

Archaeology

Mini-lesson

What is archaeology?

Study of (usually) past cultures using artifacts they have left behind

William Rathje from U. Arizona "garbology" project excavated landfills around Tucson to examine current patterns of consumption; found they did not always fit with self-reported patterns.

- William Rathje, *Rubbish!: The Archaeology of Garbage*; ISBN 0-06-016603-7; HarperCollins (hardback, 1992)
- William Rathje, *Once and Future Landfills*; National Geographic, May 1991.

Artifact: objects that are made or used by humans (tools, food remains such as bones, artwork, pottery, buildings, etc.)

Where do we find artifacts? Anywhere people have been!

Underwater archaeology (shipwrecks, sites that are under water due to rising water levels)

One of four sub-disciplines of **anthropology** (Gk. "study of man"). Other three:

Cultural anthropology (studies aspects of present-day cultures, compares cultures)

Biological anthropology (includes forensics of modern and past humans; human evolution; pathology, etc.)

Linguistic anthropology (includes languages, dialects, physiology of speech, evolution of languages and evolution of speech and language)

Culture: religious beliefs, foods eaten, types of houses, technology, clothing, language, media, etc.-- any behavior revolving around beliefs and practices

Dating:

Absolute dating (carbon 14, K-Ar, dendrochronology, etc. based on radioactive decay of isotopes) Carbon 14 is an unstable isotope of carbon (has 8 neutrons instead of normal 6, decays gradually by shedding electrons. 5,730 year half-life. (i.e., For every 5,730 years, half of any given C14 sample will have decayed into N14) C14 for organic

materials (bone, leather, plant remains, etc.) up to about 60,000 years ago K-Ar for lava deposits, etc. Finds an absolute date for an object.

Relative dating (stratigraphy, typology, etc.) dates something as earlier or later than something else.

Law of superposition (newer deposits are layered over older ones, e.g. Grand Canyon

“Layer cake” of natural and human-made deposits

Archaeology is an **interdisciplinary science**

Primatologists (apes, monkeys, and other primates, living as well as extinct

linguists (languages and evolution of language)

epigraphers (writing systems)

geologists (geology, earth science)

biologists/paleontologists (extinct life forms)

geneticists/epidemiologists (study diseases)

palynologists (pollen) climate change during and in between ice ages, advent of agriculture

art historians (art forms through time—pottery, paintings, sculptures, architecture, etc.)

chemists (dating, identifying food residues inside pots, etc.)

How can archaeology tell us about the past?

When something took place (dating)

How many people lived there?

Where people lived

What types of shelters, building, and monuments they built

What their beliefs were

What they did for a living

What they ate

What kind of social, economic, and political structures they had (power and social inequality)

Whether tasks were divided or shared

If there were craft specialists and tradespeople

When and where specific plants and animals were first domesticated

Early human migration routes and settlement patterns

What can archaeology tell us about "Ötzi," the pre-historic iceman?

Where he was born (Valle Isarco, Italy)—isotopic analysis of teeth

Where he grew up (1-2 valleys to west) bone analysis

When he lived (5,300 years ago, or c. 3,255 B.C.) Neolithic/copper age 1,000 yrs before previously thought

How tall he was (5'5")

Weight: 110 lbs.

Age at death (40-45)

Brown eyes, hair

Type "O" blood

Occupation: probably high ranking, likely coppersmith (copper + tin or arsenic = bronze) (high levels of copper and arsenic in hair; 99.7 pure copper axe—very valuable)

Health: whipworm (intestinal parasite)

Sick 3 times in last 6 months before death; last time for 2 weeks (Beau's lines in fingernails)

Had Lyme disease

Genetic predisposition to heart disease

Lactose intolerant

Lots of cavities (agriculture vs. h&g)

Carried medicine kit with anti-bacterial birch fungus

Lungs blackened from campfires

What he ate at last two meals: (chamois, ibex, red deer, einkorn wheat, barley, flax, and poppy seeds—bread; sloes and other berries preserved from previous summer and fall). Pollen in meals indicate he ate last meal in spring (hop hornbeam) at mid-altitude conifer forest)

Cause of death (violent confrontation following fight 1-3 days earlier)

Arrowhead in left shoulder/ But the finding also adds corroborating evidence to the long-cold murder case of Ötzi the Iceman. Traces of a protein called fibrin were found in the blood from the arrow wound, Zink said. Fibrin is a part of the clotting process that appears immediately after a wound but vanishes very quickly. The oldest red blood cells ever identified have been found in the body of Ötzi the Iceman, a 5,300-year-old mummy found in the Alps in 1991.

Blow to head

Bruises/cuts to hands, wrists, and chest (some of which had started to heal)

State of clothing technology (sturdy, bear-skin soled shoes with grass insulation, possible snow shoes; woven grass cape)

How is archaeology similar to and different from history?

Both historians and archaeologists study the past

Historians use written documents and other primary source materials (e.g. diaries, ship's logs, census records, etc.)

Archaeologists study primarily artifacts to learn about the past. Written documents are not always available, and can be biased (e.g. defaced Egyptian hieroglyphics). 99% of human (pre)history took place before writing was invented. Also, written documents usually only kept by small percentage of population. Books can be lost, burned, etc. Artifacts can rot (organics vs. lithics).

Archaeology is primarily about learning how past peoples lived on a daily basis; it is not treasure hunting!

How archaeology is done:

Research topic or questions

Surveying

Excavation (site)

Analysis

Publication

Each step can take years

How to become an archaeologist:

Read and learn about past cultures and topics that interest you:

Mayans, Phoenicians, Minoans, Native Americans, etc.

Why, where, and how farming got started

Where and how did humans evolve/how humans differ from other apes and primates?

What causes civilizations to rise and fall?

What causes social stratification vs. egalitarianism?

Was Troy a real city or just a legend? (Heinrich Schliemann)

Read and learn about current and past excavations

Visit and/or volunteer an excavation in progress

Crow Canyon, CO middle school archaeology camp:

www.crowcanyon.org/programs/campus/middle_school_archaeology_camp

U.S.F.S. (U.S. Forestry Service)'s "P.I.T" (Passport in Time) program:

Work with professional U.S.F.S. archaeologists and historians on real sites

Keep your grades up and study your science, social studies, and math!!

Research universities with strong anthropology/archaeology programs

Obtain a Ph.D. in anthropology (U.S.) or archaeology (Europe): original field research, dissertation

Where do archaeologists work?

Universities

State and federal governmental agencies (e.g. park service, forestry service, etc.)

State and private archaeology companies doing cultural resource management (C.R.M.) work (e.g. road and dam building, etc.)

museums

What to do if you find an artifact:

Don't loot! (Looting is illegal on Native American landholdings and public property, e.g. national and state parklands, and destroys information about the artifact's context in space and time—"provenience")

Leave artifact "in situ;" take a photo if you like, notify closest university or park service/ranger, museum, professional archaeologist, or historic preservation office (each state has one and they keep records of exact locations of known archaeological sites). This is crucial for accurate dating and full understanding of the site and artifact.

How to Learn More About Archaeology:

Archaeology Resources for Middle School Students

Books:

The Young Scientist Book of Archaeology by Barbara Cook and Sturan Reid (EDC Publishing 1987)

Archaeology for Kids: Uncovering the Mysteries of the Past by Richard Panchyk (Chicago Review Press 2001)

Archaeology Smart Junior by Karen Laubenstein (Random House 1997)

Archaeology for Young Explorers by Patricia Samford and David Ribblett (Colonial Williamsburg Foundation 1995)

Hands-On Archaeology: Real-Life Activities for Kids by John R. White (2005)

Archaeological Oceanography by Robert D. Ballard (2008)

Book Series:

Digging for the Past by Oxford University Press:

Alexandria, VA

Chaco Canyon, NM

Tenochtitlán, Mexico

Palace of Minos at Knossos (Greece)

Eyewitness Series:

Eyewitness Archeology by Jane McIntosh

Eyewitness Early Humans by Nick Merriman

Best Book of Early People by M. Hynes and M. White

Periodicals:

Archaeology (Archaeological Institute of America)

National Geographic

Dig

Discover

Smithsonian

Articles:

“Unearthing the Colosseum’s Secrets,” by Tom Mueller. *Smithsonian* January 2011 (vol.41, n.9).

“Unburying the Aztec,” by Robert Draper. *National Geographic* December 2010. (Ahuitzotl—10-Rabbit, 8th Aztec Emperor)

Online:

www.saa.org

www.archaeological.org (American Institute of Archaeology)

www.archaeology.org (A.I.A. magazine online)

www.ajaonline.org (American Journal of Archaeology)

www.saa.org/publicftp/public/faqs/students.html (general questions and “Ask an Archaeologist” feature)

www.archaeology.org/news (daily updates)

www.yahoo.com/social_science/anthropology_and_archaeology

www.nps.gov/archeology/PUBLIC/kids/index/html

“try it” projects (e.g. trash can dig)

www.archaeology.org/news/

news

on-going excavations

videos and video tours of on-going excavations

www.digonsite.com

www.kidsdigreed.com/ (Reed farmstead archaeological site, VA)

learn about surveying

view artifacts

www.nationalgeographic.com

type "archaeology" or topic of interest (e.g. "Aztecs") in to search bar

lots of articles

<http://education.nationalgeographic.com/education/encyclopedia/archaeology> (online archaeology encyclopedia)

Otzi

News.nationalgeographic.com/news/2011/02/pictures/110225-otzi-iceman-new-face-science-mummy-oetzi/

News/nationalgeographic.com/news/2003/10/1030_031030_icemanorigins.html

Ngm.nationalgeographic.com/2007/07/iceman/hall-text

www.iceman.it/en/node/226

Rome

Smithsonianmag.com/history-archaeology/Road-Warrior.html

www.archaeology.org/onlinefeatures/bull_killer

archaeology.about.com/od/romanempire/Roman_Empire.html

Aztecs

Smithsonianmag.com/history-archaeology/Aztec/html

www.archaeology.org/1011/abstracts/chocolate.html

China

www.news.discovery.com/history/terracotta-warriors-china-120611.html (new warriors unearthed)

www.news.nationalgeographic.com/news/2012/03/120319-great-wall-of-china-mon