Archaeology Merit Badge
PART TWO
Eric Cutright, January 2022
Scoutmaster Troop 1029 (F)
Archaeology Merit Badge

Your Troop 1029 Merit Badge Counselor
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Part 1 – Summary of Requirements, Introduction, Site Sampling, Mock Dig

Part 2 – Artifact ID/Preservation, Dating, Cool Archaeological Sites around the world

Part 3 – Artifact ID, Looting, Time Capsules, YOUR Requirement 7 and 8 presentations

Part 4 - Experimental Archaeology, Cool Careers in Archaeology
Part Two - Dig In!

- The Archaeological Process, continued
  - Artifact Identification and Examination
  - Preservation
  - Information Sharing

- Dating
  - Artifacts, that is!

- Cool Archaeological Sites Inside or Outside of United States
  - Patrol Assignments – research and report using Eric’s books
Refresher – Site Excavation: Artifacts
Site Excavation: Artifacts

• “The fundamental premise of excavation is that all digging is destructive, even that done by experts. The archaeologist’s primary responsibility, therefore, is to record a site for posterity as it is dug because there are no second chances.”

  – Brian Fagan, Archaeologist
Site Excavation: Artifacts

• When archaeologists find an artifact, they dig carefully with special tools and brushes to avoid damaging the artifact

• An artifact is never immediately moved unless it is in danger of damage or theft
  – The artifact’s position can provide valuable clues to how it was used, its relationship to nearby artifacts, and for site dating
  – The artifact’s location must be carefully recorded on the dig grid
  – Pictures are taken (with a reference stick) to record the position, and detailed drawings or digital/laser scans are also made
  – Each artifact is assigned an identification number and marked
  – The artifact is moved only after all the above steps are done
Artifact Identification and Examination
After artifacts have been excavated, they are sent back to the archaeology lab

- First step is to clean artifacts and label them with an ID number
- Artifacts are grouped into categories for analysis
- Researchers may use books, previous finds, and on-line databases to help with artifact identification

Some artifacts make identification easier:

- Pottery survives well and the style, manufacturing technique, and decorations can identify the culture and likely dates
- Pollen analysis can be used to see what people ate
- Organic materials (cloth, fibers, bodies) are typically highly perishable but can survive under the right conditions
Artifact (Mis)Identification: Motel of the Mysteries

- One of my required readings from my UVA college archaeology class
- The year is 4022 and famed archaeologist Howard Carson has discovered the Motel Toot N’Cmon in the ancient country of Usa
Artifact (Mis)Identification: Motel of the Mysteries
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- The great altar was the center of Usa religion - used for communication with the gods
- Intended primarily for communication with the gods MOVIEA and MOVIEB
- Communication was continued in the afterlife by placing communicator box in the hand of the deceased
Artifacts (Mis)Identification: Motel of the Mysteries

- Howard’s wife Harriet poses with some of the priceless artifacts
  - The Sacred Collar
  - The Ceremonial Headband
  - Magnificent *plasticus petrificus* ear ornaments
  - Exquisite silver chain and pendant from the highly polished white sarcophagus found in every tomb
Artifact (Mis)Identification: Motel of the Mysteries

- At the Toot N’Cmon museum display, Howard wears the Sacred Collar and Ceremonial Headband to re-enact the ritual “chant of the ranking celebrant” into the Sacred Urn
Artfact (Mis)Identification: Motel of the Mysteries

- The Internal Component Enclosure (ICE)
  - A 20th century adaptation of the ancient Egyptian canopic jar for holding internal organs
  - Finely fashioned of *plasticus petrificus*
  - Interior lined with a priceless translucent substance
  - May have been symbolic since no internal organs were found in any of the tombs
Artifact (Mis)Identification: Motel of the Mysteries

• Portable shrine
  – Delicate inscriptions were intended to identify an individual’s religious preference along with the burial site where their body should be delivered
  – Matching inscriptions were found on the main doors of the great sanctuary
  – Because the ancients were unable to predict the exact time of death, each shrine had to last for an entire year as shown by the “valid date” inscription
Artifact Identification

- The moral of this story?
  - People in ancient times knew exactly what artifacts were used for since they used them every day
  - For us, artifact identification can be VERY difficult, particularly if items are not used by our modern culture

- We will have a Patrol competition about this later!
Artifact Preservation
Artifact Preservation
(MB Book pages 63-66, Requirement 2)

- Some fragile artifacts must be preserved immediately after excavation, for example:
  - Shipwreck material – RMS Titanic, Sweden’s Vasa
  - Wooden furniture - Jericho
  - Wall paintings and floor mosaics – Pompeii
  - Iceman’s body – Italy

- Preservation is the set of techniques for cleaning and stopping (or slowing) the decay process
  - May apply special chemicals or wax to protect artifacts
  - May sometimes freeze-dry to remove water
Preservation of the Vasa Shipwreck, Stockholm Sweden
Artifact “Virtual” Preservation: Laser Scanning – Modeling
Information Sharing
(MB Book pages 68-71, Requirement 2)

- Archaeologists must share their findings to help other archaeologists and keep the public interested
  - Academic journals and conferences
  - Books and television programs
  - Internet sites
  - Museums
  - Magazines
Dating
(Artifacts, that is !)
Several techniques exist for dating artifacts, there are two basic types

- **Absolute dating** – provides dates based on units of absolute time
- **Relative dating** – designates an artifact as being older or younger than another artifact

**Common absolute dating techniques**

- **Radiocarbon dating** – measures decay of radioactive carbon
- **Dendrochronology** – dating based on tree ring patterns
- **Potassium Argon dating** – measures decay of radioactive potassium in volcanic rock
- **Electron Spin Resonance** – measures number of trapped electrons in bone
Radiocarbon Dating

• Radiocarbon dating built on these concepts:
  – All living things absorb ordinary carbon (C12) and radioactive carbon (C14) into their living tissue
  – At moment of death the C14 begins to decay at a known rate
  – The amount of C14 left in the artifact determines its age

• Limitations:
  – Can only be used on organic (i.e. once living) matter
  – Sample size and careful handling is critical
  – C14 decay is logarithmic, therefore approach is not accurate for recent deposits
Dating with Dendrochronology

Trees respond to their environment: In years with lots of precipitation, they grow faster than in years with less precipitation.

Scientists build tree-ring chronologies by starting with living trees and then finding progressively older specimens—including archaeological wood—that outer rings overlap with the inner rings of more recent specimens.

Wood Cross Sections

Year 1798

1871

1924

2013

Prepared. For Life.
Common relative dating techniques

- Seriation – a technique for dating by putting groups of objects into a serial sequence in relation to one another

- Stratigraphy – a technique for relative dating based on organizing artifacts by means of strata. Objects in lower strata are older than objects in higher strata.
Relative Dating by Stratigraphy
Stratigraphy Exercise
Dendrochronology Exercise
Cool Archaeological Sites around the World (Requirement 4a/b)
Archaeological Sites around World (whole MB Book, Requirement 4a/b)

• Each patrol will research one archaeological site inside or outside the US, and give a speech w/ pics

• Suggested sites:
  – Pompeii and Herculaneum
  – Vikings and Bog People
  – Tomb of King Tut
  – Palace of Knossos

• Other choices:
  – Wreck of the RMS Titanic
  – Wreck of the Vasa, Stockholm, Sweden
  – Inca Royal Retreat of Machu Picchu, Cusco, Peru
  – Anything else you can find!!
Archaeological Sites around World (whole MB Book, Requirement 4a/b)

• Guidelines from workbook:
  – Point out the site on a map
  – Explain how it was discovered
  – Describe some of the information from the past that has been found at the site
  – Explain how the information gained from the study of this site answers questions that archaeologists are asking
  – Explain how the information may be important for modern people

• FILL OUT YOUR PATROL WORKBOOK!