Encyclopedic Entry

archaeology

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Archaeology is the study of the human past using material remains. These remains can be any objects that people created, modified, or used.

Portable remains are usually called artifacts. Artifacts include tools, clothing, and decorations. Non-portable remains, such as pyramids or post-holes, are called features.

Archaeologists use artifacts and features to learn how people lived in specific times and places. They want to know what these people's daily lives were like, how they were governed, how they interacted with each other, and what they believed and valued.

Sometimes, artifacts and features provide the only clues about an ancient community or civilization. Prehistoric civilizations did not leave behind written records, so we cannot read about them.

Understanding why ancient cultures built the giant stone circles at Stonehenge, England, for instance, remains a challenge 5,000 years after the first monoliths were erected. Archaeologists studying Stonehenge do not have ancient manuscripts to tell them how cultures used the feature. They rely on the enormous stones themselves—how they are arranged and the way the site developed over time.

Most cultures with writing systems leave written records that archaeologists consult and study. Some of the most valuable written records are everyday items, such as shopping lists and tax forms. Latin, the language of ancient Rome, helps archaeologists understand artifacts and features discovered in parts of the Roman Empire. The use of Latin shows how far the empire's influence extended, and the records themselves can tell archaeologists what foods were available in an area, how much they cost, and what buildings belonged to families or businesses.

Many ancient civilizations had complex writing systems that archaeologists and linguists are still working to decipher. The written system of the Mayan language, for instance, remained a mystery to scholars until the 20th century. The Maya were one of the most powerful pre-Columbian civilizations in North America, and their Central American temples and manuscripts are inscribed with a collection of squared glyphs, or symbols. A series of circles and lines represents numbers.

By deciphering the Mayan script, archaeologists were able to trace the ancestry of Mayan kings and chart the development of their calendar and agricultural seasons. Understanding the basics of the Mayan writing system helps archaeologists discover how Mayan culture functioned—how they were governed, how they traded with some neighbors and went to war with others, what they ate, and what gods they worshipped.

As archaeologists become more fluent in Mayan writing, they are making new discoveries about the culture every day. Today, some archaeologists work with linguists and poets to preserve the once-lost Mayan language.

History of Archaeology

The word “archaeology” comes from the Greek word “arkhaios,” which means “ancient.” Although some archaeologists study living cultures, most archaeologists concern themselves with the distant past.

People have dug up monuments and collected artifacts for thousands of years. Often, these people were not scholars, but looters and grave robbers looking to make money or build up their personal collections.

For instance, grave robbers have been plundering the magnificent tombs of Egypt since the time the Pyramids were built. Grave robbing was such a common crime in ancient Egypt that many tombs have hidden chambers where the family of the deceased would place treasures.

In Egypt in the mid-1800s, an Egyptian man searching for a lost goat stumbled across the tomb of Pharaoh Ramses I. (Many archaeologists doubt this story and say grave robbers, working as an organized group, routinely scouted and plundered many tombs in the area.) Ramses I ruled for a short time in the 1290s BCE. Besides the body of the pharaoh, the tomb held artifacts such as pottery, paintings, and sculpture. The man sold the mummies and artifacts from the tomb to anyone who would pay.

The mummy of Ramses I wound up in a museum in Niagara Falls, Ontario, Canada, where it remained until the museum closed in 1999. The Canadian museum sold the Egyptian collection to the Michael C. Carlos Museum in Atlanta, Georgia, which confirmed the mummy’s royal status through the use of CT scanners, X-rays, radiocarbon dating, computer imaging, and other techniques. Ramses I was returned to Egypt in 2003.

One of the most well-known archaeological finds is the tomb of Pharaoh Tutankhamun, also known as King Tut. Unlike many other Egyptian tombs, grave robbers had never discovered King Tut. His resting place lay undisturbed for thousands of years, until it was discovered in 1922. In addition to mummies of Tutankhamun and his family, the tomb contained some 5,000 artifacts.

Many early archaeologists worked in the service of invading armies. When Gen. Napoleon Bonaparte of France successfully invaded Egypt in 1798, he brought artists, archaeologists, and historians to document the conquest. Napoleon’s troops took home hundreds of tons of Egyptian artifacts: columns, coffins, stone tablets, monumental statues. Today, these Egyptian antiquities take up entire floors of the Louvre Museum in Paris, France.

Some archaeologists of this time were wealthy adventurers, explorers, and merchants. These amateur archaeologists often had a sincere interest in the culture and artifacts they studied. However, their work is often regarded as an example of colonialism and exploitation. The so-called Elgin Marbles are an example of this controversy.

In 1801, Greece had been taken over by the Ottoman Empire. The British ambassador to the Ottoman Empire, Lord Elgin, received permission to remove half of the sculptures from the famous Acropolis of Athens, Greece. These marble sculptures were a part of buildings such as the Parthenon. Lord Elgin claimed he wanted to protect the valuable sculptures from damage caused by conflict between the Greeks and the Ottomans.

The government of Greece has been lobbying for the return of the Elgin Marbles ever since. Most Greeks view the sculptures as part of their cultural heritage. Greece has cut off diplomatic relations to the United Kingdom several times, demanding the return of the sculptures, which remain in the British Museum in London.

Eventually, archaeology evolved into a more systematic discipline. Scientists started using standard weights and measures and other formalized methods for recording and removing artifacts. They required detailed drawings and drafts of the entire dig site, as well as individual pieces. Archaeologists began to work with classicists, historians,

and linguists to develop a unified picture of the past.

In the 20th century, archaeologists began to re-assess their impact on the cultures and environments where they dig. Today, in most countries, archaeological remains become the property of the country where they were found, regardless of who finds them. Egypt, for example, is scattered with archaeological sites sponsored by American universities. These teams must obtain permission from the Egyptian government to dig at the sites, and all artifacts become the property of Egypt.

Disciplines of Archaeology

Archaeology is based on the scientific method. Archaeologists ask questions and develop hypotheses. They use evidence to choose a dig site, then use scientific sampling techniques to select where on the site to dig. They observe, record, categorize, and interpret what they find. Then they share their results with other scientists and the public.

Underwater archaeologists study materials at the bottom of lakes, rivers, and oceans. Underwater archaeology encompasses any prehistoric and historic periods, and almost all sub-disciplines as archaeology. Artifacts and features are simply submerged.

Artifacts studied by underwater archaeologists could be the remains of a shipwreck. In 1985, National Geographic Explorer-in-Residence Dr. Robert Ballard helped locate the wreck of RMS *Titanic*, which sank in the North Atlantic Ocean in 1912, killing about 1,500 people. Ballard and other scientists used sonar to locate the wreck, which had been lost since the ocean liner sank. By exploring *Titanic* using remote-controlled cameras, Ballard and his crew discovered facts about the shipwreck (such as the fact the ship broke in two large pieces as it sank) as well as hundreds of artifacts, such as furniture, lighting fixtures, and children's toys.

Underwater archaeology includes more than just shipwrecks, however. Sites include hunt camps on the continental shelf of the Gulf of Mexico, and portions of the ancient city of Alexandria, Egypt, submerged due to earthquakes and sea level rise.

This basic framework carries across many different disciplines, or areas of study, within archaeology.

Prehistoric and Historic Archaeology
There are two major disciplines of archaeology: prehistoric archaeology and historic archaeology. Within these groups are subdisciplines, based on the time period studied, the civilization studied, or the types of artifacts and features studied.

Prehistoric archaeology deals with civilizations that did not develop writing. Artifacts from these societies may provide the only clues we have about their lives. Archaeologists studying the Clovis people, for instance, have only arrowheads—called projectile points— and stone tools as artifacts. The unique projectile points were first discovered in Clovis, New Mexico, in the United States, and the culture was named after the town. So-called Clovis points establish the Clovis people as one of the first inhabitants of North America. Archaeologists have dated Clovis points to about 13,000 years ago.

A subdiscipline of prehistoric archaeology is paleopathology. Paleopathology is the study of disease in ancient cultures. (Paleopathology is also a subdiscipline of historical archaeology.) Paleopathologists may investigate the presence of specific diseases, what areas lacked certain diseases, and how different communities reacted to disease. By studying the history of a disease, paleopathologists may contribute to an understanding of the way modern diseases progress. Paleopathologists can also find clues about people's overall health. By studying the teeth of ancient people, for example, paleopathologists can deduce what kinds of food they ate, how often they ate, and what nutrients the foods contained.

Historic archaeology incorporates written records into archaeological research. One of the most famous examples of historic archaeology is the discovery and decipherment of the Rosetta Stone. The Rosetta Stone is a large slab of marble discovered near Rashid, Egypt, by French archaeologists in 1799. It became an important tool of historic archaeology.

The stone is inscribed with a decree made on behalf of Pharaoh Ptolemy V. The decree was written and carved into the stone in three different languages: hieroglyphic, demotic, and Greek. Hieroglyphics are the picture-symbols used for formal documents in ancient Egypt. Demotic is the informal script of ancient Egypt. Before the discovery of the Rosetta Stone, Egyptologists did not understand hieroglyphics or demotic. They could, however, understand Greek. Using the Greek portion of the Rosetta Stone, archaeologists and linguists were able to translate the text and decipher hieroglyphs. This knowledge has contributed vastly to our understanding of Egyptian history.

Historic archaeology contributes to many disciplines, including religious studies. The Dead Sea Scrolls, for instance, are a collection of about 900 documents. The tightly rolled parchment and other writing sheets were found between 1947 and 1956 in 11 caves near Qumran, West Bank, near the Dead Sea. Among the scrolls are texts from the Hebrew Bible, written in Hebrew, Aramaic, and Greek.

The Dead Sea Scrolls are the oldest versions of Biblical texts ever found, dating from between the third century BCE to the first century CE. The scrolls also contain texts, psalms, and prophecies that are not part of today's Bible. Discovery of the scrolls has increased our knowledge of the development of Judaism and Christianity.

A subdiscipline of historic archaeology is industrial archaeology. Industrial archaeologists study materials that were created or used after the Industrial Revolution of the 1700s and 1800s. The Industrial Revolution was strongest in Western Europe and North America, so most industrial archaeologists study artifacts found there.

One of the most important sites for industrial archaeologists is the Ironbridge Gorge in Shropshire, England. The River Severn runs through the gorge, and during the Industrial Revolution, it allowed for the transport of raw materials such as coal, limestone, and iron. In fact, the world's first iron bridge spans the Severn there. By studying artifacts and features (such as the iron bridge), industrial archaeologists are able to trace the area's economic development as it moved from agriculture to manufacturing and trade.

Other Disciplines

Ethnoarchaeologists study how people use and organize objects today. They use this knowledge to understand how people used tools in the past. Archaeologists researching the ancient San culture of southern Africa, for instance, study the way modern San culture functions. Until the mid-20th century, the San, sometimes called the Bushmen, maintained a somewhat nomadic lifestyle based on hunting and gathering. Although the San culture had evolved significantly, archaeologists studying the tools of the modern San could still study the way ancient San tracked and hunted animals and gathered native plants.

Environmental archaeologists help us understand the environmental conditions that influenced people in the past. Sometimes, environmental archaeology is called human paleoecology. Environmental archaeologists discovered that the expansion of the Taquara/Itararé people of the Brazilian highlands is closely linked with the expansion of the evergreen forest there. The forest grew as the climate became wetter. As the forest provided more resources to the Taquara/Itararé people (timber, as well as plants and animals that depended on the evergreen trees), they were able to expand their territory.

Experimental archaeologists replicate the techniques and processes people used to create or use objects in the past. Often, re-creating an ancient workshop or home helps experimental archaeologists understand the process or method used by ancient people to create features or artifacts. One of the most famous examples of experimental archaeology is the *Kon-Tiki*, a large raft built by Norwegian explorer Thor Heyerdahl. In 1947,

Heyerdahl sailed the *Kon-Tiki* from South America to Polynesia to show that ancient mariners, with the same tools and technology, could have navigated the vast Pacific Ocean.

Forensic archaeologists sometimes work with geneticists to support or question DNA evidence. More often, they excavate the remains of victims of murder or genocide in areas of conflict. Forensic archaeology is important to the understanding of the "Killing Fields" of Cambodia, for instance. The Killing Fields are the sites of mass graves of thousands of victims of the Khmer Rouge regime of the 1970s. After the fall of the Khmer Rouge, forensic archaeologists studied the remains of the bodies in the Killing Fields, discovering how and when they died. The forensic archaeologists helped establish that the Khmer Rouge used starvation and overwork, as well as direct killing, to silence opponents of the regime.

Archaeologists working in the field of cultural resource management help assess and preserve remains on sites where construction is scheduled to occur. Archaeologists working as cultural resource managers often collaborate with local governments to balance the infrastructure and commercial needs of a community with historic and cultural interests represented by artifacts and features found on construction sites.

Where to Dig?

Most archaeology involves digging. Winds and floods carry sand, dust and soil, depositing them on top of abandoned features and artifacts. These deposits build up over time, burying the remains. Sometimes catastrophes, like volcanic eruptions, speed up this burial process. In places where earth has been carved away—like in the Grand Canyon in the U.S. state of Arizona—you can actually see the layers of soil that have built up over the centuries, like layers of a cake.

Cities and communities also tend to be built in layers. Rome, Italy, has been an urban center for thousands of years. The streets of downtown Rome today are several meters higher than they were during the time of Julius Caesar. Centuries of Romans have built it up—medieval home on top of ancient home, modern home on top of medieval home.

Establishing a dig site in an inhabited area can be a very difficult process. Not only are the inhabitants of the area inconvenienced, archaeologists don't know what they may find. Archaeologists looking for an ancient Roman fortress, for instance, may have to first excavate a Renaissance bakery and medieval hospital.

Because most artifacts lie underground, scientists have developed methods to help them figure out where they should dig. Sometimes they choose sites based on old myths and stories about where people lived or where events occurred. The ancient city of Troy, written about by Greek poet Homer as early as 1190 BCE, was thought to be a work of fiction. Homer's epic poem the *Iliad* was named after Troy, which the Greeks knew as Ilion. Using the *Iliad* as a guide, German amateur archaeologist Heinrich Schliemann discovered the ruins of the city near the town of Hisarlik, Turkey, in 1870. Schliemann's find helped provide evidence that the Trojan War may have actually taken place, and that ancient manuscripts may be based on fact.

Sometimes, archaeologists use historical maps to find ancient artifacts. In 1973, for instance, archaeologists used historical maps and modern technology to locate the wreck of the USS *Monitor*, an "ironclad" ship used by the Union during the Civil War. The *Monitor* sunk in a storm off the coast of Cape Hatteras, North Carolina, in 1862. After archaeologists identified the ironclad, the United States designated the area as the nation's first marine sanctuary.

Before securing a site, an archaeological team surveys the area, looking for signs of remains. These might include artifacts on the ground or unusual mounds in the earth. New technology has greatly increased their ability to survey an area. For example, aerial and satellite imagery can show patterns that might not be visible from the ground.

Other technologies give clues about what lies under the surface. These techniques involve radar and sonar. Radar and sonar technologies often use radio waves, electrical currents, and lasers. Archaeologists send these signals into the earth. As the signals hit something solid, they bounce back up to the surface. Scientists study the time and paths the signals take to familiarize themselves with the underground landscape.

Accidental finds can also lead archaeologists to dig sites. For instance, farmers plowing their fields might come across sherds of pottery. A construction crew might discover ruins beneath a building site.

Another monumental discovery was made by accident. In 1974, agricultural workers in Xian, China, were digging a well. They discovered the remains of what turned out to be an enormous mausoleum for Qin Shi Huangdi, China's first emperor. The complex includes 8,000 life-sized clay soldiers, horses, chariots, and artillery, popularly known as the Terra Cotta Warriors. The archaeological research surrounding the Terra Cotta Warriors has provided insight on the organization and leadership style of Qin Shi Huangdi and the development of Chinese culture.

Once a site is chosen, archaeologists must get permission to dig from the landowner. If it is public land, they must obtain the proper permits from the local, state, or federal government.

Before moving a single grain of dirt, archaeologists make maps of the area and take detailed photographs. Once they begin digging, they will destroy the original landscape, so it is important to record how things looked beforehand.

The last step before digging is to divide the site into a grid to keep track of the location of each find. Then archaeologists choose sample squares from the grid to dig. This allows the archaeological team to form a complete study of the area. They also leave some plots on the grid untouched. Archaeologists like to preserve portions of their dig sites for future scientists to study—scientists who may have better tools and techniques than are available today.

For example, during the Great Depression in the 1930s, programs to create jobs led to many archaeological digs around the United States. Some scientists on these digs removed artifacts, such as pottery, but threw away charcoal and animal bones. These items were considered junk. Today, scientists are able to carbon-date the charcoal and analyze the bones to see what kinds of animals people were domesticating and eating at the time. It is important that archaeologists today keep some parts of each site pristine.

Not all archaeology involves digging in the earth. Archaeologists and engineers work with sophisticated technology to probe the earth below without disturbing the ground. National Geographic Emerging Explorer Dr. Albert Yu-Min Lin leads an innovative archaeological project centered in Mongolia. The Valley of the Khans project is using digital imaging, aerial photography, radar, and digital surveying to locate the tomb of Genghis Khan. Using satellite technology, Lin and his team can access information about the project without disturbing the land or even going to Mongolia.

The Big Dig

The process of researching and securing a dig site can take years. Digging is the field work of archaeology. On occasion, archaeologists might need to move earth with bulldozers and backhoes. Usually, however, archaeologists use tools such as brushes, hand shovels, and even toothbrushes to scrape away the earth around artifacts.

The most common tool that archaeologists use to dig is a flat trowel. A trowel is a hand-held shovel used for smoothing as well as digging. Archaeologists use trowels to slowly scrape away soil. For very small or delicate remains, archaeologists might also dig with dental picks, spoons, or very fine blades. Often, they will sift dirt

through a fine mesh screen. Tiny remains, such as beads, can often be found this way.

Archaeologists take lots of notes and photographs along each step of the process. Sometimes they include audio and video recordings. Global positioning system (GPS) units and data from geographic information systems (GIS) help them map the location of various features with a high level of precision.

When archaeologists find remains, they are often broken or damaged after hundreds or even thousands of years underground. Sunlight, rain, soil, animals, bacteria, and other natural processes can cause artifacts to erode, rust, rot, break, and warp.

Sometimes, however, natural processes can help preserve materials. For example, sediments from floods or volcanic eruptions can encase materials and preserve them. In one case, the chill of an Alpine glacier preserved the body of a man for more than 5,300 years! The discoverer of the so-called "Iceman," found in the Alps between Switzerland and Italy, thought he was a recent victim of murder, or one of the glacier's crevasses. Forensic archaeologists studying his body were surprised to learn that he was a murder victim—the crime just took place more than 5,000 years ago.

Uncovered Artifacts

As artifacts are uncovered, the archaeological team records every step of the process through photos, drawings, and notes. Once the artifacts have been completely removed, they are cleaned, labeled, and classified.

Particularly fragile or damaged artifacts are sent to a conservator. Conservators have special training in preserving and restoring artifacts so they are not destroyed when exposed to air and light. Textiles, including clothing and bedding, are especially threatened by exposure. Textile conservators must be familiar with climate, as well as the chemical composition of the cloth and dyes, in order to preserve the artifacts.

In 1961, Swedish archaeologists recovered the ship *Vasa*, which sank in 1628. Conservators protected the delicate oak structure of *Vasa* by spraying it with polyethylene glycol (PEG). The ship was sprayed with PEG for 17 years, and allowed to dry for nine. Today, *Vasa* sits in its own enormous museum, a hallmark of Swedish heritage.

Then the artifacts are sent to a lab for analysis. This is usually the most time-consuming part of archaeology. For every day spent digging, archaeologists spend several weeks processing their finds in the lab.

All of this analysis—counting, weighing, categorizing—is necessary. Archaeologists use the information they find and combine it with what other scientists have discovered. They use the combined data to add to the story of humanity's past. When did people develop tools, and how did they use them? What did they use to make clothing? Did their clothing styles indicate their social ranks and roles? What did they eat? Did they live in large groups or smaller family units? Did they trade with people from other regions? Were they warlike or peaceful? What were their religious practices? Archaeologists ask all of these questions and more.

The scientists write up their findings and publish them in scientific journals. Other scientists can look at the data and debate the interpretations, helping us get the most accurate story. Publication also lets the public know what scientists are learning about our history.

VOCABULARY

Term	Part of Speech	Definition
abandoned	*adjective*	deserted.

accurate	*adjective*	exact.
Acropolis	*noun*	large, flat-topped hill that is the highest point of the city of Athens, Greece.
aerial photograph	*noun*	picture of part of the Earth's surface, usually taken from an airplane.
agriculture	*noun*	the art and science of cultivating the land for growing crops (farming) or raising livestock (ranching).
alpine glacier	*noun*	mass of ice that moves downward from a mountain.
Alps	*plural noun*	(highest peak: Mont Blanc, 4,807 meters/15,771 feet) large mountain range in southern Europe.
amateur	*adjective*	person who studies and works at an activity or interest without financial benefit or being formally trained in it.
ambassador	*noun*	person who represents a place, organization, or idea.
analysis	*noun*	process of studying a problem or situation, identifying its characteristics and how they are related.
ancestry	*noun*	family (genealogical) or historical background.
ancient	*adjective*	very old.
antiquity	*noun*	ancient object.
archaeologist	*noun*	person who studies artifacts and lifestyles of ancient cultures.
archaeology	*noun*	study of human history, based on material remains.
artifact	*noun*	material remains of a culture, such as tools, clothing, or food.
artillery	*noun*	weapons that launch or fire large projectiles, such as cannons or catapults.
assess	*verb*	to evaluate or determine the amount of.
backhoe	*noun*	large piece of construction equipment consisting of a digging bucket on a maneuverable arm.
bacteria	*plural noun*	(singular: bacterium) single-celled organisms found in every ecosystem on Earth.
Bible	*noun*	holy book of the Christian religion.
bulldozer	*noun*	vehicle used for moving large obstacles, such as boulders or trees.
carbon-date	*verb*	to estimate the age of an organism by tracking the decay of the isotope carbon-14. Also called radiocarbon dating.
catastrophe	*noun*	disaster or sudden, violent change.
charcoal	*noun*	carbon material made by burning wood or other organic material with little air.
chariot	*noun*	vehicle with two or four wheels and pulled by horses.
Christianity	*noun*	religion based on the teachings of Jesus of Nazareth.
civilization	*noun*	complex way of life that developed as humans began to develop urban settlements.
Civil War	*noun*	(1860-1865) American conflict between the Union (north) and Confederacy (south).

classicist	*noun*	person who studies ancient Greek and Roman civilization.
climate	*noun*	all weather conditions for a given location over a period of time.
Clovis people	*noun*	(13000-9000 BCE) one of the first people and cultures native to North America. Also called Llano.
Clovis point	*noun*	style of stone knife, spearhead, or arrowhead (projectile point) found throughout North America and associated with the ancient Clovis culture.
coal	*noun*	dark, solid fossil fuel mined from the earth.
coast	*noun*	edge of land along the sea or other large body of water.
coffin	*noun*	box containing the body of a dead person.
colonialism	*noun*	type of government where a geographic area is ruled by a foreign power.
commercial	*adjective*	having to do with the buying and selling of goods and services.
community	*noun*	group of organisms or a social group interacting in a specific region under similar environmental conditions.
complex	*adjective*	complicated.
conflict	*noun*	a disagreement or fight, usually over ideas or procedures.
conquest	*noun*	victory.
conservator	*noun*	person who repairs, restores, or maintains the quality of valuable items.
continental shelf	*noun*	part of a continent that extends underwater to the deep-ocean floor.
controversy	*noun*	disagreement or debate.
crevasse	*noun*	deep crack, especially in a glacier.
CT scanner	*noun*	(computerized tomography scanner) device combining X-ray and computerized equipment to provide cross-sectional images of internal body structures. Also called a CAT scanner.
cultural heritage	*noun*	traditions and customs of a specific population.
cultural resource management	*noun*	the practice of studying and preserving ancient remains on sites where construction is scheduled to occur.
current	*noun*	steady, predictable flow of fluid within a larger body of that fluid.
data	*plural noun*	(singular: datum) information collected during a scientific study.
Dead Sea Scrolls	*noun*	(100 BCE - 135 CE) leather, papyrus, and copper scrolls containing ancient Jewish writings.
debate	*verb*	to argue or disagree in a formal setting.
deceased	*adjective*	dead.
decipher	*verb*	to figure out or interpret.
decree	*noun*	formal or legal order.
deduce	*verb*	to reach a conclusion based on clues or evidence.
demotic	*noun*	(700 BCE - 400 CE) informal written language of ancient Egypt.
dental pick	*noun*	small, sharp instrument used to remove material from teeth.

designate	*verb*	to name or single out.
digital imaging	*noun*	process of creating, processing, storing, and displaying images made from binary code.
diplomatic relations	*noun*	the formal ties between nations.
discipline	*noun*	field of study.
disease	*noun*	a harmful condition of a body part or organ.
DNA	*noun*	(deoxyribonucleic acid) molecule in every living organism that contains specific genetic information on that organism.
domesticate	*verb*	to tame or adapt for human use.
dust	*noun*	tiny, dry particles of material solid enough for wind to carry.
dye	*noun*	pigment used to color cloth or another object.
earthquake	*noun*	the sudden shaking of Earth's crust caused by the release of energy along fault lines or from volcanic activity.
economic	*adjective*	having to do with money.
Egyptologist	*noun*	person who studies the culture and history of ancient Egypt.
Elgin Marbles	*noun*	(440-430 BCE) large collection of ancient Greek statuary displayed in the British Museum, London, England. Also called the Parthenon Marbles.
Emerging Explorer	*noun*	an adventurer, scientist, innovator, or storyteller recognized by National Geographic for their visionary work while still early in their careers.
emperor	*noun*	ruler of an empire.
encase	*verb*	to enclose or completely confine.
engineer	*noun*	person who plans the building of things, such as structures (construction engineer) or substances (chemical engineer).
enormous	*adjective*	very large.
environmental archaeologist	*noun*	person who studies how environmental conditions influenced people in the past.
erode	*verb*	to wear away.
ethnoarchaeologist	*noun*	person who studies how people today use and organize objects in order to understand how they used and organized objects in the past.
evergreen	*noun*	tree that does not lose its leaves.
excavate	*verb*	to expose by digging.
experimental archaeologist	*noun*	person who replicates techniques and processes used to create or use objects in the past.
exploit	*verb*	to use or take advantage of for profit.
explorer	*noun*	person who studies unknown areas.

Explorer-in-Residence	*noun*	pre-eminent explorers and scientists collaborating with the National Geographic Society to make groundbreaking discoveries that generate critical scientific information, conservation-related initiatives and compelling stories.
extend	*verb*	to enlarge or continue.
extinct	*adjective*	no longer existing.
familiarize	*verb*	to understand how something works or operates.
feature	*noun*	non-portable archaeological remains, such as pyramids or post-holes.
fiction	*noun*	media, such as books or films, that are imaginative and not true stories.
field work	*noun*	scientific studies done outside of a lab, classroom, or office.
flood	*noun*	overflow of a body of water onto land.
fluent	*adjective*	able to speak, write, and understand a language.
food	*noun*	material, usually of plant or animal origin, that living organisms use to obtain nutrients.
forensic archaeologist	*noun*	person who excavates and studies the remains and artifacts surrounding areas containing graves, or sites of murder or genocide.
formal	*adjective*	official or standardized.
fortress	*noun*	protected place. Also called a fort.
fragile	*noun*	delicate or easily broken.
geneticist	*noun*	scientist who studies the chemistry, behavior, and purposes of DNA, genes, and chromosomes.
Genghis Khan	*noun*	(1162-1227) founder of the Mongol empire.
genocide	*noun*	intentional mass murder of a specific religious, cultural, or ethnic group.
geographic information system (GIS)	*noun*	any system for capturing, storing, checking, and displaying data related to positions on the Earth's surface.
glacier	*noun*	mass of ice that moves slowly over land.
Global Positioning System (GPS)	*noun*	system of satellites and receiving devices used to determine the location of something on Earth.
glyph	*noun*	written mark or sign that indicates the meaning of what is written, such as a letter or symbol.
gorge	*noun*	deep, narrow valley with steep sides, usually smaller than a canyon.
govern	*verb*	to make public-policy decisions for a group or individuals.
government	*noun*	system or order of a nation, state, or other political unit.
Grand Canyon	*noun*	large gorge made by the Colorado River in the U.S. state of Arizona.
grave robber	*noun*	person who steals valuable objects from a tomb, mausoleum, or other burial site.
Great Depression	*noun*	(1929-1941) period of very low economic activity in the U.S. and throughout the world.

grid	*noun*	horizontal and vertical lines used to locate objects in relation to one another on a map.
Hebrew Bible	*noun*	holy writings of the Jewish faith that correspond with the Old Testament writings of the Christian faith. Also called the Hebrew Scriptures.
Heinrich Schliemann	*noun*	(1822-1890) German archaeologist.
heritage	*noun*	cultural or family background.
hieroglyphics	*plural noun*	written language using pictures to represent words or ideas.
highlands	*plural noun*	plateau or elevated region of land.
historical map	*noun*	representation of spatial information displaying sites of historical interest.
historic archaeology	*noun*	study of people, culture, and civilizations that developed writing systems.
Homer	*noun*	(~800 BCE) probably fictitious author of the ancient Greek epics The Iliad and The Odyssey.
hypothesis	*noun*	statement or suggestion that explains certain questions about certain facts. A hypothesis is tested to determine if it is accurate.
Iceman	*noun*	(3300-3255 BCE) naturally mummified body of a man found in the Alps between Italy and Switzerland. Nicknamed "Otzi."
Iliad	*noun*	(1180-1195 BCE) epic by the Greek poet Homer, about events of the Trojan War.
inconvenience	*verb*	to disturb or bother.
industrial archaeology	*noun*	study of the materials created during the Industrial Revolution.
Industrial Revolution	*noun*	change in economic and social activities, beginning in the 18th century, brought by the replacement of hand tools with machinery and mass production.
influence	*verb*	to encourage or persuade a person or organization to act a certain way.
infrastructure	*noun*	structures and facilities necessary for the functioning of a society, such as roads.
inhabit	*verb*	to live in a specific place.
innovative	*adjective*	new, advanced, or original.
inscribe	*verb*	to mark or engrave a surface.
iron	*noun*	chemical element with the symbol Fe.
ironclad	*noun*	steam-propelled warship protected by plates of iron or another metal.
Jewish	*adjective*	having to do with the religion or culture of people tracing their ancestry to the ancient Middle East and the spiritual leaders Abraham, Isaac, and Jacob.
Judaism	*noun*	religion based on the holy book of the Torah and the teaching surrounding it.
Julius Caesar	*noun*	(100 BCE-44 BCE) leader of ancient Rome.
Khmer Rouge	*noun*	(1975-1979) communist, dictatorial government of Cambodia led by Pol Pot.

Killing Fields	*noun*	sites in Cambodia where thousands of victims of the Khmer Rouge regime are buried in mass graves.
Kon-Tiki	*noun*	(1947) raft used by explorer Thor Heyerdahl to sail from South America to the Polynesian islands.
lab	*noun*	(laboratory) place where scientific experiments are performed.
landscape	*noun*	the geographic features of a region.
laser	*noun*	(acronym for light amplification by stimulated emission of radiation) an instrument that emits a thin beam of light that does not fade over long distances.
Latin	*noun*	language of ancient Rome and the Roman Empire.
limestone	*noun*	type of sedimentary rock mostly made of calcium carbonate from shells and skeletons of marine organisms.
linguist	*noun*	person who studies language.
lobby	*verb*	to try to influence the action of government or other authority.
looter	*noun*	thief.
magnificent	*adjective*	very impressive.
manufacturing	*noun*	production of goods or products in a factory.
manuscript	*noun*	written material.
marble	*noun*	type of metamorphic rock.
mariner	*noun*	sailor.
marine sanctuary	*noun*	part of the ocean protected by the government to preserve its natural and cultural features while allowing people to use and enjoy it in a sustainable way.
mass grave	*noun*	large burial site with many corpses, usually unidentified.
mausoleum	*noun*	impressive tomb or burial site.
Maya	*noun*	people and culture native to southeastern Mexico and Central America.
medieval	*adjective*	having to do with the Middle Ages (500-1400) in Europe.
merchant	*noun*	person who sells goods and services.
mesh	*noun, adjective*	sheet of wires woven together with small, uniform openings.
monarch	*noun*	king or queen.
Monitor	*noun*	(1861-1862) steam-powered military ship protected by metal plates (an "ironclad") commissioned by the U.S. Navy during the Civil War.
monolith	*noun*	tall column or statue made from a single block of stone.
monument	*noun*	large structure representing an event, idea, or person.
mummy	*noun*	corpse of a person or animal that has been preserved by natural environmental conditions or human techniques.
murder	*verb*	to kill a person.
museum	*noun*	space where valuable works of art, history, or science are kept for public view.
myth	*noun*	legend or traditional story.

Napoleon Bonaparte	*noun*	(1769-1821) military general and emperor of France.
navigate	*verb*	to plan and direct the course of a journey.
nomadic	*adjective*	having to do with a way of life lacking permanent settlement.
nutrient	*noun*	substance an organism needs for energy, growth, and life.
obtain	*verb*	to get or take possession of.
Ottoman Empire	*noun*	(1299-1923) empire based in Turkey and stretching throughout southern Europe, the Middle East, and North Africa.
overwork	*verb*	to demand too much of someone or something.
paleopathology	*noun*	study of the history of a disease or the history of disease in ancient cultures.
parchment	*noun*	carefully prepared skin of goats or other animals used as material on which to write.
Parthenon	*noun*	(438 BCE) ancient temple to the goddess Athena on the Acropolis of Athens, Greece.
permit	*noun*	official, written permission to do something. Sometimes called a license.
pharaoh	*noun*	ruler of ancient Egypt.
plow	*noun, verb*	tool used for cutting, lifting, and turning the soil in preparation for planting.
plunder	*verb*	to rob or steal.
Polynesia	*noun*	island group in the Pacific Ocean between New Zealand, Hawaii, and Easter Island.
portable	*adjective*	able to be easily transported from one place to another.
post-hole	*noun*	depression where supports (posts) for a structure once stood.
pottery	*noun*	pots, vessels, or other material made from clay or ceramic.
pre-Columbian	*adjective*	having to do with the Americas before the arrival of Christopher Columbus in 1492.
prehistoric	*adjective*	period of time that occurred before the invention of written records.
prehistoric archaeology	*noun*	study of people, culture, and civilizations that did not develop writing systems.
prior	*adjective*	before or ahead of.
pristine	*adjective*	pure or unpolluted.
projectile point	*noun*	archaeological term used to describe a sharp stone tool that could be thrown (projected), such as an arrowhead, spearhead, dart, or blade.
prophecy	*noun*	prediction of the future.
psalm	*noun*	sacred song or musical poem.
Ptolemy I	*noun*	(367-283 BCE) Greek general who became pharaoh of Egypt. Also called Ptolemy Soter.
Ptolemy V	*noun*	(210-181 BCE) Egyptian pharaoh. Also called Ptolemy Epiphanes.

publish	*verb*	to provide a written piece of work, such as a book or newspaper, for sale or distribution.
pyramid	*noun*	three-dimensional shape with a square base and triangular sides that meet in a point.
Qin Shi Huangdi	*noun*	(259-210 BCE) first emperor of China.
radar	*noun*	(RAdio Detection And Ranging) method of determining the presence and location of an object using radio waves.
radiocarbon dating	*noun*	to estimate the age of an organism by tracking the decay of the isotope carbon-14. Also called carbon-dating.
radio wave	*noun*	electromagnetic wave with a wavelength between 1 millimeter and 30,000 meters, or a frequency between 10 kilohertz and 300,000 megahertz.
raw material	*noun*	matter that needs to be processed into a product to use or sell.
regime	*noun*	system of government.
rely	*verb*	to depend on.
Renaissance	*noun*	period of great development in science, art, and economy in Western Europe from the 14th to the 17th centuries.
Robert Ballard	*noun*	(1942-present) oceanographer and National Geographic Explorer-in-Residence.
Roman Empire	*noun*	(27 BCE-476 CE) period in the history of ancient Rome when the state was ruled by an emperor.
Rosetta Stone	*noun*	(196 BCE) large black stone carved with a decree about the coronation of Pharaoh Ptolemy V. The decree is carved in three languages: Greek, demotic, and hieroglyphic.
rot	*verb*	to decay or spoil.
rust	*verb*	to dissolve and form a brittle coating, as iron does when exposed to air and moisture.
San	*noun*	people and culture native to southern Africa. Also called Bushmen.
sand	*noun*	small, loose grains of disintegrated rocks.
satellite imagery	*noun*	photographs of a planet taken by or from a satellite.
scholar	*noun*	educated person.
scientific journal	*noun*	magazine that focuses on developments in scientific research.
scientific method	*noun*	method of research in which a question is asked, data are gathered, a hypothesis is made, and the hypothesis is tested.
script	*noun*	text or system of writing.
scroll	*noun*	rolled-up sheet of paper or other thin material for writing.
sea level rise	*noun*	increase in the average reach of the ocean. The current sea level rise is 1.8 millimeters (.07 inch) per year.
sediment	*noun*	solid material transported and deposited by water, ice, and wind.
sherd	*noun*	fragment of pottery. Also shard.

shipwreck	*noun*	remains of a sunken marine vessel.
sift	*verb*	to separate larger pieces of material from smaller ones.
significant	*adjective*	important or impressive.
sincere	*adjective*	genuine or real.
slab	*noun*	flat, thick piece of material such as earth or stone.
soil	*noun*	top layer of the Earth's surface where plants can grow.
sonar	*noun*	method of determining the presence and location of an object using sound waves (echolocation).
sophisticated	*adjective*	knowledgeable or complex.
specific	*adjective*	exact or precise.
starvation	*noun*	dying from lack of food.
Stonehenge	*noun*	prehistoric monument in Salisbury Plain, England.
storm	*noun*	severe weather indicating a disturbed state of the atmosphere resulting from uplifted air.
subdiscipline	*noun*	field of study within a larger area of research.
submerge	*verb*	to put underwater.
subway	*noun*	underground railway; a popular form of public transportation in large urban areas.
survey	*noun*	a study or analysis of characteristics of an area or a population.
system	*noun*	collection of items or organisms that are linked and related, functioning as a whole.
tax	*noun*	money or goods citizens provide to government in return for public services such as military protection.
technology	*noun*	the science of using tools and complex machines to make human life easier or more profitable.
temple	*noun*	building used for worship.
Terra Cotta Warriors	*noun*	(~210 BCE) collection of thousands of life-size clay figures of soldiers, horses, chariots, and other artifacts in Xian, China, buried with Qin Shi Huangdi, China's first emperor.
territory	*noun*	land an animal, human, or government protects from intruders.
textile	*noun*	cloth or other woven fabric.
Thor Heyerdahl	*noun*	(1914-2002) Norwegian explorer.
timber	*noun*	wood in an unfinished form, either trees or logs.
time-consuming	*adjective*	taking a long time to finish.
Titanic	*noun*	luxury cruise ship that sank in the North Atlantic Ocean in 1912.
tomb	*noun*	enclosed burial place.
trade	*noun*	buying, selling, or exchanging of goods and services.

transportation engineer	*noun*	person who plans, designs, and maintains facilities for transporting people and goods.
Trojan War	*noun*	(~1194-1184 BCE) ancient conflict between the Greeks and the Trojans, written about by ancient poets and historians in works such as the Iliad.
troop	*noun*	a soldier.
trowel	*noun*	hand-held shovel with a flat blade.
Troy	*noun*	ancient city on the Aegean coast of what is now northwestern Turkey. Also called Troia and Ilion.
tunnel-boring machine	*noun*	enormous machine that drills tunnels for subways or underground railway lines.
Tutankhamun	*noun*	(1341-1323 BCE) Egyptian pharaoh.
underwater archaeologist	*noun*	person who studies artifacts and features found at the bottom of lakes, rivers, and oceans.
Union	*adjective*	having to do with states supporting the United States (north) during the U.S. Civil War.
urban center	*noun*	densely populated area, usually a city and its surrounding suburbs.
vast	*adjective*	huge and spread out.
volcanic eruption	*noun*	activity that includes a discharge of gas, ash, or lava from a volcano.
warp	*verb*	to bend out of shape.
wealthy	*adjective*	very rich.
wind	*noun*	movement of air (from a high pressure zone to a low pressure zone) caused by the uneven heating of the Earth by the sun.
X-ray	*noun*	radiation in the electromagnetic spectrum with a very short wavelength and very high energy.

For Further Exploration

Articles & Profiles

- National Geographic News: Ancient World News
- National Geographic Kids: Interview with Fredrik Hiebert, Archaeologist and NG Explorer

Audio & Video

- National Geographic News: Diver ‘Vanishes’ in Portal to Mayan Underworld

Interactives

- Indiana Jones and the Adventure of Archaeology

Websites

- National Geographic Science: Archaeology
- Archaeology Magazine: Interactive Digs
- National Park Service: Archaeology for Kids
- National Science Foundation: Archaeology—From Reel to Real