaf shaped arrowheads. Engraved copper tablets were also found.

Brick working: It was another important industry of the Harappans. In the early Harappan period the brick size ratio was 3:2:1 and during Mature Harappan period it was 4:2:1. The uniformity in brick making found across all regions of the Harppan Civilization showcases the technological advancement. The craft tradition spread to the settlements of the different region. Mud bricks burnt bricks were used. In the construction of drains large sized bricks were used.

Bead making: Etched carnelian beads, long barrel cylindrical beads of carnelian were produced by the Harappans. Carnelian, chalcedony, amazonite, lapis lazuli, turquoise, agate, sandstone, limestone, faience, jasper, kaolinite, quartz, onyx paste, vesuvianite are among the variety of raw materials used apart from steatite, terracotta and metal beads.

The shapes in carnelian agate beads include short bicones, long barrel, lenticular barrel, long barrel cylindrical , tubular. Evidences for different stage of manufacturing beads, like making roughouts from the raw material, polishing, drilling and various types of drills for soft stones, hardstones were developed from the earlier periods. Long carnelian beads and etched carnelian beads were much in demand during this Mature Harappan period. International trade also had a huge demand for these beads as noted above.

Seal making: Harappan stamp seals were made on steatite. Considering the variety of motifs (plants, animals, imaginary animals, composite animals, composite humans, horned animals, horned human, narrative seals, scripts) highlights the complication of carving techniques. Each motif is carved delicately. The tools used would have been different types of copper and bronze tools. They produced square and also oblong seals. Rigid

standardization is visible during this period. These seal working are a result, of special knowledge long training for this kind of specialized working.

Shell and bone working: Exquisite inlay work on shell was observed at various sites. Exclusive sites for shell working show the importance of shell working. One of the main centres for production of shell objects was Gujarat. Turbinella Pyrum was commonly used. Shell objects included bangles, beads-pendants, spoons and ladles etc. Bone working was also an important craft. Beads and pins of bone were produced. Ivory products were also important. Ivory combs are an interesting find. Inlay pieces of ivory were an important item of external trade.

Terracotta objects: There was prolific finds of terracotta sculptures ranging from birds, animal figurines to female figurine and male figurines. Figurines depicting yoga poses were also found. There is a variety of way in which these figurines are depicted in dress, headgear and hairstyle.

Stone sculptures: These stone sculptures are present in less numbers. Red jasper male torso, gray stone dancing figure are some of the art pieces from the Harappan Civilization. The steatite priest king is one of the most known art piece from the Mature Harappan phase Toy carts, rattles, plough, bulls, wheels, made of terracotta and metal were also found.

Check your Progress:

1) Write a note on the metal technology of the Harappan Civilization

2) Describe the city of Mohenjodaro and the role of technology in its development.

7.5 SUMMARY

The Harappan Civilization reached its zenith in all aspects of life. This Civilization went a long way in creating the basic foundation of today's society and culture in the Indian subcontinent. It was the technical knowledge of the Harappans which was carried forward an formed the knowledge system of the ancient Indians. The roots of our Civilization can be traced back to the Harappans. They were pioneers in many fields like brilliant water management as exemplified by the number of wells, dams, reservoirs constructed by them. The well-planned cities with the system of drains show the importance of cleanliness and hygiene. Here in lies the importance of this Civilization, which gave us scientific technologies and important cultural traditions.

7.6 UNIT END QUESTIONS

1) Describe the town planning of the Harappan cities

2) Analyse the importance of trade in the Harappan economy

3) Critically evaluate the main aspects of Harappan religion

4) Assess the achievements of the Harappans in the field of technology.

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8

EARLY HISTORIC SITES

Unit Structure

8.0 OBJECTIVES

After going through this unit, the students will be able:

- To understand the early historic sites in India.
- To Ancient culture through the pottery and its sites.

8.1 PAINTED GREY WARE (PGW) CULTURE

8.1.1 INTRODUCTION

The PGW culture belongs to the Iron Age. Its most important feature is the pottery. The ware is grey in colour, made of fine grain, well levigated clay and fired under reducing condition in the kiln. It consists of dish, pan, *lota, etc.* and is often painted in black or deep chocolate brown color on grey surface with designs like dots, dashes, criss- cross lines, concentric circles, semi- circles, sigmas, swastikas, etc. (Ghosh 1989). This ceramic was first discovered at Ahichhatra (1940- 44) in association with NBPW but its independent existence in stratigraphic context was established only after the Hastinapur excavation in 1950- 52. The exploration by B.B Lal during 1954- 55 shows the presence of this ceramic with the sites associated with Mahabharat. (Dhavlikar 1999).

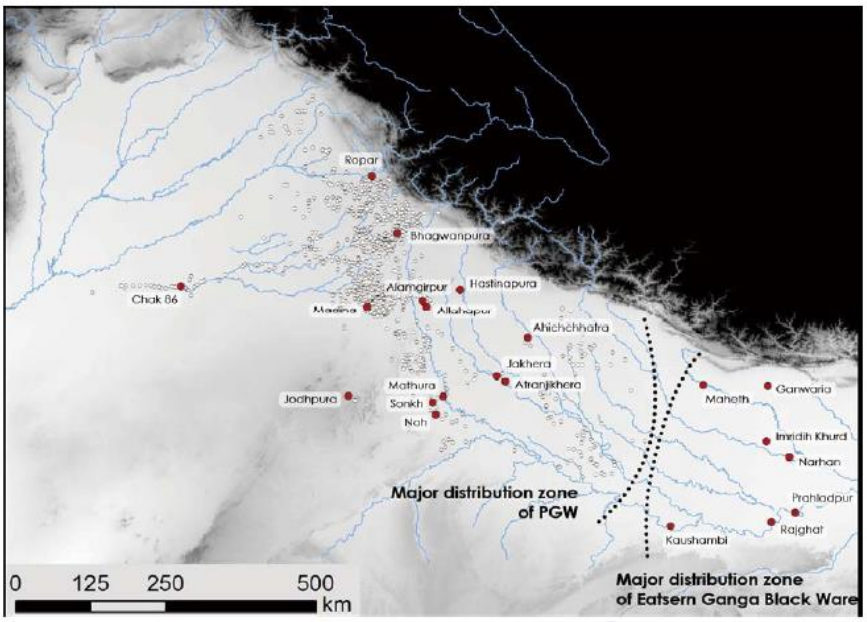


Figure 1: Distribution of Excavated PGW Sites and Other Relevant Sites

Credit: Uesugi 2018

8.1.2 CHRONOLOGY

The chronology of PGW is controversial. An attempt has been made to date the culture through both relative and absolute dating methods. In terms of absolute chronology Painted Grey Ware culture has been comfortably place before 2890±105 BP. from Atranjikhera (Singh et al 2014).

When it comes to relative dating, B.B. Lal, who excavated the site of Hastinapur assigned a time bracket of 1100- 800 BCE on the basis of stratigraphy. However other scholars like Childe and Wheeler did not accept this time bracket. According to Childe, the PGW could have established at the site Hastinapur from 1400-600 BCE and Wheeler believed that the beginning of the ware at the site Hastinapur would be 800 BCE. After the excavations at Hastinapur, a number of sites in western Uttar Pradesh and northern Rajasthan have been excavated that resulted into a considerable amount of information about its chronology. The Bhagawanpura excavation by J.P. Joshi revealed the origin of this pottery in the late second millennium BCE. The end of the Harappan ceramic tradition and the emergence of a new ceramic style represented by PGW signify not only the change in pottery but also the socio-cultural transformation from the Bronze Age society to the Iron Age society (Uesugi 2018).

R.C. Gaur on the basis of Atranjikhera excavation, assigns the time bracket of 1100- 600 BCE whereas, V. Tripathi, after examining the evidence from different sites has concluded that at Hastinapur the PGW stratum should be assigned to 850-550 BCE and at Atranjikhera it may have started a little earlier by 900 BCE (Dhavlikar 1999). Sites like Ahichchhatra, Atranjikhera, Sravasti, Kaushambi shows overlap of this ware with Northern Black Polished Ware (NBPW). However, the origin of NBPW cannot be placed

later than 600 BCE. Therefore, similar date may be proposed for the end of the PGW *i.e.* 600 BCE. Hence the time bracket for Painted Grey Ware from 1200- 600 BCE seems to be most reasonable under the available evidences (Ahmed 2015).

8.1.3 DISTRIBUTION

Post-Independence, many PGW sites have been discovered especially in Punjab, Haryana, North Rajasthan and Western Uttar Pradesh (Upper Gangetic Plain). It has an extensive distribution of more than 1000 sites ranging from Sutluj/ Hakra basin on the west and the Aravalli range in the south; the Chambal in the southeast and the foothills of Himalayas in the north. Most of the sites are located on the riverbanks and very few in the interiors. The main concentration of the sites is found in Indo- Gangetic Divide (Haryana), Sutlej basin and upper Ganga plains. Important PGW sites include Hastinapur, Alamgirpur, Ahichchhatra, Allahpur, Mathura, Kampli, Noh, Jodhpura, Bhagwanpura, Kausambi, Jakhera and Shravasti.

Overall, there are four kinds of stratigraphic contexts where PGW occurs (Singh 2009):

I) Sites like Rupar and Sanghol (Punjab), Daulatpur (Haryana) and Alamgirpur and Hulas in Western UP have yielded the PGW ceramic assemblage after a late Harappan level, with a break in between the occupation.

II) Sites like Dadheri, Katpalon and Nagar (Punjab) and Bhagwanpura (Haryana) have witnessed an overlap between the two cultural assemblages i.e. PGW and the Late Harappan phase.

III) Sites like Hastinapur and Ahichchhtra in UP have yielded the PGW ceramic assemblage after the OCP culture, with a break in between the occupation.

IV) Sites like Atranjikhera in UP, Noh and Jodhpura in Rajasthan have yielded the PGW ceramic assemblage after the BRW phase, with a break in between the occupation.

Scholars have studied the sites and settlement patterns associated with the PGW phase. Makkahn Lal's study (1984) of Kanpur district identified 46 PGW sites. Of these 26 sites were below 1 hectare, 14 between 1 and 1.99 ha, 2 between 2 and 2.9 ha, 3 between 3 and 3.99 ha and 1 between 4 and 4.99 ha. He also noticed that the sites which are far from the rivers were smaller than those along the riverbanks. Average spacing between two settlements was 10-14km.

Another scholar Erdosy's study (1988) traced the history of settlements in Allahabad district of UP between c. 1000 BCE and 300 CE. In Period I (600-100 BCE) there was a two-tier hierarchy of settlements. 15 sites were 0.42- 2.80 ha in size, the average size was 1.72 ha. The largest site was Kausambi with 10 ha. Erdosy estimates that between 60 to 450 people lived in these villages. A similar hierarchy was visible in northern Haryana. Out

of 42 PGW sites, one site was 9.6 ha and others were not more than 4.3 ha. The evidence is comparable with that of Mughal's analysis of PGW settlements in the site of Bahawalpur, where 14 sites ranging between 0.5 and 5 ha except for Satwali which is the largest PGW site so far with 13.7 ha.

These data show that it was particularly small village settlements with few large one's as exceptions. Some of the important PGW sites are as follows (Dhavlikar 1999, Singh 2009 & Singh 2014):

a) Abhaipur

The site falls in the Bisalpur tehsil of Pilibhit district of Uttar Pradesh. It was excavated from 2001-02 to 2005-06. Painted Grey Ware culture was the main culture at the site found in Period-III. The people in this period lived in wattle and daub houses and later on made mud-wall houses with mud plastered floors. The presence of a large number of pits in this phase is conspicuous. A bones tool making workshop was found where in both finished and unfinished bone tools and beads along with equipment's were found. The excavators are of the view that mainly hunting, gathering, fishing contributed to the economy, while iron and copper metallurgy, pottery making and trade played subsidiary role. Beads of agate, carnelian, jasper, crystal indicates the existence of long-distance trade. P.G.W. ceramics with paintings are common. On some sherds stamped decoration was also noticed. A low bund or dump like structure along with moat is noteworthy. Post holes and circular wattle and daub structure give us an idea about their houses.

Numerous floors and a few underground storage pits are important structure that was found. Circular and oval furnaces with iron objects, slag, bin shaped ingots and a chunk of magnetite ore shows the local manufacturing facilities. Copper metallurgy and gold smelting were well developed. Bone objects making industry was quite proliferated one along with ivory working. Terracotta human, animal, birds' figurines and other objects are commonly found in the PGW levels.

b) Ahichchhatra

The site of Ahichchhatra is located in the Bareilly district of Uttar Pradesh. It is first reported site which yielded Painted Grey Ware. It was excavated by Archaeological Survey of India from 1940-44 by Ghosh and Panigrahi. The lowest level here has yielded the sherds of Painted Grey Ware. This period was then dated to pre-300 BCE. The site was again taken up for excavations in 1964-65 under the direction of N.R. Banerjee and four-fold cultural sequences were encountered.

Period-II has a deposit of about one meter and belongs to Painted Grey Ware culture. People in this period lived in huts and mud-brick houses. A broken brunt brick is also reported in this phase. The Painted Grey Ware is accompanied by plain red ware of coarse fabric. Some of the PGW were found over-heated resulting in brownish red

colour which the excavator included in a separate category. Different shapes and forms of PGW were found in this category. Polished grinding objects fixed in a mosaic pattern are the interesting finds of this period. Terracotta animal figurines, spindle whorls, beads etc. are other important finds. Copper and iron objects point to the metallurgical technology of the people who were mostly agro-pastoral.

c) Atranjikhera

This site is situated on the right bank of Kali river in Etah district of Uttar Pradesh and. It was excavated by R.C. Gaur. This is the most important PGW site in India. Period-II belongs to PGW whose deposit is up to 2.20 m. Earlier the excavator had divided the deposits into two phases but in the final report two sub phases of PGW and one phase of Late PGW were added. Some sherds of PGW show fabric impression. A good number of iron objects like shaft, axes, clamps, hooks, borers, chisels, knives, needles, bangles and a pir of domestic tongs were found in this period. Use of copper is found in the form of toiletries, ornaments and fish-hook etc. Houses were made of mud and reed, post holes indicate the presence of huts, whose floors were made of yellowish rammed earth. Terracotta beads, toys, discs, along with handmade human figurines were found. Remains of a mud bund were also encountered. Unfortunately, this could not stop flood from washing way the final deposits of this period. Agriculture, cattle rearing, fishing and hunting was the bases of economy here.

d) Dadupur

The site is located at further east of the village across Nagwa nullah. U.P. State Archaeology Department, under the direction of Rakesh Tiwari excavated the site. Period-II belongs to the PGW culture and the average deposit is 35 cm. Common shapes of PGW with painted motifs is the hall mark of this period which has other associated wares like Grey Ware, Black and Red Ware, Black Slipped Ware and Red Ware were found. Three successive floor levels were encountered, which were made of mud rammed, mixed with pot sherds. Brunt clay lumps with reed impression indicate that wattle and daub houses were made. Bone artifacts, terracotta hop scotches, bead along with iron objects were found. A bone tool making workshop was also found at the site from where finished and unfinished produced were found. Period-III is marked by the presence of NBP ware and associated wares, a few sherds of PGW continued in this period.

e) Hastinapur

This famous site is located about 96 km. north-east of Delhi in Mawana Tehsil of Meerut district. This is a signature site of PGW culture which was excavated by B.B. Lal (1955). Here five occupational deposits were excavated with a definite gap between each.

There was a gap between periods I & II. The PGW is the main ware of the period-II which is of fine fabric and most of the pots were wheel made, though handmade specimens were also encountered. Common shapes are bowls and dishes, painted with black, chocolate and reddish-brown pigment. Mud wall or mud brick houses were made. Use of copper and iron was attested by the presence of various objects. Chert and jasper were also used for making beads. Terracotta objects in the form of animal figurines, discs, stamps, pendent, beads; glass objects mainly bead; bone objects like beads, points etc. were main antiquities of this period. A huge flood destroyed the settlement of PGW and in the next period, people using NBPW inhabited this site. There is hiatus between this period and next period which belonged to 3rd century AD.

f) Jakhera

This site is located in Etah district of Uttar Pradesh on the left bank of Kali nadi to the north-west of Kasganj tehsil. This site is spread over an area of about 25 hectare and was excavated by MDN Sahi of Aligarh Muslim University in 1988-89. Four periods were unearthed here.

The period IIIA is named as proto PGW. In this period BRW, BSW and Red slipped ware having painted designs were introduced. The slipped red ware's colour ranges from deep brown thorough red to orange. This pottery was labelled as Proto PGW. The colour of this pottery is due to careless firing as a result of which sherds intend to be of grey colour were reduced red due to reducing heat technique.

Period-IIIB is labeled as mature PGW and has deposits varying from 50 cm to 2 m. This period is characterized by the continuation of BRW, BSW and red ware along with PGW and grey ware. Paintings are found on the sherd and few sherds were found decorated with stamped design.

g) Mathura

The ancient mounds at Mathura were subjected to excavations in number of seasons starting from 1954-55 and again from 1972-76. The excavation at *AmbarishTila* during 1975-76 yielded a few PGW sherds in the small area of the huge mound in the northern side. Phase 1A has a few sherds of PGW but bulk of pottery is BSW, GW, B&RW and Red Ware. Out of painted designs, special mention may be made about a ladder design. Common PGW antiquities were found here.

h) Sankisa

The site is located in the Farrukhabad district of U.P. The excavations were conducted under the direction of B.R. Mani in 1995-96 and a fourfold cultural sequence was encountered here. The layers of period-I have yielded PGW and associated ceramics. Red ware is both handmade and wheel made having coarse to fine fabric. Clay lumps

with reed marks give us an idea about their houses. Common PGW, shapes and painted designs were found along with some course Black & Red ware sherds. A large number of terracotta discs with a variety of decorations and other antiquities were found in this period along with a few semi-precious stone and two bone objects.

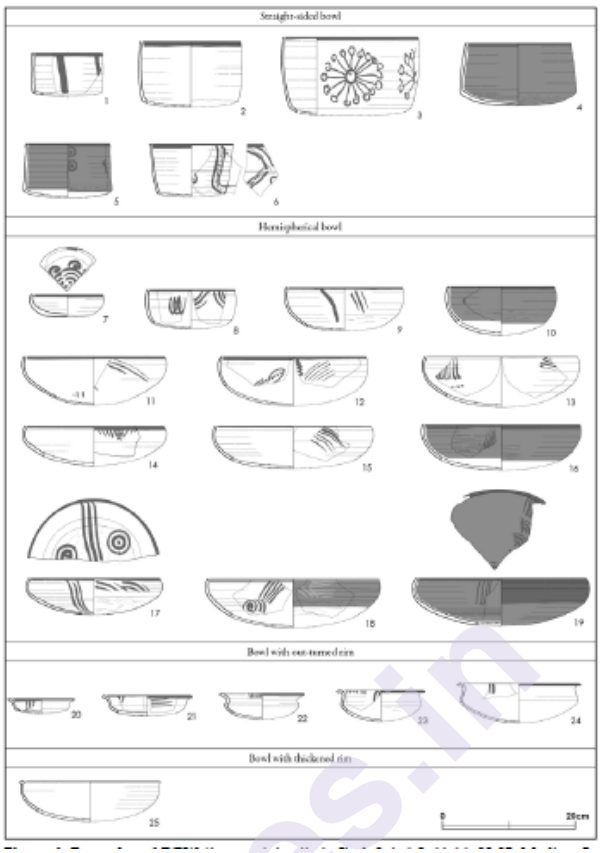
i) Sonkh

The site is located in the Mathura district of U.P and it was excavated by Hartel (1993). It measures 320x280 m. and had 17.20 m. thick deposit. The lowest deposit here belongs to the PGW using people who lived in thatched huts resting on post holes. Other wares of this period include BRW, Red Ware and Grey Ware. Artifacts like Iron objects, terracotta figurines, discs, balls, bangles etc. were found. Besides, beads of carnelian, agate and copper are the other antiquities were also found in this phase.

8.1.4 TECHNOLOGY

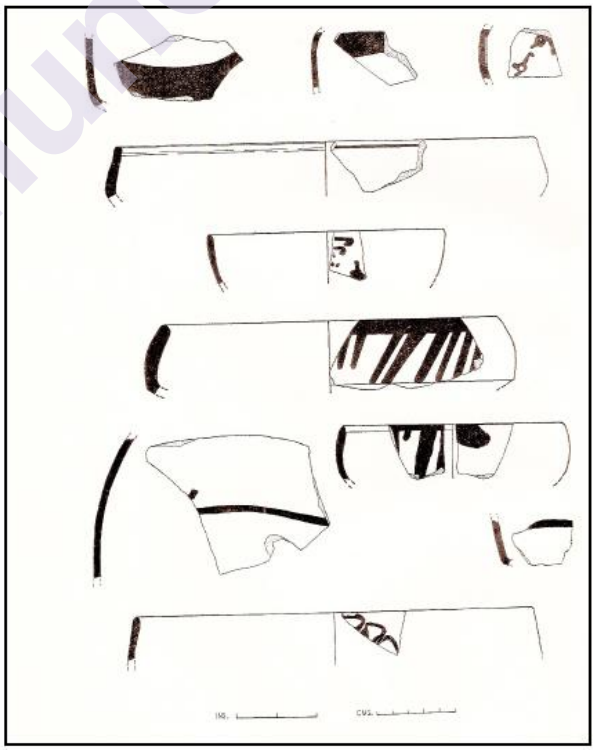
The PGW is very fine, smooth and has a thin fabric. Scholars like Lal and Dhavlikar believed that it is due to the excellent quality of clay which is available in the Ganga Valley. Sana Ullah opines that the color was due to the presence of black ferrous oxide produced by the controlled firing technique. According to Tripathi, a uniform high temperature must have been maintained in the kiln. Although no kiln has been found at PGW sites, it seems that PGW was fired not in an open kiln but in the closed ones, in which a high temperature could be attained (Uesugi 2018). Few wares found at the site of Ahichchhtra were partly reddish, and partly bluish or bluish grey in color. The reason behind this coloration might be due to the peculiar conditions of firing in the kiln attributed to the presence of oxygen. The pots were wheel made and once they were hard, they were turned on the wheel again for send time. Though majority of PGW pots have been wheel made, handmade potteries were also found at some sites. Outside the Gangetic plains, especially from Rajasthan medium grained PGW sherds are reported (Ahmed 2015). To give a smooth and matt finish, some smoothening agent was applied.

As mentioned earlier Bowl, dishes, dish on stand, cup, basins, *lotas* are commonly found. Bowls and dishes have straight, convex, carinated, corrugated sides with outgoing tappers. Dish on stand have corrugated sides. Basins are extremely thicker with grooved rim. *Lotas* are very rare might be used for drinking and washing, reported from Ropar. The paintings executed on the surface include geometric as well as naturalistic designs. Designs like sun and floral patterns are very uncommon. Interestingly, some sites in Rajasthan have yielded stamped or incised designs on the pottery. Paintings are thick in execution and do not seemed to have been painted with a fine brush. Since very small percentage of total pottery assemblage is found at a given site (3-10%), scholars have assigned PGW to a deluxe table ware, used by the rich people. (Dhavlikar 1999; Singh 2009).



Examples of PGW

(Credit: Uesugi 2018)



Various shapes of Painted Grey Ware (Kaushambi)

(Credit: Ahmed 2015)

Q.1 Give an outline of Painted Grey-Ware Culture of India with special reference to the excavated sites.

8.2 MEGALITHIC CULTURE

The word Megalith is derived from two Greek words- mega (big/huge) and lithos (stone). They are found in Europe, Asia, Africa, Central and South America. It is a nomenclature used for certain burial style which involves stone erect structures for dead.

In the Indian context, megaliths generally belong to the Iron Age. More than 2000 sites have been recorded since 19th century. The oldest megaliths in Indian subcontinent are found in the westernmost part of the present-day Afghanistan, dated to about 3000 BC. They are in the form of stone circles. But the megaliths are also found in almost all parts of the subcontinent including Central, Southern and Eastern India where they are a part of continuing traditions by communities like Khasis of Assam and Mundas of Chhotanagpur. However, the heavy concentrations of megaliths have been reported from Central and Peninsular South India. These monuments are assumed to be associated with burial or post burial rituals including memorials for those whose remains may or may not be available (Vahia et al: 2010).

8.2.1 TYPES

U.S. Moorti has classified the megalithic burials into two categories (Vahia et al: 2010):

1) Sepulchral megaliths

The sepulchral megalith contains the remains of the dead in a variety of forms. They could be primary burials, in which the dead is placed soon after his or her death. It will contain a complete skeleton (in either flat or curled up positions) with some burial goods as homage to the dead so that they could use them in afterlife. In some cases, these primary burials may also be in a sarcophagus made of terracotta. Similarly, secondary burials are also common when the remains of the dead, essentially his or her bones, are put in urns or pits. The location of the dead is most often marked with stone circles but Cairns, slab circles are also found on the surface.

2) Non-sepulchral megaliths

The most common amongst the non-sepulchral megaliths are the menhirs, stone alignments and avenues. These are difficult to make but more elaborate in their construct and more spectacular. They tend to be spread over a much larger area of several hundred square meters. They always have alignments which are either north south or east west with one prominent marker stone or a porthole in one stone pointing to either north or east. The earliest of these tend to have large stones put at specific locations but the later ones tend to be thin well-worked

stones made with care and the boulder type ones also tended to be dressed.

The architecture of burial monuments is subjected to regional variations. Even within a site there are overall significant variations. Each burial is unique in their nature, architecture and human remains. The different types of burial monuments are as follows (Mohanty et al: 2017; Reddy 1991):

1) Cist

A chamber type of burial with orthostats in a rectangular, swastika or box- type pattern has mostly has a capstone. It is usually accompanied with a stone circle periphery. Some cist burials have a passage and some have a port- hole on the main orthostat.

2) Urn

These are huge urns that are sometimes legged. Legged Urns are called sarcophagus.

3) Cairn burials

These are pit burials with a cairn packing of stone rubble.

4) Stone Circles:

These are a variety of cairn burials but having a periphery of stones generally boulders.

5) Kudai- Kal (Umbrella Stone)

It is an Urn burial capped by a slab and above there is an umbrella like stone.

6) Topi- Kal (Hat Stone)

It is like the umbrella stone but the cap stone is similar to a hat.

7) Dolmen

It is non- sepulchral chamber burial with one side open. There is a port-hole when the dolmen is closed on all sides.

8) Dolmenoid cists

Burial chambers made of multiple stones for the sides and top with single or double stone circles around them.

9) Menhir

A monolithic slab erected in memory of the deceased. There are some other types known as avenues and stone alignments. Few sites in South India, the burials are marked by carved monoliths

known as 'anthropomorphic figures'. The megaliths or the rocks near the megaliths are reported with rock paintings or engravings at some sites and the excavations also have revealed a large number of art objects.

10) Alignments

Menhirs erected in lines of particular order.

11) Avenues

Two or more alignments which lie roughly parallel to each other are called Avenues.

12) Barrows

Earthen mounds over the surface of which occur chips of granite. The pit covered by the barrow contains urns or terracotta legged sarcophagus.

13) Rock-cut caves

The Rock-cut caves are nothing but burial caves cut into the lateritic rock. They form an oblong or circular structure with a vaulted dome.

8.2.2 Settlement Pattern

Settlement pattern studies are useful in understanding human adaptation. Initially it was believed that megalithic people were pastoral. Mahurjhari, as an important megalithic site excavated extensively by Deo, was believed to be only a burial site. However, a habitation site was later located and excavated at Mahurjhari. Habitation deposits were subsequently located in close proximity of burial sites were also found at Panchkedi and Vyahad in Nagpur district and Malli in Gondia district. Explorations by various scholars have shown that almost all burial sites are associated with habitation, except in few cases where substantial changes in the landscape have taken place. Mohanty and Joshi classified megalithic sites into three categories (Mohanty &Thakuria: 2014):

i) **Category A-** It includes all the sites that directly contribute to the better understanding of the life and pattern of megalithic community of Vidarbha. Sites like Mahurjhari, Naikund, Takalghat-Kapa, Raipur, Borgaon, Bhagimohari, Vyahad, etc. which have either megalithic monuments or megalithic burials along with habitation are in this group.

ii) **Category B-** It includes those sites where no trace of megalithic burials is found in vicinity, but the presence of Megalithic phase succeeded by the early historic period in stratigraphical order is found. Sites like Kaundinyapura in Amaravati and Arni in Yavatmal district comes under this category.

iii) **Category C-** It includes sites where evidence of Megalithic and early historic culture is found in the vicinity of megalithic burials.

Moorti commented that location of habitation sites was dependent on environment and resources both for subsistence economy and construction for burials. Therefore, megalithic sites are located in mainly resource rich areas of mineral and ore resources like iron, copper, gold and mica, biotic resources, arable land and water, raw material for burial constructions. He further emphasized that some of the sites were located on the trade routes and in deltaic zones convenient for trade activity.

8.2.3 Distribution

Indian megaliths are found in different chronological context in all over India. The south Indian megaliths are dated the oldest megalithic culture in India erected during the Iron Age i.e. 1000 BC onwards. Many megalithic sites are found in the states like Kerala, Tamil Nadu, Andhra Pradesh, Karnataka and Maharashtra. Different types of megaliths are found in South India varying from menhir, dolmen, chamber tomb, rock – cut burials, alignments and stone circle. In Kerala, megalithic sites are located in Tengakkal, Mangadu, Pumimattu and Peria which are associated with burial sites. Megaliths of Andhra Pradesh are also associated with the burial sites and many sites are discovered from Nagarjunkunda, Kadambapur, Gallapalli and Amravati. The megaliths of Karnataka are the most important one in South India with the important sites like hire Benkal, Brahmagiri, Maski, Hanamsagar and Hallur. Hallur is an important site in Indian megaliths where iron objects are recovered along with the human skeletons.

The megalithic culture of Central India is found in many districts of Jharkhand like Ranchi, Ramgarh, Chatra, Singbhum and Lohardagga. The practices of erecting megaliths in central India is still continuing among the tribes or Adivasi communities like Gond, Munda and Oraons in Jharkhand. Many megalithic sites are also present in Kashmir and Uttarakhand in North India. In Kashmir, along with the Neolithic Phase, Burzaham and Gufkral also have the witnessed megalithic culture around mid-second millennium BCE. From these two sites, different types of menhirs and stones circles are found. In Uttarakhand, megalithic sites are reported from Almora, Kumaon, Ramganga and so on. The types of megaliths found from Uttarakhand are: menhir, dolmen, cist and cairn circle.

North East India comprises of eight states - Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. The megalithic culture is found widespread among many indigenous groups of North East India and it is a living tradition in many parts of this region. The origin of megalithic culture in North East is controversial. According to scholars, the North East megaliths are formed between late Neolithic and early Chalcolithic period and it is most probably influenced by the Southeast Asian megaliths.

The Khasi society of Meghalaya mostly erects megaliths as burial stones. Besides this, they have also erected stones as boundary stone and gate stone.

The Garos of Meghalaya also practice megalith with modified form. In the memory of the dead person, the Garos erect some decorated 'Y' shaped wooden post instead of stone in their society. Generally, three types of megaliths are found predominantly in Meghalaya. These are - menhir, dolmen and cist.

In Karbi Anglong district of Assam, megalith is a living practice. Both the Plain and Hill Karbis erect megaliths as a commemorative stone after someone's death. The Nagas of Nagaland mostly used megaliths as war memorial stone. After a successful raid, most of the Nagas like, Ao, Angami, Lotha and Konyak Nagas used to erect stone or megaliths as a symbol of their bravery in past. Despite these, cist burial is also found among many Naga societies which were used clan wise to keep the skulls of the death persons. The Nagas also used megaliths as a gate stone, boundary stone and foundation stone. In Arunachal Pradesh, megaliths are found among the Wancho, Nocte, Hrusso and Sherdukpen people. The Noctes and the Wanchos generally used menhir as a war memorial stone. Cist burial is also common among the Noctes and Wanchos in Arunachal Pradesh (Gogoi: 2019).

Some of the important sites are as follows:

a) MAHURJHARI

This site is located in Nagpur district of Maharshtra. The presence of megalithic monuments at Mahurjhari village was brought to light by Hunter in 1933. Later in 1958, Banerjee from Archaeological Survey of India explored the site and recorded 300 megalithic stone circles. The site was further selected for exploration and excavation by Mohanty with the aim of locating the habitation deposit Excavations at the habitation deposits revealed typical micaceous red ware, black and red ware, thick red and black slip ware of Vidarbha megalithic culture. Besides, sherds of black - painted red ware were also found. Several floor levels were exposed along with silos, hearths, roasting places, fireplaces, washing platforms made with pebbles and clay. The floors were made by ramming the black clay upon which stone chips were laid and then it was covered with a thin layer of brownish earth and sticky fine clay paste. U-shaped earthen hearth and storage pits are the other characteristic finds. The circular post holes indicate some kind of superstructures made of wood or other perishable materials. The burnt clay clumps found with impression of bamboo and mat indicate mud plaster over the bamboo mat. Besides, artifacts like semiprecious stone beads, terracotta beads, clay tablets, pottery discs and grounded-flat-circular stones of different wrights were found along with large amount of animal bones and charred grains.

There are 270 burials identified in 11 localities located in considerable distance from each other at Mahurjhari. They are located on barren, less fertile, un-productive landscape and hilly tracts (Mohanty &Thakuria: 2014).

b) PACHKHERI

Pachkheri is located in Kuhi taluk of Nagpur district and was excavated by the Archaeological Survey of India. The site has menhirs and stone circles. Excavation revealed five cultural levels between the Mesolithic and the medieval. Period II is megalithic, with mainly black and red ware, red ware, black on red painted ware and black slipped ware. Discovery of the patches of mud floor and iron rod, ring fastener and a copper bowl are some of the important finds. Excavation of the menhirs revealed that a pit was dug to erect the monolithic stone or slab. No funerary materials were found in the excavation of menhirs. One stone circle was also excavated, where a central pit was surrounded by a circular chamber made of pebbles. The funerary materials include a copper bowl, iron coiled rings, ring fastener and red ware vases (Mohanty &Thakuria: 2014).

c) ADICHCHANALLUR

Adichchanallur is known for the remains of urn burials. The site was excavated by Alexander Rea in 1902-03. Later Chennai Circle of Archaeological Survey of India's excavation at the site resulted discovery of 160 urn burials. Based on the urn types and nature of skeletal remains excavated, urns were divided into three phases. Phase one is dominated by primary burials. Urns of phase I invariably contain non-articulated human skeletal remains along with grave goods like pottery, iron tools and ornaments. The skeletal remains interned in urns are in crouched position. Example of double burials in the same urn was also noticed. In Phase II primary burials are fewer and urns containing secondary burials more. The phase III is dominated by secondary burials.

In the secondary burials, the body was first allowed to decompose and then bones were collected for secondary burial. In the primary burials, as evident from Adichchanallur, the fore and hind limbs of the body were folded and tied by vegetal or bark rope and then kept inside the urn. The urn no.83B revealed a double burial with bodies kept in such manner.

The grave goods found in the urns are mainly bowls, dishes, ring stands and lids of black and red ware, black polished ware, red ware and black ware. Besides, white pained black and red

Wares were also found. Other finds include axe, arrowheads, dagger and spearhead of iron and copper ornaments. Traces of rice husk and impression of cloth also noticed. A piece of potsherd found inside an urn with human skeletal remains shows the appliqué figures of two crocodiles and a deer on one side of a standing women and a sheaf of paddy and a crane on her other side is a noteworthy discovery (Mohanty &Thakuria: 2014) .

d) UMMICHIIPOYH

This is a rock cut burial site in the Kasargod district of Kerala. A cluster of rock cut caves was noticed on the western slope of a lateritic outcrop. Two caves were excavated by Thrissur circle of Archaeological Survey of India. The caves are circular on plan. A circular hole was made on the top of the cave. The rectangular entrance was closed by placing a slab. A steep slope was provided as passage to the entrance. No antiquity save pots of various size, bowls and lids of black and red ware and red ware were found (Mohanty &Thakuria: 2014).

e) AMRAVATI

This site situated in Guntur District of Andhra Pradesh. It is well known for its Buddhist stupas. Alexander Rea had excavated this site to restore as well as to study the nature of the stupa. The excavation revealed the presence of megalithic culture at this site, attested by the discovery of seventeen huge urn burials. But the excavator had assigned Neolithic affiliation to them. However, evidences show that they belong to megalithic period (Murali: 1993).

f) CHITTOOR

This site is situated about in Chittoor district of Andhra Pradesh. It has been excavated by Captain Newbold. Dolmenoid cist with port-hole surrounded by slab circle is the type noticed here. The orthostats of the chamber were arranged in anti-clock wise pattern and contained legged terracotta sarcophagi in them. The sarcophagi were filled with earth and human bones. Other finds included spear—heads, swords, presumably of iron, and some pottery (Murali: 1993).

g) NAGARJUNAKONDA

The site is situated on the right bank of the river Krishna in the Guntur District of Andhra Pradesh and has been excavated by the Archaeological Survey of India. Fifteen burials have been excavated out of which thirteen were pit burials and the remaining two were oblong cists with port-hole. Secondary and multiple burial practices were the prominent types here. There are only two instances of extended burials. Skeletal remains and associated objects were placed on ash or lime bed. Pottery and iron objects were found in abundance. Animal bones were also found frequently in these burials. Megalith III had yielded only skeletal remains of 1 an animal and no human bones, pottery or iron objects were found. Both east-west as well as north-south orientation was noticed in these burials. Megalith XIV is interesting in as much as it yielded an extended skeleton, probably of a female, with ornaments on its body. Two gold wire earrings and beads of gold and silver were found along with this skeleton, apart from pottery and iron interments (Murali: 1993).

h) HIRE BENKAL

The megalithic burial complex at Hire Benkal is situated in Gangavati Taluka, Koppal District of Karnataka. The megaliths on the hill encompasses an area of nearly 20 ha and spread at three different localities in an east - west orientation, together to a distance of about 1 km. The three clusters could be classified as the western group, central group and the eastern group. The site is world renowned for the existence of thousands of megalithic structures with dolmens in large numbers, standing on mound for more than 2500 yrs. Several subtypes that have been identified at Hire Benkal are as follows: Port-holed Dolmenoid Cist – Circles, Oblong Dolmenoid Cists or Cists with or without port-holes, Irregular polygonal chambers, Rock Shelter Chambers, Anthropomorphic, etc.

A unique feature of Hire Benkal is its prehistoric rock paintings. In Hire Benkal, 11 rock shelters have been discovered so far. However, few paintings from Mesolithic period have also been reported. Majority of the paintings belong to overlapping period of Late Neolithic and Early Iron Age-Megalithic, i.e. c. 700-500 BCE. The depictions in rock art from Hire Benkal provides clue about subsistence strategies (hunting), weapons used (spears, Axes comparable to the one reported from megalithic excavated sites), fauna etc. of the Iron Age - megalithic period.

Leonard Munn first published the report in 1934- 35 about 3 rock paintings near the well-known groups of megalithic dolmens reported earlier by Keis. He also mentioned about the ash mounds near the village. Later, Archaeological Survey of India's Darwad Circle undertook excavations at two habitation sites of Durgadi Dadi and Talavarmule, in the vicinity of Hire Benkal (unesco.org).

A cist burial from Mayiladumparai, Tamil Nadu.

Credit: Mohanty &Thakuria, 2014

Burial urns from Addichchannalur, Tamil Nadu.

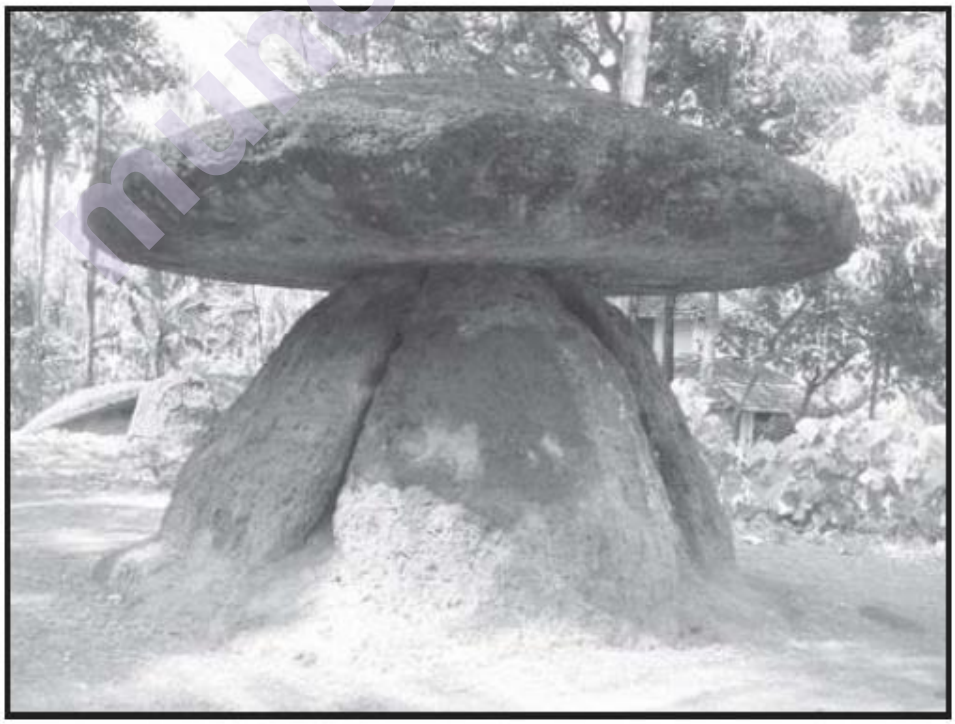
Credit: Mohanty &Thakuria, 2014

Cairn with periphery boulders having a rectangular chamber in the centre from Malli, Vidarbha.

Credit: Mohanty &Thakuria, 2014

A Kudaikal from Kerala.

Credit: Mohanty &Thakuria, 2014

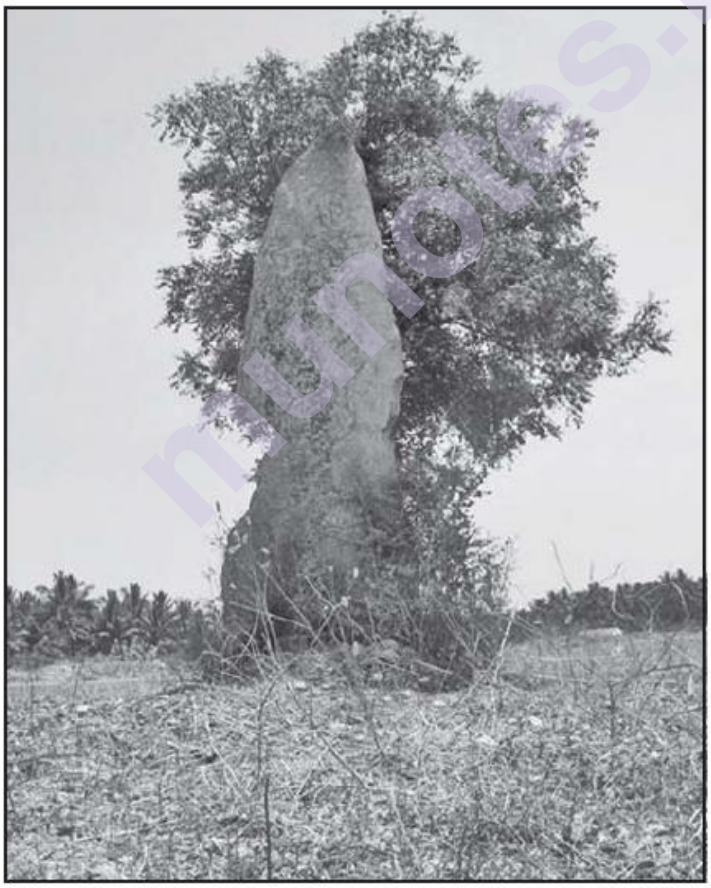


A Topikal from Kerala.

Credit: Mohanty &Thakuria, 2014

Dolmen from Mallasandram, Tamil Nadu.

Credit: Mohanty &Thakuria, 2014



A menhir from Ayyampatt, Tamil Nadu.

Credit: Mohanty &Thakuria, 2014

A view of a portion of the avenue at Hanamsagar from a hill on the west.

Credit: Mohanty &Thakuria, 2014

Rock cut cave burial from Ummichiipoyh, Kerala.

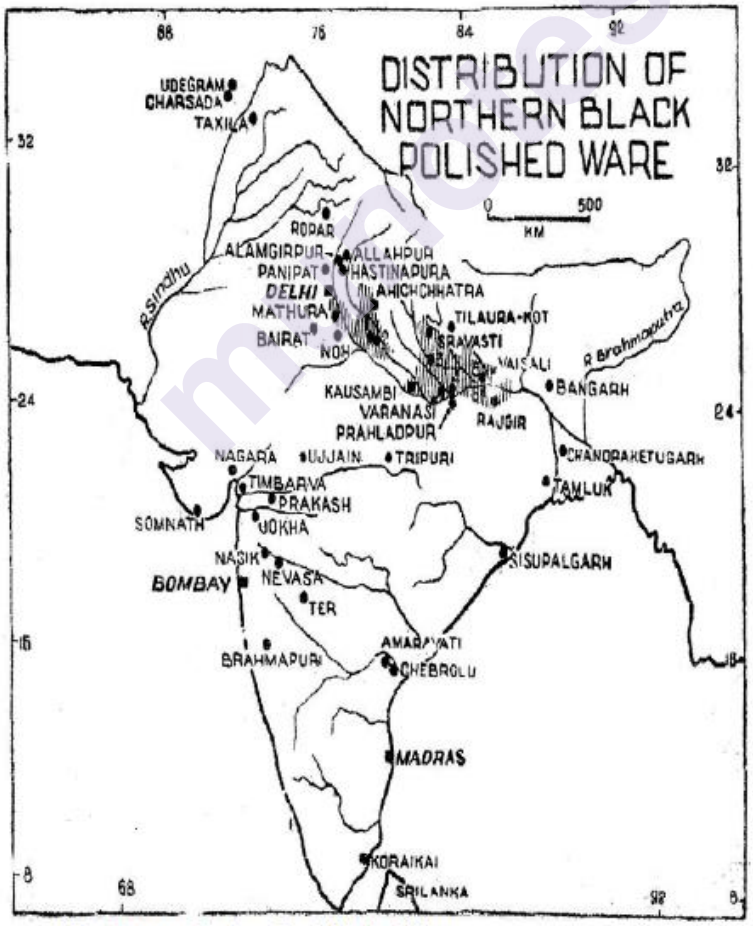
Credit: Mohanty &Thakuria, 2014

Q 2. What is Megalithic Culture? Discuss the Megalithic Culture of India with special reference to South India.

8.3 NORTHERN BLACK POLISHED WARE CULTURE

The Painted Grey Ware Culture was succeeded by the NBPW culture. As the name suggests this pottery has lustrous black polish and it is found mostly in northern India. Its fineness is sometimes as thin as 1.5 mm. The ware is also well levigated; wheel made and well fired. Apart from black, it is also found in other shades and colours. The popular shapes in which it is found are bowls with straight, convex, tapering and corrugated sides; dishes with incurved rims and convex sides, straight sides, knobbed lids, carinated handis and miniature vases. The NBPW was first discovered at the sites of Sarnath, Bhita and Bhir in Varanasi, Allahabad and Taxila respectively. Marshall believed it to be a variety of Greek Black Ware which is a deluxe ceramic of 4th- 3rd century BCE. However, he had doubts whether it was locally made or imported from somewhere (Ghosh 1989).

Interestingly, the introduction of NBPW marks the beginning of Second Urbanization in the Ganga plain and coincides with other factors like Buddhist archaeology, introduction of coinage and art of writing in the middle Ganga plain. It not only marks a new era in the field of ceramic industry but also in respect of ancient political, socio-economic and cultural history of India.



Distribution of Northern Black Polished Ware

Credit: Ahmed 2015

8.3.1 Chronology

The chronology of NBPW is also controversial like that of PGW. Marshall found it in pre- Greek levels at Taxila i.e. pre-300 BCE and therefore provided 500- 200 BCE as the time bracket. The work on chronology was done by Wheeler and Krishnadeva. They proposed the time bracket of 5th BCE to early 2nd BCE because at Taxila, the NBPW was mainly pre- Greek. At Hastinapur, there was a break inoccupation between the PGW period & the NBPW period and since Lal placed the former in 1100- 800 BCE, he assigned the NBPW period to 600- 200 BCE. On the basis of evidence from Ayodhya and Sringaverapur, he stretched back its antiquity to the 7th Century BCE.

On the basis of Carbon dating, a bracket of c.550 to 50 BCE has been proposed by Agarwal (Ghosh 1989). The pottery is not homogenous when it comes to the distribution. Two phases have been identified on the basis of stratigraphical evidence and fabric. The earlier phase has been identified at Shravasti and the other is represented by the sites like Vaishali and Rajgir (Bihar) where the beginning is placed at 7th Century BCE. K.K. Sinha thinks that Hastinapur and and Ropar belongs to the later phase. T.N Roy has divided the NBPW period into two phases of which the earlier ones are represented by the sites in UP or middle Ganga basin. It should be understood that the ceramic is bound to undergo changes in six or seven centuries over a vast area. The pottery is divided into 3 phases (Dhavlikar 1999):

I) 7th- 6th Century BCE- Beginnings in Kausambi- Patna region

II) 5th- 2nd Century BCE- Emergence of Magadhan Empire where the pottery reaches up to the Gandhara region in the west, Tamluk in the east and also towards South. However, when the mass production for the purpose of export starts during the Mauryan period, the quality of the fabric deteriorates.

III) 2nd- 1st Century BCE- With the downfall of Mauryan Empire, the NBPW too waned out which represents its last phase.

8.3.2 Distribution

The NBPW has a wide distribution in India. The ceramic is not only limited to North India but have been found at various sites in southern, western and eastern parts of India as well as beyond the present political boundaries of India like Pakistan, Nepal, Bangladesh, Afghanistan, Sri Lanka etc. There are almost 1,500 sites where this ceramic has been found ranging from Taxila and Charsada in the north- west to Amravati in AP in the south; and from Prabhas Patan in Gujarat to Tamluk in Bengal. The main excavated sets are Rupar (Punjab); Raja Karna ka Qila and Daulatpur (Haryana); Bairat, Noh and Jodhpura (Rajasthan); Hastinapur, Atranjikhera, Shravasti and Kausambi (UP); Vaishali, Patna and Sonepur (Bihar) (Singh 2009). Though middle Ganga plain has been accepted as the place of NBPW yet there have been contradictory claims, regarding the epicenter of the ware. While scholars like B.P. Sinha and Sahay are of the view that the epicenter

of the ware would have been around Pataliputra (Patna) and, on the other hand, scholars like G.R. Sharma proposed Kausambi as epicenter. Even though early dates of NBPW come from Bihar but on the basis of distribution Uttar Pradesh surpasses Bihar. The wide distribution of this ceramic is attributed to the spread of Mauryan imperialism, Buddhism or iron technology through trade routes (Ghosh 1989 & Kanungo et al 2021).

The NBPW phase is preceded by the PGW, sometimes with an overlap at sites like Punjab, Harayana, Rajasthan and Western UP whereas when it comes to the eastern UP and Bihar, Black and Red Ware (BRW) precedes this phase (Singh 2009).

Some of the important sites are as follows (Ahmad 2015):

a) Bhita

It is located in the Allahabad district. The NBPW was discovered and reported from the excavation at this site by John Marshall in 1909-10 and 1910-11. The deposits of the site are divided into five periods ranging from pre-Mauryan to Gupta times. Besides the NBPW, punch-marked coins, un-inscribed cast coins, tribal and Kushan coins and several sealings of Kushan and Gupta Periods were reported also. Two phases of NBPW are found. These are pre-structural ones (Early NBP) and the structural ones (Late NBPW).

b) Kausambi

The site is located near Allahabad. According to the Puranas, when Hastinapura was swept away by floods at the time of Nichakshu, the capital of the Pandavas was shifted to the site of Kausambi. The ruins were identified for the first time by Cunningham. Period II yielded huge number of NBPW shreds and several floor levels. The excavation from 1951-56 led to the discovery of *Ghoshitarama* monastery besides other objects. In the courtyards, a number of small stupas and a small shrine of Hariti were also found. The monastery marked the place where Buddha preached his Sermons which was described in detail by Hiuen-tsang.

The third cultural period (*circa* 605-45 BCE) identified on the basis of pottery is marked by the appearance of NBPW, PGW and Black and Red ware. The inscribed cast coins of Mitra Kings, lanky bull type and silver and punched marked coins along with terracotta figurines were also found in the period.

According to Sharma, Kausambi II belongs to a late phase of PGW phase and the view of the gap between the end of the PGW and the beginning of NBPW is no longer tenable. Here also, below NBPW (period III) there is a deposit of Black and Red ware (period II). And above NBPW is a post-NBPW deposit (Period IV). It is not possible here to demarcate the early and late phases of NBPW in Period III.

c) Patna

The site was first studied by P.C. Mukherjee in 1897-98 who reported several punch-marked coins and a coin of Chandragupta II in his exploratory diggings at Lahanipur besides other antiquities. D.B. Spooner conducted archaeological excavations at Bulandibagh and Kumrahar in 1912-13. At Bulandibagh, he traced the wooden beams and reported about two hundred uninscribed cast coins, two terracotta human figurines and a chariot wheel with iron round the hub. At Kumrahar, he brought to light Mauryan pillared-hall and several other antiquities like a polished stone pillar, punch-marked, Kushan and Gupta coins and terracotta Figurines. Thus, the antiquity of the site from Maurya to Gupta periods was more or less established by his work.

Under the direction of A.S. Altekar and V.K. Mishra, the site was excavated again from 1951 to 1955. The occupation was divided into six periods, the first five, corresponding roughly to the Mauryan, Sunga, Kushan, Gupta, late Gupta times and the sixth once again cropped in 17the century CE after a gap. Period I & II recovered the NBPW sherds, dated prior to *circa* 150 BCE and *circa* 150 BCE to 100 CE respectively. Only one shred of NBPW was, however, also reported from Period III which was dated from *circa* 100 CE to 300 CE.

The site was excavated again in 1955-56. This time a sequence of five periods, the earlier four were continuous in occupation from *circa* 600 BCE to 600 CE and the fifth beginning from 1600 CE was established. NBPW which was the distinctive pottery in Period I (From *circa* 600 B. CE to 150 BCE) degenerated in fabric and diminished in quantity in Period II (from *circa* 150 BCE to 100 CE) and finally went out of use in Period III (from *circa* 100-300 CE).

On the basis of excavation report in 1970, there are two phases of NBPW at the site. Period I, represents the early or pre-structural phase while Period II is marked by the presence of late NBPW complex. In this phase, NBPW occurs in small quantity, sometimes stamped with symbols like hollow cross and crescent hill, sometimes also riveted with copper and lastly interlocked with coarse grey ware. Structures also start occurring in this phase. Period III is post-NBPW when the NBPW went out of use.

d) Ahichchhatra

Ahichchhatra which is identified by Alexander Cunningham as Ahichchhatra of ancient literature is located in Bareilly district. This site was first excavated by him and then by K.N. Dikshit and others in 1940-44. They identified nine periods of occupation called 'strata' starting from pre Mauryan period (pre-300 BCE) up to 1100 CE. Besides other things the excavation also revealed number of coins which includes caste coins from the earliest strata followed by Panchala coins (1st Century BCE), Kushana coins, coins of Acyu,

who is identified with Acyuta, the king who was defeated and the territory annexed by Samudragupta etc.

Ahichchhatra was excavated again by N.R. Banerjee in 1963-64 and 1964-65 which brought to light four cultural periods named as Period I to IV starting from OCP. PGW followed by NBPW up to Kushana-Gupta period. The deposits of Period III were characterized by burnt clay and brick-bats, rammed into compact mass was represented by NBPW, thick Grey Ware, carinated *handis* and pear-shaped vases in Red ware. The use of burnt bricks along with mud-floors having evidence of multiple ovens, indicated structural remains. The other antiquities included animal and human terracotta, beads of carnelian and terracotta, pestles and querns, iron objects, and copper rings, nails and pins. These are all indicate towards the late phase of NBPW.

This period at Ahichchhatra is comparable with Sravasti II, Hastinapur III and Prahladpur IC.

e) Atranjikhera

It is situated on the right bank of the Kali-Nadi in Etah district. This site was excavated by R.C. Gaur in 1960- 61for the first time. After this, it was taken up for wide excavation in sessions 1962-63, 1963-64, 1965-66, 1966-67, 1967-68 and 1968-69.

The excavation revealed seven occupational deposits. Period IV, which represents an overlap of the PGW and NBPW, has been also divided into two phases, pre-structural and structural. The ceramic of this period was similar to that of NBPW levels of Hastinapur (Period III). But in the earlier phase no definite house-plans could be noticed except the remains of burnt mud clods with bamboo and reed impression. In the late phase, however, mud brick as well as burnt brick structures were reported. The pre-structural NBPW Phase in which the entire cultural pattern of the preceding period continued was ended by a flood. After this the site was fully urbanized perhaps also fortified and showed intense structural activities in form of brick floors, houses and ring wells. The Characteristic shapes like carinated *handis*, pear-shaped vases were absent from this pre-structural phase.

f) Hastinapur

This site is known in literature as the capital of the Kauravas from the Mahabharata. It is located in Meerut district of U.P as small streamlet Burhi Ganga a tributary of Ganga flows near the mound. Lal had excavated the site (1954-55) in which five occupational levels were encountered with a break between each have been recognized. Period III represents NBPW, the people were more sophisticated than their predecessors as they used burnt-brick structures, terracotta ring wells and brick drains. Iron was regularly used and money also came into circulation in form of punch-marked and un-inscribed cast coins. Other finds of the period dated from early sixth to early third century B.C. were terracotta figurines of animal like elephants, horse and

human figurines with elaborate head dress and ornaments. Beads, glass bangles and rings made of copper, chalcedony and horn were the other collections.

g) Tamluk

The site is situated in Purba Medinipur district in West Bengal. According to scholars, present day Tamluk is the site of the ancient city known as Tamralipta or Tamralipti. It was excavated in 1954-55 by M.N. Deshpande. Period II was represented by the use of Northern Black Polished Ware. In Period III, Rouletted Ware, sprinkler type vessels, ring wells and a brick built stepped tank were noteworthy. It is observed Period II and Period III represent the late phase of NBPW.

h) Ujjain

It is located in Malwa region on the eastern bank of the Kshipra River, a tributary the Chambal. Its importance as a Northern Black Polished Ware bearing site was only felt when Y.D. Sharma gave a short description of the site in 1953. The site was excavated by N.R. Banerjee from 1955-56 to 1957-58 and then by K.M. Srivastava in 1964-65 primarily to collect carbon-14 material for dating. The archaeological deposit is divided into four cultural periods. In Period II (from *circa* 500 to 200 B.C.), besides earlier potteries, Northern Black Polished ware was introduced in huge quantity. Structures of both mud-brick and kiln burnt brick made their appearance. Brick-built tank, a canal and a mud-built tile-roofed workshop were the other important findings.

i) Sugh

The site is positioned about 5 km east of Jagadhari in Ambala district. Under the supervision of Chhabra and Suraj Bhan of the University of Punjab, this site was excavated in 1963-64 and again in 1965-66.

The excavation revealed two cultural periods. Period I, was divisible into two sub-periods. Sub-period IA (circa 600-500 B.C) was characterized by the occurrence of Painted Grey Ware and Northern Black Polished ware. In Sub-period IB (*circa* 500-100 B.C.), all the ceramic of preceding phase continued except PGW. Human and animal terracotta figurines, bone points, punch- marked and Indo–Greek coins in silver, copper inscribed and un-inscribed cast coins, soapstone casket beads of semi-precious stones and iron and copper objects have been reported also from this period. Brick-built houses, terracotta drain pipes and ring wells were the ruins of structural activity.

j) Nashik

This site is situated on the southern bank of river Godavari in Maharashtra. The site was traced by Pt. Bhagwanlal Indraji and Henry Cousens of the Archaeological Survey of India in 1908. In 1948, the

site was explored by H.D. Sankalia and M.N. Deshpande where some sherds of the NBPW were recovered.

The excavation was taken up by H.D. Sankalia in 1950 and total human occupation of about 7.5 m was revealed. It was divided into four periods from Chalcolithic or Early Bronze Age to Maratha times. After Period I the site remained deserted. It was re-occupied in a about 400 B.C. with the advent of Northern Black Polished ware for the first time. The early historical period, called Period II, was divided into two phases, A and B, dated to 400-200 B.C and 200 B.C. – 50 A.D. respectively. The common pottery was Northern Black Polished ware, Black-and-Red ware and coarse Red ware. Iron implements, beads of semi-precious stones, bangles of shell and uninscribed cast copper coins in the late levels of this period were the other finds. The mud-walled houses, large storage-jars and soakage pits lined with rings (ring wells) and bricks constituted the dwellings of the people. It is observed that Period II is related to the Late Phase of NBPW.

k) Jodhpura

It is located near Jaipur. The excavation work (IAR 1972-73: 29-30) was directed by Vijay Kumar (1976) under the Supervision of R.C. Agrawal in the session 1972-73. The ancient mound of Jodhpura was situated on the right bank of the river Sabi, forms a part of Ancient Mastsya-desa. The total deposit was divided into five periods. Period IV is marked by the occurrence of the Northern Black Polished ware and slipped red ware. Important finds of this period include iron arrow-head and nails, shell bangles, terracotta humped bull and a stone bead. It must be said that the early phase of Northern Black Polished ware related with period III i.e. with the late phase of the P.G.W. and the late phase of Northern Black Polished ware by period IV.

l) Noh

The site is located near Bharatpur district. It was reported by B.B. Lal as a site containing both Painted Grey Ware and Northern Black Polished ware. The Department of Archaeology and Museums, Government of Rajasthan, under R.C. Agrawal and Vijay Kumar, excavated the site in 1963-64. The excavations yielded deposits of five cultural periods. Period III contained satisfactory quantity of Painted Grey Ware and Northern Black Polished ware from the related layers. Other major finds included terracotta discs (incised and scalloped), bone points, several objects of iron, charred rice. In Period IV, Terracotta human and animal figurines, un-inscribed cast coins, floors, hearths and a seal reported. The Middle phase is enclosed by period III having both Painted Grey Ware and Northern Black Polished ware. The late phase is covered by period IV in which NBPW and other assemblage of the Late phase of NBPW are reported.

m) Sisupalgarh

This site is located near Puri district of Odisha. An excavation was conducted by the Archaeological Survey of India under B.B. Lal in 1948. In order to find out the facts of the fort and its gateway and other important findings, the excavations at the site was again resumed in 1970-71 by the Government of Odisha. The total occupation deposit was divided into three periods. Period II B yielded three sherds of NBP. A silver punch-marked coin, a copper coin of Huvishka, clay bullae imitating Roman coins were the additional finds.

In Period III (*circa* A.D. 200-350), a gold coin, copied from the coinage of the Kushan King Vasudeva, some Puri-Kushan coins and houses of bricks or of cut laterite slabs with streets were the additional findings. The excavation also revealed the existence of a rampart of heaped earth built round about 200 B.C, during the first constructural phase. In the second phase, a thick layer of laterite was laid on the earlier earth work. In the third phase, two brick walls with mud filling between were added along with a revetment with stepped exterior. It was observed that the defense wall with two structural phases has been reported in the excavation of 1970-71. It is said on the basis of above facts that this site is significant parallelism from the sites of the late phase of NBPW culture.

n) Amravati

This site is located in Guntoor district of Andhra Pradesh. Under the direction of Krishna Murthy and L.K. Sharma of Archaeological Survey of India, this site was excavated in the sessions of 1958-59 and 1973-74. It revealed five cultural periods. Period I (*circa* 4th – 3rd Century B.C.) has divided into two sub-phases. Sub-period IA is characterized by the occurrence of Black-and-Red ware and Nothern Black Polished ware, sometimes in association with Iron. Among the noteworthy antiquities of the site were remains of hut and two inscribed potsherds in early Brahmi Characters. Sub period I-B is also connected with a large quantity of Nothern Black Polished ware. Period II (2nd - 1st Century B.C.) is marked by the continuation of the Northern Black Polished ware and punch marked coins. No other site in peninsular India has yielded so much of Northern Black Polished ware (NBPW). Period I and II belonged to late phase of Northern Black Polished ware.

8.3.3. Technology

Scholars believe that the Northern Black Polished Ware was fast wheel made and fired in the sagger-kiln at high to very high temperatures and cooled in reducing atmosphere. The technology behind the highly polished and mirror like surface of NBPW has not been fully understood yet. One theory is that some ferruginous compound was applied on the surface of the pots before firing and its black color was due to firing the pots in reduction condition. According to B.B. Lal, the lusture was achieved by applying some agent such as oil or plant juice after the pots was fired while still hot.

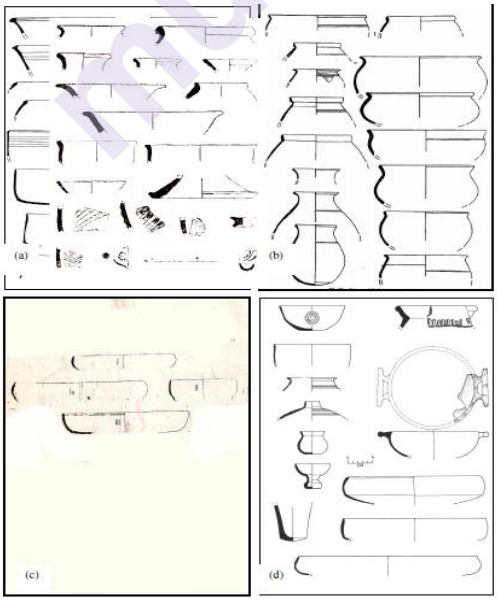
Besides, other theory suggests that magnetic iron oxide gave the pottery its black glassy look, while the shine was due to application of liquid clay, containing hematite, along with natural alkaline substance before firing the pot under reducing conditions. This ceramic is usually unpainted but there are some instances of designs consisting of bands, wavy lines, concentric and intersecting circles, semi- circles, etc. which are painted in yellow and light vermillion (Dhavlikar 1999, Singh 2009 & Ahmed 2015)

NBPW was highly valued; perhaps it was limited for elite usage which is indicated through the limited assemblage. Some interested finds are some specimens where fragments have been repaired with copper rivets, fillets, or pins. Ropar in Punjab, Bairat in Uttar Pradesh, and Sonepur, Juafardif, and Kumrahar in Bihar are some of the sites where such repaired NBPW are found. This suggests that NBPW vessels with minor breakage were not usually thrown away after they had been damaged but were used after repairing (Kanungo et al 2021).

8.4 CONCLUSION

The painted grey Ware culture clearly, identifiable with the later Vedic Aryans. The painted Grey ware people was much oriented about the iron technology. Through the excavation of the various sites it is observed that they are the first to have brought about a revolution in the settlement pattern in the Ganges-Jamuna basin-the Madhyadesa of old. Further, it is the painted grey ware period that brought northern India to the threshold of what is known as the second urbanization.

Therefore, through the excavations of early historic sites the clear picture of the knowledge of technology was existed among the people who were settled in the various places of early Indian culture.



(a) Shapes of Northern Black Polished Ware and associated PGW (Kaushambi) (b) Various shapes of Northern Black Polished Ware (Atranjikhera) (c) Various shapes of Northern Black Polished Ware (Rajghat) (d) Various shapes of Northern Black Polished Ware (Agiabir)

Credit: Ahmed 2015

CHECK YOUR PROGRESS

Q. 1. Why is NBPW also linked with Second Urbanization?

Q. 2. Write the important sites in the north India where NBPW are found?

8.5 UNIT END QUESTIONS

1. To highlight on the various sites of painted Grey ware sites in early India?
2. Evaluate the important features of the Megalithic sites in Early India?
3. Write a detailed note on the North Black polished Ware sites.

8.6 ADDITIONAL READINGS

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