

HIS6E01 -PRINCIPLES AND METHODS OF ARCHAEOLOGY

MODULE III- ARCHAEOLOGICAL EXPLORATION

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- Previous chapters have given an idea about the meaning, scope, types and the various theoretical perspectives of archaeology.
- Archaeology, as you know, is a systematic and scientific study of human past through material remains like artifacts, features and eco-fact.
- Various methods are there for the retrieval of archaeological materials from archaeological sites such as exploration and excavation.
- The present chapter explains the exploration methods and various techniques used in exploration.

Exploration

- Archaeological exploration means the **non- destructive scientific survey and documentation of sites.**
- Archaeologists often **carry out different methods to explore archaeological sites include Desktop study, Surface survey, Specialized survey and Geophysical survey.**
- **Desktop study involves the review of the existing records including the pioneer studies about the site if any and literary references on the site.**
- For instance, the archaeologists involved at Pattanam, Kerala has gone through the **previous archaeological reports of Anujan Achan, K.V.Raman, K.P.Shajan, Shinu Abraham etc.** They have also **examined the Greek-Roman classical literatures like Periplus of Eritrean Sea, Ptolemy's Geography and early Tamil poems like Akananuru and Purananuru that referred to the ancient port city of the Periyar river belt called Muziris before the commencement of exploration.**

- This kind of study has **helped them to make a broad outline of the area of ancient Muziris.**
- **Desktop study, therefore, involves researching the available maps and historical or archaeological documents in order to make a clear plan of exploration.**
- The other three methods of the explorations; surface survey, specialized survey and geophysical survey, will explain in the course of the following discussion.

Identification of an archaeological site or mound

- The important task of an archaeologist is the identification of site.
- **Archaeological sites are the locations that show significant traces of human activity, essentially where artifacts, features and eco-facts are found together.**
- There are **different types of sites like burial sites, habitation site, urban site, rock shelters, mounds etc.**
- Archaeological mounds are common in many parts of the world. It is often called as ‘Tell’ (see previous chapter) in the Near East.
- Mound site result when the same site is occupied for centuries, even thousands of years.
- Successive generations lived atop their predecessors’ settlements.
- So many natural and artificial processes, ranging from wind erosion to human activity, led to the formation mounds.
- For the identification of archaeological sites, the archaeologist often depended on the following methods.

Field walking and survey

- Field walking or pedestrian survey is one of the important site survey methods in archaeological explorations, which **involves a simple walking over the surface of the site, observes, and collects the materials remains.**
- **Surface survey means the collection of archaeological finds from sites with the objective of gathering representative samples of artifacts from the surface.**
- **Archaeologists often use various maps like geological, topographic, and satellite imageries of the site before the commencement of field walk.**
- **After making an idea about the site based on the available maps, archaeologist will start their field survey. Such exploration usually conducted before any excavation**

- For instance, a detailed surface survey has carried out in the Kodungalloor and Paravur area of North Paravur, Ernakulam district Kerala, before the beginning of extensive excavation at Pattanam in 2007 onwards.
- If the surface survey furnishes considerable amount of material remains from a particular area of the archaeological sites, then the archaeologist normally laid down a 'Test pit', which also called as 'Sondage'.
- Test pits are generally placed to understand the archaeological potentiality of a site.
- In 2014, based on the previous site surveys, a test pit was laid out at Pattanam in order to understand the potential of the site.
- It yielded a sufficient amount artifacts and features about the maritime traditions of Malabar Coast with the Mediterranean world.
- Based on the result, KCHR started extensive excavations, which continued until 2015.

Aerial photography

- Aerial photography is the earliest, and perhaps still the most important, remote sensing tool available to archaeologists searching for new archaeological sites.
- It is a survey using airborne and spaceborne remote sensing tool.
- The survey has two components: Data Collection, which comprises taking photographs or image from aircraft or satellite; and Data Analysis, in which such images are analyzed, interpreted and integrated with other evidences such as may be collected by field survey, ground based remote sensing, or from documentary evidences.
- Aerial photography gives an overhead view of the past. Site can be photographed for many directions.
- It gives both vertical (upright) and oblique (slanting) picture of the archaeological sites. OGS Crawford, an English pilot, introduced this method. Several features are made visible by aerial photography.
- Crawford termed these features as shadow marks, soil marks and crop marks.

- Most familiar are Crop Marks, may be Positive and Negative.
- Positive marks occur in dry conditions, when the moisture and the fertility of the soil in a buried pit or trench allow the crop above it to grow more vigorously than the surrounding crop, reproducing the plan of the features as a pattern of differential crop growth.
- This growth result in a colour difference with the stronger crop, which is usually visible as a greener mark, surrounded by yellow, ripping crops.
- Negative marks occur when the underlying feature (eg. a buried wall) restrict the crop growth and thus the crops ripen sooner (as they have less water) and a yellow mark is visible in a green field.
- One of the main factors affecting the development of crop marks is therefore the moisture distribution in the soil.

- Shadow marks- in low light, either at the beginning or end of the day, shadows are at their longest and even quite minor variations in ground level cast shadows.
- Soil marks analysis is based on the marked contrast between the colour of the surface soil.
- For instance, the soil marks of ancient structures often be clear in aerial photographs, because a decaying structure contains and collects a different types of soil than the surrounding areas.
- In short, shadow marks, soil marks and crop marks etc of the earth are visible to the surveyor flying above and often the surveyor takes both oblique and vertical picture of the visible patterns which may analyze later to find out the site.

Sampling techniques

- Sampling is one of the important tasks of the archaeologists as it provides invaluable information on various environmental, social and cultural factors.
- Sampling a landscape to locate sites can be undertaken either by examining discrete blocks of the landscape (squares or quadrats) or by walking lines across the landscape (transects).
- The geographer Peter Haggett defined four basic sampling strategies in his classic *Locational analysis in human geography*; simple random, stratified random, systematic and stratified systematic unaligned.
- His simple random sample involved gridding the area on a map and then using random number tables to select a point on the x-axis and a point on the y-axis.
- Where the two lines drawn out from these axis points cross is the randomly selected spot on the landscape.
- How many such random spots are selected will depend on available time and resources and the size of the area searched at the located spot depends on resources.

- To do Stratified random sample, the area to be surveyed is broken into geographic zones, like mountains, low hills and valleys.
- Each zone is then sampled separately in the same way as simple random sampling. This guarantees geographic coverage. It does not, however, get around the problem of clustering.
- To avoid clustering, the area could be sampled in a Systematic way. To do this the area is gridded and a point within the first square is selected randomly.
- Exactly the same location is then selected in each square. An alternative to this is to select randomly a different location within each square. This design, known as Stratified systematic unaligned has the advantage of being systematic (guaranteeing wide coverage) but with a random element.

Sondage

- Another important sampling method is Sondage or Trial pits or trial excavation in the surveyed surface.
- The main purpose of this is to understand the archaeological potential of the site with a short time.
- It will not take much time and proceed with a rapid excavation strategy. It also helps to make clear the extension of a site before, during, and after the excavation.
- For example, at Pattanam, in 2004, a trail trench was laid out and yielded significant archaeological evidences.
- In 2007 extensive excavation started and during this excavation, one trial pit was also laid out in the surrounding area of the larger trench, which yielded a long piece of a wooden vessel.
- After the excavation in the larger trenches, a number of trial pit were laid out in the surroundings of the major site in order to find out its extension.

Soil sampling

- The collection of soil samples from the site may help the archaeologist to understand the process of the soil deposition and the environmental aspects of the site in the past.
- Sampling for faunal and floral remains (eco-facts): The sampling involves attempting to recover very small materials or those not visible to the human eye like pollen. This can be done only by taking soil samples and undertaking extraction under laboratory conditions.
- Both wet and dry sieving is used by the archaeologist for the collection of eco-facts from the soil. If charcoal, bone, wood, pollen, seeds etc are discovered from a site, the sampling is crucial. Such materials have to be collected and labeled separately without contamination. These materials will be sending to the laboratory for the scientific analyzing, which is a post excavation activity.

Instruments used in exploration

- Various instruments are using for the archaeological exploration and documentation.
- It ranges from the simple measurement tape to the multifaceted ground penetrating radars.
- Measurement tape is a basic tool of an archaeologist, which uses to document every measurement aspects of the artifacts discovered from the field.
- Different types of maps, which mentioned above, are also help the archaeologist to make a clear idea about the site before exploration.
- A magnetic compass is another important tool of a field archaeologist to find out the direction and lay outing of the site.

- The equipment for specialized survey includes remote sensing radar (Aerial Photography), electrical resistivity survey instruments (Resistivity Survey), Ground-penetrating radar, proton magnetometer etc.
- Resistivity survey method is developed by Atkinson that helps the archaeologist to record the geophysical data.
- The different soil or rocks of earth conduct electricity differently, offering varying amounts of resistance to the passage of current.
- Based on the resistance variation, geo-physist locates buried archaeological evidences, especially the structure, tomb or such other archaeological features.
- The most useful instruments used for this survey is Martin-Clark meter and twin-electron type like the Geoscan Research RM15.