

(Terms in *italics* are defined elsewhere in the glossary)

absolute dating The determination of age with reference to a specific time scale, such as a fixed calendrical system; also referred to as chronometric dating. (Chapter 4)

achieved status Social standing and prestige reflecting the ability of an individual to acquire an established position in society as a result of individual accomplishments (*cf. ascribed status*). (Chapter 5)

aerial reconnaissance An important survey technique in the discovery and recording of archaeological sites (see also *reconnaissance survey*). (Chapter 3)

alleles Different sequences of genetic material occupying the same locus on the DNA molecule; alleles of the same gene differ by mutation at one or more locations within the same length of DNA. (Chapter 11)

alloying Technique involving the mixing of two or more metals to create a new material, e.g. the fusion of copper and tin to make bronze. (Chapter 8)

amino-acid racemization A method used in the dating of both human and animal bone. Its special significance is that with a small sample (10g) it can be applied to material up to 100,000 years old, i.e. beyond the time range of *radiocarbon dating*. (Chapter 4)

annealing In copper and bronze metallurgy, this refers to the repeated process of heating and hammering the material to produce the desired shape. (Chapter 8)

anthropology The study of humanity – our physical characteristics as animals, and our unique non-biological characteristics we call *culture*. The subject is generally broken down into three subdisciplines: *biological (physical) anthropology*, *cultural (social) anthropology*, and *archaeology*. (Introduction)

archaeobotany See *paleoethnobotany*.

archaeological culture A constantly recurring assemblage of artifacts assumed to be representative of a particular set of behavioral activities carried out at a particular time and place (*cf. culture*). (Chapter 1)

archaeology A subdiscipline of anthropology involving the study of the human past through its material remains. (Introduction)

archaeology of cult The study of the material indications of patterned actions undertaken in response to religious beliefs. (Chapter 10)

archaeomagnetic dating Sometimes referred to as paleomagnetic dating, it is based on

the fact that changes in the earth's magnetic field over time can be recorded as remanent magnetism in materials such as baked clay structures (ovens, kilns, and hearths). (Chapter 4)

archaeozoology Sometimes referred to as zooarchaeology, this involves the identification and analysis of faunal species from archaeological sites, as an aid to the reconstruction of human diets and to an understanding of the contemporary environment at the time of deposition. (Chapters 6 & 7)

artifact Any portable object used, modified, or made by humans; e.g. stone tools, pottery, and metal weapons. (Chapter 3)

ascribed status Social standing or prestige which is the result of inheritance or hereditary factors (*cf. achieved status*). (Chapter 5)

assemblage A group of artifacts recurring together at a particular time and place, and representing the sum of human activities. (Chapter 3)

association The co-occurrence of an artifact with other archaeological remains, usually in the same *matrix*. (Chapter 2)

atomic absorption spectrometry (AAS)
A method of analyzing artifact composition similar to *optical emission spectrometry* (OES) in that it measures energy in the form of visible light waves. It is capable of measuring up to 40 different elements with an accuracy of c. 1 percent. (Chapters 8 & 9)

attribute A minimal characteristic of an artifact such that it cannot be further subdivided; attributes commonly studied include aspects of form, style, decoration, color, and raw material. (Chapter 3)

attritional age profile A mortality pattern based on bone or tooth wear which is characterized by an overrepresentation of young and old animals in relation to their numbers in live populations. It suggests either scavenging of attritional mortality victims (i.e. those dying from natural causes or from non-human predation) or the hunting by humans or other predators of the most vulnerable individuals. (Chapter 7)

augering A *subsurface detection* method using either a hand- or machine-powered drill to determine the depth and character of archaeological deposits. (Chapter 3)

Australopithecus A collective name for the earliest known hominids emerging about 5 million years ago in East Africa. (Chapter 4)

band A term used to describe small-scale societies of hunters and gatherers,

generally less than 100 people, who move seasonally to exploit wild (undomesticated) food resources. Kinship ties play an important part in social organization. (Chapter 5)

bifurcation See *self-organization*.

biological anthropology See *physical anthropology*.

boising A *subsurface detection* method performed by striking the ground with a heavy wooden mallet or a lead-filled container on a long handle. (Chapter 3)

brain endocasts These are made by pouring latex rubber into a skull, so as to produce an accurate image of the inner surface of the cranium. This method gives an estimate of cranial capacity and has been used on early hominid skulls. (Chapter 11)

catastrophe theory A branch of mathematical topology developed by René Thom which is concerned with the way in which nonlinear interactions within systems can produce sudden and dramatic effects; it is argued that there are only a limited number of ways in which such changes can take place, and these are defined as elementary catastrophes. (Chapter 12)

catastrophic age profile A mortality pattern based on bone or tooth wear analysis, and corresponding to a “natural” age distribution in which the older the age group, the fewer the individuals it has. This pattern is often found in contexts such as flash floods, epidemics, or volcanic eruptions. (Chapter 7)

cation-ratio dating This method aspires to the direct dating of rock carvings and engravings, and is also potentially applicable to Paleolithic artifacts with a strong patina caused by exposure to desert dust. It depends on the principle that cations of certain elements are more soluble than others; they leach out of *rock varnish* more rapidly than the less soluble elements, and their concentration decreases with time. (Chapter 4)

cenote A ritual well, for example at the late Maya site of Chichén Itzá, into which enormous quantities of symbolically rich goods had been deposited. (Chapter 10)

central place theory Developed by the geographer Christaller to explain the spacing and function of the settlement landscape. Under idealized conditions, he argued, central places of the same size and nature would be equidistant from each other, surrounded by secondary centers with their own smaller satellites. In spite of its limitations, central place theory has found useful applications in archaeology as a preliminary heuristic device. (Chapter 5)

Glossary

- chaîne opératoire** Ordered chain of actions, gestures, and processes in a production sequence (e.g. of a stone tool or a pot) which led to the transformation of a given material towards the finished product. The concept, introduced by André Leroi-Gourhan, is significant in allowing the archaeologist to infer back from the finished artifact to the procedures, the intentionality in the production sequence, and ultimately to the conceptual template of the maker. (Chapter 8)
- characterization** The application of techniques of examination by which characteristic properties of the constituent material of traded goods can be identified, and thus their source of origin; e.g. petrographic *thin-section analysis*. (Chapter 9)
- chiefdom** A term used to describe a society that operates on the principle of ranking, i.e. differential social status. Different *lineages* are graded on a scale of prestige, calculated by how closely related one is to the chief. The chiefdom generally has a permanent ritual and ceremonial center, as well as being characterized by local specialization in crafts. (Chapter 5)
- chinampas** The areas of fertile reclaimed land, constructed by the Aztecs, and made of mud dredged from canals. (Chapter 6)
- chronometric dating** See *absolute dating*.
- classification** The ordering of phenomena into groups or other classificatory schemes on the basis of shared attributes (see also *type* and *typology*). (Chapters 1 & 4)
- CLIMAP** A project aimed at producing paleoclimatic maps showing sea-surface temperatures in different parts of the globe, at various periods. (Chapter 6)
- cluster analysis** A multivariate statistical technique which assesses the similarities between units or assemblages, based on the occurrence or non-occurrence of specific artifact *types* or other components within them (Chapter 5)
- cognitive archaeology** The study of past ways of thought and symbolic structures from material remains. (Chapter 10)
- cognitive map** An interpretive framework of the world which, it is argued, exists in the human mind and affects actions and decisions as well as knowledge structures. (Chapter 10)
- cognitive-processual approach** An alternative to the materialist orientation of the functional-processual approach, it is concerned with (1) the integration of the cognitive and symbolic with other aspects of early societies; (2) the role of ideology as an active organizational force. It employs the theoretical approach of *methodological individualism*. (Chapters 1 & 12)
- computed axial tomography** (CAT or CT scanner) The method by which scanners allow detailed internal views of bodies such as mummies. The body is passed into the machine and images of cross-sectional “slices” through the body are produced. (Chapter 11)
- conjoining** See *refitting*.
- conjunctive approach** A methodological alternative to traditional normative archaeology, argued by Walter Taylor (1948), in which the full range of a culture system was to be taken into consideration in explanatory models. (Chapter 1)
- context** An artifact’s context usually consists of its immediate *matrix* (the material around it e.g. gravel, clay, or sand), its provenience (horizontal and vertical position in the matrix), and its *association* with other artifacts (with other archaeological remains, usually in the same matrix). (Chapter 2)
- contextual seriation** A method of *relative dating* pioneered by Flinders Petrie in the 19th century, in which artifacts are arranged according to the frequencies of their co-occurrence in specific contexts (usually burials). (Chapter 4)
- contract archaeology** Archaeological research conducted under the aegis of federal or state legislation, often in advance of highway construction or urban development, where the archaeologist is contracted to undertake the necessary research. (Chapter 14)
- coprolites** Fossilized feces; these contain food residues that can be used to reconstruct diet and subsistence activities. (Chapter 6)
- core** A lithic artifact used as a blank from which other tools or flakes are made. (Chapter 8)
- Critical Theory** A theoretical approach developed by the so-called “Frankfurt School” of German social thinkers, which stresses that all knowledge is historical, and in a sense biased communication; thus, all claims to “objective” knowledge are illusory. (Chapter 12)
- cultural anthropology** A subdiscipline of anthropology concerned with the non-biological, behavioral aspects of society; i.e. the social, linguistic, and technological components underlying human behavior. Two important branches of cultural anthropology are *ethnography* (the study of living cultures) and *ethnology* (which attempts to compare cultures using ethnographic evidence). In Europe, it is referred to as *social anthropology*. (Introduction)
- cultural ecology** A term devised by Julian Steward to account for the dynamic relationship between human society and its environment, in which *culture* is viewed as the primary adaptive mechanism. (Chapter 1)
- cultural evolution** The theory that societal change can be understood by analogy with processes underlying the biological evolution of species. (Chapter 1)
- cultural group** A complex of regularly occurring associated artifacts, features, burial types, and house forms comprising a distinct identity (Chapter 5)
- cultural resource management (CRM)** The safeguarding of the archaeological heritage through the protection of sites and through salvage archaeology (rescue archaeology), generally within the framework of legislation designed to safeguard the past. (Chapter 14)
- culture** A term used by anthropologists when referring to the non-biological characteristics unique to a particular society (*cf. archaeological culture*). (Chapter 1)
- culture-historical approach** An approach to archaeological interpretation which uses the procedure of the traditional historian (including emphasis on specific circumstances elaborated with rich detail, and processes of *inductive* reasoning). (Chapter 12)
- deduction** A process of reasoning by which more specific consequences are inferred by rigorous argument from more general propositions (*cf. induction*). (Chapter 12)
- deductive nomological (D-N) explanation** A formal method of explanation based on the testing of hypotheses derived from general laws. (Chapter 12)
- deep-sea cores** Cores drilled from the sea bed that provide the most coherent record of climate changes on a worldwide scale. The cores contain shells of microscopic marine organisms (foraminifera) laid down on the ocean floor through the continuous process of sedimentation. Variations in the ratio of two oxygen isotopes in the calcium carbonate of these shells give a sensitive indicator of sea temperature at the time the organisms were alive. (Chapter 4)
- demography** The study of the processes which contribute to population structure and their temporal and spatial dynamics. (Chapter 11)
- dendrochronology** The study of tree-ring patterns; annual variations in climatic conditions which produce differential growth can be used both as a measure of environmental change, and as the basis for a chronology. (Chapter 4)
- diachronic** Referring to phenomena as they change over time; i.e. employing a chronological perspective (*cf. synchronic*). (Chapter 12)
- diatom analysis** A method of environmental reconstruction based on plant microfossils. Diatoms are unicellular algae, whose silica cell walls survive after the algae die, and they accumulate in large numbers at the bottom of rivers and lakes. Their assemblages directly reflect the floristic composition of the water’s extinct

- communities, as well as the water's salinity, alkalinity, and nutrient status. (Chapter 6)
- diffusionist approach** The theory popularized by V.G. Childe that all the attributes of civilization from architecture to metalworking had diffused from the Near East to Europe. (Chapter 1)
- DNA** (Deoxyribonucleic acid) The material which carries the hereditary instructions (the "blueprint") which determine the formation of all living organisms. *Genes*, the organizers of inheritance, are composed of DNA. (Chapter 11)
- dowsing** The supposed location of subsurface features by employing a twig, copper rod, pendulum, or other instrument; discontinuous movements in these instruments are believed by some to record the existence of buried features. (Chapter 3)
- echo-sounding** An acoustic underwater survey technique, used to trace the topography of submerged coastal plains and other buried land surfaces (see also *seismic reflection profiler*). (Chapter 6)
- ecofacts** Non-artifactual organic and environmental remains which have cultural relevance, e.g. faunal and floral material as well as soils and sediments. (Chapters 2 & 6)
- ecological determinism** A form of explanation in which it is implicit that changes in the environment determine changes in human society. (Chapter 12)
- electrical resistivity** See *soil resistivity*.
- electrolysis** A standard cleaning process in archaeological conservation. Artifacts are placed in a chemical solution, and by passing a weak current between them and a surrounding metal grill, the corrosive salts move from the cathode (object) to the anode (grill), removing any accumulated deposit and leaving the artifact clean. (Chapter 2)
- electron probe microanalysis** Used in the analysis of artifact composition, this technique is similar to XRF (*X-ray fluorescence spectrometry*), and is useful for studying small changes in composition within the body of an artifact. (Chapter 9)
- electron spin resonance (ESR)** Enables trapped electrons within bone and shell to be measured without the heating that *thermoluminescence* requires. As with TL, the number of trapped electrons indicates the age of the specimen. (Chapter 4)
- empathetic method** The use of personal intuition (in German *Einfühlung*) to seek to understand the inner lives of other people, using the assumption that there is a common structure to human experience. The assumption that the study of the inner experience of humans provides a handle for interpreting prehistory and history is made by *idealist* thinkers such as B. Croce, R.G. Collingwood and members of the *postprocessual* school of thought. (Chapter 12)
- emulation** One of the most frequent features accompanying competition, where customs, buildings, and artifacts in one society may be adopted by neighboring ones through a process of imitation which is often competitive in nature. (Chapters 5 & 9)
- environmental archaeology** A field of interdisciplinary research – archaeology and natural science – is directed at the reconstruction of human use of plants and animals, and how past societies adapted to changing environmental conditions. (Chapters 6 & 7)
- environmental circumscription** An explanation for the origins of the state propounded by Robert Carneiro that emphasizes the fundamental role exerted by environmental constraints and by territorial limitations. (Chapter 12)
- ooliths** Crude stone pebbles found in Lower Pleistocene contexts; once thought to be the work of human agency, but now generally regarded as natural products. (Chapter 8)
- ethnicity** The existence of ethnic groups, including tribal groups. Though these are difficult to recognize from the archaeological record, the study of language and linguistic boundaries shows that ethnic groups are often correlated with language areas (see *ethnos*). (Chapter 5)
- ethnoarchaeology** The study of contemporary cultures with a view to understanding the behavioral relationships which underlie the production of material culture. (Introduction & Chapter 8)
- ethnography** A subset of *cultural anthropology* concerned with the study of contemporary cultures through first-hand observation. (Introduction)
- ethnology** A subset of *cultural anthropology* concerned with the comparative study of contemporary cultures, with a view to deriving general principles about human society. (Introduction)
- ethnos** The ethnic group, defined as a firm aggregate of people, historically established on a given territory, possessing in common relatively stable peculiarities of language and culture, and also recognizing their unity and difference as expressed in a self-appointed name (ethnonym) (see *ethnicity*). (Chapter 5)
- evolution** The process of growth and development generally accompanied by increasing complexity. In biology, this change is tied to Darwin's concept of natural selection as the basis of species survival. Darwin's work laid the foundations for the study of artifact *typology*, pioneered by such scholars as Pitt-Rivers and Montelius. (Chapter 1)
- excavation** The principal method of data acquisition in archaeology, involving the systematic uncovering of archaeological remains through the removal of the deposits of soil and the other material covering them and accompanying them. (Chapter 3)
- experimental archaeology** The study of past behavioral processes through experimental reconstruction under carefully controlled scientific conditions. (Chapters 2, 7, 8, & 14)
- factor analysis** A multivariate statistical technique which assesses the degree of variation between artifact types, and is based on a matrix of correlation coefficients which measure the relative association between any two variables. (Chapter 5)
- faience** Glass-like material first made in predynastic Egypt; it involves coating a core material of powdered quartz with a vitreous alkaline glaze. (Chapter 8)
- fall-off analysis** The study of regularities in the way in which quantities of traded items found in the archaeological record decline as the distance from the source increases. This may be plotted as a fall-off curve, with the quantities of material (Y-axis) plotted against distance from source (X-axis). (Chapter 9)
- faunal dating** A method of *relative dating* based on observing the evolutionary changes in particular species of mammals, so as to form a rough chronological sequence. (Chapter 4)
- feature** A non-portable *artifact*; e.g. hearths, architectural elements, or soil stains. (Chapter 3)
- filigree** Fine open metalwork using wires and soldering, first developed in the Near East. (Chapter 8)
- fission-track dating** A dating method based on the operation of a radioactive clock, the spontaneous fission of an isotope of uranium present in a wide range of rocks and minerals. As with *potassium-argon dating*, with whose time range it overlaps, the method gives useful dates from rocks adjacent to archaeological material. (Chapter 4)
- flotation** A method of screening (sieving) excavated *matrix* in water so as to separate and recover small *ecofacts* and *artifacts*. (Chapter 6)
- fluxgate gradiometer** A type of *fluxgate magnetometer*, producing a continuous reading on a meter. (Chapter 3)
- fluxgate magnetometer** A type of magnetometer used in *subsurface detection*, producing a continuous reading. (Chapter 3)
- formation processes** Those processes affecting the way in which archaeological materials came to be buried, and their subsequent history afterwards. Cultural formation processes

Glossary

include the deliberate or accidental activities of humans; natural formation processes refer to natural or environmental events which govern the burial and survival of the archaeological record. (Chapter 2)

fossil cuticles Outermost protective layer of the skin of leaves or blades of grass, made of cutin, a material that survives in the archaeological record often in feces. Cuticular analysis is a useful adjunct to *palynology* in environmental reconstruction. (Chapter 6)

fossil ice wedges Soil features caused when the ground freezes and contracts, opening up fissures in the permafrost that fill with wedges of ice. The fossil wedges are proof of past cooling of climate and of the depth of permafrost. (Chapter 6)

frequency seriation A *relative dating* method which relies principally on measuring changes in the proportional abundance, or frequency, observed among finds (e.g. counts of tool types, or of ceramic fabrics). (Chapter 4)

functional-processual approach See *processual archaeology*.

genes The basic units of inheritance, now known to be governed by the specific sequence of the genetic markers within the DNA of the individual concerned. (Chapter 11)

genotype Genetic composition of a cell or individual, as distinct from its *phenotype*. (Chapter 11)

geochemical analysis The investigatory technique which involves taking soil samples at regular intervals from the surface of a site, and measuring their phosphate content and other chemical properties. (Chapter 3)

geomagnetic reversals An aspect of archaeomagnetism relevant to the dating of the Lower Paleolithic, involving complete reversals in the earth's magnetic field. (Chapter 4)

geomorphology A subdiscipline of geography, concerned with the study of the form and development of the landscape, it includes such specializations as *sedimentology*. (Chapter 6)

gift exchange See *reciprocity*.

glottochronology A controversial method of assessing the temporal divergence of two languages based on changes of vocabulary (*lexicostatistics*), and expressed as an arithmetic formula. (Chapters 4 & 5)

granulation The soldering of grains of metal to a background, usually of the same metal, and much used by the Etruscans. (Chapter 8)

ground-penetrating radar A method of *subsurface detection* in which short radio pulses are sent through the soil, such that the echoes reflect back significant changes in soil conditions. (Chapter 3)

ground reconnaissance A collective name for a wide variety of methods for identifying individual archaeological sites, including consultation of documentary sources, place-name evidence, local folklore, and legend, but primarily actual fieldwork. (Chapter 3)

half-life The time taken for half the quantity of a radioactive isotope in a sample to decay (see also *radioactive decay*). (Chapter 4)

hand-axe A Paleolithic stone tool usually made by modifying (chipping or flaking) a natural pebble. (Introduction & Chapter 8)

haplotype A specific combination of *alleles* within a *gene* cluster. (Chapters 5 & 11)

historical archaeology The archaeological study of historically documented cultures. In North America, research is directed at colonial and post-colonial settlement, analogous to the study of medieval and post-medieval archaeology in Europe. (Introduction & Chapter 3)

historical particularism A detailed descriptive approach to anthropology associated with Franz Boas and his students, and designed as an alternative to the broad generalizing approach favored by anthropologists such as Morgan and Tylor. (Chapter 1)

historiographic approach A form of explanation based primarily on traditional descriptive historical frameworks. (Chapter 12)

hoards Deliberately buried groups of valuables or prized possessions, often in times of conflict or war, and which, for one reason or another, have not been reclaimed. Metal hoards are a primary source of evidence for the European Bronze Age. (Chapters 2 & 10)

holism Theoretical approach which, when applied to human societies, sees change as the product of large-scale environmental, economic, and social forces with the assumption that what individual humans wish, desire, believe, or will is not a significant factor. (Chapter 12)

homeostasis A term used in *systems thinking* to describe the action of *negative feedback* processes in maintaining the system at a constant equilibrium state. (Chapter 12)

hunter-gatherers A collective term for the members of small-scale mobile or semi-sedentary societies, whose subsistence is mainly focused on hunting game and gathering wild plants and fruits; organizational structure is based on *bands* with strong kinship ties. (Introduction)

hypothetico-deductive explanation A form of explanation based on the formulation of hypotheses and the establishment from them by *deduction* of consequences which can then be tested against the archaeological data.

ice cores Borings taken from the Arctic and Antarctic polar ice caps, containing layers of compacted ice useful for reconstructing paleoenvironments and as a method of *absolute dating*. (Chapter 4)

iconography An important component of *cognitive archaeology*, this involves the study of artistic representations which usually have an overt religious or ceremonial significance; e.g. individual deities may be distinguished, each with a special characteristic, such as corn with the corn god, or the sun with a sun goddess etc. (Chapter 10)

idealist explanation A form of explanation that lays great stress on the search for insights into the historical circumstances leading up to the event under study in terms primarily of the ideas and motives of the individuals involved. (Chapter 12)

induction A method of reasoning in which one proceeds by generalization from a series of specific observations so as to derive general conclusions (*cf. deduction*). (Chapter 12)

inductively coupled plasma emission spectrometry (ICPS) Based on the same basic principles as OES (*optical emission spectrometry*), but the generation of much higher temperatures reduces problems of interference and produces more accurate results. (Chapter 9)

infrared absorption spectroscopy

A technique used in the characterization of raw materials, it has been particularly useful in distinguishing ambers from different sources: the organic compounds in the amber absorb different wavelengths of infrared radiation passed through them. (Chapter 9)

interaction sphere A regional or inter-regional exchange system, e.g. the Hopewell interaction sphere. (Chapter 9)

isostatic uplift Rise in the level of the land relative to the sea caused by the relaxation of Ice Age conditions. It occurs when the weight of ice is removed as temperatures rise, and the landscape is raised up to form *raised beaches*. (Chapter 6)

isotopic analysis An important source of information on the reconstruction of prehistoric diets, this technique analyzes the ratios of the principal isotopes preserved in human bone; in effect the method reads the chemical signatures left in the body by different foods.

Isotopic analysis is also used in *characterization* studies. (Chapter 7)

kula ring A system of ceremonial, non-competitive, exchange practiced in Melanesia to establish and reinforce alliances. Malinowski's study of this system was influential in shaping the anthropological concept of *reciprocity*. (Chapter 9)

LANDSAT See *remote sensing*.

landscape archaeology The study of individual features including settlements

- seen as single components within the broader perspective of the patterning of human activity over a wide area. (Chapter 1)
- lexicostatistics** The study of linguistic divergence between two languages, based on changes in a list of common vocabulary terms and the sharing of common root words (see also *glottochronology*). (Chapter 4)
- lineage** A group claiming descent from a common ancestor. (Chapter 5)
- loess sediments** Deposits formed of a yellowish dust of silt-sized particles blown by the wind and redeposited on land newly deglaciated, or on sheltered areas. (Chapter 6)
- macrofamily** Classificatory term in linguistics, referring to a group of language families showing sufficient similarities to suggest that they are genetically related (e.g. the Nostratic macrofamily, seen by some linguists as a unit embracing the Indo-European, Afro-Asiatic, Uralic, Altaic, and Kartvelian language families). (Chapters 11 & 12)
- market exchange** A mode of exchange which implies both a specific location for transactions and the sort of social relations where bargaining can occur. It usually involves a system of price-making through negotiation. (Chapter 9)
- Marxist archaeology** Based principally on the writings of Karl Marx and Friedrich Engels, this posits a materialist model of societal change. Change within a society is seen as the result of contradictions arising between the forces of production (technology) and the relations of production (social organization). Such contradictions are seen to emerge as a struggle between distinct social classes. (Chapter 12)
- material culture** The buildings, tools, and other artifacts that constitute the material remains of former societies. (Introduction)
- matrix** The physical material within which artifacts are embedded or supported. (Chapter 2)
- Maya calendar** A method employed by the Maya of measuring the passage of time, comprising two separate calendar systems: (1) the Calendar Round, used for everyday purposes; (2) the Long Count, used for the reckoning of historical dates. (Chapter 4)
- megalithic yard** A metrological unit (c. 2.72 ft) proposed by Alexander Thom, and argued by him, on statistical grounds, as the standard unit of length used in the construction of megalithic monuments in Britain and France. (Chapter 10)
- Mesolithic** An Old World chronological period beginning around 10,000 years ago, between the *Paleolithic* and the *Neolithic*, and associated with the rise to dominance of *microliths*. (Chapter 8)
- metallographic examination** A technique used in the study of early metallurgy involving the microscopic examination of a polished section cut from an artifact, which has been etched so as to reveal the metal structure. (Chapter 8)
- methodological individualism** (individualistic method) Approach to the study of societies which assumes that thoughts and decisions do have agency, and that actions and shared institutions can be interpreted as the products of the decisions and actions of individuals. (Chapters 1 & 12)
- microlith** A tiny stone tool, characteristic of the *Mesolithic* period, many of which were probably used as barbs. (Chapter 8)
- microwear analysis** The study of the patterns of wear or damage on the edge of stone tools, which provides valuable information on the way in which the tool was used. (Chapter 8)
- midden** The accumulation of debris and domestic waste resulting from human use. The long-term disposal of refuse can result in stratified deposits, which are useful for *relative dating*. (Chapter 7)
- Middle Range Theory** A conceptual framework linking raw archaeological data with higher-level generalizations and conclusions about the past which can be derived from this evidence. (Introduction)
- Midwestern taxonomic system** A framework devised by McKern (1939) to systematize sequences in the Great Plains area of the United States, using the general principle of similarities between artifact *assemblages*. (Chapter 1)
- MNI** (minimum number of individuals) A method of assessing species abundance in faunal assemblages based on a calculation of the smallest number of animals necessary to account for all the identified bones. Usually calculated from the most abundant bone or tooth from either the left or right side of the animal. (Chapter 7)
- mobiliary art** A term used for the portable art of the Ice Age, comprising engravings and carvings on small objects of stone, antler, bone, and ivory. (Chapter 10)
- monocausal explanation** Explanations of culture change (e.g. for *state* origins) which lays stress on a single dominant explanatory factor or “prime mover.” (Chapter 12)
- Mössbauer spectroscopy** A technique used in the analysis of artifact composition, particularly iron compounds in pottery. It involves the measurement of the gamma radiation absorbed by the iron nuclei, which provides information on the particular iron compounds in the sample, and hence on the conditions of firing when the pottery was being made. (Chapter 9)
- mtDNA** Mitochondrial DNA, present in the mitochondria – organelles in the cell engaged in energy production. MtDNA has a circular structure involving some 16,000 base pairs and is distinct from *nuclear DNA*; mtDNA is not formed by recombination, but is passed on exclusively in the female line. (Chapters 5, 11 & 12)
- multi-dimensional scaling (MDSAL)** A multivariate statistical technique which aims to develop spatial structure from numerical data by estimating the differences and similarities between analytical units. (Chapter 5)
- multiplier effect** A term used in *systems thinking* to describe the process by which changes in one field of human activity (subsystem) sometimes act to promote changes in other fields (subsystems) and in turn act on the original subsystem itself. An instance of *positive feedback*, it is thought by some to be one of the primary mechanisms of societal change. (Chapter 12)
- multivariate explanation** Explanation of culture change, e.g. the origin of the state, which, in contrast to monocausal approaches, stresses the interaction of several factors operating simultaneously. (Chapter 12)
- native copper** Metallic copper found naturally in nuggets, which can be worked by hammering, cutting, and *annealing*. (Chapter 12)
- negative feedback** In *systems thinking*, this is a process which acts to counter or “dampen” the potentially disruptive effects of external inputs; it acts as a stabilizing mechanism (see *homeostasis*). (Chapter 12)
- Neolithic** An Old World chronological period characterized by the development of agriculture and, hence, an increasing emphasis on sedentism. (Chapter 4)
- Neolithic Revolution** A term coined by V.G. Childe in 1941 to describe the origin and consequences of farming (i.e. the development of stock raising and agriculture), allowing the widespread development of settled village life. (Chapter 7)
- neutron activation analysis (NAA)** A method used in the analysis of artifact composition which depends on the excitation of the nuclei of the atoms of a sample's various elements, when these are bombarded with slow neutrons. The method is accurate to about plus or minus 5 percent. (Chapter 9)
- neutron scattering** A *remote sensing* technique involving placing a probe into the soil in order to measure the relative rates of neutron flows through the soil. Since stone produces a lower count rate than soil, buried features can often be detected. (Chapter 3)
- New Archaeology** A new approach advocated in the 1960s which argued for an explicitly scientific framework of archaeological method and theory, with

Glossary

hypotheses rigorously tested, as the proper basis for explanation rather than simply description (see also *processual archaeology*). (Introduction & Chapter 1)

NISP (number of identified specimens) A gross counting technique used in the quantification of animal bones. The method may produce misleading results in assessing the relative abundance of different species, since skeletal differences and differential rates of bone preservation mean that some species will be represented more than others. (Chapter 7)

non-equilibrium systems See *self-organization*.

non-probabilistic sampling A non-statistical sampling strategy (in contrast to *probabilistic sampling*) which concentrates on sampling areas on the basis of intuition, historical documentation, or long field experience in the area. (Chapter 3)

nuclear DNA present (within the chromosomes in the nucleus of the cell. (Chapters 5 & 11)

obsidian A volcanic glass whose ease of working and characteristically hard flint-like edges allowed it to be used for the making of tools. (Chapters 4, 9, etc.)

obsidian hydration dating This technique involves the absorption of water on exposed surfaces of obsidian; when the local hydration rate is known, the thickness of the hydration layer, if accurately measured, can be used to provide an absolute date. (Chapter 4)

off-site data Evidence from a range of information, including scatters of artifacts and features such as plowmarks and field boundaries, that provides important evidence about human exploitation of the environment. (Chapter 3)

Oldowan industry The earliest toolkits, comprising flake and pebble tools, used by hominids in the Olduvai Gorge, East Africa. (Chapters 4 & 8)

open-area excavation The opening up of large horizontal areas for *excavation*, used especially where single period deposits lie close to the surface as, for example, with the remains of American Indian or European Neolithic long houses. (Chapter 3)

optical emission spectrometry (OES) A technique used in the analysis of artifact composition, based on the principle that electrons, when excited (i.e. heated to a high temperature), release light of a particular wavelength. The presence or absence of various elements is established by examining the appropriate spectral line of their characteristic wavelengths. Generally, this method gives an accuracy of only 25 percent and has been superseded by ICPS (*inductively coupled plasma emission spectrometry*). (Chapter 9)

paleoentomology The study of insects from archaeological contexts. The survival of insect exoskeletons, which are quite resistant to decomposition, is important in the reconstruction of paleo-environments. (Chapter 6)

paleoethnobotany (archaeobotany) The recovery and identification of plant remains from archaeological *contexts*, used in reconstructing past environments and economies. (Chapter 7)

Paleolithic The archaeological period before c.10,000 BC, characterized by the earliest known stone tool manufacture. (Chapters 1, 4, 8, etc.)

paleomagnetism See *archaeomagnetic dating*.

palynology The analysis of fossil pollen as an aid to the reconstruction of past vegetation and climates. (Chapters 4 & 6)

paradigmatic view Approach to science, developed by Thomas Kuhn, which holds that science develops from a set of assumptions (paradigm) and that revolutionary science ends with the acceptance of a new paradigm which ushers in a period of normal science. (Chapter 12)

parietal art A term used to designate art on the walls of caves and shelters, or on huge blocks. (Chapter 10)

peer-polity interaction The full range of exchanges taking place – including imitation, emulation, competition, warfare, and the exchange of material goods and information – between autonomous (self-governing) socio-political units, generally within the same geographic region. (Chapter 9)

phenetic dendrogram Tree diagram (dendrogram) showing the relationship of individuals on the basis of observed similarity and difference, generally calculated in terms of taxonomic distance: the tree-form does not necessarily carry phylogenetic implications. (Chapter 11)

phenotype Total appearance of an organism, determined by interaction during development between its genetic constitution (*genotype*) and the environment. (Chapter 11)

phylogenetic tree Tree diagram (dendrogram) representing the descent and ancestry of an individual or group. (Chapters 5 & 11)

phylogeny Evolutionary history (of an individual or group). (Chapters 5 & 11)

physical anthropology A subdiscipline of anthropology dealing with the study of human biological or physical characteristics and their evolution. (Introduction)

phytoliths Minute particles of silica derived from the cells of plants, able to survive after the organism has decomposed or been burned. They are common in ash layers, pottery, and even on stone tools and teeth. (Chapter 6)

pinger (or boomer profiler) An underwater survey device, more powerful than *sidescan sonar*, capable of probing up to 60 m (197 ft) below the seabed. (Chapter 3)

piston corer A device for extracting columns of sediment from the ocean floor. Dates for the different layers are obtained by *radiocarbon*, *archaeomagnetic*, or *uranium series* methods. (Chapter 6)

plating A method of bonding metals together, for instance silver with copper or copper with gold. (Chapter 8)

polity A politically independent or autonomous social unit, whether simple or complex, which may in the case of a complex society (such as a state) comprise many lesser dependent components. (Chapter 5)

pollen analysis See *palynology*.

polymorphism Simultaneous occurrence in a population or social group of two or more discontinuous forms. (Chapter 5)

positive feedback A term used in *systems thinking* to describe a response in which changing output conditions in the system stimulate further growth in the input; one of the principal factors in generating system change or morphogenesis (see also *multiplier effect*). (Chapter 12)

positivism Theoretical position that explanations must be empirically verifiable, that there are universal laws in the structure and transformation of human institutions, and that theories which incorporate individualistic elements, such as minds, are not verifiable. (Chapter 12)

postprocessual explanation Explanation formulated in reaction to the perceived limitations of functional-processual archaeology. It eschews generalization in favor of an “individualizing” approach that is influenced by *structuralism*, *Critical Theory*, and neo-Marxist thought. (Chapter 12)

potassium-argon dating A method used to date rocks up to thousands of millions of years old, though it is restricted to volcanic material no more recent than c. 100,000 years old. One of the most widely used methods in the dating of early hominid sites in Africa. (Chapter 4)

prehistory The period of human history before the advent of writing. (Introduction)

prestige goods A term used to designate a limited range of exchange goods to which a society ascribes high status or value. (Chapter 9)

primitive valuables A term coined by Dalton to describe the tokens of wealth and prestige, often of specially valued items, that were used in the ceremonial exchange systems of non-state societies; examples include the shell necklaces and bracelets of the *kula* systems (*cf. prestige goods*). (Chapter 9)

- probabilistic sampling** Sampling method, using probability theory, designed to draw reliable general conclusions about a site or region, based on small sample areas; 4 types of sampling strategies are recognized: (1) *simple random sampling*; (2) *stratified random sampling*; (3) *systematic sampling*; (4) *stratified systematic sampling*. (Chapter 3)
- processual archaeology** An approach that stresses the dynamic relationship between social and economic aspects of culture and the environment as the basis for understanding the processes of culture, change. Uses the scientific methodology of problem statement, hypothesis formulation, and subsequent testing. The earlier functional-processual archaeology has been contrasted with *cognitive-processual archaeology*, where the emphasis is on integrating ideological and symbolic aspects. (Introduction & Chapter 12)
- proton magnetometer** A device used in *subsurface detection* which records variation in the earth's magnetic field. (Chapter 3)
- pseudo-archaeology** The use of selective archaeological evidence to promulgate nonscientific, fictional accounts of the past. (Chapter 14)
- punctuated equilibria** Principal feature of the evolutionary theory propounded by Niles Eldredge and Stephen J. Gould, in which species change is represented as a form of Darwinian gradualism, "punctuated" by periods of rapid evolutionary change. (Chapter 12)
- pyrotechnology** The intentional use and control of fire by humans. (Chapter 8)
- radioactive decay** The regular process by which radioactive isotopes break down into their decay products with a half-life which is specific to the isotope in question (see also *radiocarbon dating*). (Chapter 4)
- radiocarbon dating** An absolute dating method that measures the decay of the radioactive isotope of carbon (^{14}C) in organic material (see *half-life*). (Chapter 4)
- radioimmunoassay** A method of protein analysis whereby it is possible to identify protein molecules surviving in fossils which are thousands and even millions of years old. (Chapter 11)
- raised beaches** These are remnants of former coastlines, usually the result of processes such as *isostatic uplift* or *tectonic movements*. (Chapter 6)
- ranked societies** Societies in which there is unequal access to prestige and status e.g. *chiefdoms* and *states*. (Chapter 5)
- reaves** Bronze Age stone boundary walls, e.g. on Dartmoor, England, which may designate the territorial extent of individual communities. (Chapter 6)
- reciprocity** A mode of exchange in which transactions take place between individuals who are symmetrically placed, i.e. they are exchanging as equals, neither being in a dominant position. (Chapter 9)
- reconnaissance survey** A broad range of techniques involved in the location of archaeological sites, e.g. the recording of surface artifacts and features, and the sampling of natural and mineral resources. (Chapter 3)
- redistribution** A mode of exchange which implies the operation of some central organizing authority. Goods are received or appropriated by the central authority, and subsequently some of them are sent by that authority to other locations. (Chapter 9)
- refitting** Sometimes referred to as *conjoining*, this entails attempting to put stone tools and flakes back together again, and provides important information on the processes involved in the knapper's craft. (Chapter 8)
- refutationist view** Approach which holds that science consists of theories about the empirical world, that its goal is to develop better theories, which is achieved by finding mistakes in existing theories, so that it is crucial that theories be falsifiable (vulnerable to error and open to testing). The approach, developed by Karl Popper, emphasizes the importance of testability as a component of scientific theories. (Chapter 12)
- relative dating** The determination of chronological sequence without recourse to a fixed time scale; e.g. the arrangement of artifacts in a typological sequence, or *seriation* (cf. *absolute dating*). (Chapter 4)
- religion** A framework of beliefs relating to supernatural or superhuman beings or forces that transcend the everyday material world. (Chapter 10)
- remote sensing** The imaging of phenomena from a distance, primarily through airborne and satellite imaging. "Ground-based remote sensing" links geophysical methods such as radar with remote sensing methods applied at ground level, such as thermography. (Chapter 3)
- rescue archaeology** See *salvage archaeology*.
- research design** Systematic planning of archaeological research, usually including (1) the formulation of a strategy to resolve a particular question; (2) the collection and recording of the evidence; (3) the processing and analysis of these data and their interpretation; and (4) the publication of results. (Chapter 3)
- resistivity meter** See *soil resistivity*.
- rock varnishes** Natural accretions of manganese and iron oxides, together with clay minerals and organic matter, which can provide valuable environmental evidence. Their study, when combined with radiocarbon methods, can provide a minimum age for some landforms, and even some types of stone tool which also accumulate varnish. (Chapters 4 & 6)
- salvage archaeology** The location and recording (usually through excavation) of archaeological sites in advance of highway construction, drainage projects, or urban development. (Chapters 3 & 14)
- scientism** The belief that there is one and only one method of science and that it alone confers legitimacy upon the conduct of research. (Chapter 12)
- sedimentology** A subset of *geomorphology* concerned with the investigation of the structure and texture of sediments i.e. the global term for material deposited on the earth's surface. (Chapter 6)
- segmentary societies** Relatively small and autonomous groups, usually of agriculturalists, who regulate their own affairs; in some cases, they may join together with other comparable segmentary societies to form a larger ethnic unit. (Chapter 5)
- seismic reflection profiler** An acoustic underwater survey device that uses the principle of *echo-sounding* to locate submerged landforms; in water depths of 100 m, this method can achieve penetration of more than 10 m into the sea-floor. (Chapter 6)
- self-organization** The product of a theory derived from thermodynamics which demonstrates that order can arise spontaneously when systems are pushed far from an equilibrium state. The emergence of new structure arises at bifurcation points, or thresholds of instability (cf. *catastrophe theory*). (Chapter 12)
- seriation** A relative dating technique based on the chronological ordering of a group of artifacts or assemblages, where the most similar are placed adjacent to each other in the series. Two types of seriation can be recognized, *frequency seriation* and *contextual seriation*. (Chapters 4 & 5)
- sidescan sonar** A survey method used in underwater archaeology which provides the broadest view of the sea-floor. An acoustic emitter is towed behind a vessel and sends out sound waves in a fan-shaped beam. These pulses of sonic energy are reflected back to a transducer – return time depending on distance traveled – and recorded on a rotating drum. (Chapter 3)
- simple random sampling** A type of *probabilistic sampling* where the areas to be sampled are chosen using a table of random numbers. Drawbacks include (1) defining the site's boundaries initially; (2) the nature of random number tables results in some areas being allotted clusters of sample squares, while others remain untouched. (Chapter 3)

simulation The formulation and computer implementation of dynamic models, i.e. models concerned with change through time. Simulation is a useful heuristic device, and can be of considerable help in the development of explanation. (Chapter 12)

site A distinct spatial clustering of *artifacts*, *features*, structures, and organic and environmental remains – the residue of human activity. (Chapter 2).

site catchment analysis (SCA) A type of *off-site* analysis which concentrates on the total area from which a site's contents have been derived; at its simplest, a site's catchment can be thought of as a full inventory of artifactual and non-artifactual remains and their sources. (Chapter 6)

site exploitation territory (SET) Often confused with *site catchment analysis*, this is a method of achieving a fairly standardized assessment of the area habitually used by a site's occupants. (Chapter 6)

slag The material residue of smelting processes from metalworking. Analysis is often necessary to distinguish slags derived from copper smelting from those produced in iron production. Crucible slags (from the casting process) may be distinguished from smelting slags by their high concentration of copper. (Chapter 8)

SLAR (sideways-looking airborne radar) A *remote sensing* technique that involves the recording in radar images of the return of pulses of electromagnetic radiation sent out from aircraft (*cf. thermography*). (Chapter 3)

social anthropology See *cultural anthropology*.

soil resistivity A method of *subsurface detection* which measures changes in conductivity by passing electrical current through ground soils. This is generally a consequence of moisture content, and in this way, buried features can be detected by differential retention of groundwater. (Chapter 3)

sphere of exchange In non-market societies, prestige valuables and ordinary commodities were often exchanged quite separately i.e. valuables were exchanged against valuables in prestige transactions, while commodities were exchanged against commodities with much less ceremony, in mutually profitable barter transactions. These separate systems are termed spheres of exchange. (Chapter 9)

standing wave technique An acoustic method, similar to *boising*, used in *subsurface detection*. (Chapter 3)

state A term used to describe a social formation defined by distinct territorial boundedness, and characterized by strong central government in which the operation of political power is sanctioned

by legitimate force. In cultural evolutionist models, it ranks second only to the empire as the most complex societal development stage (Chapter 12)

stela (pl. *stelae*) A free-standing carved stone monument. (Chapter 4)

step-trenching *Excavation* method used on very deep sites, such as Near Eastern *tell* sites, in which the excavation proceeds downwards in a series of gradually narrowing steps. (Chapter 3)

stratification The laying down or depositing of strata or layers (also called deposits) one above the other. A succession of layers should provide a relative chronological sequence, with the earliest at the bottom and the latest at the top. (Chapters 3 & 4)

stratified random sampling A form of *probabilistic sampling* in which the region or site is divided into natural zones or strata such as cultivated land and forest; units are then chosen by a random number procedure so as to give each zone a number of squares proportional to its area, thus overcoming the inherent bias in *simple random sampling*. (Chapter 3)

stratified systematic sampling A form of *probabilistic sampling* which combines elements of (1) *simple random sampling*, (2) *stratified random sampling*, and (3) *systematic sampling*, in an effort to reduce sampling bias. (Chapter 3)

stratigraphy The study and validation of *stratification*; the analysis in the vertical, time dimension, of a series of layers in the horizontal, space dimension. It is often used as a *relative dating* technique to assess the temporal sequence of artifact deposition. (Chapter 3)

structuralist approaches Interpretations which stress that human actions are guided by beliefs and symbolic concepts, and that underlying these are structures of thought which find expression in various forms. The proper object of study is therefore to uncover the structures of thought and to study their influence in shaping the ideas in the minds of the human actors who created the archaeological record. (Chapter 12)

style According to the art historian, Ernst Gombrich, style is "any distinctive and therefore recognizable way in which an act is performed and made." Archaeologists and anthropologists have defined "stylistic areas" as areal units representing shared ways of producing and decorating artifacts. (Chapter 10)

sub-bottom profiler See *underwater reconnaissance*.

subsurface detection Collective name for a variety of remote sensing techniques operating at ground level, and including both invasive techniques (probing, *augering* or coring) and non-invasive techniques (geophysics, geochemistry, *remote sensing*, *dowsing*). (Chapter 3)

surface survey Two basic kinds can be identified: (1) unsystematic and (2) systematic. The former involves field-walking, i.e. scanning the ground along one's path and recording the location of artifacts and surface features. Systematic survey by comparison is less subjective and involves a grid system, such that the survey area is divided into sectors and these are walked systematically, thus making the recording of finds more accurate. (Chapter 3)

symmetry analysis A mathematical approach to the analysis of decorative style which claims that patterns can be divided into two distinct groups or symmetry classes: 17 classes for those patterns that repeat motifs horizontally, and 46 classes for those that repeat them horizontally and vertically. Such studies have suggested that the choice of motif arrangement within a particular culture is far from random. (Chapter 10)

synchronic Referring to phenomena considered at a single point in time; i.e. an approach which is not primarily concerned with change (*cf. diachronic*). (Chapter 12)

synostosis The joining of separate pieces of bone in human skeletons; the precise timing of such processes is an important indicator of age. (Chapter 11)

systematic sampling A form of *probabilistic sampling* employing a grid of equally spaced locations; e.g. selecting every other square. This method of regular spacing runs the risk of missing (or hitting) every single example if the distribution itself is regularly spaced. (Chapter 3)

systematic survey See *surface survey*.

systems thinking A method of formal analysis in which the object of study is viewed as comprising distinct analytical sub-units. Thus in archaeology, it comprises a form of explanation in which a society or culture is seen through the interaction and interdependence of its component parts; these are referred to as system parameters, and may include such things as population size, settlement pattern, crop production, technology etc. (Chapter 12)

taphonomy The study of processes which have affected organic materials such as bone after death; it also involves the microscopic analysis of tooth-marks or cut marks to assess the effects of butchery or scavenging activities. (Chapter 7)

tectonic movements Displacements in the plates that make up the earth's crust, often responsible for the occurrence of *raised beaches*. (Chapter 6)

tell A Near Eastern term that refers to a mound site formed through successive human occupation over a very long timespan. (Chapter 2)

- temper** Inclusions in pottery clay which act as a filler to give the clay added strength and workability and to counteract any cracking or shrinkage during firing. (Chapter 8)
- tephra** Volcanic ash. In the Mediterranean, for example, *deep-sea coring* produced evidence for the ash fall from the eruption of Thera, and its *stratigraphic* position provided important information in the construction of a *relative chronology*. (Chapter 4)
- thermal prospecting** A *remote sensing* method used in *aerial reconnaissance*. It is based on weak variations in temperature which can be found above buried structures whose thermal properties are different from those of their surroundings. (Chapter 3)
- thermography** A technique which uses thermal or heat sensors in aircraft to record the temperature of the soil surface. Variations in soil temperature can be the result of the presence of buried structures. (Chapter 3)
- thermoluminescence** (TL) A dating technique that relies indirectly on radioactive decay, overlapping with radiocarbon in the time period for which it is useful, but also has the potential for dating earlier periods. It has much in common with *electron spin resonance* (ESR). (Chapter 4)
- Thiessen polygons** A formal method of describing settlement patterns based on territorial divisions centered on a single site; the polygons are created by drawing straight lines between pairs of neighboring sites, then at the mid-point along each of these lines, a second series of lines are drawn at right angles to the first. Linking the second series of lines creates the Thiessen polygons. (Chapter 5)
- thin-section analysis** A technique whereby microscopic thin sections are cut from a stone object or potsherd and examined with a petrological microscope to determine the source of the material. (Chapter 9)
- Three Age System** A *classification* system devised by C.J. Thomsen for the sequence of technological periods (stone, bronze, and iron) in Old World prehistory. It established the principle that by classifying artifacts, one could produce a chronological ordering. (Chapter 1)
- trace element analysis** The use of chemical techniques, such as *neutron activation analysis*, or *X-ray fluorescence spectrometry*, for determining the incidence of trace elements in rocks. These methods are widely used in the identification of raw material sources for the production of stone tools. (Chapters 7 & 9)
- trajectory** In *systems thinking*, this refers to the series of successive states through which the system proceeds over time. It may be said to represent the long-term behavior of the system. (Chapter 12)
- tree-ring dating** See *dendrochronology*.
- trend surface analysis** The aim of trend surface analysis is to highlight the main features of a geographic distribution by smoothing over some of the local irregularities. In this way, important trends can be isolated from the background “noise” more clearly. (Chapter 9)
- tribes** A term used to describe a social grouping generally larger than a *band*, but rarely numbering more than a few thousand; unlike bands tribes are usually settled farmers, though they also include nomadic pastoral groups whose economy is based on exploitation of livestock. Individual communities tend to be integrated into the larger society through kinship ties. (Chapter 5)
- tuyère** A ceramic blowtube used in the process of smelting. (Chapter 8)
- type** A class of artifacts defined by the consistent clustering of *attributes*. (Chapters 1 & 4)
- typology** The systematic organization of artifacts into types on the basis of shared *attributes*. (Chapters 1, 3 & 4)
- underwater reconnaissance** Geophysical methods of underwater survey include (1) a *proton magnetometer* towed behind a survey vessel, so as to detect iron and steel objects which distort the earth’s magnetic field; (2) *sidescan sonar* that transmits sound waves in a fan-shaped beam to produce a graphic image of surface features on the sea-bed; (3) a *sub-bottom profiler* that emits sound pulses which bounce back from features and objects buried beneath the sea floor. (Chapter 3)
- Uniformitarianism** The principle that the stratification of rocks is due to processes still going on in seas, rivers, and lakes; i.e. that geologically ancient conditions were in essence similar to or “uniform with” those of our own time. (Chapter 1)
- uranium series dating** A dating method based on the *radioactive decay* of isotopes of uranium. It has proved particularly useful for the period before 50,000 years ago, which lies outside the time range of *radiocarbon dating*. (Chapter 4)
- varves** Fine layers of alluvium sediment deposited in glacial lakes. Their annual deposition makes them a useful source of dating. (Chapter 4)
- Wheeler box-grid** An excavation technique developed by Mortimer Wheeler from the work of Pitt-Rivers, involving retaining intact baulks of earth between excavation grid squares, so that different layers can be correlated across the site in the vertical profiles. (chapter 3)
- world system** A term coined by the historian Wallerstein to designate an economic unit, articulated by trade networks extending far beyond the boundaries of individual political units (nation states), and linking them together in a larger functioning unit. (Chapter 9)
- X-ray diffraction analysis** A technique used in identifying minerals present in artifact raw materials; it can also be used in geomorphological contexts to identify particular clay minerals in sediments, and thus the specific source from which the sediment was derived. (Chapter 6)
- X-ray fluorescence spectrometry (XRF)** A method used in the analysis of artifact composition, in which the sample is irradiated with a beam of X-rays which excite electrons associated with atoms on the surface. (Chapter 9)
- XTENT modeling** A method of generating settlement hierarchy, that overcomes the limitations of both *central place theory* and *Thiessen polygons*; it assigns territories to centers based on their scale, assuming that the size of each center is directly proportional to its area of influence. Hypothetical political maps may thus be constructed from survey data. (Chapter 5)
- Y-chromosome** Sex chromosome present in males; unlike other *nuclear DNA*, the DNA in the Y-chromosome is not formed by recombination but is passed on exclusively in the male line. (Chapters 5 & 11)
- zoarchaeology** See *archaeozoology*.