MODULE-4
EXCAVATION AND DATING TECHNIQUES
TOPIC- EXCAVATION

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Excavation

- The method of archaeological explorations that help the archaeologists to find out the material remains from the surface.
- Based on the field surveys, they will proceed with the trial pits in order to understand the potential of the site.
- Consequently, the archaeologist will start extensive excavation in that area.
- Excavation is the most systematic and scientific method to retrieve the buried object of the past societies.

- The excavations are mainly yielding the evidences of two main information on the human past societies; (1) human activities at a particular period in the past and (2) changes in those activities from period to period.
- Very broadly, we can say that contemporary activities take place horizontally in space; whereas the changes in those activities occur vertically through time.
- It means in an archaeological excavation pit the horizontal space always represent the contemporary period and the material evidences collected from the horizontal spaces belongs to a particular period.
- However, after the excavation when we observe all these horizontal evidences vertically we can see the changes occurred in different period.

Excavation of mounds

- The archaeological mounds are the locations that show significant traces of human activity, essentially where artifacts, features and eco-facts are found together.
- It is a site where the continuous human occupations occurred in the past.
- Two methods are using for the excavation of an archaeological site or mount; **vertical and horizontal digging**.

- **Vertical Excavation**
- Vertical excavation **reveals the total stratigraphy of the site.**
- The sediment layers cut perpendicularly and removed the soil in reverse order.
- Therefore, vertical digging discloses the entire cultural deposit of a site.
- Vertical excavation often starts from the present surface, which is known as surface humus layer, and ends at the natural layer, a sediment layer without human interaction.


Horizontal Excavation Length(Lopt)
Safety Length(Ls)
Vertical
Excavation
Depth(Hv)

- **Horizontal excavation**
- If the vertical digging exposed the cultural deposits of the past up and down, the horizontal excavation **aims to expose the deposits horizontally.**
- It **reveals the extension of the site** while presenting a stratigraphic record in the baulk left between pits.
- Mortimer Wheeler is one of the chief opponents of this excavation by using grid method

Open-Area excavation

- This type of excavation **aims to expose a large area of the archaeological site without maintaining baulk.**
- **Philip Barker** is the chief advocate of this method.
- This may **help the archaeologist to realize the total cultural deposit of a site.**

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Grid excavation

- **Mortimer wheeler** has developed the grid system, which is also known as **Box-Grid System,** of excavation to **obtain information both horizontally and vertically**.
- He developed the grid system of systematic digging whereby **the field was divided into small squares.**
- **Each square clearly separated by a narrow baulk that was never excavated**.
- This method permitted an area to be excavated yet preserved a vertical cross-section that revealed the strata of the site as the trench was dug.
- Wheeler's box-grid system has been used universally in modern archaeology and although less popular in Europe it is still the most simple method to ensure a systematic approach.

Quartering

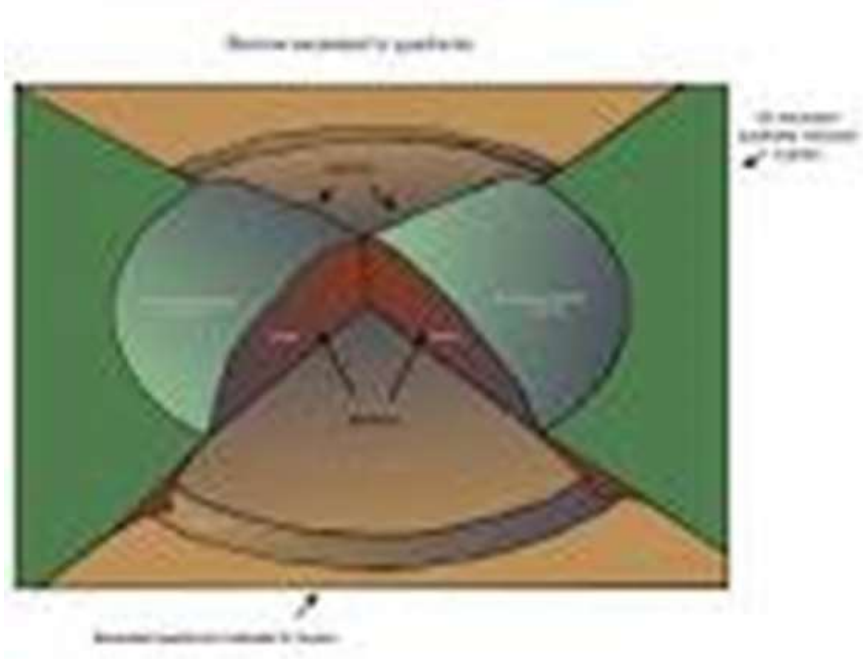
- This is an excavation technique involving **cutting archaeological sites in to four quadrants to obtain maximum vertical and horizontal information**.
- It is generally **applied to the excavation of small mounds.**

Excavation of burials (Quadrant Method)

- Burial excavation leads us to understand various aspects of the human life in the past centuries include ritual practices, believes, ancestral belief and belief on life after death.
- The skeletal remains helps to identify the racial affinities, family groups, age, sex, nutrition, palaeodemography, palaeo-diseases and other cultural information.
- Megaliths are the most important burials of Kerala and South India that have archaeological importance.

- There are different types of megalithic burials like Umbrella stone, Cap stone, cist, dolmen, rock-cut sepulchers, stone circle, urns, sarcophagus etc.
- Quadrant method of is **normally used for the burial excavation**.
- Quadrant method **involves dividing the mound or burial into four segments and each quadrant removed very systematically**.
- After removing the soil of one quadrant, the archaeologist tries to understand the actual position of the burial and then proceed with the removal of remaining three quadrants. Even depth must be maintained in the entire quadrant.

- For instance, if one tries to excavate an urn burial he/she has to remove the four quadrants until the capstone is identified and then proceed with removal of one or two quadrant simultaneously.
- Once the burial is exposed the entire burial goods have to be documented in situ(on site).
- The documentation includes, drawing or illustration, photographs, mapping etc.
- The samples, especially bones or fossils, charcoal, pottery etc have to be scientifically collected.
- After the completion all documentation the burial goods will send to the museum



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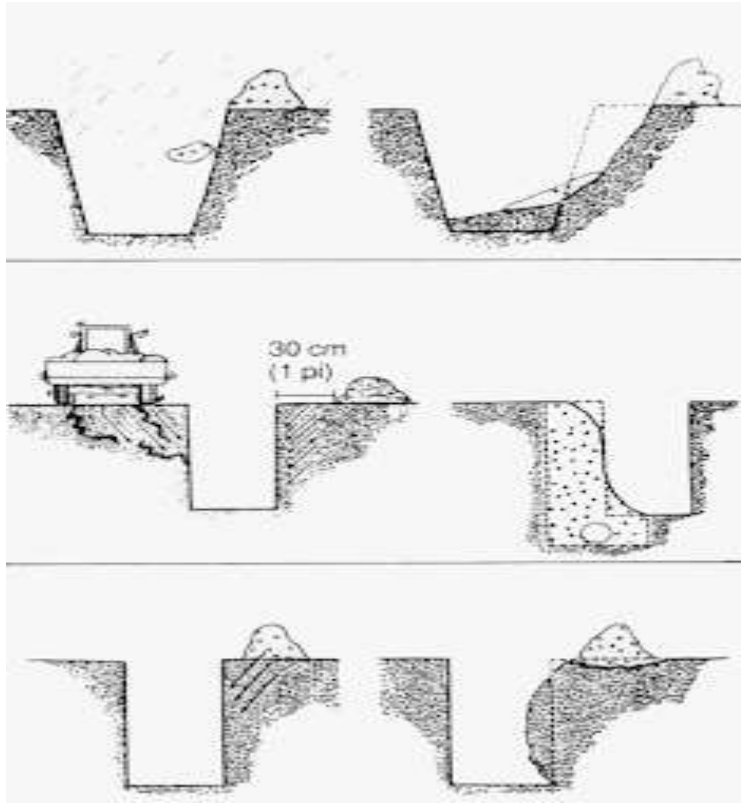
Trench excavation

- Trench is used to **refer to small or sample excavation as opposed to open area excavation.**
- Even a large area excavation is only a sample of archaeological landscape and so is really a large trench.
- Trial trenches or trial pits or sondages are also the sampling excavation of the sites.
- They are often small square trenches (1m x 1m) in order to recognize the archaeological potentials of the site.


30 cm
(1 pi)

Sieving

- Sieving is the most important part of excavations.
- This method, **also known as screening or sifting, used to recover quantifiable data from excavations.**
- The cultural materials meticulously recover through sieving and record its context properly.
- Prior to the New Archaeology of the 1960s, sieving was not widely practiced and usually was restricted to the use of coarse mesh sieves for the recovery of small artifacts such as coins and beads.
- However, presently the archaeologists collect and document all artifacts, whether it is small or big, from the archaeological sites.

Stripping

- Stripping is **not often advisable in archaeological excavation.**
- **It involves the removal of top soil accumulations.**
- It is often carried out after a series of excavations that had taken place in various parts of the site.
- The **removal, as efficiently as possible, of all above the surface those considered archaeologically not significant**.
- For instance, in an urban context, this may involves removing the remains of recently demolished concrete building.
- This method is employed in contract archaeological work when the time factor is short.

Stratigraphy and Law of superposition

- 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**.
- As we learned in the previous chapter, 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 differ 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**.

- The **Law of Superposition is of first importance in the interpretation of the stratification**.
- It **assumes that the strata and features are found in a position similar to that of their original deposition**.
- **“In a series of layers and interfacial features, as originally created, the upper units of stratification are younger and the lower are older, for each must have been deposited on, or created by the removal of, a pre-existing mass of archaeological stratification”.**

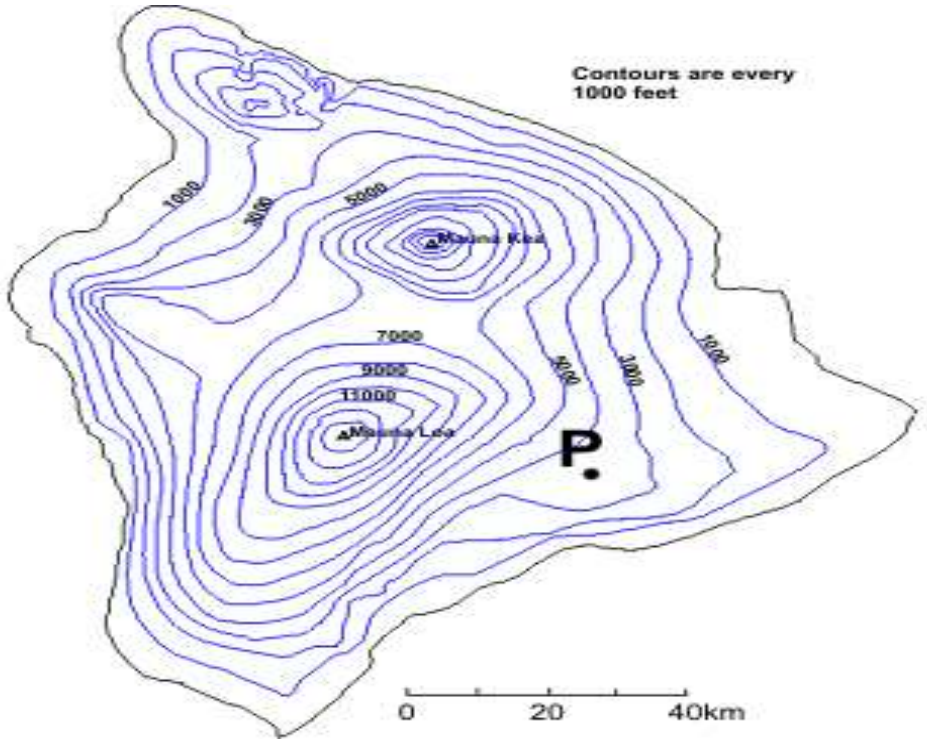
- The Law of Superposition is a **statement about the depositional order between any two strata.**
- Since it **only relates to any two units of stratification, it can make no declaration about the detailed position of strata in the stratigraphic sequence of a site.**
- The law is **simply a statement about the physical relationships of superimposed deposits, i.e. one lies on top of or underneath another, and is therefore later or earlier.**
- By recording super positional relationships, the archaeologist amasses a body of data, which **will be of assistance in determining the stratigraphic sequence of the site.**

Mapping of sites

- Map is one of the important tools in archaeological exploration and excavation.
- It includes **topographic map, site map, aerial map, contour map** etc.
- **Topographic map depicts the topographical data in combination with representation of archaeological features.**
- **Topographic map helps an archaeologist to observe the landforms through which he/she may able to locate an archaeological mound before and during the exploration and excavation.**
- The **contour map represents the elevation or undulation of the landscape**.
- The Satellite maps, Google earth maps etc are also widely using nowadays to locate and document the archaeological site.

TOPOGRAPHIC MAP

CONTOUR MAP


Contours are every
1000 feet
1000
3000
5000
7000
9000
11000
13000
1000
800
600
400
200
P.
0
20
40km

Excavation reports

- Excavation report is the **final product of the excavation**.
- It is generally **divided into many parts representing the evidence in a meaningful way and placed in logical sequence.**
- The **first part deals with the discovery of the site, proper identification of the site, previous researches including salvage operations, exploration and excavations, stratigraphical record of the site, and a detailed description of the site**.

- The **second part contains a detailed report of trenches (excavated pits) with description of archaeological layers, material remains and an analysis of the trench supervisor.**
- It **mentions the location of the trench and its relation to other trenches if any in the same site, topographical features of the site, the measurement of the trench (eg. 4m x4m), and GPS position of the trench and the ownership of the land where the trench is laid out.**
- The report contains the report of all trenches laid out in the site. (For instance, seven trenches were laid out at Pattanam in 2007.Then in the second part of the report of Pattanam Excavation 2007, a detailed report of seven trenches will be included).

- The **third part contains a detailed catalogue of artifacts.**
- It includes the list of artifacts and eco-facts collected from the site.
- The numbers of features if any noticed in the site may also recorded in this part.
- This may be placed as appendixes to the report as well.
- The **last part of the report carries the result of the samples collected during the time of excavation from various experts**.
- It includes the result of carbon dating, thermoluminescence, dendrochronology or such other dating if any.
- The **last part also gives a comprehensive conclusion of the excavation.**

Interpretation of archaeological data

- Excavated sites represent the cultural sequence of a region from ancient to present.
- Therefore, the **interpretation of an archaeological data is crucial part in any excavation project.**
- The interpretation archaeologist actually **gives meaning to the site.**
- The archaeological interpretation of a site is **based on the site stratigraphy, cultural materials include artifacts, features, and eco-facts, result of the expert reports, previous research etc.**
- **various theories include, cultural context, cultural evolution, ethno archaeology, New archaeology, post processual archaeology, cognitive archaeology etc. are also using for the interpretation of archaeological data**.

Preservation and conservation of archaeological sites and materials

- Any buried artifact would have reached a chemical and physical equilibrium with its environment.
- It remains relatively stable in that environment.
- After burial in the earth, they have to adapt a new environment through certain modification to establish equilibrium with its microenvironment.
- The artifacts will again have to adapt to the new environment when it is excavated.
- This process causes the breakdown of the object either physically or chemically or biologically or combination of all these factors.
- **Archaeologist must follow certain procedures for the care of archaeological materials; Cleaning, Repair and Stabilization**.

- **Cleaning means the careful removal of dirt to facilitate examination, recording and conservation of the artifacts**.
- **Repair means securing the original position of the objects.**
- **Stabilization means to strengthen the specimens in all means to reduce or arrest its further deterioration**.
- There are **different methods applying for the conservation of organic and inorganic materials.**
- **Organic materials like bone, wood, leather, ivory are best kept under the conditions in which they are found.**
- If the microenvironment is dry, wet, or humid, the object must be kept in the same microenvironment.
- **Various chemical applications are practicing for the preservation of inorganic materials like potteries, stone, metals etc**.

Archaeological museums

- **An archaeological museum is an institution that preserves a collection of artifacts and other objects of artistic, cultural, historical, or scientific importance.**
- The **goal of museum is to serving the material remains to the researchers also make available to public to get an idea about their cultural heritage.**
- The earliest necessity to house objects of antiquarian remains dates back to late **1796 AD when the Asiatic Society of Bengal felt the need to house the enormous collection of archaeological, ethnological, geological, zoological pursuits.**
- However, the **first museum by them was started in 1814**.
- The nucleus of this Asiatic Society Museum later provided to the **Indian Museum, Calcutta.**

- In Archaeological Survey of India also, due to the various explorative investigations that was initiated since the times of its **first Director General, Alexander Cunningham, vast quantity of antiquarian remains were collected.**
- The **creation of site museums had to wait until the arrival of Sir John Marshall, who initiated the founding of the local museums like Sarnath (1904), Agra (1906), Ajmer (1908), Delhi Fort (1909), Bijapur (1912), Nalanda (1917) and Sanchi (1919).**
- **National Museum Delhi, Salar Jung Museum Hyderabad, Madras Museum, Trissur Sakthan Museum, Pazhassi Raja museum Kozhikkode, Ambalavayal museum Waynad etc have a good collection of archaeological materials.**