**Linking to the Past, Second Edition**

Glossary

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**A**

**absolute dating**: Dating techniques that provide an actual age in years or a range of years for archaeological artifacts, ecofacts, features, or sites. The precision offered by different absolute dating methods when applied to archaeological sites can range widely. In dendrochronology, for example, the precise year in which a tree was cut down can be determined and, in another example, the maker's mark on a ceramic vessel can be traced to the precise year in which the maker produced a particular style of pottery. At the other extreme, some absolute dating techniques in their archaeological application may provide only a very broad possible range of thousands, tens of thousands, hundreds of thousands, and even millions of years. For example, the potassium/argon dating method may date a volcanic layer overlying archaeological material to 1 million years ago and another layer underlying the site may date to 1.5 million years ago. In this case, we may conclude that the site is between 1 and 1.5 million years old (dating to sometime after the older volcanic flow and before the later deposit. Though the precision is not very high here (the range is a half-million years) this is still an absolute date. Chronometric is another term for absolute dates.

**accession**: A unique designator assigned to each artifact in an archaeological assemblage. An inventory number. With a unique accession number (or some other designator) assigned to each item found at a site, detailed information about each item (its precise location of discovery, depth and date of discovery, and so on) can be recorded on a paper inventory or computer database under its accession designator, allowing the information to be correctly associated with each item.

**activity area**: A general term for a spatially bounded area within a place inhabited or used by people where a particular task or tasks were carried out. Stuff may accumulate where activities were carried out as people lose or simply dispose of material they no longer need or that is of no further use. The discarded objects become artifacts and ecofacts; together they constitute an archaeological feature.

**adaptation**: An adaptation is a "strategy," in the broad sense of that term, for survival. The adaptations of nonhuman animals are primarily biological, the physical characteristics they possess that make survival possible. The primary adaptations of the human animal are literally strategies for survival - behaviors invented and refined by human groups to enable their survival.

**aeolian**: Find particles of clay, silt, and sand deposited by the wind. In some parts of the world, archaeological sites commonly are covered entirely and preserved by aeolian deposits. In some cases, once a community is covered with sand producing a hill, a subsequent group may settle the top of the hill and the remnants of their community may be covered in aeolian deposits as well when is it abandoned. This process can be repeated several times at the same place, producing an enormous hill called a tell, enclosing a sequence of the remains of several communities superimposed one on top of the other.

**alidade**: A surveying instrument that consists of a sighting scope mounted on a flat base. Resting on a leveled plane table, the alidade can be used to sight on a stadia rod to determine the precise depth of the surface on which the rod is resting.

**alluvium**: Material deposited by a flooding river; the soil that blankets the floodplain of a river valley. Technically, alluvium consists of unconsolidated material; sand, gravel, and fine particles of rock. As a result of its fine fabric and rich organic content, alluvium produces soil that is attractive to farmers, both ancient and modern. The regular deposition of alluvium, sometimes in a yearly cycle, can produce a substantial stratigraphic record with deeply buried archaeological material.

**American Antiquities Act of 1906 (**[**http://www.cr.nps.gov/local-law/anti1906.htm**](http://www.cr.nps.gov/local-law/anti1906.htm)**)**: The law that really set the stage for federal preservation and protection of archaeological sites. This law was short and simple: it explicitly made illegal the destruction or defacement of archaeological sites on federal property and established a fine of up to $500 and a penalty of up to ninety days in jail for its violation. Further, it made digging sites on federal land illegal without a permit; such permits were limited to qualified individuals and issued only when the excavation benefited a recognized university or museum. The law further stipulated that archaeological excavation on public lands was for the public benefit and material excavated needed to be made available to the public in, for example, a public museum.

**anadromous**: Fish, like salmon and shad, that live part of their lives in the sea but return each year to the freshwater stream where they hatched for females to lay their eggs and males to fertilize them and then for them both to die. Their offspring hatch and mature in the freshwater, where they live for between one and three years and then migrate into the ocean. Large fish runs mark the point in the year when the fish swim upstream to reproduce, providing an ample food source for humans poised to exploit it.

**angle of applied force**: In percussion flaking, the angle between the striking platform and the trajectory of the hammerstone as you bring it down on the core or flake. In pressure flaking, the angle between the surface of the flake and the direction of the applied pressure. The angle of applied force should be less than 90 degrees in most circumstances. An angle approaching 90 degrees will tend to produce long flakes, extending down the length of the core; an acute angle of applied force ordinarily will result in shorter, but very thin, sharp-edged flakes.

**anthropologist**: Scientists who focus on the broad analysis of human behavior within the discipline of anthropology.

**anthropology**: The holistic study of humanity. Where other social and behaviural sciences tend to specialize and focus on individual elements of human behavior such as, economics, political patterns, or social systems, anthropology looks broadly at how human beings behave and how that behavior has evolved. The examination of human physical evolution, cultural evolution, adaptation, and language.

**archaeological context**: Archaeologists can't travel back in time to observe directly the use and meaning of the elements of material culture found through excavation. When these objects are recovered, they are, by definition, in their archaeological contexts: artifacts or ecofacts in the ground, in particular soil levels, in association with other artifacts and ecofacts. Careful analysis of these objects allows for a determination of how these objects were used - their behavioral contexts - by past people.

**archaeological excavation**: The exacting process of revealing the remains left behind by a past people, preserving the physical integrity of the objects revealed, as well as their spatial contexts. By segmenting a site into manageable excavation units; by slowing peeling back the soil in each of those units in small increments by the use of hand tools; by leaving material, at least initially, precisely where found and, by inference, where a past people left the material through processes like discard, loss, and caching; by carefully measuring and mapping in three dimensions, the exact locations where objects were found; and by taking these discovered objects and samples back to the lab for analysis, the information contained within a site is preserved in the process of archaeological excavation.

**archaeological fieldwork**: That portion of archaeological research that is conducted in the field. Examining soil surfaces through walkover or pedestrian survey as well as probing the subsurface through test excavation in the search for sites (survey) and, once found, the intensive investigation of individual sites by excavation.

**Archaeological Resources Protection Act of 1979 (ARPA)**: This federal law expanded and clarified the American Antiquities Act of 1906, protecting archaeological materials located on federal land. Specifically, ARPA prohibits "unauthorized excavation, removal, damage, alteration, or defacement of archaeological resources." ARPA provides stiff penalties for its violation, a fine of up to $10,000 and one year in jail for a first offense and even more severe punishment for subsequent convictions. By passing this law and imposing substantial penalties on those convicted of violating it, the federal government was making an important statement: it takes seriously its responsibility to protect and preserve archaeological resources on federal land; these resources belong to all American citizens as a group, not to any individual, and those who violate the law will be punished. (http://www.cr.nps.gov/local-law/FHPL\_ArchRsrcsProt.pdf).

**archaeological site formation**: Archaeological sites come into existence as the result of human behavior. Sites form by a series of site formation processes that include loss, discard, abandonment, and caching (storing for future use or as a ceremonial deposit).

**archaeology**: The study of the material remains of human behavior. Archaeology is the subdiscipline of anthropology (the study of people) that focuses on the lives of past peoples through the analysis of the things that they made, used, and then lost or discarded and that have fortuitously preserved.

**archaeomagnetism**: Orientation of the earth's magnetic field can become fixed in relatively recent cultural deposits like the sediments in a canal or in the clay bricks lining a kiln. The date of a site can be determined where that orientation points to a location of magnetic north already fixed in space and time along a master curve.

**artifacts**: Any portable object made by a human being. For an archaeological specimen to be an artifact, it must have been intentionally made, not merely the accidental result of human activity. Arrow points, pottery, bone needles, bricks, a mill wheel, and a plow blade are artifacts. Wood found in an ancient fireplace and the unintentionally modified bones of an animal hunted by a human being are not artifacts. Though they bear witness to human activity (burning, butchering marks) the wood and bones in this example were not made into anything. They are, instead, categorized as ecofacts.

**assemblage**: The entirety or individual subsets of the material culture recovered at an archaeological site or sites. All of the artifacts or individual categories of artifacts. One can speak of the artifact assemblage for a particular site and by that mean all of the artifacts. Or, for example, you can refer to the stone tool assemblage or ceramic assemblage, the array of stone tools or ceramic objects found at a site, in a region, or dating to a particular time period.

**B**

**backdirt**: The excavated and screened soil that piles up around an excavation unit or test pit. Ostensibly - and hopefully - backdirt is devoid of cultural material, having already been carefully examined by the archaeologist.

**behavioral contexts**: Term given to describe the behavioral meaning of objects in the culture that produced and used them. If an ancient people produced a hunting weapon, for example a spear point, its behavioral context, obviously enough, is that of a tool used in killing an animal in the hunt. Though archaeologists hope to discover the behavioral contexts of the objects found at archaeological sites, it isn't always obvious or immediately evident. Archaeologists first encounter an object's archaeological context.

**Beringia**: The area of northeastern Asia, northwestern North America, together with the Bering Sea that currently separates the two regions, that was a continuous landmass during periods of lowered sea level. The lowered sea level resulted from expanded ice fields in higher elevations and latitudes during the Pleistocene, commonly known as the Ice Age. Beringia was inhabited by cold-adapted plant and animal species and provided a route of migration between the Old and New Worlds. It is thought by most archaeologists that human beings in Asia expanded into Beringia from the west and south, eventually migrating into North America. Native Americans encountered by European explorers in the late tenth century A.D. (the Norse) and late fifteenth century (Columbus and those who followed) were the descendants of these Asian migrants.

**Bering Land Bridge**: The land, currently under the Bering Sea, that was exposed during periods of lowered sea level, and that served as a metaphorical bridge between the Old and New Worlds. At its greatest extent, this "bridge" was, from north to south, likely more than 1500 km (close to 1000 miles) wide, providing a broad and diverse route through its interior and along its southern coast for the movement of people into the New World.

**bifacially**: This refers to how a stone flake has been shaped and sharpened. A stone tool may have two edges or margins and two faces. The distance from margin to margin is the width of a flake and the distance between its faces is its thickness. When a flake is shaped and sharpened by percussion and/or pressure on both faces, it is bifacially flaked. When sharpening or shaping flakes have been struck or pressed from only one of the flake's faces, it is said to be unifacially flaked.

**biological anthropology**: A branch of anthropology, the study of human beings, that focuses on the biological aspects of our species. Among the topics investigated by biological anthropologists are the biological evolution of human beings, the biological variation exhibited by modern human beings, forensic anthropology, primatology (humans are primates and primatologists study the nonhuman primates, including monkeys and apes). Synonymous with physical anthropology.

**biological archaeologists**: Archaeologists who focus on the biological environment in which past people lived and to which they adapted. Biological archaeologists usually focus on the physical remains of animals and plants found at archaeological sites in an attempt to reveal the nature of a past environment and the ways in which the people used that environment.

**biomes**: A spatially extensive community of plants and animals living in a significantly large, recognizable habitat. North American biomes include tundra, taiga, mountain forest, temperate deciduous forest, tropical rainforest, grasslands, and deserts.

**bipedal locomotion**: The pattern of walking about on two feet. Among the primates (monkeys, apes, and human beings, along with our evolutionary antecedents), only those in the human line exhibit a pattern of habitual or full-time bipedalism. We know this to be the case both by observing living creatures (of course) and by reconstructing the locomotor habits of deceased or extinct creatures by the examination of their skeletal morphology. The bones reveal how the muscles must have worked which, in turn, reveals how the creature got around.

**C**

**C-14 dating**: Carbon-14 dating. Carbon-14 is a radioactive isotope (an unstable variety) of the element carbon. Most carbon is carbon-12. The "12" reflects the atomic weight of the most common configuration of the nucleus of the carbon atom with six positively charged (protons) and six neutral particles (neutrons). Carbon-14 possesses two additional neutrons and is unstable, decaying at a known rate to the element nitrogen. Knowing its rate of decay (its half-life) and by measuring the amount of carbon-14 remaining in a substance, we can determine its age. When found at an archaeological site, the age of the site can be associated with the dated item or items.

**cache**: From the French verb cacher, to hide. A cache is, essentially, a stash of stuff placed away for safekeeping - a cluster of spear points, a hoard of coins - that is not retrieved (perhaps intentionally if the items were intended as a ceremonial offering, perhaps unintentionally when the person who deposited the cache died before retrieving the stored material).

**calibration curve**: One of the assumptions underpinning radiocarbon dating is that the ratio of stable carbon-12 to unstable carbon-14 has always been the same. It turns out that this is not the case and that a number of natural processes have served to alter that ratio by increasing or decreasing the rate at which carbon-14 was produced in the atmosphere. Things alive when there was an overproduction (from a contemporary perspective) of c-14 will now appear to be younger and things alive when there was an underproduction of c-14 will now appear to be older than they actually are. This problem has been addressed, at least in part, by determining the radiocarbon dates of individual tree rings. Once a tree ring is added in a living tree, no additional atmospheric carbon is added to it; in other words, if you were to carbon date the first ring in a living, five-hundred-year-old tree, you should get a result in the vicinity of five hundred years old. A comparison of tree-ring dates and radiocarbon dates has been carried out, resulting in a calibration curve, which, in turn, is used to correct carbon dates to tree-ring dates, which are absolutely accurate in terms of calendar dates.

**carbon dating**: Shorthand for radiocarbon dating.

**ceramic**: Objects made of fired clay. Pottery, which usually implies a vessel or plate for cooking, storage, or serving food, is a common end product of ceramic technology.

**chemical signature**: The chemical makeup of a particular raw material (flint, obsidian, copper ore, clay, and so on) at its geographic source (quarry, flow, deposit, mine) as well the chemical constituents of the raw materials of artifacts excavated at archaeological sites. The chemical signature often exhibits a complex array of elements in miniscule or "trace" amounts and may be unique to a particular geographic source. The chemical signatures of artifacts can be revealed and then compared to possible source areas, enabling archaeologists to trace, sometimes quite precisely, the place from which past people obtained the materials, revealing past patterns of resource extraction, movement, and trade.

**chronometric dating**: Dating techniques that provide an actual age in years or a range of years for archaeological artifacts, ecofacts, features, or sites. The precision offered by different chronometric dating methods when applied to archaeological sites can range widely. In dendrochronology, for example, the precise year in which a tree was cut down can be determined and, in another example, the maker's mark on a ceramic vessel can be traced to the precise year in which the maker produced a particular style of pottery. At the other extreme, some chronometric dating techniques in their archaeological application may provide only a broad possible range of thousands, tens of thousands, hundreds of thousands, and even millions of years. For example, the potassium/argon dating method may date a volcanic layer overlying archaeological material to 1 million years ago and another layer underlying the site may date to 1.5 million years ago. In this case, we may conclude that the site is between 1 and 1.5 million years old (dating to sometime after the older volcanic flow and before the later deposit. Though the precision is not very high (the range is a half-million years) this is still a chronometric date. Absolute dating is another name for chronometric.

**CIEP**: See crossover-immunoelectrophoresis.

**colluvium**: Imagine a very slow-acting avalanche and you have a picture of colluviation and the production of colluvium. The rock, gravel, sand, silt, and clay that move downhill, along a slope, covering material along the slope and, especially, at the bottom of the hill, is called colluvium.

**clay**: Sticky, fine-grained earth consisting of silicate minerals with a particle size typically less than 2 micrometers (.00016 inch) in diameter. When wet, clay can be shaped and, when dried, retains the shape it has been molded into. After baking at a high temperature, clay becomes ceramic, a durable, stiff, waterproof (or nearly so) material.

**clay body**: A particular kind of clay with specific characteristics including texture, color, absorbency, and plasticity.

**comparative collections**: Groupings of samples of animal bones, seeds, nuts, lithic raw materials, and so on that can aid in the identification of materials recovered at archaeological sites. A comparative collection is, essentially, a library of prototypes that serve as the models by which archaeological samples can be judged and identified. Comparative collections are particularly valuable when the archaeological specimens are highly fragmented.

**complex societies**: These are societies in which authority, coordination of activity, and control of behavior are organized at a level beyond that of the family. Complex societies may have ranks or classes, peopled by individuals with greater or lesser wealth, authority, or social standing than those in other ranks or classes.

**compliance archaeology**: Archaeological research conducted to fulfill legal mandates. Federal, state, and local governments in the United States have enacted a wide variety of laws aimed at preserving and protecting archaeological sites. The value of archaeological sites as cultural resources whose study can benefit all citizens has been formally recognized and, especially when these cultural resources are endangered by construction or development, such laws compel developers to have archaeological work conducted to locate endangered cultural resources and, in some cases, to mitigate or diminish the deleterious impacts of development projects on archaeological sites. The archaeological research, in such cases, is conducted to comply with these laws, and thus the term compliance archaeology.

**conchoidal**: A variety of fracture exhibited by some rock types. Literally meaning shell-like, with a smooth surface showing concavities and convexities. Rock types like obsidian, flint, jasper, and chalcedony that exhibit conchoidal fracture break predictably and controllably. By a process of trial and error and by a long period of experimentation and repetition, knappers learn how conchoidal fracture is expressed by a rock type and develop an ability to predict and control the fracture to produce stone tools of regular and consistent sizes and shapes.

**conjoin**: To join together. In archaeology, broken fragments of artifacts that can be joined together: the top and bottom halves of a broken spear point, two fragments of a ceramic vessel are examples.

**contexts**: Shorthand for spatial context. The in situ location of an artifact, ecofact, or feature and the materials with which it was found.

**continuous variable**: Any variable in which its expression is a measurement along a continuous scale. The length of projectile points, the cranial capacities of ancient human ancestors, the volume of Egyptian pyramids, and the distance from an archaeological site to the geological source of a raw material used by the inhabitants of the site are all continuous variables because they can be measured.

**coprolites**: Fossilized feces. Because the digestive systems of animals, including human beings, are not 100% efficient, some ingested food is excreted in feces. As a result, the coprolites contain food remains and, therefore, provide data for dietary reconstruction.

**cord-marking**: A technique for decorating a ceramic vessel. After the vessel has been shaped and while the clay is still soft and wet, a length of twine, sometimes wrapped around a wooden paddle, is pressed into the surface, adding an interesting texture while, at the same time, pressing together and more firmly joining the clay where individual coils meet.

**core**: A nodule of stone from which a tool maker detaches flakes by the application of a force, usually percussion, with a hammerstone. In some approaches, the core is essentially sculpted into a tool; in others, the core is merely the source for flakes, the flakes serving as blanks from which tools are then made.

**cranial sutures**: The boundary lines between the cranial plates. When a human is born, his or her cranium consists of seven more or less separate bony plates enclosing the brain. These plates are strongly connected with cartilage and the squiggly lines seen where contiguous plates join are called cranial sutures. The cranial sutures ossify when the skull attains full growth, but the lines do not disappear right away. Bone growth fusing adjoining plates continues during adulthood, eventually obscuring the sutures altogether. The degree of suture closure and disappearance can be used to gauge an individual's age at death, but this is neither terribly accurate nor precise, allowing for an estimation of age sometimes accurate to within about a decade.

**cranium**: The bony enclosure of the brain. Technically, the cranium is that part of the skull that includes the head, face, and upper jaw, but not the mandible (lower jaw).

**crew chief**: The individual archaeological field-worker in charge of a group of diggers. Especially in a large survey project covering a substantial amount of territory, a field crew may have to break up into a number of groups, each of which may cover a separate area. A crew chief will direct the work of a group of test pit diggers or surface investigators, following the directions of the field director.

**crossover immunoelectrophoresis (CIEP)**: Forensic analysis in which, in its archaeological application, blood residues are recovered from the edge of a stone or metal tool. These residues are then exposed to a series of different antisera derived from a number of known animal species. The antibodies present in each antiserum will react biologically to the antigen in the blood residue only when the antiserum and the blood come from the same animal species. A positive reaction, therefore, when the antiserum and blood are mixed indicates the presence of blood from the same species as that from which the antiserum was derived, allowing for an identification of the species of animal whose blood is on the tool.

**cryptocrystalline**: Literally meaning "hidden crystals," this refers to the fabric of a rock consisting of individual crystals cemented together where these crystals are too small to be visible, even with a petrological microscope. Where the individual crystals of a rock are relatively large, an applied force (percussion or pressure) tends to shatter the rock along the intersections of the crystals. An applied force to a rock with very small "hidden" crystals moves through the rock in a manner similar to how that force moves through glass - predictably, controllably, producing thin, sharp edges. Cryptocrystalline rock is usually preferred for making stone tools by percussion and/or pressure.

**cultural ecology**: The study of the interrelationships between human groups and their environment. The cultural ecological approach views culture as an adaptive system.

**cultural resources**: A term that reflects the philosophy of the historic preservation movement. Just as we can identify as natural resources elements of our natural environment that make life possible - air, water, plants, and animals - we can also identify elements of the artificial or human-made environment that make life interesting, providing things that we can study, ponder, and from which we can attain knowledge. Ancient archaeological sites, seventeenth-century mill remains, Civil War battlefields, nineteenth-century bridges, and the remnants of early twentieth-century factories are all defined as cultural resources, valuable elements of the human-made environment.

**cultural resource management (CRM)**: The study, preservation, and protection of archaeological sites. Within the approach of CRM, the archaeological record is viewed as a non-renewable "cultural" or historical resource that is worthy of our consideration. Much of the archaeology currently conducted in the U.S. is done under the auspices of federally mandated CRM.

**culture**: The "extra-somatic" means of adaptation. In its broadest sense, culture is a strategy for survival based on ideas, as opposed to physical characteristics of our bodies provided by nature. We can hold a tool in a number of ways because of the inborn, physical characteristics of our hands. We then have the ability to invent a nearly infinite variety of tools that can be used by our hands. Culture is "extra-somatic" or beyond the body; beyond the biological or physical characteristics given us by nature. Culture is still biologically based in that our capacity for culture is based on our enormous intelligence made possible by a large and complex brain. Culture is constituted by all of the behaviors that human beings have invented and passed down to subsequent generations. In a more specific sense, a culture is the particular strategy of survival of an individual group of people.

**culture history**: Essentially, what happened when in a given region. An outline of the major cultural developments - adaptations, subsistence and settlement patterns, technological innovations, culture contacts, and so on - over time. In most world areas, archaeologists have a good handle on the outline of local culture history and simple charts are nearly ubiquitous, showing a column of culture names and developments from bottom (most ancient) to top (most recent).

**D**

**datum**: The origin or 0, 0 location of a site grid. A site grid is analogous to a giant piece of graph paper superimposed over a site. Datum is the origin of this imaginary piece of graph paper, and excavation units - and, ultimately, everything recovered at a site - are defined and located in reference to this point.

**debitage**: The wastage produced in stone tool making. Stone tool making is a reductive technology; the maker starts with a piece of stone and sculpts a tool from this core of rock by removing what can be defined as excess. Some of these excess flakes removed in tool making are themselves useful and can be used as tools. But because of size or form, many of the flakes removed in tool making cannot be used and are waste. The waste is called debitage.

**deciduous teeth**: Human baby teeth. These are the teeth that become visible in the mouth during infancy and early childhood and are shed, like the leaves of deciduous trees in the fall, to be replaced by the permanent or adult teeth. The various deciduous teeth - the flat-faced incisors in the front, the pointed canine teeth adjacent to the incisors, and the larger grinding molars to the rear of the child's mouth - erupt through the gum line at a fairly consistent age and are then lost and replaced by the permanent teeth at a similarly fixed point during development. The presence or absence (because they haven't erupted yet or because they have already been shed to make room for the adult teeth) of deciduous teeth is a good gauge of the degree of development of the individual and, therefore, a pretty good indicator of how old the person is - or how old the person was when he or she died, in the case of forensic or archaeological examples.

**demographic**: Anything referring to the "demography" or vital statistics of a population. The basic population data collected and published in the census is demographic: overall population size, longevity, male:female ratio, ethnicity, and so on. Archaeologists approach demography in a number of ways. Those who study cultures with written records may have formal census data available for analysis. When examining the population statistics of prehistoric societies, demographic data is often collected from skeletal remains, whose study may allow for a statistical picture of a group of people if a sufficiently large, representative sample of the ancient population is available.

**demography**: The basic population data collected and published in the census is demographic: overall population size, longevity, male:female ratio, ethnicity, and so on. Archaeologists approach demography in a number of ways. Those who study cultures with written records may have formal census data available for analysis. When examining the population statistics of prehistoric societies, demographic data is often collected from skeletal remains, whose study may allow for a statistical picture of a group of people if a sufficiently large, representative sample of the ancient population is available.

**dendrochronology**: Tree-ring dating. The actual year date a tree was cut down and used, for example, by a past people to build a structure, can be determined by comparing the succession of rings in the ancient tree to those of a broad master sequence whose final ring represents the current year. The master sequence for a given region is constructed by examining a number of trees of overlapping ages. The master sequence consists of a series of rings of various thicknesses stretching back, in some areas, for more than ten thousand years. Tree-ring thickness varies from year to year, consistently across a region as a result of varying temperatures or amounts of rainfall. Ring thicknesses for even a short series of years are not repeated, so any ancient tree found in a region can be placed within the master sequence and the year date of its final ring can be determined, thus dating when the tree died or was cut down.

**descriptive statistics**: The numerical data that summarize the nature of a population. Descriptive statistics can exhibit the central tendency of a data set, for example, the mean, median, or mode of a variable. Your "average" for the semester, more formally, the mean score of all of your individual grades, is a descriptive statistic. The mean length of spear points in a cache, the mean volume of the individual blocks making up the Great Pyramids in Egypt, and the mean cranial capacity (skull volume) of representatives of an ancient hominid species are all descriptive statistics. The standard deviation - a measure of how closely individuals in a sample cluster about the mean - is another descriptive statistic. Where descriptive statistics merely describe a population, inductive statistics provide a way to assess patterns, correlations, and cause-and-effect relationships between and among variables.

**diaphysis**: The shaft of each of the long bones; the individual bones of the legs, arms, hands, and feet. That portion of a long bone between the end caps (epiphyses).

**diffusion**: The movement of ideas across geographic distance and cultural boundaries. When new technologies or styles are reflected in the archaeological record at a particular archaeological site or within a particular region, it may be the result of local and independent invention or development of the new technology or idea, or it may be the result of the borrowing of the new behaviors as a result of diffusion.

**direct historical approach**: An approach in ethnographic analogy in which the culture of a group that represents the descendants of the people whose archaeological remains are being investigated is used as the source for models or analogies used to explain the lifeways lived by the ancient group.

**discontinuous variables**: Variables whose possible expressions are not measurements but names. For example, eye color is a discontinuous variable whose most common possible expressions are brown, blue, and green. Lithic raw material (for example: flint, obsidian, quartzite, quartz, and basalt), temper added to clay (for example: none, quartz grit, sand, shell, ground up pieces of fired clay), and feature type (for example: burial, hearth, lithic cache, foundation, midden) are examples of discontinuous variables. Also called nominal variables.

**distal epiphysis**: Each long bone in your body consists of a shaft - the diaphysis - and two end caps - the epiphyses. In the geography of the body, the distal epiphysis of each of those long bones is the end cap farther away from the trunk (think, "distant" means far from). The end cap closer to or in "proximity to" the trunk is the proximal epiphysis.

**E**

**ecofacts**: You won't find this term in the dictionary; it was invented by archaeologists who needed a way to differentiate archaeological specimens that were actually made by people (artifacts) from those that are present at an archaeological site because of human behavior, and that may even show direct evidence of human manipulation, but that were not intentionally made into something by people. Ecofact is what archaeologist Lewis Binford came up with. Ecofacts are elements from the environment (bone, stone, wood, seeds, nuts, shell) that were collected by people for their use (to eat or to warm themselves), but are not themselves tools or manufactured objects.

**effigy mounds**: Earthen structures made in the shape of animals - both real and mythical - and people. The ancient people of the American Midwest, in particular, produced effigy mounds.

**egalitarian**: A society in which all of the members within the group's recognized age and sex categories (for example, young children, adolescents, young adult men, young adult women, elderly people) have an equivalent amount of wealth, authority, and social standing. All members of an egalitarian society are not necessarily "equal" and there may be differences in wealth, authority, and social standing among the different groups.

**elastic limit**: Although rock may seem to be hard and brittle, many rock forms actually are flexible, at least at a microscopic level. They are, in fact, "elastic" and deform, if only very slightly, when a force - either percussion or pressure - is applied. Up to a certain level of applied force, the rock will rebound when the force is removed. Once a certain level is reached, a level that will vary within each type of rock and even among different geographic sources of the same rock type, the rock cannot sustain the force and rebound and, instead, breaks. The maximum force a rock can sustain before breaking is its "elastic limit." In stone tool making, the craftsperson exceeds the elastic limit of the rock to remove flakes.

**electrical resistivity survey**: A noninvasive procedure used in archaeological survey where an electrical current is passed through the ground. Variations in soil resistance to the current are used to pinpoint the location of archaeological artifacts or features.

**electron spin resonance (ESR)**: Dating method based on the accumulation of energy in the form of electrons in atoms pushed into and then "trapped" at higher energy levels as a result of background radiation. In a given environment and for a given material, the electrons become trapped at a regular rate. The amount so trapped can be measured and the amount of time it would have taken for all that trapping to have occurred once an object was buried can be determined.

**enamel hypoplasia**: Pits and other imperfections in the enamel of the permanent teeth, resulting from bouts of malnutrition during early childhood before those adult teeth appeared in the mouth. The nascent buds of the permanent teeth are present in the upper and lower jaws of newborns, below the buds of the deciduous dentition. Nutritional and other dietary problems (for example, an excess of fluoride) as well as childhood diseases, therefore, can have an impact on the adult teeth long before they erupt. Enamel hypoplasia is one example. Dietary and nutritional deficiencies in individuals, in entire populations, or in only certain segments of a population can be revealed by the discovery of enamel hypoplasia.

**enculturated**: To become a member of a culture, to learn the rules by which a society operates, and to follow them is to become enculturated. Children are born into a culture that is, after all, a set of learned behaviors. As they mature, they grow into their culture - become enculturated - learning every day how to act, how to behave, how to believe, by being surrounded by people who are members of the culture who are acting, behaving, and believing in ways appropriate to the culture.

**environmental determinism**: The now discredited view that the degree of "challenge" presented by a particular environment determines the level of technological complexity achieved by the people living there. Not surprisingly, Western European thinkers in the nineteenth century viewed the environments of Western Europe and North America as presenting exactly the right level of challenge to produce the world's most developed societies.

**Environmental Impact Statement (EIS)**: Literally, a formal statement concerning the potential and real affects a given, proposed development or construction project may have on the environment. Mandated by the federal government in the National Environmental Protection Act, an Environmental Impact Statement is often a detailed report prepared by experts in water, air, botanical, zoological, and cultural resources, assessing the possible damage to the environment, in the broadest sense of the word, of a federally funded or mandated project (for example, road construction, pipeline placement, or river dredging). Archaeological sites are defined as cultural resources, of value to all citizens, and worthy of federal concern and protection. Information provided in an EIS may result in an alteration of a proposed project in order to protect archaeological resources, or may lead to the excavation of a site in order to salvage the information it contains before the project proceeds and the site's location is destroyed.

**epiphysis (pl. epiphyses)**: Each end cap of each long bone in the body. When you are born, each of your long bones consists of three segments: a shaft called the diaphysis and two end caps called epiphyses. The epiphyses are each joined to their diaphysis by a band of cartilage. The proximal epiphysis and distal epiphysis of each long bone permanently fuse to the contiguous diaphysis during a narrowly circumscribed time period of an individual's development. As a result, the age of a subadult individual can be estimated by examining his or her skeleton (by noninvasive imaging of a living person or by directly examining the bones of a deceased individual) and determining which of the epiphyses have already fused to their shafts and which are yet to solidly connect. The long bone epiphyses have all fused by the late teens or very early twenties. Once this has occurred, examining them can tell you only that the individual is at least that old.

**ESR**: See electron spin resonance.

**ethnoarchaeology**: A strategy employed by archaeologists attempting to better understand the ways in which the archaeological record reflects the lives of a group of people. In ethnoarchaeology, the archaeologist lives among a group of people in the manner of an ethnographer, focusing on how the behavior of the living group of people becomes transformed into an archaeological record of that behavior. Investigating how behavior becomes translated into an archaeological entity (a site), provides the archaeologist with insights into the question of how an archaeological entity (a site) reflects the behavior that produced it.

**ethnographic analogy**: Using the description of a living group of people - or a people who lived in the not too distant past and whose lifeways have been documented - as a model for understanding the lifeways of an archaeological group. A recent group whose way of life has been described is considered an appropriate source for comparisons and analogies when the two peoples - those whose archaeological remains we are trying to understand and the more recent groups whose way of life has been described by eyewitnesses - appear to have lived under similar conditions, in generally similar cultural settings.

**ethnographic research**: Ethnography is the observation and analysis of a living group of people. Archaeologists are interested in the study of a living group of people for at least two fundamental reasons: (1) the study of the living descendants of the people who left behind the archaeological materials may provide insights into the meaning and significance of the material and (2) even when no living descendants of the archaeological group can be identified, the analysis of living people, especially those living a way of life similar or analogous to that reflected in the archaeological record, may similarly provide insights into our analysis of the archaeological record.

**ethnography**: The study of a living group of people by living among them, observing their behavior, and participating in their daily activities. The published work describing the research of an ethnographer is also called an ethnography.

**ethnohistory**: Written descriptions of foreign or alien cultures produced, not by trained ethnographers whose purpose was to describe such cultures, but by explorers, adventurers, colonists, traders, missionaries, and others who encountered alien people accidentally while exploring, adventuring, colonizing, trading, or proselytizing. The advantage of ethnohistorical work rests in the fact that they are among the earliest descriptions of many of the world's non-European societies and, therefore, reflect the cultures of non-European people before they were significantly altered by such contact. The disadvantage rests in the fact that those who wrote ethnohistorical descriptions of alien cultures were generally not trained scientists, were not unbiased reporters, and had particular agendas and purposes that often detracted from the objectivity of their observations.

**excavation**: The careful and methodical exposure of subsurface archaeological material. Excavation is usually conducted with hand tools such as trowels, small brushes, and dental picks in an attempt to expose the materials left behind by a past people exactly where these past people left them. See archaeological excavation.

**excavation units**: The individual analytical field unit at an archaeological site. Excavation units are often called "squares" because that is their form; often 2 meters on a side, but they can be 1-meter squares, 6-foot squares, or any other size, and they don't even need to be squares. Excavating in regularly sized and spaced units allows for site excavation in manageable "bites" and makes it easier for the principal investigator - and everyone else - to keep track of where items were found.

**exhausted core**: A stone nucleus that has had a series of flakes removed from it and now is either too small, too battered, or too oddly shaped to allow for the efficient removal of additional flakes.

**exotic material**: Any raw material used by a past people that is not native to their local area. Any raw material that had to be obtained through long-distance trade or by travel to a source outside of the area in which a group commonly moved.

**experimental archaeology**: Answering questions about the cultures of past people by attempting to replicate particular elements of their behavior. Usually applied to material culture, experimental archaeologists attempt to figure out how tools were made and used by actually going through the trial-and-error process of making and using them. Experimental archaeology certainly contributes to our scientific understanding of specific processes of the technologies of past people, but it also does something more: it provides us with a visceral appreciation for past technologies through the humbling experience of actually trying to make and use things similar to objects made by past people.

**F**

**faunal analysis**: Examination of the animal bones recovered at an archaeological site. This analysis should provide information about the subsistence base of a group by identifying the animal species being used. Other aspects of a group's subsistence strategy may also be revealed. Did they hunt wild animals or are remains those of domesticated species? Were they capable of capturing only very old and very young animals, or were they successfully hunting animals in their prime? Did they avoid killing females in their prime - females, after all, were important in producing the next generation of animals? Were they thorough or wasteful in their use of an animal's carcass?

**features**: A combination of artifacts and/or ecofacts that together represent a location where an activity took place that resulted in the combined presence of the artifacts and ecofacts. When people carry out tasks in activity areas, they often use material objects and, during the course of the activity, they may intentionally or accidentally leave some of those material objects behind. The remnants of a fireplace characterized by a concentration of charcoal and rocks; an activity area where stone tools were once made and where now battered fragments of hammerstones, waste flakes, and tools broken during the tool making process litter the ground; a human burial with bones and grave goods (the treasured belongings of the deceased provided for use in the afterlife); a platform on which deer meat was once roasted and where now only a bed of burned stones, bits of charred wood, and flecks of bone remain; all of these are archaeological features.

**femur**: The bone of the upper leg; the thigh bone. The femur is the longest of the so-called long bones, which are, exactly as advertised, the long bones of the legs, arms, hands, and feet.

**fibula**: The smaller of the two bones of the lower leg. The larger lower leg bone is the tibia. Feel your shin; that large, flat bone just below the surface of your skin is your tibia. The fibula is behind the tibia, enclosed in muscle.

**field director**: Archaeological field worker in charge of the entire field crew while out in the field. Taking direction from the principal investigator, the field director gives instructions to the crew chiefs concerning the work on any given day.

**field school**: Intensive training, often offered as a course at a university, in archaeological fieldwork and laboratory work. Students may be trained in a diverse array of archaeological methods through a process of learning by doing. In most field schools, students perform much of the grunt labor as they learn common procedures of archaeological survey, gridding, troweling, screening, mapping, recording, photographing, as well as procedures of cleaning, inventorying, and preliminary analysis in the lab. Field schools are conducted all over the world and most offer college credit; many field school opportunities are listed in the Archaeological Fieldwork Opportunities Bulletin published by the Archaeological Institute of America (http://www.archaeological.org/ webinfo.php?page=10015).

**floodplain**: A flat expanse of land adjacent to a river or stream. The floodplain is commonly flooded on a yearly basis, particularly in spring as the result of heavy rainfalls and, in the north, meltoff of the winter snowpack. This flooding brings with it a heavy burden of silt - fine-grained material - that is deposited on the floodplain. Called alluvium, this silt consists of fine particles easily moved and deposited by flowing water and very few larger rocks. This can be extremely attractive to farming people, particularly those without machines to help turn over the soil in preparation for planting. This flooding also explains why archaeological material is often found deeply buried, the result of many years of flooding and attendant deposition.

**flotation**: A procedure used in archaeology to separate artifacts and ecofacts from excavated soil - either the soil matrix recovered from a feature or soil samples taken from ancient living surfaces - by the use of water. Flotation is based on the fact that, in the vast majority of instances, the archaeological material that you are trying to isolate and recover from the surrounding soil has a different specific gravity than water (the fixed volume of the archaeological material weighs more or less than but not the same as the same fixed volume of water). This means that when dumped into a pool of standing water (for example, in a basin or bucket) most archaeological remains will separate from the water either by floating to the top or sinking to the bottom. Materials that float (many organics) can be collected by skimming the water's surface. Materials that sink (lithics) can be extracted by draining the water through a fine mesh screen that will allow the water and most of the very fine soil particles, but not the artifacts or ecofacts, to pass through.

**fontanelles**: These are the so-called soft spots on a newborn baby's cranium. There are two fontanelles, one on top toward the front and one farther back where the bony cranial plates do not yet meet in the newborn skull. The presence of these gaps, where the brain is covered not in bone but in a thick layer of cartilage, allows for the flexibility needed in the relatively large newborn human skull in order to pass through the narrow human birth canal. The fontanelles close up during development: the smaller fontanelle at the rear of the skull fuses over at about three months of age and the one toward the front closes at about a year-and-a-half.

**foragers**: Term used to describe a subsistence strategy in which food is provided by any combination of hunting wild animals, fishing, shellfish collecting, and gathering the seeds, roots, nuts, fruits, or leaves of wild plants. All human groups were foragers until the development of food production technologies, where plants and animals were domesticated through a process called artificial selection. The earliest evidence of a shift away from foraging toward food production and, ultimately, full-blown agriculture, occurred in the Middle East sometime soon after twelve thousand years ago and then, independently, in a number of places in the Old and New Worlds sometime later.

**forensic anthropologists**: The word "forensic" refers specifically to the law, and forensic scientists apply scientific procedures to the investigation of a crime. Forensic anthropologists focus on human remains and contribute to our understanding of a past society's demography, including individual longevity, ethnicity, nutrition, disease, and trauma. And, in fact, just like forensic scientists who attempt to solve modern crimes, forensic anthropologists may reveal ancient ones. For example, in the case of the 9,400-year-old Kennewick Man in Oregon as well as the 5,000-year-old Ice Man found in the Italian Alps, forensic specialists found stone spear points embedded in their bodies. In the case of Kennewick, the individual survived to live a long life after impaled; in the case of the Ice Man, the spear wound likely contributed directly to his death.

**Four Corners**: The only place in the United States where four separate states meet at right angles. The four states are Arizona, New Mexico, Colorado, and Utah. The region is well known and even world renowned for its extraordinary archaeological heritage exemplified by the Great Houses of Chaco Canyon in New Mexico and the cliff dwellings of Mesa Verde in Colorado.

**G**

**Geographic Information Systems (GIS)**: Computer mapping programs in which each variable is treated as a map layer. By superimposing layers that might include information about watercourses, topography, soil type, and so on, as well as the locations of archaeological sites, patterns of site location in reference to those environmental variables may become apparent.

**GIS**: See Geographic Information Systems.

**glaze**: A glassy substance fused through the application of heat onto the surface of a ceramic form in order to produce a smooth, often glossy, waterproof surface.

**Global Positioning System (GPS)**: System of locating precisely any point on Earth, originally developed exclusively for military use, through the use of twenty-four satellites orbiting our planet. Less precise, degraded satellite signals were made available to anyone with a receiver, and as of May 2000, the nondegraded signal became available. With a handheld GPS unit costing just a few hundred dollars, the location of an archaeological site to within just a few meters can be determined, and its location in relation to surrounding resources - resources that may have played a role in a past people's using the location in the first place - can be assessed.

**GPS**: See Global Positioning System.

**ground penetrating radar**: A noninvasive technique used in archaeology where an electromagnetic pulse is passed through the soil. This pulse encounters objects in the soil and is reflected back to a receiver. The radar operator may then be able to interpret the nature of objects that reflected the radar pulse, some of which may represent cultural remains, for example buried walls or foundations.

**ground stone**: Stone tools made, not by striking them with a rock or antler hammer to remove flakes, nor by applying pressure to the edge to push off flakes, but by grinding the stone, often against the surface of another stone, to produce a shape and often a sharp and durable edge.

**ground truth**: The actual explanation for a feature identified through remote sensing. For example, after recognizing a pattern of plant growth from an aerial photograph, the archaeologist may test the significance or "truth" of the pattern through a close-up examination on the "ground."

**growth arrest lines**: Horizontal cracks at the end of the diaphysis of a long bone that persist through adulthood, resulting from a bout of malnutrition during the developing years. Before the fusion of the epiphyses to their diaphysis, the long bone shaft grows out from its ends. If an individual experiences a period of severe malnutrition that growth may stop or at least slow down substantially. If the individual survives and resumes growth when nutrition is restored, a line or lines may appear, sometimes visible on the surface of the bone and sometimes recognizable only in x-ray. The presence of growth arrest lines, therefore, is an indication of nutritional deficiencies in an individual, an entire population, or only in certain segments of the population. Also called Harris Lines, after the researcher who first recognized their cause.

**H**

**half-life**: The fixed, regular, and measurable amount of time it takes for one half of the radioactive isotope in a substance to decay into its stable end product or to a step on the path to its stable form. Some radioactive isotopes of elements exhibit half-lives no more than a fraction of a second in length while some half-lives are measured in billions of years. The half-life is, in essence, a natural clock that can be used to date a substance whose age, when found at an archaeological site, can be associated with the site.

**half-moons**: A category of wear traces on stone tools. Unlike scalar scars, which are gouged out on the surface of a tool near the edge, these little crescent-shaped scars along a tool's working edges result when actual bites are taken from those edges during use. A tool that begins with a straight edge may appear serrated after use that produced half-moon scarring. For example, a thin, sharp-edged stone tool used to incise a design on a piece of wood may result in a rapid and significant deterioration of the edge in the form of half-moon scars. The tiny flakes removed in the process may become embedded in the material being worked on and produce striations on the tool as it rubs against them.

**hammerstone**: Tool used in the production of stone tools. The hammerstone is the percussor, the tool used to strike a stone core to remove flakes or to strike a flake in order to thin, sharpen, and shape a tool. The hammerstone needn't be harder than the core; often spherical and, therefore, without facets or angles of less than 90 degrees, a core's geometry provides it with much of its strength and durability.

**haplogroups**: Co-occurring genetic markers that are inherited together, as a unit. The presence of certain recognized mitochondrial haplogroups may distinguish populations of human beings from one another and enable the tracing of historical connections among living peoples.

**haplotypes**: A cluster of co-occurring genetic markers within particular haplogroups that are inherited together, as a unit. The presence of certain recognized mitochondrial haplotypes may distinguish populations of human beings from one another and enable the tracing of historical connections among living peoples. For example, the fact that all five of the mitochondrial haplotypes found among Native Americans are also found in Asia and not in Africa, Europe, or Australia, is interpreted to support the hypothesis of a historical connection between the native people of Asia and the Americas.

**Harris Lines**: Horizontal cracks at the end of the diaphysis of a long bone that persist through adulthood, resulting from a bout of malnutrition during the developing years. Before the fusion of the epiphyses to their diaphysis, the long bone shaft grows out from its ends. If an individual experiences a period of severe malnutrition, that growth may stop or at least slow down substantially. If the individual survives and resumes growth when nutrition is restored, a line or lines may appear, sometimes visible on the surface of the bone and sometimes recognizable only in x-ray. The presence of growth arrest lines, therefore, is an indication of nutritional deficiencies in an individual, an entire population, or only in certain segments of the population. Named for the researcher who first recognized their cause. Also called by the accurately descriptive name growth arrest lines.

**high-performance liquid chromatography (HPLC)**: A laboratory procedure for separating molecules in a sample by the application of high pressure. Once separated, the molecules can be identified. HPLC has been used to analyze ancient food residues adhering to interiors of clay vessels.

**hominid**: The taxonomic family that includes human beings and species directly ancestral to humans. The first hominids are characterized by chimp-sized brains and exhibit a skeletal anatomy that enabled upright walking more than 6 million years ago during the Pliocene epoch. Stone tool making dated to about 2.5 million years ago in the hominids, about the same time the hominid brain exhibited a dramatic increase in size beyond that of any ape species.

**HPLC**: See high-performance liquid chromatography.

**humerus**: The upper arm bone. It is entirely coincidental that at the far end (distal epiphysis) of the humerus is the "funny bone."

**hunter-gatherers**: Human groups that feed themselves by hunting wild animals and collecting wild plants are said to be hunter-gatherers. In most such societies, though hunting provides the bulk of the protein, most of the caloric intake is supplied by plant food and some suggest the term is more appropriately "gatherer-hunters." The term "forager" is preferred by many because it does not implicitly prioritize the importance of any one food source and it is more inclusive, recognizing the possible significance of fishing and shellfish and egg collecting in the subsistence quest.

**I**

**igneous**: Volcanic rock formed when enormously hot, molten material in the Earth's interior cooled and solidified; granite, basalt, obsidian, pumices, and so on.

**inductive statistics**: Numerical analysis of patterns, correlations, and cause-and-effect relationships between and among variables. In descriptive statistics researchers can calculate numbers that summarize how a population (of people, spear points, archaeological sites, and so on) scores on a given variable. In inductive statistics, researchers can calculate numbers or formulas that reveal any patterns of how a population scores on a number of variables. For example, inductive statistics may reveal that the measurement for one variable (for example, the thickness of the wall of a ceramic vessel), correlates with another (for example, its age). Knowing, in this example, that older pots have thicker walls may provide insights into the evolution of ceramic technology in a given society.

**in situ**: A Latin phrase meaning "in place." Archaeologists use the term specifically to characterize an exposed artifact that has been left, at least temporarily, in its original location of discovery. In some cases, an in situ specimen is exactly where it was left behind (lost, discarded, cached, abandoned) by a person at some time in the past.

**isotope**: In physics, an isotope is a variety of the atomic structure of an element. All atoms of a given element have the same number of protons in their nuclei but the number of neutrons may vary; different isotopes of an individual element have different numbers of neutrons in their nuclei. Some isotopes of an element are atomically stable, never changing. Others are unstable or radioactive, changing at a regular rate, by a process of decay into a stable end product. The fixed rate of decay of a radioactive isotope forms the basis of radiometric dating.

**K**

**K/Ar**: See potassium/argon dating.

**kitchen midden**: An aboveground accumulation or pile of residue from food preparation. Inedible material, spoilage, and excess is thrown on the pile and left to decay. The stuff that does not disappear - depending on the local soil condition this will often be bones, shells, and carbonized remains like seed husks, nutshells, cobs, and rinds - becomes a kitchen midden.

**knapper**: A person who knaps; to strike stone in an effort to shape the stone into a tool or produce flakes that can be used as is or further shaped into tools. A flintknapper refers specifically to a stone tool maker who knaps flint. Knappers are also occasionally referred to as "rock-knockers."

**knapping**: The act of making stone tools.

**L**

**lacustrine**: Relating to lakes. Gravel, sand, silt, and clay that accumulate along the shoreline of a lake produce lacustrine deposits that may cover and preserve the archaeological sites resulting from human activity along lake margins.

**landscape archaeology**: An archaeological approach and perspective that focuses on the distribution of archaeological material across a broad landscape rather than on a series of individual sites. In landscape archaeology, the archaeological record is viewed, not as a series of discrete loci of material, but as a spatially and temporally continuous record of human occupation and use.

**landscape signature**: Term suggested by archaeologists William Marquardt and Carole Crumley (1987) for the archaeological manifestation of a settlement pattern. A human group uses its territory and locates its villages, camps, burial grounds, sacred places, and so on in ways that are culturally determined. The spatial distribution of archaeological sites left behind reflecting their pattern of land use is the landscape signature of the group.

**laser transit**: Device used in surveying. Where the old-style transits were visual sighting devices used to measure elevations (depths) and locations, laser transits emit a beam of laser light that bounces off a special stadia rod. The signal is captured by a receiver on the transit where the precise distance and elevation of the point being measured are recorded and stored.

**law of superposition**: The commonsensical rule stating that the relative age of a soil layer (stratum) is determined by its position in an undisturbed vertical sequence of a number of layers (strata). In other words, more recent soil layers are superimposed over older layers. Under most circumstances, this means that deeper layers in a sequence are older than layers higher in the same sequence, but natural and cultural processes can disturb these sequences, so it is best to examine a sequence of layers rather than simply to measure depth to determine the relative age of a stratum. The relative age of archaeological materials can be determined by reference to the soil layers in which they are found.

**literature search**: Primary stage in an archaeological research project in which publications are examined that might discuss previous archaeological research in the proposed project area. In the past, this was fairly straightforward as most regions have a rather limited list of publications in which relevant material might appear. When we started the Farmington River Archaeological Project in which the Wood Lily site was discovered, about the only significant publication in which previous archaeological research in the Farmington River Valley might be discussed was the Bulletin of the Archaeological Society of Connecticut. Today, there is a substantial and growing body of "gray literature," including unpublished reports produced in compliance archaeology projects and nontraditionally published material sometimes available online. In Connecticut, compliance archaeology reports are gathered by the Office of the State Archaeologist and made available to researchers in the Archives and Special Collections of the Thomas J. Dodd Research Center at the University of Connecticut (http://archnet.asu.edu/ archives/crm/conn/cttowns/introct.html). Other states and municipalities may handle these materials differently.

**lithic**: Adjective for stone. Any material composed of stone is lithic.

**living archaeology**: A strategy employed by archaeologists attempting to better understand the ways in which the archaeological record reflects the lives of a group of people. In ethnoarchaeology, the archaeologist lives among a group of people in the manner of an ethnographer, focusing on how the behavior of the living group of people becomes transformed into an archaeological record of that behavior. Investigating how behavior becomes translated into an archaeological entity (a site) provides the archaeologist with insights into the question of how an archaeological entity (a site) reflects the behavior that produced it.

**M**

**mandible**: The lower jaw. The upper jaw is called the maxilla.

**master sequence**: In dendrochronology, tree-ring sequence, extending in some cases for a period of more than ten thousand years, produced by overlapping the rings of a living tree with a series of successively older trees. Over the course of the time period covered in a regional master sequence, no section of the sequence of ring widths repeats itself. As a result, once a master sequence is established, the ring sequences of newly discovered, long-dead trees, including those cut down and used by ancient people, can be positioned precisely in the master sequence. The exact year of each ring in the master sequence is known because the end of the sequence is rooted in the present, thus the year any tree alive during any time represented in the sequence was cut down can be determined. If people cut it down and used it in a structure, the age of the tree can be applied to the age of the ancient dwelling and archaeological site.

**mastoid process**: In the geography of the skeleton, a process is a bump of bone. Each cranium has two mastoid processes, located at the base on the left and right sides. Feel directly behind your ears, at the level of the earlobes; those are your mastoid processes. The mastoid processes of males and females are a bit different in size and shape (males tend to have larger, rounded processes while those of females are smaller and more pointy). This fact is used to help identify the sex of a deceased individual based on his or her skeleton.

**material culture**: That portion of the human strategy for survival that involves making and using objects: tools, weapons, containers, clothing, houses, items of adornment, art and craftwork, and so on.

**matrilocal**: A postmarital residence pattern in which, upon marriage, a man leaves the community (compound, neighborhood, or village) into which he was born and within which he was raised and moves into the compound, neighborhood, or village in which his wife and her family reside.

**matrilocality**: Refers to a pattern of postmarital residence in which a newly married couple lives in the village, compound, or even the house of the wife's parents. See matrilocal.

**Minimum Number of Individuals (MNI)**: This statistic represents a conservative estimate for the number of individual animals represented in the faunal assemblage at an archaeological site. In the MNI calculation, it is assumed that "redundant" skeletal elements, different parts of an animal's body that could have belonged to the same individual - a right front leg and a left rear leg from an animal of the same sex and age, but not two right front legs or two heads - did belong to the same animal. The MNI reflects the minimum number of animals that we can state with certainty are represented in an assemblage.

**mitochondrial DNA**: A type of DNA, separate and distinct from the nuclear DNA, present in the mitochondria of an organism's cells. Unlike nuclear DNA, mitochondrial DNA (mtDNA) of the male and female is not combined in sexual reproduction. The mtDNA of only the female is transmitted to subsequent generations. The simplicity of mtDNA inheritance renders it a valuable tool in examining the relationships between modern populations and, when recovered from ancient bone, the relationships among ancient populations and between modern people and them.

**MNI**: See Minimum Number of Individuals.

**morphology**: We use this term when referring to the form of anything. Biologists use it in reference to the form and structure of organisms and anthropologists use it in the same way, usually applying it to the form of the skeletal remains of human beings and human ancestors. Archaeologists use the term as well, more often referring to the form or shape of tools.

**N**

**NAGPRA**: See Native American Graves Protection and Repatriation Act.

**National Environmental Protection Act (NEPA)**: Federal law passed in 1969 whose stated purpose was to protect the environment, to minimize negative impacts on the environment by federally funded projects, and to encourage study of the natural world. NEPA is important for archaeologists because the nation's cultural and historical heritage were explicitly included in those elements of the environment that deserved protection and study (http://ceq.eh. doe.gov/nepa/regs/nepa/nepaeqia.htm).

**National Historic Preservation Act of 1966**: This legislation formally established historic preservation as an official policy supported by the federal government of the United States. The spirit of this law is reflected in the wording of its preface, in which the authors expressed the belief that the history of the American people, reflected in part by cultural resources, should be preserved as a reflection of our national heritage. This act also established the National Register of Historic Places.

**National Museum of the American Indian Act of 1989**: Federal law that established a national museum of American Indians to be included as part of the Smithsonian Institution. This museum is currently under construction in Washington, D.C. (http://www.nmai.si.edu).

**National Park Service (NPS)**: The government agency given the task of overseeing our nation's national parks. Recognizing that our national parks with their vast acreage contain many significant archaeological sites, the NPS includes a large cohort of archaeologists who oversee the protection, preservation, study, and public display of those sites on federal land.

**National Register of Historic Places**: Established and authorized in 1966 through the National Historic Preservation Act, the register amounts to an honor role of structures, places (including historic battlefields), and sites that meaningfully reflect significant episodes, events, people, or practices in American history (http://www.cr.nps.gov/nr/about.htm). Sites nominated to and accepted onto the register are deemed worthy of preservation because of their significance in our history.

**Native American Graves Protection and Repatriation Act (NAGPRA) of 1990**: Federal law that confers "ownership" of the biological remains of Native Americans (including Indians and Hawaiians) excavated in federally funded archaeology projects and/or stored in federal or federally funded facilities, to the biological descendents of the people whose remains have been recovered and stored. NAGPRA also requires the return to descendants of those objects that have been kept in federal or federally supported museums, libraries, laboratories, and so on that are deemed sacred by the native people whose ancestors made the objects (http://www.cr.nps.gov/nagpra/).

**NEPA**: See National Environmental Protection Act.

**neutron activation analysis**: Procedure for revealing the chemical signature of a raw material. In neutron activation analysis, samples of a specific raw material (for example, turquoise, obsidian, copper, or iron ore) from a series of geographically distinct sources are irradiated with neutrons. Different elemental constituents in each sample then emit radiation at levels unique to each element. The identity of about sixty different elements can be detected and their concentrations measured (down to trace amounts measured in parts per billion) by the application of this method.

**nomadic**: A way of life in which a group of people regularly move their habitation. A nomadic way of life is not a random existence. Many nomadic groups follow a regular pattern of migration on a yearly basis, consistently moving each season to the same separate location when resources are most abundant there during the course of a year. These nomads essentially follow the geographically shifting abundance of natural resources, moving their residence according to the local availability of wild plant and animal foods.

**nominal variables**: Variables whose possible expressions are not measurements but names. For example, eye color is a nominal variable whose most common possible expressions are brown, blue, and green. Lithic raw material (for example: flint, obsidian, quartzite, quartz, and basalt), temper added to clay (for example: none, quartz grit, sand, shell, ground up pieces of fired clay), and feature type (for example: burial, hearth, lithic cache, foundation, midden) are examples of discontinuous variables. Also called discontinuous variables.

**Number of Identified Specimens (NISP)**: A statistic in faunal analysis that reflects the numbers of bones of each animal species represented in a faunal assemblage.

**O**

**obsidian**: Naturally produced volcanic glass, usually black and translucent at thin edges. Obsidian without impurities breaks very predictably and controllably, producing exceptionally sharp, thin edges. Though these thin edges can be rather delicate and brittle, many ancient people utilized obsidian to make cutting, piercing, slicing, and scraping tools.

**object piece**: In stone tool making, the stone that you are striking with a hammerstone or antler hammer or the stone to which you are applying pressure with a pressure flaking tool. It's simple enough; it's the "piece" of stone (core or flake) that is the "object" of your percussion or pressure.

**obtrusive**: Where past cultures produced large-scale modifications of the landscape and/or constructed buildings of durable material, the archaeological remains of these landscape features and structures are said to be obtrusive: under the right conditions, readily obvious to practically anyone simply walking about these remains. The archaeological visibility of even obtrusive remains, however, may sometimes be obscured by the heavy growth of vegetation. The Maya of Mesoamerica are a good example of this, producing enormous, impressive, durable, and, therefore, highly obtrusive monuments, but in a tropical rainforest environment that has hidden much of their remains in thick vegetation, rendering the archaeological visibility of these features and sites sometimes quite low.

**occupation layer**: The actual layer that was the surface when an archaeological site was occupied. At sites that were not buried, the modern surface also was the occupation layer. At sites covered by alluvium, lake (lacustrine), shoreline (marine), slope (colluvium), or wind-blown (aeolian) deposits the occupation layer is buried and recognizable stratigraphically as the surface upon which the vast majority of artifacts and ecofacts are found and the level where features dug into the soil (trash pits and hearths, for example) begin.

**Oldowan**: The name given the earliest stone tool industry. First found in Olduvai Gorge in eastern Africa, Oldowan tools were manufactured of stone, often quartz or quartzite, pebbles. Using direct percussion, the tool maker struck the stone core, removing a large flake. The flake scar left on the core then became a striking platform for another flake, removed from a facet opposite from the first. The core was then turned around again, using the scar left by the second flake as another striking platform, and another flake was removed. This process was repeated several times, producing a large chopping tool and several sharp, thin cutting flakes. These tools have been dated to as much as 2.5 million years ago and most likely were made by a human ancestor called Homo habilis.

**optically stimulated luminescence (OSL)**: A variety of luminescence dating; see also thermoluminescence. Buried objects are subject to naturally occurring radiation in the soil. The energy released by radioactive decay may accumulate in rock and clay. If rock or clay is heated to a high temperature by people (rock in a fireplace or clay when fired to make a pot), the energy previously accumulated is released. In other words, the human activity sets the energy accumulation clock to zero. When then buried, energy released by background radiation begins to accumulate again in the rock and fired clay at a regular rate. In optically stimulated luminescence, laser light is used to release the energy so accumulated. The amount of time since the "clock" was set to zero by people can be determined, thus dating the human activity and, therefore, the archaeological site.

**OSL**: See optically stimulated luminescence.

**osteology**: The study of bones. Osteology can focus on the skeletal remains of animals (for example, to determine ancient human use of animals) or of human beings (for example, to analyze the population statistics, dietary features, and disease histories of an ancient people).

**P**

**paleoenvironmental**: Relating to the ancient environment of an area. Archaeologists want to understand the nature of the paleoenvironment to which a human group adapted.

**paleofeces**: Ancient, preserved feces. Because the digestive systems of animals, including human beings, are not 100% efficient, some ingested food is excreted in feces. As a result, the paleofeces contain food remains and, therefore, provide data for dietary reconstruction. The term coprolite is more commonly used, but technically, coprolites are fossilized and most human deposits are not.

**Paleomagnetism**: A dating method based on movement of the Earth's magnetic poles. Magnetic minerals present in plastic material - for example, in a hot lava flow - may preserve the alignment of the ever-shifting planetary magnetic field at the time the material solidified.

**paleontologist**: Scientist who studies ancient animals, ordinarily through the recovery and analysis of their ancient bones.

**paleopathology**: The study of ancient trauma, infectious disease, and nutritional deficiencies. Such pathologies often leave permanent and recognizable marks on human skeletons. Decades, centuries, and even millennia after death, these pathologies often can be accurately diagnosed, providing insights into the conditions that afflicted individuals as well as entire communities.

**palynologists**: Scientists who study pollen. Palynologists become expert in recovering pollen and identifying the species of plants that produced it. Palynologists can reconstruct ancient plant communities and, by inference, ancient climates, by comparing the pollen profiles derived from ancient pollen assemblages to the pollen rain falling in modern locations with their known climates.

**patrilocal**: A postmarital residence pattern in which, upon marriage, a woman leaves the community (compound, neighborhood, or village into which she was born and within which she was raised) and moves into the compound, neighborhood, or village in which her husband and his family reside.

**patrilocality**: Refers to a pattern of postmarital residence in which a newly married couple lives in the village, compound, or even the house of the groom's parents. See patrilocal.

**pedestrian survey**: The phase of an archaeological survey in which the ground surface is scanned for the presence of archaeological remains. In those parts of the world where soil forms fairly rapidly and covers most small-scale remains, only large-scale, built features - things like stone walls, house foundations, canals, stone-marked graves, monuments - will be visible on the surface and locatable in a pedestrian survey. In those places where soil formation is very slow, artifact clusters, hearth remains, and other small-scale remains may be visible on the surface and can be found in a pedestrian survey. In addition, even in those places where archaeological materials get covered up as a matter of course, other natural processes (for example, erosion along a river or something a bit more catastrophic like an earthquake) may serve to expose buried material that can be found in a pedestrian survey.

**percussion flaking**: A method of stone tool making in which a nucleus of stone is struck with a hammerstone or antler percussor in order to remove stone flakes. Percussion flaking may be used in a primary step in stone tool production in which large flakes that will be worked further into tools are removed from cores and in the intermediate and final stages where a tool is thinned, sharpened, and shaped into its final form.

**percussor**: The tool used in percussion flaking to remove flakes from a core. Ordinarily, the percussor may be of stone (a hammerstone) or of antler. In either case, the percussor does not need to be harder than the rock that makes up the core, it merely must be harder to break. The geometry of the percussor contributes to its durability.

**petroglyphs**: Literally "rock writing." By incising or pounding, people produce images and designs on rock surfaces, often by exposing the lighter rock beneath a dark rock surface.

**physical anthropologists**: Practitioners of a branch of anthropology (the study of human beings) that focuses on the biological aspects of our species. Among the topics investigated by physical anthropologists are the biological evolution of human beings, the biological variation exhibited by modern human beings, forensic anthropology, primatology (humans are primates and primatologists study the nonhuman primates, including monkeys and apes). Synonymous with biological anthropology.

**phytolith**: Microscopic, inorganic mineral particles produced by plants. Phytoliths are extremely durable and species-specific. Enormous databases are being compiled that allow the researcher to examine phytoliths recovered in the soils or adhering to artifacts recovered at archaeological sites and to identify the species from which the phytoliths originated (http://www.missouri.edu/phyto/index.shtml).

**Pictographs**: Designs painted onto a rock surface.

**plane table**: A flat table mounted onto a tripod. The plane table can be leveled and serves as the base for an alidade.

**Pleistocene**: The geological epoch, beginning 1.8 million years ago, punctuated by periods of worldwide cooling, an increase in the area of land surfaces covered by snow and ice year-round, the expansion of often massively thick glaciers, and sea-level decline. The Pleistocene is defined as having ended 10,000 years ago, replaced by the Holocene, but there is no evidence necessarily that the pattern of periodically much colder climates that characterized the Pleistocene has actually ended.

**polish**: A category of wear traces on stone tools. Polish appears on the face or faces of a stone tool in applications where the surface(s) continually rubs against the smooth face of the material being worked on. For example, a long, thin stone drill may exhibit smoothing and polishing on high points as a result of rubbing against the material being drilled into. Even without the aid of a microscope, polish can be seen as a smoothed surface on a tool, sometimes dull, sometimes brightly reflecting light.

**pollen**: The male gamete in plant sexual reproduction. The pollen grains produced by different species are morphologically distinct from one another and, under the right conditions, can preserve for millennia. Palynologists can recover pollen grains from the occupation layers at archaeological sites or in areas adjacent to sites where preservation is higher. They can then identify the species that produced the pollen, calculate the percentages of the pollen of the species represented, and then deduce the makeup of the plant communities living in the area of an ancient human habitation.

**pollen analysis**: Figuring out the makeup of a plant community at a particular time and place by the recovery and examination of the pollen deposited there and then. By using modern pollen profiles as models, an ancient pollen profile can be interpreted in reference to modern plant communities. Finally, the climatic conditions that characterize the modern plant community can be suggested as being similar to those that applied when the ancient similar pollen profile was produced.

**pollen profile**: The percentages, usually depicted in a graph, of the pollen of each of the species of plants contributing to the overall pollen assemblage at a given place, at a given time period, compared over time. The increase or decrease in the percentage of individual plant species over time may be a product of a change in climate, either to the benefit or detriment of those species. A change in percentage through time may also result from cultural activity, including forest clearing, the introduction of new species, and farming. Pollen percentages also change through time as the result of the natural process of the evolution of plant communities called succession.

**pollen rain**: The pollen actually falling on a region. Today, the pollen rain may be collected with sticky tape. This sample of the pollen rain is then examined through a microscope in order to determine the percentages of the various plant species contributing to the pollen rain. An ancient pollen rain may be determined by palynologists who recover preserved pollen in soil samples.

**pongid**: The taxonomic family that includes all ape species, both living and extinct. The first pongids date to sometime after fifteen million years ago in the Miocene epoch and they flourished thereafter. Today there are several pongid species including, in Africa, gorillas, chimpanzees, and bonobos (formerly called pygmy chimenzees), and, in Asia, organgutans, gibbons, and siamangs.

**population**: A term used in statistics. The population is the entire group in any data set. The population of sites in a project area means all of the sites, known as well as those not yet (and perhaps never to be) discovered. We rarely have access to an entire population (of sites, particular kinds of artifacts, the skeletons of all of the members of an extinct hominid species). We are able to accurately describe, reveal patterns in, and investigate correlations within a population by analyzing a representative sample of that population.

**population profile**: In demography, a graphic representation of the breakdown of a population of people by sex and age. This graph, also called a population pyramid, depicts the proportion of a population in each decade of life, broken down by sex.

**post-cranial skeleton**: The skeleton below and excluding the cranium.

**potassium/argon (K/Ar)**: Dating method based on the decay of an unstable isotope of the element potassium into a stable and inert argon gas. The half-life of radioactive potassium, common in the Earth's crust, is 1.25 billion years, during which time its end product, argon gas, builds up at a regular rate in the rock. By measuring how much argon has accumulated in a lava flow, the amount of time since the lava solidified can be determined.

**potsherds**: Fragments of pottery from a broken pot. Entire, intact pots are rare in archaeology. Most ceramic artifacts recovered are, in fact, potsherds, sometimes simply called sherds.

**pre-ceramic**: Term usually applied regionally to refer to the period of time before the development or adoption of ceramic technology, especially the manufacture and use of pottery. People certainly can store items or cook food without ceramic vessels. In some parts of the world, the presence of soapstone or steatite provided a soft stone that could be carved into fireproof, watertight containers suitable for storing liquids or for use in cooking. Elsewhere, bark and woven containers were made that could hold liquids and that could be heated, not directly over a fire, but by placing heated stones into their contents. Ceramics, however, allowed for the mass production of relatively durable containers and people the world over recognized their utility. The earliest examples of pottery vessels date to a little more than ten thousand years ago in Japan, and between five and six thousand years ago in South America.

**preform**: A product of the process of making a stone tool. A perform represents a flake taken off of a core and then worked in a preliminary, general way into a shape that can be further modified into a number of possible, different, final tool forms, depending on the particular need of the moment. The production of preforms in anticipation of the need to make tools at some point in the future is more efficient and convenient than to have to begin from scratch each time a new stone tool is needed.

**prehistoric**: Adjective modifying any site, culture, artifact, ecofact, feature, and so on that dates to the period before the development of writing. Because writing was not developed or adopted at the same time in all world areas, there can be no universally applied prehistoric time period. Prehistoric refers to a local sequence. In some areas, for example, Southwest Asia, "prehistoric" refers to the time before six thousand years ago when writing was first invented. In other parts of the world, for example, Mesoamerica, "prehistoric" refers to the time before about two thousand years ago when writing was developed there. In yet other parts of the world, for example, America north of Mexico, writing didn't develop independently, but arrived with explorers and colonizers in the fifteenth century A.D. In North America, therefore, "prehistoric" refers to the period before the arrival of the Europeans.

**prehistory**: Literally, the period before the development of true writing or a written system of recordkeeping. The first written language dates to no more than six thousand years ago and the earliest hints at the use of symbols as a form of recordkeeping are about ten thousand years old, so everywhere in the world, archaeological sites that are more than six thousand years old are, by definition, prehistoric. It should be added that not all regions became historic at the same time, so the boundary between prehistory and history is not everywhere the same. The native people of Australia and North America, for example, did not independently develop writing systems, so their story is part of prehistory up until their contact with Europeans just a few hundred years ago. As upright walking, tool making human ancestors date to 2.5 million years ago, human prehistory, therefore constitutes well over 99% of the time human beings and or hominid ancestors have walked the planet.

**pressure flaking**: A method of stone tool making in which relatively small flakes are removed from larger flakes by the application of pressure. Pressure flaking tools are ordinarily made of antler or metal; bone and wood generally are too soft. Because the pressure flaking tool can be positioned precisely at the point where the knapper hopes to remove a flake, pressure flaking is used for the finer work in stone tool making, including precise edge sharpening, flake thinning, final shaping, and notching (to provide a firmer attachment of the stone point to a wooden or reed shaft).

**primary refuse**: Luckily for archaeologists, people tend not to be particularly fastidious about their discard habits. Human beings, including those in the distant past, have always consumed enormous amounts of resources to produce the material objects they needed or wanted and to provide their subsistence. Commonly, a portion of the raw materials from which material objects were made or from which food was extracted were perceived as trash and left just where the objects were made or the food was consumed. At the same time, most tools have a limited useful life and eventually either break or simply wear out and are then discarded. Tools (artifacts) or inedible material produced in food preparation (ecofacts) discarded at their place of manufacture, use, or consumption are called primary refuse.

**principal investigator**: The director of any scientific endeavor, including archaeological research. The researcher who plans the project, obtains funding, directs the conduct of the study, and is responsible for the report or publication describing the results of the research.

**prognathous**: A jaw that protrudes out from the rest of the face. Some human populations are relatively flat faced; viewed in profile their faces are flat from their foreheads down to their chins. Other human groups are relatively prognathous, with their jaws protruding out from the plane of the rest of their faces.

**projectile point**: A sharp piece of stone (usually) that is firmly attached to a wooden or reed shaft that is used as a weapon by throwing or shooting. Projectile is the generic term that includes spear points, darts, and arrowheads. Because the shape and size of a point does not necessarily clarify whether it was used to tip a spear, dart, or arrow shaft, archaeologists generally prefer the term projectile point unless they are certain of precisely which kind of projectile was attached to the tip.

**proton magnetometry**: A noninvasive technique used in archaeology in the search for buried remains. The proton magnetometer measures the strength of the Earth's magnetic field at the surface. The magnetometer may detect variations in that field above the locations of buried remains like walls and foundations.

**provenience**: The precisely measured, three-dimensional, in situ location of an artifact, ecofact, or feature at an archaeological site. The provenience may be recorded as a single point for a very small object or as a series of points for larger artifacts and ecofacts and, especially, for the outline of features. Proveniences may be measured initially by reference to the southwest stake of an excavation unit (centimeters north and east of that stake) and depth below a fixed point (the top of the southwest stake or the ground surface at that stake's location). Proveniences are then converted to their location relative to the site datum.

**proximal epiphysis**: Each long bone in your body consists of a shaft (the diaphysis) and two end caps (the epiphyses). In the geography of the body, the proximal epiphysis of each of those long bones is the end cap closer to the trunk (think, "in proximity to" means "near" or "close to"). The end cap farther or more "distant" from the trunk is the distal epiphysis.

**pubic symphysis**: The point of connection or "articulation" between the two halves of the pelvis. Connected by a band of cartilage, the two adjoining faces of the pubic symphysis go through a fairly regular process of change and deterioration during an individual's life. The appearance of the pubic symphysis, therefore, is pretty much time dependent and time consistent, allowing for a fairly accurate estimate of the age at death of an individual.

**R**

**races**: A term used to denote different "varieties" of humanity. There is no objective definition for what constitutes a particular race, no set of characteristics that represents precisely one group of people to the exclusion of all other groups. As a result, race is not used as a scientific term and biological anthropologists usually refer to a multiplicity of varieties of human beings, often distributed geographically, but not to a small number (three? four?) of distinct human races.

**radioactive**: A substance that is unstable on the atomic level and that emits energy (radiation) as it decays into a more stable substance. That decay occurs at a fixed, regular, and measurable rate. That rate, once known, provides a natural clock or calendar that can be used to date an object through the measurement of how much of the radioactive substance remains or how much of the stable end product of the decay has accumulated.

**radiocarbon dating**: Radiometric dating procedure that measures the amount of carbon-14 (14C) remaining in an item found at an archaeological site to determine its age. Carbon-14 is an unstable isotope of carbon. Its decay rate, expressed as a half-life, is known; therefore, when the amount of carbon-14 remaining in an item is measured, the age of the item can be determined.

**radiometric**: Dating techniques that are based on the regular rate of decay of an unstable (radioactive) variety (isotope) of an element. Because decay rates are known (through measurement), an estimate of how old the object is can be derived from the amount of the radioactive variety of an element remaining, or the amount of the stable end product the radioactive variety decays to. When the life history of the material being dated can be related to past people (for example, when humans cut down a tree containing radioactive carbon and used it in building a structure or when lava containing radioactive argon flowed directly over an ancient village), the date derived from the object being dated is applied to the cultural material.

**random**: Refers to the nature of a sample. A sample is random if there is no bias and every member of a population has the same probability of being selected for inclusion. In the example of a site survey, every location in the project area would have an equal likelihood of being selected for testing.

**rank society**: A society in which there are a number of socio-political levels or "ranks." These ranks do not confer economic power but do provide different levels of status or prestige.

**relative dating**: Refers to dating methods that place individual artifacts, ecofacts, features, or sites in a chronological sequence, but without a determination of actual age. Applying a relative dating technique allows the researcher to conclude that one site is older than another, or one artifact is younger than another, but does not provide an age in years for sites, artifacts, or any other archaeological materials.

**remote sensing**: Noninvasive process used in probing for archaeological sites without disturbing the soil. Remote sensing includes those procedures that employ instrumentation that is truly remote, like satellite and plane-based cameras. Remote sensing also includes approaches that use devices that can image or probe the characteristics of the subsurface, searching for anomalies that indicate the presence of artifacts or, more usually, patterns of soil disturbance that likely resulted from human activity (for example, burials, trenches, walls).

**representative**: Refers to the nature of a sample. A sample is representative if the various subcategories in the sample are included in the same or very nearly the same as their proportions in the population. A sample of people in an electoral poll is representative if it reflects the same proportion of men and women, rich, middle class, and poor, Democrats and Republicans, and so on as the population from which the sample was drawn. A sample of tested locations in an archaeological survey is representative if the number of pits in each habitat contained in a project area is proportional to the area each of the habitats constitutes of the total project area (if 10% of the project area consists of floodplain, then 10% of the test pits should be located in the floodplain). In a perfect world, an entirely random sample should be also be representative. But the world is rarely perfect and samples may be skewed accidentally. A sample can be made representative by making certain it reflects the characteristics of the population; in the above example, if, by chance only 7% of the test pits ended up in the floodplain, more test pits can be placed there to increase the percentage to the representative 10%.

**representative sample**: Ordinarily, in attempting to understand a given population (the population can be all voters in the state of Nebraska, all redwood trees in California, all archaeological sites in the lower Ohio Valley, and so on) only a fraction of a population - a sample - is examined. In most cases, the entire population of any data set is simply too large and, therefore, too expensive and time consuming to examine so only a part of it, a sample, is actually looked at. To ensure that the conclusions we reach about the subset of the population we can investigate directly also apply to the population as a whole, we make every effort to examine a sample that "looks like" the population. If a sample exhibits the same or very nearly the same characteristics of the population - the same proportions of males and females; Democrats and Republicans; young trees, middle-aged trees, and old trees; village sites, hunting camps, fishing loci, and quarries; and so on - the sample is said to be representative and conclusions reached about the sample likely apply equally well to the larger population as a whole.

**research strategy**: Archaeological research is not random. It is not conducted merely to amuse archaeologists or provide opportunities for students to broaden their experience. At least it shouldn't be. Archaeological research is informed by research goals. Surveys are conducted and sites excavated in an attempt to answer questions about life in the past. The research goal may be designed to answer a very simple, practical question: are there significant archaeological resources that may be destroyed by a planned development project? On the other hand, the research goal may focus on a better understanding of fundamental and very complex issues of human cultural evolution, for example, the nature and causes of the origins of the first complex state societies, commonly called "civilizations." The research strategy of a project consists of the methods by which archaeologists go about the process of reaching these research goals.

**S**

**sample**: A term used in statistics to signify that subset or portion of an entire population that the researcher has access to and is analyzing in an attempt to draw accurate and meaningful conclusions about the population as a whole. In most sciences, including archaeology, we cannot recover or it is far too inefficient to study an entire population, but instead we rely on a sample taken from that population. We increase the likelihood that our conclusions about the population based on a sample will be valid by making sure that we have extracted a representative sample of the population.

**sampling strategy**: The approach, in an archaeological survey or excavation, of selecting a fraction of an area or a site to search for the constituents of archaeological sites. The goals of sampling strategies differ on the basis of the research goal of the project as a whole. If an area is to be completely altered in a development project, the strategy may be to intensively sample the entire project area. In other cases, the strategy may be to examine a representative sample, a portion of the project area that closely represents, on a smaller scale, the characteristics of the project area as a whole.

**scalar scars**: A category of wear traces on stone tools. Scalar scars are tiny flake scars, shaped like fish scales, representing the damage caused along a stone tool edge when the pressure applied in use results in the removal of small flakes of stone. Scalar scars usually appear on the face of a tool alongside the edge without deterioration to the edge itself. The same qualities of stone that allow a tool maker intentionally to remove flakes through pressure flaking may result in the accidental removal of flakes through the pressure applied in tool use. For example, the pressure applied when using a steep-edged scraping tool to smooth a wooden shaft in the production of a spear may remove small flakes from the tool's working edge, resulting in scalar scars along that edge.

**sciatic notch**: A deep indentation in the back of each half of the pelvis through which the sciatic nerve travels. The size of the notch affects the overall width of the pelvis. Females tend to have a substantially more widely angled notch, which allows for a wider birth canal. Of all the metrical characteristics of the human skeleton, there probably is the least overlap between the measurements taken for males and females. Because of this, the size of the sciatic notch can be used to accurately (but not perfectly) distinguish the skeleton of a female from that of a male.

**secondary refuse**: People generally are slobs and have a tendency to leave their trash where it first falls to earth (primary refuse). In many instances, however, for reasons of safety (when the discarded material is dangerous: very sharp or even poisonous), or simply for sanitary reasons (the remains are attractive to insects, dangerous animals, a health risk, or they just plain smell bad), people will pick up after themselves and place the trash in a separate trash deposit located a safe and reasonable distance away from where people are actually living or the trash may be buried in the ground. This trash, removed from its initial place of deposit, is called secondary refuse.

**sedentary**: A way of life in which a human group tends to inhabit a single location during the course of a year. Though active, healthy adults may be quite mobile, leaving home and staying for short periods at locations where resources are collected, they invariably return to their fixed, home base inhabited by less mobile members of society, including the very old, the very young, and pregnant women close to giving birth. A sedentary way of life is made possible by an extremely rich local environment that provides sufficient wild foods for the group year-round and/or by an artificial increase in food resources through food production; in other words, agriculture.

**semi-lunar knives**: Stone or metal knives in the shape of a half moon. The straight part of the half-moon is held or has a handle attached. The curved portion of the tool is the cutting edge. Called an ulu among the Inuit people of the Arctic, the semi-lunar knife was used in butchery, especially fish gutting.

**seriation**: A relative dating technique based on a common pattern of change in material culture. In many cases, when a new way of accomplishing a task is invented or introduced in a society, it is adopted by initially a small fraction of the population and through time slowly increases in popularity until it reaches a peak in its acceptance. At some point, yet another way of accomplishing the same task is invented or introduced and this new way slowly grows in popularity, replacing the previously accepted method, which slowly decreases in use. Individual sites can be dated by measuring the proportions of use of different styles or methods, and from this figuring out where they fit in a general continuum of technological or stylistic change through time.

**seriation graph**: A graphic representation of the level of popularity of a style or method of accomplishing a given task in a society as it changes through time, compared to the level of use of competing styles or methods. A seriation graph is sometimes called a "battleship curve" because of its appearance. Horizontal bars represent the popularity of styles or methods and are stacked in a commonsensical sequence reflecting a pattern of slow acceptance, increasing popularity, maximum use, and subsequent, almost inevitable, decrease as they are replaced by a new approach.

**settlement pattern**: The nature of land use and the resulting distribution across a landscape of habitations, work areas, burial grounds, encampments, sacred places, resource extraction areas, and so on, by a human group. The settlement pattern of a group of people produces a unique archaeological landscape signature reflecting how those people utilized their territory.

**sexual dimorphism**: The nature and degree of difference between the sexes in a species. In some species, there is an extreme level of sexual dimorphism with one sex, usually but not always males, being much larger than females. In other species, there is a very low degree of dimorphism and males and females may be virtually indistinguishable, at least to the naked human eye. Undressed, living human males and females are fairly easy to distinguish and the same can be said for male and female skeletons. Nevertheless, our overall degree of dimorphism falls somewhere between the extremes.

**sherds**: Broken pieces of ceramic objects, usually broken pieces of pottery.

**shovel-shaped incisors**: A form of the incisors, the four flat teeth in the front/center of both the upper and lower jaws. The shovel shape refers to the interior surface of the incisors where there are ridges along the margins giving the teeth the appearance, appropriately enough, of a shovel or spade. Shovel-shaped incisors are very common in Asian populations and in the teeth of Native Americans and are much less common in other populations. The presence of shovel-shaped incisors among human skeletal remains, modern or ancient, is a strong, though imperfect, indicator of an Asian source for the population. It is no coincidence that Native Americans exhibit very high levels of shoveling in their incisors if Asia is the source for their population.

**shovel test pits**: Test pits, sometimes called STPs. Because test pits are usually, but not always, excavated with shovels, archaeologists tend to refer to them as test pits, often preceded by a common expletive.

**silt**: A deposit consisting of very fine mineral particles; technically, between 1/16 and 1/256 mm in size - bigger than sand and smaller than clay particles. Silt is produced by the decomposition of preexisting rock and often makes up a substantial component of alluvium.

**site**: The archaeological term site is shorthand for archaeological site. An archaeological site is a place that people used in the past - they may have lived there or simply used the place to conduct a specific task or tasks (hunted, buried their dead, engaged in war, conducted a religious ceremony) - and where physical evidence of their use of a place remains in the form of artifacts and/or ecofacts.

**site constituents**: The things that make up the archaeological record and that, therefore, alert the archaeologist conducting a survey that he or she has found a site. Artifacts, ecofacts, and features are among archaeological site constituents.

**site formation processes**: The processes by which the material objects used, manipulated, altered, or manufactured by people become part of the archaeological record. Simply, people lose objects, throw them away, leave them behind, or simply abandon them when they are used up or of no use. These objects become deposited on the ground and in the ground (through intentional burial or placement in pits). By these processes, archaeological sites are formed.

**site survey**: The search for archaeological sites. Site survey often includes historical analysis of a study area, an examination of aerial photographs, a methodical surface inspection, and test excavations, all aimed at discovering the location where people lived in the past and left behind evidence of their presence.

**skull**: The bones of the head, face, and upper and lower jaw. In other words, the skull consists of the cranium and the mandible. The skull exhibits differences between the sexes, it changes in a regular and patterned way from birth through old age, and shows geographic variation in its morphology.

**slip**: A watery, thin mixture of clay brushed or poured over a clay vessel before firing, providing a smooth, consistent clay coating on its surface.

**soapstone**: A metamorphic rock, consisting primarily of the mineral talc, that is highly resistant to and retentive of heat. It is quite soft and can be fairly readily carved with stone or metal tools and, where available, was often used by ancient people to make cooking vessels. In more recent times, soapstone's heat retention capacity rendered it suitable for colonial bed warmers. Called soapstone because of its slippery, soapy feel, its formal name is steatite.

**spatial associations**: The spatial linkages of material at an archaeological site. Items that are found in close proximity to each other and likely were deposited together as a result of their linkage in a behavioral context (as a hammer is linked to a nail) are said to be in spatial association with one another. A key rationale for initially leaving items in place (in situ) upon their discovery during excavation of an archaeological site, as well as providing a reason for the detailed and accurate recording of their exact place of discovery (their provenience), is to insure that spatial associations are preserved, if only on paper, and that the behavioral meaning of those associations can be deduced.

**spatial context**: The location where an archaeological object is found and its spatial associations. Consider three different possible spatial contexts for the same artifact, a chipped stone spearpoint: (1) embedded in the butchered bone of a deer found in a fireplace; (2) one among several spearpoints found together as apparent offerings in a human burial; and (3) in a cluster of stone tools on the floor of the remains of a house. In each case, the spear point's spatial context implies its use and significance in the culture that produced it that cannot be determined simply by its morphology.

**stadia rod**: Essentially a large-format, rigid ruler, usually with metric gradations. The rod is usually collapsible, extending to more than 3 meters in length. The rod is placed on a surface whose precise location and depth are to be measured. The actual measuring may be accomplished with an alidade, old-style transit, or laser transit.

**starch grains**: Small pieces of starch produced by plants. The shapes of individual starch grain shapes are species-specific. As a result, when starch grains are preserved on tools used to process plants, they can be recovered and the plant species that produced the grains and on which the tool was used can be identified.

**State Historic Preservation Officer (SHPO)**: A federally mandated state administrator whose responsibilities include coordinating federal requirements for the protection, preservation, and study of cultural resources contained within that administrator's state.

**steatite**: A metamorphic rock, consisting primarily of the mineral talc, that is highly resistant to and retentive of heat. It is quite soft and can be fairly readily carved with stone or metal tools and, where available, was often used by ancient people to make cooking vessels. In more recent times, steatite's heat retention capacity rendered it suitable for colonial bed warmers. Steatite is often known by its common name "soapstone" for its slippery, soapy feel.

**step scars**: A category of wear traces on stone tools. Step scars are tiny flake scars that terminate abruptly, at a right angle, into the face of the rock, giving the appearance of tiny stair steps. Step scars are caused along a stone tool edge when the pressure applied during use results in the removal of small flakes of stone. Step scars usually appear on the face of a tool alongside the edge without deterioration to the edge itself. The same qualities of stone that allow a tool maker intentionally to remove flakes through pressure flaking may result in the accidental removal of flakes through the pressure applied in tool use. For example, the pressure applied to the edge of a stone tool while scraping the meat off of a bone, may remove small flakes from the tool's working edge, resulting in step scars along that edge.

**STPs**: See shovel test pits.

**strata**: Naturally formed and often quite distinct superimposed layers of soil, composed of differing proportions of rock, gravel, sand, silt, clay, and decayed and decaying organic material, as well as cultural material left behind by past people. Different strata may exhibit different colors, textures, and chemical makeup and the boundaries between them may be sharply defined. These differences in strata can be explained by the characteristics of the "parent material" from which the soil layer formed, the agency that laid down the layer (flowing water, wind, vulcanism, slope movement, and so on), the particular environmental conditions present when the layer formed, as well as chemical and physical processes to which the soil has been subjected. The relative position of cultural materials in a sequence of strata is often used to determine the relative ages of those materials.

**stratified (societies)**: These are societies characterized by social/economic/political classes or castes into which people are born and, ordinarily, within which they and their descendants remain. These layered societies, with noble classes, merchant classes, workers, and peasants, characterize complex societies.

**stratigraphic**: Refers to the sequence of soil layers superimposed one on top of the other. Stratigraphic levels may result from natural processes of deposition (flooding, blowing wind, soil movement down and across a slope), chemical processes in the soil, and also human activity through movement of soil as well as the accumulation of trash.

**stratigraphy**: Analysis of the sequenced layering of rock and soil. The relative ages of archaeological materials can be determined by the position of the soil levels or strata in which the materials are found by reference to the law of superposition.

**stratum**: The singular of strata; a single or individual soil layer.

**striations**: Scratch marks found on tool surfaces and edges, usually parallel to each other and to the direction of use of a stone tool. Striations are a category of wear traces, a form of damage to or deterioration of a stone tool with use. For example, a durable, sharp-edged stone knife used to cut through bone will usually exhibit striations on both faces, parallel to its working edge.

**striking platform**: The surface of a core or flake - usually flat or platform-like - that the percussor (hammerstone or antler hammer) strikes in an attempt to remove a flake from a contiguous core or flake surface that intersects with the striking platform at an angle of less than 90 degrees.

**supraorbital torus**: A lump or protrusion of bone above the eye orbits, about where your eyebrows are located. Ancient and extinct varieties of hominids had a substantial and, in some cases, continuous ridge of bone over both eyes. In modern humans, the torus is less pronounced and usually not continuous. Within particular groups, human males tend to have larger ridges than females, and this feature is examined when attempting to determine the sex of an individual from his or her cranium.

**survey**: The search for archaeological sites. Site survey often includes historical analysis of a study area, an examination of aerial photographs, a methodical surface inspection, and test excavations, all aimed at discovering the location where people lived in the past and left behind evidence of their presence.

**T**

**tells**: Artificial hills that develop, primarily in the Middle East, when sand accumulates around and over abandoned villages. In some instances, subsequent inhabitants of a region elect to construct their villages on the tops of tells. When this happens, the process can repeat itself and the tell grows in size when these subsequent habitations are abandoned and sand accumulates around and over them. In this way, some tells grow to a substantial height, enclosing a succession of villages, one on top of the other, providing a stratigraphic sequence of habitations.

**temper**: Material added to clay to improve its drying characteristics and to improve its strength. Temper commonly consists of sand, ground-up bits of shell, quartz grit, and small pieces of previously fired clay (called grog).

**test pit**: Preliminary excavations carried out in the search for subsurface archaeological evidence. Test pits are excavated in the initial surveying for sites yet to be discovered and also in the preliminary examination of sites in an attempt to ascertain site size and function.

**test pit forms**: Standardized forms for consistently recording information concerning the test pits excavated in an archaeological survey. Test pit forms will include, at least, the name and location of the project, a unique identifier for the pit (a number in a sequence along a transect, for example), a drawing of soil levels encountered with their depths recorded, a listing of any artifacts or ecofacts encountered in the soil levels of the pit and their precise depths recorded, a location of the test unit, the name of the excavator(s), and the date. Using a standardized form insures that every crew member records the same information about each pit and makes life infinitely easier for the person analyzing the results of a survey transect.

**test pitting**: The process of excavating test pits in an attempt to examine a sample of the soil below the ground surface of an area in the search for the archaeological components of sites.

**thermoluminescence (TL)**: A variety of luminescence dating; see also optically stimulated luminescence. Buried objects are subject to naturally occurring radiation in the soil. The energy released by radioactive decay may accumulate in rock and clay. If rock or clay is heated to a high temperature by people (rock in a fireplace or clay when fired to make a pot), the energy previously accumulated is released. In other words, the human activity sets the energy accumulation clock to zero. When then buried, energy released by background radiation begins to accumulate again in the rock and fired clay at a regular rate. In thermoluminescence, heat is used to release the energy so accumulated. The amount of time since the "clock" was set to zero by people can be determined, thus dating the human activity and, therefore, the archaeological site.

**tibia**: The larger of the two bones of the lower leg. The smaller lower leg bone is the fibula. Feel your shin; that large, flat bone just below the surface of your skin is your tibia.

**TL**: See thermoluminescence.

**tool kit**: A tool kit is the entire assemblage of tools a past people made and used in an activity or set of activities. Look at the set of tools in your basement used in woodworking - hammers, saws, straightedges and fasteners such as nails and screws - that is a woodworking tool kit. Look at the pots and pans, spatulas, knives, bowls, and even the oven and stove in your kitchen - that is your food preparation tool kit. In the same way, the stone spear points and spear shafts, stone knives, and scraping tools represent the hunting tool kit of a past people.

**topographic maps**: Maps depicting the terrain of an area, including elevations. Archaeologists commonly use topographic maps published by the United States Geological Survey with a scale of 1:24,000. One inch on a map of this scale represents about 2,000 feet. Topographic maps, obviously, are of practical importance in locating archaeological sites. Also, in our attempt to understand how a past people used the landscape, we need to become familiar with that landscape; topographic maps are a useful tool in this effort.

**total station**: Surveying device that uses a laser transit to determine the precise distance and elevation of a point in space. A stadia rod is positioned at a location, the transit emits the beam of light which hits the rod and bounces back to a receiver in the total station. The distance and elevation of the locations being measured are then calculated and stored in the total station where the information can be downloaded to a computer.

**transects**: Lines through a project area along which test pits are excavated or surfaces are examined. Based on the sampling strategy developed for a particular project, transects may be located randomly or situated so as to cut across all of the various habitats found in a research area. The surface is scanned for surface remains and/or test pits are excavated along these transects at regular intervals and the subsurface examined for evidence of archaeological remains.

**unconsolidated material**: Geological deposit in which individual elements are separate and not cemented together. Sand and gravel, for instance, are representative of unconsolidated deposits.

**U**

**United States Geological Survey (USGS)**: A branch of the United States Department of the Interior. Established in 1879, the USGS has as its job the monitoring of natural resources in the United States. As part of its mandate, the USGS produces topographic maps of the United States of numerous sizes and scales. The USGS maps most commonly used by archaeologists are the topographic quad sheets at 1:24,000 scale. Made from aerial photographs, these maps show major and minor drainages (rivers, streams, brooks), lakes, ponds, wetlands, cultural features (roads, buildings), and provide detailed topographic information. USGS quad sheets serve as good base maps for archaeological survey projects.

**Universal Transverse Mercator (UTM)**: A metric mapping and measurement system. The Earth is divided into sixty numbered, north-south zones, each zone representing 6 degrees of the 360-degree, circular Earth when viewed from above the north pole. Measurements of the precise location of any point within a zone are expressed in metric. The boundaries of an archaeological site are often expressed using this system.

**USGS**: See United States Geological Survey.

**UTM**: See Universal Transverse Mercator.

**V**

**varve**: Sediments deposited annually in distinct and distinquishable layers along lake and ocean shorelines. Like tree rings in dendrochronology, by counting back varves from the most recently deposited layer (the current year), the precise calendar year date for each varve in a sequence can be determined. A carbon date derived from organic material extracted from a varve can be compared to the year date determined for that varve. When a sequence of such comparisons can be made, any pattern in the possible inaccuracy of the carbon dating technique through time can be assessed; in other words, it can be determined if carbon dates are consistently too old or too young for given stretches of time. Radiocarbon dates can then be calibrated or corrected by reference to the varve chronology.

**visibility**: Archaeological visibility is a relative measure of the ease with which archaeological remains can be spotted in a given area. Areas with high archaeological visibility may be characterized by slow natural processes that tend to cover material left on the surface, so even ancient materials may be exposed on the modern landscape. Vegetation growth also contributes to the degree of archaeological visibility; areas with rapid growth of thick vegetation present low levels of visibility while areas that are sparsely vegetated have higher levels of archaeological visibility.

**vitreous**: Glass-like. Vitreous rock tends to break predictably and controllably, producing sharp edges suitable for making cutting, piercing, and scraping tools. In many world areas, past people made tools from vitreous rock where it was locally available, and traded for it in locations where it was not.

**W**

**wear patterns**: The damage that accumulates on the working edge of a stone tool. When a stone edge is used to cut, slice, scrape, or pierce a material (wood, animal flesh, bone, antler, stone, and so on) the edge of the stone tool deteriorates though abrasion and breakage. This deterioration or wear is reflected in striations, polish, and microchippage. Each manner of use, combined with the raw material of the tool and the nature of the material on which the tool is being used, produces a unique pattern of wear on the tool itself. Examining the wear traces on an ancient stone tool, therefore, enables archaeologists to deduce the tool's function; how it was used and on what material.

**Wide Area Augmentation System**: A process added to the standard Global Positioning System that provides for even greater locational accuracy, down to about 2 meters.