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ABORIGINES

The word *aborigine* means “from the beginning.” In Australia, this word began to be used to refer specifically to the continent’s nearly one million indigenous inhabitants at the time of the British invasion in 1788. Many cultures have been lost since then, due to violent conflict between Aborigines and successive waves of new settlers. Some cultures have survived and renewed their focus on kin networks, close religious and legal relationships to the land, and revitalization of their culture and language. Of 250 languages, 20 remain.

Experts believe ancestral Aborigines arrived approximately 46,000 years ago, possibly when sea levels were low during the Ice Age. Archaeological sites near Melbourne and Perth are dated to 40,000 years ago, shell middens to 30,000 years ago. Indigenous peoples of Australia and New Guinea, closely related, probably share a common origin in Indonesia. Aboriginal language diversified into a large number of families with no clear relationships, suggesting a much longer period of differentiation than the single Austronesian language family had in the South Pacific.

Early tools consisted of flakes and pieces of stone with sharp edges. Ground-edged hatchet heads found in the North were the only prehistoric tools shaped into regular patterns. From 3000 BC, stone tools spread throughout the continent and may have been used as currency as well as for woodworking.

The clan, the most important social group, moved within a specific tract of land in response to seasonal variation or the need to be at a specific place for ritual purposes. Clans were linked as part of exchange networks that moved objects or ideas over long distances. They also maintained and transmitted culture with images and songs describing creation, short songs

containing powerful information related to specific localities, and series of songs strung together in song lines. Rock and body painting and decoration of portable objects linked clans to the land, each other, and the past.

Aboriginal people believed in the continuing existence of spirit-being ancestors who lived on earth during “the Dreaming” and created the natural world before the arrival of humans. They took various forms represented by totems and behaved as people. They aged and had to return to the sleep from which they awoke at the dawn of time, but they continued to influence natural events and breathe life into newborns. Their wisdom regarding kinship, hunting, and marriage relationships was highly desired.

Australian Aborigines were hunter-gatherers identified by a managerial forager prehistoric lifestyle that included vegetation burning, replanting, and occasional wetland ditching, depending on available natural resources. In western Victoria, elaborate systems were constructed for trapping eels. In northern wetlands, tubers were replanted to promote future growth. Elsewhere, wells were sunk to raise large crops of yams; trees were transplanted; streams were diverted for irrigation; and digging was undertaken to encourage roots. Fire was widely used to open pathways, kill vermin, remove dry vegetation and promote new growth, cook edible animals in their burrows and nests, and prevent more destructive natural fires. Yet when Europeans saw these methods of managing grasslands and diversifying plant and animal life, they did not recognize Aborigines as farmers, gardeners, or herders. Absence of defined fields, permanent villages, and edible domestic animals led them to regard Aboriginal country as unproductive and unclaimed. Aborigines seemed to be wanderers, an inferior people who were not using the land and who should

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be forcibly removed to make way for colonization. Australia was annexed to the British Empire on the basis that it was *terra nullius*, or uninhabited wasteland. This myth prevailed until 1992, when a High Court judged in the Mabo case that native title to land still existed in Australia.

— Susan Schroeder

See also **Australian Aborigines**

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ABORIGINES

Cultural anthropologists have long been fascinated by the study of Australian Aborigines, and many foreign anthropologists have emigrated to Australia to study Aborigines. The new arrivals often outnumber local anthropologists at academic institutions. In addition to the historical aspects of Aborigine studies, cultural anthropologists as well as social scientists have become concerned with myriad problems that have surfaced as Aborigines have been acclimatized into mainstream Australian life.

The quality of education in many indigenous communities lags behind standards for Australians in general, resulting in lower literacy rates and a deficit of basic skills needed to prepare young people for facing the realities of the adult world. Aborigines in the most remote areas also lack quality health care and a general knowledge of how poor sanitation makes individuals more susceptible to certain diseases. For instance, in the remote area of Mulan, where more than 60% of Aborigine

children have been stricken with blindness-inducing trachoma, the Australian government agreed to improve fuel access only if local authorities guaranteed that Aborigine children would take daily showers and wash their hands at least twice a day and that residents would regularly remove household garbage. The infant mortality rate among Aborigines is 6 times that of the White population. Aborigines are also more likely than other Australians to die from health-related causes as well as from violence.

The Australian government announced in late 2004 that welfare policies have created a cycle of lifelong dependency among Aborigines, while doing little to change the endemic problems of Aborigine acclimatization. These include lower life expectancy, chronic alcoholism, and high rates of domestic violence. *The Australian* reported on December 16, 2004, that Aborigine males born between 1996 and 2001 face a life expectancy of 59.4 years compared with 77.8 years for their white male counterparts. While comparable Aborigine females fare better with a life expectancy of 64.8 years, that number lags far behind the 82.8-year life expectancy of their white female counterparts. Experts believe that incidences of alcoholism and the flogging deaths of Aborigine wives by their husbands are a result of poverty and alienation. Prime Minister John Howard of the Liberal Party has proposed reforms that stress Aborigine self-help and independence.

Charges of racism have threatened Aborigine acclimatization, leading some experts to claim that the country is in the midst of a racial crisis. This issue exploded in late 2004 after publication of a report by the Equal Opportunity Commission (EOC). The commission's investigation revealed that Aborigine families in Western Australia who make up 18% of the tenants of Homeswest, a public housing complex, were 3 times more likely to be evicted for allegedly being behind with their rent, damaging property, or being socially incompatible with their white neighbors.

As proof of Homeswest's racism, the EOC pointed to the fact that most Aborigine tenants were relegated to inferior housing, which in many cases had been scheduled for demolition. The investigation also uncovered evidence that the housing authority's staff was trained to treat Black

and white tenants differently and that the staff advised white tenants on how to successfully lodge complaints against their Aborigine neighbors, heightening chances of eviction.

While Homeswest stated that it had implemented 43% of the committee's recommendations, the executive director rejected the remaining 57%, claiming that they smacked of paternalism. Rejected recommendations included moving overcrowded Aborigine families into better, more spacious quarters rather than evicting them, because many of the problems had resulted from overcrowding. Recommendations implemented by Homeswest included cultural training for staff members and an agreement to conduct interviews with tenants privately rather than publicly, as had been done in the past.

— Elizabeth Purdy

ACHEULEAN CULTURE

The Acheulean stone tool “culture” refers to the suite of typological characteristics associated with the stone tool technology of the later part of the Lower Paleolithic or Early Stone Age. In terms of stone tool culture chronology, the Acheulean culture immediately follows the Oldowan culture in Africa, and contemporary industries that possibly existed elsewhere in the world, and precedes the Middle Paleolithic or Middle Stone Age. The range of dates associated with the Acheulean is the subject of some controversy, although the general consensus is that it began around 1.6 my and ended around 200 ky.

The Acheulean was distributed throughout the tropical and temperate zones of the Old World. Acheulean sites are found over most of Africa (with the possible exception of tropical forested regions), range into the Near East and India, and extend into Northern and Western Europe. The earliest occurrences of the Acheulean culture are seen in the Rift Valley of East Africa. The Acheulean was present in the Near East and India certainly no later than 1 my and perhaps as early as 1.4 my. The Acheulean appeared in Europe no later than 800 ky. Until

recently, hand axes were not thought to be present in Southeast Asia, which was thought to be divided from Europe and the Near East by the so-called Movius Line, named for Harvard prehistorian Hallam Movius. Recent discoveries in Southeast Asia have called this conventional understanding into question. It appears now that the Acheulean may have been present in Southeast Asia as early as 800 ky, depending on how the Acheulean is defined.

The Acheulean culture ranged remarkably widely in terms of both geography and chronology. It therefore likely represents the product of a substantial diversity of hominids, including *Homo ergaster*, *Homo erectus*, *Homo heidelbergensis*, *Homo neanderthalensis*, and *Homo sapiens*. Much of this, of course, is dependent upon how hominid phylogeny is arranged.

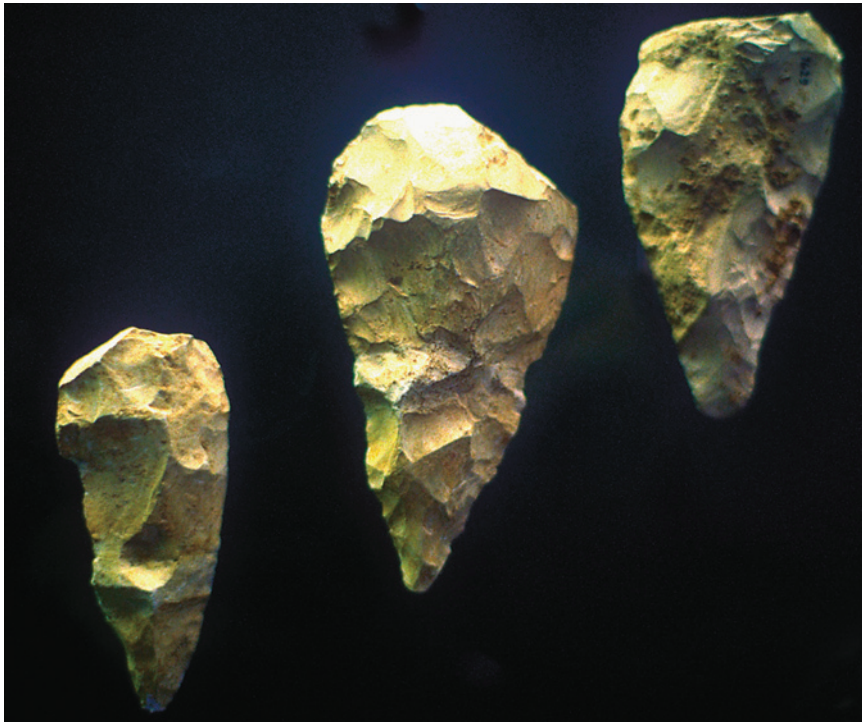
History of Research

The Acheulean culture has an important place in Old World Paleolithic prehistory. The defining characteristic of the Acheulean is the presence of large bifacial reduced core tools, conventionally called “hand axes” or “cleavers.” The most remarkable feature of the Acheulean culture is the persistence of hand axes over an incredible duration of time—almost the entire course of the Pleistocene. Over the course of the Acheulean, hand axes gradually became thinner and more refined, incorporating technological advances such as core platform preparation. However, the overall design and shape of hand axes changed very slowly and remained remarkably consistent. This is the case both within individual sites that contain records of long periods of time and more generally across the Old World in prehistory.

The persistence of the Acheulean hand axe represents a substantial research problem, with numerous proposed explanations. These possibilities include inherited biological programming for hand axe manufacture, sexual signaling using hand axes, cultural instruction of offspring by parents for the production of hand axes, or simply the functional unity of an effective technological design, which was invented and utilized innumerable times in prehistory. The explanations are too numerous to list here, and there is extremely little consensus concerning this problem.

Hand axes were among the first stone tools recognized by modern prehistorians in Europe, likely because of their distinctive appearance. John Frere, an English scientist writing at the end of the 18th century,

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Source: © Kathleen Cohen.

is frequently cited as the first to recognize hand axes and other Acheulean implements as the results of ancient human activity. However, the Acheulean culture is named for the type site of Saint-Acheul, discovered along the Somme River of France during the mid-19th century by Jacques Boucher de Perthes. In addition, the observation of hand axes in association with the bones of extinct animal species at sites like Saint-Acheul was instrumental in the recognition of the antiquity of human presence in Europe, as well as the rest of the world. Among these early researchers of hand axes were the pioneer geological prehistorians, such as Boucher de Perthes and Gabriel de Mortillet, working in the mid-1800s. These scholars and their contemporaries saw hand axes as “type fossils,” indicative of the earliest time periods of human prehistory in the same way that animal fossil specimens were used to date ancient geological layers.

Likewise, hand axes were noticed by archaeologists working in Africa very early at sites such as Stellenbosch, and this lent support to speculation concerning the early origins of humans on that continent. Here, hand axes became important features of stone tool typologies as early as the 1920s. Hand axes and their stratigraphic associations were extremely important to Louis Leakey’s early work in Kenya. He used hand axes as a linchpin in developing a stone

tool chronology for East Africa. Among the most prominent of the natural historians to discuss the subject of hand axes and the Acheulean culture was Thomas Henry Huxley, who saw such stone tool industries as indicative of the sophistication of early humans.

By the first part of the 20th century, archaeologists were beginning to conventionally speak of the Acheulean culture as a ubiquitous industry of the early Paleolithic in the Old World. It was during this time that archaeologists began to speak of “the Acheulean” as a unitary set of stone tool types significant of a specific time range. In this context, the term was basically entirely restricted to chronology.

It is important to understand that stone typology was one of the few methods for determining the age of archaeological sites. By identifying sequences of archaeological cultures, such as the Acheulean, with consistent sets of attributes, it was possible to determine the relative age of archaeological sites. With the Acheulean, the term was used to describe the relative position of stone tool remains in the chronology of the Paleolithic. The Acheulean has never really been used as a descriptive term for any patterns of behavior associated with this time period.

The Emergence of Modern Viewpoints

The emergence of chronometric dating techniques in the mid-20th century significantly changed the place of the Acheulean culture concept. This took the burden off of analysis of stone tools in terms of determining the age of archaeological sites and freed analysis to answer questions of behavior and culture change. Because of the newer importance of questions inferring behavior, the Acheulean culture has been defined using other technological characteristics, taking emphasis away from hand axes as type specimens almost exclusively defining the culture. These features include centripetal removal of flakes from cores, bifacial removal of flakes, low frequencies

of “formal” or shaped or retouched tools, and large assemblages of unmodified flakes. In certain technological vocabularies, the Acheulean is referred to as “Mode 2” technology because of the presence of these features. In general, the Acheulean is characterized by simple flake reduction, without much evidence of core preparation until the transition to the Middle Paleolithic or Middle Stone Age. The early Acheulean is marked by deep, aggressive flake removal using stone hammers, while the later Acheulean is defined by more refined flaking using bone, wood, or antler hammers, especially in the thinning of bifaces.

The emphasis on hand axes as markers of the Acheulean was also largely based on the assumption that such core tools were the functional parts of the technology; flakes were viewed as waste products of the manufacturing process. More recent studies have recognized flakes as the most useful part of Acheulean technology, because they have a much sharper edge than either core tools like hand axes or retouched “formal” tools. This has somewhat challenged the validity of defining this culture as using hand axes so exclusively. In fact, this newer view sees cores, such as hand axes, as the waste product of flake production—the exact reverse of the classical notion. In this revised view, the Acheulean is no longer defined by the designed manufacture of specific tool types like hand axes, but instead by specific strategies of flake manufacture, core reduction, and lithic raw material economy. Because of this, more recent scholarship has been extremely wary of the hand axe as typological marker.

In addition, after the dating advances in the mid-20th century, numerous sites appeared within the date range associated with the Acheulean, but they lacked hand axes. Oftentimes, sites without hand axes were even in close geographical proximity with contemporary sites containing hand axes. Such contemporary sites lacking hand axes have often been referred to as belonging to the “Developed Oldowan” industry, because of their presumed connection with the earlier culture. However, the Developed Oldowan is a term that has largely fallen out of favor within Paleolithic archaeology. Quickly, it became apparent that a number of factors affected whether or not hand axes were deposited at a given site, including the availability of appropriate raw material and the occurrence of technological problems for which the manufacture of hand axes was a solution. The absence of hand axes could not, by itself, indicate a separate technological culture. These rationales have

also been used to explain the scarcity of hand axes east of the Movius Line. The geology of Southeast Asia is characterized largely by sedimentary contexts, which seldom produce the quality of raw material needed for hand axe manufacture found in Europe, the Near East, or Africa.

Further complicating the definition of the Acheulean tied to the presence of hand axes, with refinement of absolute dating techniques, many archaeological sites with hand axes were dated outside of the range usually associated with the Acheulean. This was especially the case in Europe, where numerous well-documented sites with hand axes were dated to surprisingly late in the Middle Paleolithic. For example, the Mousterian-of-Acheulean culture of the European Middle Paleolithic is defined by the presence of hand axes but occurs long after the end of the Acheulean in that region. Furthermore, it is unclear whether the hand axes present in the Mousterian-of-Acheulean tradition operated in the same way as their earlier counterparts.

These factors have meant that the use of hand axes as the definitional characteristic of the Acheulean has become problematic. In addition, few other features of equal clarity have been offered to redefine the Acheulean. In fact, in many circles, the use of the term “Acheulean” has been eliminated in favor of more general terminology more closely tied to chronology, rather than stone tool typology. Advances in dating techniques and new conceptual approaches to the archaeology of stone tools have presented a substantial critique of the Acheulean culture as a singular phenomenon. It now appears that the Acheulean was neither a group of related hominids nor a single “cultural” way of manufacturing stone tools. The term now has little agreed-upon significance beyond its meaning for chronology.

— Grant S. McCall

See also **Axes, Hand; Dating Techniques; Oldowan Culture; Paleontology**

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ACROPOLIS

The word *acropolis* literally means the higher, fortified part of a city. While there may be many of these in Greece, when we speak of the Acropolis, most understand the reference to be to the Acropolis of Athens. The Acropolis sits more than 500 feet above the plain of Attica in the city of Athens, bordered on three sides by cliffs and accessible by foot on only one side. Its geography made it a natural fortress during the iron-age beginnings of Athens, and it functioned primarily as a fort until sometime after the end of the Persian Wars (479 BC).

Evidence of human habitation dates from the Neolithic. Through the centuries, the Acropolis has served the people of Athens as a place of residence, palaces, centers of worship, a citadel, and monuments to their gods and goddesses. One such temple was

dedicated to Athena, the city's patron goddess, as early as 650 BC.

Major Monuments

On the Acropolis, major monuments include the Parthenon, the Erechtheion, the Temple of Athena Nike, and the Propylaea.

The Parthenon

Built around 440 BC and dedicated to the city's patron goddess Athena Parthenos, the Parthenon's creators were Pericles, the Athenian sculptor Pheidias, and architects Kallikrates and Iktinos. The *cella* or center of the temple was designed to shelter Pheidias's statue of Athena. On four sides of the Parthenon, a frieze of the Procession of the Panathenaea, one of ancient Athens's most holy religious festivals, depicts the figures of more than 300 human beings as well as gods and beasts in procession.

Through the centuries following its construction, the Parthenon has served as a Byzantine church, a Latin church, and a Muslim mosque. When the Venetians attacked the Acropolis in 1687, the Turks used the Parthenon to store gun powder during the seige. As the Venetians bombed the Acropolis, one of the bombs hit the Parthenon, destroying much of the structure.

The Erechtheion

Built about 20 years after the Parthenon, the Erechtheion sits on a sacred site of the Acropolis, the



Source: © iStockphoto/Andy Didyk.

site where Greek legend claims the goddess Athena and the god Poseidon-Erechtheus battled over which would be the patron of the city. Athena won. The Erechtheion's main temple was divided so that Athenians could worship both Athena and Poseidon. The monument's most famous feature is the porch of the Caryatids or maidens, in which statues of maidens border the porch's perimeter. One of these was removed from the Acropolis by Lord Elgin and subsequently sold to the British Museum, where it remains. The other maidens are now housed in the Acropolis Museum, so the figures we now see decorating the porch of the Erechtheion are only copies of the original statues.



The Temple of Athena Nike

About the same time as the building of the Erechtheion, the architect Kallikrates constructed the Temple of Athena Nike. The small monument's walls are friezes depicting the meeting of the gods on one side and battle scenes on the three remaining sides. In 1686, the Turks dismantled the temple to use the site for a large cannon. The Greeks rebuilt the temple around 1840 and again in 1936, when the platform on which it had been built was found to be crumbling.

The Propylaea

Pheidias's associate, the architect Mnesicles, built the Propylaea, a monumental gateway entrance to the Acropolis just before the beginning of the Peloponnesian wars. It consisted of a central structure and two wings, with one wing serving as an art gallery. The Propylaea's massive colonnades faced the east and west, and two rows of columns divided the central corridor. Its coffered ceiling was complete with painted decoration.

The Acropolis Today

Earthquakes, fires, bombs, vandalism, and war have, through the centuries, taken their toll on the

structures of the Acropolis. In some instances, parts of buildings were demolished and used in the construction of new monuments. But once the Greeks liberated Athens from the Turks, they began major restoration efforts to protect, conserve, and restore the Acropolis.

These efforts continue today. The Greek government reports completed restoration of the Erechtheion, parts of the Propylaea, and the east facade of the Parthenon. Projects in progress include the north side of the Parthenon, the Propylaea's central building, and the Temple of Athena Nike.

— C. A. Hoffman

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ACTION ANTHROPOLOGY

Action anthropology is a scholarly enterprise based in field research, data collection, and theory building, during which the anthropologist is also committed to assisting local communities in achieving their goals and meeting specific felt needs. Rather than pursuing pure science or perusing their own agendas, action anthropologists see themselves more as tentative coexplorers who help the host community to identify challenges and seek ways to meet them. In the process, action anthropologists contribute to the community while learning from their experiences. While applied anthropology generally focuses on programmatic concerns of nonlocal funders, both public and private, action anthropology discovers local concerns in the course of ethnographic work and engages local resources in addressing them. Though related to applied anthropology, which began in Great Britain in the 1920s and the United States in the 1930s and which shares the goal of being a useful rather than purely scholarly field, action anthropology takes a more populist approach. The anthropologist must be committed to assisting the host community by serving as an educator and a resource, not as a source of money or expertise. Mutually agreed-upon plans for action arise from knowledge gained by fieldwork and the reception of knowledge by the host group.

Primarily derived from research with Native American communities, action anthropology was a product of and sustained by the personal dynamism of anthropologist Sol Tax (1907–1995). Anthropology has, from its inception, been more than disinterested research and data collection. E. B. Tylor (1832–1917) described anthropology as a reformer's science. Lewis Henry Morgan (1818–1881) advocated against Iroquois removal. Bronislaw Malinowski (1884–1942) publicly excoriated British colonial policy, and James Mooney of the Bureau of American Ethnology critiqued the federal government as part of the cause of Plains Indians' social and economic problems in the 1880s. Nevertheless, it was many decades before anthropologists came to the idea that host individuals in the field were colleagues rather than "informants" or to the belief that the relationship between fieldworker and host community was one of mutual help and reciprocity rather than simply scholar and subject population. Also, action anthropologists are participants as well as participant observers, both

objectively learning from outside and eventually entering the fray when and where appropriate. Though not without good intentions, early anthropology simply suggested solutions for Native peoples, anathema to action anthropologists. Action anthropology facilitates what is now referred to as *community-based needs assessment*.

Tax articulated his own understanding of action anthropology in 1975. He stressed professional tolerance for ambiguity in action anthropology, as its methodology was tentative and contextual, much like the clinical situation of a physician interacting with a patient. He cautioned that this process was not social work; theory building and understanding remained paramount but should never be separated from assisting communities with their specific difficulties. Local people must make their own decisions and identify their own problems and target the specific situations they wish to address. Tax stressed three values in carrying out action anthropology: the value of truth couched in science and scholarship, the value of freedom of communities to make their own decisions, and the value of focusing on only the specific task at hand rather than attempting to change total situations.

Tax worked out the program for action anthropology while teaching at the University of Chicago and directing the work of graduate students at a field school, which ran from 1948 to 1959. Tax himself worked for a short period of time in 1928 among the Fox (Mesquakie) of Tama, Iowa, and steered his students into the Fox Project, where they engaged in cooperative activities such as establishing an American Legion hall, educating the local non-Indian population about the Mesquakie and the Mesquakie about their neighbors, setting up an artists' cooperative, assisting the Mesquakie in maintaining the integrity of their own local school system, encouraging small-scale communal gardening, establishing scholarships for Native students, and opening their own off-reservation residence as an informal social hall for young people to form strong relationships with members of the Native community.

Tax's own larger anthropological career demonstrated his commitment to the ideals that find their expression in action anthropology, particularly his organizing the Chicago American Indian Conference in 1961, his activism regarding Native American rights, and his founding of the international journal *Current Anthropology*, which published new research

and facilitated collegial dialogue, academic and Native. In addition to his research and political action in Guatemala, Dr. Tax worked for the improvement of his own Hyde Park neighborhood; participated in the organization and early growth of the American Indian Center of Chicago; supported a Native-based educational venture, Native American Educational Services (NAES) College in Chicago; encouraged Native American participation in the Master of Arts Program in the Social Sciences (MAPSS) at the University of Chicago, the Chicago Indian Center; and facilitated the establishment of the tribal research D'Arcy McNickle Center at the Newberry Library, named after his friend, colleague, and key American Indian Chicago Conference associate D'Arcy McNickle (of the Salish culture).

Many scholars have carried on the mission of action anthropology using Tax's insights and continue to do so. Among the most significant action anthropologists to emerge directly under Sol Tax's mentorship were Robert Reitz, Robert K. Thomas, and Nancy Lurie. Robert Reitz started with the Fox Project in 1955 and began an artists' cooperative. He also worked among the Three Confederated Tribes (Mandan, Hidatsa, and Arikara) at Fort Berthold and was director of the Indian Center of Chicago until his death in 1971. Unfortunately, his legacy was in action and not in writing, and thus we have little from his pen. Robert Thomas, a Cherokee anthropologist trained at Chicago, worked on the Fox Project, the National Indian Youth Council, was a founding board member of NAES, and was deeply involved in the struggle for Native American rights. Nancy Lurie of the Milwaukee public museum also based her approach to museum anthropology in the realm of action anthropology, stressing Native community involvement and partnership with the Native community in constructing museum displays and establishing activities and programs. She also promoted displays of contemporary Native life rather than simply focusing on the Native past.

Other anthropologists credited with direct assistance to indigenous populations that presage the tenants of action anthropology include Allan Holmber's work in Vico, Peru, assisting in the aftermath of an earthquake, and James Spillius's intervention in Tikopia (Polynesia), after a horrific hurricane. Both anthropologists' roles moved from pure research to what Tax would call "action": communal assistance at the time of a crisis.

The invisibility of Tax's own action program as well as that of others became painfully evident when Vine Deloria Jr. and other Native Americans took anthropology to task for remaining apart from the real needs of Native communities, exploiting them through research that furthered only the career of the anthropologist. Deloria, who attended the American Indian Chicago Conference in 1961, published his initial critique in 1969, some 20 years after the inception of the Fox Project and at a time when research with Native American communities had significantly diminished. Nevertheless, his words served to challenge the discipline to take seriously its commitment to peoples as much as to research and to carry out research not "pure" but practical to lived situations.

Deloria's critique was part of a larger change in consciousness experienced among U.S. anthropologists who experienced not only paradigmatic meltdown but also a crisis of conscience in the 1970s. Many came to believe that their discipline was too closely associated with the rise of colonialism at best, and instrumental or essential to colonialism's success at worst. Anthropology as a field grew self-conscious and self-critical, attempted to distance itself from power structures (although the academy itself is a power structure), and sought consciously and even radically to identify and side with indigenous peoples who were once objects of study.

While action anthropology was being formulated both in the mind and heart of Sol Tax and in the praxis of the Fox Project, a similar community organizing was beginning in urban Chicago. Fostered by such activists as Sol Alinsky, who knew Tax well, this movement sought to improve the lives of the urban poor, particularly industrial and meatpacking workers. Tax's work in the Chicago Community Trust mirrored these concerns.

There is no formal "school" of action anthropology today, nor does it have specific institutional locus. Lecture, meetings, and concrete field model its methods and practices. Tax and his students Fred Gearing and Robert Rietz presented their work on the Fox Project at the Central States Anthropological Society in the spring of 1956. Information on the Fox Project and action anthropology was also presented at a symposium at the annual meeting of the American Anthropological Association in 1957. There have been significant conferences on action anthropology itself, including the Panajachel Symposium, held

in Guatemala in November 1974. The majority of contemporary reflections on action anthropology are intimately linked to the career of Sol Tax and the Fox Project.

Action anthropology is not without its critics. Most trenchant of the critiques is precisely that anthropology should be conducted as an objective science whose goals are research, publication, and instruction. To become aligned with people in the field is to betray that objectivity. Furthermore, critics point out, the more students became aligned with the helping aspect of action anthropology, the less likely they were to complete their doctorates, and therefore, they ultimately could do little to interact with and help change larger power structures. While these criticisms are fair, action anthropologists are inclined to empower others to construct solutions rather than to deal with these power structures themselves. Action anthropology is sometimes accused of a hidden paternalism in the assumption that a group needs to change or that outsiders are necessary to effect successful or appropriate change.

Finally, there are critics who say that American anthropological theory was insufficient to the goals of action anthropology and action anthropology would have been better served through British applied social anthropology and a multiplicity of social science approaches. Because the methods of action anthropology are an outcome of Sol Tax's particular way of proceeding in the field, it may have been too dependent on his own personality and action anthropology is still finding its tentative, experimental way within the discipline. Many anthropologists adhere to the ideals of service to the host group, theory building through social interaction and process, and the transformation of anthropology from ivory-tower science to collaborative venture.

Sol Tax's ideals are manifest in today's "service learning courses," in which elements of action anthropology are found, as well as in applied anthropology and hyphenated disciplines such as medical-anthropology and legal-anthropology. With the growth of service learning and values-centered education, there will continue to be a place for action anthropology. Action anthropology turned fieldwork into a lifelong profession and activity, not just something required in graduate school and contemplated for the rest of one's career. The fundamental notions of action anthropology are widespread today, especially as anthropologists and "Natives" around the

world continue to build collaborative relationships. The present generation of anthropologists, especially those who work with Native Americans, has practitioners who consciously identify themselves as action anthropologists and shape their fieldwork and teaching accordingly.

The tension between publishing within the academy versus development of ongoing reciprocal relationships with one's field is the tension between doing and being, and that tension can be productive. Action anthropology has more often than not revealed the difficulty of change rather than the importance of total transformation. Indeed, in value-oriented anthropology, the deepest relationships are not utilitarian, but simply *are*. Perhaps that is the more important legacy of action anthropology: fieldworkers learn this lesson through interaction and actively establish these relations, rather than simply gathering knowledge or applying templates for local change.

In my own first year at graduate school in Chicago, Sol Tax told me that ultimately anthropology is an academic discipline that is relegated to the bastions of offices with securely closed doors, libraries, and classrooms. After he said this, he looked up at me and said, with a twinkle in his eye, "But I hope you will prove me wrong on this."

When Creighton University sought to increase enrollment and improve retention of Native students, it was an anthropologist instructor (me) and a Native American colleague working in retention who *together* recognized the need to increase the layers of support given to each high school student. They required help filling out both admissions and scholarship applications, and the faculty needed help to better understand the cultural situation of an increasing population of reservation and urban Native individuals on campus. Our work, funded only with gas money and room and board, was in the best tradition of Tax's action anthropology. We shared the recognition with communities on a local reservation of an addressable problem, the expenditure of a few tanks of gas, and mutually discovered solutions as we worked toward direct assistance to students, to evaluate our successes and failures, and to build better relations with Native students and their relatives.

The best explications of action anthropology come from Sol Tax's own pen. Keep in mind that Tax's view was constantly being modified both in particular field contexts as well as in intellectual discourse.

While Sol Tax himself attributed the Fox Project as the birthplace of action anthropology, this program is best understood in the context of Tax's entire life as demonstrated by Blanchard. Fred Gearing, Robert McC. Netting, and Lisa R. Peattie assembled a documentary history of the Fox Project, which exposes a lot of the thought processes involved in formulating action plans and was used for some time as a textbook for Tax's seminars on action anthropology. Frederick Gearing also wrote a more analytical text on his work in the Fox Project. Assessments of action anthropology and the Fox Project have originated from a variety of authors, such as Piddington, Stucki, Washburn, Rubenstein, Foley, Bennett, Daubenmeier, and Mertens. While there are many critiques of anthropology by Native people, the most trenchant remains that of Vine Deloria Jr.

— Raymond A. Bucko

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ADAPTATION, BIOLOGICAL

Adaptation has a diversity of meanings, even within areas in which it is widely used, such as anthropology, biology, the humanities, and in common parlance.

The study of adaptations is a central activity in biology, where interpretations of the concept have received much scrutiny in recent years, for example, in the articles and monographs of Andrews, Brandon, Gould and Lewontin, Gould and Vrba, Rose and Lauder, Sober, and Williams. Gould and Verba pointed out the presence of two distinct adaptation concepts in the literature: one historical, emphasizing traits' origins and their past histories of selection, the other nonhistorical, emphasizing current functions of traits and their contributions to fitness. For example, some argue that to be regarded as an adaptation, a trait must have been produced by natural selection, and so must be genetically inherited. Gould and Lewontin distinguished adaptations from *exaptions*. The latter are preexisting traits that at some time in the past acquired beneficial effects without being selected for them at that time. However, exaptions may subsequently be modified by natural selection as a result of their new functions. The concept of exaptions seems to have little relevance to studies of extant species.

A meaning common in physiology and the social sciences is that an adaptation is a beneficial modification of an organism that adjusts it to changes in the environment. In many cases, these changes are homeostatic. For example, changes in the size of the pupil keep the light intensity at the retina within the optimal range for vision. If effects of such phenotypic adjustments lead to increased survival and reproductive success, that is, to greater fitness, they and the machinery of the body (nerves, muscles, and so on) that produce them are adaptations in the core sense described below.

Another common requirement for a trait to be considered adaptive is that its functional consequences must be consistent with a priori design specifications for accomplishing a specified task. For example, in order to transport oxygen from the lungs to the rest of the body, blood must include a component that binds to oxygen in the lungs yet subsequently releases it in tissues that are oxygen depleted. Hemoglobin has exactly this property, as revealed by its oxygen dissociation curve. Optimality models used in behavioral ecology and many other areas of functional biology

12 ADAPTATION, BIOLOGICAL

are comparable to the engineering specifications used in functional anatomy. Both attempt to identify characteristics of functional designs for specific tasks. At the heart of the use of design specifications is the question: Under existing circumstances, how would a well-adapted organism of this species behave or be structured? Design specifications play an important role in the study of adaptations, at every level of biological organization.

At the core of these diverse interpretations is the idea that adaptations are traits that benefit the organism. In many cases, these benefits result from effects on vital processes, such as maintaining osmotic balance, obtaining food, avoiding predators, caring for offspring, and so forth. The ultimate criterion of benefit is that a trait's effects must be functional, in the sense of enhancing fitness. In some cases, adaptation refers to the processes that select for such traits. Adaptations may be at any level of organization: biochemical, physiological, anatomical, or behavioral.

Measuring Adaptiveness in Extant Species

From the standpoint of the current functions of traits and their impact on fitness, a trait variant is better adapted, relative to competing variants in other individuals of the same species, to the extent that it directly augments fitness. Thus, in studies of living organisms, one can confirm that a trait is adaptive and measure its degree of adaptiveness by determining its effect on fitness. However, just confirming that traits are adaptive leaves unanswered some of the most interesting questions about a trait, such as: What correlated traits augment fitness because they affect the same vital functions, and what are their relative contributions? By what means does a trait augment fitness, and how strongly is it being selected? Adaptation requires a mechanism.

Following is an abbreviated description of several research approaches that, depending on one's choice among them, can answer the questions above, providing quantitative measures of the relative adaptiveness of traits in terms of their contributions to functions as well as fitness. They enable one to evaluate the direct force of characters on fitness, excluding effects from correlated traits. They are based on phenotypic selection but not the genetic response to selection; thus, they require only data that can be obtained within a single generation and require no assumptions about the genetic basis or evolutionary history of the traits.

They take advantage of individual differences in traits in a local population of a species and are applicable to polygenic traits, such as those commonly studied by anthropologists, evolutionary psychologists, and biologists. Some are based on *a priori* design specifications of optimal phenotypes, others on multivariate selection theory, especially the work of Russell Lande and Stevan Arnold, which deals with the effects of selection acting simultaneously on multiple characters.

Components

Depending on the choice of approach, various combinations of the following four empirical components are used: (a) samples, taken in a local population of a species, of individual variants in a set of phenotypic traits known or thought to affect a specified vital activity, such as getting food or obtaining mates; (b) samples of proximate effects ("performances") of these variants, whether functional or otherwise; (c) a quantitative optimality model of one or a combination of traits and corresponding proximate effects that are posited to augment biological fitness; and (d) estimates of lifetime fitness of each individual.

The approaches will be illustrated by a fictitious study of fishing success of women in a local population. They spearfish independently in the nearby lakes. The fish that a woman catches are eaten only by her family and are the primary staple of their diet. The only exceptions are fish exchanged in barter for other goods. Three traits of the women affect their relative fishing styles and are measured. Women with the best visual acuity favor lake edge shallows, where only they can see the small fish hiding among the water plants. Only the tallest women fish regularly in deep water, where fish are largest, oldest, and relatively slow moving, but scarce. Women with the greatest competence with a spear tend to fish in water of intermediate depth, where they have a unique ability to catch the fast-moving, mature fish.

Two aspects of the women's daily catch seem to be of particular importance: their success at catching pescos, a rare and highly prized fish, very valuable in barter, and the total mass of other fish that they catch. Each day, the weight of pescos caught by each female and the weight of the rest of her catch are recorded. Seasonal totals of these two sets of values for each female provide two measures of her fishing success.

First approach: Evaluate the causal link from any selected trait to fitness. To measure the potential

impact on relative fitness of each phenotypic trait, regress relative fitness w on it. However, because fitness-affecting traits may be correlated, use partial regression β_{wz-i} (ordinary, not standardized) to measure the direct impact of the i th trait, z_i , on relative fitness w , with indirect effects from correlated traits thus held constant. Repeat for each of the other traits that may affect relative fitness. Then, to document any correlations among these traits, calculate their covariances (unstandardized correlations).

Relative fitness w of an individual is defined with respect to the mean fitness in the population, $w = W/W^-$, where W is the absolute fitness of an individual and W^- is the mean fitness in the population. The fitness of individuals can be estimated in several ways, particularly by using aspects of reproductive success, such as the number of surviving offspring. Individual fitness can be measured at long-term study sites of populations on which basic demographic data are consistently recorded and maintained; for data sets of shorter duration, it can be estimated from various components of fitness.

The partial regression of relative fitness on a given character is its *selection gradient*. It measures the change in relative fitness expected if that character were changed by a unit amount but none of the other characters varied. A remarkable result, due to Russell Lande, is that for a set of characters that affect fitness, including all phenotypically correlated traits that directly affect fitness, their selection gradients, arranged as a vector, include all the information about phenotypic selection (but not inheritance) that is needed to predict the directional response to selection.

So, in the case of our study of fisherwomen, we would regress their relative fitness on their ability to see fish hiding in the shallows, on their deep-water fishing ability, and on their spearing competence, then calculate the three covariances among these three traits.

Second approach: Evaluate the causal link from each trait to its proximate effects, then the link from each proximate effect to fitness. The first approach, above, evaluates the causal links from traits to fitness by determining their selection gradients. However, that approach does not tell us anything about the intervening functional effects of traits that augment fitness. In 1983, Stevan Arnold used Sewall Wright's method of path analysis to provide a convenient means of partitioning selection gradients (see Figure 1). He showed



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that for any character z_i (such as z_1 in Figure 1) that affects only one performance variable f_p , a selection gradient β_{wz-i} can be partitioned into two parts: a *performance gradient* β_{f-iz-i} representing the effect of the trait on some aspect of performance, and a *fitness gradient* β_{wf-p} representing the effect of performance of fitness. That is,

$$\beta_{wz-i} = \beta_{f-iz-i} + \beta_{wf-i}$$

$$\text{[selection]} = \text{[performance]} + \text{[?fitness]}$$

$$\text{[gradient]} \text{? [gradient]} \text{ [gradient]}$$

where β_{wf-i} is the partial regression of relative fitness w on the performance variable and β_{f-iz-i} is the partial regression of the performance variable on its trait variable.

A trait may affect more than one performance variable, resulting in branching paths. For example, the second trait z_2 in Figure 1 affects two performance variables, f_1 and f_2 . In that case, the total path connecting

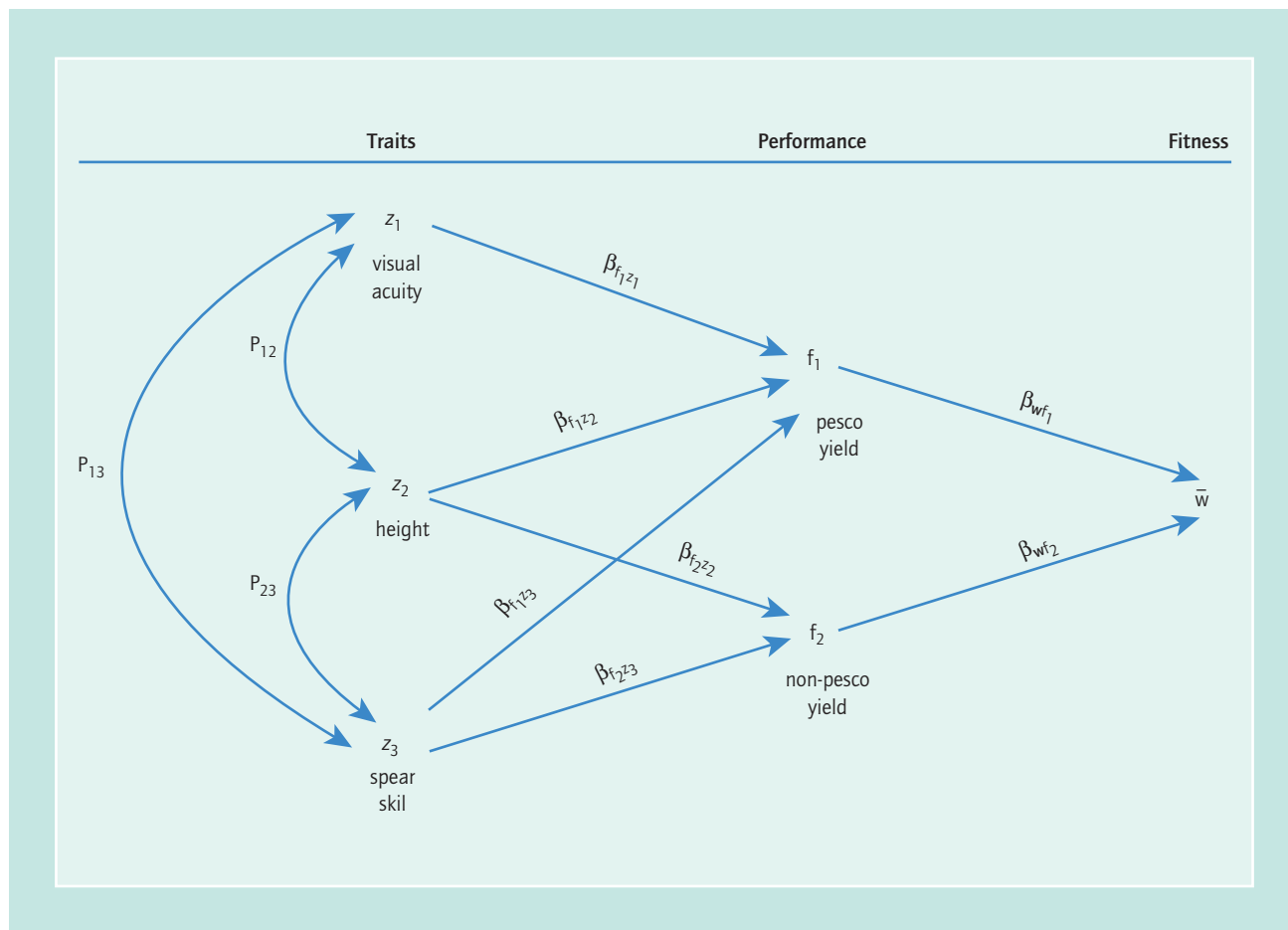


Figure 1 Effects of each phenotypic trait (z terms), such as visual acuity, height, and spear skill in fisherwomen, on performance (f terms), such as yields of pesco and non-pesco fish, and then the effects of performance variables on biological fitness (w term). P terms on double-headed arrows represent covariances among traits, and β terms represent partial correlations, as described in text.

character z_2 with relative fitness is the sum of the two paths, one through effect variable f_1 and one through effect variable f_2 , as shown in Figure 1. The corresponding relationship in partial regression coefficients is $\beta_{wz-2} = \beta_{f-1z-2} \beta_{wf-1} + \beta_{f-2z-2} \beta_{wf-2}$. Thus, the total selection gradient can be partitioned into parts, corresponding to branching paths of influence on fitness, as well as factored along paths. These elementary results can be expanded for analysis of selection gradients in situations considerably more complicated than that of the fictitious fisherwomen depicted in Figure 1.

Of course, we want to know the magnitude of the influence of various traits on a given proximate effect, not just whether they can have any influence. For this purpose, we use each trait's performance gradient to

calculate that trait's average contribution to the mean value of a given effect.

To illustrate, consider our example of spearfishing women. The yield of pesco fish of the average woman can be expressed as the sum of mean contributions from each trait that affects these yields: Each such contribution is the product of that trait's average value and its performance gradient for pesco yield:

$$\begin{aligned}
 \bar{f} &= \text{average woman's pesco yield} \\
 &= \beta_{f-1z-1} \cdot \bar{z}_1 = \text{average contribution of visual acuity} \\
 &+ \beta_{f-1z-2} \cdot \bar{z}_2 = \text{average contribution of height} \\
 &+ \beta_{f-1z-3} \cdot \bar{z}_3 = \text{average contribution of spearing ability} \\
 &+ \dots = \text{contribution from other elements.}
 \end{aligned}$$

We can proceed similarly for the second causal link, evaluating the contribution made by each performance variable to fitness. For example, the mean fitness w^- of the spearfishers can be partitioned into additive components:

$$w^- = \beta_{wf-1} \cdot f^-_1 + \beta_{wf-2} \cdot f^-_2 + \text{contribution from other elements,}$$

where the first two terms in the summation on the right are the contributions to mean fitness made by the average woman's catch of pesco and non-pesco fish, respectively. Such contributions of performance variables to fitness are good indicators of their relative adaptiveness.

Third approach: For a selected vital task, devise and test an optimality model. Such a model would be based on optimizing (maximizing or minimizing, as appropriate) a performance variable presumed to have a major net impact on fitness, taking into account the variable's benefits and also correlated costs and entailed constraints.

The benefit variable to be optimized is represented by an objective function. If the detrimental effects of some cost variables change continually as the benefit variable changes, the cost and benefit variables can be combined into a single cost-benefit function, to be optimized. For cost variables that exhibit their detrimental effects only when they exceed a threshold value, those values are each represented by an appropriate constraint function. Those diets that meet all constraints are adequate: They meet minimum requirements for all nutrients without exceeding any limits on toxins or other hazards.

For our hypothetical fisherwomen, their fishing is a contribution to the vital task of getting enough food and the right kinds. Suppose that during a period when catches are poor, their protein intakes and those of their families are so low that increases in protein intakes are expected to result in greater increases in survival and reproductive success than would a change in any other attribute of their diets. Then, their objective would be to increase their protein intake, which for them comes almost entirely from fish.

In a protein maximization model for their fishing, this objective is made explicit by an objective function. Suppose that pesco fish are 17% protein and all other fish are 12% protein. Then, the weight of protein P in

a woman's catch on a given day can be calculated from the linear function $P = 0.17f_1 + 0.12f_2$, where f_1 is the weight of her pesco catch that day and f_2 is the weight that day of her catch of other fish. In a simple model, the objective could be to maximize P . Suppose, however, that greater time devoted to fishing results in progressively less time available for other vital activities, and thus in decrements in fitness. In that case, the objective function would be for a net effect, chosen to reflect this cost-benefit trade-off.

A variety of constraints would further limit a woman's ability to obtain more protein. She cannot maximize protein by limiting her catch to the protein-rich pescos, because they are rarely caught. Other constraints that might restrict her protein yield include maximum effort that she can devote to fishing and the need to remain below her maxima for all toxins or other hazards entailed by consuming any given diet. For example, if pesco fish are unusually rich in vitamin D, the upper limit on safe vitamin D intake establishes a maximum daily safe consumption of pesco, even though they are very rich in protein. If the largest non-pesco fish occur only in the cold, deep water, the dangers of hypothermia and drowning might place an upper limit on the time that can safely be devoted to those fish. The success of an optimality model depends on one's ability to incorporate as much relevant natural history as possible into the choice of the objective function and its constraints.

In addition to the optimality model itself, three forms of data are required for this approach. They are the same as in the second approach, namely, (a) individual values of phenotypic traits that are relevant to the model (in our example, values for the three traits that contribute to successful fishing and for each constraint-related trait); (b) proximate effects (the weight of each female's pesco and non-pesco catch and their respective protein concentrations); and (c) fitness (how long each subject survived and her lifetime reproductive success).

A model is basically an elaborate hypothesis, for which the common method of confirmation is a goodness-of-fit test. For an optimality model, such a test would tell us whether the individuals or their mean were at or near the specified optimum. However, for a host of reasons, reviewed by Altmann, Dawkins, Rose and Lauder, and also Emlen, most organisms are unlikely to be performing at or near optimum. For example, the constraint set may not

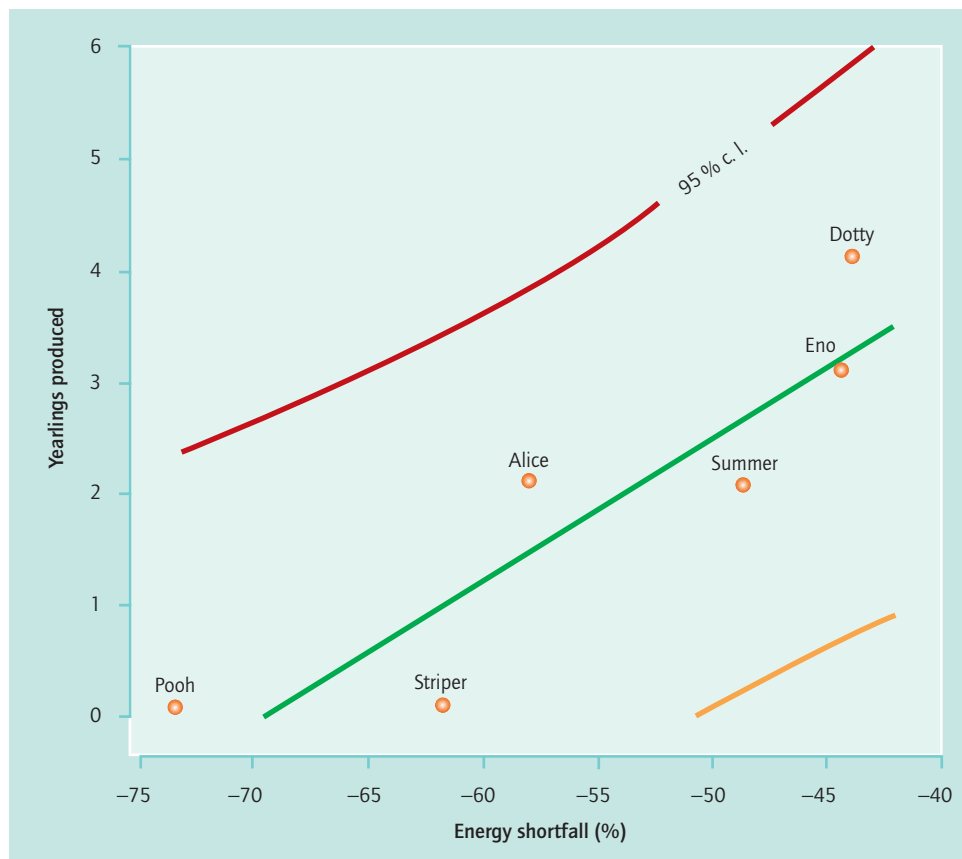


Figure 2 Reproductive success of female baboons (number of surviving yearlings that they each produced in their lifetime) as a function of their energy shortfalls as yearlings (percent deviation of their actual intakes from their respective optimal intakes). Adjusted $R^2 = 0.76$, $p = 0.05$.

Source: From Altman, S., *Foraging for Survival*, copyright © 1998, reprinted with permission of The University of Chicago Press.

be complete, and so the putative optimum may be beyond reach. A more reasonable question to ask is whether those individuals that are closer to the optimum specified by the model have higher fitness, as in Altman's study of foraging in yearling baboons (see Figure 2).

Confirming an optimality model in this way is, at the same time, a confirmation of adaptive differences in the specified traits and in our identification of the functional mechanisms by which these traits affect fitness.

Thus, if, up to a point, women whose catches yielded more protein have higher fitness than other women—if the objective function of the model is, as had been assumed, a limiting factor for fitness—her fishing and the constellation of traits involved in it are more adaptive than those of the other women.

Fourth approach: Evaluate the causal links from each trait to its proximate effects. What can we do to evaluate adaptiveness if data on fitness are not (yet) available? Method 2 was based on Arnold's separation of fitness into two parts: a performance gradient representing the effect of the trait on some aspect of performance and a fitness gradient representing the effect of performance on fitness. We can take advantage of the ability of performance gradients to isolate the effect that each trait has on a given performance traits, and we can quantitatively evaluate the contribution made by each trait to each performance variable. If we assume that through their impact on vital processes, each of these performance variables affects fitness, they are indicative of the adapt-

iveness of the traits, even though in the absence of fitness data, we would be unable to test that assumption.

If we had an optimality model (third approach), we would already have hypothesized how to combine trait variables into quantitative predictions of each individual's level of performance on the most fitness-enhancing performance variable, and thus to predict its fitness.

Recent developments in interspecific comparative methodology, involving phylogenetic analysis of homologous traits, provide another approach to documenting that a trait is an adaptation and studying the evolution of correlated traits. For the study of living humans, however, the lack of any surviving species of the same genus or even family greatly limits the applicability of these methods in cultural anthropology. Similarly, alteration or removal of traits,

though sometimes used in experimental biology to study the functions of traits, would be unacceptable in studies of living humans, except perhaps where such changes are made independently, for cultural or medical reasons. (Do I chew differently without my third molars?)

Fifth approach: Evaluate the adaptiveness of a trait by whether its effects are beneficial by intuitively reasonable criteria. Suppose that we have neither the data to evaluate performance gradients or selection gradients nor a model of optimal phenotype. What then? One possibility is to use our knowledge of the subjects' needs or deficiencies, particularly ones having major effects on survival or reproduction, and our evaluation of the efficacy of various traits to satisfy these needs. This basic technique has enabled medical research to uncover hundreds of functional traits, without recourse to measures of fitness or heritability.

If members of our local fishers' families show signs of protein malnutrition, then even before the first of them has died from it, we can reasonably assert that those fishers who bring home a larger harvest of fish have adaptive fishing practices. On the other hand, if the local human population shows signs of scurvy, then the woman who brings back a bounteous catch of fish only because she fished longer has traits that are less adaptive than the one who fished just long enough to satisfy her family's protein requirement, then went off in search of fruit—which, she has noticed, alleviates the symptoms of scurvy.

For centuries, descriptive naturalists have identified a wide variety of adaptations. Charles Darwin described dozens of them. Although the criteria that descriptive naturalists use to identify adaptations seem never to be made explicit, their descriptions indicate that they rely on noticing uses to which physical traits and behaviors are put, particularly exaggerated ones, and especially in comparison with corresponding traits in related species. These methods of observant physicians and naturalists are no less valid today, even if they have neither the scope of some methods described above nor the ability of those methods to systematically disentangle and measure complex interrelationships.

— Stuart A. Altman

See also **Selection, Natural**

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ADAPTATION, CULTURAL

Cultural adaptation is a relatively new concept used to define the specific capacity of human beings and human societies to overcome changes of their natural and social environment by modifications to their culture. The scale of culture changes depends on the extent of habitat changes and could vary from slight modifications in livelihood systems (productive and procurement activity, mode of life, dwellings and settlements characteristics, exchange systems, clothing, and so on) to principal transformation of the whole cultural system, including its social, ethnic, psychological, and ideological spheres.

History of the Idea

The origin of the concept of cultural adaptation and dissemination in contemporary anthropological literature is connected with the concept of cultural



Source: © Photo provided by www.downtheroad.org, The Ongoing Global Bicycle Adventure.

systems that, to a certain extent, fit the living conditions of their transmitters. The theoretical background of such an approach was created at the end of the 19th century in the American school of possibilism led by Franz Boas. Possibilists regarded nature as a basis from which a great number of different versions of cultural communities could arise and develop. Bronislaw Malinowski, the founder of the functional approach to the interpretation of culture, understood culture as the specific answer to the challenges of nature. Representatives of the New York school of culture studies, led by Ashley Montagu, regarded culture as an adaptive dimension of human society.

Western European anthropologists in the 1950s and 1960s—in line with a reconsideration of the fundamental basis of theoretical reflection in the humanities—took the next step. Julian Steward put forward the idea that we should regard the natural environment as one of many factors of cultural change. About the same time, Leslie White proposed the view that human culture was an extrasomatic system of adaptation with three basic directions: technological, social, and ideological.

With this theoretical background, a social direction was formed for investigations in the fields of

cultural and social anthropology, cultural geography, ecology, psychology, and archaeology. Its proponents see their primary task as the detection of the ecological function of culture. In the mid-1990s, we could distinguish two basic approaches within this framework: the phenomenological approach, which paid special attention to the active character of primitive populations' engagement with their environments, and the cognitive approach, which tried to classify mental representations of the environment. As a result, western European and American science now thinks of cultural systems

and societies as autonomous but mutually interdependent units in which complicated mechanisms of adaptation to living conditions are elaborated and realized. In this process, cultural systems act as determinants of social trajectory, and society is an indispensable component of this trajectory.

In Marxist Soviet and post-Soviet science, the analysis of natural geographic factors in the genesis of culture and detection of culture's ecological function is connected with the ethnographic direction of interpreting culture from an actional approach. The movement's most prominent founder and promoter, E. Markaryan, regarded culture as a system of extrabiological mechanisms, through which the whole cycle of human activity is realized, primarily in all of its specific manifestations: stimulation, programming, regulation, fulfillment, maintenance, and reproduction. The adaptive effect here could be achieved as a result of the plurality of a culture system's potentialities. At the same time, the majority of actionalism's proponents don't deny that the specific mode of adaptation to living conditions is elaborated in human society. There, the cultural system no longer acts as an adaptive unit but only as a universal mechanism of adaptation.

The concept of the ecological function of culture has been further developed in recent studies by

Russian ethnologist Sergei Arutyunov. According to Arutyunov, we should regard culture as a set of different ways of institutionalizing human activity. Culture's principal functions are the formation and transformation of the environment, on one hand, and of human beings with their spiritual and physical characteristics, on the other. The formation of a cultural system is a process of adaptation to specific niches, at first only natural ones, but niches that, in the course of time, become more social. To be able to realize its adaptive function, culture should not only be capable of responding to a minimum of environmental requirements, but also have at its disposal the potential necessary for the achievement of its adaptive effect in new conditions.

Main Notions and Theories of Cultural Adaptation

In recent decades, the concept of cultural adaptation has become an integral part of many fields of behavioral studies, such as behavioral psychology, behavioral archaeology, behavioral anthropology, and others. Their principal subject of investigation is behavioral systems, which are regarded as a model of connections between human activity and components of natural environment. In the second half of the 1990s, such notions as behavioral selection, behavioral flow, behavioral repertoire and others contributed to the rise in popularity of a cultural adaptation concept.

Series of theories, notions, and concepts have been elaborated on in connection with the concept of cultural adaptation, among them, adaptive level, adaptive policies and processes, and accommodation and assimilation. Most are subjects of sharp discussions. At the present, the concept of optimum adaptive level appears to be the only one that does not invoke substantial opposition. The idea of optimum adaptive level is that the human group always tries to minimize the changes necessary for achieving an adaptive effect. We can trace the roots of this idea to physics in the 18th century. Lagrange formulated for the first time the principle of least action. In the first half of the 20th century, this theory in different variations was explored by Losch in economic geography and by Zipf in social sciences. It plays an important role in systems analysis (as in the concept of minimum potential energy) and in operational analysis (the

route of optimum transfer or geodesic line). Environmental psychologists have also adapted it.

In applying the concept of cultural adaptation, there are several acute problems, including the gradation of adaptive levels for each adaptive policy. During the past 40 years, anthropologists have discussed a broad spectrum of variation in parameters. Among them, we can discern criteria that can be defined rather precisely, such as the concrete scoring of the net efficiency of food acquisition, alongside absolute abstract notions, such as happiness.

— Olena V. Smyntyna

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AESTHETIC APPRECIATION

Aesthetics is the area of philosophy that studies the nature of beauty and art. Aesthetic appreciation, then, is the admiration of beauty, such as valuing the fine arts of music, literature, dance, and visual art. What is considered beautiful and even what is considered



Source: © iStockphoto/Radu Razvan.

art are not always agreed upon by everyone in the same culture, much less across different times. Recognizing what is appreciated aesthetically for a given group can help us understand the values that inform their decisions, how individuals interact with each other, and even how advanced a past civilization was according to how art was incorporated into their tasks. Much of what we know about ancient civilizations in Egypt, Greece, South America, and China, for example, comes from the art and artifacts that have been uncovered by archaeologists. The word *aesthetics* comes from the Greek word *aisthanomai*, which means *to perceive*. Theories of aesthetics fall under the study of philosophy and other disciplines concerned with how we value what we perceive.

Artifacts are objects created for human use, such as tools, weapons, clothing, utensils, and individual works of art. The word *art* usually refers to the intentional process of creating something to fulfill an aesthetic purpose. Because there are choices in how artifacts are designed, they can be artistic and carry an

aesthetic quality. While some people share reactions to certain objects of art, the aesthetic properties themselves are usually subject to individual interpretation. That a painting is square, framed in gold, and brushed with blue and yellow pigments are aesthetic facts; they are not questionable. That the square represents perfect order, the gold depicts the prestige of royalty, and the vibrant blue and yellow convey the peace, warmth, and contentment of the sun shining in the sky are aesthetic determinations that could be interpreted differently. They are judgments. Aesthetic properties often have the power to inspire emotional response, and such a response is not likely to be consistent.

Whether or not there is a universal concept of beauty is a question philosophers have asked for centuries. Nevertheless, the beauty and aesthetic properties found in art serve many purposes. Art can be educational, as with an illustration that details the bones in the human skeleton. It can be representative, as with a play that tells the life of two characters in history. It can motivate, as with a speech that inspires listeners to action. Art can enrich our lives in the way that a sculpture adorns a room or music

inspires a mood. The ways we communicate what we perceive in the world are expressed in how we create, value, and respond to the aesthetic properties of art. Contemporary philosophers of aesthetics are concerned with our perceptions, both immediate images that present themselves in our minds and the personal manner in which we make sense of such impressions. Because aesthetic appreciation inspires emotional response, it is also of interest to cognitive psychologists who seek to know how the brain processes what we see.

Major Contributors

The term *aesthetics* was first used in 1735 by Alexander Gottlieb Baumgarten, a German philosopher who separated the study of knowledge into two subgroups: logic as the study of abstract ideas and aesthetics as the study of how feelings influence sensory perception. The topic itself is much older, having been explored by ancient Greek philosophers. Plato (427–347 BC) believed that true reality exists in perfect forms of

concepts like good, beauty, triangle, and so on. People and objects can at best only be imitations of the ideal forms, because the world we live within is made of appearances. If something is beautiful, it is because we strive to know the ideal form of beauty. In the dialogue *The Republic*, Plato suggests that art can be dangerous. Poems and stories can be entertaining and beautiful, but they are falsehoods because they are only representations of true reality. Plato saw art as an imitation of life and life as an imitation of the ideal forms. Aristotle (384–322 BC) similarly recognized the imitative value of art but more as an instrument for communicating with nature. When we appreciate something for its aesthetic value, positive emotions are aroused because we step away from our individual selves and recognize the universal beauty we share with all of nature. Aristotle saw poetry and tragedy as ways of rising above individual emotional situations; aesthetic appreciation paves the way for spiritual purification.

Medieval philosophers expanded Aristotle's religious focus. For Thomas Aquinas (AD 1224–1274), the beauty we witness in the world proves cosmic order and the power of the divine. Aquinas also identified what he saw as the necessary components of beauty: perfection, proportion, and clarity. Theories of aesthetics since this time have tried to define art and beauty. During the 18th-century Age of Enlightenment, the emphasis shifted toward shedding superstitions and recognizing the human capacity for reason. The Earl of Shaftesbury (1671–1713) looked to human nature to explain why we have certain tastes. We identify some objects as aesthetically pleasing because they affect our sentiments. Like Shaftesbury, Baumgarten (1714–1762) believed that the emotions were not necessarily something that should be repressed. He saw aesthetic experience as a means of interacting with the world through our thoughts or cognition, such as poetry and the truth it reveals about the world.



Immanuel Kant (1724–1804) was concerned less with emotions than with separating the world of appearances from things as they truly exist. For aesthetics, this means that unlike Shaftesbury, we admire things because they are beautiful and not because of the pleasure they produce. Beauty is a universal concept, something that exists independently of our recognition of it. Arthur Schopenhauer (1788–1860) and Friedrich Nietzsche (1844–1900) both emphasized the role of the human will and art as a means of freeing oneself from misery. Music for Schopenhauer is the purest of the arts because of the abstract creative powers it employs. For Nietzsche, two opposing powers are present in both art and the artist: Apollonian (light, beauty, and measure) and Dionysian (chaos). Nietzsche's "will to power"—inspired by Schopenhauer's "will to live"—embraces pain. Aesthetics here is a natural drive that reveals and transcends the burden of the individual human condition, uniting all of humanity across cultures.

Art is defined by R. G. Collingwood (1889–1943) as self-expression and by Monroe C. Beardsley (1915–1985) as something produced for the purpose of aesthetic pleasure. Unlike an artist, a craftsperson creates artifacts for the purpose of function. The 20th-century "new criticism" movement saw aesthetic appreciation as having its own value and "good" art as representing the common human experience through Western history. More recently, Arthur Danto (1924–) has

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suggested that what is appreciated as art can be influenced by the evolving discussion of theorists such as himself but nonetheless has specific content and meaning. Art is much broader for George Dickie (1926–) and is defined according to the aesthetic principles that are able to contain the viewer’s awareness; Dickie also formulated the “institutional theory of art” to explain the systematic way of restricting aesthetic value to what is appreciated within society.

— *Elisa Ruhl*

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AFFIRMATIVE ACTION

Just as with many phrases, *affirmative action* can mean different things to different people. Not only do we find a difference in definition, but we find a



Source: © iStockphoto/Lise Gagne.

difference among people in how they view it. Perhaps an individual’s view of affirmative action is sometimes affected by how it personally affects that person or someone close to that person. It is understandable that if one is personally helped by its presence, a person might be inclined to be in favor of it. Of course, if one believes that affirmative action should be used because it is better for society to provide opportunities for those who have not had them in the past, such an individual might also be in favor of it. On the other hand, if one has been personally deprived of an opportunity because of its implementation, this person may not be in favor of it. In addition, if a person believes affirmative action is not necessary today in our society, there might be opposition to it. Obviously, there are a host of other reasons for being in favor of it or being against it.

Affirmative action makes it possible for a number of our citizens who have not traditionally been given equal opportunities in this country to improve themselves and make contributions to our society. The policy has not remained the same over time. It continues to change and expand from the 1960s, when it first started to gain public notice. A number of former presidents and court cases have extended affirmative action policies. This is important because it recognizes the political implication of the policy. It is also important because government has the power and influence to bring about substantial changes in a society. Thus, we can expect affirmative

action to be a topical concern for our present and future political leaders. We can also expect various public groups to lobby for and against the issue. Of course, it will be of interest to private individuals and concerns because it will also affect them in many ways.

There are a variety of reasons why affirmative action is present in our society. Certainly, a number of pressure groups or interest groups worked to bring it about. One can also cite a variety of other reasons for its presence. For example, there is ample evidence that some populations in our society, such as women and

minorities, have not been treated fairly or equally in their aspirations to improve their lives. It is especially important to note this has taken place in the areas of employment and education. Affirmative action policies could reduce this inequity of treatment. In addition, one could cite a history of discrimination toward certain individuals in our society based on race, ethnic origin, and gender. Unfortunately, remnants of this discrimination still exist in our society. Perhaps they are not as evident in our public arena today as they were in the past, but they are still manifested in the behavior of some people. One should not believe that affirmative action will quickly eliminate all inequalities in our society, but it is a good start to improving the lives and conditions for many of our citizens who traditionally have had the doors of opportunity closed to them.

Of course, affirmative action policies have also been criticized for a number of reasons. For example, a popular view is that only the most qualified individual should be given preference in hiring or in acceptance for admission to a particular program. However, it is a view that does not lack criticism and is not without difficulties, such as determining the meaning of "most qualified." Others may also believe that affirmative action is in reality a form of reverse discrimination. They suggest that those who are not chosen when qualified are really discriminated against because of their particular characteristics, such as gender and race. Still others may believe that the days of discrimination have been put aside and that our society can operate fairly without an affirmative action policy.

Advocates of affirmative action certainly can cite good reasons for its presence in our society. Obviously, it has helped and will help certain individuals obtain opportunities to improve their lives in many ways and also brings them into positions of influence, prestige, and power in our society. Many of these individuals may not be able to advance as well without an affirmative action program. Of course, their representation in desirable public and private areas will have an effect on the attitudes of our citizens. In particular, their presence should change some views about their abilities and their roles. For example, law enforcement has traditionally been a male-oriented type of employment, and it still remains so. However, with the hiring of more females as police officers, our society is learning that females are capable law

enforcement officers. The same may be said for a number of other professions, such as law and medicine, which have traditionally been occupied primarily by white males.

No one knows for sure what the future holds for affirmative action. However, there is no doubt that our society is becoming more pluralistic. We can expect to see more calls for an extension of affirmative action policies—as well as opposition to this extension. In any case, we have seen and will continue to see a higher percentage of individuals who have traditionally not been publicly prominent in our society becoming more evident in a wide variety of positions. This occurrence will be due to a number of reasons, and certainly one is affirmative action. It is not easy to assess the effectiveness of affirmative action policies and whether our society is better with their enforcement. Again, we may see a difference of opinion here among our citizens. Thus, the controversy regarding affirmative action will probably continue in the future.

— William E. Kelly

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AFRICA, SOCIALIST SCHOOLS IN

The African concern for the state and society socio-economic and political advancement led to the consideration of both capitalist and socialist paths of development, which brought about a wealth of anthropological studies on precapitalist forms of the social organization, colonialist policies innovating the society, and the challenges of postindependence

times to carry out sustainable development by the new states. African socialist thought incorporated the African supernatural values, including Islam or Christianity, into socialist ideas. Nkrumah adopted both Marxist socialism and Christianity in Ghana without any contradiction between the two. Leopold Senghor (1960–1980) maintained reconciliatory relations between the Christian and the Muslim groups of Senegal, and Nasser considered Islam as an essential part of Egyptian life and which, perhaps, could assist the revolution.

The early 1950s throughout the 1960s witnessed the continent's rejection of the inherited capitalist planning of the colonial authorities and an increasing yearning to do away with the state of sluggish economic growth in the face of mounting demands by the rural and urban populations for the modern services of education, health, and the other welfare programs for which high agricultural and industrial productivity was seriously sought by the nationalist bureaucracies. The failure of most African states, however, to ensure successful achievements of these goals led to an acute drift from free-market capitalist planning to a complete adoption of socialist policies for which more state powers were adamantly enforced. It was with these drastic transformations in the structure of state bodies that Africa passed the cold war era with subtle alliances that mostly reinstated an African cult of leadership rather than installing deep consistent changes in the social structure for the vast majority of the poor populations.

In a few African states, significant changes in political representation, land reform, and a vital access to health and education nonetheless enabled the peasants and the working urbanites to acquire parliamentary seats and a few portfolios in the cabinet. The emphasis of socialist ideas on national unity and popular mobilization and the effective sharing by the poor peasantry and the working people in state management motivated many African liberation movements to eradicate apartheid in South Africa; liberate Congo, Angola, and Mozambique; and open up intriguing approaches for state planning and development programs. The African socialist experiences, however, were largely marked with short-lived systems of rule that further ensued in the emergence and growth of bureaucratic-authoritarian regimes—the totalitarian police-states that seriously curtailed civil rights and public freedoms. Before the end of the 1980s, therefore, many African socialists

advocated liberal democracy as the best alternative to state socialism.

Starting with Gamal 'Abd al-Nasser's massive nationalizations of the Suez Canal Company and the feudal lords' land ownership in Egypt, Kwame Nkrumah announced unrelenting war to combat neocolonialism in Ghana and the whole continent, and Amilcar Cabral armed revolutionary activists to liberate Guinea Bissau from Portugal. Signaling the engagement of Africans in the cold war era, a wave of pro-Soviet ideologies embraced the African states, for which eager intellectuals developed schools of socialism that uniquely added African thought to the European-based Marxist doctrine.

The African socialism of Julius Nyerere was closely linked in Tanzania with self-help programs and the pan-African movement. In general, the common characteristics of African socialism embodied a commitment to replace the free-market economies of colonial capitalism with state policies that gradually led to the sequestration of private property, the prohibition of private firms from free trade, and the monopoly of national wealth by the state as a sole regulator of society. The result of these restrictive policies, however, depleted the national resources by security concerns, escalated the brain drain, and increased the corruption of state officials that further aggravated the impoverishment of rural populations.

Kwame Nkrumah's *Towards Colonial Freedom* (1947) and *Class Struggles in Africa* (1970) emphasized the commonness of African cultures as a basis for emancipation of the African continent. His *consciencism* aimed to end exploitation, solidify class divisions, and promote planned egalitarian development and social justice. By the mid-1960s, the Nkrumah-led pan-African movement successfully motivated the African heads of state to sign the establishment of the Organization of African Unity (OAU) in Accra, and the following years saw the African Charter for Human and People's Rights that embraced both nationalist and socialist orientation.

Theoretically, the African socialist state aimed to increase popular participation in national decision making. The state-socialist changes of the Egyptian *Pasha* feudalism culminated in the Charter for National Action in 1962. It defined the objectives of the Arab world as freedom, socialism, and unity.

The enforcement of state socialism, regardless of popular participation in decision making, by Mu'amar

Qaddafi in Libya, Siyad Berre in Somalia, Mangistu Mariam in Ethiopia, Kaonda in Zambia, and Ja'far Nimeiri in Sudan alienated many national and democratic parties and generated similar repercussions: the Sudanese Socialist Union (SSU) (1970–1985) created more problems for the state and society than it was originally established to reform. Excessive use of administrative and financial powers by the SSU ruling elite consolidated state hegemony and isolated the masses from policy making. In Algeria, the Front Islamique du Salut (FIS: the Islamic Salvation Front) was the victor, giving rise to opposition by the ruling military and violent confrontations between the two.

— *Mahgoub El-Tigani Mahmoud*

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AFRICAN AMERICAN THOUGHT

African American thought has been uniquely influenced by the African love of nature, cruelties of aggression, and an increasing need to adapt to hostile environments and to contribute creatively to overcome the challenges of new worlds, civilizations, and lifestyles tremendously different from the African ancestral heritage. The resistance of Africans to the hardships of life in the new world, including enslavement, sexual exploitation, and cultural genocide was strongly articulated in the works of the succeeding generations of the African American thinkers

who purposefully aimed to ensure constructive participation of the black people in community affairs, sciences, and technological advancement by the full enjoyment of civil liberties and the other constitutional rights.

The early writings of Frederick Douglass, Maria W. Stewart, Sojourner Truth, Ida B. Wells-Barnett, Anna Julia Copper, Booker T. Washington, Marcus Garvey, and William Edward Burghardt (W.E.B) DuBois, among many others, revealed consistent striving for the observance of social justice, with persistent emphasis on the cause of liberation, unity, and the perseverance of human dignity in the American society. Rooted in the centuries' spirituality of Africa, the African American thought was largely influenced by spiritual leaders. The use of spiritual principles to uplift the social status of blacks was forcibly applied by Marcus Garvey, a founder of pan-African and a self-sufficiency doctrine for blacks in the diaspora, as well as Elijah Muhammed, the founder of the Nation of Islam, who taught his disciples blacks had been the chosen children of God. The civil rights movement marked the leadership of the Nobel Laureate Martin Luther King Jr., of the southern Christian churches, who taught millions of demonstrators in the civil rights movement era that "character, not color" was the determining criterion for human merits, and the Muslim leader El-Haj Malik El-Shabazz (Minister Malcolm X) of the Nation of Islam, whose teachings impacted the concern of African Americans with the ethics of power.

The African American contemporary thought has been developed by generations of the African American thinkers who continued to develop the centuries-old intellectual-activist tradition in modern times. This included the liberation schools of black thought that adopted both liberal and socialist philosophies in the pursuit for citizenship rights and privileges of the good life within American democracy. Anne Walker Bethune, Na'im Akbar, Angela Davis, Nyara Sudarkasa, Manning Marable, Maulana Karenga, Frances Cress Welsing, and Nobel Laureate Toni Morrison introduced new scholarly concepts to strengthen the blacks' social movement for personal integrity, political activity, and economic prosperity. Toward this end, the African American thought drew heavily from the history of the continent of Africa, the contributions of Africans in the American and Caribbean diaspora, and the need to emulate cultural heritage to reconstruct the image of blacks "in their own interests." Stressing the deep concerns of African

value systems with justice, discipline, and productive behavior, the Kwanza doctrine exemplified the African American concern for unity, self-determination, collective work and responsibility, cooperative economics, purpose, creativity, and faith.

Faced by the challenges of adaptability in the new world, the need for effective social equality and women's rights occupied a central part of the African American thinking, which further impacted the international literature on social equality and the striving for women's rights. Early endeavors were greatly initiated by Sojourner Truth and Ida Wells, who called for the eradication of enslavement and all racist attitudes from society with direct public speech and community-based activism. Wells-Barnett (b. 1862) developed a reputation for intelligence, eloquence, and public persona, since she was the first black person to initiate a legal challenge to the Supreme Court's nullification of the 1875 Civil Rights Bill, regarding Wells's appeal versus the Chesapeake and Ohio Railroad train in May 1884. Wells encouraged the establishment of the national black women's club movement to advance women's status, and helped to revive the Afro-American League national organization to promote black unity. She became editor of the *Evening Star* and another black weekly, called *Living Way*, as well as editor and part owner of the *Memphis Free Speech and Headlight*. Her early journalistic emphasis was on children and education, but that changed dramatically in 1892 to a strong campaign against lynching, in which she wrote a powerful exposé entitled "Southern Horrors: Lynch Law in All Its Phases," and toured the country and eventually Europe to speak against this terrorism, probably in the most radical statements made by an African American leader of the time.

Booker T. Washington's (1856–1915) "accommodationist" philosophy was expressed in his speech in Atlanta, in 1895: "In all things that are purely social, we can be as separate as the fingers, yet one as the hand in all things essential to mutual progress." This was described by DuBois as the "Atlanta Compromise" and noted as socially retrogressive and predicated on "Uncle Tomism" racist discrimination against blacks. Du Bois believed that Washington's conservatism appealed to white America, whose politicians—both northern and southern—courted him because of his declaration to the world that political and social equality were not priorities for blacks. Instead, Washington recognized the nature of racism

in the South, where 90% of black Americans lived, and he suggested that what they wanted—and should be willing to work very hard to get—was economic prosperity, out of which all else might follow.

Frederick Douglass (1817–1895) was a pioneering abolitionist, orator, and journalist, who initiated a school of thought that merged the spiritual activity of church sermons with liberal journalism and a lifelong commitment to political activism. Assisted by anti-slavery women, his *North Star* paper helped to promote the antislavery movement with a strong support for an independent, organized movement for women's suffrage and other rights. In 1848, the Seneca Falls Convention in New York, led by Elizabeth Cady Stanton, discussed the social, civil, and religious conditions and rights of women.

The multiple-perspective activist school of Douglass was diligently developed throughout the 20th century by the distinguished academician W.E.B. DuBois (1868–1963), the first black to receive a PhD from Harvard University (in history), and a sociologist, writer, and educator who taught Latin, Greek, English, and German. Opting for a vanguard role for African American intellectuals to excel as social change agents in American society, DuBois worked in higher education for the establishment of "The Talented Tenth, developing the Best of this race that they may guide the Mass away from the contamination and death of the Worst, in their own and other races." Concerned with the social progress of colored peoples, he pursued scholarly work from his early career to study *The Philadelphia Negro* (1899), among many other succeeding works. His deep knowledge about the civilization heritages of Africa, coined with a liberal socialist political activism, motivated him to become "the leading intellectual voice of black America," cofounder and leading participant of the pan-African Movement, cofounder of the National Association for the Advancement of Colored People (NAACP), and editor of its magazine, *The Crisis*.

Afrocentricity, a contemporary African American school of thought, has largely benefited from the earlier emphasis of Black thinkers on the African cultural heritage as a fundamental source to promote the psychological, ideological, and political well-being of black peoples. Molefi Asante reinvigorated the African frame of reference to establish the self-worth and creativity of the African person. Criticizing Western reformist and traditional theories of psychology, Na'im Akbar and Frances Cress Welsing stressed the

intellectual repression that had victimized the blacks of America with mental degradation since enslavement times. Welsing provided a new psychological approach, rejecting race supremacy and asking for a healthy code of self-awareness by black males and females for the achievement of justice “in a common effort against injustice to express the strongest possible statement about respect and love for themselves as individuals.” Furthering the tradition of the early pioneers of African American thought, the post-civil-rights era thinkers Anne Walker Bethune, Angela Davis, Nyara Sudarkasa, Manning Marable, Maulana Karenga, Nobel Laureate Toni Morrison, and hundreds of others shared a renewable concern for the African American present-time and future generations: cherishing the African cultures and the African American heritage, preserving sisterly, extended-family relations, increasing access to high education and jobs, and actively participating in the intellectual search within the democratic life of America for an African-based philosophy and a viable plan of action.

Toward this end, Manning Marable theorized that justice demanded affirmative action based on race and gender to address continuing patterns of inequality. Marable suggested defining a new moral assignment and vision of emancipation. He believed that equality is about social justice and the realities of human fairness, such as health care, education, housing, jobs. Stressing the “consideration of duty to one’s family, community, or society,” Nyara Sudarkasa has noted the vital role that black families consistently played in the advancement of African Americans from racism, gender discrimination, and poverty. Sudarkasa has emphasized the complementary roles of black women and men in the family.

African American concern for the improvement of their social, political, and economic status helped a great deal to bring to light the affirmative action legislation, which can be viewed as a way to help minorities “catch up” by delivering access to the benefits and opportunities historically reserved to white people. The principles of affirmative action continue to be interpreted and refined through court action. Legal opinion on affirmative action is inconclusive. The Supreme Court decided in 1978 that race can be used as a criterion for admission to undergraduate or graduate and professional schools or for job recruitment, as long as race is combined with other criteria and racial quotas are not used. In 1996, however, the University of California Board of Regents decided to

eliminate race, but not social class, as a basis for admitting students to its campuses. Also in 1990, in *Hopwood v. Texas*, a panel of judges of the Fifth Circuit Court of Appeals in Texas ruled as unconstitutional the affirmative action admissions policy of the University of Texas, Austin, law school.

— Mahgoub El-Tigani Mahmoud

See also **African Thinkers, Social Change**

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AFRICAN AMERICANS

The quest for equality among African Americans has always been difficult, and some may argue with good reason that our present-day society has much further to go in reaching a semblance of equity for this minority group in American society. A casual perusal of economic, social, and political situations in the United States makes this quite evident.

African Americans are unique in a number of ways. Their skin color distinguishes them from other citizens, and their history is distinct in that most of their ancestors were brought to America against their will under a legalized system of slavery. How many can say the same about their heritage as it relates to the United States? The institution of slavery to which African Americans were subjected lasted from their arrival to the end of the Civil War.



Even after the conclusion of the war between the states, the conditions of African Americans in many parts of the United States were not noticeably different than pre-Civil War days, despite the Emancipation Proclamation and the passage of a number of amendments to the Constitution. This was clearly demonstrated by the emergence of the Ku Klux Klan—an extremist group dedicated to white supremacy that numbered in the millions at one time in the United States.

To complicate matters, the U.S. Supreme Court legalized segregation in this country when it enunciated the famous “separate but equal” doctrine via the case of *Plessy v. Ferguson* (1896). Hence, states could and did segregate African Americans by the passage of Jim Crow laws, which mandated separate facilities for them. The *Plessy* doctrine lasted until 1954, when the Court reversed itself in the famous case of *Brown v. Board*—which outlawed legal segregation or *de jure* segregation in public schools on the basis of race. However, there was massive resistance to the implementation of this important court decision in many parts of the United States. In addition, the reality of an integrated educational system did not evolve the way some had hoped it would after this prominent court case. In fact, some may argue that there is another type of segregation at work, *de facto* segregation, which involves a variety of economic and social

factors, such as housing patterns, not mandated by law. This type of segregation has been quite difficult to eradicate in America society.

The 1960s have often been described as a turbulent time for African Americans in the United States, primarily because they were required to pay a heavy cost for needed social, economic, and political improvements in their lives. Two important federal laws were passed by Congress as a result of obvious social and political inadequacies. One was the Civil Rights Act of 1964—a law that provided

African Americans the opportunity to receive equal public accommodations in areas such as restaurants and hotels. It was followed the next year by the Voting Rights Act of 1965, which resulted in more African Americans not only having the right to vote but the election of many others to public office. Both laws resulted from many unjust hardships endured by African Americans for too long a period of time.

Governments and other agencies have also enacted policies of affirmative action to provide African Americans and other groups with employment and educational opportunities as a means to achieve a better life. Increased educational opportunities are particularly important, since the level of formal education that one obtains is often related to the level of one’s economic income.

As for the future, on one hand, some will argue that laws and policies have increased opportunities for African Americans that were not available a number of generations ago. In addition, it is certainly true that the African American presence is more noticeable in many areas of our society. Some of the more prestigious and powerful positions in our society are now occupied by African Americans. On the other hand, some may say that the African American presence is yet a distinct minority among a greater mass of citizens who traditionally have benefited from this country’s advantages. They may

also note that we have two distinct and different societies, both unequal in terms of opportunity and other factors.

Many of our large cities are seeing a migration of whites and others who can afford it to the more affluent suburbs, causing a resurgence of segregation in business and housing. The trend has also affected the integration of urban schools as a means of achieving a greater understanding and tolerance for our fellow citizens. Yet it has also resulted in increased political opportunities in large American cities for African Americans, as well as for more employment opportunities in municipal governments. The important question today is, How many African Americans are really experiencing these benefits? Many in America are still far from it.

— William E. Kelly

See also **Affirmative Action**

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AFRICAN THINKERS

In the cradle of humanity, Africa, thought was creatively practiced in a natural environment of bountifulness and human diversity. Languages, artistic works, inscriptions, cave paintings, and architectural constructs of huge irrigation schemes and other colossal monuments testify to the intellectual abilities of the African peoples who thought about them, and then designed and erected them. In the deeply rooted African spirituality, the African thought was expressed in a great

many deities, rituals, ethical stands, and religious teachings.

Since ancient times, African thinkers used thousands of languages that have been grouped in the large families of the Saharan, Sudanic, Kordofanian, and others. Some of these languages were written in Egyptian hieroglyphics, Nubian Meroitic, Ethiopian Geez, or Arabic. Perhaps one of the oldest inscriptions in Africa is the Stale of Piankhi, the Nubian king who invaded Egypt and founded the 25th Dynasty (ca. 734), which reads “I am a king, the image of God, the good divine one, beloved of the divine ones.” Another stela by Ethiopian King Ezana of Aksum (325 CE) carried with it a story of invasion. The African thinkers were also some of the earliest to establish cosmological doctrines on theology and monotheism. The Egyptian Pharaoh Akhenaten called for the veneration of the one almighty Lord, instead of the polytheist deities of his time.

African thinkers have contributed distinguished achievements to the arts and sciences, for example, the knowledgeable architect Imhotep, builder of the first pyramid, who was equally a prime minister, philosopher-teacher, and father of medicine. The continent witnessed prolific leaders of thought in the medieval times. In the 15th century, among the Mali and the Songhay, Timbuktu and Jenne began their long careers, with ideas from their schools of theology and law spreading far into Muslim Asia. ‘Abd al-Rahman ibn Khaldun of Tunisia (1332–1406) was a researcher on education and psychology, a political activist and a statesman, a jurist and judge who innovated autobiography as well as a scientific methodology for the science of history and founded a science of sociology in the course of his rigorous research to correct the reported events of history.

Endowed with intensive knowledge about the holy *Koran*, the *Hadith* (the Prophet’s sayings and deeds), monotheism, jurisprudence, linguistics, poetry, metaphysics, natural science, mathematics, arts and foreign languages, Ibn Khaldun spent about 8 years authoring his magnanimous masterpiece *Muqaddimat Ibn Khaldun* (the Ibn Khaldun Introduction), which is one of the seven volumes, *Kitab al-Ibar wa Diwan al-Mubtada wa al-Khabar* (The Book on Events on the Days of the Arabs, the non-Arabs, the Berber, and Contemporary Relatives of the Superior Sultan). Excluding some historical events as “impossible” judged by “the nature of things,” the methods of scientific research and the rules of investigating

historical events as “codes of society,” the *Muqaddimat* dealt with the study of “the ‘*Umran* [societal life or sociological activity], social phenomena, ownership, authority, acquisitions, craftsmanship, sciences, and the factors and the causes underlying them.” Ibn Khaldun’s history of the Berber is perhaps the strongest, richest, and most genuine historical research. The French historian Dozy described his accurate writing on Spain as “outstanding: nothing of the sort is found or comparable in the accounts of the medieval Christian westerners of whom no one successfully documented what Ibn Khaldun clearly wrote.”

Ant’nor Firmin, a Haitian thinker, is considered a pioneer of anthropology in the African domain. Early in 1885, Fermin realized that the human species appeared in various parts of the world with the same primordial constitutional imprint of the species, the same intellect and that same morality as in the original human blueprint.

In recent times, a number of African writers have added significant strides to our knowledge of the continent’s societal life and challenging realities, as they penetrated the arenas with intriguing thought. The Sudanese writer Jamal, a founding member of the 1962 *African Encyclopedia*, authored *Sali Fu Hamar*, a collection of stories on the African mythology, as well as other literary works on the African cultural and political affairs. The first African writer to be awarded a Nobel Prize in literature in 1986, the Nigerian writer Woll Soyinka earned his fame with a consistent critique of authority impositions upon the personal freedoms of people and the severe repercussions of state intrusions with respect to the peaceful competition in power relations. Soyinka addressed the traditional African rituals that continue to influence the mentality of Africans: “The king has died, and his horseman is expected by law and custom to commit suicide and accompany his ruler to heaven.”

Based on rigorous anthropological investigation on the impact of human geography on human behavior, Diop, a Senegalese historian and cultural anthropologist, developed a theory on the north and the south cradles of civilization in Europe and Africa, respectively. Diop discovered “for certain that ancient Egyptian Pharaonic civilization was a black civilization. Herodotus had no interest saying that ‘the Egyptians had black skin and frizzy hair.’” According to Diop, “The harsh and for long periods cold climate in

Europe gave rise to the patriarchal family system.” Diop showed that Ethiopia [Nubia], Kush, and Ta-Set, the world’s first nation state, were “matriarchal.” Focusing on the Egyptian female, Nawal El-Saadawi, a prolific writer who has authored several plays, mostly translated into international languages, has analyzed with factual materials the current state of affairs of African and Arab women. Including her deep insights in *The Hidden Face of Eve* (1977), the stories of El-Saadawi have unveiled the conflicts of modernity with traditional forms of life in the society, in which women, in particular, suffer male domination and state repression.

African thought has been remarkably geared and engineered to address reality with a view to help enforce optimum change—a deeply rooted tradition that the African American scholar Maulana Karenga eloquently conceptualized as “the intellectual-activist tradition.” This norm, moreover, should be further linked to the richness of the continent and the colorful life of its peoples since ancient times, which further explains the African diverse, prolific, and multiple forms of thinking, compared with strict specializations of thought experienced in other places. *The Cairo Trilogy* and the other stories of Naguib Mahfuz have analyzed the lively experiences of people, the contrasting portrayals of secular versus profane situations in the spheres of family, neighborhoods, educational institutions and government agencies, and the contradictory encounters both women and men confront within the context of the African oriental life.

— Mahgoub El-Tigani Mahmoud

See also **African Thought**

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 **AGGRESSION**

Aggression is simply defined as “Any form of behavior directed toward the goal of harming another living being who is motivated to avoid such treatment.” Aggression is most commonly studied in its application to humans and may include both verbal confrontations and physical gestures. Singular aggression between two humans is the most typical form of aggression found in the social world. The most destructive occurrence of aggression is found in warfare between sovereign nations. Numerous studies and analyses of the many forms of aggression reveal a host of potential variables that are social, gender, racial, biological cultural/geographic, psychological, historical, and even situational factors.

Aggression is usually thought of negatively because of its association with harm, such as in assaults and homicides. While this may be the prevailing popular perception, the use or display of aggression is clearly relative to its immediate social or cultural context. Consider, for example, the aggression in competitive sports, such as boxing. The same actions outside the arena are condemned as criminal and requiring a formal response in the form of punishment. The ancient Romans were famous for promoting gladiatorial contests that culminated in the deaths of humans, all in the pursuit of entertainment. Government punishment of criminals is aggression mandated by the state for the purpose of correcting or deterring an assault committed against another citizen. However, in some cultures, it is perfectly acceptable for an individual member to exact justifiable justice or revenge. Among other cultures, aggression may actually be prescribed in response to personal status building or status defense. In our culture, self-defense or defense of another may justify acts of aggression to the extent of causing death. Self-defense as a validation for aggression can clearly be extended to sovereign nations. An act of war or even the threat of war is morally justified because it both defends its people from potential conquerors and prevents a greater harm from a prolonged bloody struggle.

An understanding of aggression begins with a broad examination of human beings and our capacity for aggression. Why should some people have a greater willingness or need than others to display aggression? The study of children is a particularly popular avenue of exploration of aggression. It is

commonly understood that the behaviors a child learns (suitable or unsuitable) can become deeply ingrained and carried into adulthood. This behavioral approach maintains that there are three primary sources of influence that shape a child’s behavior and comprehension of appropriate responses: family, peers, and symbolic models.

Households in which the parents do not discipline, are permissive in the child’s expression of aggression, and use power assertion in disciplining tend to produce aggressive children. The family provides the earliest socialization through the interaction of its members, from which the child learns the use of aggressive behaviors and patterns of interaction. The influence of interaction with peers is also very powerful because it provides children the opportunity to learn both aggressive behaviors and vie for, and possibly establish, a coveted position of dominance. Rough play such as chasing, catching, tumbling, and other competitive strength comparison activities provide a usually safe means to learn some of the benefits of aggression, such as victory and peer status/recognition.

Modeling is the third social influence on acquired aggressive behavior in children. Live models are the most common source of childhood-learned aggression, and of all the potential sources, parents are the most powerful and far-reaching. In addition, prolonged observation of aggressive actions causes a gradual desensitization to violence and the pain or suffering of others. Self-modeling is the effect of a child who is the victim of aggression either in the home or at the hands of peers. The child begins to utilize aggression as a means to resolve conflict or in play. The mass media model claims that the effects of observing televised or filmed violence in either physical or verbal forms produces childhood aggression. This model has been under study for several years. The exact impact of viewing aggressive behaviors by children cannot always be accurately predicted because of other confounding variables. However, the effect of any two or all three influences (family, peers, and media) must certainly be significant.

Social factors are certainly not the sole influence on human aggression, because biology may also contribute significantly. Various gender and psychological differences also account for the differences in manifestations of aggression. Much research debate exists over the influence of biology and its impact on human intellect, physical ability, and behavior and especially how it affects human

aggression. Debate between those that embrace theories supporting the social causes of human aggression and those that advance a belief in biological influences is commonly referred to as “nature versus nurture.” Some of the most popular biology-based research has been along the lines of heritability and studies of twins, adopted children, and chromosome examinations.

Twins separated at birth have been examined with regard to their histories of aggression and the records of both their natural parents and adopted parents. Research has revealed that adopted children displaying generally aggressive behavior most often shared this same characteristic with their biological father as opposed to a low aggression correlation with the adopted father. This research supports the belief that nature (biology) rather than nurture (environment) has a clear bearing on aggressive behavior.

Studying children has also provided another source for the validation of biological-based explanations into human aggression. The disparity in the aggression levels between boys and girls is well recognized and documented. Research into the type of play that children engage in reveals that boys are more competitive and their play activities tend toward a more physical orientation as opposed to girls. When similar comparisons are conducted on adults, the differences are not as dramatic; however, they are nonetheless identifiable. The disagreement over the causes of gender aggression differences is further complicated by studies of chromosome variation and abnormality. The cells within the human body are comprised of 23 pairs of chromosomes. In females, the pairs are both “X shaped”; in males, the pairs contain one “X” and one “Y-shaped” chromosome. It is the “Y” chromosome that researchers maintain accounts for males having a greater capacity for aggressive behavior than females. This is commonly referred to as the “Y-chromosome hypothesis.” Consistent with this thesis is the belief that males with the rare “XYY” chromosome abnormality must be especially aggressive and would likely have a criminal history of violence. However, studies of “XYY” males in prison do not support that particular hypothesis.

There are other potential influences on aggression not directly attributable to social or biological factors. We must understand that some individuals are more affected than others by these influences. The first of these effects is temperature, specifically hot temperature. It is widely recognized that assault offenses

increase during the summer months, and within heat wave periods, individual irritability can be particularly elevated. Noise levels can also impact aggression. The significant contributors to noise are naturally located in the more urban areas: automobile movements, industrialization, and airplane traffic. Increased noise levels have been associated with reduced interpersonal interaction as well as a decrease in citizens helping others and less sociability. Associated with noise is the influence of crowds or high-density populated geographic areas. The studies that have been conducted are inconclusive with respect to what particular quality of crowds causes increased aggression. However, it has been determined that males are more affected than females.

— Richard M. Seklecki

See also **Crime; War, Anthropology of**

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APE AGGRESSION

The study of nonhuman primate behavior allows biological anthropologists and other scientists to come closer to understanding why human primates act as they do. Traditionally, scientists have viewed members of the ape family as aggressive and competitive. More recent research, however, has demonstrated that apes are more inclined toward

cooperation and affiliation than aggression. This shift in how apes were viewed first occurred in the 1970s at a zoo in the Netherlands, when Frans de Waal observed two male chimpanzees embracing one another immediately after a fierce fight had taken place. De Waal maintained that the chimpanzees were engaged in reconciliation. After thousands of hours spent observing members of the ape family, de Waal concluded that apes had been unfairly identified as killers. De Waal contends that because apes live in groups, community interests often predominate over tendencies toward aggression.

In early 2004, primatologists Paul Garber of the University of Illinois and Robert Sussman of Washington University set out to disprove the theory that aggression is a dominant behavior in apes. Like de Waal, Garber and Sussman discovered that apes were more likely to exhibit cooperation and affiliation than aggression. They found that only 1% of the apes' time was spent in aggressive behavior, while 10% to 20% of their time was devoted to affiliate behavior.

The notion that apes are more likely to cooperate than fight has been borne out by a number of research studies. For instance, the Yerkes National Research Primate Center of Emory University in Atlanta, Georgia, concluded after long-term observations that monkeys cooperated in order to obtain food, rather than fighting for it. Observations of chimpanzees also revealed that when the animals were exposed to crowding, they used coping methods rather than aggression to deal with the problem. Studies of bonobo have been particularly instrumental in advancing theories of nonviolent apes. Bonobos, which live in matriarchal societies, have been labeled as peacemakers because they use sex rather than aggression to deal with confrontations that arise.

On the other hand, baboons, which are classified as monkeys rather than apes, have repeatedly exhibited aggressive behavior. Recent studies, however, have also begun to question whether or not baboons are biologically prone to aggression or whether it is a learned behavior. After half of the males in a group of olive baboons contracted tuberculosis and died in 1983, after being exposed to tainted meat at a tourist lodge at the Masi Mara Reserve in Kenya, Stanford University primatologist Robert Sapolsky observed that younger male leaders

who had migrated into the group were less aggressive than their predecessors.

Returning to study the same troop of baboons 10 years later, Sapolsky found that male baboons were still pacific. They were also less likely to attack females than were baboons in other troops. When blood samples of the pacific baboons were compared with those of the males who had died, Sapolsky discovered that the younger baboons had lower levels of glucocorticoids, a hormone released as a response to stress. Sapolsky posited that the continuing lack of aggression might be the result of observed pacific behavior in others in the troop, combined with the efforts of female baboons that perpetuated the pacific behavior because they preferred a less aggressive society.

— Elizabeth Purdy

AGRICULTURAL REVOLUTION

The *agricultural revolution* is a notion applied to a wide spectrum of new kinds of human activities and a variety of new forms of social and cultural life resulting from the practice of soil cultivation, cattle breeding, and livestock raising. In some cases, it could be understood as opposition to the “Neolithic revolution” concept, proposed in the 1920s by W. G. Childe in order to characterize the origin of self-sufficient societies that produce their food. Such understanding emphasizes a broader sense of an agricultural revolution versus a Neolithic one, implying at the same time their common economic and ecological background. Unlike the Neolithic revolution, which indicated strict chronological frameworks of the event, in most cases we apply the term agricultural revolution to long-lasting gradual processes and their historic consequences. So, the “evolutionary” is interpreted as “revolution,” exclusively based on its important impact in all spheres of human life.

Technological Components of the Agricultural Revolution

The origin of a productive economy was accompanied by a series of technological innovations. One of the

most important among them was the *origin of ceramics*, which is regarded as the first artificial raw material used by prehistoric populations. Pottery enabled the process of boiling and cooking; it gave rise to soups and cooked cereals, an introduction to the paleodiet, substantially broadening its spectrum of micro-elements and vitamins that human beings could receive from food, and changing in some manner the processes of metabolism. Pottery utilization also greatly promoted storage strategy development, which helped to secure subsistence as well. Beginning with primitive handmade multipurpose forms, pottery gradually evolved toward fine vessels made with the help of a potter's wheel. Pottery ornamentation traditionally is regarded as one of the basic ethnic markers, while the morphology of ceramic artifacts is connected with the sphere of their utilization and economic orientation of their makers.

Tool-Making Technology Improvement

The beginning of land cultivation required new tools. New forms of tools connected with wood processing (deforestation being the first stage of land preparation) appeared at the Neolithic times, and a variety of axes is the most striking feature of the tool kit of this time. A series of tools for land cultivation was also widely distributed. The technique of polishing and grinding widely distributed in the Neolithic enabled the origin of specific tools for cereal processing (for example, millstones, graters, and the like). The peculiarities of the natural habitat of early forms of productive-economy promoters contributed to spatial differentiation of their tool kits and techniques of tool production.

House building gradually replaced hunter-gatherers' temporary huts, and tent construction could be regarded as another important technological innovation connected with agricultural revolution. The necessity of looking after their crops and herds promoted the need for a well-prepared house accompanied by special facilities for crop storage and domestic animals and birds.

The origin of spinning and weaving was an inevitable reply to the need for food transportation and storage, and enabled interior house decoration as well.

Transportation meant improvement. Transport by wheel and sail is one more important technological element of agricultural revolution. It mirrors the needs of the socioeconomic processes accompanying land cultivation and improved cattle breeding.

Socioeconomic Implications of the Agricultural Revolution

Transition to a Settled Mode of Life and the Premise of Town Origin

The origins of plant cultivation and cattle breeding helped to secure the food procurement system and contributed greatly to the creation of a rather settled mode of life. It was grounded on a relatively stable quantity of product, which could be obtained during a long period of time from the same territory using different sources or/and different ways of their exploitation, combining traits of hunter-gatherers with a productive economy. The most suitable areas for living later were developed into towns with wide specialization (trade or/and crafts, war shelters, ritual and/or administration centers).

Exchange System Transformation

The establishment of a productive economy caused a transformation of the exchange process function. Traditional for hunter-gatherers' community rituals and "strategic" implication of exchange aimed to establish peaceful contacts among different communities after the beginning of land cultivation and cattle breeding was added by real economic value. The appearance of intercommunity exchange of food obtained from different sources in many cases guaranteed the survival of communities and satisfaction of their vital needs and, in this way, contributed to the growth of prestige of early agricultural communities. The origin of the first equivalent of money, "proto-money," occurred in such exchange. A specific form of exchange, so-called prestige, or potlatch, became one of the basic elements of the transformation of prehistoric communities, promoting the appearance of individuals possessing relatively more authority, property, and power in their groups.

Surplus Product Origin, Prestige Economy

The development of farming and cattle breeding, for the first time in human history, guaranteed the existence of surplus product during a rather long period of time (till the next crop or next calving, for example). Crucial for its basic existence (excluding the display of any sort of inequality in its frame), prehistoric society faced the necessity of managing this surplus. The original form of prestige exchange, potlatch, which appeared at organized festivals,

promoted the redistribution of surplus product among the community members. As a result, a restricted number of “big men,” relatively more authoritative and wealthy persons, appeared in the historical arena. This group gave rise to private property, exploitation, and class structure formation, promoting in this way the origin of civilization and state power.

Demographic Revolution

Food base improvement and the gradual growth of the term of occupation on the same settlement removed earlier natural limitations on child birth rate and thus caused rapid population growth, accompanied by the formation of heterogeneity. Thus, territories more suitable for productive economy became more attractive for occupation, and the tendency toward overpopulation was demonstrated. In turn, the tension of excessive population on the territory created the first ecological problems for early farmers and cattle breeders. Most probably, one such crises originated a special form of productive economy, nomad cattle breeding, which has often been interpreted as an

accelerated way to property accumulation, trade, and nonequivalent exchange development. Territories with excessive population density gave rise to the first wars, contributing to an early form of exploitation.

Ideological and Cultural Displays of Agricultural Revolution

Another development in the productive economy was the appearance of leisure, that is time free from subsistence, in particular from food procurement activities. And the needs of new forms of economy and social relations required rational knowledge as well as an ideological background and ritual sanction.

The *fertility cult* is one of the most striking features of mental life with origins in the productive economy. Fertility cults usually were accompanied by the growth of the role of Woman-Mother (foremother), as well as inspiration by natural forces and phenomena. Common economic backgrounds and the extreme importance of such forms of ideology in everyday life



Source: © iStockphoto/William Walsh.

of early agriculturists caused the curious situation in which similar ritual activity was realized in principally different forms in different locations.

Rapid development of astronomy and time-count systems could be regarded as a specific element of the agricultural revolution and at the same time as its necessary premise. The first calendars enabled rational and well-timed agricultural processes, in this way guaranteeing surplus product.

Protoscientific knowledge development (zoology, veterinary, etiology, agronomy, genetics, geography, climate, and soil studies, among others) also contributed greatly to the development of agriculture and promoted the rise of its effectiveness.

Primitive writing systems used for the fixation and transmission of new knowledge systems and newly formed traditions is also connected with the agricultural revolution.

Other Displays of the Agricultural Revolution

The gradual transition from hunter-gatherers to an agricultural mode of life was accompanied by changes in human morphology. This is displayed in the modification of facial and postcranial (connected with the consumption of boiled instead of roasted food), the degradation of human dens (because of lack of necessity to chew fresh vegetation), and many diseases and epidemics connected with a stationary mode of life that included constant contact with animals.

Alongside the weakening of the human body, the natural habitat also deteriorated. Human society has participated in the disturbance of the balance in nature by its intervention into physical geographic processes, in particular, by deforestation, by soil erosion, and by introducing new sorts of plants and animals into environments.

Changes in the mode of life, from a subsistence system to the formation of a prestige exchange network, resulted in the degradation of prehistoric social dogmas and stereotypes and promoted modification of the marriage system (polygamy) and changes in community structure (formation of lineage) and kinship systems.

It should be stressed, nevertheless, that most components of the agricultural revolution displayed themselves only when farming and cattle breeding became not only a guaranteed supplement but the necessary bases of food procurement system in

prehistoric populations. The replacement of hunting, gathering, and fishing in prehistoric subsistence was a long and gradual process, whose realization in different parts of the world depended on a set of natural geographic, economic, and cultural agencies.

— Olena V. Smyntyna

See also **Agriculture, Origins of; Anthropology, Economic;**

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AGRICULTURE, INTENSIVE

Agricultural intensification can affect any of the inputs of an agricultural system—the crops planted, the labor expended, and the productivity exacted from the land. It can be driven by increasing population relative to the land available or by changes in market prices and demand for crops. It can result in dramatic investments in and transformations of the landscape, and it can be accompanied by, but will not necessarily result in, intensive social change.

There are several ways of categorizing the changes in intensive agriculture. In small-holder systems, intensive agriculture is marked by high investments of time in weeding, planting, and especially watering crops and manuring the soil. Several crops will be planted in the same field and mature at different times, and fields will also be worked several times a year as long as conditions support growth. All this requires a high population density and a strong work ethic. In Chagga agriculture on Kilimanjaro, Tanzania, for example, competition for land is high, and use of space intensified by the complex systems of agroforestry that are practiced. These involve planting shade-tolerant species (yams, coffee) intermingled with banana and



fruit and timber trees. In anthropology, the work of Robert Netting is probably the most well-known corpus of study on the ecology and practices of intensive small-holder agriculture in diverse parts of the world.

Agricultural intensification can be driven by population increase. This has been famously theorized by Esther Boserup in *The Conditions of Agricultural Growth*. Boserup, in contrast to Malthus, saw population growth as the independent variable driving agricultural and social change, not as the consequence of agricultural output or social systems. But the changes resulting are also intimately related to market pressures and increased demand for crops. The development of labor-intensive irrigated agriculture in the Pare mountains, in Tanzania, for example, is thought to have preceded their dense settlement and was driven by the need to acquire livestock for marriage through trade with neighboring pastoralists. Similarly, there are many cases where population increase has not been marked by intensification.

The landscapes of intensive small-holder agriculture have tended to attract admiration from people who enjoy the gardenscape of different patches of intensive use. Some of the most dramatic anthropogenic landscapes in the world are the complex layers of irrigated rice terraces, which can produce 5 to 10 tons per hectare per year (higher yields are dependent on advanced technology). One famous study of intensification in Machakos, Kenya, has recorded the transformation of a land characterized by extensive land use and apparent erosion to a gardenscape of trees, terraces, and well-tended land.

But we should note that changes in landscape are never socially neutral. The Machakos case was widely received as a good-news story of averted degradation. But at the same time, the transformation in the land has had its social costs, with poorer families finding it harder to cope with population pressure. In other parts of Africa, investment in agricultural intensification and land improvement is reduced

because of the changes they portend to social support mechanisms. Similarly, the intensification of agriculture in the United Kingdom in the 18th and 19th centuries was accompanied by an extraordinarily vigorous enclosure movement, which concentrated land in the hands of wealthy estate owners. Improving estates was intimately bound up in denying others access to rural resources. Clifford Geertz has famously characterized change in Indonesian agriculture as “Agricultural Involution,” which saw increased labor investment in agriculture with no real increase in per capita productivity.

The diversity and intricacy of small-holder intensive farming stands in sharp contrast to the landscapes and practices of capital intensive agriculture. This is characterized by monocropping; heavy investment in machinery and chemicals, which maximizes productivity per person; as well as working with high-yielding, fast-maturing crops and animals. The spread of scientifically and, more recently, genetically engineered crops has been associated with global booms in production (the Green Revolution) and at the same time erosion of the genetic diversity of crops; increased use of pesticides, fertilizers, and antibiotics; and a decline in the quality, especially taste, of food.

Capital intensive farming’s great service is that it provides cheap food, which, as Bjorn Lomborg noted, means that people are healthier from the better nutrition. But it has provoked opposition in diverse quarters. First, there are the environmental costs of pesticides and fertilizers, and there are also potential problems of feeding growth hormones and antibiotics to domestic stock, as these may affect consumers. Fears here and dissatisfaction with the miserable lives of factory-farmed animals have generated a whole industry of “organic” agriculture. Second, there is a tendency to produce a great deal of food where there is no market for it, and this leads to “dumping” of food at low prices in places where there is apparent demand, but at considerable cost to local producers. The fact that this agricultural production can be heavily subsidized makes the whole situation rather perverse. Others observe that factory farming and agribusinesses can be characterized by low wages and poor working conditions.

Nonetheless, agricultural development is generally assumed to mean greater intensification along the lines of capital intensive agriculture practiced in the Global North. It was the hallmark Netting’s work to

resist that assumption. Intensive agriculture, Netting argued, could be achieved in other ways apart from concentrating land and resources to a few farmers who work the land with machines and chemicals. Small-holder agriculture could be just as productive, with fewer environmental costs and different sorts of social costs.

— Dan Brockington

See also **Aztec Agriculture; Ecology and Anthropology**

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AGRICULTURE, ORIGINS OF

The origins of the practices of soil cultivation, crop harvesting, and livestock raising traditionally are regarded as the main criteria of transition to the next stage of human society and culture development following hunter-gatherers community and directly preceding the formation of state and private property. The premises of the origin of agriculture as well as the mechanisms of its dissemination over the world remain under discussion in contemporary cultural anthropology.

Theories and Premises

One of the earliest explanations of the origin of agriculture was proposed by G. Childe, in his idea of “Neolithic revolution.” According to Childe, drought and supply shortage stimulated food production in oases. Later, demographic agency has been put forward as a necessary background of transition to the productive economy (L. Binford), alongside a

wide spectrum of social and ecological factors (R. Braidwood, K. Flannery, C. Renfrew, V. Masson, V. Shnirelman, L. White, and many others). Today, most researchers tend to interpret the origin of agriculture as the inevitable response to a crisis in the traditional hunter-gatherer economy and the necessity of securing a subsistence system in a new ecological situation. Alongside a disparity of natural resources and human needs, other factors contributed to the origin of agriculture, such as presence of plants suitable for cultivation and human knowledge about the biological peculiarities of these plants.

Mechanisms and Chronology

The mechanisms and chronology of the origin of agriculture traditionally are conceptualized throughout several binary oppositions existing in prehistoric science for the last two centuries. Monocentric versus polycentric paradigms are rivals when discussing the place of plant cultivation origin; in the frameworks of each theory, revolutionary versus evolutionary views coexist. At the same time, in different case studies, early farming has been interpreted as fundamental to late prehistoric population subsistence system or only as an additional food supply alongside hunting, gathering, and fishing.

Today, agriculture dissemination over the world is considered a long-lasting process that was generated independently in several regions (primary loci), starting around 9,000 BC (“effective” village stage, Jarmo culture of the Middle East). Harvest collecting arose from seed gathering. The earliest evidences of plant domestication are traces at Natufian settlements of Palestine, Shanidar, and Ali Kosh (in present-day Iran and Iraq) and are dated about 9000 BC to 7000 BC.

Seven primary loci of agriculture origin, huge areas where the transition to an agricultural mode of life was based on a complex of cultural plants, have been distinguished by Soviet geneticist N. Vavilov:

1. East Mediterranean locus, or Fertile Crescent (Iran, Iraq, Israel, Jordan, Syria, Turkey); 9000–7000 BC; wheat, barley, rye.
2. South Asian locus (southern China, southeastern India, and southeastern Asia); 7000–5000 BC; rice, tuberosals.
3. East Asian locus (Mongolia, Amour region, northern China); 7000–5000 BC; Chinese millet, beans.

4. Sahara and Sudan; 4000–3000 BC; pearl millet, sorghum.
5. Guinea and Cameroon; 4000–2000 BC; yams, beans, oil-bearing palms.
6. Mesoamerican locus (central and southern Mexico); 9000–4000 BC; maize, amaranth, string beans, pumpkins, peppers, garden trees.
7. Andean locus (Colombia, Ecuador, Bolivia); 7000–5000 BC; potatoes and sweet potatoes, manioc, amaranth.

Historical Significance and Economic Consequences

The historical significance and economic consequences of the development of agriculture are connected, first of all, with the cyclical character and long-lasting effects resulting from the regularities of land cultivation and harvesting. Improvement of such activity required the formation of a settled mode of life, the concept of land as property, and labor division in its social (gender, age) as well as seasonal forms. These tendencies led to the transformation of the whole system of social distribution of food supply and material valuables of the society. The possibility of obtaining predictable excess of the products gave the opportunity (or even necessity) for its holders (“big men”) to organize ritual ceremonies (potlatch), which resulted in the growth of their importance in the community. A so-called prestige economy led to the formation of property and social inequality and, in turn, to the formation of social classes, exploitation, and political organization.

Transition to the settled mode of life required the formation of many sorts of household activities necessary to secure the livelihood of early farmers. The origins of ceramic production, spinning, weaving, advanced tool production technique and means of transportation, and other phenomena are connected with the needs of a new form of production. First, the negative consequences of early farming (environment pollution, forest reduction, soil deterioration, infections, and epidemics) also could be traced as early as the Neolithic.

Agriculture improvement necessarily accompanied with development of rational knowledge in the field of plant biology and soil peculiarities; weather prediction and first calendars have been elaborated at that time.

A new form of ideology was required to accommodate the new form of production and secure its repetition by following generations. Fertility cults and cosmogony and the beginning of deification of elements of nature coincided with the advent of agriculture.

The diversity and global character of the historical consequences of the transition to agriculture, and its deep influence on all spheres of human life, are reasons to consider this phenomenon as the background for the “wide-spectrum revolution” theory proposed by K. Flannery.

— Olena V. Smytyna

See also **Agricultural Revolution; Agriculture, Intensive**

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AGRICULTURE, SLASH-AND-BURN

Slash-and-burn agriculture, sometimes known as *swiddening* or *shifting cultivation*, involves felling trees and vegetation on a plot of land, leaving them to dry, and then setting fire to them. Crops planted on the plot benefit from the nutrients provided by the ash. A diversity of crops tend to be planted and intermingled with each other. Depending on the fertility of the soil, once cleared, a plot is used for a further 2 to 5 years before being left to fallow. The reasons for abandoning plots vary. It may reflect decreased soil fertility, excessive weeding effort, or combinations of both.

Slash-and-burn agriculture has been widely practiced in human history. It is still extensively used in tropical forests, where some 250 to 500 million people are thought to practice it. Slash-and-burn agriculture can also be viewed as an extensive early stage in the evolution of agricultural practice to more intensive measures. Depending on the fallowing time, it will

require 10 to 30 hectares per person. The fallowing period will decline with the increasing population density, with attendant consequences for soil fertility and agricultural practice. But where slash-and-burn agriculture is not practiced just for subsistence, but is one of several pursuits within more diverse livelihoods, it will be less directly dependent on population density.

Slash-and-burn agriculture has its advocates. It minimizes human effort, while maximizing the input of energy from burnt vegetation. It can leave larger trees protecting the soil from vigorous rains. The timing of the burns, the temperature of the flames, and planting the right mix and rotation of crops can take considerable skill.

But slash-and-burn agriculture has rarely been popular in development or conservation circles. It was castigated in the early years of agricultural development for being wasteful and inefficient or lazy. This overlooked both its productivity, per person, and the ecology of intercropping. It is currently widely criticized for its impact on biodiversity conservation where habitat conversion is assumed to be driven by increasing populations and intensity of use. The threats are real, but these criticisms can exaggerate the blame due to small holders, when more profound forces drive their action. They also privilege the role of population growth, when other forces are more significant. Finally, they can overplay the detrimental consequences of anthropogenic disturbance, without acknowledging that disturbance can foster biodiversity at some scales.

— Dan Brockington

See also **Cultivation, Plant; Ecology and Anthropology**

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ALCHEMY

The last few decades have seen the growth of a vigorous research program investigating alchemy and a subsequent increase in our understanding of how it functioned both in late antiquity and early Europe. The ultimate origins of alchemy, however, are still obscure. Different scholars place its genesis either in Egypt, India, or China. In fact, the difficulties posed by a historical field of study that spans three continents and nearly two millennia are increasingly leading students to speak in terms of “alchemies” rather than seeing the movement in unified or totalizing terms.

Two basic goals, common to many historical schools of alchemy, were the creation of a universal medicine, capable of curing disease and extending life, and the mastery of the art of transmutation. The technical body of knowledge that supported these aims apparently arose out of the workshops of Egypt between 500 BCE and 200 CE. An investigation of period sources, such as the Leyden Papyrus X and the Stockholm Papyrus, show that Egyptian artisans and jewelers had become skilled at making glass, artificial gems, pigments, and even being able to change the properties of gold or other metals through using chemical dyes or alloys.

Nevertheless, true alchemy did not emerge until the third and fourth centuries of the current era, when these technical procedures were combined with Greek thought and philosophy. Authors such as pseudo-Democritus, Zosimos, and Stenphanos of Alexandria sought to integrate this body of art with both classic philosophical texts and more contemporary Hellenistic movements like Neoplatonism and Gnosticism. It was only after these associations were made that the phenomenon known as alchemy can be said to have existed. Interest in the subject was maintained and advanced by Arab scholars after the seventh century. Like many other forms of knowledge, they were primarily responsible for importing it into Europe through works by authors like Jabir Ibn Hayyan, pseudo-Gerber, and Avicenna in the late 12th and 13th centuries.

Interest in alchemy started to wane rapidly in Europe after the early 17th century as new theories of matter and chemistry emerged. Little notice was taken of this subject until the 19th century. Due to the Romantic movement, popular interest in alchemy increased, and it became associated with magic and astrology, which were also very much in vogue at the time. These

19th-century interpreters of alchemy sought to preserve the art by transforming it from a mode of inquiry about the natural world into an esoteric spiritual practice. This move was erroneously accepted by later scholars who were primarily interested in the perceived psychological or mystic nature of alchemical symbols, rather than their ability to convey technical knowledge. Perhaps the two most well-known authors using alchemy in this way were Mircea Eliade and Carl Jung. While their work made important contributions to the fields of psychology and comparative religion, their portrayal of the underlying subject matter was flawed. Recently, historians have become sensitive to these issues and are attempting to restore our understanding of this important phenomenon to its proper context.

— Benjamin N. Judkins

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ALEUTS

The Aleuts inhabit the Aleutian Archipelagos that span from the Alaska Peninsula to the Commander Islands in Russia. Their original name is *Unangan* and *Unangus*, meaning “the people.” Their aboriginal



Aleut dancers

Source: Photo courtesy of the Aleut Corporation.

lifestyle was based on survival and developed in response to their environment in this land they called “the birthplace of the winds” and “the cradle of storms.” They fashioned unique tools from the materials available on their barren islands and learned to utilize every valuable part of their prey or what they gathered. Claiming their hunting grounds in both the North Pacific and Bering Seas, they became expert hunters in boats fashioned from driftwood and skin. The first was their primary hunting vessel, the *iqax*, which became known as the *kayak* (the Russians called it a *baidarka*). The second was a vessel crafted large enough to transport their families in. The weather on these treeless, volcanic islands is nearly uniform in temperature, with high winds the Aleuts say can be “like a river.” Their skill in reading the currents and navigating in the constant fog was key to their survival. Did the ancestors of the Aleuts cross the Bering land bridge and/or arrive via watercraft, hunting mammals along the edges of Beringia? Are they more closely related to the Eskimos or the Natives in the southeastern part of Alaska, the Tlingit and Haida? How have the changes since post-European contact affected the people known as the Aleuts?

The New World

During the last glacial maximum (formed between Asia and America), known as *Beringia*, also the *Bering land bridge*, it was first speculated that the ancestors

of the Aleuts made their way by walking into the New World to settle in the circumpolar zone of the Aleutian Islands. Stronger support is forming for maritime entrance into the New World as more evidence surfaces, like the discovery of fossils of bears carbon-dated to more than 12,000 years ago and of a young man dating back more than 9,000 years ago, on Prince of Wales Island in southeast Alaska, which was thought to be glacially covered. Dr. Tim Heaton is doing the study of these fossils and the possibility of glacier-free areas, existing along what now are islands that border Alaska. This opens the possibility that Aleuts, as well as other Native Americans (either during or after other glaciating processes) could

travel via waterway to the Americas.

Due to the location of the Aleuts and the various traits they exhibit, questions have developed as to what Native group the Aleuts originated from, either the Eskimos or the Tlingit. William S. Laughlin presented that the Aleuts came from the “proto-Eskimo-Aleut culture.” Linguists like Swadesh, Hirsch, and Bergsland suggest that the Aleuts separated from a proto-Eskimo-Aleut Language around 4,000 years ago. Mitochondria DNA research by Dennis O’Rourke and Geoff Hayes reveals that the Aleuts became their own people about 6,000 years ago.

Did the Aleuts come by land or sea? Was the split prior to or after the linguistic Eskimo language? Within these equations is an Aleut myth, mentioned in *Baidarka as a Living Vessel: On the Mysteries of the Aleut Kayak Builders* (1988), which backs a theory that the Aleuts migrated from the east (the mainland, after arriving either easterly by land or westerly by water). In this account, the Aleuts moved after their “creation,” from the overpopulated *Chilkak* (translation perhaps “Chilkat,” a Haines, Alaska, area) so they could have their own land.

Lifestyle, Kayaks, and Feasts

The winter home construction was semi-subterranean, allowing several families to coexist, as each family had their section of the building. Being a paternal nonequalitarian society, the people lived in accordance

with their status in a hierarchy, with a chief at the top and slaves at the bottom. During the nomadic summer hunting seasons, a hole would be dug (at their choice of camp) for sleeping, and woven mats of grass would be used to cover the ground or for blankets. Their parkas would be laid on top of the mats for warmth and insulation. Parkas were made from the fur of walrus, seals, caribou, bear, and bird skins. Waterproof over-shirts were made from sewn strips of walrus intestines. There was no campfire; to gain heat, a small smoldering fire was made from grasses, and then the person would stand over it, and then lower his or her parka.

Their main vessel, the kayak, was unique in design:

- It had a cleft bow to cut through the waves.
- It was stated to be so light, even “a child” could carry it.
- The original design was made with bone and stone joints for flexibility.
- This complex design was made from memory.
- It was clocked at 7 to 10 miles an hour.

Each season, the chief occupation within the settlement was survival, and all activities were geared to the preparation and productions of food, in hopes of accumulating an abundance to celebrate the numerous “potlatches” throughout the feasting fall and winter season. The months were named in accordance with the activities through the year, beginning in March, which was “a time of eating skin.” Around this month, the food supply was spent, and the weather was so bad, the only option left was to forage for mollusks and perished sea mammals washed ashore, and when none could be found, then the skin obtained from the previous season became their meal.

Spring brought migrating birds, which were caught within whalebone nooses. Pinnipeds of large numbers made brief stops to the island chain en route to their nesting rookeries on the fringes of the Bering Sea. From spring to autumn, the rivers spawned three varieties of salmon. Also, from early spring to late autumn, migrating fur seals from as far as California were hunted with darts. Late spring to early summer,

the sea otters arrived (the most coveted fur for clothing). Summer brought whales, walrus, berries, and edible roots, as well as grasses for basket weaving.

Winter was the season of celebration, a time of feasting, dancing, and masks. Aleut potlatches resembled those of the northwest coast Natives. The winter festivals included the distribution of gifts and performances of accessional reenactments in songs and dances. Many of the same themes and activities of northwest potlatches existed, such as the funeral potlatch, the killing or freeing of slaves during this time, games, and Raven (a common thread to the



Shumagin Islands of the Aleutian chain

Source: Photograph by Tony Ise.



Modern Aleut Dancers reenact their cultural history

Source: Photograph courtesy of the Aleut Corporation.

North Pacific Rim “First People,” from Russia down to Washington); he is also a hero in their myths, and they likewise considered him their ancestor.

Enter the Europeans

During the second Kamchatka Expedition (1733–1743), Vitus Bering (commanding the *St. Peter*) and Aleksey Chirikov (the *St. Paul*), encountered island dwellers, who at that time were called the Unangan (the eastern dialect) and the Unangus (the western dialect), which means “the People,” at Unga and Nagni Islands. It was after this trip that these people became known as the “Aleuts,” though the origin of this name is unknown. The discovery of the wealth of fur available at the Aleutian Islands started a “fur rush” to Alaska. The Russians claimed a sovereignty over the land they called “Alyeshka,” from 1741 to 1867. Skirmishes developed when the Russians began enforcing a dominant role in the Aleuts’ lives, as well as killing entire villages. The world of these Arctic peoples, their culture and sustenance for thousands of years, disappeared in large part due to their adoption of the Russian Orthodox religion; their dependence on Europeans for clothes, food, other merchandise, and wage earning; and general assimilation to European culture. Parts of the Aleut culture were totally lost, as Shirley A. Hauck found in her study about how the aboriginal Aleut music became extinct due to European contact.

When the “sale” of Alaska was transacted, this also brought many changes to the Aleut community. For example, the original homes were semi-subterranean, but the Americans transported lumber to build houses on the island, and they were very drafty in comparison and brought sickness to elders and young children. A new language was enforced when a law passed in 1866 concerning public schools that only English could be spoken. Also, the Aleuts, especially those of the Pribilof Islands, were the only Alaskan Natives to become subjects of America in the service of fur companies. The Americans also indiscriminately overhunted the fur seals, so that by 1913, their

extinction was feared and the United States declared a 5-year sealing holiday.

World War II

On June 7, 1942, a Japanese invasion came to the Island of Attu, resulting in 42 villagers, both Aleut and Caucasian, being taken as prisoners of war and relocated to Otaru, an island in Japan, for 3 years. The American government responded by ordering the evacuation of the Aleutian and Pribilof Islands, sending 881 Aleuts from nine villages to camps called “duration villages” in southeast Alaska for 2 years. The Aleuts left their islands with suitcases and blanket rolls and the memory of their villages burning. In 1944, the Aleuts were allowed to return to their homeland, but four of the villages were never to be inhabited again.

Aleuts Today

The Aleuts appear to have survived by becoming skilled in their ever-expanding environment. They are true children from “the cradle of the storms,” having survived wind and cold, volcanoes and earthquakes, oppression by fur traders, World War II invasion and relocation, as well as other challenges as they evolved into modern life. Today, the Aleut language is being taught in schools, as well as the culture. A young

13-year-old Aleut, John Bell (Bennie) Benson, made his mark in history with the design of the Big Dipper for the Alaska State flag, in a contest prior to Alaska's statehood. An Aleut artist, Thomas Stream, from Kodiak, has become an abstract artist, blending Aleut subjects into his gouache paintings and playing a part in evolving Aleut art with colorful and playful themes. The Aleutian Chain has become a home to the tourist and fishing industry. With airports, computers, and other expanding luxuries, the present-day Aleuts have emerged as a modern people, reclaiming and honoring their ancestral culture and redefining what it means to be an Aleut, to be an Unangan.



Aleut dance group wearing traditional Aleut regalia

Source: Photograph courtesy of the Aleut Corporation.

— Pamela Rae Hutesson

See also **Athabascan; Native Peoples of the United States**

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ALFRED (the ALele FREquency Database) is an Internet-accessible database designed to store and make available frequencies of alleles of DNA-based human polymorphisms for multiple populations, primarily for the population genetics and molecular anthropology communities. The emphasis remains on populations typed for multiple polymorphisms and polymorphisms typed on multiple populations. Allele frequencies at each site are linked to the specific populations and specific samples of those populations with descriptions. When available, haplotype frequencies are also included. Each polymorphism site is linked to molecular definitions and to molecular databases.

As of January 2005, ALFRED had data on 1,051 polymorphisms, 399 populations and 23,179 frequency tables (one population typed for one site). ALFRED is accessible from <http://www.alfred.med.yale.edu>. Data in ALFRED come from two sources: They are extracted from the literature, or they are submitted by researchers. From either source, data included in ALFRED are carefully curated and multiple links established, making it possible to retrieve data through many pathways. All of the data in ALFRED are considered to be in the public domain and available for use in research and teaching.

Populations are organized by geographic regions, and each population record is annotated with alternate names (synonyms), linguistic, geographical location information, and links to external databases. The population descriptions in ALFRED are meant to be helpful but not fully comprehensive. The ability to retrieve additional information on populations is provided by active links to linguistic and ethnographic databases. Population samples are organized by populations and annotated with sample information such as sample size and relation to other samples. Genetic polymorphisms are defined primarily by their locus and allele. Loci are organized by chromosome, and each locus record is annotated with alternate names (synonyms), chromosomal position, a valid locus symbol, and links to external databases. Polymorphisms and haplotypes are organized by locus, and each polymorphism record is annotated with dbSNP rs#, alternate names (synonyms), ancestral allele, and links to external databases for expanded molecular information. Thus, ALFRED provides links to both molecular and anthropologic databases. Each allele frequency record is linked to the population sample information, polymorphism information, typing method, and the publication the frequency was extracted from. All publication entries are linked to PubMed. Every record in ALFRED has a unique identifier (UID) that can be used in publications to reference specific data.

Flexible methods of querying ALFRED are available. The queries can start with loci, population, publication author, ALFRED UID, dbSNP ID (rs#, ss#), geographic region, or a combination of gene name and population name. The results of frequency searches can be viewed both in graphical and tabular format. The graphical stacked-bar format offers a quick visual display of the frequency variation among populations. On the other hand, the tabular format offers frequency values and related information, which can be used in analysis tools.

Several other means of retrieving data are being developed. One is a geographic interface that displays populations on maps and can also display graphics of data at the map location of the population.

Data in ALFRED are available for downloads in different user-friendly formats. Allele frequency data for individual polymorphisms can be downloaded in semicolon-delimited format. The entire database can be downloaded in XML format by following the link provided in the Web site (<http://www.alfred.med.yale.edu/alfred/xmldatadump.asp>). Depending on requirements, a researcher can download the entire

database with or without the descriptions or have the tables separately downloaded in XML format. In addition, the allele frequencies, polymorphism, and population information tables in ALFRED are also provided in downloadable text files. Data in these files can be seamlessly imported into Excel spreadsheets for further analysis.

A Web page has been prepared for the purpose of providing guidelines to users for submitting data to ALFRED (<http://www.alfred.med.yale.edu/alfred/AboutALFRED.asp#datasubmission>). We are requesting that researchers help us by submitting their data using the Excel spreadsheet provided at this page.

Graphical overviews of the database contents can be viewed at the page (<http://www.alfred.med.yale.edu/alfred/alfredsummary.asp>). A “sites per population” Web page (http://www.alfred.med.yale.edu/alfred/sitesperpop_graph.asp) shows graphically (and numerically) the number of allele frequency tables for each population. A “populations per site” Web page (http://www.alfred.med.yale.edu/alfred/popspersite_graph.asp) similarly represents the number of allele frequency tables for each polymorphic site.

ALFRED has a page dedicated for user registration (<http://www.alfred.med.yale.edu/alfred/registration.asp>). The primary benefit of registering is to receive the ALFRED newsletter. The newsletter provides hints on how to efficiently use ALFRED for various purposes and will provide highlights and recent additions to ALFRED on a regular basis.

ALFRED is supported by the U.S. National Science Foundation.

— *Kenneth K. Kidd*

See also **Computers and Humankind; Genetics, Human; Genomics; Human Genome Project**

ALGONQUIANS

Algonquian is a linguistic term that describes the language family belonging specifically to a large number of North American Native nations. The Algonquian linguistic family is believed to have originated from a Proto-Algonquian parent language spoken as far back as 2,500 to 3,000 years ago. The area in which it originated is thought to have been located between Georgian Bay and Lake Ontario. The Proto-language has since then developed into many variations as a

consequence of migration patterns, historical relationships, European contact, and environmental changes.

Algonquian languages were spoken throughout North America, across the Great Plains to the eastern seaboard and north from the Canadian Subarctic to North Carolina in the south. We categorize Algonquian languages into three geographic areas that include

- the *Plains Algonquian* languages spoken in central and northern Great Plains
- the *Central Algonquian* languages spoken around the Great Lakes, north from eastern Quebec through Manitoba and from Labrador west to Hudson Bay and Alberta, and
- the *Eastern Algonquian* languages spoken from the Gulf of St. Lawrence south to coastal North Carolina.

The distribution of the Algonquian languages rests as one of the largest language expansions over North America. Due to their wide geographic distribution and location along a broad swath of the eastern North American coast, the Algonquian nations were the first with which Europeans had contact. Approximately half of the Algonquian languages were spoken in the Eastern Algonquian regions, while the others were concentrated within the eastern woodlands and northern plains. The Iroquoian nations neighbored the Algonquian nations in the eastern and southern areas, as the Siouan nations bordered on the south. The Algonquian nations were surrounded on the southwest and west by the Muskogean and Siouan nations, on the northwest by the Kitunahan and the great Athapascan language families, and on the north, the coast of Labrador, and east of Hudson Bay by the Inuit. Although we recognize early relationships among Algonquian languages, these are difficult to confirm because some Algonquian languages vanished or disappeared before they could be studied. Some suggest that, when explorers first came in contact with Native American people in North America, there might have been as many as 300 Native American languages being spoken. By 1960, only around 80 of these languages were still being spoken but mainly by older generations, individuals over 50 years of age. Historically many Algonquian speakers could converse in more than one language and often, in several. Beginning in the 17th century, Christian missionaries and travelers formulated much of the histories of the Algonquian languages. Because the accumulation of research from the earliest ages is sparse, we see gaps within the

chronological picture of the Algonquian history. As a consequence, the history includes bias and misunderstanding. By the 19th century, a number of scholars began research in Algonquian comparative studies.

Micmac (Mi'kmaq) is spoken in parts of Nova Scotia; Prince Edward Island; eastern New Brunswick; Gaspé, Québec; Labrador; and Boston. Maliseet-Passamaquoddy is spoken in western New Brunswick by the Maliseet and in eastern Maine by the Passamaquoddy. Etchemin was spoken between Kennebec and St. John Rivers. Some suggest that Etchemin originated from Maliseet-Passamaquoddy and Eastern Abenaki. Eastern Abenaki was primarily spoken in central and western Maine. Different from Eastern Abenaki, Western Abenaki was spoken in St. Francis, Québec; Massachusetts; Vermont; and Sokoki, New Hampshire. The English translation of the French word *loup* is wolf. Given this name by the French, it is speculated that Loup A was spoken in areas of central Massachusetts and the Connecticut Valley. Loup B has similar dialects to Western Abenaki and Mahican. Massachusetts was spoken in southeastern Massachusetts, Cape Cod, the Elizabeth Islands, Martha's Vineyard, and Nantucket. Narragansett was spoken in Rhode Island. Mohegan-Pequot-Montauk was spoken in eastern Connecticut and the eastern portion of Long Island. There is not sufficient information on Quiripi and Naugatuck-Unquachog-Shinnecock, but some suggest that these were also spoken in western Connecticut and Long Island. Mahican lived in areas from Lake Champlain along the southern Hudson River to eastern New York, western Massachusetts, and northwestern Connecticut. One of the Delaware languages, Munsee, was spoken on western Long Island, southern New York, and in northern New Jersey. The Munsee was later found in areas within Ontario, such as Moraviantown, Munceytown, and Six Nations. Another Delaware language, Unami, was spoken in southern New Jersey, Pennsylvania, Delaware, and Oklahoma. Nanticoke was spoken in Maryland and, more specifically, Piscataway to the west of the Chesapeake. Powhatan was spoken in Virginia, from the Potomac south to the James River. Pamlico was spoken in northeastern North Carolina.

Central Algonquian

The Shawnee frequently relocated but lived mainly in Oklahoma. Sauk-Fox was spoken in central Oklahoma and on the Kansas-Nebraska boundary. Kickapoo was spoken in Kansas, Oklahoma, Texas, and Coahuila,

A list of Algonquian languages arranged within the three general North American locations.

Eastern Algonquian

Micmac (Mi'kmaq)
 Maliseet (Malecite)
 Passamaquoddy
 Etchemin
 Eastern Abenaki (Penobscot)
 Caniba, Aroosagunticook, Pigwacket
 Western Abenaki (Abnaki) (St. Francis)
 Loup A (Nipmuck)
 Loup B
 Massachusetts (Natick)
 North Shore, Natick, Wampanoag
 Narragansett
 Mohegan-Pequot
 Mohegan, Pequot, Niantic, Montauk
 Montauk
 Quiripi (Quinnipak) (Connecticut)
 Naugatuck-Unquachog-Shinnecock
 Mahican
 Stockbridge, Moravian
 Munsee (Delaware)
 Munsee, Wappinger
 Unami (Delaware) (Lenape)
 Northern, Southern, Unalachtigo
 Nanticoke
 Nanticoke, Choptank, Piscataway (Conoy)
 Powhatan (Virginia Algonquian)
 Pamlico (Carolina Algonquian) (Pamtico) (Pampticough)

Central Algonquian

Cree
 Eastern Cree dialects
 East Cree, Naskapi, Montagnais
 Western Cree dialects
 Plains Cree, Woods Cree, Western Cree, Swampy Cree, Eastern
 Swampy Cree, Moose Cree, Mithchif, Atikamek
 Ojibwa (Ojibway) (Ojibwe) (Chippeway)
 Saulteaux, Northwestern Ojibwa, Southwestern Ojibwa, Severn
 Ojibwa, Central Ojibwa, Ottawa (Odawa), Eastern Ojibwa,
 Algonquin
 Potawatomi
 Menominee (Menomini)
 Sauk-Fox-Kickapoo
 Miami-Illinois (Peoria)
 Shawnee

Plains Algonquian

Blackfoot
 Cheyenne
 Cheyenne, Sutaio
 Arapaho-Atsina-Nawathinehena
 Arapaho, Atsina (Gros Ventre), Nawathinehena
 Eastern Algonquian

Mexico. Miami-Illinois was spoken in Indiana, Illinois, and in eastern Oklahoma. Potawatomi was spoken around Lake Michigan, and later spoken in Wisconsin, Kansas, Indiana, Michigan, Oklahoma, and possibly Ontario. Ojibwa languages are spoken from southwestern Québec through Ontario, Michigan, northern Wisconsin and Minnesota, southern Manitoba, and southern Saskatchewan. Algonquin language is spoken in Western Quebec and adjoining areas in Ontario. Cree is spoken across Canada, from Labrador westbound to Alberta. Menominee is spoken in north-eastern Wisconsin.

Plains Algonquian

Blackfoot is spoken on the Blackfoot Reservation in northwestern Montana as well as on various reserves in Alberta. Cheyenne is spoken in southeastern Montana and western Oklahoma. Arapaho is spoken on the Wind River Reservation in Wyoming and in western Oklahoma. Atsina, also known as Gros Ventre, was spoken on the Fort Belknap reservation in northern Montana. Nawathinehena was last spoken in the early 20th century and is only known by a short wordlist.

Linguistics of the Algonquian Language

From the study and reconstruction of languages, linguists are able to theorize about the relationships among groups of individuals that use similar terminology within their language systems. One technique used to assist in discovering which Aboriginal nations were associated with a shared mother tongue within a certain area is the reconstruction of languages. This technique involves the reconstruction of words used to describe flora and fauna. The next step involves the search for a region in which all of these terms are associated. All Algonquian languages are different but they share similar features that enable them to be placed together within the same language family. Algonquian languages are moderately simple in association to features of tones, accent, and voicing. The Proto-Algonquian language consists of four vowels—*i*, *e*, *o*, and *a*—that have both long and short qualities. Semivowels include *y* and *w*. The Algonquian word is characterized as being overall slightly complex in reference to syntactics. Algonquian words are considered to have themes. These themes include a root and a suffix called a *final*. The final plays an important role in determining the part of speech. Themes also include

verbs, nouns, pronouns, or particles. Grammatical categories belonging to Algonquian languages are not distinguishable by gender-based terms. Instead, distinctions correspond on the basis of living and nonliving entities. These living and nonliving entities are defined as inanimate and animate categories. Edward Sapir, a linguist, characterizes Algonquian words as “tiny imagist poems.” This may be a reflection of the use of grammatical categories corresponding with that of nature instead of being gender-based, as with many other languages. Examples of animate nouns include persons, animals, spirits, large trees, various fruit, and body parts.

There has been a constant concern over the possibility of losing more Native languages in North America. In the past, language loss has been primarily due to death and disease in which entire nations were extinguished. Beginning in the late 1800s, assimilation policies resulted in the prohibition of Native languages use in residential schools and the removal of Native American children from their families. This resulted in the erosion and loss of language by a break in the oral transmission of language to future generations. In the past, Native American communities were forced out of their traditional territories by encroachment of French and European settlers. One of the consequences of these relocations was, indeed, language loss, with the coastal languages as prime examples. The factors associated with the loss of Aboriginal languages in Canada today is migration, marriage, education, and employment. In a 1996 survey from Statistics Canada, only 26% of 800,000 Aboriginal people had an Aboriginal language as their mother tongue and even fewer claimed to speak it within their homes. Within the Algonquian language family, the languages that continue to remain in use include Arapaho, Blackfoot, Cheyenne, Cree-Montagnais-Naskapi, Ojibwa, Algonquin, Potawatomi, Menominee, Sauk-Fox-Kickapoo, Maliseet-Passamaquodda and Mi'kmaq. Many of these languages are on the verge of extinction, such as the Tuscarora language. In Canada, for example, only 3 of the 51 Aboriginal languages that exist today are thought to survive. Aboriginal and Native American communities are, however, struggling to revive and strengthen the use of their languages and cultures. Postsecondary schools throughout North America offer classes that concentrate on cultures and languages within their Native Studies programs. For example, Trent University in Ontario, Canada offers courses in Ojibwa. There has been an increase in Aboriginal

media coverage, networks, and programming. Traditional stories, songs, and histories are being recorded and transmitted to Aboriginal and non-Aboriginal communities. The internet is also being used to teach languages, for example, the Kitigan Zibi Anishenabeg community teaches Algonquin on its website. There has been an increase in the number of conferences and events that are held to celebrate, teach, and express Native American culture, language, and art, all of which aids in strengthening a variety of Aboriginal cultures and languages.

Although Algonquian speakers vary in customs, beliefs, and environments, there are many shared qualities. For example, the Algonquian peoples share the belief in a Great Spirit, frequently referred to as *Manitou*, and other teachings and ceremonies common to their history and culture. Although these ceremonies have regional variations, ones common among the Algonquian peoples include the sweat lodge, healing circles, medicine wheels, and shaking tent. Some ceremonies are no longer practiced by some Algonquian speakers. North of the Great Lakes, wild rice was harvested, where it was plentiful. Members of most nations hunted bison, but they were most abundant within the Great Plains. Hunting, fishing, and gathering wild plants, seeds, and fruit were primary food sources, especially when agriculture was not a main focus. Throughout Algonquian-speaking territories, there is a renewal and revitalization of traditional language and culture to aid in healing the present generation from the scars of colonization and past assimilation policies.

— Simon Brascoupe and Jenny Etmanskie

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ALIENATION

Alienation refers to the process by which individuals become disconnected or divorced from their social worlds. It also operates on a broader societal level when the very forces created by human beings appear to be separate and alien from their creators. The concept is commonly used by economic and political anthropologists questioning the conditions of modernity.

Alienation is frequently used in anthropological analyses to describe the general state of estrangement that human beings may feel living in late-capitalist society. The following sample of research topics illustrates the diversity of contexts in which it is used. Ethnographic analyses have employed the concept in studies of the penetration of money-based economies into exchange/gift-based economies in African and Latin America, in acculturation studies of non-Western indigenous people, in studies of the effects of industrialization and the implementation factory regimes, in studies of consumption in Western and non-Western societies alike, and in studies of religious evangelization. Feminist critiques argue that the split between humanity and nature and the division of reproductive and productive labor serve to alienate masculine identity. Research on the commodification of human bodies, where buyers, sellers, and even the contributors consider their body parts commodities for sale and consumption, best illustrates how profoundly alienated humans are in the contemporary market-based society in which they live. Despite this wide use of the concept, very few studies have used alienation as a guiding theoretical perspective.

The first major discussion of alienation is by Hegel in *Phenomenology* (1808). He critiqued the notion that human consciousness was separate from the world of discrete objects. For him, all truth and reality is part of human thought. Even conceiving of a discrete objective, worlds of nature or culture are forms of alienation. The goal of humans is to uncover how they are connected to and how they construct these seemingly independent objects and reconceptualize them as part of their self-consciousness.

Most anthropologists draw on Karl Marx's concept of alienation. Marx criticized the Hegelian conception, because he argued that Hegel's notion that

alienation would cease with the eradication of the external world was false. He contended that humans are part of the external world and must come to understand their relationship with it.

Marx's concept, alienation, is similar to that of Durkheim's concept, anomie. Both apply to the general estrangement an individual feels from their social world, but what distinguishes these terms from each other is that anomie relates to the loss of moral feelings of connectedness people experience when religious and secular rituals cease to function to reproduce the community. By comparison, Marx emphasizes the collective loss of control humans have over their material conditions. For example, workers are alienated because they lack control of production. The use of money furthermore alienates producers and consumers from the material conditions of production and obscures the real social relations that exist among individuals and individuals with the processes of productions.

For Marx, alienation within the domain of labor has four aspects: workers are alienated from the objects that are produced, from the very processes of production, from themselves, and from their community. All this occurs because workers cease to recognize their connections with the material world. What occurs, according to Marx, is that the alienated products of human labor, commodities, appear to take on a life of their own, become detached from human social relations, and seemingly dominate their creators. Marx describes this process as commodity fetishism. Through the related concepts of alienation and commodity fetishism, social relations are conceived as relations between things, which is the process of reification.

In contrast, Weber believed that Marx had erred. According to him, alienation is the result of bureaucracy and the rationalization of social life that comes with modernity. Workers become alienated when they sacrifice personal desires for those of a larger group. Losing control of the means of production is merely a consequence of large-scale rational production. Hence, because workers cut themselves off from their individual goals, they are necessarily alienated.

In general, anthropological treatments of alienation and the related concept of commodity fetishism have held sway over the Weberian conceptualization, in part because power relations between workers and capitalists are not recognized and, in addition,

because it does not acknowledge the seeming independence of commodities from their producers. For instance, anthropological research on the penetration of capitalist economies, in which money replaces local forms of exchange, has shown that commodities and money itself are perceived to attain mystical power.

Although the object of most anthropological research related to alienation has been on the effects of modernization or capitalism on non-Western tribal and peasant societies, recently anthropologists have applied the concept to the effects capitalism has on Western societies. The international adoption market estranges individuals from reproduction through the commodification of children. Online or cyberspace communities, where individuals communicate across vast distances, alienate individuals because they lose face-to-face contact with their peers and cease to regard them as fellow material beings.

As extensive as commodification has become, where all social relations are reduced to capitalistic market exchange, not all individuals have become alienated from their community, history, and means of production. Ethnic tourism research on craft reproduction has shown the opposite to happen, where the commodification of traditional handicrafts and practices have revitalized local culture and created niches within late-capitalist society to stay connected to core cultural values. In other words, these people are not alienated from the products they produce or from their history or community and family by the intense commodification of everything in the contemporary world.

— Walter E. Little

See also **Marxism; Political Economy**

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ALIENATION

Within the field of sociocultural anthropology, those who study human behavior have devoted a good deal of attention to understanding the impact of alienation on individuals and society. Since the terrorist attacks of September 11, 2001, a number of scholars have turned their attention to trying to explain the growing alienation among young Islamic youths and its impact on terrorism. Alienation has played a major part in expanding the belief that any actions taken for the fundamentalist cause are justified and, therefore, approved by Allah. The target for this extremist hatred of all non-Muslims has been primarily anti-Western and particularly anti-American in nature. By definition, radicalism calls for extreme actions taken outside of the political system; therefore, this new generation of Islamic youths has been taught that traditional political actions are of no use to adherents of Islam because the democratic system has failed to meet their needs in the past.

Studies of the behavior of Islamic youths since the late 1990s have shown that alienated young people have become prime targets for Islamic leaders who have secretly established committed groups of followers that are willing to die without question for the cause. It is this kind of dedication, stemming from the belief that dying for the cause grants immediate entry into paradise, that leads to suicide bombings and other forms of terrorism in which the perpetrator has no thought for personal safety. The lack of caution increases the probability of success.

In order to understand why Islamic youth are so vulnerable to fundamentalist radicalism, some scholars have examined changes within the Middle East and North Africa that have altered traditional family structures. At the same time that Islamic families have lost influence, alcohol and criminal activity have increased, contributing to alienation from more traditional Islamic values. Western media has also played a part in the alienation process by illustrating the difference between Islamic youth and those who live in Western societies.

Some scholars have paid particular attention to Islamic youths whose families have immigrated

to Europe, where the youths have failed to become integrated into Western society. For instance, in Great Britain, the Islamic population has more than doubled in recent years. Several polls of Arab youth have found almost half of them willing to fight for Osama bin Laden but unwilling to bear arms for Great Britain. British security personnel are aware that several thousand Islamic youth traveled from Britain to Afghanistan during the 1990s to receive religious indoctrination and to be trained as terrorists. Records show that other European nationalities are also represented among those incarcerated as suspected terrorists at the U.S. Naval Station at Guantanamo Bay, Cuba.

Scholars who study the connection between the alienation experienced by young Islamic youths and terrorism believe the only way to end the threat to international peace is by identifying and dealing with the underlying causes of alienation that have created a fertile environment for Islamic fundamentalism and its insistence on radicalism, separatism, and terrorism.

— Elizabeth Purdy

ALTAMIRA CAVE

Often called the “Sistine Chapel of Paleolithic Art,” the prehistoric Altamira Cave contains paintings and artifacts dating from 18,000 to 13,000 years ago (BP). Located on Monte Vispieres in Cantabria, Northern Spain, it was first explored in 1879 by Don Marcelino Sanz de Sautuola. Early controversy raged over the age of the site, as many doubted that prehistoric humans could produce such sophisticated art; however, its significance was recognized by the early 1900s, and Altamira Cave was listed as a World Heritage Site by UNESCO (United Nations Educational, Scientific, and Cultural Organization) in 1985.

Altamira Cave consists of an S-shaped series of rooms with a total length of 270 m (886 feet) and contains two rich occupation levels. The earlier, dated to the Solutrean (18,500 years BP), contains stone points, bone awls, and pendants. The second, dated to the Magdalenian (15,500–14,500 years BP), contains

antler and bone points and leatherworking tools. Altamira is unusual because it contains both domestic artifacts and cave paintings; most cave art is located far from living areas.

Engraved and painted on the ceiling of the cave are images of wild animals such as bison, deer, horses, and wild boar; outlines of human hands; and abstract figures and shapes. Sometimes drawings are superimposed on earlier works. Bison are the most common animal depicted.

These Paleolithic artists were skilled at painting images on the ceiling that would accurately reflect the proportions of the animal as seen from the cave floor. The images at Altamira were painted in red, brown, yellow, and black pigments. The use of several colors allowed for subtle shadings and perspectives. The naturally rough texture of the walls was used to depict movement and a three-dimensional perspective for the viewer below. These details reflect a significant level of technical skill. On seeing them, Picasso reportedly exclaimed, “After Altamira, all is decadence.” Indeed, many artists of the modern art movement claimed inspiration from Paleolithic cave paintings.

Creating these works of art required a considerable expenditure of effort. The artists needed scaffolding to reach the vaulted ceilings. Light must have been provided (and raised to the ceiling) via torches or bowls filled with animal fat. The four colors of pigment were produced by mixing ochre and manganese with a binder, such as blood or urine. The pigment was then applied with a brush or by blowing it onto a surface with a pipe or by mouth.

Why did our ancestors invest so much energy in cave art? While the thoughts of these artists will never be known, anthropologists have developed several hypotheses to explain why these paintings were created. Perhaps the artists performed sympathetic magic by ritually capturing the animal’s soul prior to the hunt, improving their success. The images could represent hunting trophies or tell stories. Many of the nonanimal symbols seen in cave art have been interpreted as representations of male and female genitalia; maybe the art signals fertility magic, influencing future births. Some feel that many of the symbols are astronomical or calendrical, and used to mark seasons. Possibly, the images were created for aesthetic or nonpractical reasons. Like all art, the social context in which these paintings were made holds the key to what made these images meaningful to the artists and their



Source: © Gianni Dagli Orti/CORBIS.

contemporaries. In any case, the beauty of these Paleolithic paintings is unforgettable.

— Cathy Willermet

See also **Cave Art; Petroglyphs; Rock Art**

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ALTRUISM

Altruism is the attitude that consists of according one's regards to the Other (*alter* in Latin), personally or globally, as a principle of one's choices and actions. Opposed to *egoism*, it implies sincere and unselfish concern for the well-being of others, expressed practically.

Its most current use is referred to interhuman relationships; in this sense, it can be attached to *humanism*. Altruism is indeed an extremely significant notion of great concrete consequences for the human societies.

There shouldn't be confusion between the principle of altruism and the one of simple respect of the Other: Being respectful doesn't necessarily imply taking under consideration the Other's welfare for the definition of one's behavior.

Another possible erroneous identification may occur between altruism and the ethical attitude founded on the principle of reciprocity, as expressed negatively already in the Hebraic *Talmud of Babylon (Shabbat)*: "Don't do to your fellow man what you would detest he did to you," and positively in the Christian *New Testament* (Luke 5:31; Matthew 7:12): "What you would like people do for you, do it in the same way for them."

Instead of these principles of "reasonable justice," Jean-Jacques Rousseau (1712–1778) thought that human actions should rather follow the principle of "natural goodness": "Do your own good with the least possible harm for the Other." However, this isn't altruism, either: Not to harm is just to respect; no active consideration for the Other's good is at play.

In fact, we may distinguish two sorts of altruism, to which we are giving here original appellations, for the sake of more clarity:

1. The "egalitarian" altruism, where one is concerned of the well-being of the Other at the same level one cares about one's own. This is the commonest way to conceive altruism. It is expressed paradigmatically by the capital Judeo-Christian command, present in the *Old* and the *New Testament*: "Love your neighbor as you love thyself" (Leviticus 18:18 and Matthew 22:39), as well as in the Islamic *Koran*: "Help ye one another in righteousness and piety" (Sourat 5:2).

2. The "absolute" altruism, where one puts the Other's good at a higher level than one's own in the scale of the values and principles defining one's actions. It is a more exceptional manifestation of altruism. Usually, it is considered as characterizing the ideal parent's love toward their children. In more rare circumstances, it may be addressed to persons with which some other kind of loving relationship occurs (family, lovers, friends) or other larger common link (compatriots, people sharing the same ideas or beliefs). In the latter category may belong the "guardians" of the ideal *Republic* of Plato (428–348 BC), who were asked to put

aside their personal happiness to occupy themselves with the welfare of the city, as well as some “national heroes” or “martyrs.”

The most astonishing case is the one where no other relationship interferes than the common human status. Such an altruism becomes, for example, the motivation inspiring the actions of persons commonly called “heroes of humanity” (or even “saints,” if they are attached at the same time to a religious belief): One’s own life might be either literally sacrificed for the welfare of others or entirely dedicated to it (such as scientists choosing to work lifelong under hard conditions for discoveries that will help the concrete amelioration of others’ lives, or persons embracing a life deprived of comfort and completely oriented toward works of charity, the defense of human rights, or even the Bodhisattvas of the Mahayana Buddhism).

The Other to Which Altruism Is Addressed

Altruism is manifest in interpersonal relations. We think that it is appropriate to first develop a little further the crucial notion of the “Other” toward whom one may behave altruistically.

According to evolutionary psychology, the notion of “Other” (or “alterity”) develops progressively for the human being as the latter defines more and more the limits of its own self (its “sameness”).

It is through our relationship with the Other that we are able to survive physically in our youngest age and to learn everything necessary for our psychological and social growth up to adulthood and till the end of our days. The particular individuality of each person is thus formed in constant interaction with the Other.

The Greek philosophers (6th century BC–6th century AD), who lived in societies where interpersonal dialogue was a considerable and crucial part of everyday life for private, public and intellectual matters, present the Other as a mirror of our soul. They have particularly underlined the importance of the Other for the awakening of the self-consciousness and of self-knowledge. The Greeks in general defined themselves through an opposition to the other people, called “Barbarians” (this didn’t imply any lack of culture accorded to them; on the contrary, we have many testimonies that there was a great esteem for the artistic and intellectual achievements of the neighboring Asian and Egyptian civilizations, toward which

travels were made for the sake of learning: The term derives from the phonetical “bar-bar,” which was the impression given of the sound of languages one didn’t understand).

Georg Wilhelm Friedrich Hegel (1770–1831) places the exceptional moment of the realization of self-conscience at the meeting with the conscience of the Other, in a dramatic clash.

For Plato and the Judeo-Christian tradition, the Other is considered moreover as an image of the divine and therefore should be respected as such. Immanuel Kant (1724–1804) thinks that the respect for the Other is founded precisely on the fact that the Other is a “person,” who should be seen as an “end in itself,” not as a “mean” for something else, like a simple object. The other persons limit our absolute freedom of action, because they are objects of our respect. Thus, the interpersonal relation with the Other also becomes the reason for the foundation of moral conduct on the notion of obligation.

A different approach of the way to conceive the Other, that is, as a separate reality and not just as an object of the ego’s conscience, is made by the phenomenologists, for example, Edmund Husserl (1859–1938) and Martin Heidegger (1889–1976). Emmanuel Levinas (1905–1995), who is at the same time inspired by this school and by Judeo-Christianity, accords a greater importance to the Other than to the Self, against the “egology” of the previous philosophical theories on the subject. The Other has a meaning by himself, before the attribution of any meaning to him by ourselves. He comes to us like a revelation by generosity. This “face” to which we can’t escape represents an appeal to responsibility and justice and reveals us to ourselves. This philosopher has eminently analyzed abnegation and altruism.

To the antipodes of such a vision stands Jean-Paul Sartre (1905–1980), who accepts that the Other’s vision of myself brings up my self-conscience, but the Other exists only for himself, as liberty. The Other “is an ‘I’ that I’m not, which creates nothingness as an element of definite separation between the Other and myself.”

Is Altruism Natural?

In the interpersonal relation to the Other, is the human being naturally inclined to altruism or to egoism? This crucial question, from which depends largely the definition of the most appropriate ethical theory, has to be answered according to David Hume

(1711–1776), only after a systematic research on human nature, inspired by natural science.

The evolutionist thesis concerning human species expressed by Charles Darwin (1809–1882) has been used therefore as a foundation for the theories supporting as natural moral human thought and conduct, “socialized egoism,” “utilitarianism,” and “hedonism” (man’s natural priority is the pursuit of what is more useful or pleasant for himself, though without harming the Others).

According to the utilitarians, even altruist behavior is following “egoist strategies” inscribed in the human genes. Altruism toward others who possess the same genes (family) or who may also be altruists in return is the naturally selected optimal way for the survival of the species. In consequence, moral conduct isn’t the result of a personal free choice, but of a programmed natural reaction. According to Jeremy Bentham (1748–1832), the welfare of a whole human community may be calculated and chosen on the basis of the greatest quantity of good or pleasant things accompanied by the least possible unpleasant things that men may expect from a common life.

These theories may arouse, and have aroused, many objections, for example: Only material goods are “measurable,” but there are many other things that are also considered as “good” by humans. All members of a society can’t have the same opinion on what is better for themselves and the whole of the community. We could add here: Even if it is true that altruism in parental and social relations is met also in other natural species, this doesn’t reduce such a behavior to a natural selection, as there are in human beings altruistic attitudes that don’t enter this scheme. As for an “altruism” that expects a return, could it still be called “altruism”?

As a more moderate solution, Adam Smith (1723–1790) accepts also a natural “sympathy” of the human being for other humans with whom he is in interference, in the sense of sharing the others’ passions.

Arthur Schopenhauer (1788–1860) believes, though, that there is more in the feeling of sympathy we have toward the members of our species: On one hand, we don’t like to see the Other suffering, and therefore we avoid harming them; on the other hand, we take pleasure in doing good to the others.

Before him, Benedictus de Spinoza (1632–1677) had supported that the goodwill toward the Other is in fact a kind of “commiseration,” or pity.

Pity, or the Buddhist “compassion,” or the Christian “charity” (translation of the Greek word *agape*, which

means “love”), is indeed the source of altruism (on the condition that it doesn’t hide any feeling of “superiority” or of “self-satisfaction” for one’s “goodness”). An excellent description of this quality of unselfish good will toward the Other is given in the first “Letter to the Corinthians” of St. Paul, in the *New Testament*.

True friendship (*philia* in Greek) in its best form is also expressed as an absolute good will, addressed to the Other for what he is as a person, as Aristotle (384–322 BC) notes in his ethical works. The spontaneous movement of the “self” toward the other person, who is asking to be loved, is called “solicitude” by Paul Ricoeur (1913–), who places this fundamental ethical intention before the moral action.

René Descartes (1596–1650), following Plato, underlines that caring for the other’s well-being without any wish for return is the characteristic of love, clearly distinguishing it from desire, which includes an egoistic will for possession.

After all these considerations, we think we may affirm that altruism should be considered as naturally coexisting with egoism in human nature, without being limited to a simple result of “natural selection.”

But altruism is preferable, even if this may sound like a paradox, as it is a “plus-nature,” says Vladimir Jankelevitch (1903–1985). For Emmanuel Levinas, the only way for us to approach the Infinite and to arrive at the highest fulfilment is to submit our “I” to the “You,” in an absolutely altruistic attitude.

New Contemporary Expressions of Altruism

We would like to conclude here by mentioning that during the last half of the 20th century, new expressions of altruism emerged. As communications and means of transfer have greatly developed, news about victims of natural disasters, diseases, transgressions of human rights, or armed conflicts travel around the globe quickly. We remark that many associations or individuals around the world show a great sensibility and eagerness to assist, in various ways, their fellow humans in need. We might call these altruistic attitudes at a global level concrete manifestations of a “universal altruism”—an unexpected aspect of the actual phenomenon of “globalization” and a supplementary argument for the innate altruism of the human species and its surprising greatness.

— Aikaterini Lefka

See also **Civil Disobedience; Critical Realism**

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Amazonia. The name conjures western images of luxuriant vegetation, unbridled nature, and vast, unexplored lands. Whether envisioned as a tropical paradise or a “green hell,” the salience of the naturalistic and idealistic features associated with Amazonia has implications for the perception of its human inhabitants. From its inception, Amazonian anthropology has been a highly contested and fractured intellectual field, partly resulting from the manner in which Amazonia was imagined as a cultural category of colonialism centuries before the advent of modern ethnographic exploration.

Early European encounters with indigenous Amazonians provoked debates about the nature of humanity in a manner that would inform subsequent centuries of colonial rule. Yet we can distinguish Amazonia from other colonized regions partly by the manner in which its native peoples were characterized as the prototypical primitive people. Long before ethnographic investigations of Amazonian societies, Westerners stereotyped Amazonians as savages, noble or otherwise, and considered them to be outside the domain of (Western) civilization and closer to nature.

The beginnings of anthropological investigation in the region remained infused with inherited stereotypes about the nature and culture of Amazonia. Ethnographic studies appeared relatively late in the region, which was still largely unexplored scientifically well into the 20th century. The diversity of societies encountered over five centuries of contact has contributed to the mosaic character of region, in

which diversity itself remains an important hallmark, frustrating attempts at regional synthesis. The first regional synthesis provided in 1948 by Julian Steward in the *Handbook of South American Indians* inherited many of the presumptions of earlier periods. Revisions of the standard model provided by Steward have predominated the past few decades of Amazonian anthropology, during which time ethnographic studies of Amazonian peoples reached unprecedented growth. The search for a new synthesis in Amazonian anthropology remains an important goal in the field, yet is further complicated by the increasingly abundant and varied literature regarding Amazonia.

Geographic Definition

Amazonia as a geographic region is named for its major river, the Amazon, the world’s largest river by water volume. The term *Amazon* refers to the female warriors of Greek mythology, who were associated with fabulous accounts of indigenous warriors along the banks of the named river. The river’s headwaters are located in the Andean mountains, and the principal channel drains east into the Atlantic Ocean. The Amazon River is approximately the same length—6,400–6,800 kilometers—as the Nile and, due to yearly changes in the meandering channel, carries a fluctuating status as the world’s longest river. Many tributaries of the Amazon also rank among the world’s longest rivers and constitute an integral part of the region. In the strict sense of the term, Amazonia refers to the watershed of the Amazon River and its many tributaries.

Occupying approximately seven million square kilometers, roughly the size of the continental United States, the Amazon Basin is the largest river basin in the world. This vast region dominates the northern portion of the South American continent and contains the world’s most extensive tract of humid tropics. Bounded to the north by the Orinoco River basin and to the south by the Brazilian shield escarpment, the Amazon Basin stretches eastward from the lower slopes of the Andes, where the 500 meter elevation contour is generally used to delimit the Amazon as a phytogeographic region. Over half of the basin encompasses two ancient upland shields, the Guiana Shield to the north of the river and the Brazilian Shield to the south, both of which predate the rise of the Andes. Remaining areas comprise a giant alluvial basin.

Several adjacent areas are not geographically part of the Amazon Basin but are considered part of greater Amazonia because they share many of its ecological and cultural features. These include the region to the southeast that is sometimes referred to as *pre-Amazonia* and incorporates the Araguaia and Tocantins River basins that drain into the Atlantic south of the mouth of the Amazon. The Orinoco River Basin, which drains north into the Caribbean, is also generally included in the definition of Amazonia, as are the tropical forested regions of the Guianas. Finally, the transition between the Central Brazilian Highlands and the Amazon Basin is gradual and includes the upper portions of the Xingú, Araguaia, and Tocantins Rivers.

We can also use the term Amazonia to mean the politically and economically defined boundaries maintained by contemporary nation states. Countries whose borders include portions of Amazonia include Brazil, French Guiana, Suriname, Guyana, Venezuela, Colombia, Ecuador, Peru, and Bolivia. As a result of historical geopolitical expansion in the region, more than two thirds of the Amazon Basin falls within Brazil's contemporary jurisdiction and generally receives proportionately more popular and scientific attention. The Andean nations of Bolivia, Peru, Ecuador, and Colombia also have sizeable portions of the Amazon Basin relative to country size. Even the smaller portions of Amazonia located within Venezuela and the Guianas have played an important role in the exploration of the region's biological and cultural diversity.

The Amazonian Environment

The environment is an important defining characteristic of Amazonia, and, as such, has figured prominently in anthropological accounts of the region. In particular, archaeologist Betty Meggers presented the Amazonian environment as a "counterfeit paradise," in which lush tropical flora is a deceptive indicator of underlying soil fertility because energy in tropical forests is recycled within the canopy structure of the forests rather than stored in the soil substrate. The ability of Amazonian soils and environments to support the development of complex societies emerged as a central debate in Amazonian ethnography and archaeology. These debates are grounded in assumptions of the Amazonian environment as pristine, static, nonproductive, and fundamentally limiting in

its effect on indigenous societies. Recent advances in our understanding of the nature and culture of Amazonian environments are therefore relevant to Amazonian anthropology.

Located in the humid tropics, the Amazon is defined by tropical conditions that include year-round warm temperatures, high amounts of solar radiation, rainfall, humidity, and biodiversity. Tropical rainforests cover the majority of the Amazon Basin, which contains the largest expanse of the world's rainforests. Yet, while Amazonia may have come to symbolize the generic tropical forest—hot, humid, and teeming with vegetation—the region is far from homogenous. Biodiversity, an important hallmark of the Amazon, generally increases from east to west and is correlated with multiple factors such as latitude, rainfall, temperature, solar radiation, and soils that likewise vary across the region. While the *Pleistocene refugia* theory was once advanced as an explanation for the rich diversity of Amazonian flora, ecologists now suggest that a variety of natural disturbance processes, rather than long-term climatic stability, underlie speciation.

Another important advance in the scientific understanding of the Amazonian environment has been the documentation of the variety of ecosystems that characterize Amazonia. At the most basic level, a distinction can be made between the upland regions, or *terra firme*, and the floodplains of the major rivers, called the *várzea*. The *várzea* accounts for approximately 2% of the Amazon Basin, yet is considered disproportionately important to Amazonian societies because of the relatively rich alluvial soils. The *várzea* can be internally differentiated into three different habitats: the upper floodplain, the lower floodplain, and the estuary.

We can categorize Amazonian rivers into three main types that have important ecological impacts: white-water rivers, clearwater rivers, and blackwater rivers. Whitewater rivers drain the eastern slopes of the Andes and carry geologically young sediments of high fertility that are deposited downstream during seasonal flooding events. These floods constitute the higher soil fertility found along the *várzea* floodplains of the Amazon River and its whitewater tributaries. In contrast, clearwater rivers drain the ancient leached bedrocks of the Guiana and Brazilian plateaus and therefore carry sediment loads of medium to low fertility. Blackwater rivers drain the white sandy soils of the northwest Amazon that are nutrient poor and extremely acidic.

Historical documents and archaeological evidence suggest that densely populated settlements once spanned the *várzea* regions—fostering ongoing debate over the nature of prehistoric and historic chiefdoms in the Amazon. The majority of contemporary indigenous societies, however, live within the upland regions of the Amazon. Emilio Moran's 1993 book *Through Amazonian Eyes: The Human Ecology of Amazonian Populations* carefully documents the internal variety of ecosystems in both the *várzea* and *terra firme* in an attempt to reach beyond this simple dichotomy and avoid condensing diverse habitats and societies under the generic rubric of "tropical forest adaptations." Moran describes the diversity of habitats within the *terra firme*, including lowland savannas, blackwater ecosystems, montaine forests, and upland forests, each of which is internally differentiated. Upland forests also exhibit what appear to be anthropogenic forest types, including liana, bamboo, Brazil nut, and certain palm forests.

Recent advances in ecological research challenge assumptions that Amazonian habitats are homeostatic or stable and increasingly recognize the dynamic role of human societies in the formation of anthropogenic environments. In addition to the large-scale landscape modifications produced by dense populations of the past, traditional subsistence activities practiced by contemporary indigenous societies likewise interact with and transform local ecosystems. Slash-and-burn horticulture efficiently converts tropical forest biomass and mimics processes of natural forest gap dynamics. The primary staple throughout much of the Amazon is manioc (*Manihot esculenta*), along with maize, bananas, plantains, papaya, sweet potatoes or yams, and beans. Cultigens are often interspersed to create multistoried swiddens or garden plots that, rather than being abruptly abandoned, are generally managed through succession. Old fallows function as agroforestry systems that may be used as the preferred hunting and gathering locations for many years. Anthropogenic forests that regenerate from old fallows may be just as biodiverse, if not more so, than adjacent old growth forests, as documented by William Balée among the Ka'apor.

Horticultural activities are generally complemented by hunting, fishing, and gathering activities. Amazonia lacks large pack animals, and game animals tend to be dispersed and cryptic. Hunting technologies such as blow darts, poisons, bows and arrows, and traps are employed and often embedded in local knowledge

systems and cosmologies that stress the relationships between people and animals. Likewise, fishing activities use technologies such as nets, hooks, weirs, and fish poisons, and the catch provides important sources of protein. Finally, the gathering of wild and semidomesticated plants, particularly palms, is an important complementary activity that affects the diversity and distribution of these resources. Even still, the assumption that Amazonian environments are uniformly poor or that indigenous people have passively adapted to pristine environmental conditions once formed a part of the traditional definition of Amazonia.

Amazonia as a Culture Region

Definitions of Amazonia as a culture region have included implicit comparisons with other culture regions of South America, particularly the Andes. Early ethnographers sought to explain why the impressive state-level societies of the Andean region were not found in the adjacent tropical lowlands, where the ethnographic present was characterized by numerous small, autonomous horticultural or hunting-gathering tribes. Steward classified these groups respectively as *Tropical Forest Tribes* (swidden horticulturalists) and *Marginals* (hunter-gatherers) in the *Handbook of South American Indians*. Assumptions underlying cultural evolutionary typologies led to the search for conditions that prevented the development of complex societies in the Amazon. The environment was initially explored as a likely culprit. The characterization of Amazonia in terms of negative rather than positive traits has had a lasting impact on the anthropology of the region.

In positive terms, Amazonia is typified by its cultural and linguistic diversity, which makes regional generalizations difficult. The traditional unit of analysis within the region has been the tribe. The exact number of tribes or ethnic groups in the Amazon region is also difficult to estimate given the uncertain overlap between local and supralocal units of identification or that between language and ethnicity. Furthermore, ongoing processes of acculturation and ethnogenesis defy analysis of tribes as static, ahistorical units.

However defined, we usually classify tribal groups according to their subsistence strategies as hunter-gatherers, trekkers, or horticulturalists. While heuristic, this typology arbitrarily divides a continuum of nomadic and sedentary lifestyles and usually negates historical or contemporary inclusion in market

economies. Mixed subsistence strategies that combine some form of slash-and-burn horticulture with hunting, fishing, and gathering are most common throughout the region. We also traditionally characterize Amazonian tribes by autonomous villages, relatively small populations, and different degrees of egalitarianism. Other region-wide characteristics include the importance of reciprocity, ostracism as a form of social control, the existence of food taboos, belief in multiple souls, and shamanism. Peter Rivière suggests that dualism is a universal structural feature of Amazonian societies, including underlying two-section kinship terminologies, moieties, and a principle of direct exchange.



Source: © iStockphoto/Ana Pinto.

Linguistic Diversity and Language Groupings

Amazonia is also recognized as a linguistic area, with shared pan-Amazonian linguistic tendencies that differentiate the languages of the Amazon from those of the Andes. Unfortunately, the Amazon basin remains the least known linguistic region in the world, with a paucity of adequate grammars in relation to the diversity of languages evident. Furthermore, processes of assimilation and language loss continue to accelerate at an alarming rate. There are more than 300 extant indigenous Amazonian languages that belong to approximately 20 language families, and include over a dozen linguistic isolates.

The largest language families in terms of numbers of affiliated languages include Arawakan, Cariban, Tupian, Macro-Gê, Pano-Takanan, and Tucanoan. The major language families are also noted for their markedly discontinuous distributions, more so than in any other part of the world. The Tupi and Arawak families are the most dispersed, followed by the Carib languages. Other language families are more localized, including Panoan and Jivaroan languages in the montaña, Gê languages in Central Brazil, and Tucanoan languages in the Northwest.

Distinctive regional distributions and associated characteristics allow language groups to function as meaningful categories for organizing and comparing Amazonian societies. Languages are closely related to ethnic identity in the Amazon, and language families provide analytical units that allow for regional comparisons. Amazonian scholars often specialize as much according to language families as they do to geographic regions, and research directions and analysis are often informed by the different cultural regularities affiliated with these major groupings.

With the largest number of languages and a wide distribution, the Arawak family has been the focus of a substantial degree of scholarly research. Published in 2002, the edited volume *Comparative Arawakan Histories* by Jonathan Hill and Fernando Santos-Granero incorporates much of this research and demonstrates how linguistic groupings can provide a basis for meaningful dialogue and regional synthesis. Throughout their vast, fragmented distribution, Arawak-speaking groups are noted for their cultural proclivity to trade, forge alliances, and maintain widely dispersed fields of identification. As such, Arawak groups are implicated in the maintenance of contemporary and historical trade networks in Amazonia. According to Arawak scholars, cultural institutions that emphasize peaceful relationships with other Arawak groups enable them to integrate larger areas into such networks.

Cultural peculiarities of Arawak speakers include a diplomatic ethos, a prohibition of internal warfare codified in ritual greetings, and a characteristic willingness to incorporate other ethnic groups into Arawak communities. Even the kinship system of riverine Arawak groups extends classificatory siblings to encourage the establishment of allies beyond immediate kin. Apart from Arawak and Tukanoan groups, preoccupation with genealogy and extended kin categories are rare among Amazonian societies and are connected to the equally uncommon emphasis on social stratification and the ambition to incorporate, rather than confront, neighboring groups.

The *Arawak phenomenon* refers to the pervasive presence of Arawak groups throughout Amazonia that resulted from the hypothesized expansion out of the Orinoco and Rio Negro heartland during the second millennium BC. The distribution of Arawak languages suggests a pattern of expansion along major rivers, creating wedges that contributed to the geographic demarcation of more localized language families. Arawak cultural institutions, along with expertise in river navigation, trade, intensive agriculture, and hierarchical social organizations may have played a role in the emergence of a regional trade system in prehistoric Amazonia that emerged at this time. With access to fertile floodplains and major riverine trade routes, Arawakan societies may have been the most powerful and expansive polities in pre-Colombian Amazonia.

Studies of Tupi language families, particularly the Tupi-Guarani groups, likewise contribute to an understanding of historical processes in the region. In apparent contrast to the Arawak expansion through trade and incorporation, Tupi societies appear to have expanded through military conquest. Tupi societies originally migrated eastward from the southwestern Amazon to conquer vast territories south of the Amazon and southeastern Brazil. The famous Tupinambá chiefdom displaced Gê speakers along the Atlantic coast shortly prior to European arrival. A westward expansion was underway when the Europeans arrived in the 16th century, by which time Tupi societies controlled the southern shore of central and lower Amazon. Orellana's 1542 expedition encountered the powerful Omagua chiefdom in the upper Amazon, lending historical evidence to the existence of complex societies along the major tributaries. Archaeologist Michael Heckenberger suggests, however, that the Omagua may have been formerly

Arawak-speakers who had recently adopted a Tupi lexicon, demonstrating the complex relationships between language and ethnicity in the region.

Although located outside of Amazonia, the prominence of the Tupinambá in the 16th century cemented their place in the Brazilian national heritage. The Tupinambá remain a point of reference for the interpretation of contemporary Tupi-Guarani societies in Amazonia, which are smaller horticultural or foraging groups, generally "regressed" horticulturalists. Furthermore, the major trade language or *lingua geral* of the Amazon evolved on the east coast of Brazil and combined a simplified morphology from the Tupinambá language with a syntax similar to Portuguese. The *lingua geral* spread up the Amazon basin, producing dialectical variants, some of which are still spoken in the Upper Rio Negro region.

Tupi-Guarani groups have received particular attention for their reputations as cannibals and their history of migrations throughout the region. Contemporary ethnographies continue to explore these enduring themes, demonstrating how they involve diverse aspects of culture such as subsistence, warfare, kinship, and cosmology. Although diverse, Tupi-Guarani societies tend to use Dravidian kinship terminologies and have oblique marriage rules. In other respects, however, Tupi-Guarani groups are more notable for their cultural diversity—a fact that has long frustrated comparative scholarly efforts.

In contrast to the loosely defined cultural similarities of the Tupi-Guarani, we typify the Gê groups of central Brazil by strongly dualistic social structures that helped inspire the emergence of structural anthropology in the 1950s and 1960s. The Gê groups are most commonly associated with the seasonally dry closed savannas (*cerrado*) of Central Brazil, but are also found in the bordering closed-canopy forests of the lower Amazon and pre-Amazonia. Although the landscape was traditionally considered only marginally productive, the Gê groups maintained an abundant existence with occasionally dense populations through complementary strategies of limited agriculture and nomadism. Most contemporary Gê groups have reduced or stopped trekking altogether as a result of circumscription by cattle ranchers and industrial soy farmers.

The earliest scholars failed to recognize the complex social structures of the Gê groups, assuming from Steward's classification of them as generic hunter-gatherers that their societies and technologies

should be equally simple. Later scholars discovered that the Gê groups were neither pure hunter-gatherers nor socially simple. Rather, they were historically semi-nomadic trekkers with seasonal reliance on agriculture and highly developed social configurations. Striking among these groups is the prevalence of men's houses, cross-cutting moieties, and hierarchical age grades, which ensured from the start that analysis of social structure would dominate Gê studies.

Major Culture Regions

We can also subdivide Amazonia into the following cultural regions, each with its own distinctive characteristics: the northwest Amazon, northern Amazonia, Guianas, Montaña, Upper Amazon, Lower Amazon, Upper Xingú, and Central Brazil. Regional focuses have developed within the scholarship of the region and are informed by the particular characteristics of each culture area.

The northwest Amazon is exemplary of regional interactions. Unique blackwater ecosystems and *caatinga* vegetation mark the ecological distinctiveness of this region, which is characterized by an incredible diversity of bitterman manioc cultivars. Geographically, the region extends from the Rio Negro westward into Colombia and Venezuela. The Vaupés and Içana river basins constitute a well-defined linguistic area with a number of characteristics shared among groups pertaining to the Arawak, Tukanoan, and Makú language families. Relationships between language and culture are particularly complex in this area. We can find material, social, and ideological commonalities among the diverse indigenous groups of the northwest Amazon, where bonds of kinship, marriage, and political alliances regularly cross linguistic boundaries.

Multilingualism and linguistic exogamy are characteristic of many groups of the region, as are specialized trade, complex cosmologies, and the shamanic use of hallucinogens. Linguistic exogamy is compulsory among East Tukano groups and Tariana in the Vaupés, where marriage practices emphasize nonendogamy rather than prescribed marriages. In these systems, language identity is assigned through patrilineal descent. Individuals also tend to know several other regional languages, including those of their mothers and spouses.

Specialized trade also unifies local groups in a regional trade network. Jean Jackson suggested the

term *artificial scarcity* to define how groups “forget” to make or obtain items that other groups provide. Subsequent specialization reinforces peaceful relations in the region. Janet Chernela likewise concluded that the northwest Amazonian trade network is structured around the maintenance of social relations. Language and artifact manufacture are the most salient identifying features of northwest Amazonian groups. As such, locally manufactured goods always move toward “outsiders” and away from relatives. A particular form of specialized trade has developed between the horticultural tribes and the foraging Makú tribes, in which the Makú peoples provide game, weapons, and hallucinogenic plants in exchange for manioc and other garden products.

The existence of complex segmentary hierarchies among the Tukano groups also distinguishes this region. Local descent groups comprised of several nuclear families are organized into ranked sibs or corporate patrilineal descent groups. Sib ranking is based on prestige and used to allocate preferential territories along rivers. Lower-ranking sibs may be comprised of individuals who originally spoke non-Tucanoan languages such as Makú. The language group, or tribe, functions as a named political and ceremonial group, with all language groups belonging to one of five phratries that serve as unnamed exogamous groups.

Northern Amazonia is delimited by the Orinoco-Rio Branco area located near the Brazil-Venezuela-Guyana border. Despite the diverse languages groups from the Yanomaman, Arawakan, and Cariban language families, Galvão defined this culture area as exhibiting remarkable cultural homogeneity. Perhaps the most well-known Amazonian tribe, the Yanomami, was popularized by the work of Napoleon Chagnon and has come to form one of the foundational societies of the anthropological corpus.

In the adjacent Guianas, Cariban groups historically dominated the region, while Arawakan societies are presumed to represent more recent intrusions. In keeping with the cultural propensities of Arawakan societies, extensive trade networks once connected the savannas of Venezuela with the Guianas. Unlike the northwestern Amazonian trade network, with its focus on intergroup relations, the trade system of the Guianas distributes natural and cultural resources such as curare, pottery, dogs, and green stones. The symbolic systems of Guiana groups have played an important role in the development of British social anthropology in Amazonia, particularly through the work of Peter Rivière.

Marking the ecological and cultural transition between the Andes and the Amazon, the montaña region is characterized by specious forests that support complex swidden horticultural systems and subsistence economies that stress the importance of hunting. Bitter manioc is absent from the montaña, although sweet varieties (*yucca*) are present. The area is populated by numerous localized language families, such as Panoan and Jivaroan, as well as many linguistic isolates. The montaña region serves an ethnic interface between the different tribes of the Andean foothills and Upper Amazon and has long been involved in trade and cultural interaction between the Andes and the Amazon. The presence of jungle Quichua, a dialect of Quechua, is emblematic of these interactions.

Montaña groups such as the Jivaroan or Shuara peoples are most notorious for their practice of head-hunting and have received much scholarly and popular attention. Instead of villages or communal houses, single-family dwellings and residential atomism define traditional settlement patterns in the region. Polygynous households that function as autonomous units may be organized into supralocal units that define an *endogamous nexus*. Marked gender division of labor and a system of resource allocation based on social categories of descent and affinity are common to indigenous peoples of the montaña. Basic concepts of symmetrical, delayed reciprocity define relationships within and across ethnic boundaries, including exchange of goods, help, refuge, and marriage partners. This concept permeates the worldviews and cosmologies of montaña peoples, whose systems of shamanic practices and hallucinogenic visions have been well studied. Shamanism may even play an important role in the extensive trade networks that are based, in part, on a system of craft specialization.

The adjacent Upper Amazonian region shares certain characteristics with the montaña, particularly the predominance of Panoan groups and the absence of bitter manioc. The contemporary city of Manaus marks the transition between the Upper Amazon and the Lower Amazon regions. The Lower Amazon, which extends to the river mouth, is characterized by the importance of bitter manioc cultivation and the universality of pottery.

Further to the south, the characteristics of the Upper Xingú river basin include remarkable linguistic diversity within a unified cultural area, where language serves as a group's main symbolic distinctive feature. This well-studied region is home to seventeen

indigenous groups that belong to five language families: Arawak, Carib, Tupi, Gê, and Trumai, a linguistic isolate. Ten of these indigenous groups have lived in the region for more than one hundred years, while the remaining tribes were relocated after the creation of the Xingú National Park in 1961. A series of rapids separating the navigable lower Xingú River from the upper basin allowed this region to serve as a refuge area.

Shared cultural features include dependency on fish for protein and taboos on eating many large game animals. People eat only fish, birds, and monkeys and complement swidden horticultural practices. Furthermore, archaeological remains in the upper Xingú suggest that the circular village layout of contemporary settlements represents cultural continuity with large sedentary settlements of the past. A typical village includes haystack-shaped houses circularly arranged around a central plaza and the inclusion of men's houses. Individual households represent patrilineal extended families. Although there is a tendency toward village endogamy, intermarriage among different groups occurs and leads to multilingualism. Intertribal connections also are maintained through ceremonial events that include ceremonial ambassadors and a common song language, intertribal games such as spear-throwing and log racing, and specialized ceremonial trade. Jackson's concept of artificial scarcity has been applied to the intertribal exchange network of the Xingú region, in which each group specializes in different ceremonial or functional items.

In contrast to the linguistic diversity of the Xingú region, Central Brazil is characterized by the predominance of Gê-speaking groups and associated cultural features, such as circular settlements, men's houses, moieties, age grades, uxorial residence with bride service, sharp divisions of labor by gender, pervasive dualism, wrestling matches, strong leaders, and seminomadism. Scholarship with a culture area focus (Central Brazil) and a linguistic group focus (Gê societies) therefore overlap in these and other Amazonian regions in ways that are meaningful to an understanding of Amazonian anthropology.

History of Amazonia

Amazonia has a long and complex history that began well before the arrival of Europeans in the 16th century. Conceptualizations of Amazonians as representing generic stages of cultural evolution long prevented an

appreciation of the role of historical processes. Furthermore, these stereotypes led to a failure to recognize the past regional scale and supraethnic character of Amazonian societies at the time of European contact. Current interest in the history and historiography of the Amazon is beginning to flesh out a more complicated past.

The first inhabitants of Amazonia arrived very early, as evidenced by sites such as Pedra Pintada (11,000 BP), roughly contemporaneous with Clovis sites in North America. Contrary to North American patterns, Amazonian Paleo-Indians seem to have practiced a generalized hunter-gatherer strategy that focused on hunting small game, fishing, and collecting shellfish and forest products rather than big game, which is lacking in the Amazon.

There is ongoing academic tension between the notion that egalitarianism and social simplicity typify Amazonia and the idea that Amazonia is characterized by a greater range of social systems that developed over time, including societies with elaborated hierarchies and social complexity. This tension is especially apparent in archeology due to its greater attention to prehistoric cultures. Archaeological sites on Marajó Island at the mouth of the Amazon date back to 950 BC, with the emergence of Marajoara chiefdoms between AD 600 and 1000. Archaeologist Betty Meggers, however, suggests that the cultural complexity of these sites was ephemeral due to environmental limitations and may even have resulted from Andean intrusions.

Other archaeologists working in Amazonia reject this claim and continue to excavate archeological sites in far-flung locations, such as the Orinoco river drainage, middle Amazon, the Upper Xingú, and *llanos de Mojos* in eastern Bolivia—which attest to the emergence of densely populated settlements and regional interactions systems by around AD 1000. In addition to mound sites located in the *várzea*, extensive earthworks in the *llanos de Mojos* of eastern Bolivia suggest that wet savannas were likewise used for intensive agriculture and habitation. Earthen features such as moats, bridges, and causeways connecting ancient settlements in the Upper Xingú also document the emergence of complex societies along the southern periphery of the Amazon. Evidence for sociocultural complexity in the Amazon includes the appearance of dark anthrosols, or *terra preta*, that indicate past activities of large, sedentary settlements. The extremely high fertility of these soils makes them

desirable by contemporary Amazonian peoples for the location of agricultural activities.

The earliest historical reports by 16th century European explorers corroborate the existence of dense settlements along the banks of the Amazon. For instance, Orellana's 1542 expedition down the Amazon documented huge, densely populated villages of the Omágua chiefdoms located along a 700 kilometer stretch of the river. Other historically recorded chiefdoms include the Lokono upland polity straddling the Amazon and Orinoco drainages, and the Aparia, Aisuari, and Yurimaguas. Early European chroniclers such as Pedro Teixeira (Acuña), Carvajal, Oveido, and Raleigh documented abundant natural resources, sophisticated productive technologies, demographic density, social stratification, centralized political power, political provinces, and interethnic economic relations, including specialized trade in elite items. These chroniclers also began to record the depopulation and disarticulation of Indian societies that occurred with the demographic collapse brought about by European diseases.

With the discovery of Brazil in 1500, the Portuguese began to explore and colonize the Amazon from the east, while the Spanish entered the Amazon from the Andean mountains to the west. The Spanish also competed with the Dutch, British, and French for control over the northerly regions of the South American continent beginning in the early 17th century. Initial European interests in Amazonia were economic and included the search for gold and forest products such as dyes and herbs. The initial impacts of the conquests are scarcely known, although chief among them was a devastating population reduction due to introduced diseases, genocide, and assimilation. As indigenous populations fled into the interior regions or perished, African slaves were brought in to meet the labor demands of the region. Refugee communities of African slaves, *quilombos*, also were established in Amazonia and contributed to the cultural heritage of the region. Peoples of African descent mixed with individuals of European and Amazonian descent in the creation of distinct *caboclo* societies that inhabit the *várzea* regions.

By the end of the 18th century, after waves of epidemics, slavery, and colonization, hardly a trace remained of the once populous floodplain chiefdoms. As a result of the extreme demographic collapse, European explorers of the 19th and early 20th centuries were inclined to perceive Amazonia as the antithesis of

culture. Natural scientists, such as Alexander von Humbolt and Alfred Russell Wallace, encountered depopulated, autonomous villages assumed to represent primordial rather than historical conditions. Instead, centuries of colonial occupation had already instigated immeasurable changes in the form of disease, warfare, slavery, religious conversion, language change, and involvement in the boom-and-bust extractive economies that linked the Amazon with the rest of the world. Postcolonial republics continued policies aimed to integrate and assimilate Amazonia's diverse societies and stimulate the economic development of the region. The environmental and social disruption caused by many of these development schemes has received growing scholarly and popular attention.

Development of Amazonian Anthropology

Descriptive accounts by amateur ethnographers such as Curt Üinkel (Nimuendaju) helped pioneer the field of Amazonian anthropology. German-born Nimuendaju became the leading Brazilian ethnographer during the first half of the 20th century, having lived among and published extensively about many Tupi-Guarani groups. His descriptive accounts, along with those furnished by other early ethnographers, comprised the corpus of materials from which the first regional synthesis was drawn. Swiss anthropologist Métraux and Swedish anthropologist Nordenskiöld, both of whom worked in Bolivia, initiated this first synthesis, completed by North American anthropologist Julian Steward after Nordenskiöld passed away. The monumental seven volume *Handbook of South American Indians* (1946–1950) that Steward edited marked the beginnings of scientific anthropology in the region. It also established what Eduardo Viveiros de Castro refers to as the standard model of Amazonian ethnography.

The image of indigenous Amazonia that emerged from the *Handbook* became deeply rooted in the ethnological tradition of the region. The model combines a schema of cultural areas, a typology of levels of sociocultural integration, and an explanatory theory of geographic or environmental determinism. Principles of unilineal social evolution are implicit in the organization of the volumes, which divides indigenous South Americans into foraging *marginals*, horticultural *Tropical Forest Tribes*, *Circum-Caribbean* chiefdoms, and the *Andes*. The four defined stages of unilineal evolution were mapped out across the South American continent and correlated with environmental

features that either promoted or limited the development of societies along this teleological progression.

The Amazon region was defined by the presence of tropical forest tribes, considered to occupy an intermediate evolutionary position between the circum-Caribbean chiefdoms and the marginal foraging tribes of Patagonia and Central Brazil. The image presented of the typical tropical forest tribe is familiar—organized into small, autonomous, egalitarian villages; limited by an unproductive environment; and unable to produce the requisite economic surplus to develop forms of sociocultural complexity recognized elsewhere in the continent. Steward's field of cultural ecology proved influential among subsequent decades of Amazonian ethnographers and archaeologists that hotly debated which “limiting factors” were responsible for the region's sociopolitical landscape. Other topics explored by cultural ecologists included land use and subsistence patterns, material culture, and trade and exchange.

The first major alternative to Steward's paradigm emerged in the 1950s with Claude Lévi-Strauss's brand of French structuralism, which became increasingly popular in Amazonian studies with the publication of his *Mythologiques* volumes in the 1960s. Lévi-Strauss drew on the wealth of myths recorded among Amazonian tribes, particularly those of the Gê, to develop his structural analysis. Whereas scholars of the materialist tradition of Steward focused on the environmental and technological interface, French structuralists emphasized the cognitive and symbolic aspects of Amazonian societies. Furthermore, the evolutionary typologies employed by Steward contrasted with the synchronic analysis of particular groups favored by French structuralists. What both traditions had in common, however, was the presumption that Amazonian societies were intrinsically small, dispersed, autonomous, and egalitarian.

British social anthropologists began to conduct ethnographic research in Amazonia during the late 1960s, and challenged this view of Amazonian social organization. Ethnographic research in Central Brazil and the Guianas provided complementary materials to explore the intricacies of Amazonian sociopolitical organization—a theme largely absent from the *Handbook* synthesis. Amazonian anthropologists of this tradition focused on studies of warfare, leadership and factionalism, gender roles, kinship, and marriage. Peter Rivière's 1969 trail-breaking monograph on Amazonian kinship, *Marriage Among the Trio: A*

Principle of Social Organization, was influential in establishing the importance of affinal categories to Amazonian societies. The dialectical nature of Amazonian societies was also explored by David Maybury-Lewis in his 1979 edited volume, *Dialectical Societies: The Gê and Bororo of Central Brazil*.

North American anthropology was also influenced during the late 1970s by contemporary transformations in the Boasian tradition and the growing influence of European schools. Emphasis shifted away from cultural ecology to the new fields of ethnohistory and symbolic anthropology that focused on cognitive and cosmological systems. These approaches contrasted with the sociobiological approach practiced by Chagnon and other ethnographers and physical anthropologists in the Amazon, who viewed foraging societies as comparative to early man.

The popularity of Amazonia among all theoretical traditions increased during the last few decades of the twentieth century and coincided with significant revisions of the standard model. Reasons for the demise of the old synthesis included a historical turn in the understanding of pre-Columbian populations and revisions in the appreciation of contemporary indigenous social formations. The field of human ecology embraced these changes and shifted from an adaptationist paradigm that focused on limiting factors and optimal foraging theories to the documentation of indigenous resource management strategies. The research program of historical ecology further postulated that indigenous societies are not passively adapted to Amazonian environments, but actively transform these through the creation of anthropogenic landscapes.

Other new directions in Amazonian anthropology included a revision of descent and alliance theories and a greater attention to ideas of personhood, identity, performance, and representation. As traditionally defined categories of analysis are increasingly deconstructed, there is a shift in analysis away from the village to regional interactions and an appreciation of local, regional, and global scales of integration. Furthermore, there is a greater synthesis of historical, archaeological, linguistic, and ethnographic data to achieve these ends. Anna Roosevelt's 1994 book *Amazonian Indians from Prehistory to the Present* goes a long way toward achieving such a synthesis, which continues to prove elusive.

The recent controversy over Chagnon's work among the Yanomami, extensively covered in Borofsky's *Yanomami: The Fierce Controversy and What We Can*

Learn From It has also drawn attention to the region and revolutionized debate about ethics within anthropology. At the same time, Amazonian anthropology is broadening to incorporate new themes that reflect these and other changing realities. As anthropologists pay more attention to issues of gender, power, and identity, the more they integrate the increasing activism of indigenous Amazonians into anthropological research and practice.

— Meredith Dudley and James Welch

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The Amish are an Anabaptist religious isolate. There are currently over 180,000 Amish residing in the United States and Canada, with about two thirds

living in Ohio, Pennsylvania, and Indiana. The terminology Old Order Amish distinguishes them from Mennonites and New Order Amish, who are also Anabaptists but who follow a lifestyle that allows more contact with the outside world.

Historical Background

The Amish arose out of the Anabaptist (Swiss Brethren) movement in early 16th-century Europe. The Anabaptists believed in voluntary adult baptism, rather than state-sponsored infant baptism, and refused to bear arms, both of which resulted in their being severely persecuted. The *Martyr's Mirror*, a book still found in most contemporary Amish homes, documents how hundreds of Anabaptists were brutally tortured and executed for their religious beliefs.

The group now known as the Amish separated from the Mennonites, one of the early Anabaptist groups, in 1693, primarily because they believed in a stricter adherence to the doctrine of *meidung*, or a total shunning of excommunicated church members. Following this separation, the Amish migrated throughout the German-speaking parts of Europe, where they were persecuted for their beliefs. To escape this persecution, many Amish migrated to North America between about 1727 and 1860. There are no longer any Amish in Europe.

Language

The Amish speak a German dialect (Pennsylvania Dutch) within the group and use High German in their church services. With the exception of preschool children, who do not formally learn English until they enter school, all are generally fluent in English.

Organization

The primary unit of organization for the Amish is the congregation, or church district. There are approximately 1,300 Amish congregations. Each congregation consists of an average of 30 households and approximately 150 people and is led by a bishop, with the assistance of two to three ministers and one deacon. These religious leaders, who serve for life, are nominated by adult church members but chosen by lot. Thus, religious leadership is thought to be determined by God. Church districts are grouped geographically into settlements. There is no higher

level of formal organization or authority above the church district.

Biweekly worship services are held in homes; there is no separate church building. Each church district has its own *Ordnung*, or the orally transmitted rules that govern the everyday behavior of the Amish. The *Ordnung* is reaffirmed twice a year during communion. The *Ordnung* consists both of rules that are common to all Amish and rules that are specific to each congregation. While distinctive patterns of dress and use of horse and buggy travel leads the outsider to assume homogeneity among the Amish, variability in the *Ordnung* across congregations results in substantial variability among the Amish.

Individuals are not considered full members of the church until they accept adult baptism. Adult baptism generally occurs between the ages of 17 and 24, depending on the individual's readiness to join the church and accept its rules. If a member consistently violates the rules of the *Ordnung*, a hierarchy of responses is initiated to try and assist the member to behave in accordance with the *Ordnung*. If the individual refuses to come into line, the highest level of response is excommunication in association with *meidung* (shunning). At the most extreme, *meidung* requires all members of the congregation (and by extension all Amish), to have absolutely no contact with the shunned individual. However, a shunned person who repents can be reincorporated into the community. The severity of the *meidung* has been decreasing in recent years in many congregations.

Key Beliefs

The core organizing principle for Amish society is their religion, which is embedded in every aspect of their lives. Amish behavior is guided by a number of key principles. Perhaps the most important of these is *Gelassenheit*, which roughly translates as acting with humility and simplicity at all times. The Amish believe that true grace can best be achieved by living in isolation from the temptations of the non-Amish world. Separation from the world is fostered by the utilization of symbols, such as distinctive clothing and horse-and-buggy travel. The Amish recognize they can best remain separated from the world if they maintain strong community ties and, in particular, freely provide each other with assistance when needed. A communal barn raising is one of the better-known examples of mutual aid, but mutual aid is actually involved in virtually all aspects of

daily life. Like all Anabaptists, the Amish believe in adult baptism. The Amish adhere to absolute nonviolence, separation from the rest of the world, and the belief that it is their duty to obey secular authorities unless those authorities interfere in religious matters.

Economic System and Change

The Amish have historically been small-scale and largely self-sufficient family farmers. However, they have been undergoing a transition over the past 50 to 60 years to an economic system based primarily on wage labor. Although there is considerable variability between settlements, the majority of Amish men now work in wage labor occupations. Some wage laborers work primarily with other Amish men, either in Amish-owned shops or in Amish construction crews, but an increasing number of men now work in factories where they have intensive contact with the non-Amish.

This transition appears to be a response to the joint effects of a rapid rate of population increase and an increase in the cost of farmland. Although the Amish are often thought of as a static society, they have a history of selectively accepting changes they feel will not violate key religious beliefs but are essential for economic survival, and thus the persistence of their culture. Factory work would have resulted in excommunication 50 to 60 years ago, for example.

Health

Health among the Amish is generally associated with an ability to perform one's work and the ability to eat well. The Amish obtain health care from biomedical practitioners, from a variety of complementary and alternative health care providers, and through the use of home remedies. Amish families are very likely to accept biomedical treatments, regardless of cost, that restore normal functioning but are likely to strongly resist treatments primarily designed to simply extend life without restoring normal functioning. The Amish traditionally have relied on personal savings and various mechanisms of mutual assistance, rather than health insurance.



Source: © iStockphoto/Diane Diederich.

The Amish originated from a relatively small founding population, and each major settlement has remained largely genetically isolated from both other Amish settlements and the surrounding U.S. and Canadian populations for a little over 200 years. As a result, a number of distinctive recessive disorders have developed among the Amish. Other than these genetic disorders, the general pattern of illness and causes of mortality among the Amish are similar to those for the United States as a whole.

The Life Course

The Amish have very strong religious proscriptions against both birth control and abortion. Children are highly valued and considered gifts from God. As a result, Amish females tend to have high fertility rates, with an average completed fertility of 7 to 8 children.

Amish parents believe that raising their children to accept adult baptism and join the Amish church is their most important responsibility. Infants are viewed as not yet having the ability to distinguish between right and wrong, making it inappropriate for them to be punished. Amish infants are primarily cared for by their parents, but older children,



particularly older female children, will generally play an important role in child care, even in infancy. Once they leave infancy, however, Amish parents believe that it is their moral obligation to firmly and consistently correct their children, sometimes including physical punishment (spanking). However, Amish culture emphasizes that any corrective behavior performed in anger will not be an effective learning event.

Because the Amish see work as central to both good health and being a good Christian, they assign Amish children age-appropriate chores from an early age. There were many useful and meaningful tasks for children of all ages when most Amish were farmers. The transition to wage labor has resulted in fewer meaningful chores for the young, a consequence that concerns many Amish.

Amish children attend school through the eighth grade, most often in an Amish school but sometimes in a public school. A Supreme Court decision exempted Amish from compulsory education through age 16 on the basis of religious freedom. All boys and many girls enter the workforce once they finish school. Boys

with fathers who farm will often assist with farm work, but many boys now work in Amish shops or construction crews, or for non-Amish businesses. Girls generally work as domestics, in both Amish and non-Amish homes.

The period from the late teens to the early twenties is when youth must decide if they will make a lifelong commitment to join the Amish church (and thus reject non-Amish life). Because joining the church must be a conscious and voluntary decision, this is a period (called *rumspringa*) during which some Amish youth are allowed greater latitude about church rules. Some experiment with various aspects of non-Amish culture, listening to the radio, driving cars, or dressing in non-Amish clothing. Once they join the church, such behaviors will not be possible. A small proportion of Amish youth develop problems with alcohol, drugs, and tobacco during this period. However, most Amish youth move through *rumspringa* with little difficulty. This is seen in the fact that the majority of youth, varying from 80% to 95% in different settlements, join the Amish church. (Contrary to a recent television portrayal, Amish youth rarely actually leave their communities during *rumspringa*.)

The Amish family is patriarchal, with the husband and father being the final authority in the household. Husbands and wives, however, are economically interdependent. Husbands are expected to provide for the family financially, and wives are expected to maintain the household and contribute economically by such tasks as food-producing gardens, canning, and making of clothing for the family. Divorce is strictly prohibited.

Amish elders are highly respected. Elders try to live as independently as possible, often moving into a small, but separate house connected to one of their children's homes (*grossdawdy* house). In the past, this move would occur when the parents turned over their farm to one of their children. Once the elderly person is no longer capable of living independently, he or she will generally either move in with one of her children, or her children will take turns providing care for the elder.

The Amish have well-established rituals associated with death, which is seen as an expected life transition and associated with eternal salvation. As a result, death appears to be associated with less stress than in many societies. Family members should be allowed, if at all possible, to die at home. If a hospital death is

unavoidable, the dying person will be surrounded by family and church members.

The Future

There has long been concern among both academics and the Amish for the ability of the Amish to maintain their cultural identity in the face of the economic transition from farming to wage labor. The fear is that this transition will ultimately affect core Amish values due to an increased contact with the non-Amish world, the fact that fathers are no longer as involved in child care, the increased income, benefits, and leisure time associated with wage labor, and the potential that this will lead to socioeconomic stratification. At the present time, however, all indications are that Amish culture is strong and resilient.

— Jill E. Korbin and Lawrence P. Greksa

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In the American Southwest, the four corners area of southern Utah, southwestern Colorado, northwestern New Mexico, and northern Arizona was home primarily to a culture typically referred to as the *Anasazi*.

Now called *Ancestral Puebloan* (*Anasazi* is a Navajo word meaning “ancient enemy”), thoughts of this culture bring to mind the cliff dwellings scattered throughout the northern American Southwest. While these architectural features are impressive, they are only one aspect of the rich and varied history of this culture.

Culture History

Humans have inhabited the northern Southwest since Paleo-Indian times (ca. 11,000–7,000 BC). At approximately 7,000 BC, a shift to a warmer, drier climate resulted in a change in lifeways to what archaeologists refer to as a “broad-spectrum pattern of resource use.” Essentially, populations no longer relied on large game animals such as mammoth as a primary means of subsistence; rather, the focus shifted to use of smaller game and an increased reliance on varied plant resources. This period of time is referred to as the “Archaic”; research has traced Ancestral Puebloan history to the Archaic peoples who occupied the northern region of the Southwest until 500 BC, when the distinctive Puebloan culture developed as people began to supplement hunting and gathering with maize horticulture.

Following the Archaic, visibly Ancestral Puebloan traits emerge in the northern Southwest during a time known as the “Basket Maker period.” Archaeologists have summarized changes in Puebloan culture using a chronological system termed the *Pecos Classification*. The Pecos Classification was developed by A. V. Kidder and others at the first annual Pecos Conference (1927) in an attempt to organize these cultural changes in the northern Southwest. Originally intended to represent a series of developmental stages rather than time periods, it is the most widely accepted terminology in referring to temporal changes in the Ancestral Pueblo region of the Southwest. Although archaeologists no longer see the Pecos sequence as a reconstruction of adaptive change throughout the Southwest, it is still used to provide a general framework for dates and broad events within and affecting the Ancestral Puebloan region for each of the major time periods

Basket Maker II: 500 BC–AD 450

There are two competing theories pertaining to the origins of the Basket Maker culture. They are

that: (a) The Basket Makers descended from local Archaic populations and (b) the Basket Makers represent a migration of maize-dependent populations from an outside area. There is evidence to support both models, and there are inconsistencies in both. What is clear, however, is the persistence of a clearly Ancestral Puebloan culture following the Archaic.

Basket Maker II sites are documented throughout the Four Corners region. These sites certainly do not fit the stereotypical idea of the ancestral Pueblos as “cliff dwellers.” Basket Maker II sites are characterized by caves or rock shelters often used for storage, small storage pits (some slab lined), shallow pithouses that were not occupied year-round, and evidence for squash and maize cultivation. Material culture of this period included coiled and plaited basketry (thus the name Basket Maker), spear throwers or atlatls, fairly large corner-and side-notched projectile points, one-handed manos and basin metates, and rabbit fur

blankets. The presence of stockades at a number of these sites may suggest the early instances of warfare during ancestral Puebloan times. Certainly, the complexity of ancestral Puebloan culture is evident during this early period in their history.

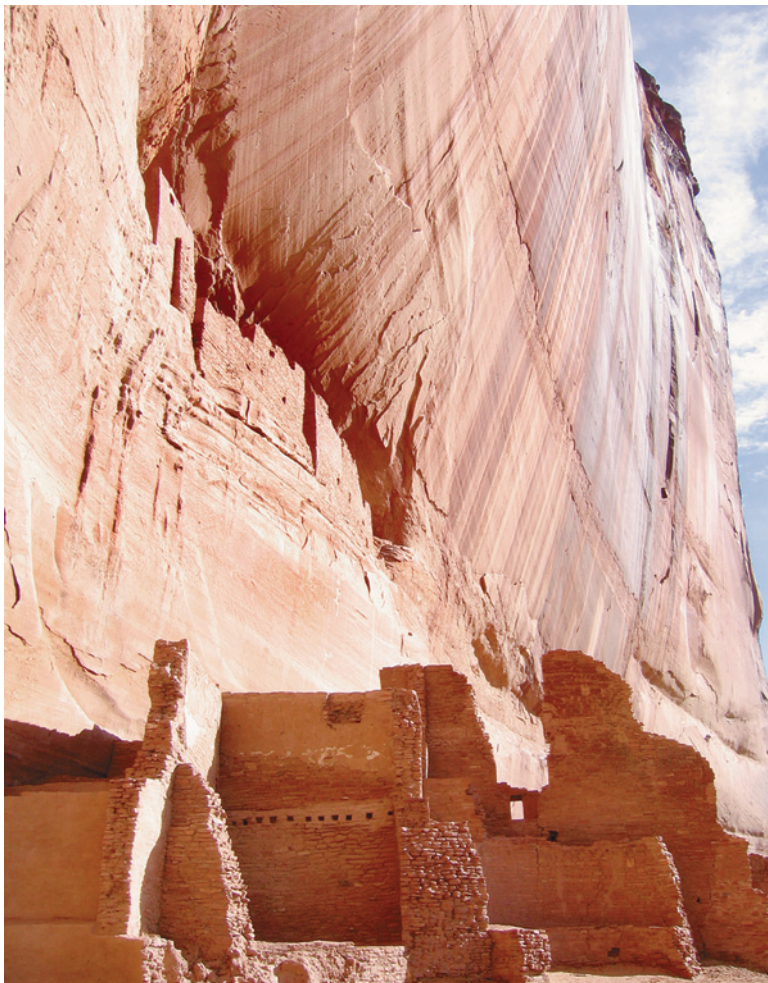
Basket Maker III: AD 450–750

In general, the Basket Maker III phase represents the continuation of the Basket Maker II phase. According to Lipe, the start of the Basket Maker III tradition is clearly marked by the appearance of a plain gray (called “Lino Gray”) ceramics in the archaeological record. In general, this pottery is fairly simple in decoration and form but marks an important shift in settlement and subsistence. Additional features of Basket Maker III appear to represent continued traditions that were first established during the preceding Basket Maker II tradition. The use of pithouses continued during Basket Maker III,

although these pithouses were deeper and larger than before; many had antechambers. Surface storage structures increased in size from the preceding period, and the presence of these features, as well as ceramic vessels and increased use of trough metates, indicates a greater reliance on food processing and storage, although hunting and gathering still remained important to subsistence.

Pueblo I: AD 750–900

Pueblo I is best known for the area around Mesa Verde. This period is characterized by periods of aggregation and abandonment of short-lived villages; abandonments of these villages appear to occur with periods of extended drought, likely resulting in crop failure. Architecture is characterized by jacal construction and simple masonry surface rooms arranged in two rows, built as “modular units” and the continuation of pit structures used for habitation. Great kivas were first recognized at Chaco Canyon during this time period; these are large kivas that range from 40 to 60 feet in diameter in some settlements. Storage rooms were often located on the northern end of the modular units. Material culture and key characteristics of this tradition included the



Source: © iStockphoto/Adrian Stapleton.

practice of cradleboard deformation; ceramics included graywares in the form of neckbanded ceramic jars and trade redware jars and vessels. Small, temporally diagnostic stemmed projectile points are related to small-game hunting with bow and arrow.

Pueblo II: AD 900–1100

The Pueblo II period is characterized by the development of spalled stone masonry construction and the presence of fully developed kivas. In some areas, settlements are large and represent well-planned communities. This pattern was recognized first for Chaco Canyon (New Mexico), an area that seems to have been the center or capital of the ancestral Puebloan world during the Pueblo II period. These well-planned communities include massively built structures called “Great Houses,” such as Pueblo Bonito at Chaco Canyon surrounded by the unit pueblos first identified for the Pueblo I period. These Great Houses are often referred to as “community houses”; they do not appear to have functioned as habitation structures. In Chaco Canyon, this pattern was concentrated, however, outside of Chaco Canyon; similar communities were constructed throughout the northern Southwest, on a smaller scale. Other architectural features included field houses (interpreted as temporary habitations/shelters used while agriculture fields were being tended) and water control features such as check dams and reservoirs. Material remains associated with the Puebloan II period are varied, ranging from seemingly simple corrugated jars, textiles, and relatively small corner-notched projectile points with convex bases and expanding stems to extensive trade goods reflecting a trade network that may have reached as far south as Mexico. The meaning of the “Chacoan” pattern is still debated; however, the influence of Chaco Canyon during this period is apparent.

Pueblo III: AD 1100–1300

The Pueblo III period is best known for the Mesa Verde area of the northern Southwest. Early archaeologists called this the “Great Pueblo period.” This is the time during which the well-known cliff dwellings were constructed. Chaco Canyon seems to have lost its place of importance in the Puebloan world, and population increased in and around Mesa Verde. This phase is marked by architectural continuity in the form of modular room blocks; however, multistoried pueblos appeared at this time, and the use of shaped

stone masonry became common. Bi- and triwalled towers similar to those found at Hovenweep appeared during the Pueblo III period; the function of these structures is unknown, although their use as a defensive feature has been postulated. It is the abandonment of the Mesa Verde region that has led to speculation about the “mysterious disappearance of the Anasazi.” Research tells us, however, that while the region was abandoned, the Puebloan people did not disappear.

Pueblo IV (AD 1300–Contact)

By 1300, the entire Mesa Verde region was virtually abandoned. The explanations for the abandonment of this area often centers on environmental change. Following the abandonment of the Mesa Verde region, population size increased in the area around the Zuni and Rio Grande area of New Mexico. By the end of Pueblo III, people moved to essentially where they lived when the Spanish arrived. The aggregated villages that were inhabited at that time look like the pueblos of today.

While many fantastic theories speculate about the “disappearance of the Anasazi,” it is clear that the people that inhabit the pueblos of Arizona and New Mexico are the descendants of the Puebloans of the past. The Ancestral Puebloan region of the Southwest was marked by a series of reorganizations, abandonments, and occupations. The “disappearance” that seemed to mark the end of the Ancestral Puebloan way of life was simply a new beginning.

— Caryn M. Berg

See also **Cannibalism; Native Peoples of the United States**

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ANCESTOR WORSHIP

Ancestor worship is often referred to as the *ancestral cult*, namely, a set of religious beliefs and ritual practices that commemorates the continued existence of the deceased ancestor beyond death. The rites of this cult are meant to cater to the needs of the deceased in the afterlife. The beliefs of this cult center on the ability of the dead to protect kinsmen in return for worship from them. Reciprocity between the living and the dead is the key to ancestor worship.

Two forms of ancestor worship can be identified in the anthropological literature. One is a domestic cult, which is observed by the family in dedication to its recent ancestors rather than remote ones. The other is observed by the descent group in dedication to its common ancestors in the remote past. As a cult of the descent group, ancestor worship functions to prescribe the principle of rights and obligations (jural authority) and the rules of conduct for the living, who form a property-holding corporate group. Not only are these rules and principles institutionalized in social structure and organization, but they also regulate individual access to the benefits of the corporate property. In short, they serve to keep up the social relations of the living world. Members of the descent group venerate their common ancestry communally, in addition to individual observance of ancestor worship as a domestic cult.

Aspects of Ancestor Worship

Conceptual Issues

Ancestor worship, or “the worship of the Manes,” is no ordinary cult of the dead. It is, for example, not

applicable to children who die young or to dead elders who belong to a different kin group, because neither qualify as ancestors. Demonstrative ancestry is the litmus test for such worship. The deceased must stand in a line of identified human progenitors to the living in order to receive ancestor worship from them. It follows that the mythical beings or animals revered as totemic forebears by the aboriginal clans in Australia are not receivers of “ancestor worship” in the proper sense of the term.

The concept of ancestor becomes more complicated when parenthood is not based on natural conception and gestation. In adoptions, ancestorhood is created by jural action where natural offspring are lacking. Chinese parents, for example, have the right to manipulate the filiation of their children jurally and put them up for adoption by either partner’s patrilineage in case its continuity of succession and inheritance is tenuous or in danger of a breakdown. It enables close relatives without biological heirs to receive ancestor worship after death and avoid becoming “orphaned ghosts” that would harass the living. In all adoptions, ancestor worship is made to continue on the jural manipulation of filiation.

Marriage provides another way of manipulating ancestor worship. A case in point is in-married males in Japan and China. With offspring typically becoming members of mother’s natal groups in a uxorilocal marriage, an in-married male can expect to receive worship only in the ancestral line of the wife’s family. There is also the Chinese custom of ghost marriage, in which a never-married dead female is wedded to a living male ceremonially so that she can receive worship from the offspring of his future marriage and become an ancestress of the conjugal family. Last but not the least, ancestorhood is jurally sanctioned in many African societies where birth in legal wedlock is often a prerequisite for ancestor worship, but the father is not necessarily the true begetter. It is not unusual that in Asian and African cultures, descent is ultimately defined in the context of ancestor worship.

Ancestor veneration is often used interchangeably with ancestor worship. However, the term *worship* underscores a reverence of what is divine and supernatural, thus carrying a more religious undertone. Central to the rites and rituals of ancestor worship are sacrificial offerings. Offerings to ancestors may take the form of an informal family rite, a formal temple liturgy, or a community festival. All forms of offering involve purification and communication. Purity may

be inherent in the proper preparation of ritual objects, such as the masks used in African ancestor worship, which must stay out of touch by women. But water is the most common cleansing agent, hence the importance of bathing and sprinkling. Communication is typically through multiple channels, including gestures, music, recitations, and chanting.

Paradigmatic Issues

Since the mid-19th century, a number of paradigms have been proposed for the analysis of ancestor worship. Among them are the body-soul model, the psychoanalytical model, the Africanist model, the multifunctionalist model, and the divine ownership model.

The Body-Soul Model. The dichotomy of body and soul dominated the early studies of ancestor worship, as in *Ancient Law*, by Henry Sumner Maine (1861); *La cité antique*, by Fustel de Coulanges (1864); *Primitive Culture*, by Edward B. Taylor (1874); *The Principle of Sociology*, by Herbert Spencer (1875–1876); and so on.

The body-soul paradigm was built on what appeared to be a universal belief, namely, the belief that after the death of the body, the soul continued to exist, as evidenced by its appearance in dream or in an altered state of consciousness. The worship of the ancestral souls turned the family or *gens* (agnatic kinsmen) into a corporate group perpetuated by the system of collective property holding. With a legal fiction, ancestor worship invested in the patriarch the qualities of a corporation so that he enjoyed rights in governing the family, or *gens*, but stood under the duty to hold its collective possessions in trust for future generations. For Herbert Spencer, ancestor worship was the root of every religion.

The critics of this paradigm called attention to the fact that ancestor worship was a “family cult.” Since the family was absent from the early stages of human society, this cult could not have spawned other types of religious institution. It paved the way for Emile Durkheim to introduce “the cult of the clan,” namely, totemism as the most primitive form of religious life (1912). Before long, however, new study dispelled the myth of “primitive promiscuity” to establish the universality of marital institutions and family life.

The Psychoanalytic Model. The primacy of the family was reinstated in Sigmund Freud’s psychoanalytic model (1913). Within its framework, ancestor worship

is a ritual of atonement for the “original sin.” Presumably driven by the Oedipus complex, the first sons committed the sin against their father for his wives. Then overcome by profound remorse and fear of a vengeful dead father, the sons held the first totemic sacrifice, identifying the animal with the dead ancestor and giving him the status of divinity. Thus, ancestor worship arose in response to deep emotional conflicts and weaknesses. Despite its sheer speculation about the original sin, the psychoanalytic model has been influential in the study of attitudes toward the dead ancestor cross-culturally.

According to Freud, ambivalence is characteristic of all human emotions, including love, behind which there is a repressed hostility. Ethnographic fieldwork has revealed that such ambivalence varies cross-culturally. Depending on the socialization patterns that are shaped culturally and historically, some societies express ambivalence in mixed attitudes to the dead, others in predominantly hostile attitudes with the benevolent aspects suppressed, and still others in predominantly benevolent attitudes with the hostile aspects suppressed.

The Africanist Model. This model is intellectually indebted to Radcliffe-Brown, for whom the social needs for continuity are *sui generis*. For society to maintain its existence and stability, there must be a formulation of rights over people and things that serves to regulate social relationships. Indeed, the Africanists saw social structure as a jural construction. Following Meyer Fortes’s investigation of the Tallensi, several studies examined how ancestor worship provided a jural construction in the African polity. Their conclusion was that ancestor worship is a crucial unifying force in the African segmentary lineage system.

Drawing on his African data, Fortes also refined the analysis of Freudian ambivalence. Among the Tallensi, the father-son relations are affectionate because the patriarchal authority is perceived to operate on a commission from the ancestors, and a positive value is put on submission to the authority invested in the father and tribal elders. Consequently, the repressed or latent resentment that a son has does not surface as hostility toward the ancestors. An interesting twist is reported by Jack Good of the repressed hostility between the heir and property holder among the LoDagaba. This culture allows for duel descent systems. By farming for his own father, a man obtains

the right to the goods he needs for bridewealth payments, but not to the property accumulated by his father. In contrast, he stands to gain property (and possibly wives) from his maternal uncle. It is between these two that the hostility is considerable. Upon the uncle's death, however, guilt prevails, prompting the heir to sacrifice to the dead ancestor, who continues to be perceived as the property holder, capable of trouble making unless the ritual obligations are fulfilled.

The Multifunctionalist Model. With *The Common Descent Group in China and Its Functions* (1948), Hu Hsien-chin was the first to explore the multifunctionality of the Chinese descent group *zu* in sociological terms. By analyzing the *zu* in the context of ancestor worship, she aptly presented it as a descent-based kin group, a property-holding entity, and a body politic. One of Hu's most important conclusions is that historically, the development of the *zu* was the strongest where the government control was the weakest. But it was Maurice Freedman who proposed a coherent theory of the *zu* (now called a lineage) in addition to a unitary account of its multifarious functions. Theoretically, this paradigm represents a move away from the Africanist emphasis on descent toward the role of corporate land in a centralized polity.

The corporate nature of the Chinese lineage finds expression in its landholdings as ancestral estates rather than a territorial dominion. For Freedman, lineage property in the form of ancestral estates is built "from the ground up," that is, from the establishment of corporate land by the joint family. The size of lineage property is structurally deterministic. As a Chinese lineage's accumulation of land increases, so does its structural complexity. Using the functional role of corporate land as the fulcrum, Freedman unravels the multiple layers of the Chinese lineage—social structure, agnatic brotherhood, economic activities, power politics, ancestor worship, folk beliefs (geomancy), and so on. Admittedly, ancestor worship is what shapes the asymmetric segmentation of the Chinese lineage, but its observance depends on proceedings from the ancestral land endowments. It is the uneven distribution of ancestral estates that determines the patterns of lineage life, whether social, economic, or political.

The multifunctionalist paradigm has impacted the study of the Chinese lineage for decades. Nevertheless, implicit in its analysis is the idea that the significance of corporate land is to be interpreted in economic

terms. This is likely to create serious problems for the investigation of ancestor worship. When lineage members are viewed as utilitarian individuals, each seeking to maximize his own gain at the cost of agnatic brothers, ancestor worship becomes merely a perfunctory product of ancestral estates. But such an analysis leaves many questions unanswered. In reality, most lineage members worship their ancestors in the absence of land inheritance. What makes them do so? How could the lineage property be sustained or grow if the descendants were all utilitarian creatures? Why did they agree to the establishment of ancestral estates against their utilitarian interests in the first place? What is so special about corporate land that it can hold agnatic brothers together despite the temptation to break it up? And so on and so forth.

The Divine Ownership Model. Allen Chun developed his model as a reaction to the Eurocentric utilitarianism of the multifunctionalist paradigm. In his view, the utilitarian analysis of Chinese lineage property betrays a total disregard of the native distinction between "ownership" and "possession" in the traditional Chinese property concepts. While the Western notion of property entails an integration of ownership and possession to some degree, they are conceptually distinct in Chinese. With respect to lineage property, its ownership is to be held collectively by the descendants in the name of ancestors, which makes it divine and inalienable. In contrast, its possession can be properly attributed to the most senior lineage member as the Corporation Sole, who manages the property in trust for future generations. Last but not the least, the Chinese terms used to describe the inheritance of property connote neither ownership nor possession, but rather productiveness, as in *chanye* ("productive enterprise") and *zuchan* ("lineage productive medium"). Because of divine ownership, corporate land has little intrinsic value in itself. What makes land indispensable is its capacity to serve as a means of sustaining production and procuring wealth for the survival of a kin group.

Land is evidently crucial to the existence of the Chinese *zu* or lineage. However, the assertion that corporate land is the *raison d'être* of ancestor worship is misguided. On the contrary, it is ancestor worship that gives rise to corporate land and establishes its inalienability in terms of divine ownership. Proceeding from the divine ownership of land, ancestor worship provides a coherent system of norms and values that

sanctions the proper transmission and management of lineage property. Among these norms and values are filial piety, agnatic obligations, and descent rules. Common descent, which is to be defined in the context of ancestor worship, is instrumental in securing and maintaining the continuity of corporate land. It brings about a sense of togetherness, enhances the awareness of a collective conscience, and provides the basis for a moral code of conduct. Owing to its adherence to ancestor worship, the Chinese *zu* is what Durkheim calls a “moral community.”

Cross-Cultural Variation of Transition to Ancestorhood

Beliefs in an afterlife appear to be ubiquitous where ancestor worship is practiced. In Robert Hertz's view, such beliefs appear to be a response to the basic contradiction between the mortality of the human body and the immortality of the body politic. As a supplement to man's earthly span, a Land of the Dead is postulated vis-à-vis the Land of the Living. But how this afterlife is postulated varies from culture to culture.

The ancestral cult is widely practiced in West African societies, including the Ewe of Ghana, who have very definite ideas about life and death. The Ewe believe that human life is composed of two souls. At death, their union is dissolved, one returning to *Mawu*, the creator, and the other to *Tsiefe*, the spirit world. Rituals are performed to help the dead complete the journey to *Tsiefe*. It is not until after the performance of the final postburial ritual that the spirit of the dead soul is thought to have joined the ancestral family and invited to partake of the food offered in the ritual of ancestor worship. But the ritual is held irregularly by the lineage or clan and may entail a long wait. Again, the basis of Ewe ancestor worship is that in the afterlife, the dead ancestors continue to show active interest in the mundane affairs of the living. On all ceremonial occasions, the ancestors must be invoked through customary libations, and they are fed on the ceremonial stools that serve as their shrines. The continuity between life and death is made possible by the rebirth of the souls in *Tsiefe*.

As is obvious from Ewe ancestor worship, afterlife involves a gradual transformation of statuses. It is possible to identify the phases of this transformation with what Arnold van Gennep calls “rites of passage.” The first phase is associated with rites of separation, whereby the dead soul is cut off from his earlier status as a living being. The second phase is associated with

rites of transition, whereby the dead comes out of separation and starts the sojourn to ancestorhood in a capacity peripheral to the worlds of the living and the dead. The last phase is associated with rites of incorporation, whereby the dead becomes a member of the ancestral family. The rites of transition appear to show the greatest cross-cultural variation in terms of duration and complexity. This transitional phase is otherwise known as the stage of liminality. In the Ewe case, the liminal period lasts from the burial to the first ritual whenever it comes along.

Among the Merina of Madagascar, the duration of liminality for the dead is undetermined for a different reason. This culture requires that members of a descent group have their bones buried in ancestral tombs. Because the Merina do not live in the same place, a member is initially buried where he dies, and the burial is attended in grief and mourning. After the initial burial, at some point in time, the bones are exhumed and moved to the ancestral tomb for a secondary and final burial. The ritual for “regrouping” the body with the ancestors is joyful, for it initiates the dead into ancestorhood and kindles the hope for its expedient rebirth. Actually, birth is symbolized in the ritual by going into and emerging from the tomb as if it were a womb.

The stage of liminality may also be prolonged for concerns about the pollution of death. In Japan, a long liminal period is instituted so that death defilement can be cleansed. It takes the spirit of the dead (*shirei*) 49 days plus purification rituals to transform into an ancestral spirit (*sorei*), which is then represented by a permanent wooden tablet on the household Buddha altar (*butsudan*). But the transition will continue for another 33 or 50 years (depending on the region of Japan) before the ancestral spirit can be accepted into the body of family ancestors. That is to say, on condition that the dead soul has received worship dutifully ceremonially on the death anniversary each year and with additional memorial service on the 1st, 3rd, 7th, 13th, 17th, 23rd, 27th, and 33rd anniversaries if the liminal period is 33 years. The bottom line is that the dead must be purified in order to be accepted as an ancestor. The concern about death pollution is so great that in rural Japan, the grave receiving the body is located far away from the residential area and goes by the name of the “abandoned grave.” A second “ritual grave” consisting only of a headstone may be built near the house so that worshippers can visit it without encountering the pollution of the dead body.

Robert Hertz maintains that the deceased's integration into the world of the dead is correlated with the survivors' reintegration into the world of the living. Consequently, the stage of liminality terminates for both at the same time. In his view, this says more about the values and institutions of the living than anything else. Although he makes the comment in connection with "double burial," the traditional Chinese system of *wufu* or "Five Mourning Grades" lends strong support to it.

Wufu actually means the five different types of mourning dresses prescribed by Confucian orthodoxy. Each type of dress was worn in mourning of certain consanguine or affinal relatives for a specific period of time. Grade 1 mourning, which was the severest, was for the death of a parent and lasted 3 years. Its mourning dress consisted of unhemmed sackcloth coat and skirt, hemp headdress, straw sandals, and mourning staff. As the principal mourner, the oldest surviving son lived in a hut built of branches against the house. He ate coarse rice for food, had water for his drinking, slept on a straw mat, and wailed twice a day. At the end of the first year, vegetables and fruits were added to the congee-only diet, and the hemp headdress was replaced by a raw-silk hat. No definite times were prescribed for his wailing. For the third year, the severity of mourning was further reduced so as to help the son's life return to normal.

Stipulated in the law, the *wufu* imposed a duty of mourning upon the people, sanctioned by punishment. An official must retire from office upon the death of his parent and observe the 3-year mourning. To keep the fact a secret and show no signs of distress would incur serious legal consequences as well as public disgrace. It is important to note that the *wufu* system heavily leaned toward patrilineal relatives, especially those in the senior generations. The mourning grade for patrilineal grandparents was 2 (1 year), but only 4 (5 months) for matrilineal grandparents and 3 (9 months) for grandchildren. Central to this mourning system was an emphasis on the cultivation of filial piety toward the patrilineal seniors. Filial piety or *xiao* was considered one of the most important virtues in Chinese society, where the father-son relationship was the cornerstone of the Confucian family system. It stressed that the son owed his life and achievements to his father's love and must attend to his memory after death as if he were alive. Ultimately, however, the *wufu* system served the

living rather than the dead—the needs of Chinese society to strengthen its kinship system.

The Chinese mortuary rites did not necessarily involve double burial. But because of the prolonged mourning periods prescribed by the *wufu*, the only burial that happened in many cases actually provided what Hertz calls the "provisional ceremony." With the ending of the *wufu* mourning came what a secondary burial provides for the institution of double burial—the "final ceremony" that put closure on the chapter of liminality.

— Zhiming Zhao

See also **Religious Rituals**

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ANGKOR WAT

King Jayavarman II founded Angkor, the capital of the Khmer Empire, in the 9th century AD in northeastern Cambodia. Angkor reached its peak of

development in the 12th century under the rule of Kings Suryavarman II and Jayavarman VII. Angkor Wat is a temple dedicated to the Hindu god Vishnu and is the most well-known building in the complex despite the fact that it is only 1 of approximately 100 temples spread throughout 40 miles of jungle.

The city of Angkor was planned and constructed to serve as both an administrative and religious center. Angkor was a symbolic model of the universe from traditional Hindu cosmology. The city was oriented around a central pyramid temple. The outer walls of the temple represent the mountains that were believed to circle the edge of the world. A complicated system of canals, moats, and reservoirs, while symbolizing the waters in the cosmos, also conveniently provided water for irrigation.

Kings who worshipped different gods built many of the greatest temples at Angkor. Angkor Wat was built at the direction of King Suryavarman II in the 12th century as a funerary temple. Not only was it a place to worship Vishnu, but also upon his death, his ashes were to be interred there, solidifying his identity with Vishnu.

Angkor Wat is easily recognizable by its five central shrines. The tallest tower in the center rises 699 feet above the jungle. The towers are believed to represent the five peaks of Mount Meru—the Home of the Gods and center of the Hindu universe. The main entrance faces West, the direction associated with Vishnu. Earlier temples all faced East, associating with Siva. Three galleries and a moat surround the center shrines of Angkor Wat. It appears that every inch of the temple is carved. The outer gallery walls contain the longest continuous bas-relief in the world. It illustrates stories from Hindu mythology, including scenes from both the Mahabharata and the Ramayana, and scenes relating to Vishnu. In many other panels, King Suryavarman II is shown holding court.

The compound of Angkor Wat measures well over 4,000 feet on each side and is surrounded by a vast 590-foot-wide moat. The existence of the moat is the reason this particular temple has been well preserved. It helped to keep the jungle growth from encroaching on the structure. A long causeway leads to the enormous entrance gate. The central chamber believed to be King Suryavarman II's burial chamber is carved with many *apsaras*, mythical, heavenly dancers who entertain the gods and are a reward for kings who die bravely.

In the late 13th century, Angkor was still a large, thriving metropolis, but the frenzy of ornate, elaborate construction had come to an end. Theravada Buddhism was on the rise, and a restrained, simpler religious orientation became the norm. Meanwhile, off to the West, the Thai empire emerged as a major power in the region. The Thais encroached on the Cambodian kingdom by moving their capital to Ayudhya, in close proximity to Angkor. In 1389, the Thais attacked and claimed the city. The final abandonment of Angkor occurred in 1431, when the city was deserted and the capital was moved eastward to the area of the current capital, Phnom Penh.

During the four centuries between the demise of the ancient city and the late 19th century, most of the interest in Angkor was focused on Angkor Wat. Virtually all the other temples were abandoned to the jungle, but Theravada Buddhist monks claimed and maintained the temple for their own use.

In the 19th century, early European visitors to Cambodia were interested in the stories of a “lost city” deep in the jungle. When the French colonial regime was established in 1863, the whole area provoked interest in scholars. Intensive research and reconstruction followed well into the 20th century. Due to political and military upheavals in Cambodia in the late 20th century, there was some damage and thievery among Angkor temples. The greatest structural damage, however, was caused by neglect. Without constant maintenance, the structures were once again engulfed by jungle vegetation. In 1992, UNESCO (United Nations Educational, Scientific, and Cultural Organization) designated the Angkor complex a World Heritage Site, and added it to the List of World Heritage in Danger. This recognition has initiated international preservation efforts. Hopefully these fascinating cultural remnants will remain intact for future generations to appreciate.

— Jill M. Church

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ANIMALS

Taxonomically, animals belong to the kingdom Animalia, which is one of several kingdoms of living beings. Although there is disagreement on how to best classify the various forms of life on Earth, other major groups of living beings include the bacteria, protists, fungi, and plants. The traits that define the kingdom Animalia are:

Mobility. With few exceptions, such as the sea lily (class Crinoidea), animals are able to freely move about their habitats and are not attached to a substrate.

Multicellularity. Animals begin their lives as a single fertilized ova that multiples into many cells, which differentiate into specialized cells and tissues. Animal body plans are the result of genes known as Hox genes.

Heterotrophism. Animals cannot produce their own source of energy and must consume organic material synthesized by plants.

Sexual reproduction. Reproduction in animals depends on meiosis, or the reduction division of the number of chromosomes from a double set in the adult to a single set in the ova in the female and sperm in the male. The ova and sperm merge to form a cell with the double set of chromosomes that eventually matures into an adult.

Eukaryotic cell. All animals are eukaryotes; that is, each cell has a membrane-enclosed nucleus that contains a double set of chromosomes, one set from each parent.

Death. Animals develop from an embryo that matures into an adult and eventually undergoes programmed death.

There are between 30 and 35 phyla of animals. There are an estimated 1 to 2 million species of animals, 98% of which are invertebrates, and more species are discovered every year. At least half of the invertebrates are insects. By contrast, there are about 4,500 species of mammals, 300 of which are primates. In addition to the animal phyla of insects, the Arthropoda, other examples include the Chordata, or vertebrates, such as mammals; Mollusca, such as clams; Cnidaria, such as corals, Echinodermata, such as sea stars; Platyhelminthes, such as flatworms; and Nematoda, such as round worms. Animals in their natural habitat lead well-ordered lives in the process of finding of adequate food and other resources, reproducing, and, in some cases such as mammals, raising their young.

In addition to the scientific and taxonomic definition of animals as discussed above, there is also the cultural discourse that concerns animality versus humanity. The basic dichotomy is between Western cultures that view the difference between animals and humans as a difference of kind and Eastern cultures that view this difference as one of degree. As a consequence of the attitude on the part of Westerners

toward animals, a societal-wide consensus on questions of the value of animals, the extent of their suffering during biomedical experimentation, and animal consciousness and self-awareness are lacking. The debate concerning animal rights and related movements center on these questions of the value and suffering of animals. To be told you are “acting like an animal” does not really mean that one’s actions are animal-like; the comment actually means that the person is acting outside of



the bounds of the moral behaviors expected of a person. The debate over the place of animals in our culturally defined worldview is a deeply emotional subject with religious implications for many people, East and West, and one that is unlikely to abate any time soon.

— Linda D. Wolfe

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ANIMATISM

Animatism is the belief that inanimate, magical qualities exist in the natural world. Specifically, it is the attribution of consciousness, personality, and common life force, but not of individuality, to phenomena observable in the natural universe. The animatistic force can be an innate part of objects, such as trees or rocks, or embedded in observable phenomena, such as thunder, lightning, and earthquakes. To be animatistic, such forces need be both supernatural and, most important, impersonal. The term *animatism* was first coined by Robert Marett (1899) in response to E. B. Tylor's (1871) well-known description of *animism* as a form of religion used by early humans and their modern "primitive" counterparts to explain the universe by personifying all phenomena with animate power. Tylor's animism was a spiritual force, akin to a soul, both animate and with a

distinctive personality, that embodied all things in the universe and was responsible for giving life to animate being. Both terms derive from the Latin *anima*, meaning "soul."

The concept of an animate yet impersonal supernatural force was first described in Melanesian by the missionary R. H. Codrington in 1891. Marett adopted this concept for anthropology, publishing it as animatism in 1909. Like Tylor, he viewed these types of belief systems as primitive forms of religion in which humans do not conceive of personal souls, but instead see external forces or phenomena as being responsible for animating the world in which humans live. He assumed, as did Tylor, that in the study of such beliefs rested clues as to the origins of religion. Drawing further distinctions between animatistic societies and the West, Marett considered practitioners of these "primitive" religions to be actors without the modern capacity of thought, saying that their religion developed under psychological and sociological conditions that favored emotional and motor processes, not ideation. Anthropologists have commonly used these early foundations to discriminate between spiritual beings with individual personalities (animism) and impersonal supernatural forces (animatism). In most animistic societies, however, there is no clear differentiation between personal spiritual beings and impersonal forces. More commonly, people perceive these powers existing side by side and interacting with each other. Spirits frequently possess practitioners of animistic beliefs or these practitioners receive information from spirits that indicate which spiritual powers are causing sickness or catastrophe.

— Keith M. Prufer

See also **Animism; Religion and Anthropology; Religious Rituals**

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The ultimate source of the term *animism* is the Latin word, *anima*, meaning spirit, soul, or life force. In contemporary anthropology, animism is the generic term for numerous and diverse religions focused on the belief that nature includes spirits, sacred forces, and similar extraordinary phenomena. This is reflected in the classic minimal definition of religion, a belief in spiritual beings, that was originally formulated by the famous British anthropologist Sir Edward Burnett Tylor in his 1871 book *Primitive Cultures*. Tylor viewed animism as the basis of all religions and the earliest stage in the evolution of religion. Animism remains relevant to considerations regarding such elemental conceptual dualities as animal and human, nature and culture, natural and supernatural, inanimate and animate, body and mind, and life and death.

In general, animists believe that supernatural forces inhabit animals, plants, rocks, and other objects in nature. These forces are envisioned as spirits or souls. While they may or may not be personified, often they are categorized as male or female. They can influence human affairs for better or worse. In turn, humans may influence them to some degree through appropriate rituals and offerings, especially by ritual specialists such as shamans and priests.

Given its spatial and temporal extent, animism qualifies as the great, major, or world religion, as opposed to Buddhism, Christianity, Hinduism, Islam, or Judaism, even though it is often omitted from books on comparative religion. The antiquity of animism appears to extend back to the time of the Neandertals some 70,000 years ago. At a cave called Shanidar in northern Iraq, archaeologists found some of the earliest evidence of intentional burials, together with offerings such as red ocher and even flowers, the latter revealed by pollen remains. In sharp contrast, other religions are relatively recent, having developed within just the last few thousand years.

Geographically, animism is the most widespread of all religions. It was the religion of the hunter-gatherers, who inhabited most of the terrestrial surface of this planet until the advent of farming, around 10,000 years ago. To this day, animism persists as the only religion in many foraging, farming, and pastoral cultures. Furthermore, it also forms a substratum of popular religion in many other societies, even though they identify with one or more of the so-called great

religions. For example, Asians often embrace elements of animism in their personal religion, along with mainstream religions such as Buddhism, Hinduism, or Islam. Thus, in Japan, Shintoism and Buddhism coexist and often commingle, and the former is a variety of animism. Neo-paganism in contemporary Europe, North America, and elsewhere is also a variant of animism. Some form of animism is still found in about half of the nearly 7,000 cultures in the world today.

Animism permeates much of human life and nature. As an illustration, rice is one of the most important food and cash crops in the world. However, in its Asian homelands, rice is not merely a material entity for nourishment, and it cannot be adequately understood only as such. In addition, it is associated with the spiritual dimension of life, and in particular, the so-called rice goddess, along with an elaborate complex of ritualistic, symbolic, and artistic expressions.

Another specific example of animism is the Thai belief in spirits that inhabit a place. Most homes and other buildings in Thailand have a separate little spirit house. It provides shelter for the spirit that was displaced by the construction of the human building. On a daily basis, offerings are placed in the spirit house, including water, fruit, candles, incense, and/or flowers. There are millions of such spirit houses throughout the country, where most people are otherwise to some degree Buddhist.

Beyond its prior antiquity, universality, and ubiquity, animism is also important because arguably it is far more natural than any other religion. Most indigenous societies that pursue animism are relatively sustainable ecologically, a point that should be obvious if one considers their existence for centuries, or even millennia, in the same region without causing resource depletion and environmental degradation to an irreversible degree. In these kinds of societies, nature is not merely a biophysical reality or economic resource, but more important, it is intrinsically spiritual. In other words, most indigenes do not rigidly segregate the natural and supernatural, but view spirits as part of the intricate and mysterious web of life. Probably the respect and reverence afforded nature because of its sacredness contributes significantly to the sustainability of these societies.

Given the temporal and spatial extent of animism, it is apparently an elemental part of human nature, and thus likely to persist indefinitely. Its ecological resonance may also contribute to its persistence.

As such, it deserves much more recognition and appreciation than it has been afforded in the past.

— *Leslie E. Sponsel*

See also **Animatism; Cosmology and Sacred Landscapes; Religion and Anthropology; Religious Rituals**

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ANTHROPIC PRINCIPLE

The anthropic (or, literally, *human-centered*) principle entails several propositions, all focusing on the relationship, if any, between the natural physical universe and the existence of human beings in this universe. It grew out of discussions in astronomy and cosmology, where some argued that the existence of life in the universe automatically set constraints on how the universe could possibly exist and how it got to be this way since the Big Bang.

There are several versions of the argument. All are tied together, however, by the fact that the laws of physics and the physical constants as they stand now all allow for complex life to occur, or perhaps for a universe to even exist at all. For example (assuming all

other forces remained the same), if the gravitational constant G —the strength of the pull of gravity of one object on another—were just a little more than it is, stars would burn out more quickly, fighting against the force of attraction trying to make them collapse. They might burn out even before there was enough time for intelligent life to evolve and notice them. Also, atoms could not form if electrons weighed a little more or protons a little less, and without atoms, nothing in the universe, alive or not, would be as we know it. The famous quantum physicist Paul Dirac was also puzzled by the apparent large number of coincidences that occur between the different dimensionless constants. Martin Rees, Britain's royal astronomer, argues that only a half-dozen numbers make the universe the way it is, and a difference in any one of them would not have allowed it to even come into existence.

These are all versions of the “weak anthropic principle,” which claims that all the laws of the universe are not equally probable, but the fact that we are here to observe them implies that the laws that *are* in effect exist because we are here to observe them. What some have asserted as the “Goldilocks principle”—that is, the universal porridge is “just right” for us—asserts that the universe *must* have only those properties that allow life to develop, that is, the properties we see in the universe today. This is also called the “strong anthropic principle” by physical scientists. The strong anthropic principle allows for teleological reasoning: The coincidences that allow life to exist must reflect evidence of an intelligent designer of some kind at work.

In anthropology, there have not been many attempts to address the anthropic principle directly, and those that have tried to do so have not been especially enlightening. Discussions of the anthropic principle come up in debates on evolution versus creationism or intelligent design, but once again, the anthropological contributions have been minimal. Perhaps linguistic anthropology might offer some future insights. There might be a language effect taking place in these discussions. Even if a strong Sapir-Whorf effect can never be demonstrated, it is impossible to address the universe in ways that are not already guided by our preconceptions of it—outlooks largely determined by the ways we talk and think about it. Thus, the whole issue of the anthropic principle might ultimately be an artifact of our perceptions—perceptions guided largely by language.

— *James Stanlaw*

See also **Big Bang Theory**

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ANTHROPOCENTRISM

The term *anthropocentrism* indicates a point of view that accords to the human being (*anthropos* in Greek) the central place, the one of the highest importance, around which everything else gravitates. This tendency, implying an overevaluation of the human race compared to other forms of life, is particularly manifest in two fields: cosmology and philosophy.

Cosmological Anthropocentrism

In the *Old Testament*, common sacred text for Judaism and Christianity, in the book of the Genesis, where is related the creation of the world by divine activity, the human being is the last one to see the light of life and the only one to come out of the Creator's hands as His own "image." Moreover, God gives Man the authority to "rule over" every other creature living in water, in the air or on the ground (Genesis 1:26–29). This fundamental belief of the natural superiority and domination accorded to the human beings from the very beginning by the divine Creator himself has led to an anthropocentric vision of the world for the cultures following the above-mentioned religions.

It is noteworthy that Man doesn't occupy such a privileged position in any other religious cosmogonical tradition. The modern scientific thesis of Charles Darwin (1809–1882), defending the evolution of all natural species, considers the human being as one

animal among the others, which explains the harsh metaphysical opposition, which still goes on, between the evolutionists and the Christian theologians who interpret their sacred texts literally (although representatives of many official churches have declared since the end of the 19th century that they don't consider Darwin's theory as contradicting their own doctrines).

We would like to underline also that despite the diversity concerning the origins and the "natural place" of man in the world, both theories accept the actual final issue of the human condition: There are particularities in the human species (especially linked to handcraft abilities and to intellectual faculties) that gave us the possibility of an extraordinary expansion, often by chasing or by subjugating many other natural species.

In fact, the "privilege of domination" (be it accorded by a divine will or by a mechanical natural development) over the other living creatures of the Earth presented a negative side for a great part of human societies: the feeling of *difference* and *alienation* from the whole. Man, especially in the Western civilizations, became progressively a "stranger" for the natural environment. The opposition between the notions of "nature" and "culture" emerged. A certain nostalgia must have remained, expressed symbolically in many myths, traditions, and beliefs relating a lost original human condition of happy and unconscious unity with all parts of nature, inspiring a wish of "eternal return."

Concretely, the human attitude toward the other living species and the natural environment in general has largely followed during the last centuries a strict and ignorant anthropocentrism, which has led to inconsiderate destruction of the natural environment, in favor of the human profit. It is only during the last decades that human beings have recognized the great ecological problems they have created, a situation for which we may still suffer the consequences in the long term. Under the light of this new understanding, we may say that the necessity of certain changes in the anthropocentric way of behaving toward the other components of the planet has started to become an inescapable evidence.

Philosophical Anthropocentrism

It is in fact difficult to define among the philosophical theories those that may be qualified as properly

anthropocentric, as the limits between “anthropocentrism” and “humanism” become vague, according to the way one defines each notion. After making here an obligatory personal choice, let us keep the same general definition, already mentioned, for “anthropocentrism” and distinguish it from “humanism” by the following characteristic: We accept that “humanism” considers the value of human being as independent (a value “by itself”) and is guided by the respect of this value; this doesn’t necessarily imply the exclusive accordance of the highest importance to the human being compared with other beings or values, as is the case of the “anthropocentric” theories.

The Sophists were the first thinkers to put Man in the center of their world vision, during the 5th century BC. The most representative fragment of their anthropocentrism is the one attributed to Protagoras of Abdera (490–420 BC): “Man is the measure of all things.” This principle legitimated pure subjectivity and relativity for all metaphysical, ethical, and political values.

Socrates (470–399 BC) and Plato (428–348 BC) firmly rejected the sophistic position, which covered a certain political opportunism, without any effort to further explore the human being himself and his relation to the world. This task was undertaken by Socrates himself, who is thus considered the founder of “philosophical anthropology.”

In the history of occidental philosophy, there have been afterward various theories that have advanced subjectivism as the “anthropocentric” principle of human knowledge. We can’t cite them here all in detail, but let us give only as representative examples the subjective idealism of Johann Gottlieb Fichte (1762–1814) and the existentialism of Jean-Paul Sartre (1905–1980).

— Aikaterini Lefka

Further Readings

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ANTHROPOLOGY AND BUSINESS

Business and industry are fundamental ways of organizing economic activity to meet basic human needs in modern market societies. *Business* means the buying and selling of goods and services in the marketplace (also known as commerce or trade), while *industry* refers to the organized production of goods and services on a large scale. When we use these terms in the anthropological context (for example, business or industrial anthropology), we may refer to one or more of the three major domains of anthropological research and practice in the private sector. These include

- anthropology related to the process of producing goods and services and to the corporate organizations in which production takes place

- ethnographically informed design of new products, services, and systems for consumers and businesses

- anthropology related to the behavior of consumers and the marketplace.

The term *business anthropology* came into usage in the 1980s, when anthropologists became full-time, nonacademic practitioners in niches related to consumer behavior and marketing. Prior to that time, we more frequently used the terms *industrial anthropology*, *anthropology of work*, or *applied anthropology in industry* to denote areas of research and practice that focused on business-related phenomenon. More recently, we have begun to more generically use the term *business anthropology* to mean any application of anthropology to business-oriented problems.

Part I: Historical Development of the Field

Early Colonial History

Anthropological roots that trace back to European colonial interests also connect, albeit indirectly, to the international trade of that era and the commercial activities associated with such trade. Early in the 19th century, for example, the Court of Directors of the East India Company made a formal decision to acquire anthropological knowledge of India, as such knowledge was deemed to be of great value in the administration of the country. Subsequently, Frances Buchanan was appointed by the Governor-General in

Council to undertake an ethnographic survey to inquire into the conditions of the inhabitants of Bengal and their religion. Likewise, in Nigeria, where the British government employed a National Anthropologist for research purposes, the journal *Africa* was established in 1928 to harmonize research policy and practice in the colonies “for the solution of pressing questions that are of concern to (among others) . . . traders working for the good of Africa,” according to Lord Lugard, the first governor general of Nigeria in his article in the first issue of *Africa*. These traders included Lever Brothers and John Holts, companies that secured the produce of the colonies for British factories and in turn shipped the finished products to the colonies.

While the actual value of European anthropology to colonial interests has been called into question, there was, at least, sufficient potential there to justify the funding of a Colonial Social Science Research Council (CSSRC) in Great Britain from 1944 to 1962, an organization that advocated a practical research agenda for anthropology in the colonies. It is, perhaps, not a coincidence that during this same period—the 1950s—British industrialists, led by Israel Sieff (a cofounder of Marks and Spencer, a department store chain), requested support from British anthropologists to deal with quite different issues in England, for example, staff relationships and productivity in corporations. The industrialists were rebuffed, however, with the reply that anthropology was an exploratory discipline and thus could not be used for anything so concrete as recommendations to businesses. The relationship between anthropology and colonial interests is part of the world history of applied anthropology and is one of the reasons why European anthropologists were slow to adopt applied anthropology as a formal area of research and graduate training in the latter half of the 20th century. The kind of work supported by the CSSRC became tainted with political incorrectness as independence movements grew in force around the time of World War II, causing embarrassment for some anthropologists who found themselves linked to colonial purposes. As a result, many European anthropologists threw the “applied baby” out with the bathwater, and application simply was off-limits in many places until the last quarter of the 20th century. The mantle of leadership in application consequently “jumped the pond” to the United States—the home of pragmatic philosophy, with important implications for the relationship

between business and American anthropology in the 20th century and beyond.

The American Context

On the other side of the Atlantic, the United States was experiencing its industrial revolution during the latter part of the 19th century, and, with it, the focus of applied anthropology shifted from studies of Native Americans to research based in industry. The rise of American industry was accompanied by a theory of organization known as *scientific management* developed by the engineer Frederick W. Taylor and implicitly in force in today’s corporations. According to Taylor, the activities of both workers and managers should be determined by “scientific” methods—thorough investigation of the skills and actions needed to perform a given role, careful selection of individual workers and managers based on their ability to perform the role, and detailed instructions that would direct each employee’s behavior so that maximum output could be achieved with minimum input. Taylor believed in the theory of “economic man”—that individual employees would respond rationally to economic rewards by increasing their productivity to maximize rewards to themselves. The trick was to find exactly the right kind and amount of incentive—sufficient to motivate the worker effectively but not so generous as to detract from profitability. This approach, he believed, would reduce labor-management strife, as all actors would be satisfied with their situations.

Taylor didn’t have to worry about unions interfering with his plan to optimize the productivity of the workforce. Prior to the 1930s, manufacturing companies did not have industrial unions, as many did later on in the 20th century. American unions were organized along trade lines (for example, carpenters, glassblowers, shoemakers) rather than by industry (such as automobiles, steel, textiles). This reflected the craft-based organization of production common at that time in which skilled workers with deep knowledge and experience in all aspects of a particular craft made products by hand. This manual process yields high-quality products, but it is slow and not suited to mass production for large national markets. Craft workers used trade unions to maintain some measure of control over the conditions under which they worked—such as who could join the trade, how they would be trained, what they would be paid. Such trade unions were much like medieval guilds.

The less skilled production workers of the growing manufacturing firms were not permitted to join trade unions. As manufacturing companies expanded in scope and influence toward the end of the 19th and beginning of the 20th centuries, their managers very much wanted to keep unions from organizing the less skilled production workers. The 19th century had been a period of serious labor-management conflict in the United States, with members of trade unions regularly going on strike against their employers and violence sometimes breaking out. These strikes were not legal, and union members often clashed with private security guards, state militia, and even federal troops. People were sometimes killed in these struggles. Because American workers did not yet have a federal law ensuring the right to form a union, workers could be arrested and charged with crimes such as conspiracy.

As industrial technology began to replace the skills of the craft workers, managers looked forward to the day when the trade unions would decline in influence, which they soon did. Managers were still concerned, however, that the less skilled production workers, who were becoming more numerous as national markets for mass-produced goods expanded, would organize unions of their own, something they wanted to avoid at all costs.

One effective approach to avoiding unionization was a benign theory of management known as *welfare capitalism*, an ideology that became central to the future relationship of business and anthropology. The hypothesis was that if management treated the workers well and ensured that they were contented, labor strife would subside and unions would not grow stronger. This approach was especially prominent during the economic boom years of the 1920s, when employers spent money improving workers' quality of life. They built new housing for workers, created flower beds, parks, and libraries and set up elementary schools for the workers' children. Management also formed company unions that negotiated "sweetheart deals" (for example, union leaders were treated very well, and they agreed to whatever management wanted). As a result of these efforts by management, the union movement did not advance in the 1920s, and there was a reign of relative peace in the ranks of less skilled industrial workers up to the time of the stock market crash in 1929.

The Hawthorne Project

It is against this backdrop that the Western Electric Company (now part of Lucent Technologies) began

in 1924 at its Hawthorne Works near Chicago a series of experiments aimed at increasing the productivity of the workforce. These experiments reflected both the influence of welfare capitalism and Frederick Taylor's scientific management movement. The company wanted to find out how to improve working conditions so that worker fatigue and dissatisfaction would be reduced (welfare capitalism), and they believed that a single variable (such as factory illumination) could be manipulated to make this happen (scientific management). In these particular experiments, however, the results did not make sense from the standpoint of scientific management theory. The experimenters found that worker productivity increased when the lights were made brighter (as expected), but productivity also increased or stayed the same when lighting was decreased, even to the dim level of moonlight. This result definitely was not expected, and could not be explained by the prevailing theory of the time.

Intrigued, the Hawthorne researchers instigated a further series of tests to explore the anomaly, one of which was called the Relay Assembly Test Room (RATR) experiment. In this test, a group of women were isolated in a laboratory where their conditions of work and output could be measured carefully. The experimenters then varied the working conditions, giving the women rest breaks, snacks, incentive pay, and then gradually withdrawing each of these, while they measured the number of relay assemblies each woman produced. Again, the same mysterious results emerged—productivity was sustained or increased no matter what the experimenters did to working conditions. We now know this phenomenon as the Hawthorne Effect, meaning that nonexperimental variables are affecting the experimental results, but at the time the outcome was inexplicable.

Hawthorne researchers called upon Harvard psychologist Elton Mayo to help them interpret the mysterious results of their experiments. With his help, they came to realize that they had inadvertently altered the working conditions of the women far beyond those of a normal work environment. For example, the researchers themselves had become the women's supervisors and had developed a congenial relationship with their research subjects. Two women who were not cooperative in the project had been replaced with two other women. Neither of these conditions paralleled those that might be experienced on the shop floor. Further, the women themselves had

developed an esprit de corps in which they worked together as a team, encouraging and helping one another if one fell behind. This is, at least, the official version of the research team after members settled internal disputes regarding the appropriate interpretation of the data. Richard Gillespie's 1991 *Manufacturing Knowledge: A History of the Hawthorne Experiments* illuminates the differing interpretations among Hawthorne researchers and explains how Mayo's views came to dominate the social science lore.

In Mayo's views, the women had developed a distinctive social system, and this system itself had become part of the production process and was no doubt contributing to the enhanced level of productivity that was being observed in the experiment. Now, rather than simply being interested in how one variable (illumination) influenced another (fatigue), the Hawthorne researchers started to become interested in understanding the relationships among variables in the social system and what their effects on production might be.

As discussed by Helen Schwartzman in *Ethnography in Organizations*, Hawthorne initiated in 1928 a massive interview project involving 20,000 employees, aimed at obtaining a better understanding of psychological factors that affected the workers. It was these interviews that uncovered the tendency of workers to band together as a means of defense against anything that might be perceived as a threat. This tendency produced a uniformity of behavior among individual workers, for example, reluctance to ask for a raise, which might create a rift within a work group. This tendency gradually came to be conceptualized as the worker's social system or social organization, and it was an interest in understanding this social system that prompted the next and final phase of the Hawthorne project.

It was at this point that anthropology entered the Hawthorne project. Elton Mayo had established a friendship with two prominent anthropologists, Bronislaw Malinowski and A. R. Radcliffe-Brown, and he therefore knew that anthropologists study natural social systems in the field. It was this very approach that Mayo wanted to adopt for the final phase of the Hawthorne study. Through his professional network, Mayo was introduced to one of Radcliffe-Brown's students, W. Lloyd Warner, who had just returned from fieldwork in Australia, studying the Murngin. Warner consulted with the Hawthorne researchers in designing and conducting the next phase of their

experiment, and with this act he fathered industrial or organizational anthropology.

With W. Lloyd Warner as design consultant, the Hawthorne researchers conducted the final phase of the Hawthorne project, known as the Bank Wiring Observation Room (BWOR) experiment. This portion of the project was aimed at exploring what workers actually *did* on the job, in contrast with what they *said* during the interviews. For the BWOR, a replica of the shop floor at Western Electric was constructed, into which a typical work group (14 male bank wirers and their supervisors) was installed. The workers performed their tasks as usual while a trained observer watched them and recorded their interactions over a time period extending for several months during 1931 and 1932, the depths of the Great Depression. To gain a better understanding of the worker's point of view, a second researcher, not present in the observation room, conducted periodic interviews with the workers. Warner encouraged the researchers to read anthropological theory and to analyze their observational data much as an anthropologist would in studying a small society such as a band or tribe.

The BWOR study was the first to demonstrate empirically the starkly contrasting points of view separating management and the workers. Hawthorne management had accepted Frederick Taylor's concept of "economic man" (that is, workers are rational actors who respond to economic incentives), and therefore they had devised a complex piece rate incentive scheme that guaranteed a minimum hourly wage in exchange for a minimum daily standard of production (the "bogey"), plus an additional sum that was determined by the amount of output produced by the entire group in excess of that which was guaranteed by the minimum hourly wage. Management believed that this system would encourage workers to maximize their efforts up to the point at which fatigue and discomfort inhibited additional production. Part of this incentive scheme was the notion that slower workers would be spurred on by those in the group who worked faster (much as they witnessed in the earlier RATR experiment).

In reality, however, the piece rate system had exactly the opposite effect to what the managers envisioned. Workers had their own notion of a "fair day's work" that was considerably below that which management envisioned as desirable under the piece rate incentive system. The workers' informal standard was translated into a certain number of units to be produced

by each man during the day; this was basically the amount of labor required to produce the bogey. Anything produced in excess of this minimum was frowned upon and negatively sanctioned by the group. If a worker set a fast pace and produced more than the minimum standard, he was subjected to verbal abuse (for example, called a slave), “binging” (using the thumb to snap the third finger against the violator’s arm), and eventually, the most dreaded punishment—ostracism or virtual banishment. Often the workers would produce their quota early in the day and then subtly scale back effort in the afternoon while enjoying one another’s company (all the while keeping an eye out for management). This work culture arose from the workers’ belief that a higher daily rate of production would prompt management to raise the bogey, cut the hourly rate, or lay off some of them. The Hawthorne project was conducted during the depths of the Great Depression, so it is not surprising that workers feared such actions from management.

The Hawthorne findings were in conflict with the existing management theory of the day. According to Taylor, the economic man was an individual, and incentive structures were set to encourage individuals to give their maximum effort and to push their peers to do the same. Yet in the BWOR, the workers did not respond as individuals but as a group, and they had developed their own informal theory of management that was based on distrust of managers, not on an interest in economic gain. Here was the first solid empirical evidence of *informal organization* (what we might call an occupational subculture or counter-culture), defined as the actual patterns of social interaction and relationships among the members of an organization that are not determined by management. Researchers were able to map this informal organization by quantifying interactions among workers and to graphically depict networks of relationships between different work groups or cliques, much as network analysis today reveals informal patterns of communication and exchange among individuals. The informal organization that was depicted very much contrasted with the *formal organization* (interactions defined by the rules and policies of the corporation) that management had put in place to enable pursuit of the company’s goals. The corporation thus was comprised of two kinds of organization that were not aligned with each other—one a rational organization designed for instrumental purposes,

and the other a spontaneous, natural form of human social interaction that arose in response to inherent human interests and needs. These findings made clear that workers were not simply “factors” in production, much like machines, but were sentient beings who assigned their own meanings to phenomenon and who protected their interests through mechanisms of their own design. Although this insight seems obvious to us now, it was a startling breakthrough in the early 1930s, and it represented a severe critique of Taylor’s scientific management theory.

One of the most significant findings to emerge from the Hawthorne project was that workers exert considerable influence over industrial productivity. As long as machines did not control the work process, as they did not in those days, workers could manipulate the pace of production in many subtle ways not easy to detect without an army of supervisors. Management was no longer fully in control of the corporation, as the theory of the day assumed, but had to deal with a powerful natural force that, from management’s perspective, did not respond to the logic of economic incentives. From the worker’s point of view, of course, the men of the BWOR were being quite logical, since any behavioral pattern other than that which they exhibited could end up costing them in the long run. Interestingly, this latter anthropological view is not the one adopted by the Hawthorne researchers, who accepted Mayo’s interpretation of the findings, which held that the BWOR workers were acting in an irrational manner, based on psychological “maladjustment.” A different industrial future may have unfolded if the alternative view had prevailed.

A new school of thought emerged in organizational theory as a result of the Hawthorne findings, and it held sway for the next two decades—the *Human Relations School*. This school of thought was based on *functional equilibrium theory*, a theory widespread in the social sciences at the time, which viewed human organizations as integrated social systems, with specific structures that interacted to maintain a smoothly operating whole. Each individual was seen as being tied to the whole yet still having his or her proper place and function in the system. Within the context of this theory, conflict between management and workers was seen as pathological, reflecting the disruption of an equilibrium state, and was to be ameliorated by making adjustments in the pattern of interaction among individuals and organizational structures. A disruption of the equilibrium state

would affect worker morale in a negative way, and this in turn would interfere with efficient production. The Human Relations School aimed at creating harmonious worker-manager relationships that would ensure optimal productivity in a company (some later called this “cow sociology”—contented workers give better work). Mayo argued that a work group’s informal organization either could support management goals (as seen in the RATR) or work against them (as in the BWOR). Management needed to adjust its relationships with workers to ensure the former result, not the latter. This school of thought was prominent in American industry for the next 20 years and was highly influential in shaping the practices of the first generation of industrial anthropologists.

Not coincidentally, the Human Relations School often is associated with welfare capitalism and with a tendency in managerial thought and action to resist unionization of the workforce. The anthropologists who were prominent within the Human Relations movement appear not to have questioned the status quo ante assumptions upon which this movement was founded, and consequently they and their colleagues often have been judged as management-centric in their research and practice, a judgment that may not be completely fair, given the anthropologists’ landmark efforts to understand the perspective of the Hawthorne workers.

The Human Relations Movement

Ironically, Warner and his colleagues did not have further opportunity to continue their studies at Hawthorne during the 1930s. This was the result of two developments. First, the Hawthorne researchers followed up on the BWOR study by initiating a program of psychological counseling with workers that they believed would contribute to industrial peace. No further studies of social interaction on the shop floor were conducted (while industrial psychology as a field expanded). Second, as the Great Depression unfolded in the 1930s, severe economic deprivation meant that companies did not have the resources needed to continue to support research of the Hawthorne type. Thus, little industrial anthropology was conducted in the United States during the remainder of the 1930s.

As the United States recovered from the Great Depression and then entered World War II, production pressure intensified and internecine “feuding” between workers and management erupted once

again, becoming an increasingly serious threat to the economic welfare and security of the nation. Any effort to ameliorate this conflict was viewed as contributing to important national goals. Intellectuals were motivated to become involved in Mayo’s Human Relations project primarily because of such critical national interests and not as a result of concern for the competitiveness or profitability of individual firms.

The group of anthropologists at Harvard during the time of the Hawthorne project also was influenced by a general interest in modern institutions, and they found many opportunities to conduct observational studies in large corporations and to apply their insights toward the goal of industrial harmony, from the 1940s through the 1950s. This generation of industrial anthropologists, including Conrad Arensberg, Elliot Chapple, Burleigh Gardner, Robert Guest, Solon Kimball, Frederick Richardson, Leonard Sayles, and William Foote Whyte (who was trained as a qualitative sociologist), undertook a series of important studies both of workers and managers, with the goal of discovering factors and forces that could be manipulated to achieve an equilibrium state in the organizational system (that is, the elimination of conflict).

Anthropologists who worked in industry during this period continued to be influenced by Elton Mayo’s conception of social science as therapeutic or clinical practice. In keeping with functional equilibrium theory, Mayo believed that a key role of social science, including anthropology, was to gain a better understanding of human social systems in industry in order to permit the design of effective interventions that could alleviate pathologies such as labor-management conflict, resulting in more smoothly functioning organizational systems. If a social system was not in an equilibrium state, the anthropologists believed that they could contribute to restoring a healthy equilibrium by identifying sources of friction in the social system and recommending ways to transform adversarial or rebellious relations into productive collaboration. The anthropologists did not question the asymmetrical relations of power in a company as a key source of conflict; these were taken as given.

During the 1940s and 1950s, anthropologists were hired by management to work on problems in specific plants, such as high turnover, absenteeism, strikes, and poor worker-management cooperation. They studied various aspects of social structure and relations within the industrial enterprise, such as informal relationships among workers, actual work processes,

status hierarchies, relations between workers and managers, union-management interaction, and voluntary associations in the workplace. Many of these studies identified the small work group as a critical factor within the industrial system, thus opening a new area of study in the social sciences that has been highly productive from a theoretical standpoint.

Companies that hired anthropologists during this period included Sears, Roebuck & Company, the Container Corporation of America, International Business Machines (IBM), Inland Steel Container Company, Libby MacNeil and Libby, Bundy Tubing Company, and the Eastern Corporation. Some of the anthropological studies of such firms produced industrial ethnographies (case studies) of the entire company, with a focus on the factors and forces that influenced human relations within an integrated social system. For example, Warner and Low conducted their famous case study of a major industrial strike in Yankee City (Newbury, Massachusetts), explaining connections between the social system within the factory and larger economic, technological, and social forces that contributed to the strike. Yet the anthropologists saw themselves not as hired guns but as scientists, working to discover laws of human interaction that could establish the foundation for a science of human behavior. W. Lloyd Warner, the founder of industrial anthropology, had a larger theoretical agenda that he hoped to advance through the study of modern institutions, such as industrial organizations.

Methodologically, Eliot Chapple and other anthropologists aimed to obtain a detailed, quantitative record of interactions among workers and managers in industrial settings, much as a naturalist would record the behavior of an animal species in the field. Detailed measurement of actual behavioral interaction would help to pinpoint the sources of tension and conflict between different industrial roles. This knowledge could then be used to make precise adjustments in patterns of interaction that could contribute to a reduction in conflict. Chapple developed a new technological device, called the Interaction Chronograph, which helped to record quantitatively the interactions among individuals as they unfolded in real time. This device may be viewed as the precursor of modern videotape analysis of workplace interaction that was later pioneered by a second generation of industrial anthropologists.

Frederick Richardson's work provides an example of a key social variable—the human contact—discovered

by the anthropologists through observational methods, and describes how this variable could be used to improve worker-manager relations. The contact pertains to the behavioral interaction that takes place between a supervisor and his or her subordinate in face-to-face meetings. Richardson suggests that it is possible to predict the performance of a work group solely by recording the supervisor's contacts that last 1 minute or more. High-performing units display "contact moderation" about 90% of the time. The anthropologists argued, based on studies of primates and other animals, that conflict between work groups is exacerbated by physical separation and a lack of ongoing contact. This behavior pattern is one in which a supervisor spends one half to three quarters of his or her time engaged in contacts with others. The contacts are well distributed across the group, with the average length being fairly short, but not curt. Typically, there are 15 to 30 contacts per day, with a good balance between group and pair contacts. Supervisors of high-performing groups also were found to be more talkative, more dominant (cannot be interrupted easily), more flexible in style, and less flappable. These supervisors over and underreact less to excessive talking or silence from others, maintaining their own rhythm of speech. This description was derived from close recording of behavioral interactions, and it was used to advise managers on ways to improve the productivity of their workers.

It is clear from the discussion above that industrial anthropologists of the time studied not only workers but managers as well, something Fredrick Taylor had difficulty doing, as managers resisted the application of his methods to their ranks. Being able to study both workers and managers meant that the anthropologists had to gain access to, and establish trust with, both of these groups, a feat that was quite difficult to do in times of industrial unrest. Anthropologists were virtually the only group of researchers capable of performing this feat, although later they were criticized for being too close to management in their assumptions and point of view.

After the Hawthorne project, W. Lloyd Warner shifted his focus to the contemporary community in his Yankee City studies. The focus of this project was the social stratification of a community using the anthropological techniques of direct observation and interviews. It was in this project that Warner uncovered the importance of both the voluntary association and the corporation as distinctive modes of social

integration in American life. Warner found that both of these forms of organization bring together and articulate diverse social elements, including individuals, families, and ethnic groups, in ways that are not typical in other societies. Anthropologists conducting studies of families, work, and corporations only now are beginning to follow up on these insights.

Especially important to our understanding of industrial anthropology in this period was Warner and Low's study of a major strike affecting several Yankee City shoemaking factories. The intensity and duration of the strike, which took place during the depths of the 1930s Depression, were a surprise to many observers, since the workers in the plant had never mounted any job action in the many decades of the factory's history. Warner and Low were able to trace the roots of the strike to changes in the technology, work process and social relations within the factory, and they also linked these microlevel changes to larger technological and economic transformations unfolding at the macrolevel of the nation. Over some decades before the strike, shoemaking production technology had gradually evolved, reducing once highly skilled craftsmen to less skilled and more interchangeable workers in a more heavily mechanized production process. The deskilling of the workforce had destroyed the traditional social system within the factory, which was based in a hierarchy of increasing levels of skill in the craft of shoemaking. Workers' identity and self-esteem were tied to their capacity to move up the skill hierarchy as they gained increasing experience and expertise. But technological changes destroyed the skill hierarchy, reducing once proud craftsmen to a more or less undifferentiated mass of deskilled workers. Such changes generated a sense of loss of control and autonomy among the workers, drawing them into a group with shared interests. At the same time, the ownership of the factories themselves had changed hands, shifting from local ownership to distant owners in New York City. The absenteeism of the factory owners removed social constraints against strikes that had been in place when the owners were integral members of the community. As a result, members of the community supported the strike in a way that would not have been possible before, and this support made a lengthy strike possible. As a result of the strike and its community support, the workers organized an industrial union and were successful in their demands against management, thereby reflecting similar changes that

were taking place across the country. Through this study, Warner and Low showed that behavior inside a plant cannot be understood fully without also knowing the connections between the plant and its historical, social, economic, political, and technological contexts. The discovery of the open-systems nature of work organizations was an original theoretical contribution that predated Selznick's work on the Tennessee Valley Authority (TVA) that often is credited in the management literature as the first research to demonstrate organizational-environmental interactions.

In 1936, Warner left Harvard and went to the University of Chicago, where he founded the Committee on Human Relations in Industry. This group encouraged and supported the work of many industrial anthropologists and sociologists, such as William Foote Whyte, whose qualitative field studies of various industries have become classics of the organizational theory literature. Another significant event during this period was the founding of the Society for Applied Anthropology (SfAA) at Harvard in 1941. Several of the founders were industrial anthropologists who published their industrial research findings in the SfAA's journal *Applied Anthropology* (now *Human Organization*).

The Decline of Industrial Practice

Around 1960, a number of significant changes in the social, political, and economic context of the United States influenced the development of academia and with it the trajectory of industrial anthropology. Instead of continuing to establish itself as an important subfield of anthropology, as might have been projected from its promising start in the previous three decades, the anthropology of industrial organizations entered a prolonged period of decline from which it has only recently begun to emerge. This decline is related both to a waning interest in modern institutions within the mainstream of anthropology and to a scarcity of practitioners, that is, individuals who conduct the science and craft of anthropology—whether research or application—inside industrial and business organizations. Possible reasons for the decline might be a change in academic environments, a shift in social science theory, and political and ethical issues.

Change in Academic Environment

With the end of World War II and the Soviet Union's launch of *Sputnik* in the 1950s, major

changes swept over American higher education. Record numbers of baby boomers entered college, along with returning GIs, and the ranks of college students exploded in number. Simultaneously, the American government was eager to continue the technological advances that had helped the Allies to win the war, and toward that objective the National Science Foundation was established to fund academic research. These developments meant that academic anthropology, and federal funds for fieldwork in countries outside the United States, grew both in numbers and stature. American anthropologists now had growing numbers of academic employment posts and the means to travel abroad to conduct research. The academic discipline of anthropology emphasized the significance of fieldwork outside the United States as necessary to the creation of a “real anthropologist.” Those conducting research in the United States (such as the industrial anthropologists) were relegated to a second-class citizen status, which ultimately pushed many of them out of anthropology and into the business world. Some became professors in business schools (for example, Frederick Richardson, William Foote Whyte, and Leonard Sayles), while others started businesses or became business consultants (for example, Burleigh Gardner and Eliot Chapple). This meant that they were not able to produce a new generation of industrial anthropologists.

Shift in Social Science Theory

The Human Relations School and functional equilibrium theory were incompatible with the emerging reality of labor relations in American industry, which was increasingly characterized by severe labor-management conflict and strife. During the Great Depression, unionism of all kinds declined as unemployment grew to unprecedented levels. The moral authority of business and its capacity to practice welfare capitalism were severely damaged, and when a slow recovery began in 1932, the previously harmonious labor relations disappeared. Labor agitation mounted as workers were called back to their jobs, and President Franklin D. Roosevelt, concerned that labor unrest could derail the fragile recovery, decided that the federal government would sponsor collective bargaining as part of a strategy to get the economy moving again. When this approach was ruled unconstitutional, the U.S. Congress passed the National Labor Relations Act in 1935, which, for the first time,

gave workers the right to bargain collectively. Shortly afterward, the Council of Industrial Organization (CIO) was formed to organize less skilled workers on an industrywide basis. Now when the union called a work stoppage, such as that which took place during the Flint sit-down strikes of 1936–1937, the government no longer interfered, and the unions began to make serious headway toward their goals of improved wages and working conditions for unskilled workers. The modern union movement was born. Over the course of the next several decades, union bargaining succeeded in transferring approximately 16% of shareholder wealth into the pockets of working people.

As the organized labor movement grew in strength, collective bargaining and the “union contract” came to be the answer to labor-management relations on a daily basis, rather than the smooth equilibrium sought by the Human Relations clinicians. As a result, this movement and its practitioners gradually faded into obsolescence. The industrial anthropologists themselves appear not to have realized what was happening until it was too late. Historians of social science have criticized this generation of industrial anthropologists for being too management centric and not connected sufficiently to the working class to foresee the rising tide of unionization and its theoretical consequences. In the meantime, other disciplines such as industrial sociology were developing new theory to explain organizational behavior. The most prominent of these (and still dominant) is *contingency theory*, which explains what is happening in an organization through correlations among formal variables such as organizational structure, technology, and the environment. Studies conducted under this theoretical regime rely upon quantitative data drawn from large surveys of scores or hundreds of organizations and rigorous statistical modeling of survey results. Anthropological methods were sidelined as appropriate mainly for “case studies,” which were suspect as unreliable and non-generalizable to a large population of organizations.

Political and Ethical Issues

The era of academic expansion in the 1960s and early 1970s brought with it serious concerns on campuses regarding the ethical propriety of conducting research under the auspices of powerful sponsors such as governments or corporations. Just as anthropologists in Great Britain reacted negatively when their ties to colonial administrations became a subject

of public criticism, so American anthropologists reacted with distaste when they found out that certain agencies of the U.S. government had attempted to engage anthropologists in research that would become part of counterinsurgency programs in the developing world (for example, Project Camelot). Such revelations, together with a growing antiwar movement in the United States, turned anthropologists away from government service and fostered a suspicion of any powerful sponsor who could use anthropological research in ways that might injure those studied, and also injure anthropology in the process. In addition to government, multinational corporations also were identified as potentially dangerous sponsors. During the 1960s, American multinational corporations were dominant overseas, making inroads into foreign markets and setting up factories in developing countries to reduce the cost of production. Academic anthropologists who were conducting fieldwork in the very places that American business was investing often saw the negative consequences of industrialization, including increasing poverty, new disease threats, and the disintegration of traditional social supports.

One notorious example of such tragedies was the malnutrition and infant death that followed Nestle's introduction of infant formula in the developing world. Often, Third World women could not afford to continue to buy formula in the amounts recommended, nor could they ensure that bottles were sterile or that water to mix the formula was pure. Formula often was heavily diluted with contaminated water, leading to infant diarrhea, malnutrition, and outright starvation. Women who relied on formula instead of breastfeeding could not switch back to the breast, since their milk supply dried up when not used. Nestle was aware of these problems, yet would not withdraw the formula from countries where these problems were manifest, triggering a massive global boycott of Nestle products. Such instances of unethical corporate behavior further alienated anthropologists from industry and caused some to begin labeling any work for industry as "unethical." This label stuck as the American Anthropological Association (AAA) promulgated principles of professional responsibility in 1971 that prohibited any research that could not be freely disseminated to the public. Since industrial research sometimes is proprietary (owned by the company and not publishable without their permission), this code of ethics virtually banned industrial anthropology for the next two decades.

The Fragmentation of Industrial Anthropology in Academe: 1960–1980

After the demise of the Human Relations School, industrial anthropology splintered into several branches, the principal ones being (1) Marxist and neo-Marxist critiques of industry at home and abroad, (2) the ethnography of industrial occupations and professions, and (3) the study of industrialization processes outside the West. Academic anthropologists who did not practice inside corporations, but studied them from the outside, at a distance, were responsible for much of the research and conceptual development during this period.

Marxist Critique of Industry

For some anthropologists, a focus on the negative consequences of industrialization at home and abroad led to a radical critique of the existing industrial order and to a cultural analysis framed in terms of Marxist, neo-Marxist, and post-Marxist theory. Marxist criticism focuses on the mode and relations of production within capitalist economic systems—meaning the way in which economic value and surplus value are produced—and social relations between management and workers.

Marxism holds that capitalist economies are predicated on an immoral and unsustainable exploitation of working people due to the notion of profit, which Marxists view as surplus value, that is, value not required to cover costs, produced by workers but not fully returned to them through wages. Rather, management diverts a portion of the value to enrich itself and to enhance the enterprise. Marx believed that eventually capitalism would collapse because workers would not have sufficient income to absorb all of the goods that they were producing. Rather than waiting for the demise of capitalism, however, Marx advocated that workers rise up against the owners of private enterprise and create a new social order in which the proletariat, through a socialist state, would become the owners of the means of production and all of the economic value produced by it. Neo-Marxism and post-Marxism revise classical Marxist theory by addressing criticisms of classical Marxism. Capitalism has not collapsed, and neo-Marxism explains why this is so and what it means to those who reject capitalist economics.

The Marxist tradition was well suited to the conditions of modern industry after World War II. As collective bargaining gained strength in U.S. industry,

workers and management clearly came to see themselves as separate parties on opposite sides of a struggle for economic gain, much as they were portrayed in Marxist writings. In this environment, anthropologists focused on the ways in which management used its power to increase the productivity of the workforce, and how the workers responded. An especially prominent stream of research in this vein centered upon managerial strategies to reduce workers' skills and their jobs (and thus their wages, numbers, and power) through the process of technological innovations. The union movement had been successful in its efforts to improve wages and working conditions, but in the process unions had ceded control of technological change to management. Before World War II, workers had significant control over the work process, and in some industries they could virtually speed up or slow down the work process at will. Intent on gaining something in exchange for higher wages, American management generally insisted on the use of technology as a "managerial prerogative," meaning that management had the right to implement new technology whenever and however they saw fit. Managers used improvements in production technology and automation to wrest control over the work process away from the workers. Technology was used both to reduce the number of workers needed for a certain level of production and the level of skill workers needed to do their jobs. Machines increasingly did the work that previously had been the province of skilled craftspeople. The process by which workers lost skill over time became known as deskilling, and it was associated with the rise of tedious, repetitive industrial jobs that were demeaning, boring, and alienating. Once management had control of the work process, they could speed up the rate of production in order to increase output without increasing costs, thereby improving profitability. Workers often had little choice but to go along with this program if they wanted to keep their jobs. Many workers lost their jobs anyway as technological advance reduced the need for workers in many industries.

Industrial anthropologists in the Marxist and neo-Marxist traditions carefully documented the strategies workers used to cope with such adverse employment conditions. Anthropologists and qualitative sociologists were among the first to empirically demonstrate the informal working knowledge that people use on the job, both to get the work done and to protect their jobs, skills, and earnings. While management often

assumed that less skilled workers did not have much need for intellect on the job in an age of automation, anthropologists found just the opposite—workers brought their intelligence with them and used it to solve work-related problems that management could not or would not address. Anthropologists conducted this research both in the United States and abroad, delving into numerous industries, including mining, automobile manufacturing, and garment production.

An example of an ethnographic study of industrial work that is Marxist in orientation is provided by Louise Lamphere's study of a New England apparel factory. She begins with a historical description of the development of the apparel industry in the United States, explaining why this particular industry has remained labor intensive, and exploring strategies managers use to maximize profit under conditions of intensive competition. The key managerial approach to ensuring a reasonable profit is maintenance of low wages. The hiring of marginalized workers (women and immigrants) and locating plants in low-wage areas are managerial tactics used to ensure low wages. Lamphere also documents the coping strategies of workers and their union as they struggle against a relentless drive by management to continuously reduce labor costs by "scientific" means, a process that also threatens jobs, wages, and skills.

Marxist and neo-Marxist anthropologists often highlight the special adversity faced by women workers in industry. Gender-related traits are used as reasons to bar women from the most lucrative jobs in industry while restricting them to low status or dead-end jobs that pay poorly. Women also serve as a "reserve army" of the unemployed (a Marxist concept), ready to go to work when needed (for example, during World War II), but then finding themselves removed from their jobs when male workers become available again. At the same time, women workers continue to be responsible for domestic production (housekeeping and child rearing), leading some writers to suggest they are "doubly exploited," as discussed by Carol Holzberg and Maureen Giovannini. Union organizations that take advantage of women's plight when attempting to organize groups of workers simultaneously deny women leadership roles within the organized labor movement, meaning that patriarchal practices are not restricted to the capitalists. Anthropologists have documented some cases in which women have overcome these barriers to participate in and even lead union movements.

Generally, anthropologists do not confine their analyses to what is going on at the shop floor level, but like W. Lloyd Warner, they trace lines of influence from the corporation to the nation-state and even the global economy. The Marxist anthropologist June Nash, for example, studied a multinational petrochemical company, including in her investigation the work of global middle managers with whom she conducted interviews. Nash's work is unusual in that most anthropologists working in the Marxist tradition do not study managers, only workers (a bias that has limited the impact of their analyses). Nash was surprised to find that the managers were just as alienated from their work as others who had no managerial authority. Her investigation is classic in showing how this company is connected to larger economic, political, and social forces. More recently, Nash (has examined the transformation of a mass production company into a technology-intensive defense producer (General Electric), focusing on the effect of these changes on communities and families in the local area (Pittsfield, Massachusetts). This work is important in showing that workers are not passive observers of such changes, but active participants in the change process.

Occupations and Professions

While many Marxist and neo-Marxist anthropologists followed the activities of industrial workers who were largely deskilled, other anthropologists in the decades between 1960 and 1980 focused their attention on members of industrial occupations or professions whose remaining or continuing skills afforded them a place of status and distinction within the work context. Members of occupations or professions often have characteristics that parallel those found in small-scale societies, such as a unique system of meanings, practices, and a language that distinguishes them from other work groups. It was Durkheim who noted that "occupational activity [is] the richest sort of material for a common life." Workers who cooperate together in the same activities and share similar experiences also tend to associate with one another and to form a collective identity.

The common life of occupational members gives rise to a *work culture*, which Herbert Applebaum defined as a system of knowledge, techniques, attitudes, and behaviors appropriate to the performance of work and social interactions in a particular work setting. The features of a given type of work promote

certain patterns of behavior while suppressing others; these patterns are reinforced through selective hiring, formal training, and the informal enculturation of new recruits. Work cultures are not only influential on the job, but off the job as well, with traditions, beliefs, and behavioral standards extending themselves into the worker's general life and life style. Work cultures may be compared along several dimensions, including social relations among workers, time orientation (the extent to which time provides discipline in the work process), authority structures, relations with peers (for example, friendship), language (jargon that fosters a sense of identity), dress and demeanor, gendering (the sex typing of occupations), and roles and statuses.

A work culture lends itself well to application of the classical concept of culture that was prevalent during this period and the ethnographic method, and anthropologists have used ethnography to record the distinctive cultures of many different occupations and professions. For example, Herbert Applebaum studied construction workers, yielding insights on the relationship between the technological requirements of an industry and the nature of its work culture. Applebaum was himself a construction worker, and so he had firsthand knowledge of the craft through many years of participant observation. His ethnographic account of life as a construction worker depicts a world in which highly skilled craftspeople (carpenters, masons, electricians, cement finishers, ironworkers, sheet metal workers, plumbers, and others) often own their own tools, accessories, and trucks and in many cases have been in business for themselves at one time or another. They know their business better than anyone else, and they thus control the work process, with an emphasis on quality. If a general manager places too much emphasis on speed, the worker is likely to walk off the job. Workers gain the respect of others through the quality of their finished work, and highly respected journeymen consider themselves to be the peers of the engineers and other overseers. It is the craftspeople and their supervisors who make most of the decisions at a work site, and since the latter have come from the ranks, they are usually on friendly terms with the workers. Hiring and firing happen on the job site, not in the home office. The personal networks of the supervisors and foremen and forewomen are the sources from which workers are selected, based on past experience. Workers also determine whether or not conditions are safe enough

to commence or continue working. These conditions create a work culture that is highly satisfying to its members, who take pride in work that they control.

Applebaum observed that the construction industry has not been affected by the increasing mechanization of work processes and specialization of tasks that has led to deskilling in many other industries. Rather, construction workers have maintained a high level of skill in which workers control much of the work process and trade unions have great strengths. These features, in turn, are related to the technological requirements of the industry, including the uniqueness of each building and site, the temporary duration of a given project, the variation in work processes due to changes in weather, and the inability to stockpile a product. All of these requirements have prevented the advance of mechanization and have enabled construction workers to maintain their independence and autonomy.

Over the years, anthropologists, sociologists, folklorists, and others working in the qualitative research tradition have contributed much to our knowledge of occupational and professional work cultures. Just as those in occupations, members of professions such as attorneys and accountants tend to form cultural patterns, but professions have relatively greater work autonomy and control compared with occupations. Descriptive studies of occupational and professional cultures in many different industries—accountants, high steel workers, locomotive engineers, longshoremen, medical school students, nightclub strippers, police, professional dance musicians, rodeo workers, social workers, timber loggers, underground miners, waiters, and others—created a foundation of knowledge that contributed to our understanding of cultural phenomena in organizations and set the stage for the concept of organizational or corporate culture during the 1980s.

Industrialization Processes Outside the West

During the 1960s and 1970s, the rise of fieldwork outside the United States was supported by federal agencies such as the National Science Foundation. Such support enabled anthropologists (and members of other disciplines, such as sociologists) to explore the changes taking place in nations that were just beginning to develop an industrial infrastructure. A prominent theory in the social sciences at the time, known as *convergence theory*, predicted that societies around the world would become ever more similar to one another in their ways of life, based on the

technological imperative of industrialization. The convergence hypothesis holds that as national economies shift from traditional agriculture to modern industry (that is, large-scale mass production) as the primary mode of production, the technologies of industrialization would require parallel changes in society and life style across many different nations, including the breakdown of the extended family, migration from rural to urban areas, the congregation of populations in urban centers, the need for increasing discipline of the workforce, mandated formal education for children, and similar occupational structures. Many of these societal changes, it was argued, follow from the fact that industry organizes production on a mass scale at certain concentrated locations (for example, factories, mines, mills), and this tends to attract people who seek a livelihood, as well as smaller supplier firms, which provide products and services both to the primary industry and its workforce. The industrial requirements for literacy and regimented individual and group behavior were the reasons why societies increasingly required formal education for children, with schools also serving as a means to teach discipline to the future workforce.

Some theorists believed that every industrializing society, regardless of its history and culture, must follow the same evolutionary pathway as that taken by Western societies with respect to the development of its economic and sociocultural systems. (The one great exception to this was the Soviet Union, but it ended up supporting the convergence hypothesis when socialism collapsed at the end of the 1980s and early 1990s.) An ethnocentric implication of this assumption is that non-Western nations will be able to industrialize only to the extent that they emulate Western societies in their institutional structures, values, and behavioral patterns. From this point of view, traditional indigenous customs (kinship obligations, spiritual orientation) are thought to impede the transition to industrialization.

Anthropological studies of societies in the midst of industrial transitions provided a critique of convergence theory, based on historical specificity and cultural relativism. A thorough discussion of this literature is provided in Carol Holzberg and Maureen Giovannini's 1981 review, mentioned earlier. Anthropologists provided a more complex and nuanced view of preindustrial societies, demonstrating that various aspects of their traditional social structures and life-ways may complement industry. For example, Clifford

Geertz demonstrated that indigenous entrepreneurs can play a crucial role in economic development; Max Gluckman showed that dual economies, in which indigenous people straddle two economic worlds (the village and the urban center), can coexist effectively with industry and are necessary to the fulfillment of human needs; and June Nash's work explored the role of traditional cultural forms such as rituals in easing the transition to industrial life. Other contributions of anthropologists expanded our knowledge of industrialization processes in several related areas, including qualitative changes that take place in preexisting institutions, the emergence of new institutional forms, the role of ethnicity and race as factors in structuring social relations within and beyond the industrial workplace, the role of women in industrialization processes, and the relative costs and benefits of the shift to industrial production. The knowledge base accumulated through anthropological studies in the developing world also supported radical critiques of mainstream models of economic development models, including dependency theory, which holds that both industrial development (as seen in the West) and underdevelopment (witnessed in the so-called Third World) are interdependent parts of a single global system of modern capitalist production.

Through fieldwork outside the United States, anthropologists made significant contributions to diffusion theory, a multidisciplinary approach to understanding the adoption of innovations (that is, products or technologies new within their context) within populations, nations, and cultures. Anthropologists contributed to the expansion and increasing sophistication of diffusion theory, which is one of the principal theoretical frameworks underpinning the modern marketing discipline. Some of the most significant discoveries made by anthropologists have focused on the aftermath of new product diffusion into geographic regions where specific technology-based commodities previously were unknown. Often, unintended (and negative) consequences have been the result. For example, Pertti Pelto studied the introduction of snowmobiles to reindeer herders in Lapland. Families of herders that were able to afford to purchase and maintain a snowmobile also were able to increase their herds of reindeer as a result, since more reindeer could be herded with a snowmobile versus skis, which had been used traditionally. At the same time, however, the snowmobile itself frightened the reindeer, and this new stressor tended to deplete the herds overall. Consequently, a de-

facto class system of haves and have-nots emerged in a society that traditionally had been more egalitarian. Such studies were the forerunners of the modern emphasis on consumers and consumption processes.

In addition to the aforementioned literature, there are three other anthropologists whose work deserves special mention. Each studied business organizations in quite distinctive ways that do not fit into any of the categories described above and/or later applied theoretical constructs to business problems, and each was precocious or prescient in his vision of future developments in global economic and social systems. The work of these three scholars is relevant to the relationship of business and anthropology in the current era.

Thomas Rohlen wrote a classic ethnography focusing on a medium-size Japanese bank, explaining the cultural logic of Japanese organizational structures and practices just as these were becoming acutely interesting to business scholars and practitioners in the West. Rohlen's approach of entering the bank as a trainee, and participating in the full training program with a cohort of new recruits, provides numerous insights into Japanese management methods that would not be available otherwise. For example, he describes a training exercise called Roto, in which recruits are required to leave the training academy and not return until they have persuaded a stranger to allow them to perform some household chore free of charge, a very difficult task in a nation where favors from strangers create onerous obligations. Recruits who finally found someone willing to allow them to discharge this task were so grateful that they did any job gladly, no matter how dreadful (for example, cleaning an outhouse). Managers used this exercise to instill in trainees the notion that the nature of a task should not determine one's attitude toward it; rather, one's attitude should determine how a task is perceived. Such normative approaches to employee control are becoming more common in Western firms that have adopted the practice of consciously fashioning "corporate culture" as a means to instill values and norms that generate their own self-policing discipline.

Edward Hall, who is said to be the most frequently cited anthropologist among business authors, developed a novel theory of culture as a network of biologically based "primary message systems" that humans extend and enhance through social communication. Hall's interests ranged far beyond language and into the nonverbal and contextual aspects of communication. Much of his work was aimed at explicating the

role of space and time as contextual dimensions of communication; through this work he invented a number of constructs that have become standards in the world of international business, including the concepts of monochronic and polychronic time (time experienced as linear and segmented versus time experienced as cyclical and nonsegmented), and high-context and low-context cultures (cultures in which most of the informational content of a message is embedded in contextual variables versus cultures in which most of the information is explicit and encoded in language). These constructs were presented in *Beyond Culture* and *The Dance of Life*. Hall and his partner Mildred Reed Hall wrote a series of books applying Hall's theoretical work on intercultural communication to the field of international business, especially directed toward businesspeople in the United States, France, Germany, and Japan. The Halls' interests are in helping businesspeople to translate and interpret communication processes and events across cultural boundaries and to prevent cross-cultural misunderstandings. Hall's books have been translated into 16 languages, his work often is cited in business textbooks, and his ideas have been incorporated into the international business lexicon.

In the late 1970s, Alvin Wolfe developed the idea of a new level of sociocultural integration above the level of the nation-state. In his 1960s study of the African mineral extraction industry, Wolfe discovered a complex, global-level network of wealthy individuals, families, corporations, and states operating together to ensure that raw materials for the world's industrial plants are indeed produced. Nationality was not an issue; the supranational network operated regardless or in spite of the interests of individual nation-states or other actors. Indeed, the "supranational integration of the economic sphere," as Wolfe put it, tended to supersede political, international ties and cleavages. Wolfe postulated that the nation-state was not the highest or most complex level of sociocultural integration, as had been proposed by previous theorists (for example, Marshall Sahlins and Elman Service). Rather, supranational networks seemed capable of transcending individual nation-states in political and economic maneuvering. These observations still appear fresh and relevant to theorizing on globalization processes.

The themes developed by these anthropologists, particularly ethnographic exploration of corporate entities outside the United States, and communication

within cross-cultural contexts, have continued to resonate in the millennial era that is described next. The next era is distinguished, however, by the reemergence of anthropological practice in the business world, that is, the application of anthropological knowledge to business-related problems by practitioners, rather than strictly academic interest in industry, which was the case from 1960 to 1980 (with a few exceptions, such as Edward Hall). The reasons for this important change, and its implications, are examined below.

Part II: The Contemporary Landscape

Globalization: 1980 to Present

The last two decades of the 20th century witnessed a transformation of capitalist economies, marked by increasing global flows of goods and services, worldwide deregulation, and the diffusion of converging information and telecommunications technologies; together, this is sometimes known as globalization. These factors have acted in concert with other important socioeconomic trends, including rising per capita incomes in industrialized and newly industrializing countries and shifts in the demographic composition of industrialized nations, to alter the competitive landscape for American corporations. New markets were opening around the world, and new competitors were rising in nearly every industry. American firms found that they could not maintain the economic hegemony they had enjoyed during the brief period following World War II and up to the 1960s and 1970s.

The term *Fordism* refers to structures and ideologies generated by mass production as an economic system, whereby the producer (à la Henry Ford) determined nearly everything about the products that were made and consumers had no choice but to buy what was put in front of them. In what became known as the "post-Fordist" world of the late 20th century, the producer was no longer king. Instead, consumers were recognized as the crucial actors under the rules of the "new economy," in which services often generated more revenue and employment than goods, and the knowledge content of a corporate asset often was more valuable than its tangible matter.

New and emerging markets in Asia, Eastern Europe, and certain parts of the developing world became lucrative targets for corporations, as consumers in these regions gained sufficient incomes to support purchases of services and goods offered by

multinational and transnational firms. Saturated consumer markets in the West fragmented into specialized niches, requiring companies to learn much more about the preferences of demographic groups that they previously had lumped together or simply taken for granted. Gradually, it dawned on American firms that they no longer understood (if, indeed, they ever did) their customers, whether these were in their own country or abroad. To understand and reach these consumers both at home and abroad, the firms themselves had to change their policies and practices, sometimes in fundamental ways. Yet the metamorphosis required to turn Western corporations away from the 20th century's producer domination, with its self-focused and functionalist perspective, and move them toward a more globally competitive, consumer-centric view of the world is no small matter. Who better to join this sort of millennial quest for renewal than an other-focused discipline such as anthropology?

Economic and technological turbulence in business environments opened new opportunities for relationships between anthropology and business in the post-Fordist era. The anthropological incentive to respond has been influenced by three developments.

First, there has been a significant gap between the production of new PhDs in anthropology and the rate of vacancies in academic employment openings since the late 1970s. In 1984, for the first time since the survey of new PhDs was conducted by the American Anthropological Association (AAA), nonacademic employment for new PhDs exceeded academic employment. At first, only a small trickle of these graduates moved into the private sector, an estimated 100 full-time business practitioners around 1990, but as word of their achievements grew, the trickle became a steady stream. Until the AAA conducts another survey, we must guess at the percentage of new PhDs entering business employment today.

Second, academic institutions have faced mounting pressure to seek external funding for research from federal agencies (to offset both direct and indirect costs), and these agencies (for example, the National Science Foundation) have been directing a greater share of grant monies toward strategic, interdisciplinary issues and problems (those that are of greatest concern to society versus individual disciplines). Such problems may involve private sector actors such as corporations (for example, knowledge and distributed intelligence, micromarkets in developing nations,

disaster prevention and recovery). Working with corporations in such contexts no longer seems beyond the pale of appropriate anthropological involvement. Third, in response to its growing practitioner ranks, the AAA revised its principles of professional responsibility during this era, removing language that essentially forbade research that could not be publicly disseminated. The AAA also founded the National Association for the Practice of Anthropology (NAPA) in 1984, and several of this organization's officers have been full-time business practitioners or academic consultants. NAPA's first monograph encouraged relationships between business and anthropology (Marietta Baba, *Business and Industrial Anthropology: An Overview*). The stage was set for American anthropology's second major foray into the world of business practice.

Three interdisciplinary domains in which anthropologists have explored new opportunities through business-related research and practice include organizational behavior and management; ethnographically informed design of products, services, and systems; and consumer behavior and marketing. Each domain reflects an interdisciplinary field. Many of the anthropologists join established groups of colleagues from other disciplines, but some authors are "hybrids," remaining in anthropology and also joining other fields.

Each of the three domains is fairly well established, with some representation in academic departments of various kinds—including anthropology, business, and interdisciplinary research centers and institutes—a tradition in the scholarly literature, and an active community of practice, including positions in major corporate research laboratories and institutes (such as GM, IBM, Intel, Microsoft, Motorola, Xerox), business functions (for example, marketing) and consulting firms (at one point, Sapient employed more than 20 PhD anthropologists). Scholar-practitioners are not unusual, because corporations often grant access to scholars in exchange for some service such as strategic research. Each of the three domains operates at both national/regional and at international/global levels. Some scholars and practitioners specialize in the former, some in the latter, while others are competent at both levels.

Organizational Behavior and Management

Continuing the tradition established by W. Lloyd Warner and his colleagues in the 1930s, this line of

inquiry grows directly out of the producer orientation with its focus on the *interior* of the firm—describing and explaining the behaviors of people and groups inside the corporation and possibly trying to effect modifications in these behaviors. Anthropological interest in organizations continues to be inspired by a conception of formal organization as “society writ small,” thus constituting a site for the production and reproduction of distinctive localized systems of meaning and practice (culture). Warner’s encompassing vision of inquiry at multiple levels of analysis (for example, industry, enterprise, work group), as well as interactions among these levels, also is sustained. The substantive focus of the research has changed considerably, however. While Warner and company were interested in treating the problem of labor-management strife with functionalist theory, the post-Fordist anthropologists have other agendas.

Anthropologists studying businesses today are part of a larger universe that examines organizational phenomenon in general. Yet apart from the master concept of culture (and that, of course, is in disarray), the private sector literature does not reflect a coherent theoretical agenda or even a discourse organized around competing schools of thought. Rather, the literature may be clustered into three general areas that reflect enduring anthropological interests, as well as historical developments in the larger frame of post-Fordist capitalism: organizational cultures in technology-based firms, boundary-crossing in a global context, and regional perspectives on work and corporations. These three areas are interrelated, and distinctions between particular works assigned to each may be somewhat arbitrary.

In the review below, further developments in the anthropology of work and occupations, neo- and post-Marxism, and/or industrialization outside the United States that do not involve empirical research or practice *inside* a business organization (that is, with access to the business) are *not* considered (for example, research on academic-based scientists, engineers, or physicians; research on unions), unless such work has fairly clear implications for corporations or industry as a whole.

Organizational Cultures in Technology-Based Firms

In the 1980s, the business community was introduced to the concept of “corporate culture” via the consulting industry, yet there was considerable

oversimplification of the construct as it diffused via this mechanism. Academic anthropologists were under pressure to bring more enlightened views to the management literature, but many were skeptical of the corporate agenda of “culture change.” Within this context, a small number of anthropologists were able to gain access to corporations for basic research purposes via networks based at corporate research laboratories and research universities. The first wave of anthropologists to examine organizational behavior at this time were intent on demonstrating the subtlety and complexity of anthropological conceptions of cultural phenomenon in organizations and on introducing the “native’s point of view” as a valid and powerful source of empirical data. This latter goal was meant to distinguish anthropological work from that of other academic disciplines that also claimed authority in the area of corporate culture (for example, psychology), yet sometimes represented culture as a monolithic phenomenon. The anthropologists also were influenced by previous literature on occupational and professional cultures. Their earliest efforts conceptualized corporations as complex configurations of interacting technical and managerial subcultures.

For example, Kathleen Gregory, in an oft-cited paper in the *Administrative Science Quarterly*, employed ethnoscience ethnography to uncover “native view paradigms,” or ways that technical professionals inside Silicon Valley computer technology firms understand their social worlds. Gregory explained the use of ethnoscience methods to elicit native taxonomies or classification schemes that in turn signaled the existence of occupational boundaries within the firms. These taxonomies could be used to gain a deeper understanding of occupational identities and experiences that were most important to individuals affiliated with particular identities. Gregory was one of the first to identify “the project” as a critical activity for many computer professionals; this later proved to be a key insight for decoding the cultural logic and social practices of hackers (see below).

Later in the 1980s, Frank Dubinkas (who at one point in his career wrote cases for the Harvard Business School) studied a biotechnology start-up firm and deconstructed the conflict between executives and PhD molecular biologists, showing how differences in the temporal patterning of their activities created serious conflicts around the goals of research, how to make choices among projects, whether research direction should change, and which projects

should be dropped. Dubinskas found that managers and biologists possess fundamentally different images of the self that are related to their notions of developmental time, giving rise to stereotypical images of the other (for example, mature versus immature) and explaining why the two subcultures frequently conflicted in ways that thwarted the company's performance.

It was also during the late 1980s that Elizabeth Briody and Marietta Baba investigated General Motors's difficulty repatriating managers from overseas duty. Drawing on cultural materialism, they described two antithetical subcultures within the corporation, one pro-international and one anti-international, each dominating different organizational units within GM, based upon historical and economic factors. Depending on a repatriating manager's destination upon return, his (all were male) knowledge pertaining to overseas environments would be valued more or less highly by one of these subcultures, respectively, leading to significant differences in postrepatriation job assignments and job satisfaction. This discovery was enabled by statistically testing the validity of several different "native hypotheses" against a database of information about expatriate assignments and repatriation outcomes and modifying these hypotheses systematically until one hybrid model was found that explained most of the variance in the data set.

Around this same time, Julian Orr made significant contributions to our understanding of culturally constituted meanings and socially organized work practices among groups of technical workers who are not considered "professional" or "managerial." Orr was based at Xerox's Palo Alto Research Center (PARC), and while there he became known for his research on Xerox repair technicians. Once a service technician himself, Orr was interested in why service technicians were able to repair technologically advanced copiers in about 95% of all cases, usually without much or any resort to the company's expert help system, even though they had little if any knowledge of the physics or engineering underlying the machines. After following pairs of technicians for about 3 weeks, Orr discovered that they solved difficult machine repair problems by telling each other stories of past machine failures and finding in their stories diagnostic and procedural clues about how to proceed with the present case. Significantly, these stories were not only ones that the technicians

themselves had experienced but ones they had learned from their colleagues through war story swap meets that took place whenever technicians gathered informally (for example, at training sessions). The company had no idea that this knowledge resource even existed. Xerox modified its practices based on Orr's findings by equipping all technicians with mobile radio phones so that they could communicate with one other and with roving "tiger teams" more readily. Orr's work also was innovative in conceptualizing the technicians' work practices as a triangular relationship between the technician, the customer, and the machine, such that the customers became a source of knowledge about machine misbehavior and technicians became a source of knowledge about customers. Technicians, Orr discovered, often needed to repair a customer relationship, as well as a machine. This research demonstrated the economic value of tacit knowledge possessed by employees who previously had not been considered "knowledge workers."

The entire corpus of research at Xerox PARC (to be discussed in greater depth later) was highly influential in placing anthropology at the center of a movement within American corporations known as "knowledge management." As demonstrated in Orr's studies, many different types of work groups develop tacit and/or embodied systems of local knowledge that are embedded within their work practices and represent intangible assets that may hold great value for the corporation. Knowledge management is a set of principles, practices, methods, and tools that enables firms to identify such assets and convert them to more explicit form so that they can be further developed and leveraged for the firm's benefit (for example, mobile radio phones). At Xerox PARC, and later at a spin-off organization called the Institute for Research on Learning (IRL), many of the core constructs associated with the knowledge management movement first were conceptualized. An especially important contribution emerged from the ethnographic research of anthropologist Jean Lave, who was involved in the early development of IRL, an institution founded in the late 1980s with a seed grant from the Xerox Foundation and dedicated to understanding the social context of learning. Lave's research on Liberian tailors revealed that learning is situated in a community of practice—an occupational network (such as Orr's repair technicians) that shares a set of work activities and a common identity. Lave found that learning takes place within a community of practice

through “legitimate peripheral participation,” a process by which apprentices come to master increasingly more difficult and complex tasks as they gradually adopt the identity of the group. Lave collaborated with Etienne Wenger to adapt this concept for learning in various corporate work settings and to write a popular book on the subject. These developments coincided roughly with an explosion of interest in the emerging “knowledge economy” and (a bit later) with the Japanese management scholar Ikujiro Nonaka’s research identifying tacit-explicit knowledge conversion as a new source of innovation for corporations. Communities of practice (or “CoPs,” as they became known) were highlighted as one of the key loci that embed tacit knowledge, and this concept entered the business lexicon as the knowledge management movement diffused around the globe.

While the studies described maintain continuity with the previous era in their focus on occupational “subcultures” or communities, the very notion of “culture” and even “subculture” had become increasingly problematic by the 1990s. Anthropologists seemed more interested in the blurring and crossing of boundaries than in descriptions of what they might demarcate. Interestingly, American corporations also were working hard on the project of taking down functional boundaries that had been built up over a century of Fordist practice; walls dividing functional “silos” inside corporations were found to increase product development time (and thus product cost) and also were responsible for defects in product quality (for example, engineers didn’t cooperate with manufacturing). The great transformation from the vertical to the horizontal corporation was under way, with a huge investment in information technology to force information and work to flow more efficiently *across* basic processes (for example, product development) instead of inefficiently up and down chains of command, as it had in the Fordist period.

Thus, rather than focusing on occupational subcultures within specific firms *per se*, anthropological research inside corporations after the early 1990s tended to reflect efforts by corporations, communities, or individuals to cross boundaries of various kinds, whether functional, national, or otherwise (as described here and in the next section). As it turned out, however, during the 1990s, the Fordist structures proved difficult to dislodge. For example, in the mid 1990s, Marietta Baba investigated a major corporation’s effort to streamline its product development

process by introducing a single “strategic” technology system that would replace hundreds of different systems then in operation across dozens of different technical groups. She mapped the cultural ecology of these groups, defining the ecological niches formed by their location in a two-dimensional product development environment. Baba was able to explain variance (for example, resistance, adoption, reinvention) in these work groups’ responses to the corporation’s strategy as “normal” extensions of adaptive patterns they had developed within the niches in which they were situated. Following this work, Baba separately explained why work groups resist electronic connections (for example, CAD/CAM, electronic data interchange) with other groups when there are preexisting relationships of distrust.

In the meantime, as the initial excitement surrounding the concept of corporate culture abated, American management departments gradually adjusted to its existence, generally in one of three ways. For some, “culture” became a variable or a set of variables in contingency models of the corporation, a system of constructs to be defined operationally and measured in surveys. For others who defined culture in ways that defied such modeling (for example, the interpretivist school), culture became a specialty niche or boutique practice in a handful of select business schools. Important contributions were made by management scholars working in both of these traditions; for example, Dan Denison modeled “cultural factors” that correlate with high performance in organizations; Joanne Martin and colleagues parsed the management literature on corporate culture into three streams (integration, differentiation, and fragmentation), corresponding roughly with developments in organizational theory; Gideon Kunda’s ethnography of a high technology firm revealed the human cost of normative control in a high commitment culture (this is only a tiny sampling of many rich offerings that helped to establish the legitimacy of “corporate or organizational culture” as a field of study). More likely, however, corporate culture was simply dispensed with or ignored by faculty in management departments as too complex or difficult to change. Publishing cultural research conducted from a non-modeling perspective in top management journals was problematic, unless accompanied by significant additional quantitative analysis.

Anthropology departments for the most part were not heavily influenced by the developments described

above, although faculty members in a few departments and some practitioners expressed interest in organizational research. Such interests were incorporated only very gradually as “normal science” in anthropology via several mechanisms: individual faculty interest, course development, and funded research; student interest and the production of masters’ theses and dissertations focused on corporations; and the placement of doctoral graduates in corporations where they maintained identities as anthropologists and began to produce literature on their own. The academic departments that have become seats of graduate-level teaching and/or research in the anthropology of private sector organizations included the College of William and Mary, Michigan State University, Northwestern University, Oregon State University, the University of North Texas, and Wayne State University (where the first undergraduate course on business anthropology was taught in 1984–1985 by Marietta Baba). A number of other universities have permitted doctoral students to conduct dissertation research in corporations or to focus on business-related phenomenon (for example, Chicago, Temple, Yale). As a result, the literature began to reflect more enduring and immediate anthropological interests.

Boundary Crossing in a Global Context

In the 1990s, research tended to focus more on cross-cultural phenomena in corporate settings, including studies of transplanted firms, firms based outside the United States, and firms whose globally distributed employees work virtually. The *Anthropology of Work Review* dedicated a special issue to these subjects. Over time, this stream of research has followed the currents of social science literature generally, shifting its attention to the construction of self, identity, and community in a world where traditional frames of reference are dissolving and new patterns emerge to startle and intrigue. In each of the works described below, anthropologists discover individuals and communities whose selves and lives are transformed through work in a multinational or transnational business, suggesting that such organizations are becoming one of the most powerful forces giving meaning and direction to human experience in postmodern society.

Tomoko Hamada, who is known for her writing on Japanese companies in the United States, describes a case of alleged (and ambiguous) sexual harassment within a Japanese-owned plant in the United States.

In this case study, an American female factory worker first aligns with her Japanese bosses in preventing formation of a union at the plant, for which she is rewarded with promotion to supervisory status. The woman is put off, however, by Japanese methods for training junior members of the management team that she finds insulting, and she also is shunned by her former American peers who believe she has turned on them. In the end, the woman files a sexual harassment lawsuit against the Japanese plant manager, which is settled out of court, forcing the manager to return to Japan in humiliation. Hamada tells the story from multiple points of view over time, showing how different parties’ perspectives form and evolve as they interact with one another, shifting individuals’ self-representations in the process. The zone of cultural interaction is rife with paradox and inconsistency; new boundaries are constantly formed and re-formed along with new political alliances. Cultural identities are in flux and are created in situ; there are few static variables or invisible cultural assumptions that can be counted upon to create conflict (although American individualism seems to be a powerful theme in the case). People create multiple self-identities in the process of engagement with intra- and intersubjective dialogues in this fresh postmodern tale of cross-cultural encounter and betrayal in an American factory.

Douglas Caulkins sleuths the “unexpected” entrepreneurs found in the deindustrialized region of Wales and Northeast England, where government policies have encouraged the development of indigenous, high-tech start-up firms as a means of internal job creation. Generally speaking, high-tech entrepreneurs are not attracted to such “rust belt” areas, but surprisingly, a group of them have launched new firms in the deindustrialized peripheries of the United Kingdom outside Southeast England. The entrepreneurs were “unexpected” in a double sense—they neither intended to start their own firms nor did the region initially appear to possess the cultural or economic infrastructure to support them. Caulkins discovered that many of the entrepreneurs were highly trained engineers who only started their own firms after they encountered career obstacles at large corporations. He identified four distinct types of career paths that resulted in different types of social networks, each of which enabled the entrepreneurs in question to form a specific kind of successful start-up. Caulkins examines the cultural ecology of these

start-ups and their prospects for growth on the basis of the entrepreneurs' self-defined trajectories.

Carla Freeman describes the pink-collar female informatics workers of Barbados who have fashioned a quasiprofessional identity that distinguishes them from their blue-collar sisters toiling in nearby factories. A professional dress and demeanor complements the "cool" look and feel of their office environments while reflecting and reinforcing the disciplined habitus required by the informatics industry. Significantly, the production of their informatics work cannot be disentangled from the women's consumption practices; many of the women engage in regular global shopping trips to purchase materials that will be transformed into affordable articles of clothing to be purchased by their coworkers. The informal economy of trade in clothes supplements the low wages earned in the formal economy, while the low-priced fashions allow the women to stock their closets with an array of stylish outfits. The informal economy thus supports the formal one, and it appears that the latter could not be sustained without the former. Production and consumption processes also mutually reinforce one another while being enmeshed in global flows of goods, services, capital, and people. Freeman's engaging analysis is edged with criticism as she interrogates the relationship between the workers' clothing preferences and managerial intentions to discipline and control their female subordinates.

At the turn of the century, anthropologists also have been at the forefront of inquiries on distributed work, a hallmark of the global economy. Anthropologist Bonnie Nardi is known for her research on "information ecologies," a concept that situates mediated communication technologies within their contexts of use. Nardi's research has shown that human face-to-face communication has advantages that cannot be replicated or substituted by any of today's communications media (supporting touch, shared activities, attention management, and network development) but also has costs (disruption, expense, effort) that may not always be sustainable over the long term. The social linkages that are built and sustained by face-to-face communication are a necessary prerequisite for effective distributed work. Therefore, a firm must understand the ecological context of mediated communication so that effective choices can be made regarding the types of technologies selected and the appropriate sequencing of face-to-face and mediated communication events.

Marietta Baba, Julia Gluesing and their colleagues also study distributed work and provide an ethnographic account of an American-based global firm's attempt to transfer a marketing methodology to a French retailing company via a global virtual team. Internal conflict breaks out within the team regarding the cultural appropriateness (phronesis) of transferring certain aspects of the methodology, and this nearly brings about the team's destruction. Ironically, it was only when team members' interests shifted from factional conflict to more individualized self-interest that they were able to cooperate and collaborate. The resulting move toward virtual community was enabled by the corporation's global incentive system and strategy, which threatened to undo the careers of squabbling nationalists. This study challenged conventional management theory by demonstrating the mutable character of key variables over time (for example, interdependence), showing that agents' behavior causes variables to fluctuate, meaning that a variable cannot be set at one point and assumed to remain stable, as is the case in many theoretical models. The ethnographic account also revealed that the geographical distribution patterns of people and resources on the ground are relevant to the processes of distributed cognition and to the ways in which leaders exploit historical, cultural, and linguistic resources to further their own agendas.

The literature described above marches to the beat of many drummers. There are multiple audiences, with different research problems, goals, and languages, including cultural anthropology; science, technology, and society studies; the anthropology of work; organizational behavior; applied anthropology; and others. The result is a fragmented literature that is difficult to access and somewhat awkward to summarize or synthesize. Yet, understanding may be enhanced through the juxtaposition of diverse intellectual currents, and one approach that may provide a pathway toward such articulation is the recent (or renewed) tendency of anthropologists to study geographic regions in the United States that are characterized by distinctive industrial, corporate, and/or work behavior and then to join forces or at least read and reflect upon each other's work and compare what they have discovered and learned from each other. This stream of organizational behavior literature is described next.

Regional Perspectives on Work and Corporations

Another Warner legacy was the regional contextualization of industrial phenomena (for example, the

Yankee City studies). Anthropologists have continued this tradition but have modernized it by reflecting new themes of global integration (for example, via technology or immigration) that find expression in regional economic patterns. Of special interest are geographic areas that generate distinctive economic forms, such as Silicon Valley with its high-tech startups. Some anthropologists have invested a decade or more in their efforts to describe and explain such regions and the companies they create. Significantly, when individual anthropologists or groups collaborate in studying the same region, or compare their observations across regions, more significant discoveries are possible.

A prime example of collaboration in regional studies is the ongoing research focused on Silicon Valley. Anthropologists began studying Silicon Valley in the early 1980s with Kathleen Gregory's dissertation, titled *Signing Up: The Culture and Careers of Silicon Valley Computer People*. Eleanor Wynn, the first anthropology intern to study at Xerox Palo Alto Research Center, helped Gregory gain access to Silicon Valley firms for this landmark study. It was one of the first to depict in detail the social structures, processes, practices, and systems of meaning underlying the remarkable capacity of this unique region to generate large numbers of technology-based start-up firms, despite their high risk of failure. In her pioneering research, Gregory explained the importance of computer professionals' commitment to new technology "projects" rather than firms per se; it was this connection to a project that enabled people to move around from firm to firm, an essential element of the dynamism of the region. Gregory did not completely unpack the project; that was not her focus. Further insights into the substantive nature of these projects had to wait until later, and they turned out to be crucial.

Nearly 20 years after Gregory's study, in a special issue of the *Anthropology of Work Review*, several anthropologists took up the thesis that high-tech work, based in firms such as those found in Silicon Valley, may be framed in moral terms that relate to the social benefits technology promises to deliver to its producers and consumers. Based on long-term ethnographic research in the Silicon Valley region and on studies of specific firms such as Apple, a number of anthropologists have discovered that the language and culture of high-tech work is permeated with a sense of "doing good," a social construction with roots that connect Silicon Valley to notions of technical

"progress" grounded in the Industrial Revolution. Authors contributing to the special issue illustrate various aspects of this construction. For example, Chuck Darrah's informants engage in emotion-laden descriptions of Silicon Valley as a future-oriented, progressive geographical locus whose power derives from the innovative potential that may be realized in cultural diversity. Or, maybe not—residents are just as likely to disagree with this premise and argue with each other over it. Darrah postulates that the zealotry bred by life in the Valley may be a reaction to the invisibility of most people's work (for example, making microprocessors for automobiles), the fragility of living on an earthquake fault at the edge of the Pacific Ocean, and/or the banality of spending much of one's day dealing with the logistical hassles of moving people around a region that is overcrowded with other people, highways, and automobiles.

In another piece appearing in the same issue, E. Gabriella Coleman writes about the practices of *hackers* (in this context, individuals who are experts and insiders in the occupational culture of computer programming), affiliated with Linux—many of whom presumably live in Silicon Valley and whose products are used by Silicon Valley companies. Linux is a firm whose productive output depends primarily upon the voluntary contributions of thousands of software developers working together over the Internet to generate technically excellent and economically competitive software that is used by major global corporations such as IBM. Linux-based products now are competing with Microsoft on the open market in a David versus Goliath-style drama that has thousands of computer industry watchers on the edge of their seats. Linux grew out of the open source code movement. Open source code makes the core computer programming of software products freely available over the Internet, as guaranteed by an ingenious legal instrument called the "copyleft." No one can copyright code that has been copylefted, so it remains free. Coleman compares the hackers' practices of production and moral notions of freedom to those of medieval guilds; both developed methods that are technical and aesthetic in nature. The hackers are motivated to high levels of performance because of their love of programming—for them it is a means of artistic expression and a means of technological innovation. Due to the copyleft and the Internet over which code is shared, there has been an explosion of free software projects, each of which is like a

miniguild. The *projects* turn out to be the central organizing mechanism through which the miniguilds are embodied—each has its own source code, technical documentation, organizational structure, technical emphasis, computer language preference, and style of development. Newcomers to a project must prove themselves through an apprenticeship in which they demonstrate their commitment and skill through collaborative learning. Coleman points out that with Linux, there is no commodification of software, yet the products still circulate in the market. Further, the technology does not set the moral or social aspects of work; these are shaped by the community of practice (that is, the hackers). She also argues that the hackers' high performance proves that intellectual property protection is not a requirement for the creation of cutting-edge technical products. The hackers are not in a crusade against capitalism, but neither are they reifying it. Rather, their work appears to represent a "qualified means" (perhaps an alternative) by which participation in the market can best be carried out.

The Silicon Valley work suggests that *some* organizations (for example, Linux) have found (or individuals within them have found) a means by which to enable or enhance a sense of moral purpose or mission in the experience of work, and that these organizations enjoy an increased level of effort, productivity, and/or innovation gains resulting from the motivation that derives from such moral enhancement. The moral sources of economic performance may be realizing an additional boost under late capitalism as a result of a process through which work becomes sacralized, much as some consumption experiences have experienced sacralization during the post-Fordist era (see discussion in next section on consumer behavior). Sacralization does not mean that work is somehow religious or spiritual, but rather that one's work and/or work products come to represent something that transcends ordinary experience, that they (by some process) have become more powerful and extraordinary than that which is merely the banal self of everyday life. If some individuals or groups regularly experience their work or work products in this way, there could be a payoff from which some corporations or other organizations may derive benefit.

On the darker side of regional studies, long-term investigations of older regions depict work that has become, perhaps, increasingly profane. Based on 10 years of research in the region, Donald Stull and

Michael Broadway describe the modern meat and poultry industry as it has developed within the American central plains. The study takes an unflinching look at the process of meat production today, comparing it with the slaughterhouse experience described by Upton Sinclair 70 years ago. Many things remain unchanged, especially the rigidly organized, labor-intensive factories that turn cattle and chickens into human food on "disassembly lines." This is ugly, grueling, dangerous work, where getting product out the door counts more than workers' physical safety. Language and cultural differences between largely Anglo managers and primarily Asian and Mexican hourly workers mean that there are two different workforces in a plant, with very different views about the way in which a plant's ideals of safety, productivity, quality, and loyalty should be put into practice. These differences exacerbate the plants' productivity and safety problems.

Building on the corpus of Stull's work over much of the 1990s, Mark Grey takes a closer look at the experience of Mexican immigrants inside this same industry and region. Despite its low wages and poor working conditions, the meatpacking industry attracts significant numbers of immigrant workers. It also experiences some of the highest turnover rates in American industry, sometimes surpassing 120% per year. Turnover contributes to high accident rates and poor productivity, but management is not fully motivated to invest in strategies that would reduce turnover significantly, due to the steady flow of low-wage migrants from Mexico. Turnover is, in part, a reaction to poor working conditions and labor relations in the plant. The management does not allow individual workers to personally care for or improve the condition of their cutting tools, thus contributing to physical strain, injury, and accidents. These physical woes, in turn, contribute to turnover. Grey discovered, however, that turnover also is a strategy used by migrants for their own purposes. They work until they have saved a nest egg, then travel back to Mexico with these monies, where they reunite with their families, rest up from the hard work in the plants, and then travel north again, when they are sure to be rehired. This is a strategy that enables the immigrants to earn and save far more money than they would in Mexico while not being forced to remain completely trapped in low-wage, dead-end jobs. Anglo workers in the plant resent the immigrants' ability to escape managerial control and create a new kind of "seasonal work" for themselves.

While the Silicon Valley studies and that of Donald Stull are longitudinal inquiries that represent basic research funded from various sources over many years, the work of Mark Grey is more strategic in nature, focused on an underlying problem, and undertaken at the request of Hog Pride's management. It is important to note that strategic research may combine both "basic" and "applied" goals; it pushes the envelope of knowledge but also focuses on pressing problems or issues. Sometimes the corporation offers the invitation to begin a strategic study, and sometimes the anthropologist requests entry, with funding from federal agencies or an academic institution. In many strategic studies, anthropologists gain access to corporate field sites in exchange for providing recommendations to address the problem under investigation; most often, these recommendations are not published but are considered proprietary. University-based anthropologists retain the right to publish research results, although the companies usually have the right to review and comment on the publication draft, so that proprietary information is not released to the public.

As Grey himself explains, he had an opportunity to interview and observe the managers during his sojourn at the plant, and he discovered to his surprise that they were disinterested in making changes that would enable maximum reductions in worker turnover, although he still made recommendations along these lines. The managers did not want to invest the funds required to reduce turnover below 60% annually, since this would cut into profit margins; they would prefer to reduce turnover moderately and continue to rely on a steady stream of low-wage immigrants to "make their numbers."

Grey's research and that of others suggest that anthropologists are, at last, "studying up" (conducting research on individuals and groups whose social status and/or power in the context of the research site may be above that of the anthropologist). Grey's study raises issues, however, regarding the costs that accrue to this privilege. Management, as Grey suggests, is ubiquitous in problem-oriented research in corporations. They provide access to the company, informants, documents and archives, artifacts, and may review manuscripts for publication. A corporation may have many levels of management, and, in large corporations, there may be substantial differences in power and authority between levels. Higher levels of management generally have sufficient control over

funds and the access required to grant entry to anthropologists for purposes of research, whether basic or strategic. Academic anthropologists cannot even get approval from their institutional review boards without management sign-off on studies, and without them, there are no publications. Management also may provide needed funds to support research in the form of grants, contracts, or consultancies. There are many risks inherent in such situations. Management may try to influence the project or its findings in subtle and not-so-subtle ways. Or they might cancel or redirect a project in midstream if they don't like the way it's going or the sponsor gets reassigned or fired. A key issue is that no matter what problem the anthropologist is investigating, there is a good chance that someone in management is going to be involved in the problem (one of the causal factors) and may be right at the heart of it. This is due to the fact that anthropologists typically do not take a management centric view of the situation, as observers from other disciplines might, and when such a view is abandoned, it turns out that serious problems often involve management in some way (how could it not be so, when management is in charge of the company?).

It is an obviously delicate matter to negotiate criticisms of management when management has so much power in the context of the anthropologist's work. Reactions to criticisms from management are unpredictable, depending upon the overall context and on the relationship between the management that is sponsoring the research and the management that is being criticized. It might be feasible to present the criticism in an ethically responsible manner (for example, without identifying individuals or subgroups, and only identifying policies) and with felicitous results. Or it might be that the anthropologist gets backed into a corner, where it is obvious that a particular individual is culpable in a particular case. Indeed, the management may "set up" the anthropologist for such a dilemma without the anthropologist's prior knowledge. Possibly, the management could become hostile toward the anthropologist and reject both her and her findings in a defensive backlash. More likely, the findings and recommendations will be ignored, as the recommendations are found to be too costly and/or infeasible for political and cultural reasons related to the self-interests of those in power. All of the factors mentioned above make this work difficult, frustrating, and risky, and *could help to explain why there is not more of it after all these years.*

Some anthropologists have concluded that strategic research on organizational behavior is impossible because of the contradictions just described; others have decided that it is too important not to take the risk.

Anthropologists have not been silent on these matters, and indeed these issues have been subjects of considerable angst in the literature for several years, as more anthropologists have ventured into the world of modern organizations. Tensions between anthropologists and powerful others in fact have prompted some highly respected corporate-based anthropologists to leave the field altogether (as discussed below). It is likely that the problems described above are *one reason why anthropological studies of organizational behavior have not flourished in the way that studies of consumer behavior and design have in recent years*. These latter areas also require encounters with management, but they are less likely to run headlong into criticisms of management since their focus is more squarely on products, services, and consumers.

Another reason for the difficulty anthropologists have had in studying organizational behavior and management over the years may relate to the lack of receptivity anthropology has experienced in management departments within business schools, in contrast to a more positive response in marketing departments. The difference may relate to the positivist nature of management as a field, compared with marketing that has made room for interpretive approaches that resonate with the more artistic and creative side of that discipline (for example, advertising). Management, after all, is about control, and anthropologists who have studied corporations never have agreed that “culture” can be controlled by management. Indeed, we have asserted the opposite—culturally constituted meanings and social practices are naturalistic phenomena that defy the rationalist grasp of managers. Also, the anthropologists themselves may be difficult to control (as described below in the discussion of Xerox PARC). Thus, the anthropological approach to corporations is counter-cultural to management, and has not been embraced by many management departments, nor is it embraced by many practicing managers in the United States (although there continue to be exceptions, and these may be growing in number in some places).

Returning to the question of boundary crossing, there is one other especially salient boundary that has been crossed in the literature on corporations—that

which separates management and the worker. During much of the 20th century, anthropologists were more or less partisans in the continuing struggle between these two classes of employees that coexist in business organizations. In Warner’s era, anthropologists often were management centric in their views, following Mayo’s influence; Marxists held sway in the years between 1960 and 1980. The labor-management struggle has continued, as evidenced in some of the literature discussed above, but emphasis on it is muted, and anthropologists are no longer so polarized. The American workforce’s participation in unions is at its lowest level in the past half-century or more, and almost by default, the focus of anthropologists who work inside businesses is not labor relations. What’s more, theoretical developments in the social sciences have encouraged the representation of social actors (workers and managers) as agents with complex agendas, while methodological trends have encouraged research collaboration with these same social actors; this in turn has meant that more points of view are taken into account in the conduct of research. Thus, rather than focusing either on workers or managers and ignoring or caricaturizing the other, anthropologists have tended to talk to both groups and include their voices in published work. As a result, we see that worker/agents may take advantage of situations to their own gain (Grey, Hamada), derive pleasure from creative interactions with markets (Freeman, Coleman), and be capable of overriding management to assert their own interests (Baba). We also discover that management/agents can be pawns in their own (or others’) game (Briody/Baba, Hamada), are constrained by forces beyond their control (Caulkins), and may be motivated by social goals that transcend the individual quest for money and power (English-Lueck, Darrah). In short, we have a more subtly textured view of the actors and relations among them, which is an indication of theoretical and intellectual maturity in this subfield.

Ethnographically Informed Design of Products, Services, and Systems

Another stream of research and practice that flowed from W. Lloyd Warner’s original invention is sometimes known in the vernacular as “design ethnography,” but may be more accurately described as ethnographically informed product, service, and system design (including work systems). The emphasis of research described in this section rests on the

notion of a marriage between ethnography and design, a novel concept often attributed to collaboration between anthropologist Lucy Suchman and Rick Robinson (the latter founded E Lab, later acquired by Sapient). Design is a profession in its own right, and it cannot be limited to the design of products, services, and systems. Many other things can be designed—work processes, organizations, cities, policies, anything that humans can make or imagine. Designers are “considered creatives” in that there is an artistic aspect to their work and their marriage with intellectuals and researchers (anthropologists) is an interdisciplinary challenge. The creation of “design ethnography” thus represents the birth of a new interdisciplinary subfield that joins together anthropology and/or other qualitatively oriented social sciences with the design profession.

While on the surface, design of products and services may seem far removed from the Hawthorne project, its roots can be traced back to the decades-earlier efforts of Frederick Taylor and Elton Mayo to improve interactions between people and equipment in the production process. These early streams of investigation on the “human factor” in production eventually gave rise to the subfield of “human factors” research, a multidisciplinary offshoot of psychology that identifies aspects of human psychology and its context that must be taken into account in the design and development of new products. Human factors is both a field of study and an area of research and development in corporations that produce advanced technology for the market.

In the 1970s, one company that was committed to pushing the envelope of knowledge on humans factors (broadly defined) surrounding advanced computing was Xerox’s Palo Alto Research Center (PARC). PARC was interested especially in human-computer interaction and the development of artificial intelligence to support this interface; they also funded graduate student interns in this and other areas related to computing. The first anthropology graduate student intern to work at PARC in the late 1970s, Eleanor Wynn, focused her dissertation research on office communications, which aligned with Xerox’s interests in office automation and the “paperless office” concept. Wynn subsequently helped Gregory make contacts in the Silicon Valley computer industry for her dissertation research and was followed by Lucy Suchman in 1979, an anthropology graduate student at University of California, Berkeley, who

initially was interested in office work practices but later became intrigued with the idea of machine intelligence in a computing context. Suchman did not come to PARC to study human factors, but her work radically reconstituted the nature of the design industry nevertheless.

Suchman established her formidable reputation at PARC by videotaping pairs of users attempting to make copies of documents using an expert help system and then comparing the users’ conversations and actions during this process with the machine’s automated instructions. Suchman had been influenced by Garfinkle’s ethnomethodology, which provided the methodological framework for this investigation. Contrasting the two points of view side by side (those of the users and the machine), Suchman portrayed communication breakdowns between them, as humans moved fluidly among several different levels of conversation (for example, simple requests for action, “meta” inquiries about the appropriateness of a procedure, and embedded requests for clarification of procedures) while the machine was severely limited to producing responses that its designer had programmed into it in anticipation of stereotypical responses that users “should” make. While these observations might not seem revolutionary now, they were a lightning bolt at Xerox PARC and led the corporation to change the design of its copiers to make them simpler to use. This research also gave Suchman a reputation for bold and fresh insight and enabled her to expand the role of anthropology at Xerox PARC.

Suchman attracted other anthropologists whose research further enhanced the reputation of PARC, including Jeanette Blomberg and Julian Orr (some of Orr’s work was discussed in the previous section). Building on Suchman’s research, Jeanette Blomberg initiated a series of studies investigating the use of technology in organizational context. Her research argued for the necessity of looking beyond the “human-machine dyad” in understanding how new technologies affect work and workers. This broader definition of the human-machine problematic suggested the need for a new technology design strategy that made visible the social, organizational, and interactional dynamics of the workplace. The approach Blomberg developed with her colleagues Randy Trigg and Lucy Suchman integrated techniques and perspectives from work-oriented or participatory design originating in Scandinavia with ethnographic studies of technologies-in-use. A central characteristic of

their approach involved cycling between ethnographically informed workplace studies and the development of design concepts and prototypes, with the active participation of both workers and technology designers. Hugh Beyers and Karen Holtzblatt commercialized many of the work-oriented design ideas pioneered by the Work Practice and Technology group at Xerox PARC and the participatory design movement more generally through their firm, InContext Enterprises.

The work of this cohort of anthropologists at Xerox PARC, together with several others who joined both PARC and the Institute for Research on Learning (for example, Susan Irwin Anderson, Melissa Cefkin, Françoise Brun-Cottan, Chuck and Candace Goodwin, Bridgett Jordan, Patricia Sachs) became known around the world for its innovative integration of anthropology and ethnography into the product and service development stream of a major corporation. A breakthrough came in 1989 when the Doblin Group of Chicago asked Xerox PARC to partner on a project for Steelcase, the office furniture manufacturer. Steelcase wanted to understand how the workplace of the future would evolve and what kinds of work environments and designs it should be thinking about over the long term. Jay Doblin was aware of Suchman's group at Xerox and wanted to bring ethnographic skills into the engagement. Xerox PARC agreed to co-fund the project, which became known as the Workplace Project. The project was situated in an airport, which was believed to have properties reflecting the workplace of the future (for example, high fluidity of people and information, workflow extending into multiple kinds of space via electronic means). Suchman served as lead on this project for several years, and through it she assembled a talented interdisciplinary group of social scientists (including several anthropologists) and designers whose work would revolutionize the design industry. One of the individuals involved was Rick Robinson, then at Doblin, who subsequently went on to co-found E Lab in Chicago, an entrepreneurial firm explicitly dedicated to the concept of equally balancing all product design projects with ethnographic research and design talent. The notion that all new product and service concepts should emerge from a contextually rich understanding of the client's natural world, developed through ethnographic field research at client sites, captured on videotape, and analyzed using anthropological theory and methodology, was first conceptualized by Suchman's group in the

Workplace Project, but it was Rick Robinson who took this concept to the market and made it profitable.

The research in question often is undertaken by interdisciplinary teams involving anthropologists and representatives of other disciplines (for example, psychologists, designers, engineers, even clients may be involved). Ideally, this research seeks to acquire deeply nuanced, visually based, contextualized knowledge of the consumer's or worker's world, and to secure an understanding of underlying factors that influence the consumer's behaviors (which assumes some knowledge of social and cultural contexts in which the behavior is situated). The goal is to know both *what* the consumer is doing and *why* he or she is doing it, and from this base of knowledge to create new ideas for product and service design concepts and improvements. This approach, or a paler facsimile of it, has been copied by scores of firms all over the world, not all of which take seriously the need to analyze data using anthropological theory and methodology, however. E Lab was purchased by Sapient in 1999, but the idea of "design ethnography" now belongs to the world.

Ironically, the researchers at Xerox PARC did not conceptualize themselves as "applied anthropologists," for the most part, even though they arguably had a greater impact on business than any other group of anthropologists since W. Lloyd Warner and his generation. The Xerox PARC group's view was that they were part of the community of scholars engaged in the anthropology of science, technology, and society studies, a field that was on the rise in anthropology during the 1980s and 1990s and is enjoying an academic renaissance at the present time. In those days, Xerox PARC was a relatively independent organization that permitted its scientists a great deal of intellectual autonomy. And indeed, perhaps it was that very autonomy that contributed so much to the wealth of creativity and high-value-added contributions this group made during its reign over the span of more than a decade. With increasing global competition, however, PARC and many other industrial labs came under increasing pressure to focus scientists' efforts more sharply on the company's critical priorities. Suchman's group was no exception. Although details remain to be written, reportedly tensions arose between Xerox PARC's management and Suchman's research group regarding its future direction and plans. When the issues could not be resolved to everyone's mutual satisfaction, the group

elected to disband itself, and the individual members went their separate ways, unleashing a diaspora of “creative destruction”—the diaspora both dismantled the greatest business anthropology resource known since the Human Relations School while simultaneously releasing the creative talent of many anthropologists (and their ideas) to engage in other pursuits.

Today, the notion of integrating ethnography (and, it is hoped, anthropologically informed analysis) into the design and development of new products, services, and workplaces or practices has become accepted practice in high-tech companies in the United States. Susan Squires, for example, describes work that represents the present form of design ethnography in new product development. Squires visits a family kitchen at 6:30 AM with her video camera partner to observe and interview a former focus group participant in her natural setting, with her two sons. Many discoveries are made: the boys do not eat the “wholesome breakfast” that Mom prepares; Mom eats it herself, apparently unaware of what she is doing; the boys actually eat other, not-so-wholesome food (purchased by Dad), or nothing at all. In the midst of it all, Mom-in-law calls up to check on what Mom is cooking. Later, at one of the boys’ schools, Squires finds that the boy who ate nothing is consuming his lunch at 10:30 a.m. Squires provides a contextual analysis of this, plus other field data, relating her discoveries to structural strains in American society that pit working women’s realities against older values regarding protection of family members. The outcome of the research is a new product, Go-Gurt, a yogurt-based snack that tastes good, is nutritious, and can be consumed on the go.

Direct observation of natural behavior in the field enables anthropologists such as Squires to gain access to a level of consumer behavior that is not reflected in focus group dialogue, where participants often share idealized representations of their activities and may not be able to report on behavior that is out of conscious awareness. Videotaping routines in the home or other natural settings for later analysis permits highly detailed analysis of behavior and comparison across numerous field sites. Especially valuable is the comparison of survey and focus group data with analysis of ethnographic material; theoretically grounded knowledge of the broader sociocultural context and its emerging trends is necessary to explain discrepancies between these sources and relate them to client needs. Ethnographic research

places the consumer in a wider context that explains why people do what they do, not only what, and also provides a deeper understanding of the value of certain products and services in people’s lives.

In a very different application, Patricia Sachs’s work at Nynex illustrates the way in which an anthropological analysis of ethnographic data can inform the redesign of work systems. Customer repair work at Nynex became disjointed and inefficient when a new “trouble ticketing system” was introduced that broke down repair work into small pieces to be distributed to disassociated individual workers. If a worker did not complete a repair job by the end of his or her shift, the job was recycled to another worker, without an opportunity for the two workers to talk to one another. An activity analysis conducted by Sachs showed that the whole activity surrounding repair work, especially making sense of a problem through conversations among multiple workers, is crucial in solving a customer problem efficiently. The new information system disrupted the natural activity pattern and made the problem resolution process much less effective.

The value of incorporating ethnography into product development and work practices research has been widely recognized in the design industry, so much so that new firms have arisen that specialize in design research, and many of them explicitly include ethnography. To what extent these “ethnographers” are anthropologists is a point of contention. Sometimes it appears that being an ethnographer means a willingness and ability to go to a customer’s location and observe, using a video camera. Contextual analysis of findings is strictly optional and not well understood or necessarily valued by the design firm or its clients.

Ethnography for new products, services, and systems or practices is generally focused on the individual or group level of analysis, that is, the user and his or her interaction with a product or service, or the work group, user group, or customer group in context. This focus may be distinguished from the research stream in the previous category (organizational behavior), which has been oriented toward an entire occupational category, or the enterprise or industry level of analysis (for example, computer professionals, a biotechnology firm, the meatpacking industry). There are both theoretical and methodological affinities between these two streams (for example, an occupation engages in a certain form of

work practice), but there also are points of distinction. One point of distinction is an emphasis on ethnographic methodology in design work; for example, a hallmark of Suchman's group was close analysis of videotapes and transcripts (for example, frame-by-frame analysis of video). This emphasis could have (inadvertently) made design research vulnerable to representation by some as a methodology, *per se*, which in turn could have had the unfortunate effect of turning it into a methodology in some minds, that is, "design ethnography" that can be done by anyone who has a video camera. This did not happen to research at the organizational level of analysis, which draws upon a wide range of methodological traditions from many different disciplines and also has been much slower to diffuse.

Consumer Behavior and Marketing

In the Fordist era, firms were dominated by a producer's view of the world. Consumers and the marketplace were viewed as territory *exterior* to the business, a place that products and services were sent outward *to*. Often, firms made products first and then looked for the consumers afterward, dictating what consumers would have to accept. Now, because of ever-intensifying competitive pressures, companies have been forced not only to listen to what consumers want but also have come to view consumers as potential sources of innovation that they must draw knowledge inward *from*. This new perspective on the value of consumers, and the need for creative exchanges with them, has transformed the way consumer behavior is conceptualized and acted upon as firms create new products and services and take them to market.

Marketing also has changed. In the past, this field was dedicated to the description of consumers' decisions to purchase products, who buys what, and what factors influence the purchasing decision. Statistical analysis of survey data related to consumer demographics was the predominant methodology. The consumer was a number on a spreadsheet. Firms seldom looked behind the numbers to understand *who* the customer really was or *why* consumers made their purchasing decisions. But the shift to a consumer orientation has encouraged new approaches that go beyond mere description of purchasing outcomes. Now, firms are interested in gaining a holistic understanding of consumers' lives in context and finding out what this may teach them about new opportunities to create or improve products or how to make

new sales. There also has emerged a realization that the purchasing decision is but a single point in a much more complex and expansive cycle of consumption that includes many other aspects (for example, production, acquisition, actual consumption or use, disposal), all of which must be understood if products are to be improved for consumers' well-being (and the firms' as well). As a result, there is a growing receptivity to inductive, qualitative approaches to consumer behavior that permit exploration of new research questions and theory building. This means that anthropology and ethnography are in vogue. Top business schools are teaching future business leaders the value of participant observation, close reading, and interpretive summary, while the faculty are following modern consumers into cyberspace, adapting their methods as they go (for example, "netnography," "cyber-interviewing.") One of the first movers in this new marketplace for consumer knowledge was the entrepreneur-anthropologist Steve Barnett, who began in the late 1970s and early 1980s to develop innovative uses for an anthropologist's window on consumer behavior. At a series of entrepreneurial firms where he directed teams of anthropologists (for example, the Cultural Analysis Group at Planmetrics, Research and Forecasts [a division of Ruder, Finn and Rotman], Holen North America), Barnett invented what were initially unorthodox ways of observing consumers and translating their behavior patterns for applications in marketing and advertising campaigns for major clients such as Campbell Soup, Procter & Gamble, Royal Dutch Shell, and Union Carbide. For example, in the early days, Barnett invented the "unfocus" group, in which a cross-section of a firm's market is placed in a video observation room with a collection of objects and then given a (usually bogus) task of some sort, for example write a booklet for middle school students describing how electricity is generated, or build a "safe" nuclear reactor using kitchen gadgets. Analysis of the videotape rendered ideas to be turned into advertising images, for example, a campaign to raise electricity rates drew on consumers' lack of knowledge on the subject, or a campaign to gain approval for a new nuclear energy plant was based on consumers' desire to "lock" any radiation inside. Some academic anthropologists were quite uneasy with this kind of activity, believing that events of the type described above did not meet the proper standards of informed consent. However, Barnett was not doing "research" in the way this term

is generally defined, so it is not clear that such standards would be applicable. Barnett developed the technique of placing video cameras in consumers' homes and in shopping locations and interpreting thousands of hours of videotape with frames drawn from anthropological theory (for example, symbolic action and ritual). Such approaches are now standard in the industry. Drawing on the paper trail Barnett skillfully left behind as proof of his own marketing know-how, John Sherry describes numerous ethnographic projects undertaken by Barnett for various clients in the 1980s and 1990s. In the early 1990s, Barnett moved to Nissan Motor Company, where he became director of product strategy, helping Nissan to reconceptualize the automobile as a cultural artifact. Barnett's creative talent helped to transform anthropology from an academic discipline engaged with the theoretical significance of consumption to one of the most sought-after professions at the cutting edge of marketing and advertising. He blazed a trail that many other anthropologists were soon to follow.

That consumption is a thoroughly cultural phenomenon has been recognized by anthropological theorists for some time. American and European theorists have underscored the centrality of consumption in the production and reproduction of cultural patterns of meaning and practice. The British anthropologist Daniel Miller argues that this "turn" represented a metamorphosis of anthropology, from a less mature state in which mass consumption goods were viewed as threatening (that is, signifying both the loss of culture and a threat to the survival of anthropology) to a more enlightened outlook that frankly acknowledges consumption as the local idiom through which cultural forms express their creativity and diversity. This rather amazing about-face has permitted a confluence of interests between anthropology and the field of marketing, which in turn has shed new light on territory stretching far beyond the mere consumption of goods in context. Material goods and services in all phases of their life cycle (design, acquisition, maintenance, disposal) reflect cultural categories and principles, and their usage reflects cultural purposes.

Anthropologists have contributed much to an emerging interdisciplinary theory of consumer culture, which may be defined as a family of theoretical perspectives that define the relationships among consumer behavior, cultural meaning, and the market. This body of literature provides evidence of the role

that material goods and services play in the definition of the self and the creation of a coherent sense of identity, even if one that is fragmented. Consumption is especially integral to cultural patterns in the advanced capitalist societies of the West, where individualism is prevalent and so much about the individual is ambiguous at birth. Consumption also is a generative source of new cultural patterns that can reconfigure blueprints for action and interpretation. Consumers are not passive adopters of products, but active innovators who also resist, mutilate, and reconfigure what they find in the market to suit their emerging interests. As active coproducers, consumers have powerful impacts upon products, services, and corporations. Anthropologists also have been intellectual leaders in explaining the ways in which institutional and social structures influence consumption (for example, ethnicity, gender, class, age). Their research has illuminated structures that channel consumer thought and action and the influence such structures have on consumer experience. Indeed, there is sufficient literature now to underpin the production of a fulsome textbook that skillfully fuses anthropology and marketing into a seamless whole. The confluence of anthropological and marketing interests was furthered especially by the work of anthropologist Grant McCracken, who developed a theory to explain the "manufacture and movement" of meaning in the world of goods, including mechanisms by which meanings are transferred from cultural contexts to consumers in a two-stage process. McCracken postulated that meanings initially reside in the culturally constituted world, from which they are first moved to consumer goods by way of a pair of mechanisms—the advertising system and the fashion system. In the advertising system, meanings are consciously attached to goods to differentiate them and enhance their attractiveness to consumers. The fashion system not only produces waves of new designs but also cohorts of opinion leaders (for example, experts, journalists) to comment on these designs and their meanings, so that consumers will have a respected source to legitimize the meanings. Once meaning is attached to a good through these mechanisms, the meaning is then transferred to consumers by several other mechanisms in the second stage of the process. McCracken describes the mechanisms at this stage in terms of symbolic action or ritual, including a possession ritual (for example, announcing one's inclusion or exclusion in a social group

through a purchase), an exchange ritual (for example, insinuating symbolic properties on to another person through a gift), a grooming ritual (for example, coaxing value out of a good through utilization, such as polishing one's car), and a divestment ritual (for example, erasing the aura of a former owner). This theoretical framework has been highly productive in explaining empirical phenomena and generating hypotheses for further research.

The emerging theory of consumer culture also was advanced by an important contribution from Russell Belk, Melanie Wallendorf, and John Sherry Jr. In their seminal piece, anthropologist John Sherry and his sociologist and psychologist colleagues report on a summer spent touring sites of consumption across the United States in an RV (the Consumer Behavior Odyssey). One of their significant observations was a purported shift in the boundary demarcating the sacred and the profane in American life, with certain consumer experiences being edged into what they defined and described empirically as "sacred" space. Their paper provides theoretical and empirical evidence of dual processes—a secularization of religion and a sacralization of the secular. As sacred institutions become less potent as a social force, consumers long to experience what they can only imagine. Consumption becomes an effort to obtain closure between reality and some imagined ideal state. Thus, in various cases, what appear on the surface to be ordinary consumption events turn out to be, for their participants, extraordinary and even transcendent moments that promise powerful new purposes and directions in life, at least for that instant. In McCracken's model, this paper contributes both to an understanding of the culturally constituted world in which consumer meanings are constructed and also helps us understand how those meanings may be moved to products by savvy marketers who can endow products with a sacred aura through creative advertising campaigns.

Another significant contribution of anthropology has been to critique and expand constructs underlying consumer behavior and marketing theory, based on empirical research in non-Western societies. For example, Eric Arnould was among the first anthropologists to interpret his extensive, long-term ethnographic studies in West Africa for marketing audiences. In an early paper, he problematized the notion of "preference formation" (that is, how a consumer develops likes and dislikes, an idea that is central to

diffusion theory) by comparing the standard Western view of this construct with both a local construction that is compatible with premarket sociocentric values and an Islamic ethnonationalist view, in which individuals achieve status through innovations based on "Meccan" goods. Since then, Arnould has published an extended series of papers that draw upon ethnographic sources to shed new light on marketing concepts ranging from cross-border trade to relationship management, enabling an empirically based globalization of the marketing literature.

The British anthropologist Daniel Miller is an especially prolific scholar, with multiple volumes on various aspects of consumption, spanning the late 1980s to the present. Beginning with his important *Material Culture and Mass Consumption*, Miller has shown how commodities, as other material forms, are capable of acting as mythic structures, as classificatory systems that establish homologies among different models of sociality and as a means of objectifying moral values. For example, in *The Theory of Shopping*, Miller connects shopping to sacrificial ritual. He notes that sacrifice has two central features—it places the sanctifier in a relationship with a transcendent entity and thereby sanctifies the former, and it marks the transition from production to consumption (for example, firstfruits sacrifice). In shopping, which usually is carried out by women, the shopper is linked through bonds of love and devotion to a family, either an existing family or one that she hopes to have one day. It is the underlying relationship that guides the woman's purchases, which are thoughtful and thrifty. And as in sacrifice, purchase of the commodity transforms it from an object of production to an object of consumption. While consumer goods may be mechanisms of alienation, discrimination, or control, this case suggests that a mature anthropology does not make such judgments a priori.

Anthropologists also have produced literature exploring more explicitly the mechanisms by which advertising firms move cultural meanings from their context into the realm of goods and services. In a volume based on observations by anthropologists based in advertising firms, Steve Kemper enhances our understanding of the relationship between the global and the local by analyzing the presentation of goods by advertising firms to traditional populations in the developing world. He uses the case example of pressed powder and scents in Sri Lanka, where the widespread diffusion of television has

opened opportunities for marketers to offer modern products to villagers for the first time. As Kemper explains, the economic powers in the village (senior males) could interpret certain products (cosmetics for young women) negatively, and refuse to provide monies for purchase, unless their advertisements are culturally sensitive. The effective advertisement used neither the “global” image of a sophisticated urban woman nor the potentially condescending “local” image of a traditional village girl, but rather created something that captured both the “local idiom” while managing to be “generic” at the same time—the “sidevi look,” which combined images that are modern enough to be attractive to a young woman but still innocent enough to avoid offending her father. Kemper explains that most advertising firms in the developing world end up creating such images that blend local and generic themes so that the end result is neither the global homogenization that is feared nor the local uniqueness that existed in the past. This explanation provides an organizational mechanism to account for the “globalization” phenomenon that anthropologists have reported in other contexts.

Anthropologist Barbara Olson provides an insider’s story of the role an advertising agency can play in detecting cultural shifts taking place in the market and translating those shifts into changes in marketing technology that also moves products to the consumer and facilitates further cultural change. Olson has a unique vantage point as an account executive in an ad agency, one of whose clients was the brassiere manufacturer Warner. When Warner first came to Olson’s agency in the 1960s, its image was that of a prudish, old-fashioned maker of “firm” products for older women. Because these were the days of women’s liberation and bra burning, Warner was worried that their market was going to disappear. At her suggestion, Olson’s agency began using anthropological techniques to gain a better understanding of the customer at the point of sale—inside the “upstairs” department stores (meaning, stores for upper-middle-class women). What they learned from fieldwork was that these stores had experienced staffing cutbacks, saleswomen were harried and fatigued and had little time to provide individual attention required to show customers brassieres. In those days, bras were kept in drawers, out of sight, and customers had to take them into dressing rooms privately to try them on. Olson’s agency suggested

that Warner put the bras on hangers and let the customers handle them without sales help—a somewhat radical self-service concept that was already in place at “downstairs” stores serving working-class women. But the idea was nixed out of hand by Warner’s male hierarchy; they believed their upscale customers would never try on a bra that had already been tried on by another woman. Certain they had the right idea based on fieldwork, however, Olson’s agency formed an alliance with a female department store buyer and persuaded Warner to try the idea in test markets. It was a sensation, and took off beyond all expectations, changing forever the way bras were marketed across the industry. After the Warner’s campaign, it was commonplace for upstairs stores to show lingerie in public. Consumers wanted convenience more than they wanted privacy. Note the role played by the agency in changing the minds of Warner executives. In the past, it was not unusual for (male) corporate executives to make decisions for (female) consumers about whom they knew little or nothing (other than what their wives might say). Olson’s agency (using anthropology, and a woman anthropologist too) stopped Warner from making this mistake. This example reveals the way in which anthropological approaches are changing business practice and how these practices in turn influence cultural patterns.

The literature in consumer behavior and marketing produced by anthropologists has been well received by marketing departments and corporations, with the result that anthropologists now hold positions in the marketing departments of several major business schools (for example, University of Pennsylvania, Northwestern University, University of Nebraska, University of Utah).

It would appear that anthropology now is a permanent addition to the disciplines that comprise the academic marketing field. Some of the ethical and political difficulties that confront anthropologists studying organizational behavior are avoided by those focusing on consumer behavior, as access to corporations may not be required (although this is less true if the anthropologist is a full-time practitioner). This is a distinct advantage that recommends this type of work. There are drawbacks, however. One relates to the uneasiness that some anthropologists sense in the use that may be made of their work in ethically questionable sales (for example, products that may cause harm). Yet, such risk is inherent in the production of all knowledge and its utilization, and this is no

different. A more troublesome issue concerns the prefabricated consumption “experiences” that are becoming almost a total institution in America. Not only do these threaten a numbing down that may mask social control; they also may encode sacralization messages that, in fact, are hollow. In truth, the idealized images that consumption seeks to quench can rarely be satisfied by the act of consumption alone. The desire to consume is insatiable. While this may be a place we have been before, anthropology has not been so entangled in the mechanisms by which consumption is produced, and for some anthropologists, it is not a comfortable place to be.

Convergence of the Domains

During much of the Cold War era, corporations and consumption were neglected subjects in anthropology, even though it was obvious to all that these forces powerfully shaped the lives of anthropologists and the peoples we studied. W. Lloyd Warner’s discovery of the corporation as one of two distinctive American institutions was forgotten as anthropologists interested in modern societies aligned against capitalism, and many deemed research inside businesses “unethical.” Consumption was at best esoteric exotica, for other reasons discussed previously. This rather strange state of affairs in which anthropologists seemed to disregard some of the most potent cultural forces of our age was bound to change sooner or later.

Over the course of the past 20 years, the relationship between business and anthropology has come of age. That is to say, a productive relationship has formed, yielding advances in the state of knowledge and practice. This has happened because of changes in the world and changes in anthropology. The opening of the post-Fordist era meant destruction of an older economic order and the birth of a new one, with the inclusion of Asia and other parts of the developing world as major economic and technological platforms of global production and consumption. Ever curious, and going where the action is, anthropologists have been true to the disciplinary mission—seeking the edge of the frontier and exploring the unknown. Our epistemological strengths enable us to go where few have gone before, and that is exactly where we are in the world of corporations, design, and consumers. The discipline has adjusted to admit observations from these field sites for a variety of reasons. There is, perhaps, less theoretical and philosophical

polarization now, as the end of the Cold War and the rise of critical theory gradually have expanded the “zone of contact” between those who were aligned with Marxian ideology and those committed to other theoretical and philosophical frames. Management journals now publish critical theorists who “study down” in companies, while anthropology journals publish cultural materialists who “study up” in the same types of firms. Boundaries are permeable and lines between categories are blurred, inside anthropology as everywhere else. Another influence on the relationship between business and anthropology has been the diaspora of the so-called institutional anthropologies. Postmodernism and critical theory in other disciplines have had the interesting effect of making anthropology very attractive elsewhere (even as it sometimes appeared that anthropology itself was about to self-destruct). A centrifugal pull outward toward other fields has been in motion for the past two decades, leading many anthropologists to become hybrids, complete with graduate degrees in other fields (for example, medicine, law, social work, education). One kind of hybrid is the business type, but this is just a specialized instance of a much wider phenomenon that is in the process of remaking anthropology and has accompanied the rise of applied and practicing anthropology more generally. Hybrids admit external influences into anthropology, and if/when these reach a critical mass, hypothetically, there could be a tipping point at which anthropology changes in a qualitative way. A final force for change is the pragmatic need to place academia’s graduates. If graduates cannot find jobs, then academia ultimately will shrink, so it is in the interests of academic anthropologists to gradually explore the new terrain of corporations, design, and consumption, and academic administrations will support this if it bears the right kind of fruit (stratified by institution, of course).

A look back over the long history of entanglements between business and anthropology shows many ironies. One is that the small world investigated by Warner and company (that is, labor-management relations in the context of Mayo’s Human Relations movement) held the promise of leading them perhaps to a deeper understanding of modern institutions. Warner attempted to fulfill this vision in his Yankee City studies, but anthropology turned its back on these interests, abandoning them to sociology and the policy disciplines. It is ironic that the “turn” we

have seen in the past 20 years toward consumption studies, which did not even exist in Warner's time, now constitutes perhaps the most ambitious theoretical agenda for exploring modern American society that anthropology has yet produced. While there are a relatively small number of anthropology scholars at the forefront of modern consumption studies, their work has inspired a vast body of interdisciplinary research that enables us to better comprehend the mechanisms through which markets mediate the creation of meaning and social practice within a broader sociohistorical frame of globalization and market capitalism. This did not happen because anthropologists decided to study modern society, but because anthropologists finally acknowledged consumption as relevant to their interests. In America, it also must be acknowledged that it happened because anthropologists joined the fields of consumer behavior and marketing in business schools.

Another irony lies in a backward look at the Hawthorne studies. Anthropologists were not running the show in those days, and today we know that "the boss" was wrong. Mayo (the boss) saw the BWOR workers as "maladjusted," but he was misinformed. The workers knew what they were doing. The problem is, no one told American managers the truth. Most managers are not trained to grasp the idea of "cultural logic" on the shop floor or in the office, even though they are trained to grasp that same notion in relation to the marketplace. That is ironic. If alternative explanations of Hawthorne had been advanced in the 1930s and anthropology had played a more decisive role in shaping the theory of organizations over the next several decades, the workplace that we know might be very different today, and anthropologists who study organizational behavior might be thriving like their counterparts in marketing. We must ask ourselves about the long-term implications of an anthropology that is perpetually marginalized in studies of private sector organizations and management.

What seems clear from an overview of the literature is that the worlds of consumers and producers are not two separate things. Consumption and production are intertwined, perhaps most clearly in the design process, which brings the producer (designer) and consumer (user) together in a collaborative juxtaposition. The service economy also represents the joining of these worlds, as one conceptualization of service is the simultaneous production and consumption of an

economic activity within the context of a relationship between a producer and a consumer (for example, teaching/taking a course). All of this suggests that the intersection of these two worlds is expected to become increasingly apparent as the 21st century evolves away from a Fordist producer orientation, with its mechanistic and functionalized view of the world, and toward a more integrated, holistic perspective encouraged by a consumer orientation. Thus, while the three domains described herein will continue as distinct subfields with their own literatures, increasing areas of interaction and overlap among them are predicted. Anthropology, as a holistic discipline, is in a good position to conceptualize the connections among the domains; indeed, they already were apparent in this entry. For example, both design and consumption are activities that often take place within organizational contexts. Understanding these contexts—the resources or opportunities, as well as the risks or constraints they pose—are significant considerations for anthropologists seeking an integrated assessment of human behavior in its natural setting. Furthermore, organizations themselves are human constructions that are objects of design, and they also are sites of consumption. With respect to their designed nature, the formal and informal structures and policies of organizations are continuously being formed and reformed. These unfolding processes could become sites of ethnographic research, toward the goal of improving outcomes in organizational decision making as it affects the design of new products and services and the offering of these outputs to market.

Consumption also should become increasingly relevant as a focus of anthropological and ethnographic inquiry within organizational settings. As corporations outsource their services to one another, each organization "consumes" their suppliers' services. While this may sound somewhat abstract and "business-to-business" in nature, on the ground it can become very individualistic and person-to-person—say, for example, someone in Chicago trying to obtain help over the telephone from someone else in Bangalore. This interaction represents the consumption of one organization's service by another organization. If we begin to conceptualize the convergence of consumption and production, we may be able to bring to our study of organizations the theoretical and methodological insights gained through the study of consumer behavior, a theoretical maneuver

that has not been optimally exploited in the study of organizations. An example of the potential of this kind of crossover was provided earlier in the notion of the sacralization of work in America. Carla Freeman's research provides another example of the potential of investigating consumption practices within a production context. Daniel Miller discussed many additional examples.

Since the broader context of our lives is connected, there should be resonance among the various facets of our experience. And if globalization indeed means that boundaries are blurring, then the boundaries between employees and consumers, between the interiors and the exteriors of the firm, are blurring as well, and anthropologists who are interested in organizational behavior, ethnographically informed design, and consumer behavior, may gain insights by spending more time talking together and reading each other's work.

— Marietta L. Baba

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ANTHROPOLOGY AND EPISTEMOLOGY

Epistemology is that discipline of philosophy devoted to the nature of knowledge and how we acquire it. It is further divided into *prescriptive* and *descriptive* epistemology. Rules of how to proceed to acquire knowledge are called “methods,” and hence a prescriptive epistemology is a “methodism.” Descriptive epistemologies are sometimes referred to as “sociology of knowledge,” although many descriptive epistemologies are not sociological.

The field derives from three main sources. One is the work of ethologist Konrad Lorenz, who wrote that the synthetic a priori judgments of Kant are the a posteriori results of evolution. That is to say, our “innate” ideas, which are not the basic theorems of logical necessity, are the outcome of selection on human cognition and that of our ancestors.

Another is the program begun by philosopher Willard Van Ormand Quine, to “naturalize” epistemology, based on the work of Carnap and the Pragmatists. Quine famously wrote that “creatures inveterately wrong in their inductions have a pathetic, but praiseworthy, tendency to die before reproducing their kind” (Quine, 1969 p. 126).

Under the influence of Karl Popper and Donald T. Campbell, a number of thinkers proposed to model epistemic, and especially scientific, change as a selection process. Early on, Popper presented a selection theory of theory change in which scientific theories are subjected to strong selection pressures through testing, so that the fittest theories survive. In later works, he repeated this view, which can arguably be traced back to comments in his 1934 edition of *Logik der Forschung*. He attempted to argue that biological mutations also follow a pattern of anticipatory behavioral change followed by genetic “hopeful monsters,” in order to make a parallel with theory change. A conjecture, he said, is an anticipatory behavioral change, while the formalized and tested theory is the transmissible entity in conceptual evolution; so he had to show that biological evolution could anticipate the future. The “modern synthesis” rejected this hopeful monsterism, and recent research has backed that up. If biological evolution were purposive, then an explanation in terms of the underlying harmony or order of things might indeed suffice to confirm anticipatory change, and by analogy the same could be true of theory change.

Beginning largely in the 1970s, attempts were made to bring evolutionary models to broader epistemology, misleadingly called by Donald Campbell “evolutionary epistemology” (EE). The term misleads because, like evolutionary ethics before it, it is an oxymoron; where it is evolutionary, it is descriptive, and hence not classical epistemology, and when it is prescribing epistemic rules and heuristics, it is not (in the Darwinian sense) evolutionary, as what has worked in the past is not necessarily a guide to truth or what will work in the future. Moreover, the movement has two broad streams: one concerned with the evolution of cognitive processes (especially those dear to empiricists; vision and the other senses), the other an attempt to provide an evolutionary process model of the growth (or less prejudicially, the development) of knowledge. Bradie distinguished between *evolutionary evolution of mechanisms* (EEM) and *evolutionary epistemology of theories* (EET).

Epistemic evolutionists accept that there are a number of fundamental disanalogies between Darwinian biological evolution and theoretical evolution, especially in science, although there is considerable disagreement about the number and nature of these disanalogies. Some consider that the evolutionary development of our cognitive mechanisms is, at best, merely sufficient to ensure our survival (or that our more abstract cognitive faculties are pleiotropic upon those faculties required for survival) and that theoretical evolution is so decoupled from biological evolution that our biologically constrained intuition is repeatedly undermined by theories of science. For example: “solid objects” are mostly space, colors are wavelengths of light, and so forth. Hence, the reliability of our senses is not established by our (biological) evolutionary success. This decoupling of theoretical (and more broadly of cultural) evolution from biological evolution is further supported by the supposed Lamarckian nature of the former. To this extent, almost without exception, epistemic evolutionism is not Darwinian; that is to say, it posits non-Darwinian processes either of epistemic variation, selection, or heritability or some mix of these.

Under the cultural Lamarckist model, either the variation is not random with respect to the selection processes (it is directed toward problem solving, and hypotheses act like Goldschmidt’s now discredited “hopeful monsters,” anticipating the selective processes either behaviorally or phenotypically) or the selection process is not blind (theories are chosen on

endogenous rational grounds, not on exogenous and contingent considerations. That is, the optimum future theory is sought by the process rather than the currently merely adequate, as in biology, or theories are not causally determined in transmission (those receiving the theories are agents who may rationally reject or modify the information coded for by the cultural items passed on).

Some other major claimed disanalogies include (1) the fact that a single theoretician may entertain a sequence of theories over his or her lifetime, unlike an organism that has a specific phenotype; (2) that there is lateral as well as vertical transmission (we are influenced by our peers as well as earlier generations); and (3) that there are a lack of corollaries for “ecology,” “resources,” “competition,” genes, and other fundamental concepts of the biological Darwinian view and that proposals for analogues are vague and involve a lot of hand-waving but very little rigor.

Many evolutionary epistemologists accept with Popper that guided cultural transmission underpins a directed evolution of science, and that it makes absolute progress, and that progress and its telic nature are the result of conscious rational decisions, in contrast to the undirected, unconscious, and blind workings of Darwinian biology. Given this basic difference of mechanism and process, it is difficult to see why these writers would want to call their epistemological evolution theories “Darwinian” at all. Each of them admits that the process involved is not blind, either in the *selection* or *generation* of variations.

In effect, these views fall within two of three increasingly more inclusive sets: they are *process* epistemologies, they are *selective* epistemologies, but they are not *Darwinian* epistemologies (in contrast to David Hull’s account of science, perhaps the best example of a purely descriptive evolutionary epistemology. That is, the processes they posit as selection processes in science are not Darwinian processes. A process epistemology explains knowledge as the outcome of dynamic and historical (diachronic) processes: the historical and causal chains that have brought it about. Process epistemologies have a necessarily sociological character to them; knowledge is seen as the production of a community (an ecology), not of an individual, however brilliant. A selective epistemology is one in which epistemic change is the result of selective retention. A Darwinian epistemology is one that claims that variation and retention are not purposive with respect to the overall outcome of

change; that is, intentions do not determine the success of final product.

Evolutionary epistemology is basically an attempt to show that the Kantian a priori are the phylogenetic a posteriori, as Lorenz expressed it. In other words, it seeks to legitimate Kantian categories (or some equivalent) as constraints brought about by severe selection processes, survivors of which are the most robust and probably the most reliable. In this way, EE attempts to avoid Humean difficulties with induction-like heuristic justifications: To justify your heuristic, merely establish its provenance and success rate to date. In this, there is a severe difficulty for epistemic evolutionism: In no organism that results from biological evolution is full cohesion or optimality achieved; why should even a Lamarckian process succeed in science? Why should directed evolution work any better (except in that it would be faster) than an undirected evolutionary process, unless, of course, the director is God or some such omniscient factor? Directed or undirected, the success of an evolutionary adaptation lies in the “solution” of problems similar to those for which the adaptation was first selected.

If an epistemology is a modeling of what an ideally or realistically successful heuristic looks like, and it makes prescriptions of the kind “in order to best achieve knowledge of kind *k*, use rules and methods *h*,” then evolutionary epistemology is ill-founded, for such prescriptions simply cannot be drawn from Darwinian or any other biological theory. A case in point is the repeated insistence that sociocultural evolution must be Lamarckian. By this is usually meant that sociocultural change is a process of artificial selection, to the specifications of evolutionary “engineers” (scientists, social planners, economists, and shadowy controlling figures in industry). Yet artificial selection is a subset of “natural” selection processes, albeit rather more severe than the usual process of natural selection. A breeder may achieve quickly a certain coloring or ear length, but the resultant animal may also be fragile or disease ridden. To achieve a robust variation may still take a long time and much trial and error. Nothing about artificial selection gives us confidence that fitness will be more reliably gained than it would be through undirected selection. It is possible that sociocultural selection of rational variations is as random as natural selection is with respect to the selection forces operative. The selection process relevant to macroevolutionary trends in sociocultural systems is of a quite different

order than for the selection involved at the individual level in generating and choosing beliefs. If intentionality in variation is decoupled from the success of the selection outcome—wishing a theory to be true (in any relevant sense) does not make it so—then even a Lamarckian epistemic evolutionism fails to establish how success to date underpins the warrant of any methodological morals drawn from the past. As philosopher Hilary Putnam has expressed it, it’s not that evolutionary epistemology is false, but rather that it fails to answer the philosophically interesting questions (such as why we should believe our selected ideas or whether they are in fact correct, or merely help us survive). There are a number of critics of evolutionary epistemology, and a comprehensive bibliography can be found in Cziko and Campbell.

— John S. Wilkins

See also **Lorenz, Konrad; Popper, Karl**

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ANTHROPOLOGY AND THE THIRD WORLD

Origins and Evolution of the Concept “Third World”

The term *Third World* (*tiers etat*) was coined in 1952 by Alfred Sauvy, a French demographer, to describe the poor, marginalized, and powerless class of prerevolutionary France. Its meaning expanded rapidly to denote areas of the world that were distinct from the industrialized capitalist countries, the First World, and from communist bloc nations that formed the Second World. This new way of talking about disenfranchised peoples of the world caught on rapidly and was used by social scientists at the 1955 Conference of Afro-Asian Countries in Bandung, Indonesia. A new journal, *Le Tiers Monde*, launched in 1956, provided a forum to explore the conditions of impoverished peoples of the *tiers monde*—Africa, Asia, Oceania, and Latin America—who, much like the commoners of the French third estate, *le tiers etat*, lived under conditions of oppression while their labor supported the more affluent social classes.

Discussions about the state of the Third World amplified and quickly moved from a focus on economic and social issues to reflect the political tensions that characterized the Cold War era and pitted capitalist nations (Western Europe, the United States, Canada, Australia, and Japan) against their communist antagonists (Russia and other communist countries that formed the USSR). Some Third World countries, wishing to remain outside the sphere of influence of these “superpowers,” came together as the Non-Aligned Nations, thus formalizing the division of the world into three distinct political arenas. The term *nonaligned*, used to indicate the political neutrality of these nations, was at best an ideal. Capitalist and communist countries vying for control of Third World politics and economies and looking to expand their sphere of influence formed often shifting alliances with poor countries in return for economic support. These rivalries continued until the collapse of the Soviet Union that began with *glasnost* and *perestroika* in 1986 and ended in 1989 with the fall of the Berlin Wall.

However, the First World/Third World distinctions and dynamics survived these changes and still influence contemporary geopolitical patterns.

Patterns That Characterize Third World Countries

Third World nations share some broad characteristics. Most were at one time European colonies and share a postcolonial legacy of political instability and repressive governments. They fall within a wide spectrum. While some of these countries are now stable, others are burgeoning democracies. A large number of Third World countries still struggle under dictatorial governments and lack well-organized political structures. Civil wars and ethnic conflicts are yet other legacies of both colonization and the arbitrary repartition of traditional lands. Weak political infrastructures are often associated with less engaged civil societies and a lack of national identity—pitting predatory states against exploited and voiceless masses. Most people in the Third World still do not have access to appropriate sanitation, clean water and electricity, good roads, and communication. They have experienced rapid shifts toward export production at the expense of production for local consumption and traditional methods that used to ensure sustainability. These changes inevitably lead to marginal economies characterized by high unemployment rates, low per capita income, and loss of productive potential. Furthermore, most people in Third World countries experience dire poverty and have little hope of improving their socioeconomic status; wealth and valuable resources are in the hands of small elites that also control politics, government, and trade. This uneven distribution of resources leads to social imbalance and a system reminiscent of colonialism.

Compared to Western countries, Third World countries tend to have high population density. Family planning methods to curb birth rates are not easily accepted in areas where large families are still preferred. Problems associated with the shift away from traditional patterns of production toward industrialization and export production also lead to demographic shifts from rural areas toward urban centers. As peasant farmers find it increasingly more difficult to support their families, they are drawn to cities and export zones in search of jobs in the manufacturing industries and assembly plants controlled by multinational corporations. Export-free manufacturing zones dot the landscape of many Third World countries. They employ predominantly low-skilled, poorly educated female workers at minimal wages

under generally unhealthy working conditions. Workers are not protected by labor laws and are strongly discouraged from forming bargaining units. In other words, multinational companies exploit a vulnerable labor force, and national governments offer little or no support to the workers. It is estimated that in Haiti, for example, close to 80% of the population are unemployed or marginally employed and live on less than \$1 a day. These conditions set Third World countries at the margins of the world economy with little hope of improvement without outside aid.

The past 40 years have also witnessed the rapid, uncontrolled, and unplanned growth of several cities such as Mexico City, Calcutta, Lagos, and Cairo. Unemployment and underemployment as well as severe overcrowding in these hyperurbanized areas lead to social problems such as violence, ecological degradation, delinquency, and civil unrest. Poverty, hopelessness, and a search for a brighter future also contribute to migration toward more industrialized and developed areas of the world, where workers perceive that their chances at upward mobility, education, and freedom are much higher.

People of the Third World have limited access to Western medicine, and preventable diseases such as malaria and parasitic diseases, which have disappeared in industrialized nations, contribute to high mortality and short life expectancy. In some parts of the Third World, the majority of pregnant women do not receive prenatal care and give birth at home with the help of traditional birth attendants. In these areas, infant and maternal mortality rates are high when compared to those in industrialized nations. Other poor health indices mainly associated with poverty, ecological degradation, and poor infrastructures include high rates of infectious diseases such as HIV/AIDS, STIs, tuberculosis, cholera, and malnutrition. Treatment and medicines available in Western countries are far beyond the budgets of most poor nations, further pushing them at the periphery of the world system. Women in general suffer more from the consequences of these conditions than men and are also more vulnerable to violence and exploitation. In most of the Third World, women carry the brunt of child care while also responsible for production and household chores. They tend to suffer more from malnutrition than men, earn less than men, and have fewer rights than men.

While it is relatively simple to identify First World countries—they are few in number and most are

located in Europe and the northern hemisphere, the Third World is more heterogeneous and diverse. Some of the countries that fall under this rubric are indeed very poor—Haiti, Tanzania, and Bolivia, for example—while some Gulf States nations are quite wealthy; some Third World countries are overpopulated and have high birth rates and others are small nations with low population densities.

By contrast, wealthier, industrialized nations such as the United States, Canada, Western Europe, Australia, and Japan are known as the First World. Nations in this group are considered established democracies, have stable economies, are industrialized, and have well-developed infrastructures. Medical care is available to the majority of people, and health prevention measures such as prenatal care and immunization against childhood and some contagious diseases contribute to higher life expectancy and low maternal and infant mortality rates. Unemployment in these areas is lower than in the Third World, and literacy rates are much higher.

The Second World dissolved with the fall of communism at the end of the 1980s, and the 1990s saw a realignment of strategic parts of the world. Allegiances to socialist principles as well as political and economic interests that united Soviet bloc countries and provided cohesion to this group were challenged. Former members of this group gradually claimed their independence from Russian domination and joined the ranks of democratizing countries. While some former Soviet nations with stronger economies are in transition toward First World status, many, especially in the autonomous regions of Asia and Eastern Europe, joined the ranks of Third World countries. Other communist countries like China and Cuba and some African countries that had strong ties to Russia chose to retain Marxist ideologies and socialist economies.

Some problems are becoming global and cut across the division between rich and poor nations. A 1999 report published by the International Forum on Globalization Studies shows that global consumption of water is doubling every 20 years, at more than twice the rate of human population growth. According to the United Nations, more than 1 billion people on Earth already lack access to fresh drinking water. At the current rate of use, it is estimated that by 2025 the demand for fresh water will rise by 56%. Regardless of their status, all the countries of the world are vulnerable to the predicted water shortage. It is a far more

serious threat to the world's health, agriculture, and industrial production than the current world dependency on oil. In Third World countries, people already spend a significant share of available resources to purchase drinking water or spend a great deal of time fetching water. As the water crisis intensifies, governments around the world—under pressure from multinational corporations—are advocating a radical solution: the commercialization and mass transport of water. This could have devastating impacts on already precarious small economies and on the health of poor people. Already, in the maquiladora zones of Mexico, water is so scarce that babies and children drink Coca-Cola and Pepsi instead. Already, more than 5 million people, most of them children, die every year from illnesses caused by drinking poor-quality water. Already, water shortages and the diversion of water from agriculture to industrial production threaten grain production in China.

The hegemonic influence of the First World is illustrated in the changes that are happening throughout Third World countries as traditional cultures and modes of production are abandoned in exchange for more valued Western practices. Westernization and globalization are changing the face of traditional cultures. The encroachment of Western cultural patterns and technology influence how Third World people view themselves and their cultures. They continue to adopt Western goods, technologies, and attitudes to the detriment of local customs. Trade and industrialization alter traditional forms of production, and small economies are forced into the world system, albeit at the margins of this system.

Theories of Underdevelopment

Why are some countries stable and wealthy while others are so poor? Perceptions of the Third World and explanations for its slower pace of development are strongly influenced by Western scholars, and not much attention is given to the voice and perspectives of Third World intellectuals. Anthropologists offer different interpretations of the dynamics between Western and non-Western countries, rich and poor nations. The language used to describe these dynamics is at best awkward and often creates more problems than it solves. Each set of terms used to characterize this dialectic reflects a particular discourse and a way of seeing the world. Each set of opposites is therefore value laden and biased. The term *Third World* stresses the hegemonic nature of

the relationship between rich and poor countries and is often contested by people in Third World countries. However, alternative terms such as *underdeveloped* and *developed*, *developing* and *industrialized*, or *countries at the center* and *countries at the periphery* of the world system also highlight the hierarchical nature of First and Third World relationships. Anthropologists writing from the periphery of the world system have used a North-South opposition to critique the effects of postcolonial dynamics that perpetuate inequities and exploitation. In this scheme, countries of the North tend to be former colonial powers and have well-developed economies and geopolitical interests. Countries of the South are mostly former colonies, tend to have weak economies, and are more apt to rely on former colonial powers and Western countries for trade and financial assistance.

Rather than ranking societies according to how rich or poor they are, the nature of their political ideologies, or who their allies are, some anthropologists suggest discussing instead how the twin processes of colonization and industrialization differentially affect the ability of some countries to build the kinds of infrastructures that distinguish poor nations from rich ones. Others have noted the limitations of definitions that compare and rate countries in terms of economic indices and level of technological development; they note that such typologies tend to devalue culture and the human experience.

Since the end of World War II, relations between industrialized nations and Third World countries have been influenced and mediated by the discourse and practice of “development.” Development is often associated with industrialization and modernity. Some current in anthropology sees development as “improvement in human well-being” and its counterpart, underdevelopment, as a state of mind. They question why some countries develop while others lag behind and suggest that specific cultural patterns and historical processes often determine, or at least influence, the economic success of Western societies. This kind of reasoning tends to imply an inability by poorer countries to measure up to some standards of excellence based on hegemonic perceptions of the relationship between developed and underdeveloped, between powerful and powerless, and between First and Third World people. Hobart notes that in this way of thinking, “being underdeveloped often implies, if not actually iniquity, at least stupidity, failure and sloth.” These perceived deficiencies are

paradoxically articulated in rhetoric of altruistic concern for the less fortunate and then translated into development initiatives.

Anthropologists and other social scientists try to understand why poverty and underdevelopment continue to define life experiences and choices for most people in the world. Three main currents of thought dominate these discussions. The dominant school of thought, also known as modernization theory, stresses the deficiencies of poor countries, such as their inability to form democratic governments, their low level of education, and the absence of well-formed civil societies as the root of their underdevelopment. They gloss over the responsibilities of rich countries in the perpetuation of these problems and see Westernization as the only solution to the disparity.

The Marxist theory of underdevelopment proposes an analysis that highlights how mechanisms of exploitation and class struggle in Third World countries work to maintain patterns of inequality. They note that, through control of capital and production, the dominant classes continue to exploit the poor and build wealth and power.

Another school of thought, which subscribes to dependency theory, suggests that the industrialized world's quest for increased wealth creates poverty and underdevelopment. In this view, poverty in the Third World can only be understood within the larger context of the world economic system and the wealth of capitalist countries as dependant on the exploitation of poorer countries. This perspective is strongly supported by Third World social scientists.

Development is usually equated with Westernization instead of empowerment.

Even though some point to the dependency of the Third World on wealthier countries for trade and manufacturing jobs, others argue that dependency also goes the other way—that rich nations rely on the cheap labor force of Third World countries and also need to sell their products in Third World markets.

Development assistance was expected to alleviate poverty and narrow the gap between developed and underdeveloped countries. It has worked for some countries and for some people in places like New Zealand and Australia and some Latin American countries. Overall, however, the promises of development have not been fulfilled, and we see an increased dependency of poor countries on rich countries for economic support and trade at the same time that the

gap between rich and poor countries is increasing. Structural adjustment measures and other fiscal policies required by international financial institutions as a condition for granting assistance stymie efforts of Third World countries to escape from the grip of poverty.

The interplay between development and power relations cannot be ignored. In *Reversed Realities*, Kabeer clarifies how these relationships work by suggesting that those involved in development assistance should pay close attention to the dynamics between “key” and “unofficial” actors. She suggests that abstract and highly formal modes of theorizing, which tend to silence or devalue the viewpoints of unofficial actors in development, have helped to generate top-down approaches that have become the hallmark of much of mainstream development policy. She notes that “key” actors are those in positions of authority and thus influence development discourse and initiatives, while “unofficial” actors, as subordinates, are those supposedly in need of development.

Jeffrey Sachs suggests that rich countries and international institutions have the capacity and the power to end poverty, if they really wanted to, and that it can be done relatively cheaply. He notes that the majority of the diseases that kill the poor such as malaria and diarrhea are easily preventable, that the extreme poverty that has become so prevalent in most of the Third World is avoidable if the powerful were to spread resources more evenly. In a 2005 address to the World Bank, Sachs noted that as long as wealthy nations and multinational corporations persist in selling things to people who have no money, poverty will continue and Third World debt will increase. He challenged the World Bank, and by extension Western countries and development practitioners, to step up to the plate and meet the challenge of the Millennium Development Goal to reduce global poverty in half by 2015 and “be done with poverty that kills” by 2025. To meet these challenges, the rich would have to put the needs of the poor ahead of increasing profits and controlling the powerless. It is important, however, to keep in mind that development is a big business for wealthy nations.

Anthropology and Development

How does development happen? What is the development encounter like? Who are the various players in this game? A look at these questions will shed light on the complexities of “doing development” and why

it is difficult to measure the outcome of development initiatives.

Applied anthropologists generally agree that development projects fall into two broad categories: top-down initiatives and bottom-up ones. Top-down development projects are usually designed outside the area of intervention. Critics of this form of development point out that such initiatives reflect Western ideas of how things should be done and offer Western solutions for Third World problems. They are usually designed by experts associated with multilateral organizations—aid organizations composed of several member or donor countries like the United Nations, the World Health Organization, or the World Bank. These organizations have large bureaucracies, are well funded, and finance projects through large grants and loans. They undertake projects with a broad scope, target problems that affect large numbers of people, and can become engaged in building infrastructures.

Like multilateral organizations, bilateral or governmental organizations (GOs) are also engaged in large-scale development projects. They are the international assistance arms of individual donor countries and have well-defined political agendas in addition to their humanitarian mission. Among the largest and most powerful GOs are the USAID (U.S. Agency for International Development) and the CIDA (Canadian International Development Agency).

Nongovernmental organizations (NGOs) refers to a number of private, nonprofit organizations working in developing countries. Contrary to larger development organizations, NGOs use a bottom-up approach to development that stresses empowerment as well as sharing of power and responsibilities. NGOs can be international or grassroots organizations located in Third World countries. Local NGOs can be village cooperatives, community-based groups, peasant organizations, or women's groups, while missionary groups and nonprofit or volunteer organizations fall under the label of international NGOs.

The relationship between donor/development organization and recipient/local communities is complex. Several issues need to be addressed, such as, Who sets the agenda? What type of organization is best suited to undertake specific projects? Who is responsible to make development “go,” foreign agencies or local beneficiaries? Who are the beneficiaries of development assistance? How is community defined?

Some anthropologists suggest that development agencies and aid workers are often too concerned

with short-term changes and lack the flexibility, the time, and the patience to become familiar with the local context and to really listen to what the poor need, and they end up designing development initiatives that do not address the real needs or desires of the intended beneficiaries. These anthropologists ask whether top-down approaches and cookie cutter solutions that are supposed to end poverty have delivered on their promises. The answer is not easy to sort out. While international and bilateral organizations can mobilize significant economic and technical resources, they are not well suited to support long-term interventions because they are burdened by top-heavy administrations and are too concerned with quick results. As development practitioners know, development that works takes time. Grassroots organizations, on the other hand, have the opportunity to develop a better understanding of local issues and form long-term working relationships in the communities where they work. They are limited, however, by their inability to mobilize enough resources and influence policymakers. It is important to keep in mind that while grassroots changes and collaborative approaches are critical in the struggle to alleviate poverty, infrastructures and nation-building efforts are also necessary. Thus, each type of organization plays a specific role in the process of development and can complement each other. The best results are achieved when large organizations and NGOs team up to address specific problems.

It is equally important to clarify who the intended beneficiaries of development projects are and have a clear idea about the area of intervention. While selecting a narrow focus and a small area of intervention may have advantages, it is also likely that restricting the scope of an intervention too tightly may limit the potential for change and for replication. When carefully planned, development initiatives can play a vital role in strengthening civil society and can serve as catalysts in encouraging nationalism. What is needed, and most difficult to achieve, is to establish respectful and collaborative relationships with all parties in the development process. While foreign organizations are critical players in development, their role is to assist local communities solve their own problems.

Ideas about the meaning of economic development have changed from an emphasis on GDP and creation of wealth to a focus on poverty and basic human needs, that is, human development. While

theoretically we are moving in the right direction, the application of these notions is difficult, slow, and not always along the lines of the ideologies. We experience difficulties linking practice to theory. Often, practice is just experimentation and the stakes are high. Or ideologies that make sense on paper are difficult to realize for a number of reasons.

Most people agree that development should be about improving human potential and not Westernizing Third World countries. Investment in human development calls for a focus on quality of life and, therefore, on improvements in education and health care, as well as on the social and political climate. Critiques of this type of development suggest that rather than safeguarding the interests of workers, human development could be construed as protection of the worker as a form of capital.

A variety of approaches inform the work of development practitioners and their choice of methods. Each approach reflects a particular construction of the relationship between donor and recipient, of the expectations of donor organizations and their perceptions of recipients of development assistance. In participatory development, project management and authority are shared between all parties. A participatory approach requires time and energy as well as accountability, respect of local values as guiding principles, and privileging local expertise over foreign ideas.

A great deal of attention is also given to sustainable development. In 1992, the World Bank outlined the salient aspects of sustainable development such as environmental preservation, reduction of population growth, attention to local problems, cost efficiency, and clear short-term and long-term goals. However, sustainability is often invoked to limit access to life-saving medicines and technologies. Some anthropologists, like Farmer, suggest that pragmatic solidarity is a more humane way of solving poverty. Pragmatic solidarity implies more than delivery of services; it addresses the broader goals of equality and justice for the poor. An example of this approach is demonstrated in the findings of the Global Anti-Poverty Summit held in Haiti in 2004. Participants in the summit concluded that in order for the extremely poor—those who live under \$1 a day—to make good use of microcredit programs, they need other kinds of infrastructure and social investment such as education, access to health care, food, and security to prepare them to succeed. Multilateral organizations and

financial institutions are too often reluctant to invest in such programs, which they find too costly and not sustainable. Grassroots organizations are more willing to undertake projects that address the needs of the very poor and to use a community development approach. This approach is a holistic approach and incorporates education and training as well as economic support for grassroots projects.

The participation of anthropologists in development work has been strongly contested among those in the discipline. Some critiques point to previous associations of anthropologists with colonialism and warn that development could be construed as a form of neocolonization. Others note that anthropologists' focus on culture, their research methods, and the approaches used in the discipline do position anthropologists to work well in Third World societies and especially with grassroots organizations. While academic anthropologists have been reluctant to do development work—engage power structures and step into the arena of policymaking—applied anthropologists have adapted theories and methods of their discipline to solve real-life problems and to advocate for the poor and marginalized.

— Rose-Marie Chierici

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ANTHROPOLOGY OF MEN

Prior to the advent of the women's movement, anthropological research tended to focus on men's lives, rituals, and interactions, but without articulated awareness or remark. The majority of early anthropologists were men; they had more access to men's than to women's lives, and gender had not yet emerged as a salient problem within anthropology. Early feminist writing within anthropology advocated for an anthropology of women to counteract this imbalance, and in the beginning, the anthropology of gender was a series of representations of women's daily lives. Later, the focus shifted to one of gendered studies (the study of women and men, transgenders, and gender-making social processes) and most recently has considered men's identities and masculinity as important topics in their own right. These studies define men and masculinity in a variety of ways, as thoughts, behaviors, or traits of men; thoughts or behaviors that make men into men; and that which is opposite of female and femininity.

The anthropology of men has started to look at the closely connected relationships between men's and women's identities; has focused on the particularities of men's daily lives; has continued to address issues surrounding male sexuality; has looked at the connections between gender and society; and has raised the question of a possible "crisis in masculinity."

Interconnections Between Men's and Women's Identities

The notion that gender is something that is created and negotiated within specific social spaces is widespread within anthropological studies of men. Some of men's most influential social situations arise through their interactions with women, and anthropologists now argue that gender is best understood as a relational construct, meaning that cultural understandings of what it means to be a male or female cannot be reached without taking the connections between men and women into account.

Anthropologists studying masculinity—Matthew Gutmann's research on men in Mexico City, Anne Allison's work on corporate masculinity in Japan, and Stanley Brandes's study of folklore and gendered relations in Spain, for example—all provide evidence that shows that men use women as points of reference as

they develop and maintain masculine identities. Work that takes a relational view of gender, therefore, strives to show that the idea of completely separate men's and women's worlds is an idealized one.

Anthropologists have broadened their research to move beyond focusing on these connections between men and women and argue that one's social environment and interactions also impact the creation of gendered identities. This research emphasizes that there are ongoing negotiations present in men's lives as masculinity is constructed and transformed through everyday interactions, and it is clear that there are multiple meanings of masculinity from which men can choose based on the social situations, relationships, or contexts in which they find themselves.

Focusing on the Particulars

Across cultures, all men live and interact within contexts such as the family, household, and workplace, though the particular characteristics of these spaces vary in different cultural contexts. By focusing on these locations, the anthropology of men has also examined ideas such as men's and women's roles and the division of labor and resources within the family, the effects of work outside of the home on men's lives, and ideas about fatherhood and parenting.

The image of the male-headed household with a clearly delineated division of labor is one that many gender studies have promoted. Other research, such as sociologist Arlie Hochschild's *The Time Bind*, has begun to complicate and flesh out this supposed ideal, however. Hochschild writes about family life among middle-class families in the United States and examines the ways in which traditionally held views about men's and women's roles are changing as a result of practical demands and personal desires of spouses in dual-career families. Anthropologist Irene Casique looks at similar questions in her studies of working-class Mexican families as she examines changes in the division of labor within families where women work outside of the home, noting that men's participation in housework continues to be rather low and sporadic.

Many anthropologists have also focused on the ways in which work itself—male and female, paid and unpaid, inside and outside of the home—impacts men's relationships with their wives, families, and other men in the community. With the powerful economic changes that started in the 1980s, studies such

as Elizabeth Brusco's *The Reformation of Machismo: Evangelical Conversion and Gender in Colombia* have highlighted the ways in which economic transformations and gendered relations are intertwined, and the connections between financial situations, social change, and how an increasing number of multi- and transnational employment opportunities affect men's lives.

With changes in ideas about men's and women's work, as well as in the types and availability of employment, come shifts in men's responsibilities, and studies have looked at the ways in which parenting and fatherhood play into the negotiation of masculine roles and responsibilities. For example, José Olavarría examines the deep transitions regarding notions of fatherhood in nuclear, working-class families in Chile, arguing that a hegemonic masculinity and patriarchal fatherhood still serve as reference points for fathers, but that the growing autonomy of women, changes in economy, and the requirements of a nuclear family create new demands and dilemmas for men that make it difficult to fit the standards of what he calls "modern fatherhood."

Men and Sexuality

A third focus within the anthropology of men is the connection between men and sexuality. In this context, sexuality can refer to the wide range of sexual practices, beliefs, and taboos, as well as the cultural values and meanings assigned to men's sexuality.

The importance of heterosexuality as a means of showing men's power and control (either over women or among one's peers) has been extensively documented. Part of Phillipe Bourgois's argument in *In Search of Respect* is that serial monogamy and blatant heterosexuality are ways in which the extremely poor, disenfranchised men in New York City with whom he works feel like they can exert dominance over others. In many studies of men in Latin America and the Mediterranean, the concept of machismo is also directly related to heterosexual practices and is a way in which men assert authority and control.

Works that focus on sexuality and eroticism between men have also been central to studies of men and masculinity. For instance, Gilbert Herdt's *Guardians of the Flutes* and *Ritualized Homosexuality in Melanisia* were two of the earliest works that focused on men's sexual practices as core to the ethnography, and examined how male youth in

certain New Guinea societies engage in fellatio (generally, older youths inseminate or feed semen to younger youths) as a central and even necessary part of becoming masculine and adult. Other ethnographic studies on groups such as the "two-spirited ones" in Plains Indian societies; Lynn Stephen's work on "third gender" roles in Oaxaca, Mexico; Annick Prieur's *Mema's House: On Transvestites, Queens, and Machos*, about male transvestites in Mexico City; as well as Don Kulick's *Travesti: Sex, Gender, and Culture among Brazilian Transgendered Prostitutes* have all examined men's involvement in what their communities view as alternative sexualities and the complicated ways that masculinity can be challenged, transformed, and/or reaffirmed through same-sex sexual practices.

For example, the work of both Prieur and Kulick focuses on biologically defined men who in complex and varied ways strive to become socially defined women. In Prieur's work, the *vestidos* do not contest stereotypical gendered roles, but instead attempt to fit into them as closely as possible. They dress as women, get plastic surgery, inject their bodies with oil to create "womanly" curves, and prefer to take a passive role in sex. In Kulick's ethnography, however, though the *travestis* fit into many female-gendered roles, they also embrace their maleness and are disgusted by biological women. These are just two among a number of diverse ethnographic studies that reveal the varied ways in which masculine and transgendered identities are created through bodily appearance (such as dress, hormones, oil injections), anatomy, sexual practices (active versus passive roles), as well as social interactions and behaviors.

Gender and Society

Images of masculinity have also proved powerful at higher levels of sociocultural integration, such as the nation. In many cases, the nation itself is conceptualized as female, while national protagonists and ideal citizens are masculinized, and threats to the nation are seen both as acts that violate the national (female) body and appropriate forms of masculinity. These processes, of course, take diverse local forms.

Octavio Paz explicitly connects gender to the Mexican nation in *The Labyrinth of Solitude: Life and Thought in Mexico*, where he discusses the ideas of the "macho" Mexican man and Spanish colonization. The conquistadors, he argues, violated the "passive"

Mexican (female) nation through colonization, just as masculine “macho” Mexican men physically, sexually, and emotionally abuse weaker men and women. Eduardo Archetti also discusses the connections between masculinity and the nation. He describes the ways in which Argentinian (male) soccer players developed a different style of play from that of the British colonizers—a style of play that ultimately stood for both a model soccer player and an ideal, implicitly masculine, Argentine citizen who symbolized that which was opposite of the colonizer, as well as a faithful representation of the nation.

A Crisis in Masculinity?

Finally, following David Gilmore’s *Manhood in the Making*, some anthropologists have argued that men are culturally “made” and therefore have to achieve masculinity through complex processes. These processes, including insemination rites and group circumcision, as well as individual achievements such as finding employment, marrying, and having children, allow boys to be seen as men by their communities. This becomes more difficult when there are significant changes in men’s lives, leading to what some of the most recent gendered analyses of men label as a “crisis” in masculinity. These works use social factors such as declining economies, an increase in the percentage of women working outside of the home, a greater equality in the salaries of men and women, and an increase in education for women to provide background explanation for this “crisis” and the inability of men to achieve the socially acceptable and “appropriate” forms of masculinity and/or manliness.

The Importance of Men in Future Anthropological Research

The study of men in anthropology holds a complicated position. Whereas men were once the default focus of anthropological research and writing, gendered studies on the particularities of men’s lives and masculinity have been overshadowed until recently by a focus on women’s lives and femininity. As a result, the anthropology of men continues to be a key topic to explore further—especially taking into account the effects of factors such as globalization and migration, and the connected and dramatically shifting economic opportunities, social resources,

and family relationships as men construct and negotiate their gendered identities.

— Sara Withers

See also **Anthropology of Women; Gender; Sex Roles**

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ANTHROPOLOGY OF RELIGION

Anthropological studies of religion had their beginnings in the late 19th century, with the seminal works of Max Muller, W. Robertson Smith, Edward B. Tylor, and James G. Frazer. These scholars, of course, were not the first to take an interest in the comparative study of religion, nor were they the first to speculate on the religions of preliterate and tribal peoples. What set these men apart is that they were among the first to suggest that tribal religions might be amenable to study following the rules of the scientific method and to posit specific methodological procedures for the comparative analysis of religious beliefs and practices. All four of these scholars have been characterized as “armchair theorists” and dilettantes (although Muller was an expert in Sanskrit; Robertson Smith had an excellent command of Semitic languages; Tylor had spent time studying the antiquities of Mexico; and Frazer had a strong background in classics). All four scholars conducted their research from the apex of a far-flung British Empire and thereby had access to a wider range of comparative data than had been available previously.

Muller, Robertson Smith, Tylor, and Frazer formulated theories that have been characterized as “intellectualistic.” All four of these men were primarily interested in human thought. All sought to understand religious belief and practice at its most fundamental, elementary level. Frazer argued, for example, that human thought is best understood as a progression from magic, to religion, to science. Magic—which Frazer contended was based either on the principle of contagion or “sympathy” (the idea that if two objects are associated, they will continue to influence one another even after they are separated), or the notion of imitation (that idea that like influences like)—was said to be the earliest form. In more advanced societies, Frazer contended, magic eventually is replaced by religion and finally by science.

Nineteenth-century anthropologists—as was common among social scientists of their day—derived their assumptions about religion from their own experiences within the Christian tradition. While Muller and Frazer considered themselves agnostics, Tylor and Robertson Smith were devout Christians. Another source of bias is that “armchair anthropologists” like Tylor and Frazer tested their theories on the basis of the highly suspect reports provided by missionaries and European travelers. It was the rare Western observer who was able to report on non-Western religions objectively. Indeed, evolutionary models current at the time would have precluded such objective reportage. Given these substantial constraints, it is amazing that the 19th-century interpretations of tribal religions are as sympathetic and insightful as they sometimes are. Despite their evolutionary assumptions and their overwhelming Eurocentric and Judeo-Christian biases, Muller, Robertson Smith, Tylor, and Frazer ended up making valuable contributions to the study of religion and can profitably be read today.

It is not surprising that many of the leading minds of the 19th century would turn their attention to religion. It has never been difficult to make a case for the significance of religion in human life. Religion has been found in all societies studied by anthropologists. It is highly visible and in the words of Raymond T. Firth (1995) represents “a massive output of human enterprise.” Religious beliefs and practices are an enduring tribute to humankind’s nearly infinite resourcefulness and adaptability in coping with the problems of daily life. As William W. Howells (1948) astutely noted, “Man’s life is hard, very hard. And he knows it, poor soul; that is the thing. He knows that

he is forever confronted with the Four Horsemen—death, famine, disease, and the malice of other men.”

Despite a keen and enduring interest in religion, there is no single, uniform anthropological theory of religion or a common methodology for the study of religious beliefs and practices. Researchers in the area cannot agree as to how exactly “religion” should be defined or what the term “religion” should encompass. Efforts at defining religion—ranging from Edward B. Tylor’s 1871 definition of religion as “the belief in spirit beings” to the more complex definitions offered by Clifford Geertz and Melford Spiro—have met with considerable resistance. Nevertheless, Geertz’s (1973) definition was far and away the most influential anthropological definition of religion for much of the 20th century: “(1) a system of symbols which acts to (2) establish powerful, pervasive, and long-lasting moods and motivations in men (and women) by (3) formulating conceptions of a general order of existence and (4) clothing these conceptions with such an aura of factuality that (5) the moods and motivations seem uniquely realistic.”

While his definition may be useful in elaborating what religion is like conceptually and what it does psychologically and socially, Geertz has been criticized for failing to inform the budding researcher how he or she might identify religion when encountered in the field. A major stumbling block to all definitions of religion, of course, is that religion is not a “thing,” but an abstraction.

Other 20th-century definitions of religion (for example, Melford E. Spiro and E. E. Evans-Pritchard) followed Emile Durkheim in positing a dichotomy between the so-called “supernatural” and “natural” orders. These alternative definitions have proved no more satisfactory than Geertz’s, since distinctions between “supernatural” and “natural” are seldom obvious and may vary from individual to individual and from society to society.

In the early 21st century, debate has arisen concerning the scope of anthropology of religion. Do anthropologists of religion study religions only in tribal settings? Is it exclusively the study of non-Western religions? Is it to be limited to the study of religion among oppressed and marginalized people? The focus of anthropological study has shifted from the study of tribal to modern religions. A number of well-received studies have analyzed religion in developing societies, Europe, and in the United States. Many of the leading contemporary exponents of

anthropology of religion—John R. Bowen, Thomas J. Csordas, Tonya Luhrmann, Robert Hefner, Maurice Bloch, Jonathan Friedman, Vincent Crapanzano, Edith L. B. Turner, James W. Fernandez, Sherry B. Ortner, Mary Douglas, Jean Comaroff, Benson Saler, and Stanley J. Tambiah—have devoted the bulk of their attention to local variants of major world religions (Hinduism, Islam, Buddhism, and Christianity) and/or the impact of world religions in developing countries (Java, Indonesia, Morocco, Sri Lanka, South Africa, and Nepal) rather than the religions of isolated tribal groups. Contemporary ethnographers concentrate on examining religious diversity in complex societies instead of providing further documentation for uniformity in tribal religions.

An unresolved issue facing anthropology of religion is the nature and problem of religious belief itself. “Belief” (and conversion) is central within Protestant Christianity, but is clearly of less concern in tribal religions, where questions of orthodoxy seldom arise. There has been protracted debate among scholars as to whether it’s possible for a non-believer to make definitive pronouncements concerning the religious beliefs of others. Can a religion be understood only from the perspective of a believer? While a number of leading psychologists and sociologists of religion are themselves adherents to the faiths they study, the overwhelming majority of anthropologists are skeptics. Most anthropological studies reduce religion to human terms, and many anthropologists would agree with Raymond Firth (1995), who concluded, “There is truth in every religion. But it is a human not a divine truth.”

Belief presents special problems for anthropologists because conversion is seldom a viable option for outsiders studying tribal religions. Nevertheless, a number of anthropologists have insisted that religions can be grasped only from “within.” This is especially true for ethnographers who conduct research among Pentecostals and Fundamentalists and the many contemporary anthropologists who specialize in new religious movements, such as neoshamanism and Wicca. In the last four decades, anthropologists have grappled with the dialectical relationship between the examination of cultures from the *emic*, or insider, perspective, or from the *etic*, or outsider, perspective. Nowhere is this creative tension more evident than in the anthropological study of religion. Questions of theory and method that can be addressed provisionally, hypothetically, or heuristically

in other social or cultural arenas become fundamental and often impossible to ignore in the study of religion. While distinctions of belief versus nonbelief or inner versus outer realities may be bracketed and examined heuristically, the very nature of that heuristic—the discovery process itself—needs to be carefully defined and pursued.

The hallmark of 20th-century anthropology has been the advocacy of firsthand participant observation and/or fieldwork. This altered once-and-for-all the character and scope of research on religion and forced anthropologists to become more modest in their goals and less sweeping in their generalizations. Contemporary anthropological assertions are more likely to concern the manifestation of a particular belief in a particular place and time rather than speculate on “religion” in the abstract. Researchers focus on a single aspect of a religion (a specific myth, a specific ritual, or an aspect of a ritual such as divination, sacrifice, spirit possession, and so on) but refuse to examine an entire religious complex. This has had both positive and negative consequences for the anthropological study of religion. Twentieth-century anthropologists of religion have been left with the choice of “saying more with less authority” or “saying less with more authority.” Most have chosen the latter path. This is a far cry from the imperial stance taken by Muller, Tylor, Robertson Smith, and Frazer and cannot help but have far-reaching consequences for the anthropological study of religion in the next century.

Theories developed in other subfields of anthropology (linguistics, economics, kinship, ecology) have been applied—with varying degrees of success—to the anthropological study of religion. As a result, religions have been analyzed from a variety of perspectives: functional, psychological, ecological, structural, cross-cultural, cognitive, and symbolic. Of these new perspectives, variants of functionalism have been the most enduring. But cognitive and symbolic studies are likely to dominate in the next century.

A number of promising studies have focused on ritual and ritual practice. From this perspective, rituals are seen as the fundamental unit of religious expression and the building blocks for all religions. Earlier studies underscore the role of ritual in mirroring defining central features of society and culture, worldviews, identities, political forms, and social arrangements. More recently, scholars have argued that ritual not only mirrors these defining features, but challenges them as well. Greater attention has

been given to so-called ritual inversions and what Max Gluckman has termed “rituals of rebellion.”

In the 19th century, scholars like Lady Jane Harrison argued valiantly for the primacy of ritual over myth. All mythology, they argued, has its roots in ritual activity. The myth-ritual debate raged for over 60 years, until 1942, when Clyde Kluckhohn offered a satisfactory compromise by recounting multiple instances in which a myth clearly began as a ritual and other instances in which a ritual clearly began as a myth.

Anthropological studies of ritual distinguish between calendrical and crisis rituals and between individual and collective rites. For Durkheim, rituals both reflect and support the moral framework underlying social arrangements. Radcliffe-Brown improved on Durkheim’s theory by attempting to explain why some rituals are chosen over others. Ultimately, Radcliffe-Brown suggested, rituals directly related to the collective and material well-being of a society are elevated to having spiritual “ritual value” as well.

Perhaps the most influential 19th-century study of ritual was provided by Arnold van Gennep in *The Rites of Passage* (1909/1960). Van Gennep argued for the significance of rites of transition, which he categorized as an immutable tripartite sequence: separation, liminality, and reaggregation. Victor Turner’s *The Ritual Process* (1969) advanced van Gennep’s concept of “liminality” by advocating its applicability for the study of ritual in both tribal (Ndembu) and modern European societies. Roy A. Rappaport’s *Pigs for the Ancestors* (1968) adroitly demonstrated how rituals regulate environmental relations. Rappaport’s is one of the best-known studies linking religious ritual and ecology.

Within the anthropological tradition, myth has been understood primarily as an encapsulation of sacred truth. Functional theorists like Bronislaw Malinowski have argued that myth promotes social cohesion and serves as a “charter” for human behavior. Myth, in short, legitimates human activities. Other theorists have treated mythology as separate from religion. The 20th-century study of mythology has received its greatest proponent in the seminal work of the French structural anthropologist Claude Lévi-Strauss, who finds in myth a key to the underlying structures of the human mind. Myth, for Lévi-Strauss, reveals how the mind functions.

Anthropologists have long noted that religions are highly dynamic, and the role of religion in fostering social change has been extensively explored. An interest in religious change is discernable in the evolutionary



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theories of Tylor and Frazer as well as the 20th-century diffusionist studies of Leslie Spier and Alfred L. Kroeber. Anthony F. C. Wallace identified a five-stage progression to account for attitudinal and organizational changes that occur within religious movements: prophetic, utopian, messianic, millennial, or millenarian. Wallace is best known for his conception of “revitalization movements” and his application of this concept to the Plains Indian Ghost Dance and cargo cults in Melanesia.

Much recent work in anthropology of religion focuses on symbols and cognition as exemplified in the writings of Clifford Geertz, Victor Turner, Edith L. B. Turner, James W. Fernandez, James Boon, Sherry B. Ortner, Mary Douglas, and others. Still other approaches focus on biological and experiential models of religion. Cognitive and neurological sciences have produced great insights into the biology of behavior,

and many of these insights have been extended to the study of religion. Organizations like the Society for the Anthropology of Religion and the Society for the Anthropology of Consciousness (both established sections of the American Anthropological Association) are devoted to the rigorous, scientific exploration of religious experiences, including the religious use of hallucinogens, categorization of altered states of consciousness, shamanism, trance states, and the cross-cultural study of spirit possession. Naturalistic theories of religion have experienced a revival in the writings of Stewart Elliott Guthrie and Pascal Boyer. In addition, a number of anthropology graduate programs have expanded their offerings in anthropology of religion, notably, the University of Chicago and the University of California-San Diego.

Other scholars have devoted attention to the reassessment of previous research. They have argued that contemporary anthropologists of religion are constrained by inadequate and outmoded categories and conceptions. Their frustration is eloquently expressed by Morton Klass (1995), who laments that anthropologists of religion continue to embrace “theoretical perceptions and assumptions that have long since been jettisoned in most other areas of anthropological concern and activity.” Not all anthropologists would agree. Such critical assessments often fail to do justice to the tremendous amount that can be learned from the excellent earlier textbooks of Robert Lowie, Edward Norbeck, Anthony F. C. Wallace, Paul Radin, and Annemarie de Waal Malefijt as well as the recent texts by Fiona Bowie, John R. Bowen, and Stephen D. Glazier.

In conclusion, functional, cognitive, and symbolic approaches have dominated the anthropological study of religion in the late 20th century as researchers have become increasingly concerned with the concept of meaning. Doubtless, biological, neurological, and cognitive approaches will assume greater importance in the next century. Anthropology of religion is no longer focused on the study of religion in tribal societies. Since the late 1970s, a majority of anthropological studies have dealt with religion in the developed or developing world.

— Stephen D. Glazier

Portions of this entry have been adapted from *The Encyclopedia of Religion and Society*, edited by W. Swatos, Alta Mira Press.

See also **Religion and Anthropology; Religious Rituals**

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THE ANTHROPOLOGY OF WOMEN

There are two ways to interpret “the anthropology of women:” One is as the work of women anthropologists, and the other is as anthropology that focuses on women as its subject. This entry deals with the latter, although for many reasons, the two often go hand in hand. Feminist anthropology, the ethnography of women, and female anthropologists have all been historically associated together, as it was feminist anthropologists—most of them women—who were first interested in doing fieldwork with women, writing ethnography about women, researching anthropological questions about women, and writing theory about women and gender.

Many early ethnographies are notable for a distinct lack of women. Early male (and some female) ethnographers, speaking mostly or entirely to male informants, managed to create many ethnographic accounts that seemed to be entirely about men. A chapter in such an ethnography might be devoted to marriage and children (in which women would naturally figure

as indispensable to these activities), but women were largely absent from early depictions of traditional life. Likewise, gender and women's concerns were also largely absent from early theory. As women entered the field of anthropology—quite early—many of them noticed this oversight and began to take steps to amend it.

We can characterize the anthropology of women as falling into four categories so far: the study of women in relation to men and gender roles (“women and men”); large-scale cross-cultural theorizing about the position of women globally (“woman, culture, and society”); the study of women's activities as valuable in and of themselves (“filling the gap” left by prior anthropologists); and last, the more modern view of positioning studies of women within a framework of gender and other cultural forces, often foregrounding agency and practice (“positioned studies”—because of the different theories and views the anthropologist may bring to bear). While these categories follow a roughly chronological order in their development, they do not follow a chronological order in their use; for example, many anthropologists still do gender role studies today (as indeed we should, as our understanding of gender is very different now than it was 70 years ago).

Sex and Temperament, Women and Men

Margaret Mead, arguably one of the most famous early anthropologists, focused much of her work not only on women in society, but on questions of gender and gender roles. Her most famous work, *Coming of Age in Samoa: A Psychological Study of Primitive Youth for Western Civilization* (1928), examines the lives of teenaged girls, a population mostly ignored by previous anthropologists. Much of her work focused on gender and the relations between men and women, and this focus meant that researchers and readers of her popular works alike were aware as never before of women as a worthy subject of study.

Mead's famous *Sex and Temperament in Three Primitive Societies* (1935) first raised the question of whether gender roles as they were conceived by Western culture were biological and thus unchangeable, or whether they were cultural and societal. In exploring three cultures in Papua New Guinea with distinctly different gender roles, Mead revealed that in the Arapesh culture, both sexes behaved in ways characterized by Western cultures as “feminine”; among

the Mundugumor, both sexes behaved in aggressive ways that would be characterized in Western cultures as “masculine”; and the Tchambuli had gender roles that could be construed as reversed by Western standards. While the use of terms such as “masculine” and “feminine” was arguably problematic (as the gender roles were perfectly normal for men and women in those societies), the point that gender roles differ to a great extent across cultures was made very effectively. Mead was thus able to argue that gender roles were formed by culture rather than biology and were not only variable between cultures, but also possibly changeable over time. This study—and her elaboration on this theme, her book *Male and Female: A Study of the Sexes in a Changing World* (1949)—is often credited with inspiring anthropologists to pay more attention to women, gender roles, and the relations between men and women in the field.

What Do We Know About Women?

In 1974, the *Woman, Culture, and Society* collection was published by Michelle Zimbalist Rosaldo and Louise Lamphere, in response to a series of lectures at Stanford called “Women in Cross-Cultural Perspective.” The collection was groundbreaking in that it addressed women as subjects for ethnographic study outside the usual bounds of marriage and child rearing and it served as a forum for cross-cultural theory. Sherry Ortner remarked in her later publication *Making Gender: The Politics and Erotics of Culture* (1996) that she protested that she didn't know anything about women when she was recruited to write an essay for the collection in 1971 but was told that no one else did either—it was an experimental publication, an exploration into unknown territory, the presentation of entirely new theories and new ethnographic material. It included essays on women in politics, women and language, women and family, and the myth of matriarchy, among other rich subjects.

While all the essays published in *Woman, Culture, and Society* are worthy of note, two in particular are often referenced today. These are Ortner's “Is Female to Male as Nature is to Culture” (first published in *Feminist Studies*) and Rosaldo's “Woman, Culture, and Society: A Theoretical Overview,” both of which propose particular theories about gender roles. The subject was typical of the era: Why is male dominance universal? It is notable that theorists of the time assumed that male dominance was universal (something that

gender theorists no longer completely agree on; for one thing, the definition of *dominance* is much more complex, as we will explore below) and furthermore that they were interested in looking at the cultural (rather than at biological) reasons for this cross-cultural trend. We can see Mead's legacy here—if gender roles are cultural, then gender inequity is cultural as well.

Ortner's essay analyzes gender inequity in terms of cultural associations. She asserts that most cultures associate women with nature because of uncontrollable biological forces, such as menstruation and childbirth, and their association with unsocialized, "natural" infants and children. Men, she argues, are more associated with culture because their freedom from reproductive duties allows them more time for cultural activities. Furthermore, in most if not all cultures, culture is more highly valued than nature, because culture tames, "cooks" (to borrow from Levi-Strauss), and civilizes raw nature into human culture. Therefore, because of these associations, women are less valued, their activities are less valued (even when these activities involve acculturating raw human infants into civilized human beings), and they accrue less status. Ortner argues that these symbolic values are cultural and therefore changeable and that women are equally cultural (human) as men and therefore not in reality "closer to nature."

Rosaldo's essay takes a different approach. Although she also links women's assumed lower position vis-à-vis men across cultures with female reproductive duties, she instead looks at the division between the domestic and the public. She argues that because of child rearing, women have been historically associated with the domestic in all societies and that the domestic sphere tends to be less valued than the public sphere, where men predominate. This analysis looks less at symbolic associations (as Ortner's essay does) and more at economic opportunities, although the relative values of the domestic and the public spheres are symbolic as well. Rosaldo argues, as Ortner does, that the values associated with the public and domestic spheres are arbitrary, as is the relative dominance of men in the public sphere and women in the domestic.

The *Toward an Anthropology of Women* collection in 1975 represents another milestone in the anthropology of women. This collection notes a strong bias in the field of anthropology of the time to assume a simplistic, direct correlation between biology and

gender roles, and it calls for more direct fieldwork, as the wide range of gender roles already suggested a cultural origin for them. The introduction (by Rayna R. Reiter) also notes that anthropology tends to have a double male bias, as it is written from a male academic perspective and is often (although not always) done in male-dominant societies. And last, Reiter problematizes the term *dominance*, noting that we do not have a singular definition for what we mean by it and that the people on either side of the "dominant" relationship may have different interpretations of it.

The essays included in the collection range from many detailed ethnographic accounts about women in different settings—including the Kalahari, Papua New Guinea, the Iroquois nation, the South of France, a Spanish village, Italy, the Dominican Republic, rural Colombia, Niger, and rural China—but also many theoretical essays, covering subjects that range from the much-debated matriarchy, to forager society, to the origin of the family. It also contains the first printing of Gayle Rubin's much-cited essay on "The Traffic in Women: Notes on the 'Political Economy' of Sex."

Rubin introduces the concept of the "sex/gender system" into the theoretical discussions about women and society. She suggests that previous theories fall short of the mark in explaining why women are cross-culturally oppressed. (Like the previous theorists discussed in this section, she assumes global male dominance.) However, she proposes that these theories can be used to build a picture of current cross-cultural forces creating gender inequities.

The theories Rubin analyzes include Marxist theory, which she points out does not explain why women are oppressed in noncapitalist societies, and Levi-Strauss's idea of the "exchange of women," which she sees as a confusion of the actual complex system of rights, social relationships, and statuses (one in which women do not have the same rights as men). Furthermore, she notes, the exchange of women is predicated on the family and the sexual division of labor (another analysis by Levi-Strauss), and this arrangement therefore is predicated on the construction of gender, sex, and obligatory heterosexuality—all constructed by culture. Rubin then turns to Freud and Lacan, postulating a "phallic culture" in which women are exchanged (in kinship structures) for phallic symbols, and moreover asserting that Freud's analysis of feminine psychological development is an accurate picture of how this phallic culture domesticates and dominates women. She sees Levi-Strauss's

analysis of kinship and Freud's analysis of the development of gender as fitting into one another like the pieces of a puzzle: Kinship depends on clearly defined sex roles, which depend on clearly defined genders, which develop out of familial structures that depend on kinship. This structure, she states clearly, is all dependent on removing rights, sexual pleasure, and opportunities from women. Furthermore, if one reintroduces Marx, one can see that the "exchange" of women in kinship structures has profound implications for economy, religion, and symbolic structures—it impacts many other aspects of social life. Therefore, it is not really possible to understand a culture without understanding the role and position of women in that culture.

Rubin concludes by noting that the sex/gender system, which is what she calls the interlocking leaves of the "traffic in women," is dependent on both halves of the system, the kinship and the sexual. If the sexual division of labor were not observed (if men as well as women cared for children), if heterosexuality were not compulsory, and if there were no "exchange of women," this system, which has already been stripped to its bones, sex/gender, in Western society, would break down. She calls for the elimination of the sex/gender system altogether, a system she feels is oppressive to both genders in that it prescribes extremely narrow roles.

All of these essays—and many more written during this era—represent the anthropological trend at the time toward "big-picture thinking:" attempts toward constructing cross-cultural explanations for trends and theorizing about human beings as a whole. The construction of male dominance as a global problem is also typical of Western feminist thinking of the 1970s. The topics of the essays were fueled by the second wave of feminism; indeed, it could be argued that this interest in the position of women and women themselves cross-culturally would not have emerged without feminism. These essays, however, present theories that are still used today as ways to explain why there is a trend toward male dominance (although one must be careful how one defines it) in many cultures across the globe.

Filling a Gap: Writing About the Unwritten

In addition to theoretical essays, the anthropology of women has also been concerned—and is still concerned—with simply writing ethnography about

women. The peculiar absence of women in early ethnographies means that there is much yet to be learned about women's lives across the globe. And given that there are many more cultures than there are anthropologists, there is still much more to learn about women in many societies. "Filling the gap"—producing and exploring ethnographies about women—is done in many ways and for different reasons. Filling the gap may involve simply filling a gaping hole in ethnographic knowledge; trying to explore issues in Western culture; dealing with a sex-segregated society; dealing with a sex-segregated aspect of culture that impacts society; or remedying inattention to women's involvement in important cultural matters.

It is interesting that *ethnography* about women actually began early on in the history of anthropology—well before the second wave of feminism provoked global theorizing about women cross-culturally. However, feminism increased awareness and interest in women's lives and many more ethnographies focused on women began to be published in the 1970s. All the same, ethnographies on women do exist prior to the explosion of theory in the 1970s. Two excellent examples are Ruth Landes's *The Ojibwa Woman* (1938) and Ruth Underhill's *Papago Woman* (first published as *The Autobiography of a Papago Woman, Memoirs of the American Anthropological Association No. 46*, 1934). Both of these are biographies, or autobiographies, if you will, stories told to the (woman) ethnographer by the women involved.

Underhill's *Papago Woman* recounts the life of a woman of the Papago people, Native Americans living in the Arizona area. Underhill's interviews took place late in her informant's life and cover many aspects of Papago life as well as Maria Choma's own complex life story. Landes's *The Ojibwa Woman*, in contrast, presents the stories of a single woman, which are not about herself, but about other women of the tribe. Both ethnographies, as well as others published during this time, are intended to record information about the women of these peoples, who have been largely ignored in other ethnographies or conventional accounts.

This interesting trend of "biographical ethnography," established so early in the anthropology of women, continues to the present day. Although the focuses of such biographies of women change, ethnographies of particular women have always been a distinguishing feature of the anthropology of women.

The classic example of such an ethnography is Marjorie Shostak's *Nisa: The Life and Words of a !Kung Woman* (1981).

Shostak's ethnography is not only Nisa's life story; Shostak also provides chapter introductions that are intended to produce a larger ethnographic explanation of !Kung life. The ethnography is also intended, as Shostak explains in the introduction, not only to introduce the reader to a largely gender-egalitarian way of life but also to answer questions about Western culture and gender roles as well. The use of Nisa's life story in this way is a particular style of ethnography that owes much to the "big-picture" questions discussed in the previous section: Is male dominance universal? Shostak asks. What can Nisa's life tell us about our own society? (Later styles of biographical ethnography focus on very different things, as we shall see below.)

Not all ethnographies of women focus on particular women, of course. Elizabeth Warnock Fernea, originally a journalist, produced a series of remarkable ethnographies of women in the Middle East while traveling there with her anthropologist husband. Her *Guests of the Sheik: An Ethnography of An Iraqi Village* (1965), an account of living with Iraqi women in an isolated village, is an excellent ethnography of a group her husband could not possibly have had access to—the women in a highly sex-segregated society. Although cases like Fernea's are rarer today (we like to think that most anthropologists enter the field on their own account), the fact is that female anthropologists are more able to access female informants in many contexts, especially sex-segregated ones. Access to women in sex-segregated societies is one argument for using female anthropologists to fill the gap of information on these societies.

Another example of female access on the part of the anthropologist is Diane Bell's *Daughters of the Dreaming* (1993), an exploration of aboriginal women's ritual activity and religion at Warrabiri in Central Australia. While the people she worked with were not a sex-segregated society—far from it—her subject was a sex-segregated one, as magic, religion, and ritual often require sex segregation in this culture. Her ethnography covers the entire community of men and women, with a particular focus on the subject of women's ritual, religion, and magic and how it influences the community and the impact it has on gender and people's lives. Bell produced an important ethnography, for while we know a great

deal about men's ritual, we know much less about the ritual of women and how it is intertwined into the lives of people in general.

Last, Annette Weiner's *Women of Value, Men of Renown: New Perspectives in Trobriand Exchange* (1976) should be mentioned as a final example. Published in the same era as *Woman, Culture, and Society* and *Toward an Anthropology of Women*, this volume represents an ambitious attempt to refigure exchange and value in the Trobriand Islands, the same area where Malinowski did his fieldwork. Focusing on exchange between women as well as the exchange between men made so famous by Malinowski, Wiener suggests that there are entire dimensions of Trobriand value and exchange that we simply did not know about, because women and their work and exchange systems were previously omitted from the analysis. Her version of filling the gap suggests that omitting women from the picture in the first place may have resulted in an inaccurate portrait of Trobriand exchange.

Positioning Ourselves: Writing About Women, Writing About Theory

Current work in the anthropology of women is extremely diverse. Although Kamala Visweswaran suggests in her "Histories of Feminist Ethnography" (1996) that the problematization of "woman" as a biological (and therefore universal) category has to some extent scattered work in the field, the anthropology of women is still very *active*, though it varies widely. This question, among others, has complicated the issue of doing fieldwork among women: How do we define *women* if anthropologists view sex as a social rather than as a purely biological category? That is, since we cannot experience our biology save through the lens of our culture, biology has cultural meaning. Given that cultural meanings can vary, is there really a single category of people called women?

How do we locate women in the web of race, ethnicity, sexuality, class, nation, and other relationships? What about the relationship of power between the anthropologist and the informant, especially considering that we're working in a world shaped by colonialism? And what is gender, and how does it work?

All of these questions and more are being posed by theorists and ethnographers today. Let's start with a familiar name, Sherry Ortner, who in the 1970s wrote a famous essay ("Is Female to Male as Nature is to

Culture,” above) and has been writing ever since. Her essay “Making Gender: Toward a Feminist, Minority, Postcolonial, Subaltern, etc., Theory of Practice” introduces the problem of dealing with structural forces and agency. Too much emphasis on the former erases the ability of the individual to make decisions; too much emphasis on the latter often results in a blame-the-victim mentality. Ortner proposes using *practice theory* (sometimes called “praxis theory”) to analyze how people negotiate their own agency and power within the constraints of structural forces. What does this have to do with gender? Practice theory allows one, Ortner argues, to look at motivations and constraints without being blinded by or ignoring gender, as well as seeing gender as a system in which people have a certain amount of agency while dealing with the constraints of their culture.

Lila Abu-Lughod suggests a different theory and a different method. Her theory is inextricably intertwined with her ethnography, and she engages a program of “writing against culture.” In *Writing Women’s Worlds: Bedouin Stories* (1993), Abu-Lughod suggests that anthropology uses ethnography and the concept of “the culture” as a form of division and difference, and she sets up her ethnography—the stories of individual women, told in their words (although chosen, arranged, and translated by Abu-Lughod)—to combat that. There is no commentary, no frame as there was with Shostak’s *Nisa*. Abu-Lughod presents us with the lives of individual women (in a callback to the ethnographic biography), in order to let readers find their own commonalities with Bedouin women.

An excellent example of a positioned ethnographic biography is Ruth Behar’s *Translated Woman: Crossing the Border With Esperanza’s Story*, which deals with issues not only of translation and border crossings in her recounting of one Mexican woman’s life but also with identity, both Esperanza’s and her own. Behar, considered Cubana and a Spanish speaker in the United States, is a *gringa* in Mexico, and her dual identity is one of the things that she reflects on in the epilogue, as well as Esperanza’s identity as a *mestitza* and a native of a country poorer than her own. Power struggles, poverty, language, and race all tie into Behar’s and Esperanza’s identities as women. This ethnographical biography examines the power relationship between the ethnographer and the informant as well as their more intimate relationship as two women who were friends and *comadres*.

Ruth Behar was also a coeditor, with Deborah A. Gordon, of the *Women Writing Culture* (1995) collection, a book that ambitiously looks beyond collecting ethnographies or theories to the creation of a feminist canon in the anthropology of women. The Introduction by Behar suggests the creation of such a canon of anthropological theory, and the volume’s essays suggest an emphasis on a new vision of anthropology. While this book might be more firmly placed in “feminist anthropology” than in “the anthropology of women,” it is telling that the ethnographies published in it—Smadar Lavie’s work with third world women poets in Israel, for example, and Aiwha Ong’s essay on views of Chinese women—are of women. Feminist anthropology is concerned not just with the anthropology of women, but it is definitely concerned with it, and that concern is reflected in this volume.

Both current concerns with gender theory and particular populations are reflected in Kath Weston’s work. Weston researched gender and gender identity among lesbians in her book *Render Me, Gender Me: Lesbians Talk Class, Color, Nation, Studmuffins . . .* (1996). Both the idea that gender is not inextricably linked to the division between male and female and the identification of lesbians as a population that have historically not been well researched make Weston’s work highly valuable in the anthropology of women.

Certain elements in the study of reproduction and motherhood have been a focus of researchers in the anthropology of women all along. Nancy Scheper-Hughes, in her classic ethnography *Death Without Weeping: The Violence of Everyday Life in Brazil* (1992), looked at maternity and child death among the poorest of the poor in Brazil, using a study of societal and political forces to show that the lives of poor women are both strategic and embedded in larger social forces that produce poverty.

All of these examples (taken from a much larger canon) of ethnography about women showcase the diversity of current writing about women and theorizing about women and anthropology. Despite—or perhaps because of—the many different theoretical approaches to the anthropology of women today, it is a flourishing and fascinating field.

—Keridwen N. Luis

See also **Anthropology of Men; Ethnographic Writing; Gender; Mead, Margaret; Sex Roles**

Further Readings

- Reiter, R. R. (1975). *Toward an anthropology of women*. New York: Monthly Review Press.
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ANTHROPOLOGY, CAREERS IN

In all their professional endeavors, anthropologists study human experience and behavior within a cultural context, which means that they can be employed in a wide array of settings. While the market for academic anthropologists has remained relatively limited, opportunities for nonacademic employment of anthropologists have expanded. The demand for those able to analyze and interpret the ever-increasing volume of data for government, business, and nonprofits is escalating. As a result, a new subfield, applied and practicing anthropology, is gaining ground within the discipline where anthropological knowledge, methodology, and theories are employed to initiate or facilitate action to address a community or organization's problems. This entry describes the variety of settings and roles in which anthropologists work, the training and skills required, the nature of institutional support, and typical work conditions for this profession.

Job Settings

Globalization has altered the nature of the anthropological job market, with government agencies, transnational and international corporations, non-governmental organizations (NGOs), and nonprofits requiring a deeper understanding of diverse cultures and increased accountability and evaluation to compete for funds and sustainability as never before. With increasing migration and the resulting mega-urbanization, the preservation of culture and traditional lifeways remains an ongoing concern. Clearly, anthropologists' training ideally suits them for this type of work. Anthropology is uniquely applicable to the 21st-century job market, which is increasingly global, diverse, and user oriented.

Anthropologists can pursue either the traditional academic arena or a career path as practitioners.

Academic jobs are based at universities and colleges, where anthropologists teach and conduct research, occasionally supplemented with some outside applied work. However, over the last 30 years, the majority of anthropologists with master's and doctoral degrees have found employment in nonacademic settings, working as researchers, consultants, and advocates for communities, government agencies, organizations, and corporations. Practicing anthropologists most typically use their skills to facilitate action or to provide information for policymakers to better human conditions.

Anthropologists work in a variety of domains, including but not limited to agriculture, archeology, business and industry, criminal justice, cultural resources, development, education, energy development, environment, government, health care, human rights, museums, natural resources, law enforcement, nutrition, public housing, recreation, resettlement, substance abuse, transportation, urban development, and wildlife. Jobs vary greatly and often are not labeled as "anthropologist." Instead, their position may be called researcher, evaluator, impact assessor, consultant, mediator, program director, administrator, manager, management analyst, human resources specialist, curator, historic preservationist, marketing expert, housing director, international development officer, development or environmental consultant, diplomat or local government official, police specialist, substance abuse counselor, human ecologist, forensic specialist, fundraiser, or cross-cultural trainer. All these roles may not be directly related to anthropology, but there are multiple ways an anthropology background can enhance a person's job performance in these as well as other positions. According to a National Science Foundation survey, a majority of people earning sociology and anthropology degrees in 2000 in the United States found jobs only somewhat or not at all related to their field.

Some practicing roles may require technical knowledge of fields related to the job, such as familiarity with crop and livestock production, commodity markets, and related policy and regulation in the field of agricultural development. Typically, anthropologists also become educated in fields related to the domain in which they practice. For example, an agricultural anthropologist would most likely need to have a working knowledge of agricultural economics and plant biology related to food productivity. This interdisciplinary aspect often entails interaction among government agencies (at home and abroad)

and their constituents, translators, and medical personnel; other social scientists such as psychologists and sociologists; public policy officials, statisticians, and market researchers; and the community or individuals being studied. The intrinsic collaboration of applied work requires that the anthropologist be skilled in negotiating competing interests and stakes. Anthropologists working in the private sector often have additional administrative or managerial responsibilities, such as handling budgets and staff, negotiating contracts successfully, and meeting marketing needs. They also figure prominently in decisions regarding policy and programs, acting as change agents by scrutinizing a topic and providing recommendations based on findings.

Training and Skills

The skill set acquired by anthropology students results in much flexibility in the job market. According to the American Anthropological Association, such students are trained in “careful record-keeping, attention to details, analytical reading, . . . [s]ocial ease in strange situations, [and] critical thinking,” to the more specific “range of social, behavioral, biological and other scientific research methods . . . supplement[ing] statistical findings with descriptive data gathered through participant observation, interviewing, and ethnographic study.” However, a career in which one is specifically employed as an anthropologist, either within the academy or without, requires an advanced degree. A doctorate can involve extensive time commitment in fieldwork sometimes entailing inconvenient transportation and poor living conditions. Fieldwork culminates in the writing of a dissertation, which is often the basis of a first book. Those interested in an academic career in anthropology should be aware of the level of commitment required: the length of time to complete a doctorate in anthropology after the undergraduate degree can reach 8 to 9 years, with as much as 12 to 30 months spent on a field project as the subject of the dissertation. Still, the many rewards of an academic career in anthropology are reflected in the increasing number of students in masters’ (from 297 in 1966 to 950 in 2000) and doctoral (from 109 in 1996 to 448 in 2000) anthropology programs in the United States.

A broad training in anthropology prepares a student equally for nonacademic and academic positions, as both roles require the same basic skills and knowledge grounded in ethnographic practices research, data

collection, data analysis, secondary data use, and information dissemination. Since traditional long-term ethnography is still the cornerstone of anthropological work, data collection and evaluation methods require quantitative and qualitative skills such as interviewing and keen observation, data recording, transcribing, coding and analysis, and the ability to design research that quantitatively tests hypotheses. Quantitative skills, including facility with statistical analysis software such as SPSS or SAS, are critical for practicing or academic work. All anthropologists are expected to have a strong understanding of complex societies and anthropological theory and the ability to adapt to diverse settings and people.

Practicing jobs require more time-sensitive research, since those supplying the funding for research often set the deadlines. This means practitioners must be prepared to adapt to a chosen specialization at any time and learn new methodologies that incorporate more efficient practices such as rapid assessment procedures (RAP) and participation action research (PAR), which involve innovative forms of direct observation and participation by the study population using focus groups, streamlined surveys, aerial photographs, satellite imagery, GIS or spatial mapping, and role playing. In addition, students are encouraged to gain training or take coursework in a substantive field related to their career objectives, such as health, nutrition, agriculture, environment, administration, law, economics, education, technical writing, communications, computers, and public speaking. For example, an individual with interests in environmental justice would be better qualified with additional education in environmental science, or someone with an interest in health care could pursue additional training in public health.

Written and oral communication skills are equally essential to professionals in anthropology; however, many programs do not specifically teach these skills. While student teaching and preparation of term papers, theses, and dissertations, journal articles, and conference presentations can help build communication skills, these activities alone cannot teach proper proposal and report writing, which are crucial for obtaining funding and functioning as practicing anthropologists. Neither do they fully prepare professionals in training for producing the type of accessible exposition demanded for the dissemination of findings—bulletins, brochures, monographs, policy reports, press releases, formal letters, persuasive

reports, educational videos and informative radio, and so on. Most anthropologists are compelled to learn these skills on the job.

Finally, gaining applied experience helps students practice their skills in a real setting, obtain feedback on methodologies employed, and see the connections between research policy decisions and the impact of those actions on individuals and communities. Traditional anthropology is often characterized by extended trips to remote locations; however, the present-day reality of anthropological research frequently involves short-term research projects and consulting. Instead of face-to-face time being necessary for fieldwork, researchers can now use technologically advanced systems for survey and analysis and communication via Internet and telephone. Students can gain experience in such practical application through a number of venues: enrollment in a master's practicum; conducting research with faculty; securing paid or unpaid work with cooperative education programs, groups like the Peace Corps, or community or local human service agencies; or through finding relevant internships.

Institutional Support

Key sources for job listings vary, depending on sub-field and area of interest. The primary means for

finding employment as an anthropologist include online networking forums like AnthroTECH.com's AnthroDesign or on anthropological association Web sites such as those of the American Anthropological Association (AAA: aaanet.org), the Society for Applied Anthropology (SfAA: sfaa.net), the National Association of Practicing Anthropologists (NAPA: practicinganthropology.org), and the Washington Association of Professional Anthropologists (WAPA: smcm.edu/wapa); and in various publications, such as the AAA *Anthropology Newsletter*. Networking continues to be a significant source for locating career opportunities and enhancing skills.

Joining professional associations and attending and participating in meetings, forums, and conferences helps individuals entering the field gain recognition within the discipline and the latest information on emerging methodologies and technological innovations, all of which can aid in finding work or in advancing professionally. At the national level, such organizations include the AAA, SfAA, NAPA, WAPA, and the High Plains Society for Applied Anthropology (HPSfAA). At the local level, groups like the Northeastern Anthropological Association and field-specific groups like the Society for Medical Anthropology, the Political Ecology Society, and the Indo-Pacific Prehistory Association are often equally helpful. In August 1948, the International Union of

Anthropological and Ethnological Sciences (IUAES) was founded to meet the need for a worldwide network. In 1993, anthropological groups from the United States, France, Great Britain, Mexico, Canada, and the former USSR, among others, developed the Commission on Anthropology in Policy and Practice within IUAES to develop a similar network among the exponentially growing applied and practicing fields. Reflecting the breadth of interests involved, the IUAES has 27 committees, several of which indicate the changes in anthropology over the last century and



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include Aging and the Aged, AIDS, Documentation, Food and Food Problems, Cultural Dimensions of Global Change, Medical Anthropology and Epidemiology, Museums and Cultural Heritage, Tourism, Urban Anthropology, Indigenous Knowledge and Sustainable Development, Mathematics, Bioethics, and Human Rights and Primatology.

Work Conditions

Anthropologists commonly work with others outside their discipline. The intrinsic interdisciplinary nature of their nonacademic work demands collaboration and translates into competition for jobs not only from other anthropologists but also from those with whom anthropologists often work, including sociologists, psychologists, statisticians, market researchers. In terms of salaries, those who work in institutions of higher learning in the United States could expect a salary from mid-\$30,000 to \$70,000 or higher for an academic year, depending on the years of experience and institution of employment. According to the National Education Association, the average salary for anthropology faculty in 1999–2000 was \$56,391 for public and \$60,085 for independent 4-year institutions. Nonacademic work for government and private sectors offers slightly higher salaries in comparison, also dependent upon years of experience and employer. According to the AAA biennial survey of anthropology PhDs, 29% of 1997 U.S. PhD graduates took nonacademic jobs. Interestingly, respondents employed in nonacademic positions were slightly more satisfied with their employment situations than those who were academically employed.

Applied anthropologists sometimes experience problems in their roles relative to sponsors' demands and possible resulting ethical dilemmas, as well as uncertainty when it comes to power or control. Occasionally, practitioners complain about not having enough power to ensure follow-through with recommendations for action or policy, but few seek positions of power. In 2000, the National Association for the Practice of Anthropology (NAPA) sponsored a survey of members with masters in applied anthropology, in which 22% identified their current roles as managers and about 10% as administrators. Anthropologists need to realize that they must take positions that enable them to make decisions without losing the

dynamic that is at the heart of anthropology—the relationship with the study community or individuals. There are instances where anthropologists cannot simply make a scientific decision. They may feel constrained by client wishes and fall into the role of social technician or social engineer without much input from the study population. Alternatively, practitioners may choose to make moral judgments regarding their work by preselecting clients with similar ideologies.

Anthropologists must use existing ethical guidelines (especially from professional associations such as AAA, SfAA, and NAPA), laws, and policies to make sound professional judgments by relying upon a framework that can help balance the pulls between positivistic science, morality, and client needs. It is important that anthropologists understand that though ethical considerations must be part of any professional decision, they are not the sole determinant. Such a professional framework is an essential foundation to building sound judgment for pursuing a successful career in anthropology.

— Satish Kedia

See also **Anthropology, Practicing**

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ANTHROPOLOGY, CHARACTERISTICS OF

Anthropology is the study of people, society, and culture through all time and everywhere around the world. Three of its main characteristics are an ongoing debate between evolutionism and cultural relativism, the use of cross-culture comparison, and ethnographic research based on “participant observation.”

Anthropology shares certain basic characteristics with her sister disciplines of biology, history, sociology, political science, and economics. These characteristics arise from a common Enlightenment heritage. One is an emphasis on collecting information by means of the human senses, rather than from revelation or authority. A second is the interplay between general understandings, usually labeled *theory*, and specific information, sometimes called *data*, used as evidence to support or to challenge a general understanding. And a third is the expectation that general understandings will change and improve as information becomes more complete.

These characteristics have not gone totally unchallenged in recent times. Influential thinkers sometimes come to be regarded as beyond criticism, their pronouncements deemed authoritative and not open to debate. In the anthropology of the 1970s, Karl Marx was deemed to be such an authority, and critics seemed to be worthy of excommunication. This phase passed with the fall of the Soviet Union. More recently, from the 1990s, the Enlightenment foundation has been attacked on philosophical grounds by postmodernism, which rejects knowledge gained through the senses and any formulations of general knowledge, and replaces them with analytic deconstruction and subjective expressionism and political commitment. This self-identified “experimental” phase has not as yet established a substantive alternative to Enlightenment anthropology, and so its offspring remains unknown.

With this background in mind, let us turn to the characteristics that distinguish anthropology from her sister disciplines. I will present this discussion in terms of three characteristics: first, the theoretical debate between evolutionism and cultural relativism; second, the analytical device of cross-cultural comparative analysis; and third, the methodological strategy of “participant observation.”

Evolutionism and Relativism

During its emergence in the 19th century, anthropology was inspired by and absorbed the dominant “master discourse” of the time, evolutionism. The place was Great Britain, and the circumstance was imperial and colonial expansion, and contact and engagement with other peoples and other cultures. Models of evolution, originally conceived in geology and biology, which were being applied by foundation sociologists to the stunning, transformational social changes in Britain and Europe during the 18th century and continuing into the 19th, were applied by foundation anthropologists, in some cases the same scholars who were founding sociology, to cultural differences of peoples around the world.

As with biological evolutionism generally, anthropological evolutionism posited higher and lower levels of accomplishment, of development, of human and social existence. Particular societies and cultures around the world could be identified according to their level of achievement; in one scheme, the levels, each defined by technology and social arrangements, were labeled “savagery,” “barbarism,” or “civilization.” Even the theoretical alternative of diffusionism, which stressed borrowing rather than internal development and identified centers of creations and secondary recipients, was consistent with the comparative spirit.

Evidence relevant to placing particular peoples and cultures was diverse: biological for racial differences, linguistic for language differences, archaeological for historical differences, literary for historical differences with classical and other literate societies, and cultural for current patterns. However, during the 19th century, most anthropologists were “armchair anthropologists,” relying on first- or secondhand reports from others for their information or “data.” The most prominent anthropologist of his time, Sir James Frazer, author of *The Golden Bough*, when asked if he had met any of the “savages” of whom he had spoken, famously (these days: incorrectly) replied “Heaven forbid, Madam.”

The early 20th century brought with it a reaction against and shift away from evolutionism, particularly in sociocultural anthropology. This resulted (at least in part) from firsthand contact by anthropologists with the cultures under study by anthropologists, which led to three new emphases: first, the study of cultures in all (or at least more) of their great

complexity and richness, instead of as illustrations of a few general and abstract categories; second, the study of cultures as wholes, as opposed to the recording of one or two traits or characteristics; and, third, the study of cultures on their own terms, without applying external criteria of evaluation, which is what we mean by cultural relativism.

This development can be seen in the work of Bronislaw Malinowski and Alfred Reginald Radcliffe-Brown, who established British social anthropology, with its emphasis on social relations, and Boas, who established New World cultural anthropology, with its focus on conventional knowledge. These schools, in addition to sharing the points mentioned above, differed on some points: In Britain, social anthropology developed more or less independently of archaeology and prehistory, linguistics, and physical-biological anthropology, while in the New World, Boas championed “four-field” anthropology, the continuing association of archaeology, linguistics, physical anthropology, and cultural anthropology. And, while some British social anthropologists advocated and attempted comparison and generalization, Boas favored a more particularistic and relativistic approach, emphasizing historical and descriptive accounts of particular cultures.

Subsequent theoretical developments in 20th- and 21st-century anthropology can be read, at least in part, as a debate between the cultural relativism established in early sociocultural anthropology and the evolutionism rooted in the 19th century. A constant side dialogue with prehistoric archaeology, which more consistently maintained the evolutionary approach (although some contemporary archaeologists disdain the term) kept the evolutionary tradition easily within reach. In New World cultural anthropology, the evolutionary approach was resuscitated twice in the mid-20th century, once by the influential University of Michigan evolutionary school and two decades later by the emergence of a major movement of Marxist anthropology, Marx of course having been a major 19th-century evolutionary thinker. Cultural relativism strode back with interpretive anthropology and more recently post-modernism, which extends cultural relativism to epistemological relativism and thus advocates particularity and subjectivity.

Thus, it appears that a central characteristic of anthropology is its ongoing, and apparently endless, debate between evolutionism and relativism.

Cross-Cultural Analysis

Comparison is a basic element in human thinking, whether in juxtaposing instances or cases for purposes of evaluation (“This tea is better than that”) or in order to establish concomitant variations (“This color makes me look healthy”; “That color makes me look sick”). Anthropology’s sister disciplines constantly engage in comparative analysis: “Members of the middle class are a, b, and c, while members of the working class are d, e, and f.” “Businesses with a unionized labor force must do x, y, and z, while those without do m, n, and o.”

What sets anthropology apart is its emphasis on cross-cultural comparison. Even particularists cannot avoid cross-cultural comparison, for even description requires categories that indicate similarity and difference. Whether explicit or implicit, cross-cultural comparison is always present in anthropology, for we can hardly avoid thinking of the cultures we study as similar to or different from our own and others we know of. Margaret Mead was quite explicit in *Coming of Age in Samoa*, comparing girls’ puberty in Samoa with girls’ adolescence in America. Bronislaw Malinowski in *Sex and Repression in Savage Society* compares the oedipal complex in patriarchal Europe with that in the matrilineal Trobriands. Ruth Benedict’s *Patterns of Culture* is a paradigmatic example of particularistic comparison, which, while identifying general types, remains at the descriptive level, disdaining the search for concomitant variations.

Comparison is the main analytic tool of anthropology, because, unlike laboratory scientists, anthropologists cannot pursue their studies with experiments. Nor are the statistical exercises of the economist usually available to the anthropologist, who commonly works in or on societies in which systematic collection of economic data did not or do not exist. Nor are the surveys of the sociologist and political scientist usually feasible, and even if they were, they would simply add grist for the comparative mill. Cross-cultural comparison provides anthropologists with a wider field of view, both in space and time, than that of the sister disciplines, which commonly limit their studies to one or a few similar societies. The breadth of anthropology, thanks to cross-cultural comparison, is one of its main strengths.

Participant Observation

The primary methodological strategy of cultural anthropology is *participant observation*, immersion

among the people being studied and engagement with them through taking part in their activities and discussing with them their activities. Direct observation and face-to-face conversation with the people under examination are central elements in ethnographic *fieldwork*, which is the other label used for participant observation. This direct engagement is necessary because the first goal of ethnographic fieldwork is to understand the culture and society from the point of view of the people themselves—to understand it as they do.

Reconstructing from the past obviously precludes this strategy. Archaeologists and prehistorians must rely upon the remains from past cultures, whether material such as bones and buildings or documentary from written records, as sources of information for the inferences required for drawing a picture of the culture. And anthropology's sister disciplines prefer short-term, formal measures, with sociologists favoring questionnaire surveys, political scientists questionnaires or organizational charts, and economists aggregate statistical data.

Participant observation has both strengths and limitations. One limitation is that working face-to-face with a handful of people, whether in one community or in a "multiple site" study, makes it difficult to know how representative the people, and thus the information gleaned from and about them, is of any larger population and culture. Another limitation is that "contact" and "engagement" with the people under study are vague terms requiring no particular technique and no mandated precision. The result can easily be strong sentiments and vague impressions. On the other hand, participant observation can make possible an intimate knowledge based on repeated observation and on triangulation, the drawing on multiple sources of information to test and retest understanding. And careful attention to local perspectives can reduce misinterpretation, which is a great risk with formal measures predesigned by outsiders. In short, one of the great strengths of anthropology is that participant observation brings the researcher closest to the people, or rather, to some people.

The spirit and substance of anthropology have been formed and expressed in the pursuit of and the debate between evolutionism and cultural relativism, in the analytic exercise of cross-cultural comparison, and in the practice of fieldwork by means of participant observation.

— Philip Carl Salzman

See also **Anthropology, History of; Cross-Cultural Research; Cultural Relativism; Participant Observation**

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ANTHROPOLOGY, CLINICAL

The defining characteristic of clinically applied anthropology is that it is anthropology practiced in health care settings: hospitals, clinics, health professional schools, and health care delivery systems of all kinds. The health care arena is so wide ranging and complex that it almost requires the kind of complete immersion that comes from working within the system itself and with its practitioners in order to do relevant research, theory building, teaching, and consulting. Anthropologists working within this branch of anthropology apply data, theory, and methods that clarify specific clinical issues and suggest changes in patient care, health maintenance, and health care delivery.

Alternative names have been suggested for the sub-discipline: "clinical anthropology," "clinically applied anthropology," "clinically applied medical anthropology," and "applied medical anthropology." The critical issue in the choice of a name turns on the roles the anthropologist necessarily must assume in the health care setting. Early on, concerns were expressed about the title "clinical anthropologist," a title that was thought indirectly to imply that the anthropologist could perform patient interventions. With the exception of those anthropologists who have additional licensure in medicine, nursing, or therapy, there are legal/liability issues in their involvement in direct patient care beyond that of a consultant to licensed health care providers. This concept of a restricted role vis-à-vis patients is not shared by all: clinical anthropologist and naturopathic doctor John Rush argues for a hands-on therapeutic role for clinical

anthropologists. However, the roles assumed by anthropologists who apply their skills within clinical settings are, by and large, those of teacher, consultant, and researcher. Usually, the clinically applied anthropologist combines all three. The term “clinically applied anthropology” will be used in this entry.

The field began to be distinguished as a separate subdiscipline of medical anthropology in the late 1970s and early 1980s with the appearance of the writings and research activities of the following individuals: Arthur Kleinman, Leon Eisenberg, Byron Good, Noel Chrisman, Thomas Maretzki, Dimetri Shimkin, and Peggy Golde. The activities of these anthropologists and their colleagues announced a trend that was to run through the subdiscipline from that time to the current day: the close, interdisciplinary collaboration between health care professionals and anthropologists. Three early writings are illustrative of this collaboration, with the first being a seminal article, “Culture, Illness, and Care: Clinical Lessons from Anthropologic and Cross-Cultural Research,” by physician anthropologist Kleinman, psychiatrist Eisenberg, and anthropologist Good. Both the edited books by Chrisman and Maretzki, *Clinically Applied Anthropology*, and Shimkin and Golde, *Clinical Anthropology*, are comprised of chapters written by anthropologists, physicians, psychologists, psychiatrists, and others working in direct patient care. At about this same time, anthropologist-nurses began to make their influence known in the work of Pamela Brink and Madeleine Leininger.

Biomedical Culture as a Focus of Research and Analysis in Clinically Applied Anthropology

Anthropologists who have centered their work in health care settings have, in a very real sense, entered a well-defined and pervasive culture, that of biomedicine, that is very different, sometimes antithetical to, the culture of the social sciences. In terms of time management, behavioral norms, vocabulary, values, and, especially epistemological perspective, biomedicine and anthropology are worlds apart. The tension between the positivist, empiricist worldview that suffuses biomedicine and its allied fields and the mostly interpretive, constructivist approaches to human sickness and suffering that characterize much of anthropological thought is broadly discussed in the writings of Fabrega, Kleinman, Hahn, and Good.

What constitutes knowledge and knowledge claims in anthropological understandings of illness are often not considered central to the diagnosis and treatment of disease in biomedicine. This contrast has created obstacles, difficult but not at all insurmountable, for anthropologists who work in health care settings. In some degree, anthropologists have found significant subject matter for theoretical formulations and research about human sickness in the contrast between the traditional perspectives of anthropology and biomedicine.

For example, a major focus of research for anthropologists in clinical settings has been that of examining and describing the characteristics of the culture of biomedicine itself and the role of physicians as central actors in this hierarchical universe. The socialization into that culture of students as they become clinicians and acquire what Good has called the “medical gaze” has been another closely examined subject for anthropologists. This unique way of seeing the body and the world of disease permeates the world of health care as a particular and distilled expression of Western rational and object-centered thought. Clinically applied anthropologists generally see this narrowness of focus in biomedicine as a failure to treat suffering patients as whole persons within sociocultural contexts of meaning. They have taken the opportunity to build contrasting models of human suffering through mental and physical disorder that emphasize illness as experienced by patients within a wider experiential and symbolic world as described by Kleinman and Hahn.

Taking a somewhat different perspective in his examination of biomedical culture, critical medical anthropologist Merrill Singer, from his vantage as researcher at the Hartford Health Clinic, mounted a critique of medical anthropology in general and the role of anthropologists in health settings in particular. He and other anthropologist colleagues such as Hans Baer and Nancy Scheper-Hughes saw many clinically applied anthropologists as having “bought in” to the power structure that constitutes the biomedical system. The critical medical anthropologists pointed out that the distribution of illnesses suffered by patient populations, their access and response to care, and differential treatment outcomes were the result of macrolevel socioeconomic and political forces that were replicated and perpetuated in the biomedical system. Another allegation made by this critique was that anthropologists who do research and other work

in the health care system perpetuate the inequities within it by ignoring the structural and political factors that cause these disparities. Many clinical anthropologists disputed this allegation, calling attention to a long tradition in medical and clinically applied anthropology of examining these factors in the social production of disease and expressing an unwillingness to reduce illness and the interactions between patients and health care systems solely to the paradigm of class struggle.

Clinical Anthropologists as Educators

Despite the differences in perspective between biomedicine and anthropology, or perhaps, ironically, because of them, clinically applied anthropologists have found important niches in medical and health care settings as teachers and consultants. Clinicians and others who design health care delivery systems are ultimately concerned with successful patient outcomes, and such outcomes are very inconsistently obtained despite the ongoing development of new diagnostic methods, medicines, and treatment modalities. The last two decades have seen a growing emphasis on patient-centered care and the importance for clinicians of building workable therapeutic alliances with their patients. Within this context, the “anthropological gaze” has come to be valued, particularly in medical and nursing schools.

In many schools, clinical anthropologists have made a contribution through teaching health care professionals anthropological techniques and concepts useful to their everyday practices. Teachers and trainers have concentrated their efforts most successfully in two areas: enhancing patient/provider communication and integrating patients' sociocultural context into diagnosis and treatment planning. For example, one of the most enduring and clinically useful techniques taught was Kleinman's method for eliciting a patient's explanatory model (EM) of his or her sickness through a set of several questions that might be used in taking a history or making a differential diagnosis. The questions served to help the clinician grasp the patient's understandings of the causes and characteristics of the illness problem and its effect on his or her life. Providing this context allowed the clinician to move from the narrow perspective of *disease*, which considered only the physical pathology, to a broader view that encompassed the patient's *illness*, the lived experience of the sickness

from the patient's point of view. Based on this wider understanding, the clinician's communication with the patient was greatly improved, and negotiating a treatment plan that ensured acceptance was more probable. The concept of a patient's explanatory model or emic paradigm has been widely used in educational and training programs since Kleinman and his colleagues introduced it.

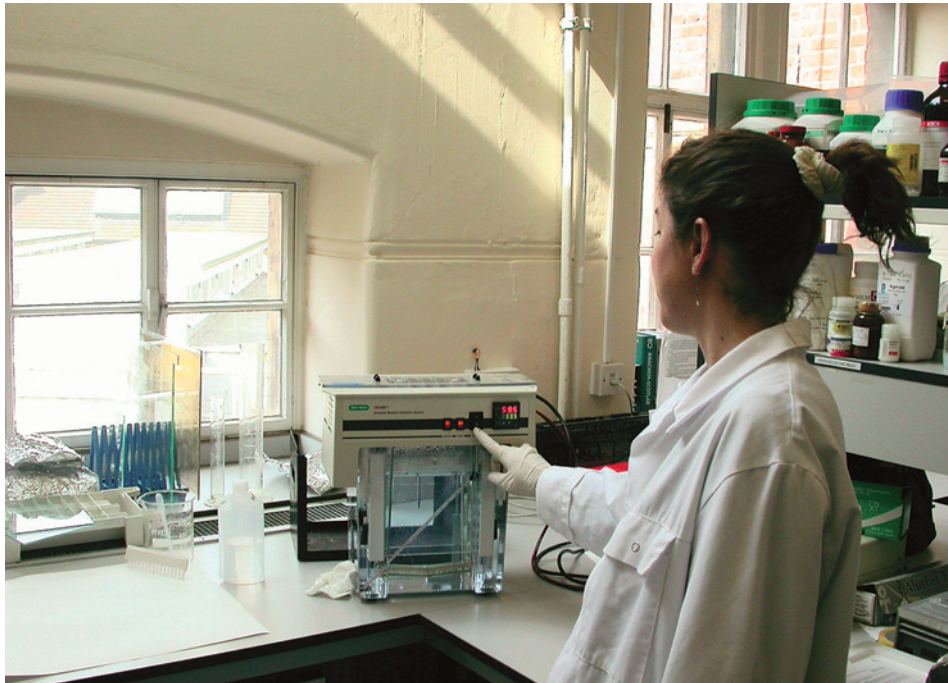
Early on, according to the writings of Noel Chrisman and Robert Ness, medical, dental, pharmacy, and nursing students, as well as other budding health professionals, were found to be initially resistant to the teachings of clinical anthropologists and questioned the relevance of this “soft” subject matter in the curriculum. This resistance persists to this day, though to a lesser degree, and is based on the strong scientific focus of clinical students and their lack of formal training or previous exposure to the social and behavioral sciences. Teaching clinically applied anthropologists has successfully overcome such resistance by concentrating on integrating anthropological materials into the teaching of specific skills required of clinicians: healing, educating, and planning. This is done by consistently integrating social and cultural factors surrounding disease processes alongside discussion of physiological processes, connecting the dots in the relationship of one to the other. The utility of understanding patients' perspectives and life circumstances is made essential to effective information transfer and treatment planning. Cultural elements are woven into case studies that students then analyze. In the study of epidemiology, concepts of social epidemiology, that is, the social and cultural factors involved in the distribution, symptom expression, onset, course, treatment, and outcome of illnesses, are made clear. Clinically applied anthropologists often serve alongside physicians and nurses as preceptors in community-based clinical rotations. Students are exposed to clinically applied anthropologists when they participate in hospital rounds and as consultants in case management discussions.

In the last 10 years, as a result of the drive for cultural competence/cultural responsiveness in health care, teaching of anthropological concepts to practicing clinicians working in health management organizations, community clinics, hospitals, and mental health facilities has been ongoing. Instead of classes and preceptorships, clinically applied anthropologists organize workshops and staff seminars as well as participate in grand rounds and resident training.

Innovative strategies geared to adult learning are used. Geri-Ann Galenti, for example, has written a very well-accepted book of cultural case studies organized around clinical themes that she uses as a basis for on-site workshops in hospitals and clinics. Jean Gilbert, in collaboration with physicians, nurses, and health educators at Kaiser Permanente, has created video vignettes that are case studies of clinical issues relating to pediatrics, obstetrics, internal medicine, geriatrics, and behavioral health. Chrisman has developed programs in community-based care and cultural medicine for hospital nurses, hospices, and community health practitioners. Other anthropologists have organized national conferences bringing together clinicians, anthropologists, and health care providers and managers from many fields to present and discuss issues in cultural medicine. In all of these endeavors, clinically applied anthropologists work closely with persons from many health care disciplines. This collaborative approach gives validity to and underscores the importance of anthropological data and approaches to quality patient care.

Dual Roles: The Clinically Applied Anthropologist Clinician

Doctors, nurses, and behavioral health therapists who are also anthropologists have been a part of this sub-discipline since its inception. Many do their work as faculty in medical and nursing schools and as practicing physicians. Anthropologist-physicians following in the footsteps of Kleinman and Eisenberg include Robert C. Like and Kathleen Culhane-Pera. Like, a family medicine physician, in collaboration with other physicians and fellow anthropologist Arthur Rubel, created a cultural curriculum for family practice medical students that has served as a model for numerous medical programs. Culhane-Pera, a family physician at Ramsey Family and Community



Source: © Robert Jurmain.

Medicine Residency in Minnesota, has done extensive research among the Hmong community. *Healing by Heart*, written by Culhane-Pera in collaboration with other health care professionals and anthropologists (Peter Kundstadter, anthropologist epidemiologist, and Joseph Westermeyer, anthropologist psychiatrist), is an in-depth study of the Hmong culture's interactions with health care providers and the health care system. It includes a well-detailed model for providing culturally responsive care useful for curriculum design and practitioner training.

Persons exemplifying the dual roles of anthropologist/mental health professional include practicing psychiatrists Horatio Fabrega and Joseph Westermeyer and psychologist Richard Castillo. Fabrega has written extensively on the interaction of biological and symbolic and cultural factors in mental health as well as the role of culture in psychiatric diagnosis. Joseph Westermeyer has studied alcohol and drug use and substance-related disorders across several populations. Castillo has focused on cross-cultural psychopathology and psychotherapy. Both he and Fabrega were part of the Group on Culture and Diagnosis who served as cultural advisers on the cultural formulation in the fourth version of the *Diagnostic and Statistical Manual (DSM-IV)* used in diagnosing patients throughout the mental health care field.

Nurses were among the first health care professionals to combine clinical and anthropology degrees, and they form a special unit within the American Anthropological Association. They have their own journal, the *Journal of Transcultural Nursing*. Examples of nurse anthropologists include Margie Kagawa-Singer, who is a professor in the School of Public Health, University of California, Los Angeles, with a research focus in oncology. Another is Fred Bloom, researching in the area of HIV/AIDs and community health care utilization at the Centers for Disease Control. Margarita Kay, well known for her research on folk and indigenous medical medicines and practices, is a clinical anthropologist working in Tucson, Arizona, clinics and at the University of Arizona. The list of clinically applied anthropologists in nursing is extensive, and it includes nurses specializing in every aspect of clinical medicine and health care from nutrition to chronic diseases, geriatrics and end-of-life care, genetics, and childbirth.

Clinically Applied Anthropologists as Policymakers, Advocates, and Consultants

In the three or so decades since medical anthropology began to be clinically applied, the structure of health care settings, the demographic characteristics of the patient population, and the politics of health care, all of which form the environment in which clinically applied anthropologists work, have undergone very significant changes. Due to immigration, refugee resettlement, and globalization, many patients entering the health care systems are linguistically and culturally different from members of the clinical professions. While the latter have certainly become more diverse as to race, ethnicity, and gender, this has only increased the probability that clinicians and their patients will not share basic cultural understandings about sickness and health. Furthermore, research begun in the 1980s and continuing into the present has demonstrated persistent inequalities in health status, treatment, and access to care across racial and ethnic populations. In an effort to address these issues, the cultural competency in the health care movement and field was born, a movement that was originally informed by the work of clinically applied anthropologists but that now has extended to a much wider health care base. As active participants, clinically applied anthropologists have increasingly become advocates, specialists in health care delivery

to diverse populations, and designers of curricula and diverse forms of training for health care professionals, students, and practicing clinicians. As with most other work of clinically applied anthropologists, they have collaborated in multidisciplinary teams with health care providers and community advocates of many types. Following are some examples of this kind of involvement.

The creation of the National Standards for Culturally and Linguistically Appropriate Services in Healthcare (CLAS Standards) was begun in an advocacy group that included physician anthropologist Like and clinically applied anthropologist Gilbert, working with other health care providers and government officials. These standards, after national input from all health care sectors, were endorsed and published by the Department of Health and Human Services, Office of Minority Health. They provide guidance to health care organizations for enhancing the quality of care to diverse patient populations. These standards are now being used as benchmarks and guidelines by health care accreditation bodies as well as state and federal auditors of health-care-providing organizations.

In 2002, clinically applied anthropologists, including nurse and physician anthropologists, gathered with physicians, nurses, health educators, and health care and accreditation administrators from across the United States to formulate *The Principles and Recommended Standards for the Cultural Competence Education of Healthcare Professionals*. This document, the creation of which was underwritten by The California Endowment, sets out recommended content, skills development, pedagogical strategies, and evaluation techniques for ensuring that clinicians are educated to treat diverse patient populations in a culturally responsive manner. The principles and recommendations are being used in designing curricula by undergraduate and graduate programs of clinical education and in the accreditation of professional schools. It is anticipated that these materials will continue to be used in many ways as other states, following the lead of New Jersey, require training in cultural approaches to patient care as a condition of licensure for physicians, and cultural medicine is required in the curricula of medical schools.

Recently, clinically applied anthropologists such as Mary-Jo DelVecchio Good have turned their attention to determining the reasons behind differential treatment of minority patients, as studies, such as

those summarized in the Institute of Medicine report *Unequal Treatment*, have indicated that at least some of these patients receive less than adequate care as a probable result of clinician behavior and poor patient-clinician interaction. Both physician-patient communication and the structuring of health care delivery and access are being examined to determine how these statistically significant variations in treatment arise.

Anthropologists with research in clinical settings often provide consultation to private foundations. For example, Susan Scrimshaw has been involved as an advisory board member on the Robert Wood Johnson Foundation initiative, *Hablamos Juntos*, an effort to seek effective ways of providing language interpretation in health care to meet the needs of the now vast number of limited-English speakers in the patient population. Under grants on this initiative, other clinically applied anthropologists are studying methods of interpretation and translation in health care settings to determine the most effective methods of providing these language services in health care settings that provide care to linguistically diverse patients.

Clinical anthropologists consult in a number of capacities in the public and private sectors. For example, they are asked to provide information and advice to the National Institutes of Health on the direction of future research and to give help on developing requests for applications (RFAs). Many also sit on research review study panels. Clinically applied anthropologists are working with the Department of Health and Human Services Health Resources and Services Administration in designing curriculum guidance for the Centers of Excellence medical, nursing, pharmacy, and dental schools.

Anthropologists working in corporate health delivery organizations help set policy and advocate for and direct research and development programs and care delivery strategies to meet the needs of diverse patient populations. They consult to health care management and often develop ongoing staff and provider education programs in cultural medicine. In California, for example, Medicaid contracts specify that all contracting health care organizations, public and private, must provide for the cultural competence education of practitioners and support staff, as well as manage their health care delivery practices and linguistic services so as to meet the needs of diverse patients.

Clinically applied anthropologists' strong ethnographic research backgrounds in many areas of health

care as well as their close familiarity with the clinical and care delivery environments equip them well for serving in a wide variety of research, teaching, consultant, and policymaking positions. Equally helpful is their experience in collaborating across health care disciplines and their flexibility in moving from clinical to teaching settings. As a result, the field of clinically applied anthropology is continuing to expand in the United States as the nation focuses more and more on the issues of health care in its diverse and aging population.

— M. Jean Gilbert

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ANTHROPOLOGY, CULTURAL

Defining Cultural Anthropology

Cultural anthropology is the study of human patterns of thought and behavior, and how and why these patterns differ, in contemporary societies. Cultural anthropology is sometimes called social anthropology, sociocultural anthropology, or ethnology. Cultural anthropology also includes pursuits such as ethnography, ethnohistory, and cross-cultural research.

Cultural anthropology is one of the four subdisciplines of anthropology. The other subdisciplines include biological anthropology, archaeology, and linguistic anthropology. Some anthropologists include a fifth subdiscipline, applied anthropology, although other anthropologists see applied anthropology as an approach that crosscuts traditional subdisciplinary boundaries rather than as a subdiscipline itself. In the United States, the subfields tend to be unified: Departments of anthropology include all of the subfields within their academic structures. In Europe, however, subdisciplines often reside in different academic departments. These differences between American and European anthropology are due more to historical than philosophical differences in how the discipline developed.

The central organizing concept of cultural anthropology is culture, which is ironic given that culture is largely an abstraction that is difficult to measure and even more difficult to define, given the high number of different definitions of the concept that populate anthropology textbooks. Despite over a century of anthropology, the most commonly used definition of anthropology is Edward Burnett Tylor's, who in 1871 defined *culture* as "that complex whole that includes knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by [humans] as members of a society."

Tylor's definition is resonant with contemporary anthropologists because it points to some important, universally agreed-upon aspects of culture, even though it does not satisfactorily define what culture is. Teachers of cultural anthropology often cite culture as a constellation of features that work together to guide the thoughts and behaviors of individuals and groups of humans. Aspects of culture often seen in introductory classes include: (1) Culture is commonly shared by a population or group of individuals; (2) cultural

patterns of behavior are learned, acquired, and internalized during childhood; (3) culture is generally adaptive, enhancing survival and promoting successful reproduction; and (4) culture is integrated, meaning that the traits that make up a particular cultural are internally consistent with one another.

Nevertheless, anthropologists differ greatly in how they might refine their own definition of the culture concept. Anthropologists also differ in how they approach the study of culture. Some anthropologists begin with the observation that since culture is an abstraction that exists only in the minds of people in a particular society, which we cannot directly observe, culture must be studied through human behavior, which we can observe. Such an approach is often termed an *objective, empiricist, or scientific* approach and sometimes called an *etic perspective*. By *etic*, anthropologists mean that our understanding of culture is based upon the perspective of the observer, not those who are actually being studied.

Other anthropologists, while recognizing that culture is an abstraction and is difficult to measure, nevertheless hold that a worthy goal of anthropologists is to understand the structure of ideas and meanings as they exist in the minds of members of a particular culture. Such an approach is often labeled *subjective, rationalist, or humanistic*, and sometimes called an *emic approach*. By *emic*, anthropologists mean that the central goal of the anthropologist is to understand how culture is lived and experienced by its members.

Although these two approaches have quite different emphases, cultural anthropologists have traditionally recognized the importance of both styles of investigation as critical to the study of culture, although most anthropologists work only within one style.

How Cultural Anthropology Differs From Sociology

In many colleges and universities in the United States, sociology and anthropology are included under the same umbrella and exist as joint departments. This union is not without justification, as cultural anthropology and sociology share a similar theoretical and philosophical ancestry. In what ways is cultural anthropology different?

Cultural anthropology is unique because its history as a discipline lies in a focus on exploration of the "Other." That is, the anthropologists of the 19th century took a keen interest in the lives and customs of

people not descended from Europeans. The first anthropologists, E. B. Tylor and Sir James Frazer among them, relied mostly on the reports of explorers, missionaries, traders, and colonial officials and are commonly known as “armchair anthropologists.” It was not long, however, before travel around the globe to directly engage in the investigation of other human societies became the norm. The development of cultural anthropology is directly tied to the colonial era of the late 19th and early 20th centuries.

The late 19th century was an era in which evolutionary theory dominated the nascent social sciences. The armchair anthropologists of the period were not immune from the dominant paradigm, and even scholars like Lewis Henry Morgan, who worked extensively and directly with American Indians, developed complicated typologies of cultural evolution, grading known cultures according to their technological accomplishments and the sophistication of their material culture. As is to be expected, Europeans were invariably civilized, with others categorized as being somewhat or extremely primitive in comparison. It was only as anthropologists began to investigate the presumably primitive societies that were known only through hearsay or incomplete reports that it was realized that such typologies were wildly inaccurate.

In the United States, the development of anthropology as a field-based discipline was driven largely by westward expansion. An important part of westward expansion was the pacification and extermination of the indigenous Native American cultures that once dominated the continent. By the late 1870s, the Bureau of American Ethnology was sponsoring trips by trained scholars, charged with recording the lifeways of American Indian tribes that were believed to be on the verge of extinction. This “salvage ethnology” formed the basis of American anthropology and led to important works such as James Mooney’s *Ghost Dance Religion and the Sioux Outbreak of 1890*, published in 1896, and Edward Nelson’s *The Eskimo about Bering Strait*, published in 1899.

In Britain, some of the earliest investigations of aboriginal peoples were conducted by W. H. R. Rivers, C. G. Seligmann, Alfred Haddon, and John Meyers, members of the 1898 expedition to the Torres Straits. The expedition was a voyage of exploration on behalf of the British government, and for the anthropologists it was an opportunity to document the lives of the indigenous peoples of the region. This work later

inspired Rivers to return to the Torres Straits in 1901 to 1902 to conduct more extensive fieldwork with the Toda. By the 1920s, scientific expeditions to remote corners of the world to document the cultures of the inhabitants, geology, and ecology of the region were commonplace. Many of these expeditions, such as the Steffansson-Anderson Canadian Arctic Expedition of 1913 to 1918, have since proven invaluable, as they recorded the cultures of people only recently in contact with the European societies that would forever alter them.

Cultural anthropology, therefore, has its roots as a colonial enterprise, one of specializing in the study of small-scale, simple, “primitive” societies. This is, however, not an accurate description of contemporary cultural anthropology. Many anthropologists today work within complex societies. But the anthropology of complex societies is still much different than sociology. The history of working within small-scale, isolated cultural settings also led to the development of a particular methodology that is unique to cultural anthropology.

The fieldwork experiences of anthropologists of the late 19th and early 20th centuries were critical for the development of anthropology as a rigorous, scientific discipline. How does an outsider accurately describe cultural practices and an understanding of the significance of those practices for members of the culture studied? Achieving these goals meant living with and participating in the lives of the people in the study culture. It is this balance between careful observation and participation in the lives of a group of people that has become the cornerstone of modern cultural anthropology.

Called *participant observation*, the method is the means by which most of an anthropologist’s information about a society is obtained. Anthropologists often use other methods of data collection, but participant observation is the sole means by which anthropologists can generate both emic and etic understandings of a culture.

There are, however, no straightforward guidelines about how one actually goes about doing participant observation. Cultural settings, personal idiosyncrasies, and personality characteristics all ensure that fieldwork and participant observation are unique experiences. All anthropologists agree that fieldwork is an intellectually and emotionally demanding exercise, especially considering that fieldwork traditionally lasts for a year, and often longer. Participant

observation is also fraught with problems. Finding the balance between detached observation and engaged participation can be extremely difficult. How does one balance the two at the funeral of a person who is both key informant and friend, for example? For these reasons, the fieldwork experience is an intense rite of passage for anthropologists starting out in the discipline. Not surprisingly, the intense nature of the fieldwork experience has generated a large literature about the nature of fieldwork itself.

Part of the reason for lengthy fieldwork stays was due to a number of factors, including the difficulty of reaching a field site and the need to acquire competence in the local language. However, as it has become possible to travel to the remotest corners of the globe with relative ease, and as anthropologists pursue opportunities to study obscure languages increasingly taught in large universities, and as it is more difficult to secure research funding, field experiences have generally become shorter. Some anthropologists have abandoned traditional participant observation in favor of highly focused research problems and archival research, made possible especially in areas where significant “traditional” ethnographic fieldwork has been done.

A second research strategy that separates cultural anthropology from other disciplines is holism. *Holism* is the search for systematic relationships between two or more phenomena. One of the advantages of lengthy periods of fieldwork and participant observation is that the anthropologist can begin to see interrelationships between different aspects of culture. One example might be the discovery of a relationship between ecological conditions, subsistence patterns, and social organization. The holistic approach allows for the documentation of systematic relationships between these variables, thus allowing for the eventual unraveling of the importance of various relationships within the system, and, ultimately, toward an understanding of general principles and the construction of theory.

In practical terms, holism also refers to a kind of multifaceted approach to the study of culture. Anthropologists working in a specific cultural setting typically acquire information about topics not necessarily of immediate importance, or even interest, for the research project at hand. Nevertheless, anthropologists, when describing the culture they are working with, will often include discussions of culture history, linguistics, political and economic systems, settlement

patterns, and religious ideology. Just as anthropologists become proficient at balancing emic and etic approaches in their work, they also become experts about a particular theoretical problem, for which the culture provides a good testing ground, and they become experts about the cultural area, having been immersed in the politics, history, and social science of the region itself.

Research Traditions in Cultural Anthropology

Early Evolutionism

As noted above, anthropology as a discipline emerged in conjunction with the European and American colonial enterprise. Anthropology also emerged during a century in which ideas about biological and human evolution emerged and eventually dominated intellectual discourse.

Charles Darwin and Alfred Russel Wallace are perhaps the best known of the evolutionists of the period, but it was the British academic Herbert Spencer who introduced evolutionary thinking to the study of human society. Spencer, in fact, was publishing on some of these ideas even before Darwin's *On the Origin of Species* was published. Spencer, like other evolutionists, advocated the application of evolutionary principles to the study of humans—and went so far as to use the biological understanding of organisms as a metaphor for the study of human society. And Spencer clearly saw the advantage of a synthetic approach in understanding humanity's past as a means of understanding what humanity's future might be.

To modern anthropologists, Spencer is most closely equated with the terms “survival of the fittest,” which he coined, and “social Darwinism.” Over the course of years, these terms have become associated with the justification of classist and racist social policy, and it is for these associations that he is often regarded with either amusement or alarm: amusement, because (albeit with hindsight) of the obviously simplistic understanding of both evolutionary theory and human culture, and alarm, because of the chilling implications of pursuing policies based on such understandings.

Perhaps ironically, Spencer's influence on anthropology has been more profound in arenas other than evolutionism. Spencer's writings, in fact, are more similar to the writings of the structural functionalists

of the early and mid-20th century than they are to other evolutionists. It was Spencer who first coined terms like “superorganic” as a reference to culture (the culture concept had not yet been formulated), and it was Spencer who first used terms like *structure*, *function*, and *system* in reference to the “superorganic.” The metaphor of culture as organism is certainly common to both functionalism and Spencer.

Spencer’s thinking about evolution and human society was, however, armchair anthropology. His primary treatment of anthropological material, *Principles of Sociology*, published between 1877 and 1896, was compiled through the efforts of a research staff that worked from documentary sources, not firsthand experience.

In this sense, the other famed evolutionist of the late 19th century, Lewis Henry Morgan, was the complete opposite, as Morgan’s contribution to anthropology was based on direct experience. Morgan is most commonly associated with work with the Seneca Nation: his legal efforts to defend the Seneca from predatory government policy, his subsequent adoption by the tribe in 1847, and, in 1851, the publication of *League of the Iroquois*. Beyond his association with Seneca, though, Morgan made visits to over 60 different Indian tribes in the United States and Canada.

Morgan’s most important contribution to anthropology, however, is *Ancient Society*, his treatise on cultural evolution, published in 1877. In this work, Morgan presented an evolutionary sequence through which all human societies either had or, presumably, could progress, beginning with several different forms of “Savagery” and proceeding through all of the steps of the sequence to “Civilization,” the apex of cultural evolution.

What is important about Morgan’s scheme, now referred to as “unilineal evolution,” is not that it was an accurate representation of reality, for it wasn’t. Rather, the lasting influence of *Ancient Society* is that Morgan identified stages as corresponding to specific technological capabilities and material possessions, which, in turn, were accompanied by particular social forms, like subsistence strategies or forms of social organization. In addition, Morgan recognized that the discovery of new technologies and changes to material culture would necessitate the development of new social traits to accommodate those material changes.

Like Spencer, the misuse of Morgan’s ideas, and the wildly inaccurate or nonexistent nature of anthropological data available for testing those ideas, meant

that the reaction against unilineal evolution was swift and complete. By 1900, evolutionary perspectives had vanished from the discipline. It wasn’t until the 1930s that anthropologists like Leslie White and Julian Steward began thinking about evolutionary issues, and it wasn’t until the 1950s that the discipline again embraced the idea.

Also like Spencer, Morgan was an important figure for other reasons, not the least of which was his influence on dialectical materialism. Morgan’s materialist approach, the desire to understand society through technology and subsistence, likewise inspired important figures of 20th century anthropology, among them Leslie White, V. Gordon Childe, and Marvin Harris.

Historical Particularism

The anthropology of Lewis Henry Morgan and others of the mid- to late 18th century was largely regarded as a hobby. That is, anthropology was viewed as an appropriate pastime for men of means and gentlemen of leisure. This gentlemanly pursuit certainly characterized the armchair approach of anthropologists like E. B. Tylor and others. And because anthropology was a hobby, it existed largely outside the bounds of the academy.

Franz Boas was responsible for moving anthropology away from a leisure pursuit to a full-time academic endeavor. A German immigrant to the United States, Boas was trained as a geographer, having written his dissertation about the color of seawater. In 1883, he traveled to Baffin Island, in the Eastern Canadian Arctic, to further these studies. Fortunately for anthropology, Boas found the local Eskimos much more interesting, and he subsequently shifted his studies to that of the customs of the Central Eskimo. His experience impressed upon him the importance of lengthy, highly detailed data collection in the field as critical to undertaking good ethnology, and he quickly realized how a limited understanding of another culture is begging the observer to misinterpret that data based on the observer’s inherent biases.

In 1888, Boas founded the Department of Anthropology at Clark University, but he quickly moved to Columbia University, the institution with which he is most closely associated and from which he trained numerous students and established an American anthropology.

Boas’s main contributions to the discipline stemmed from his rejection of unilineal evolution and the comparative method with which it was associated. Boas

and his students argued that the comparative method was problematic on two fronts. The biggest problem was that comparisons between cultures were based on too little data. Boas recognized that all primitive cultures have their own unique and particular histories, and he accused the evolutionists of equating contemporary primitives with our prehistoric ancestors, pointing out that contemporary primitives have been evolving too, which makes them very different from any prehistoric human. Further compounding the problem is that because there are so little extant data, how is it possible to compare two cultures if we do not know the circumstances under which those features arrived and developed in each society?

Second, Boas also felt that the value judgments associated with the various evolutionary schemes laid out by Morgan and others hindered our ability to understand cultural evolution at all. Boas argued that evolutionary schemes were full of implicit assumptions that certain stages, like “Civilization,” were inherently better than stages like “Barbarism,” but there was no objective means of making that assessment. For Boas, cultures must be understood on their own terms, not in relation to others.

This last point is a close approximation of cultural relativism, the notion that no culture is inherently superior to any other culture. All cultures are equal and comparable, and value judgments about cultural traits must be made only after understanding the context in which those traits occur.

Beyond the first formulation of cultural relativism, though, Boas is known for the development of his unique, holistic approach to cultural anthropology. As a means of combating loose speculation about culture, he advocated the meticulous collection of data through extensive fieldwork, arguing that theorizing and generalizing could be done only after the accumulation of detailed knowledge about a culture’s history, its inventory of cultural traits, and its relationships with neighboring societies. This inductive approach has since been called “historical particularism,” and it was the dominant approach in American anthropology until 1950.

Functionalism

Beginning in about 1910, British anthropology began to reject the evolutionary approach. The new paradigm, called “functionalism,” eschewed the examination of cultures through the investigation of how cultural traits evolved (for evolutionists) or

developed (for particularists). Instead, functionalists were concerned not with discrete traits but rather with social “institutions” and how these operated within bounded societies.

The functionalists relied on a concept of culture that was based on Spencer’s concept of the super-organism. For functionalists, culture was believed to operate in much the same way that the human body functioned. Individual institutions, like social organization, religion, or economy, were like the organs of the body, working together to create something greater than the sum of their parts. This metaphor is so appealing that it has come to dominate the way that many anthropologists teach cultural anthropology. Almost all introductory textbooks in cultural anthropology, for example, begin with an explanation of the culture concept and the unique methodology and approach of cultural anthropology, followed by chapters that examine specific cultural institutions: environment, subsistence, and economic anthropology; kinship, marriage, and social organization; religion, the arts, and expressive culture; and applied anthropology and cultural survival.

British functionalism is known mostly through two actors, Bronislaw Malinowski and A. R. Radcliffe-Brown, both of whom are credited as the founders of functionalism in anthropology. Malinowski was born in Poland but enrolled in the graduate program in anthropology at the London School of Economics in 1910. In 1914, he began fieldwork in New Guinea, finally settling on working in the Trobriand Islands in 1915. While in the field, World War I broke out, and because he was a subject of the Austro-Hungarian Empire, he faced the possibility of incarceration. Luckily for him, British officials bent the rules and allowed him to continue his fieldwork.

His lengthy stay in the Trobriand Islands allowed him to formulate the method of participant observation, the method that is now the standard method of all anthropological fieldwork. He learned the language, recorded reams of data, and participated in the lives of the Trobrianders with whom he was living.

For Malinowski, work with the Trobrianders was largely focused on how particular cultural institutions functioned to maintain individual psychology and provide coping strategies for dealing with stressful events. So, for example, the primary function of magic, ritual, and religious belief was to promote individual well-being in uncertain situations. Malinowski’s discussion of the differences between magic use by

lagoon fisherman (who hardly resorted to magic at all) and open-ocean fisherman and long-distance voyagers (who relied heavily on magic to ensure success) is a classic example. Differences in magic use were clearly based on the differences between locales. Inshore, lagoon fishing was viewed as a safe and productive activity, whereas voyaging-fishing in unprotected waters was extremely risky and unpredictable. Magic, then, provided a sense of control in uncertain situations.

R. Radcliffe-Brown was trained at roughly the same time as Malinowski, conducting his field research in the Andaman Islands from 1906 to 1908, and then in Australia from 1910 to 1912. It was during his rewrite of his Andaman Islands fieldwork that he began to read the French sociologists Marcel Mauss and Emile Durkheim, and from these influences was born his own version of functionalism, called “structural functionalism.” For Radcliffe-Brown, the individual was of almost no account. Social institutions were of primary interest: What is the relationship between social structure and social activity? In this sense, the concerns of Radcliffe-Brown and other structural functionalists centered around the ways in which social institutions functioned to maintain society as a whole.

Structural and Symbolic Anthropology

Radcliffe-Brown’s version of functionalism was quite at odds with Malinowski’s. Whereas Malinowski was more concerned with how social institutions served individual psychological and even biological needs, Radcliffe-Brown was more interested in understanding how cultural institutions worked together to satisfy the mechanical needs of society. For Radcliffe-Brown, society was best characterized as a system of institutions that exists independently of the individuals who comprise the system.

As noted above, structural functionalism, then, takes its intellectual cues more directly from the



Andaman Islanders

Source: Courtesy of the Society for Andaman and Nicobar Ecology.

writings of Emile Durkheim and Marcel Mauss, French sociologists whose primary interests were, to paraphrase Edmund Leach, in the realm of “things said,” the world of ideas, rather than with “things done,” as Malinowski’s were, and indeed most American anthropology. The British functionalists, however, still employed the concept of the biological organism as the metaphor for culture. It was Claude Levi-Strauss who altered the meaning of “structure,” as employed by Radcliffe-Brown, by replacing the metaphor. For Levi-Strauss, language was the best metaphor for understanding culture.

Levi-Strauss’s entrée into professional anthropology began in 1934, when he took a position in the sociology department at the University of Sao Paulo, Brazil. The position provided an opportunity to travel into the Brazilian interior, where he conducted fieldwork for the first time. The experience had a lasting effect on him, for, having been trained in law, he was expecting to find individual social facts and instead discovered genuine human beings who lived quite sophisticated mental lives.

Levi-Strauss remained in Sao Paulo until 1938, returned to Europe to serve a year in military service, and after the occupation, took a position at the New School in New York. It was there that he first met the linguist Roman Jakobson, who introduced Levi-Strauss to structural linguistics. It was from this intellectual crossbreeding that Levi-Strauss developed his

version of structuralism, sometimes called “structural anthropology” but more commonly known as “French structuralism.”

In using a linguistic metaphor for understanding culture, Levi-Strauss was arguing that culture is a kind of language. Like language, culture is a series of rules that govern behavior and transmit messages to others. A commonly used example is that of breakfast. When we wake in the morning and are hungry, we reference deeply embedded cultural rules about what kinds of foods are appropriate for breakfast, how they may be prepared and consumed, and what meanings those foods carry, what they “say” about the meal itself, and what meanings they transmit to others observing the meal.

Human culture is therefore like language in the sense that all human cultures satisfy the same basic needs, like eating or reproducing, but they do so in different ways. For the structuralists, what is actually consumed at breakfast is, by itself, not very interesting, unless what is done at breakfast is contrasted with what is done at lunchtime and dinnertime. It is through the patterns as revealed through the contrasts that we begin to understand the grammatical rules of eating. Of even more interest is the attempt to tease out how the grammar of eating is similar to, say, the grammar of reproducing. “What is done,” for the structuralist, is akin to the surface structure of a language, the actual utterances; the real interest is in the patterns and rules that lie under the surface structure, the “deep structure” of culture.

Levi-Strauss and his followers often used the metaphor of the orchestra to explain how the structuralist sets about the task of decoding cultural meanings. In a musical score, separate instruments have distinct musical parts. The “message” of the symphony makes sense only when the parts are acting in unison. In addition, just as the symphony carries meaning in a left-to-right, melodic sequence, as the instruments play their parts from beginning to end, so does the musical score carry meaning at any given moment within the symphony, as the instruments operate in harmonic unison.

The metaphor of the orchestra sets up an opposition between syntagmatic and paradigmatic chains of meaning. For Levi-Strauss, the nature of the differences between the two, the former as association by contiguity and sequence, the latter as association by metaphoric analogy, underscores an underlying binary nature of the human brain.

For most anthropologists, the application of binary oppositions to the study of myth is Levi-Strauss’s primary contribution to cultural anthropology. But his real contribution was the development of a new approach to anthropology that began to focus more extensively on uncovering meaning, an important attempt to approach culture emically rather than etically.

Despite this shift away from an objective approach to the study of culture, structuralism was criticized for focusing on meaning as generated through the examination of contrasts between aspects of culture and not through meaning as derived from the forms of the symbols themselves. Structuralists were also accused of placing undue emphasis upon actions rather than on the people performing those actions.

This different take on the examination of ideas in cultural anthropology has been labeled as *symbolic* or *interpretive anthropology*, and it has two main proponents, Clifford Geertz and Victor Turner.

Geertz is most often associated with interpretive anthropology. He believed that the key to understanding cultural meaning was through the examination of symbols, which he thought were the direct expression of worldview and ethos. For Geertz, culture wasn’t necessarily simply locked away inside people’s heads, but was most clearly expressed in the symbolic life of a group of people.

Victor Turner, most closely associated with symbolic anthropology, was more interested in process and the ways in which symbolism worked as an operator in that process. For Turner, like Geertz, symbols express shared meanings, but, unlike Geertz, they do so in ways that additionally serve to promote group solidarity. Turner’s key concept was that of the social drama, a spontaneous unit of social process that occurs regularly in social life. Composed of four stages, the social drama is a sequence: The social fabric is ruptured, subsequently creates a crisis, and is resolved through the use of ritual to either reestablish or reformulate social relations. For Turner, the emphasis was on understanding how symbolism worked as a vehicle for expressing shared meanings, resolving conflict, promoting group solidarity, and recognizing changing social statuses.

Some cultural anthropologists would object to having interpretive and symbolic anthropology lumped together so, but the approaches of Geertz and Turner are important for understanding cultural anthropology because they both managed to turn cultural anthropology away from the “grand theory” traditions

of functionalism, materialism, and structuralism and toward a focus on cultures and how anthropologists can best interpret them. Furthermore, these anthropologists, Geertz especially, were influenced by scholars traditionally seen as existing outside of the bounds of anthropological scholarship. Cultural anthropology owes many of its intellectual roots to “nonanthropologists” like Spencer, Marx, Durkheim, and Freud, of course, but the interpretive and symbolic approaches were influenced by philosophers like Heidegger, Ricoeur, and Wittgenstein.

The symbolic and interpretive approaches have been criticized by other anthropologists for being more literary criticism than anthropology, which underscores a growing debate in the subdiscipline: Is cultural anthropology a science or a humanity? The issue is critical: Geertz and other interpretive anthropologists were criticized because their research was impossible to replicate, making it difficult to verify whether a subjective symbolic interpretation of cultural behavior is an accurate representation of reality as it exists on the ground.

For the symbolic anthropologists, of course, that was precisely their point. A scientific approach in cultural anthropology, such as cultural ecology, misses the entire basis of a focus on emics. Since culture dominates all modes of human behavior, the symbolic approach is critical for our understanding of what culture is. The symbolic anthropologists also argued that just as Boas had hinted nearly a century before, the fieldwork experience is highly subjective, and the individual fieldworker must be careful that their own inherent cultural biases do not overwhelm the recording and interpretation of anthropological data.

This last point was seized upon by cultural anthropologists working under the influence of postmodernism, an eclectic movement that has its origins in philosophy but has become established in contemporary cultural anthropology. The postmodern perspective adopted by many cultural anthropologists questions whether we can accurately capture a cultural reality. For one thing, ethnographers engaging in fieldwork, by their mere presence, alter the cultural setting in which they are working. Second, the ethnographer’s own conception of reality inherently colors the reconstruction of the culture when it is presented as ethnography.

The solution to this problem and the future of cultural anthropology are unclear. Some cultural anthropologists now see themselves not so much as

anthropologists, but as practitioners of cultural studies. Others see themselves as a kind of literary critic, with the “text” being a particular society. Still others have rejected this criticism outright, observing that postmodernist perspectives, taken to their extreme, are both paralytic and detached from a reality that is positively observable, even if there remain some serious methodological concerns that cultural anthropologists must consider when engaging in fieldwork.

— Peter Collings

See also **Anthropology, Characteristics of; Anthropology, History of; Anthropology, Subdivisions of; Boas, Franz; Frazer, Sir James; Functionalism; Malinowski, Bronislaw; Radcliffe-Brown, A. R.; Spencer, Herbert; Tylor, Edward Burnett**

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ANTHROPOLOGY, ECONOMIC

Economic anthropology includes the examination of the economic relationships found among precapitalist societies (nonmarket economies); this includes

band, village, and peasant societies. Economic anthropologists study the historical incorporation into the world market economy (capitalism) or state socialist economies of tribal peoples and peasant societies.

Formal Economics

Cross-disciplinary studies are both an admirable and a desired pursuit. Formal economics is designed to study the psychology of marginal utility, scarcity, price theory, economizing rationality, entrepreneurial skills, and buying and selling in a market economy. The question remains: To what degree are its concepts relevant to most of the economic history of the world, in which market either plays a minor role or no role at all in the everyday lives of the people? Formal economics uses individual behavior as its methodology to answer this question.

Cost under capitalism includes labor. Cost to a peasant farm is that drudgery is the major cost. In an economic slump, capitalists cut back on wage labor. A peasant farm must increase labor to maintain the standard of living. Cultural values are important in defining the standard of living, making drudgery any work not necessary in achieving that standard of living.

Chayanov in Today's Anthropology

Chayanov was a Russian agricultural economist who worked under both the Czars and the Bolsheviks. After he was arrested and killed by Stalin, his works were banned. When his writings were rediscovered in 1965, he became a major influence on American economic anthropology. Formal economics cannot work as a historical model because it assumes a stability of preferences. This change comes over time; formal economics as a theory is nonhistorical or at best has a very short historical scope. Formal economics theory lacks sociology, and thus is useless in explaining historical changes, such as changes in political domination, ideology, or culture.

The relationship between a capitalist world economy and local economies in which noncapitalist social relations prevail requires an understanding of the interaction between these noncapitalist social relations and a dominant capitalist economy. Purely economic categories cannot be used when studying this interaction. Much of the everyday life of any

traditional people, even under capitalist domination, is based upon the nonwage family economic unit. The household economy lies outside the framework of an economic theory designed for studying capitalism. The key to understanding economic life in a fully developed capitalist economy is profitability based upon wage labor.

Without wage labor, there is no longer a purely capitalist economy. The domination of a larger capitalist economy clearly exists, but noncapitalist social relations alter its local details. Much of the economic activity is locally determined by the requirement of satisfying family needs. In a household economy, the family is both a production and consumption unit. Each economic activity meets specific family needs. Without wages, profit maximization is not the primary concern. Family economy moves toward equilibrium between two major factors: family demand satisfaction and the drudgery of the work. The primary economic decisions center around family needs.

Every economic system must equip labor power with a means of production. There is the possibility of increasing productivity, when the need arises, with increasing labor exertion, increasing division of labor, and alternative sources of income. Productivity, for the family, centers between an upper and a lower limit. The upper limit is the amount of work, which maximizes family labor to achieve family consumer expectation.

If families work to meet family demands and not for the profit of a capitalist employer, and if the conditions of life are not too harsh, the intensity of labor will remain below what it would be if family labor were fully utilized.

Polanyi, George Dalton, and the Substantivist Economists

The *substantivists*, using both economic history and anthropological data, openly dispute the theoretical relevance of formal concepts like "marginal utility" outside of a narrow historical view of industrial capitalism. Polanyi was the economic historian who launched the substantivist rebellion.

Polanyi claimed economic relationships are embedded in other social institutions of a society. Even the forced integration of isolated communities into a world market economy happens in a historical context of economic systems already established and

operating to various degrees on principles other than “free trade.”

The differences between the various traditional economies require the researcher to abandon the use of economic categories developed to study industrial capitalism. Studying any economic system requires a truly holistic approach.

The substantivist uses empirical data rather than grand theory to create categories to study a specific economy. In the “real world,” there are various types of interaction between household economy, community reciprocity, and redistribution or exchange to make each economic system culturally and historically specific. This requires the researcher to use particular conceptual categories when studying nonmarket economies.

Formal economics focuses on economic behavior and individual psychology in a market setting. Formal economics begins with choices of individuals acting as economic agents. Production, distribution, and consumption are considered as connected to calculations of costs versus benefits. Even under a fully developed capitalist system, many decisions are imposed by external concerns dictated by the effects of a market economy and not a matter of personal choice.

In most nonmarket economies, economic behaviors are based upon specific rules governing production and distribution. Social obligations, ecology, and technology determine the rules of the economy. In these economies, choice is not an obvious issue. These restrictions are firmly set by custom, social obligations, ecology, and technology. Choice as central to consumer-based capitalism is a minor part of a peripheral market, if it exists at all.

Within the economic setting, people share a common social identity and culture. The rules governing an economic course of action are required for survival.

The economy is expressed in kinship, religious, or political terms. There is generalized social control over production and subsistence. Access to land, labor, and emergency assistance is controlled by rules and is outside of purely market considerations. Economic systems are the structured transactions and rules of action overseeing production and distribution of goods and services in a reliable style. Within the community, access to land and other resources, division of labor, production goals, and types of technology used are guided by culturally specific rules. In traditional societies, the economy is not a separate institution. Traditionally, allocation of labor, organization

of work, and distribution of goods and services are expressions of political, religious, or kinship obligations being defined as the moral responsibilities of group members.

Market economy is an economic system that is self-regulated by market prices and production for profit. Until modern times, markets, where they did exist, were a secondary part of the overall economy. Even local markets were peripheral to subsistence.

Social relations in any community are more central than profit to the economic concerns of the people. The economy everywhere is primarily submerged in the social relations of that society. Economic activity is motivated for the most part by concerns for social responsibility, social prestige, and social security. In tribal and peasant societies, the economy remains an adjunct of the sociology of the community. Production is not for profit in the majority of economic activity, and the distribution within society never reflects wealth for wealth's sake. Social interest of the whole must be used to justify the economy, including systems of production, distribution, or exchange. All social relations within the economic system reflect a person's moral position within the community. Social ties are social security. Social obligations are reciprocal in both the material and the moral concerns of all and affect each individual of the community. Economic self-interests threaten the community and the individuals within the community by undermining the collective identity and solidarity of the community.

In all peasant societies, there is a marketplace and a market day. Within peasant society, self-sufficiency is the major economic philosophy of the households. This is and must be supplemented by a symmetrical pattern of social organization called “reciprocity,” centralization of redistribution, and a marketplace separated in time and space and importance from the rest of the economy. Without a market economy, barter can take only a secondary role in the overall economy. Within a market economy, both reciprocity and redistribution continue to exist in supplementary roles. The self-sufficiency of the household is also an institutionalized philosophy within a capitalist society and yet is very dependent on the market economy, with its necessity to sell labor power for a wage to support the household.

Before the market economy is established, the economy is only a minor part of the equilibrium of a larger sociological arrangement. Only a market economy makes production for economic gain a major

motive for economic activity. The market economy is based upon the historically specific philosophy of *production for profit* that creates the institution of a market freed from the market place. The universal market makes all other institutions subordinate, reversing the sociological relationship found between the economy and the rest of society in traditional societies. Instead of the economy being embedded in other social relations, all other social relations are now embedded in the economy of the market. Once the economy becomes separate from its sociological constraints, the rest of the society becomes reshaped to meet the needs of the economy.

Market exchanges developed to the degree where goods are bought and sold with money. Because each side wants to gain the advantage, economic exchange must become free of any and all social obligations. Money becomes all-purpose.

All-purpose money now replaces special purpose money. The laws of supply and demand set prices and not any other social agreements as before. All goods and services have a monetary price. Most people now make a living by selling something on the market. People who have no other resources sell their labor power for wages, because these workers do not have their own capital goods or raw materials to produce the goods sold. With a market economy, land, labor, and capital are all bought and sold. The economy follows no law other than the laws of supply and demand, thus it becomes self-regulating. The natural economy is founded upon the survival of the group. The individual's economic activity is to support social standing within the community. Because in all noncapitalist economies, the economy is integrated into noneconomic social concerns, the health and well being of the community and all its members take precedence over the personal economic gain of the individual.

Every step in the production process must meet some social claim to other members of the community. These social claims are the basis of the economic philosophy and the motivations around which people organize their labor. All social obligations are reciprocal in the long run. Within this system, economic self-interest is incomprehensible. Generosity and social prestige are very closely linked. Traditionally, the economy is immersed in other, more important social relations, and most people are concerned with larger issues in the community if they are to maintain their social standing. In times of extreme need, a welfare system is put in place. This welfare is always cloaked

in terms other than economic aid. The maintenance of social ties is framed in terms of kinship concerns, religious obligation, and honor. All social obligation is reciprocal. There is always social pressure to eliminate open economic self-interest. Reciprocity protects the family, governing both the production and distribution needs. Sharing within the family goes without saying, but sharing with other closely related families is the benefactors' own social security.

Redistribution needs a broker of some sort who is a distinguished individual that others in the group trust; this individual receives, stores, and distributes the supplies as needed. The economy behind this system of storage and distribution is socially defined outside of any purely economic motives. The motivation is not defined as wealth in material affluence. Sharing and mutuality of reciprocity is further supplemented by the welfare of redistribution with any economic system of record keeping for the overall estimated expenditures. Through a social organization of unity and incorporation of all into a larger social entity with economic motives of cost versus benefits, material gain need not play an important role in the daily operations of the society. Interdependence between the exploited and the exploiter is a social arrangement based upon a moral and not an economic explanation of the relationship in peasant society.

Before capitalism of the free-market type, *stratification* was explained as a mutual relationship ordained by honor and obligation and was the noneconomic organization of redistribution. The approach is that all economic systems before a market economy of capitalism were some combination of a household economy producing for use, reciprocity, or redistribution, with the market a very minor and carefully controlled aspect. Even in the mercantile economy of Europe after 1500, markets were the main concern of government and were always carefully run by the government. Under mercantile capitalism, markets were too important not to be strictly controlled. The notion of a self-regulating market was not present.

The idea of a self-regulating economy controlled only by market processes would have been a very dangerous thing to even think about in the medieval European economy. The market was carefully regulated in all societies to either a very minor role or was prevented from controlling the necessary subsistence resources. The substantive environmental factor for survival remained under social control at all times. The economy was immersed in other social relations.

Production and distribution remained closely tied to the larger social ethic. The preservation of the social connections was acute. There was compelling pressure on individuals to get rid of their own economic self-interest. With the coming of the Industrial Revolution in the 1800s, tools of production were marvelously improved.

The farmer buys land to produce crops to sell on the market. Prices regulate themselves. The change to a market economy means a change in the psychology of the people of the society from being concerned with making a larger social obligation, social prestige, and social standing in the community to individual responsibility, individual merit, and personal gain in material items. All transactions are turned into money transactions. Mass production requires that the market can be reasonably understood only if all the factors going into production, like land, labor, and other needed resources, are sold on the market without any other social restrictions. The self-regulating market controlled by market prices is the central organization of a market society.

Marxist Anthropology

Economic anthropology is constantly asking why cross-cultural similarities and differences have occurred, making formal economics too cumbersome to work with beyond the most superficial level. Formal economics cannot work as a historical model because it assumes a stability of preferences. These change over time; the classical theories of formal economics are not historical, or at best have a very short historical scope. The primary flaw is that this model assumes institutional patterns and hierarchies of values, and what is assumed cannot be explained.

Human needs and basic human nature are socially fabricated or transformed; human nature is also, at its core, universal. Marxist anthropologists have come to believe that formal economic theory is next to useless in explaining historical transformation from precapitalist to capitalist economic systems, political domination, state formation, ideological systems that legitimize exploitation, or how dominant beliefs evolve jointly with changes in economic social relations of society. Over long periods of time, there are conflicts inherent within society, and because of these conflicts, all societies are changing.

Property relations are social relations and as such have socially defined rights. These rights are

distributed among groups and individuals, and at the same time, these rights limit access to productive resources.

A social system also interacts with other social systems. The result is that the environment of a social system is altered because of the interaction between these two social systems. Expansion of the market economy of Europe until it consolidated the entire earth into an integrated world economy is such a case. The development of capitalism on a world scale brings even the most remote people under the control of a market economy, creating areas of relative wealth and other areas of increasing poverty.

Lenin's theory at first looks at the older form of capitalism when free competition prevailed and the export of manufactured goods was the core of Europe's economic relations with the less developed parts of the world. Then, Lenin examines modern capitalism, when monopolies dominate and the export of capital has become the typical feature.

According to Lenin, the competitive capitalism of the early 19th century became increasingly centralized (fewer competitive firms) and concentrated (larger firms). This centralization was accomplished through combines (the grouping together of related or dependent industries), cartels (large firms cooperating in the same industries and dividing up territories), and trusts (many firms operating as a single firm).

Monopoly capitalism, when a few highly centralized firms effectively dominate the economy, creates imperialism out of its own needs. To find continued profits in an already overly developed economy at home, investments flow to less developed areas of the world where the capitalist economy has not reached a saturation point, therefore making profits much higher. Export of capital is the fundamental principle of imperialism. The export of capital greatly influences and hastens the growth of capitalism in those countries to which it is exported. Monopoly capitalism and imperialism are a stage of capitalism, which reaches a point that is the beginning of a complete international socialization of production. Production becomes social, but the seizing of the profits remains the private property of the capitalists.

Luxemburg saw that capital had to be expanded outward to survive, until the whole world would become a single capitalist system. Lenin saw imperialism as a necessity only under the conditions of monopoly capitalism; the Luxemburg model shares the point in common with the dependency theorists,

that imperialism is as old as capitalism. According to Luxemburg, imperialism is the political manifestation of the accumulation of capital. The less developed parts of the world remain attractive sources of future profits, because accumulation in the earlier capitalist nations reached a point where profitable markets became saturated, and capital must move into the less developed regions in order to take advantage of greater profits. This movement of capital helps speed up capitalist development in the less developed areas. With the expanded economic development of the capitalist countries and their heightening of extreme competition in gaining control over noncapitalist areas, imperialism increases in its tone of strife and savageness. Capitalism grows both in its aggression toward the less developed areas of the world and in its continuous struggle among competing capitalist countries. The more violently, ruthlessly, and thoroughly imperialism brings about the disintegration of noncapitalist nations and peoples, the more speedily it undermines the very basis for capitalist accumulation. Imperialism is a major strategy for prolonging the life of international capitalism, but it also destroys the very foundation of capitalism. Capitalism needs noncapitalist social structures as a market for its surplus value, as a reservoir of supply of raw materials for its means of production, and as a source of labor power for its wage system. For each of these requirements, modes of production grounded in a natural economy are useless to capital. In all modes of production where natural economy predominates, relations of production are basically in reply to domestic necessity or production for use; therefore, there is very little desire for foreign goods and even less local production for market exchange.

A natural economy resists the demands of capitalism with uncompromising barriers. Capitalism must confront traditional modes of production with a struggle of subjugation, opposing any natural economy that it meets. The cardinal process in these conflicts remains political coercion. In Europe, there were revolutions opposing feudalism; in the non-European nations, this capitalist development presupposes the formula of colonial policy.

The second condition of importance for acquiring means of production and realizing the surplus value is that commodity exchange and the commodity economy become accustomed to economic activity in societies based on natural economy as soon as their independence have been abolished. In the course of

this disruptive process of coming under the control of a world economy, natural economies become dominated by capitalism. Capital growth requires the ability to buy the products of and sell its commodities to all noncapitalist strata and societies.

To Andre Gunder Frank, the problem is *underdevelopment*, brought about by the export of capital from the poor countries to the rich ones, which allows for the economic overdevelopment of the rich and the increasing economic underdevelopment of the poor. Underdevelopment is the inevitable outcome of over 400 years of capitalist expansion and of the inherent contradictions of capitalism itself. The capitalist system is separated into a metropolitan core and peripheral satellites in the rest of the world. There is the perpetuation of the essential organization and inherent contradictions of the capitalist world economy throughout the history of the development of capitalism and its exaggerated growth. Capitalism's continuity is due to the reproduction of these contradictions throughout the world in modern history. These capitalist contradictions and the historical development of the capitalist system have given birth to underdevelopment in the peripheral satellites, whose economic surplus is expropriated and used to produce economic development in the metropolitan centers, which appropriate that surplus.

The first contradiction is what is called "the expropriation and appropriation of a poor country's economic surplus." This is an extension of Marx's labor theory of value, in which the capitalist expropriates the surplus that is created by the worker.

The capitalist of the rich metropolitan center expropriates the surplus from the poor peripheral satellite. In both Marx's and Frank's theories, the expropriated surplus is saved by the capitalist and reinvested, increasing the power and the wealth of the capitalist. Once established, this exploitative relation extends capitalist relations between the rest of the world and metropolitan centers, with regional centers being an intermediate position. There are firmly established international, national, and local capitalist relations who produce economic development for a small number at each level and underdevelopment for the masses.

Frank's second contradiction is based upon Marx's concept of the centralization of the capitalist system. Both are the necessary result of the contradictions that are central to the capitalist system worldwide.

Development and underdevelopment are the products of a single dialectically contradictory economic system of capitalism. The same historical movement of the development of capitalism throughout the world has concurrently created both economic development and underdevelopment.

The third capitalist contradiction is based on the mutual interrelationship of the first two contradictions throughout time. Once established, the capitalist system continues to reproduce itself based upon exploitation, which is the process of expropriation of economic surplus of the poor producers and the appropriation of this surplus by the owners of capital. Historically, what are created are the developed metropolitan centers and the underdeveloped peripheral satellites. This creates a continuity that runs throughout the entire history of capitalism.

Dependency theory sees the world as a single capitalist economy that has increasingly controlled the world since 1500, when Europe began colonizing the Americas and established direct trade routes to Eastern Asia. The dependency theorists claim capitalism is the production for profit maximization in the world market. Capitalism, even though it is a system of dependency, domination, and subordination, is a system of full integration into a worldwide capitalist system. The dominant nation is obliged to protect the markets upon which its internal economy is built. This leads to potential rivalry among capitalist nations and forces them to protect their markets either by annexation of territory or by obtaining economic and political influence over other countries.

This became the major debate between the orthodox Marxist-Leninist and the Marxist dependency theorist. Where Lenin and his followers saw capital flowing from the advanced capitalist nations to the areas now called third world, or less developed nations, and creating distorted capitalist social relations there, the dependency theorist sees capital flowing from the poorer nations to advanced centers of capitalism. Frank claims that what was created in the third world was not distorted capitalist relations, but underdevelopment within capitalism. The distinction between distorted capitalist social relations and underdevelopment is subtle, but important. Underdevelopment means the poor nations provide the surplus for the advanced nations to further their economic development (Frank, Wallerstein, Baran, and Sweezy are the major dependency theorists).

The world capitalist economy, with its own logic, eliminates the competing economic systems from the start, according to the dependency theorist. Profits are controlled by worldwide trends that are dominated by the center of world capitalism. The capitalist owns the means of production (the raw materials and tools necessary, as well as the labor power purchased from the worker). Capitalism becomes production for profits in a market economy.

This, as Fernandez and O'Campo claim, obscures the analysis of the development of social relations of free labor to capital. Dependency theory eliminates the transitional periods from precapitalist to capitalist eras, because they claim capitalism was fully developed at the end of the feudal period. In addition, Marx, as claimed by Fernandez, writes that social relations are the necessary definition of capitalism or any economic system. The worker must be free to sell labor power to the capitalist; also, the capitalist must be able to introduce the past labor of others in the form of the means of production. This is important because the surplus value or the profit created is the driving force of the capitalist economy.

The Leninists claimed that what is central to the Marxist definition of capitalism is the productive relationship of workers owning nothing but their own ability to labor or to sell labor power for a wage. What the worker creates above a wage goes to the capitalist in the form of surplus value. The capitalists control, if not own, the means of production. The means of production is past labor embodied in the raw materials of current production, including land and tools necessary in that production, as well as the labor purchased from the worker. Social relations in production are central to the relationships between people.

Dependency theory, by focusing on the flow of excess profit out of the third world, explains the lack of capital necessary for the poor countries to control their own industrial development directly. In dependency theory, far from being a sign of decadence, imperialism is a part of a market economy and is a sign of the vitality of the capitalist system. What the dependency theorists miss is that in point of fact, subsystems with their own logic exist; however, any subsystem remains dependent on the larger capitalist system. Both dependency theory and Marxist-Leninist theory can supplement each other in a more complete theory of imperialism.

The control over the economy rests with outside major corporations. Profits generated in the less

developed nations increase the wealth and power of the major corporations. Profits generated in these poor nations are reinvested anywhere in the world. There is clearly the export of capital from the dominant culture to the less developed nations, creating a strong money-based market economy that is highly stratified, and that affects the very fiber of the everyday life of all people. Traditional social relations, while still present, are weakened and continuously redefined over time.

Articulation of Modes of Production

The interrelationship between local modes of production and the dominant economic logic is an ongoing historical process, changing constantly in an interactive relationship. According to Rey's model, the first contact between capitalism and other modes of production begins with commercial exchange where the needs of the larger capitalist system reinforce the precapitalist modes of production. This is followed by capitalism becoming firmly established, subordinating the precapitalist modes but still making use of them. Finally, in Rey's model, there is total incorporation into the world capitalist system with the complete disappearance of all precapitalist modes of production. Rey closely follows Marx's study of British colonial relations over India. Marx claims that at the first stage, trade is in luxury items benefiting the capitalist of a richer country because of an unequal exchange. With industrialization in the advanced nation, the colonial nations serve as markets for the manufactured goods coming from the industrialized centers. This has a devastating effect on the local social structure and modes of production in the nonindustrialized areas. The precapitalist modes of production are then transformed to meet the needs of the capitalist centers. Up until now, in the nondeveloped areas of the world, exploitation has been primarily an unequal exchange, followed by unequal exchange and markets for manufactured goods. In the expansion of the Industrial Revolution, British investors controlled the extractive industries, which resulted in the beginning of a wage labor force to work in these industries, that is, the beginning of capitalist social relations.

Rey's first stage of incorporation into a worldwide capitalist system is the initial link with capitalism through commercial exchange. The second stage is the subordination of precapitalist modes of production

to the needs of international capitalism, which have already happened in most third-world countries. The third stage is the total disappearance of all precapitalist modes.

Francisconi claims there is a constant restructuring of existing noncapitalist modes of production to meet the conditions of trade and to withstand the impact of direct capitalist investments. Corresponding to this restructuring of existing modes of production is a continual reinterpretation of local tradition. Through this restructuring and readjustment, there is a continuous adjustment and resistance to the expanding capitalist penetration into the local political economy. The reproduction of the noncapitalist modes of production is the result of capitalist expansion into local economies. The above is equally important in understanding the history of articulation of modes of production, as a functional explanation of capitalist exploitation as well as local resistance to capitalist expansion.

The incorporation of the world into a single world capitalist system develops through tensions and contradictions that are inherent in the logic of the capitalist system itself. Wars, conquest, imperialism, and neocolonialism are deadly necessities for the continuing expansion of industrial markets. All small nations come under the control of more powerful capitalist centers. The ruin of noncapitalist nations begins with the first contact of commercial trade. The carefully manipulated use of symbols of self-determination, by preserving precapitalist modes of production and traditional ideology, have been used by colonial administrations to continue the power of international capitalism.

The neo-Marxist modes of production theorists investigate the structure of economic relationships of local communities. The dependency theorists study the world economy of international power relations. In both these theories, social relations become something that is neither fully capitalist, nor are they traditional. Capitalist social relations remain underdeveloped.

The Nature of the Informal and Formal Economy

Because of the incomplete development of capitalist social relations in the less developed nations, there has developed a second economy called the "informal sector," unregulated and largely untaxed. This second economy is a mixture of advanced capitalism and

traditional kinship economies. Self-employment is growing faster than wage labor in many places in the world and is a result of increasingly restricted opportunities for wage labor. The rapid growth of the *informal economy* is a direct result of the independent self-employment on a world scale, which meets the needs of corporate capitalism.

The informal economy has grown rapidly with the increasing disenfranchisement of labor. With the decline of the power of organized labor and labor parties around the world, corporate capitalism actually benefits from this increase in the unregulated labor supply to provide needed goods and services.

The public sector, welfare organizations, and labor groups all have been dramatically weakened around the world. Flexibility of production has increased and the cost of production dramatically lowered.

By the 1990s, the informal economy had become an integral part of the total economic system. The close network that ties formal and informal frees the economic system from rigid controls, to the benefit of capitalism as a whole.

The main question that economic anthropologists struggle with is, how much can anthropologists borrow from formal academic economic theory in studying people in different historical and cultural settings? Marxist and substantivist anthropologists define *economic* as providing for the material necessities of life, while formal economics looks at economic choices in how societies and individuals invest their resources. Marxist economics concentrates on production, while formal and substantivist economics look at distribution as more central to their studies. Finally, how much of the precapitalist and noncapitalist behaviors survive in local communities dominated by a global capitalist economy? Thus, it must be asked, how much of price theory, marginal utility, and other major concepts is relevant to anthropology?

— Michael Joseph Francisconi

See also **Lenin, Vladimir I. U.; Marx, Karl; Marxism; Materialism, Cultural**

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ANTHROPOLOGY, HISTORY OF

Anthropology is the science of humans. If we take science in a broad sense as rigorous intellectual inquiry, anthropology has occurred in a number of times and places, whenever literate thinkers recorded observations and analyses of humanity, particularly those involving diverse cultures and physical forms. Anthropology also refers to a historically specific social formation: the product of university-trained scholars within the boundaries of a discipline of the same name. In this sense, it has existed only since the late 19th century. Whichever definition we use, a few basic lines of inquiry apply. Anthropologists are influenced by their surrounding social, cultural, and political settings. In this sense, each era has its own anthropology. At the same time, the technology of recording intellectual products in writing enables an element of progress, as scholars look back on the work of previous writers. One can thus put forward a narrative of successive schools of thought. In a third sense, however, anthropology is not the progress of ideas and information, but the endless repetition (often in perceptive ways) of human preoccupations (for example, progressivism versus primitivism or romanticism versus objectivism), because anthropology

involves humans considering humans, the subject studying itself.

Among the many anthropologies produced by premodern intellectuals (for example, Herodotus and other Greek scholars and Chinese bureaucrats and travelers), let us focus on one exemplary individual, Ibn Khaldun (1332–1406). An itinerant political specialist, he traveled through the western Islamic world (North Africa and Spain) and had reading knowledge of domains to the east. He concluded that history revolved around the interplay between cities and nomadic peoples, noting the forces of social cohesion in tribal formations and wider-scale religious movements. He described his analytical approach as “the science of culture.” Of course, Ibn Khaldun’s work depended on a dominant political-religious formation, Islam, as did subsequent European-based anthropology, but there is still much to learn from his work.

From the late 1400s on, Western Europeans attempted to conquer and proselytize the rest of the world. At the same time, European societies themselves underwent vast transformations, including mercantile and industrial capitalism, urbanization, commercial agriculture, and the rise of the nation-state. Modern anthropology emerged within this context. As Europeans catalogued the peoples that they drew into commercial slavery and estate agriculture, they developed a preoccupation with human bodies (heads, height, skin color, and so on). As they traded with, governed, and tried to convert diverse peoples from Indonesia to Greenland, they began to document vast differences in customs. And their own changes lead them to theorize about progressive, ranked sequences of social structure and beliefs.

Rich (if biased) descriptive anthropology came from the 16th- and 17th-century expansion, in particular the Catholic missionary orders’ documentation of the cultures of their would-be converts. It was, however, during the late 17th- and 18th-century Enlightenment that the first flourishing of European anthropology took place. Intellectuals speculated about the fundamental nature of the human species, so-called philosophical anthropology. Likewise, classification of human cultures and physiques flourished, leaving an enduring concern with “race” in physical anthropology. Anthropology also began its move into what Michel-Rolph Trouillot calls the “savage slot,” specialization in non-Western, “colored,” and subordinated peoples, even though anthropology claimed to be the study of all humankind. Colonialism was a

context for this, as well as the problematic assumption that “primitives” held the key to human nature, but the savage slot also provides anthropology a legacy of deep knowledge of, close association with, and members from among peoples who are otherwise ignored, despised, and badly stereotyped.

The Enlightenment and the beginning of 19th-century Romanticism also provided key concepts still used today in anthropology. The notion of civilization came from the hierarchical ranking of customs in centralizing absolutist-monarchical contexts, such as prerevolutionary France. Culture as a way of distinguishing peoples by their languages and customs emerged as a separatist reaction to civilization-setting centers (concretely, among nationalistic Germans reacting to French political and cultural domination). Society was a way of envisioning voluntaristic, person-to-person order amidst the rapid changes of industrialization, migration, urbanization, and the decline of previous hierarchical, ascribed feudal and absolutist orders. Other concepts, such as ideology, economy, classes, and race (as mentioned above), can also be traced to this era.

Evolution was a European preoccupation even before Darwin’s theory of natural selection and gained enormous intellectual prestige with his work. But the natural selection model of evolution was less influential than its assumed progressiveness, so 19th-century anthropologists (Tylor, Morgan, Spencer, and others) elaborated schemes of ascending cultural stages. The example of enormous technological progress within industrial capitalism was before them and triumphant imperialism throughout the world. Their theories rested, on one hand, on the basic unity of humankind, rendering the anthropological preoccupation with “primitive” cultures relevant to the study of overall human history, and at the same time, they invariably placed the educated upper classes of Europe and Euro-America at the pinnacle of cultural development. Such approaches offer insights into the genuinely accumulative aspects of cultural history, such as technology and hierarchical political organization, while being deeply flawed by insisting on progress in domains such as art or morality. Anthropologists were often gentlemen scientists with nonprofessional incomes but recognized expertise. Their concept of research included secondary gathering of data (for example, lists of customs) as well as primary field collection, consistent with the intellectual framework of the progress of culture (note the singular) across all places and times.

Anthropology underwent a process of academic professionalization around 1900. For example, recognized scholarship usually required a PhD from a university department specialized in anthropology. This provided the social framework for tightening standards of evidence and analysis. In the United Kingdom, and somewhat later in parts of continental Europe and in British colonies (the quintessential figure was Bronislaw Malinowski, a Polish migrant to Britain), this movement raised the expectations for fieldwork, emphasizing long-term participant observation, including use of the native language. This was facilitated by a context of governed colonies with a dominated but still active non-Western social life; hence, the British explored functionalist analyses of various kinds, emphasizing the coordination of ideas, behavioral norms, and activities within a positive social whole. The functionalists rejected speculative history, and they averted their eyes from some realities of colonialism (such as migratory wage labor), resulting in a characteristic blindness to questions of power and change.

Meanwhile, in the United States, and then Canada and Mexico, Franz Boas (a German immigrant to the U.S.) and his students sharply critiqued speculative histories and general evolutionary schemes and dedicated themselves to careful reconstructions of pre-contact Native American cultural traits. As they examined how traits cohered in local clusters, they emphasized learned patterns of ideas and activities, essentially our current culture concept. Notably, the Boasians shifted the question of culture from the singular—the cumulative trajectory of all human accomplishments—to the plural, the manifestation of culture in a local place and time. Boas also called for careful physical anthropology as he did battle with pseudoscientific “eugenics” (the speculative attribution of all human qualities to genetic inheritance). This formed part of broad struggles against racism and anti-immigrationism. In the United States, though not in Europe, anthropology thus came to include all inquiries into the human condition, from human biology through archaeology, to the total range of past and present human languages and cultures. However, the relationship of academic anthropologists to their “subjects” was ambivalent, vindicating their worth within a society inclined to disparage or ignore them but also treating them as almost collectible objects whose human rights were less important than the intellectual needs of science.

World War II, and the powerful national and global military and economic institutions that followed it, reshaped the organization and intellectual concerns of anthropology. Universities grew rapidly, and governments sponsored large volumes of research. The focus of U.S. anthropology shifted from its internal subjects, Native Americans, to international political and economic spheres of power, such as Latin America and Southeast Asia. Although anthropology did not abandon the study of small-scale societies, it increasingly addressed peasants, plantation workers, migrants, and cities. As a result, anthropological theories paid increasing attention to inequality, states, social change, and after global movements for democracy and justice started in the 1960s, power and resistance.

From the 1940s to the 1960s, perhaps influenced by the apogee of cold-war national and global bureaucracies, anthropologists strongly emphasized systems theories, examining, for example, human-environmental relations or the structure of ideas. From the late 1960s onward, scholars began to question the total perfection of systems (while retaining the insights of systems dynamics), including questioning the boundedness and coherence of cultures and the consensus and functional benefits of societies. Rather, cultures and societies were viewed as localized and temporally situated nexuses of fluid practices and ideas within endlessly mutating networks of worldwide relations.

Considerable progress was also made in biological anthropology and archaeology. In the former, the modern synthesis of genetics with Darwinian evolutionary theory finally arrived in anthropology, dismissing the fascination with racial body types in favor of models of complex variation and adaptive dynamics; at the same time, the empirical record of human paleontology became much better established, pointing to a series of origins in Africa. In the 20th century, archaeologists had established scientifically robust methods, such as the use of stratigraphic excavation and various relative and absolute dating techniques; by the middle of the century, they also began to treat their subjects as the study of past cultures and societies through material remains rather than the documentation of one phase of objects after another. As anthropology became increasingly specialized in large universities, it tended to fragment, and yet ironically the intellectual foundations of various branches of anthropology now spoke to each other much more effectively.

Anthropology contributed to and has been reshaped by the increasing intellectual and political equality of world peoples (in material terms, however, global inequality has continually worsened). National anthropologies flourished in India, China, South Africa, Brazil, Mexico, and elsewhere. Feminism reshaped anthropology, correctly insisting on the concerns and perspectives of half of humanity. And indigenous people's increased self-determination in intellectual as well as political terms inevitably challenged anthropology's science-for-science's-sake mission and its place in the "savage slot." Anthropologists at their best responded with greater self-awareness ("reflexivity") about ideas and politics. They engaged more openly in public issues and have begun collaboration with communities, seen as subjects and not just scientific objects. The application of anthropological knowledge and methods to practical problems became vital, both because of the trends identified above and because anti-intellectual, militarist, and capitalist employment and research funding priorities by post-1968 universities and governments resulted in a glut of academic PhDs.

Two important questions now loom on anthropology's horizon. In this would-be new world order, offering both possibilities of repression and liberation, how can anthropologists combine their political-ethical and objective scientific commitments? And as anthropological concepts such as "cultures" or "human nature" come to be part of the public lexicon and thus are infused with various ideological tendencies and manipulations, how can anthropologists promote their use in the most thoughtful and ethical manner?

— Josiah McC. Heyman

See also **Anthropology, Characteristics of; Anthropology, Cultural; Anthropology, Philosophical; Boas, Franz; Malinowski, Bronislaw**

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FUTURE OF ANTHROPOLOGY

Anthropology, which has always held that, as the poet said, "the proper study of mankind is man," has taught us much of what we know about ourselves as human beings living together in society. Whether it was Frank Hamilton Cushing's pioneering work among the Zuni Indians in New Mexico or Margaret Mead in American Samoa and New Guinea, anthropologists have held up a mirror in which to reveal much about what really makes us human. Now, 125 years after Cushing began his work among the Zunis, anthropology may be facing the most challenging chapter in its history.

When Cushing, Franz Boas, and the other pathfinders of anthropology began their work, most people still lived and died in the country of their birth. Even when, as with the great migrations to the United States, millions of immigrants arrived from Europe in the 19th century, they sought out people from their same ethnic backgrounds to recreate the cultural and ethnic communities of their homelands. Even today, in 2005, the Irish in Havertown, Pennsylvania, refer to their city as "Ireland's thirty-third county," because of their warm identification with their ancestral home. (Ireland itself is formed of 32 counties: 6 part of British Northern Ireland, and 26 in the Republic of Ireland to the south.) By the time large-scale immigration

ended around the time of World War I, America's population had been swelled by millions of immigrants, almost entirely from Europe.

Now, however, thanks to the long-distance travel made possible by commercial airlines, immigrants are arriving in countries far removed not only culturally and ethnically from the country in which they were born—but even from the continent. Indians are arriving in large numbers to work in the burgeoning computer industry in the United States. Turkish *gastarbeiters*, "guest workers," continue to come to Germany to take jobs left vacant because of the country's declining population. And Americans, in quest of oil business, migrate to the Middle East, Central Asia, and the oil fields of Southeast Asia.

The result of such immigration to totally alien environments can be unsettling and even lead to violence between the new arrivals and the resident populations. After Germany was reunited in 1989, neo-Nazi skinheads embarked on a reign of terror against the Turkish workers living in German cities. Today, Muslims newly arrived from North Africa have increased the anti-Semitism directed against Jews in France. And in 1981, after the fall of South Vietnam in 1975, Louis Beam and Ku Klux Klan extremists carried out a campaign of intimidation against Vietnamese fishermen in Galveston Bay, Texas.

If the past is any guide to the future, such incidents will not only continue, but may in fact increase. Faced with such a future, policy planners can look for help to those who have made the greatest contribution to studying the interaction of human societies in the past: anthropologists. Already, noted anthropologists have undertaken such cross-cultural work in the past. Two of these were students of Boaz at Columbia University, Margaret Mead and Ruth Benedict. In 1959, Mead published *People and Places*, while Benedict had published *Patterns of Culture* in 1934. The need to turn to anthropology to help build a global future for humankind is already critical. Between April and June 1994, some 800,000 members of the Tutsi tribe and opposition Hutus were slaughtered by the dominant Hutu population in the African country of Rwanda. While Rwanda descended into a nightmare of massacre, neighboring Kenya remained peaceful, despite the fact that its population also came from

different tribes, Kikuyu (also Gikuyu), Masai, and smaller tribes like the Pokot. Perhaps one reason that Kenya had survived major tribal unrest since its independence in 1963 was that its first president, Jomo Kenyatta, had worked as an anthropologist, studying his own Kikuyu tribe in *Facing Mount Kenya* (1938). From the beginning, Kenyatta had led Kenya with the slogan of "Harambee," Swahili for "all working together" (translations vary), a policy that embraced not only the native Africans, but the European settlers as well.

— John F. Murphy, Jr.

ANTHROPOLOGY, HUMANISTIC

As Eric Wolf notes in "Anthropology," his 1964 essay, anthropology is "the most scientific of the humanities, the most humanist of the sciences." Anthropologists have commonly taken into consideration the human condition—that which makes us distinctly human. However, maintaining balance between anthropology as a science that is concerned with causation, structure, function, and the predictability of human and cultural variation and anthropology as a humanity that is concerned with the function of human minds and how humans create their social and cultural worlds has not been easy. Historically, this has created a tension within anthropology, as anthropologists tend to conduct research toward one of these poles. At the same time, this underlying dichotomy propels the discipline and makes it distinct from both the natural sciences and the humanities.

From the earlier research of Ruth Benedict and Robert Redfield to the more recent research of Ruth Behar and Edith Turner, cultural anthropologists have long advocated humanistic concerns and approaches to the understanding of human thought and creativity from a distinctly insider's perspective. As is noted in the Society for Humanistic Anthropology's charter, humanistic anthropology "celebrates that human reality is something upon which we creative primates have real feedback effects: We can change our social and natural environment." It takes the position, which is illustrated in the ethnographic and theoretical writing of the above anthropologists,

too, that anthropological inquiry includes “promoting multicultural understanding and revealing the social blockages that are deleterious to our social and physical environment.” In essence, humanistic anthropological approaches reject blind positivistic scientific analyses, dogma in all manifestations, and extreme cultural relativism. Despite this long-standing position, humanistic anthropology did not become a concerted, self-consciously embraced approach until the early 1970s, which was due in large part to the efforts of Edith Turner.

Turner’s humanistic orientation is rooted in symbolic, or interpretive, cultural analysis. The roots of this tradition can be seen in E. E. Evans-Pritchard’s ethnographic writings on the Azande and the Nuer. Favoring interpretive analytical strategies, he rejected anthropology as a natural science and placed it within the humanities. His basic approach to the study of society, which is based on learning thought processes through the beliefs and opinions of members of the social group being studied, fits nicely with contemporary humanistic anthropological approaches to studying human cultural difference, because it emphasizes indigenous concepts and models of explanation.

As interpretive anthropology emerged from the margins of anthropological theory and practice in the early 1960s, humanistic approaches became even more central in cultural analyses. Although at that time, Mary Douglas, Victor Turner, and Clifford Geertz did not call themselves humanistic anthropologists, their theoretical and methodological practices have done much to shape humanistic anthropology today. In general, they contend that human culture is based on a system of symbols and meanings, which humans create and use to direct, organize, and give coherence to their lives. The emphasis is on meaning rather than on the materiality of human life or on innate structures of the mind. Each went in a distinctive direction with regard to symbolic analysis, while being anchored within a humanistic framework. Douglas combines Durkheimian functionalism with the ways that cultural symbols reflect social order, as best illustrated in her book *Purity and Danger* (1966). Through an exploration of beliefs about purity and pollution, she shows links between the human body and society. Turner, in contrast, focuses on ritual performance and practice but was less interested in symbols themselves, concentrating on what they mean to people as they use them and are inspired to action by them. By comparison, Geertz, drawing heavily from

the sociologist Talcott Parsons and philosophers, such as Alfred Schutz, Gilbert Ryle, and Ludwig Wittgenstein, focuses on the interpretation of culture, which for him is a system of symbols and meanings that are publicly displayed in actions and objects created and made meaningful through human social interaction. In *Interpretation of Cultures*, Geertz seeks to understand culture in its own terms through a variety of analytical practices, not exclusively anthropological. Like Redfield before him, whose theories of Great and Little Traditions helped to democratize humanities scholarship, which focused on “high culture” rather than “low, mundane culture,” Geertz’s thesis that ethnographies should be understood as texts to be read alongside the local, indigenous-produced texts helped break down the divisions between outside researcher and local insider-subject. One tour-de-force example of this trend in interpretive analysis that is well-grounded in humanities scholarship is Turner and Bruner’s 1986 volume, *The Anthropology of Experience*, which includes chapters by the leading interpretive and humanistic anthropologists of the time: Renato Rosaldo, Barbara Myerhoff, James Fernandez, Barbara Babcock, and Geertz. The book breaks even more from the tradition of structuralism rooted in Emile Durkheim and A. R. Radcliffe-Brown to embrace Wilhelm Dilthey’s “concept of an experience, *Erlebnis*, or what has been ‘lived through’ . . . [where the contributors] focus . . . more on experience, pragmatics, practice, and performance.”

Some themes raised in *The Anthropology of Experience*, such as ethnography as narrative, reflexivity, and authorship, are also treated in Clifford and Marcus’s volume, *Writing Culture: The Poetics and Politics of Ethnography*, but it serves more as a critique of anthropological practice. Underlying it are Foucauldian concepts of power relations, which challenge the contributors to rethink their respective, as well as those of the discipline, positions vis-à-vis their subjects and the texts that they produce. The contributors clearly advocate humanities-based strategies to improve cultural analysis, as they argue for cultural anthropologists to take into consideration literary and philosophical concepts and methods (something that Ruth Benedict did in the 1934 book *Patterns of Culture*); to experiment with new forms of writing—especially those that include the subjects’ voices; and, drawing on postmodernism, to recognize the arbitrariness of culture, the power/subject position of the

researcher, the resistance to master narratives, and the incompleteness of the ethnographic endeavor.

Although the main theses in *Writing Culture* generated debate within the discipline and were largely accepted by cultural anthropologists, the volume was criticized for its male, Eurocentric orientation, first by anthropologists of color in the 1991 volume, *Recapturing Anthropology*, and then by feminist anthropologists in the 1995 volume, *Women Writing Culture*. Both volumes argue that the driving forces behind anthropological practice, be they methodological or theoretical, need not be dominated by white men and Western ideological and historical paradigms. The contributors to *Recapturing Anthropology* in particular argue that scholars cannot control the historical conditions in which their representations are located or future readings of them. Moreover, the very location of anthropological research, the field, continues to be exoticized and mystified, often beyond anthropologists' control. In other words, the goal is to further democratize the discipline by demarginalizing the margins, recognizing the contributions of anthropology's internal others, and understanding the historical and cultural contexts of the anthropological endeavor, all the while drawing on the humanities as broadly conceived.

In the *Women Writing Culture* volume, the innovative contributions of female anthropologists are noted, particularly with respect to new forms of cultural description that are literary in form. This is best exemplified in Zora Neale Hurston's largely ignored ethnographic writings and novels, in Edith Turner's poignant personal ethnography, *Spirit and the Drum* (1987), and in Laura Bohannan's archetypical ethnographic novel, *Return to Laughter* (also noted in Wolf's essay "Anthropology"). Bohannan wrote her novel in 1954 under the nom de plume, Eleanor Smith Bowen, for fear of negative fallout from her anthropologist peers. Her novel has since inspired a whole genre of writing. From the writing of Stanley Diamond to Dennis Tedlock and others, poetry has also become a form of cultural representation/presentation of others by anthropologists. These literary forays have not been exclusively based on Western models, but have incorporated non-Western modes of thought, aesthetics, and themes that anthropologist-creative writers learn while doing fieldwork.

The Foucauldian question of power raised in *Writing Culture* and experimentations in writing styles have resulted in humanistic anthropologists

rethinking the relationship between anthropologist and subject. The impersonal term, *informant*, is being replaced with *friend*, *colleague*, *expert*, *collaborator*, and others, as humanistic anthropologists recognize the intense, intersubjective relationships they and their subjects share. Furthermore, as native, local forms of knowledge and analysis are elevated on par with those of anthropologists and are incorporated into anthropological modes of method, theory, and analysis, the traditional anthropological "informant" becomes even more awkward to employ.

As the Society for Humanistic Anthropology states, "Humanism has historically made the human endeavor the subject of its concerns. Humanistic anthropology seeks to bring the intellectual resources of the discipline to bear upon this subject." Founded in 1974 at the American Anthropological Association's annual meeting, then held in Mexico City, the members of the Society for Humanistic Anthropology have deliberated over the methodological, theoretical, and topical concerns described above. The primary vehicle for this is the journal, *Anthropology and Humanism*, which is edited by Edith Turner. The journal takes a holistic approach to the understanding of "what it is to be human" by soliciting contributions from all fields of anthropology, the humanities, and the sciences. It publishes articles that help further humanistic anthropology via new trends in the humanities, illustrate the linkages between anthropological fields and humanistic anthropology, and explore the contradictory processes of life in other cultures and also those of the anthropologists. In addition, it embraces the creative cultural representations of anthropologists by regularly publishing essays, fiction, poetry, and other art forms.

Humanistic anthropology clearly has no easily delineated academic boundaries, as Edith Turner notes on her faculty Web page at University of Virginia:

My theoretical interests have developed from [Victor] Turner's "anthropology of experience," a field that has been spreading in anthropology to narratology, humanistic anthropology, and the anthropology of consciousness. Good anthropology rests on humanism—that is, respect for the ideas and religions of other cultures and, where possible, the willingness to experience through the eyes of others. Analysis therefore has seriously to take into consideration local "exegesis" (interpretation), and local statements of experience.

Humanistic anthropology's vitality rests on the ability of anthropologists to utilize new and alternative modes of knowledge drawn from both scientific and humanistic fields.

— Walter E. Little

See also **Anthropology of Women; Benedict, Ruth; Evans-Pritchard, Edward; Turner, Edith**

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ANTHROPOLOGY, PHILOSOPHICAL

Anthropology, a discipline that encompasses five areas or subdisciplines, provides a comprehensive view of our species' origin, present state, and future. As a science, anthropology can be considered as a recent academic discipline; however, the fundamental inquiry into human origin, social structure, and human interaction has its roots in the tradition of philosophy. From the first materialists of Ionian (ca 585 BCE) to the metaphysics of Aristotle (384–322 BCE) and later the theology by Thomas Aquinas (1225–1274 CE), the geocentric and anthropocentric positions concerning our species' epistemology, ontology, and teleology has a directly impacted the conduct of science. As illustrated in foundational philosophic masterpieces (for example, Aristotle's *Physics* and *Metaphysics* and Aquinas's *Summa Theologica*), these metaphysical concepts directly influence the context by which both the evidence and interpretations are sought or derived. Given this established logical necessity of metaphysics, any

modern theoretical reference must be able to sufficiently depict these metaphysical views based on current available scientific evidence. From these dialectics, science and metaphysics work in unison, via logic, to produce a coherent and accurate explanation concerning human existence within a dynamic universe.

As for anthropology, the influences of Charles Darwin (1809–1882) upon the metaphysics that govern science are profound. Darwin's theory of organic evolution had permanently refuted the fixity (eternal) of species as depicted by either Aristotle or Aquinas. Cosmologically, and theologically for Aquinas, the Great Chain of Being was reduced to mere conceptual links. The traditional views concerning our own species' epistemology, ontology, and teleology have been far removed from its previous dogmatic position. In its wake, an "arc of interpretations" of evolution and dynamic integrity, as postulated by H. James Birx, resulted in differing metaphysical views. However, not all metaphysical interpretations of evolution are correct. It is the duty of the philosopher of science, via philosophical anthropology, to construct and implement a theoretical framework that correctly reflects this metaphysical foundation; all of which is based on rational speculation based on current physical evidence.

It becomes obvious that the philosophical framework that stimulated this inquiry into human existence and its origin precedes the academic structure of anthropology that is known today. However, it becomes necessary to acknowledge that it is the evolutionary framework that both accounts for and is the sustaining factor in the philosophical cohesion of the scientific basis for anthropology; for without this evolutionary framework, what remains is incoherent, unsubstantiated conjecture that is sometimes accompanied with cosmological innuendo. When examining the plethora of theoretical constructs or paradigms, it becomes evident that the foundational structures of anthropology have become obscured from the original esprit de corps set forth by rational and critical inquiry based on this evolutionary approach. Ultimately, the lack of a philosophically sound grand theoretical framework has caused fracturing among the subdisciplines of anthropology. The greatest strength of anthropology stems from its multidisciplinary approach to the study of our species that and approach is now in jeopardy. Though the theoretical construct for physical anthropology and forensic anthropology remains stable, philosophically speaking,

it is the subdisciplines of archaeology, linguistics, and to the greatest extent, cultural anthropology that have become subjected to the greatest risk.

Currently, there are three major perspectives within anthropology: diachronic, synchronic, and interactive. Each perspective, some compatible and some contradictory, contains several particular points of view that establish an integral ontology and teleology from which an epistemologically derived anthropological interpretation of the available evidence are based. Upon examination, it becomes evident that not only does anthropology need a grand theoretical framework but also which paradigm becomes philosophically sound.

Diachronic Perspectives

Diachronic perspectives, a perspective that traces relationships through time, include theories of evolutionism, diffusionism, cultural area synthesis, and Marxism. Though evolutionary theory had a profound influence on philosophy, the resulting philosophical traditions manifested themselves in four evolutionary perspectives: unilinear (stresses one line of evolution that passes through particular stages), universal (stresses generalized stages of evolution), multilinear (stresses both diversity and environmental factors), and neo-Darwinism (stresses a synthesized approach to evolutionary biology and behavior). Progressively, each evolutionary perspective attempts to add and contribute defining boundaries to the evolutionary process as proposed by Darwin.

As reflected in evolutionary theory, our species is considered one species with differences on the phenotypic level. Using this concept within a Darwinian framework, the unilinear view holds that all populations pass through the same stages of culture development at different rates—essentially one species; therefore, there is one line of development. The interdependency of various factors within each cultural stage will eventually propel the population into the next stage in their own cultural genesis. In responding to problems with the unilinear approach, universal evolutionism held a more generalized view concerning stages of development. The creation of generalized categories based on maximum criterion encompassing each category offers a greater advantage; yet the defining characteristic that may describe a given culture fails to offer a sense of accountability. The progression to multilinear evolutionism seems in

itself an evolution of evolutionary theory. The strength of this perspective resides in the acknowledgement of the environmental factor that influences cultural development. Through regional mapping of culture, what emerges are patterns of adaptive responses to external factors. The most recent evolutionary perspective, neo-Darwinism, encompasses progressive theories from biology, genetics, sociobiology, psychology, and cognitive sciences. Though the evidence and philosophical (theoretical) underpinnings are in the process of being united, the ontological, teleological, and epistemological realities are grounded in materialist interpretation of the evidence within an evolutionary framework. Acknowledging yet disregarding the importance of evolution, diffusionism, and later cultural area, attempted to offer differing explanatory factors.

In contrast to evolutionism (any form), diffusionism, either the German-Austrian or British perspective, regards culture, including the development thereof, as expressions that originate and are transmitted from one population to another. In this regard, a cultural aspect may diffuse, but cultural complexes are due to migration or conquest. From this view, cultural similarities are prioritized by ethnocentric attitudes concerning advancements and thus accordingly are stigmatized. The readily available patterns of culture dictated by diffusionist theory created the concept of the cultural area, whereby each cultural area would be comprised of essential traits of that particular area. This process of compiling vast amounts of data resulted in the ability to compare and contrast traits among various cultures. Within these perspectives, the ontological perspective has a philosophical tinge that borders on predestination, whereby advancements are internalized ontologically, then expressed in a teleological manner. Epistemologically, it appears that all cultures are able to adaptively learn but few can create. This essentially creates a “natural order” by which social interaction is governed. Though the logistics for such judgments are illusive, these perspectives incorporate a latent form of the survival of the fittest. In these comparisons, a greater understanding of population interaction and cultural adaptation was made possible.

The remaining diachronic perspective is Marxism. Marxism, a perspective based on a segmented part of philosophy postulated by Karl Marx, focuses on the relationship between modes of production and power structure. Within this structure, distinction between

infrastructure and superstructure aid in the defining properties of the common conceptualization of the term *society*. From this process of analysis, power structure can be analyzed in terms of center and periphery. This perspective offers all the advantages inherited from the philosophy of Marx: historical outlook, the importance of economy and its role in politics, materialism, and evolution, all of which had great explanatory power. However, Marx's misunderstanding of both human evolution and psychology is reflected within this perspective. The resulting epistemology, ontology, and teleology become erroneous due to their skew and fixity.

Synchronic Perspectives

Synchronic perspectives, perspectives that trace relationships within the same time, includes theories of relativism, structuralism, functionalism, and structure functionalism. In relativism, the existence of cultural universals is denied in favor of particulars relevant to a particular culture. Relativism includes descriptive, normative, cognitive, moral, and epistemological. The primary philosophical position states that an individual's culture is the only standard known in itself, whereby objective statements or evaluation of another culture are not possible. Truth, morals, and perceived facts are contingent solely by the arbitrariness of birth. If this perspective is correct in its entirety, the philosophical implications are twofold: International regulation and dissemination of knowledge (for example, science), are not possible. In this same manner, the only ontology and teleology that can be epistemologically acquired is by the society by which an individual was exposed. Objectivity of science becomes irrelevant, and humanity itself becomes obscured. Unlike relativism, functionalism acknowledges both the capability and process by which cultures can be objectively studied.

In the functionalist perspective, focus is placed upon the functionality of organizations and their related practices for individuals in a society. Functionalism, in a philosophical sense, was always a point of inquiry. From this approach, an individual and social meaning are derived from and are dependent on the functions of the interrelating organizations and their particular customs or traditions. Although acknowledging but not stressing evolution, the adaptive process of culture signifies this functional aspect of evolution (need and cultural response). Philosophically, an

individual's ontology and teleology are directly formed by the epistemological limitations set forth by the functional parameters of the organization. Though functionalism does have its strength, structural functionalism offers additional benefits.

Structural functionalism, a perspective that incorporates both structure and function, focuses upon the structural and functional order of organizations in respect to society. Accordingly, each structure and its related function interact in a cohesive fashion (organic model). Within an anthropological inquiry, structural functionalism primarily deals with the observed interaction among social institutions based upon current evidence. Once again, this approach acknowledges both evolution and the attainability of objective scientific knowledge but fails to concern itself with the origin of cultural particulars. In defining properties, this perspective allows human ontology and teleology to develop under the function and form of social institutions. Epistemologically, it is assumed or is latent that knowledge is acquired and advanced through the interactions of these institutions.

Structuralism, a perspective that focuses on structural relationships, states that any derived social meaning is derived from structure. The basis for this view is that structure of culture patterns parallels that of the human mind and can be expressed in language. The ability to recognize and express this structure as a universal, or in the terms of Levi-Strauss, collective consciousness, results in dynamics between languages and culture that allow for examination on multiple levels. From this perspective, a culture could be understood in the same manner that an individual reads literature and more important, provide the ability to access the meaning of cultural expressions that may not be readily apparent. This relationship between thought and culture is essential to this perspective. The ontological aspect of this perspective appears to reflect the cognitive factor of society. In this manner, the definitive ontological assessment becomes indicative of the intellectual and psychological components of the social structure itself. Furthermore, teleology becomes reciprocal with this ontological assessment. Epistemologically, the transmission and advancement of knowledge becomes interred internally within the structure.

Interactive Perspectives

Interactive perspectives, perspectives that focus on action rather than form or function, include theories

from processualism, transactionalism, feminism, post-structuralism, and postmodernism. Processualism, a perspective that focuses on any social process and structural propensities for change, offers a degree of critical analysis concerning social process in regard to social structure. However ill-defining and erroneous, any ontological and teleological aspects inferred are drawn from changing social values, though active social processes within a dynamic structure are not metaphysically reflective. Yet the significance of interaction, especially in evaluating the inferences of philosophical implications, remains an important factor. This can be seen in the transactionalist perspective.

Transactionalism, a perspective that focuses on relationships between or among individuals, provides an adequate basis to expose human motives for anthropological analysis. Through this analysis, a clear indication of values, thought structure, and stability are depicted within this cost-benefit analysis of human interaction. The ontological and teleological implications, though latent, are inferred from the value system used during the process of decision making. Epistemology is unclear but remains in the tradition provided by the Enlightenment. Once again, the metaphysical basis is ambiguous at best.

Unlike the perspectives presented thus far, the remaining three perspectives of feminism, poststructuralism, and postmodernism are more a philosophical position than a method for science. Nevertheless, the influences of these perspectives on anthropology are profound. This is certainly the case with feminism. Feminism, a perspective that focuses on issues from the female perspective, offers an alternative point of view from the mainstream view. Distorted from its original philosophical state, this perspective shifts attention to the empathized function of the female sex in both society and the evolution of our species. Regardless of its original philosophical value and the contributions made regarding misconstrued or disregarded areas of study, its inability to definitively state a metaphysical claim eliminates any theoretical plausibility. However, this perspective has more of a potential that is compatible with science than the remaining two perspectives.

The perspectives of poststructuralism and postmodernism both indicate a breakdown of science and rational speculation. In this manner, poststructuralism rejects structuralist methodology in favor of deconstruction. This process attempts to illustrate that any structural concepts are negated during its

construction; therefore, these independent structures of a social system, structurally expressed as subject/object become obscured and impossible to evaluate. These concepts are closely tied with postmodernism. The postmodern perspective, a perspective that rejects the validity of objectivity and scientific methods, stresses two points: the impossibility of an inclusive system of universals that would objectify the known world and, second, that social systems are reflexive. Therefore, the process of reflexivity becomes essential to the anthropological approach. Besides the blatant contradictions, fallacious reasoning, and mental processes that are indicative of a psychosis rather than a theoretical framework, there remains no tenable ontology, teleology, and epistemology that is relevant to either anthropology or philosophy.

When constructing or evaluating these theoretical paradigms, the philosophical implications for science concerning epistemology, ontology, and teleology become paramount. The perspectives given illustrate the theoretical problems that anthropology must, at all expense, solve in order to retain its comprehensive view. From the perspective given, the only solution is a diachronic paradigm based on evolutionary principles. The limitations of both synchronic and interactive categories become too restrictive in order to establish a coherent view of our species, though it does provide an adequate source for the recording of cultural information. However, interpretation is as important as the methodology. What is needed is the establishment of a new evolutionary paradigm, what this author terms *evolutional dynamics*.

Evolutional dynamics is active synthesized materialistic interpretation of evolution with some pragmatic features. This new theoretical synthesis should have open communication and incorporate the most recent advancements from biology (biological anthropology), genetics, chemistry, primatology, physics, sociobiology, psychology, cognitive sciences, and computer science into an evolutionary framework. With speculation based upon the evidence, an open-ended epistemology, ontology, and teleology would provide a united fundamental basis for all areas of anthropology. Though a complete detail of this theoretical concept is beyond the scope of this summary, it would be sufficient to state that this truly comprehensive view would not only explain our species' origin and present status but also provide an action base for the future. Concerning the perspectives that exist today, diffusionism, Marxism, structural functionalism,

processualism, and feminism perspectives must be modified in order to be grounded within this evolutionary perspective. Their particular focus would enrich the appreciation for the history of our species. As for the poststructuralism and postmodernism perspectives, unfortunately there is no hope. Their own inadequate and futile theory condemns their relationship with science. These theoretical malignancies must be removed from anthropology (science).

In adopting an active and pragmatic stance as depicted with evolutionary dynamics, each of the traditional areas of anthropology would benefit. In the area of physical and applied anthropology, communication among biology, psychology, primatology, chemistry, and physics could procure advanced methodologies in the examination of physical evidence. Under these circumstances, the evidence given to science can not only construct our species' phylogenetic past but also aid in the pursuit of justice in the present day. As for archaeology, communication with physics (geology) and computer science (technology) could aid in new methods for the acquisition of new evidence for scientific evaluation. This evaluation of archaeological artifacts, based on psychological and sociobiological factors, could provide a solid processed view of our species' material history. Similar to this process, linguistics would also benefit. In the area of linguistics, communication with psychology, cognitive science, and computer science could open new grounds concerning the development and dynamics of human language. As for the *new biocultural anthropology*, the social arm of anthropology, communications among the areas of biology, psychology, cognitive science, sociobiology, and primatology could provide new and relevant sources of information concerning the development and developing factors of culture. Furthermore, the adopting posture of pragmatism could further benefit those anthropologists who want to promote social change. However, all these areas or subdisciplines must communicate with each other to provide a comprehensive view of our species.

In the final analysis, one of the greatest contributions from anthropology is the evolutionary framework proposed by Charles Darwin. With the procurement of scientific advancements (genetics), the genesis of the evolutionary theory must reflect future dynamic contributions. To secure a coherent grand theory, the metaphysics by which the discipline operates must be adequately responsible for answering

the essential features of our own humanity. Currently, the evolutionary perspective offers the greatest advantage; however, a refinement and synthesis must take place. In this manner, philosophical anthropology becomes a necessary factor. Open to many possibilities, the advantages of evolutionary dynamics serve to unite the field that would otherwise have to capitulate due to the improper implementing of metaphysical concepts. With such adaptation, the discipline of anthropology will survive and thrive, as does our species.

— David Alexander Lukaszek

See also **Biological Anthropology and Neo-Darwinism; Darwin, Charles; Evolution, Human; Evolutionary Epistemology; Functionalism; Postmodernism; Structuralism**

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ANTHROPOLOGY, PRACTICING

Practicing anthropology primarily refers to anthropological work performed outside academia to address issues in areas such as community development, agriculture, health care, environment, resource management, housing, criminal justice, marketing, and technology. Although a majority of practicing anthropologists work in urban or other local settings, some work on international projects, especially in

development and health. Practicing anthropologists can be employed by a university, but most hold positions in public and private sectors where they study community-related problems, help develop programs and policies, and implement solutions.

Historical Context

In 1941, Margaret Mead, Eliot Chapple, and others founded the Society for Applied Anthropology (SfAA) in response to the growth of applied anthropology, which the SfAA defines as the application of anthropological perspectives through interdisciplinary scientific investigation of human relationships for solving practical problems. Originally a part of American Anthropological Association (AAA), SfAA became a separate entity to avoid traditional anthropology's undercurrent of bias against applied or practicing anthropology. By the 1950s, applied anthropology was generally regarded as an academic, research-based subfield of cultural anthropology intended to inform policy, program administration, intervention, and development. Practicing anthropology, conversely, did not burgeon until the 1970s, spurred by an extreme shortage in academic positions in the United States, and by recognition of the potential for anthropologists beyond basic research in applying anthropological knowledge to help solve humans' critical problems as practitioners of anthropology.

The National Association for the Practice of Anthropology (NAPA) was created in 1983 as a section of the AAA in acknowledgement of the growth of the practicing field. NAPA membership currently exceeds 700, and NAPA supports practicing anthropologists in public and private sectors, as well as those affiliated with academic institutions, whether or not in anthropology departments. It also promotes practice-oriented work by publishing the *NAPA Bulletin* and practitioner directories, sponsoring professional mentoring, networking opportunities, workshops, and interest groups around common themes, and assisting in the establishment of local practitioner organizations (LPOs) across the United States. Current LPOs include the Washington Association of Professional Anthropologists (founded in 1976), the High Plains Society for Applied Anthropology (founded in 1980), the Mid-South Association of Professional Anthropologists (founded in 1983), and the Southern California Applied Anthropology Network (founded in 1984). These associations have

successfully advanced the position of nonacademic practitioners within the discipline and professionally as witnessed in the AAA's moving toward creating a new category for those members employed by organizations that would be similar to accommodations granted academic departments.

The actual term *practicing anthropologist* was not in common use until the appearance of the SfAA's journal *Practicing Anthropology (PA)* in 1978, a publication originally intended for individuals with nonacademic employment. Eventually *PA* sought to establish *practicing* as part of the anthropology discipline and to bridge the gap between practicing in nonacademic and academic settings. It is still debatable as to whether there is a difference between applied and practicing anthropology, since both employ anthropological means to study societal, organizational, or programmatic issues, and to help facilitate change by influencing policy and practice. Shirley Fiske considers *practicing* as virtually interchangeable with *applied* in that both serve as testing grounds for theory of traditional anthropology subfields. Others contend that *practicing* is broader than applied because it incorporates all nonacademic anthropological work, not only the policy research of applied significance. Still others make a distinction between the two by describing the applied work of those employed in business and agencies as *practicing* and similar work of academically employed as *applied*. Robert Hinshaw views *practicing* as primarily separated from *applied* by being collaborative, while Erve Chambers relegates *practicing* to an element of *applied*, distinct only in its explicit intent to make anthropology useful through collaborative inquiry, knowledge transfer, and decision making.

The blurring of the distinction between *applied* and *practicing* is evident in the fact that the memberships of the SfAA and the NAPA overlap substantially. NAPA is also a frequent co-sponsor of the annual meetings of the SfAA and has participated in a joint commission comprised of representatives from SfAA, AAA, and NAPA. If the discipline itself were to make a distinction, it would probably be that *applied* work is primarily concerned with producing knowledge that will be useful to others, while *practicing* work directly involves anthropologists' intervening beyond social-scientific inquiry, making their knowledge and skills useful and easily accessible. Despite the lack of consensus on a precise definition, *practicing* is a recognized area of anthropology, having become institutionalized

through its increased relevance in professional realms and the establishment of professional associations and affiliated publications.

Because the academic employment crisis of the 1970s has not yet abated, anthropology programs are aware that increasing numbers of graduates are being employed in positions outside of universities. The government and private sector now offer more job opportunities for anthropology graduates with a master or doctoral degree than academic institutions. It is now common for doctoral students to contemplate future applied or practicing work as well as an academic position while progressing through their studies. Simultaneously, graduate programs with applied anthropologists on faculty are becoming more attractive to prospective students. There are now at least 25 applied anthropology programs in the United States, several of which focus their graduate programs on training future anthropologists for nonacademic work, and many that offer a master's degree. In 2000, the Consortium of Practicing and Applied Anthropology Programs (COPAA) was established as a cohort of university departments involved in applied anthropology to foster professional exchange among faculty and to develop workshops for professionals and educators. It also assists students in finding professional opportunities in practicing domains through securing internships and practicums and supplying information on training for careers in applied and practicing anthropology.

Domains of Practice

One must look beyond job titles to find the roles taken by practicing anthropologists. Unless the position is academic, job announcements rarely use the term "anthropologist"; however, many nonacademic positions are well-executed by practicing anthropologists. At the same time, anthropologists may have to precisely define what they bring to the job, in contrast to professionals from other disciplines. A survey conducted by NAPA in 2000 of those with master's-level training in applied anthropology found that practicing job categories included (in descending order by number of responses) government, private, education, and other sectors, and archeology, medical, development, and environment substantive areas. The NAPA Web site offers a list of *Areas of Practice* that details even more settings in which practicing anthropologists work: agricultural development,

environmental policy and regulation, product design and program management in business and industry, software and database design in computer science, human factors engineering in information technology, cultural resource management, curatorial activities in museums, forensics in law enforcement, and nonprofit and social service work, including management and policy implementation and grant writing.

Typical Roles

Practicing anthropologists often play multiple roles. The most common include researcher, research analyst, evaluator, impact assessor, needs assessor, planner, change agent, advocate, culture broker, information specialist, administrator, and manager. Therapist and expert witness roles are rare but have also been a part of practicing anthropology. Other roles include educator and consultant: anthropologists have long been involved in personnel training (for example, the cross-cultural training of administrators, managers, or other social scientists in anthropological techniques such as social impact assessment) and have frequently performed long- and short-term consulting.

According to the 2000 NAPA survey of master's-level graduates in applied anthropology, more than 30% of respondents reported having researcher occupational roles. Practicing anthropologists working as researchers use their training in data collection to supply information to analysts and decision makers, but they may also operate as research analysts and policy makers. In fact, contributing to analysis elevates the status of practicing anthropology and enables anthropologists to have an impact on decision-making. Thus, practicing anthropologists can participate in the entire policy-making process—research performance, data analysis, and finding-based decision making. Practicing anthropologists may also use their acumen as specialists involved in program implementation and evaluation. These roles require skills in research design, data collection, quantitative and qualitative analysis, personnel supervision, and writing. As evaluators, practitioners assess the outcomes of a project or program that has been implemented and determine its impact on a community. The 2000 NAPA survey showed that 31% of members used evaluation skills on the job, which indicates that the evaluator role is common among practicing anthropologists. Possible areas of employment for evaluators include education, health care, human services,

and community development. Impact assessors usually work on the front end of a project, researching ways a community might be affected by alterations in its surroundings (for example, zoning changes, new development projects, or highway construction). Areas such as energy development, fisheries and water resource management, and transportation may require research and impact assessment.

Practicing anthropologists also work as agents of change who attempt to transform a community, sometimes on behalf of a development agency and often through new technology introduction. This can be as simple as showing villagers in a remote area how to build a well for a ready supply of water, or as complicated as helping a community deal with relocation and resettlement because of dam construction. In many roles, an anthropologist may be considered a change agent or may become one after fruitful research leads to advocacy. Advocacy can be an anthropologist's only role or an important part of other roles, since it is often the impetus for anthropological participation. Anthropologists involved in advocacy serve as liaisons on behalf of a community or group because the latter are often not accustomed to dealing with the agencies that offer them services or have power over them.

Culture brokers also serve as liaisons between two diverse groups, but their communication is always two-way, from community to decision makers and vice versa. Because of the inherent capacity for conflict in such situations, anthropologists as culture brokers strive to act as neutral mediators, with allegiance to the solution of the present problem rather than the particular interests of one group over the other. This role may involve helping public health officials better understand a particular ethnic clientele while assisting community members in comprehending proposed health intervention. Culture brokers may favor one side, especially in situations in which loyalty is tied to a shared heritage with the particular group being served, but ultimately the anthropologist in this role is responsible for assisting both parties in making a transition.

Performing as culture broker is often not the sole position of a practicing anthropologist; it may arise concurrently with other roles, such as public participation specialist. These specialists provide expert input in the planning process to disseminate information to the public through town hall meetings or media outlets. For example, a culture broker may

work as a liaison between Native American tribes and the federal government in handling policy or legal issues, tenure and land use negotiations, and program subsidies, while simultaneously informing locals about incentives or opportunities, and policy makers about needed programs or project adjustments.

Program services and planning are broad roles that may include media anthropologists, who may be public participation specialists working in broadcasting or media production as "translators" of cultural knowledge, informing media outlets on news stories from the expert perspective of an anthropologist. This is an example of the trend within anthropology of practitioners being called upon to communicate their knowledge and expertise in the public sphere more often. Such expanded roles require consideration of improving training of new practitioners.

As the employment opportunities for practicing anthropologists in new work settings increase, anthropologists are increasingly occupying positions of authority as administrators and managers, setting goals, supervising others, delegating tasks, and allocating resources. In many instances, practicing anthropologists have advanced in a natural progression from their research, evaluation, or planning policy roles to high-ranking positions as key decision makers in government and public administration or corporate executive ranks. Others work in academic settings in administrative rather than faculty roles, often directing applied or practicing units that serve universities in community outreach efforts. An evaluator of a hospital's nutrition program may easily slide into the role of liaison, media specialist, public relations representative, assessor, or administrator with all the working knowledge required for planning, policy decision making, and budgets and staff management, as well as clientele interaction. This advancement reflects the success of anthropological training, the effectiveness of its methods, and the relevance attributed to practicing anthropology.

Skills Required for Practice

Practicing anthropologists need substantial training in ethnographic research to be able to effectively collect community and group-level data. Quantitative skills, including statistical analysis, are invaluable for practicing and academic anthropologists. Similarly, grounding in social science research for fieldwork beyond ethnography, such as sampling, survey research, and computer-aided analysis, is essential.

In addition, globalization and the corollary emergence of transnational and international nongovernmental organizations, government agencies, and corporations, combined with the inherent collaborative and interdisciplinary nature of practicing anthropology, requires that practicing anthropologists have strong communication skills for information dissemination, collaboration, and funding requests through grant proposals.

Finding a mentor already working in a chosen field can help direct a student to the additional training needed for success in that realm. Informal and formal networking is of the utmost importance for practicing anthropologists on the job, and should also be a routine part of anthropology education. Networks can be formed or enhanced through professional associations, online forums, and other means used to connect with colleagues within, and outside of, anthropology. Developing professional relationships not only prepares students for finding employment and offers a knowledge base, but also engenders skills in the collaborative work one should expect in any practicing anthropology career. Collaboration should not be considered an innate ability, but one that requires practice and training through education and experience. Communication, networking, and collaboration are desirable components of graduate training in anthropology that can be garnered through practical experience. Faculty projects, various institutes and programs already in place, and contributing time to volunteer organizations such as the Peace Corps, UNICEF, the World Bank, and local grassroots groups or neighborhood associations are opportunities for such experience prior to graduation. As both students or working professionals, practicing anthropologists require field-specific knowledge, which can be achieved by keeping up with relevant books, journals, newsletters, and other trade publications; networking with practitioners from a particular field of interest; and studying domain-relevant laws, policies, and regulations.

Professional Conduct

An essential aspect of professionalism is ethical conduct. Practicing anthropologists must realize that anything they do or say may have positive or negative repercussions on people's lives. The ability to make professional judgments must be developed. Actions and words must be carefully scrutinized; choices must be informed. Anthropologists must be able to overcome potential conflicts in their roles, particularly

when they feel compromised by client wishes and cannot base their decisions on science alone. To safeguard ethical decision making on the practitioner's behalf, a professional framework must be built to guide sound judgments and to help balance science, morality, and client interests. This framework should consider the ethical guidelines of professional associations (AAA, SfAA, and NAPA), and related laws and policies such as those provided by Institutional Review Boards, the U.S. National Research Act of 1974, and field-specific mandates such as the National Environmental Policy Act of 1969.

The direction of research and timelines of funded work are typically controlled by the sponsoring agency; likewise, findings and field notes are proprietary, rendering study subjects vulnerable to public disclosure. To reduce these risks, professional conduct demands incorporating informed consent and thoughtful consideration of the impact the research may have on the client, the study subjects, the anthropologist, and the discipline of anthropology. Adhering to ethical guidelines assures the reputation of anthropologists everywhere, while failure to do so can seriously undermine the discipline as a whole. This is the primary responsibility facing practicing anthropologists—to positively transform communities and individuals through anthropological means, ethically, with consideration for all parties involved.

— Satish Kedia

See also **Anthropology, Careers in**

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ANTHROPOLOGY, SOCIAL

While anthropologists in the United States developed cultural anthropology, the British developed social anthropology. In the present, despite the fact that social anthropology departments still exist in Great Britain and in other parts of the world, social anthropology existed as a distinct discipline only from the early 1920s to the early 1970s. Historically, social anthropologists rejected evolutionary anthropology as speculative rather than scientific and tended to study a society at a particular moment in time. Social anthropologists focused on social organization, particularly on kinship. Until recently, they did not deal with history and psychology as much as cultural anthropologists did.

Bronislaw Malinowski (1884–1942) and A. R. Radcliffe-Brown (1881–1955) were the two main figures to develop social anthropology. Malinowski developed the functionalist approach, and Radcliffe-Brown developed structural functionalism. Influenced by French sociological thought, social anthropologists looked at social institutions. In particular, Emile Durkheim's (1858–1917) organic view of society influenced social anthropology. This approach described society as an organism, in which the different parts of the society work to maintain the society. This led to a holistic approach, which said that you could not look at any institution in society in isolation from any other institution. Social anthropology took hold in the British Empire. It also developed as a specialized discipline in parts of the United States, particularly at the University of Chicago.

Malinowski developed the method of social anthropology, ethnography, during World War I, when he did intensive field research in the Trobriand

Islands of Melanesia for 2 years. Intensive fieldwork, where the anthropologist lives among an exotic people, became a hallmark of social anthropology. Malinowski's functionalism focused on human biological and social needs, ideas that followed those of W. H. R. Rivers (1864–1922). He said that people had primary needs for sex, shelter, and nutrition and that people produced culture to satisfy these needs and other needs that resulted from these primary needs. While his theory has lost popularity, his fieldwork method has become standard in anthropology. Malinowski wrote many books based on his fieldwork, the most famous of which is *Argonauts of the Western Pacific* (1922). Early works based on Malinowski's approach included Raymond Firth's *We the Tikopia* (1936) and Reo Fortune's *Sorcerer's of Dobu* (1937). Later scholars criticized such ethnographies because the better they explained a particular aspect of society in relation to the whole society, the harder it became to compare that aspect cross-culturally.

Radcliffe-Brown's structural functionalism used Durkheim's ideas to a greater degree than Malinowski, and Radcliffe-Brown suggested social anthropology should be called "comparative sociology." He got his ideas of social structure from Lewis Henry Morgan, Henry Maine, and his teacher W. H. R. Rivers. Radcliffe-Brown developed a more organic functionalism than Malinowski. He made the analogy that people of a society are like the parts of a human body. Social anthropologists who followed this analogy talked about kinship systems, political systems, economic systems, and other systems, which all worked to maintain a society's social structure. They wrote about how each of these systems influenced one another, and when one changed, the others would change as well. Thus, some social anthropologists talked about how witchcraft beliefs are linked to social control, and, as Durkheim said, what religion you belong to correlates with the chance you will commit suicide. Examples of ethnographies produced that combined Malinowski's fieldwork method with Radcliffe-Brown's theoretical approach include Gregory Bateson's *Naven* (1936) and E. E. Evans-Prichard's *Witchcraft, Magic, and Oracles Among the Azande* (1937).

Early social anthropologists focused on social relationships in terms of social statuses and social roles. Social statuses are the different positions a person holds in a society. Each society has different social statuses a person can hold in a society, and there are

behaviors associated with these statuses. Social roles are the behaviors associated with social statuses. They involve how people relate to each other in terms of their status, such as how a father relates to his children, a supervisor relates to her staff, or a chief relates to his followers. As people react together in relation to social roles, they define their social relationships. Social anthropologists discovered social relationships by looking at how people said they should relate to each other and observing how they related to each other in everyday life.

Henrika Kuklick points out another aspect of social anthropology; it was tied to colonial rule, and this influenced how people wrote ethnographies. Most social anthropologists described the societies they studied as harmonious and static. Social anthropologists for various reasons usually concentrated on egalitarian societies and wrote how in such societies consensus was the rule. She uses Evans-Pritchard's writings on the Nuer to make this point, noting that Evans-Pritchard's accounts show that some Nuer prophets had considerable power and leopard-skin chiefs also had power but Evans-Pritchard downplays this power. She says that the British anthropologists downplayed this inequality because they were also downplaying the oppression caused by their own rule.

In the 1940s and early 1950s, the focus of social anthropology changed to the study of social structure, the relationship between groups. Major works of this period were *The Nuer* (1940), by E. E. Evans-Pritchard, and *African Political Systems* (1940), which was influenced by classification systems by Lewis Henry Morgan and Henry Maine. In *The Nuer*, Evans-Pritchard took a more cultural view than most earlier social anthropologists, since he said structures were cognitive maps of society, not actual social relationships. Then in the mid-1950s, some social anthropologists began to pay more attention to how society changed. This was reflected in the approach of Edmund Leach, who was influenced mostly by Malinowski, and in the conflict approach of Max Gluckman, who was influenced mostly by Radcliffe-Brown and Karl Marx. Major works that came out during this period were Edmund Leach's *Political Systems of Highland Burma* (1954), and the work of Gluckman's student, Victor Turner, *Schism and Continuity in African Society* (1957).

After this period, the influence of Malinowski and Radcliffe-Brown began to decline as social anthropologists turned to the structuralist ideas of Claude Lévi-Strauss, and later the ideas of Americans like David

Schneider and Clifford Geertz, who looked more at culture than society. And Americans were exposed to ideas of social anthropology as social anthropologists like John Middleton, Victor Turner, and Mary Douglas all came to teach in universities in the United States. Finally, theorists like Foucault and Derrida influenced both social and cultural anthropologists. Today, many American universities say they teach sociocultural anthropology, and social anthropologists now deal with culture as much as society.

— Bruce R. Josephson

See also **Anthropology, Cultural; Ethnographic Writing; Evans-Pritchard, Edward; Functionalism; Malinowski, Bronislaw; Radcliffe-Brown, A. R.; Rivers, W. H. R.; Social Structures**

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ANTHROPOLOGY AND SOCIOLOGY

Studies of anthropology and sociology have blended together as cultural anthropologists have attempted to draw comparisons among various societies and cultures. Identifying cultural characteristics became more difficult during the 20th century in response to two world wars. By the beginning of the 21st century, globalization had further blurred the once distinct lines between

particular cultures, as the affairs of nations became more intertwined with those of others.

One area where anthropology and sociology have joined forces is in the study of refugees. Approximately 140 million people entered the ranks of refugees in the 20th century. Many refugees left their homes because of war and political violence. Others relocated to escape nature's wrath as droughts, floods, tidal waves, and earthquakes ravaged their homelands. Studies have revealed that about 90% of all refugees remain in the first area of relocation. While large numbers of refugees, particularly those who leave voluntarily, will be assimilated into the cultures of their adopted lands, others will remain in refugee camps in tents or barracks, creating new cultures that blend elements of the old with the new.

After World War I, the newly formed League of Nations oversaw the relocation of refugees displaced by the war. The end of World War II witnessed a shift in this responsibility to the Displaced Persons Branch of the Supreme Headquarters Allied Expeditionary Forces. The lives, rights, and basic needs of refugees were thereafter protected by international law. In 1951, the responsibility for refugee oversight again shifted when the United Nations High Commission for Refugees (UNHCR) was created at the Geneva Refugee Convention. By the early 21st century, UNHCR was responsible for some 17 million refugees around the world, mostly from Africa and Asia. Many of the refugees under UNHCR protection are children unaccompanied by adults. These children present new challenges to cultural anthropologists who study them, as well as to the agencies responsible for their welfare.

After both World War I and World War II, a number of scholars in various disciplines turned their attention to refugee studies as they attempted to develop a framework of research that would affect policy decisions. In 1939, the publication of a special issue on refugees in the *Annals of the American Academy of Political and Social Science* served to focus attention on the legitimacy of refugee studies as a scholarly endeavor. In 1950, during the post-World War II years, the Association for the Study of the World Refugee Problem was founded in Liechtenstein, followed by the creation of UNHCR the following year.

In 1981, International Migration Review issued a call for comparative, interdisciplinary studies on refugees. Seven years later, the *Journal of Refugee Studies* was founded to provide a comprehensive forum for scholarly research in the field. Since its inception, 22.5% of the contributors to the *Journal of Refugee Studies* have been anthropologists, and 18% have been sociologists. That same year, in response to increased interest in refugee studies within anthropology, the American Archaeological Association established the Committee on Refugees and Immigrants as a subgroup of the General Antiquity Division. Over the next 6 years, the number of anthropologists involved in refugee studies increased significantly.

— Elizabeth Purdy



SOCIAL ANTHROPOLOGY

Originating in Bronislaw Malinowski's works, social (or cultural) anthropology studies the cultural lives of the diverse populations of the world in all their aspects, thus using figures, methods and theories from archaeology, folklore, ethnography, and linguistics in its analyses. Social anthropology is increasingly differentiating itself from physical anthropology, which focuses instead on biological characteristics and traits.

Social anthropology brings together different disciplines to analyze the cultural life of human beings and cultural differences between different peoples. The first focus of the discipline was on cultures and people that remained exotic and primitive to Western eyes. Early anthropologists were all Europeans or North Americans, thus the distance between the observer and the observed became a characteristic feature of the discipline. Because of the anthropologists' whiteness, anthropology has often been charged with ethnocentrism. Today, the focus of social anthropology has become more inclusive. Researchers study not only primitive peoples living in small villages but also urban groups and cultures.

Yet the first topic of anthropology has clearly influenced the way it relates to other disciplines and its ambition to be able to come to valid generalizations on cultural and social changes. The agenda of achieving a total description of a given society clearly derives from the small-scale observations of early anthropologists, who examined simpler societies where changes were slower. The inclusion of modern societies as an anthropological field of study has brought the discipline increasingly close to sociology.

During the second half of the 20th century, the expansion of anthropological objects of study has also coincided with the emergence of non-Western anthropologists. In addition, there has been a steady growth of anthropology institutes and university departments in Eastern countries, such as Japan and India, as well as in some Latin American nations. However, the establishment of new institutions has not always entailed appropriate funding, so that researchers have remained limited to the countries' own heritages. The status of cultural anthropology today, however, remains ambiguous. Different schools of social anthropology often coexist in the same country, and the discipline still has not attained that unity of languages and concept that would give it the status of the science of culture.

— Luca Prono

ANTHROPOLOGY, SUBDIVISIONS OF

Anthropology may be best viewed as the comparative scientific study of human societies and cultures throughout the world and throughout time. This seems to appropriately summarize the nature of anthropology and the depth of the ability of this discipline to provide a holistic approach to the study of humankind. Anthropology is comparative in that it attempts to understand both similarities and differences among human societies today and in the past. We study our species from its beginning several million years ago right up to the present. This is possible because anthropology has taken a holistic approach, dividing into several subdivisions, each

unique in their ability to address aspects of humanity and each contributing to each other in order to create a more complete picture of humans throughout time.

There are four subdivisions, or subdisciplines, in anthropology: cultural anthropology, archaeology, physical (biological) anthropology, and linguistic anthropology. These four subdivisions allow anthropologists to study the total variety present in our species. As a discipline, anthropology studies everything about being human and therefore better enables us to understand the origins and development of who we are today. For humans, it is very important to us to understand where we come from. Many societies have origins myths, and for anthropologists, studying ourselves is like writing the story of our origins.

Cultural Anthropology

Cultural anthropology deals with the origins, history, and development of human culture. Cultural anthropologists often, although not always, tend to study groups that have different goals, values, views of reality, and environmental adaptations that are very different from those of themselves. Cultural anthropologists note that culture is learned and that it is through culture that people adapt to their environments; therefore, populations living in different places with different environments will have different cultures. Much of anthropological theory has been motivated by an appreciation of and interest in the tension between the local (particular cultures) and the global (a universal human nature or the web of connections between people in distant places). This allows us to develop a concept of human nature very different from the research other disciplines provide.

Also called ethnographers, cultural anthropologists are known for producing ethnographic works (or holistic descriptions of human culture, based on extensive fieldwork). These works traditionally have focused on the broad description of the knowledge, customs, and institutions of a particular culture group. More recently, however, cultural anthropologists have also examined the ways in which culture can affect the individual and his or her experience. Cultural anthropologists stress that even though the behavior of people in different cultures may seem silly or meaningless, it has an underlying logic that makes sense in that culture. The goals of cultural anthropology,

therefore, serve to make sense of seemingly bizarre behavior in terms of the people practicing the behavior. Cultural anthropologists are often thought of as studying people in faraway, exotic places. More often than not, cultural anthropologists tended to study non-Western groups, especially during the early development of this subdiscipline. Today, however, cultural anthropologists also focus on the subgroups (or subcultures) within Western culture. Each of these groups is a part of a larger culture and can help us to better understand the human condition. Even research on our own society attempts to uncover the logic behind how we behave.

Archaeology

Archaeology can be defined as the study and interpretation of past societies and cultures from the earliest of times to the present. By excavating sites created by humans in the past, archaeologists attempt to reconstruct the behavior of past cultures by collecting and studying the material culture remains of people in the past. Using these remains to understand the past can be a real challenge for archaeologists because they have to infer past lifeways from what is sometimes considered trash. Archaeologists have to look at what people left behind. Archaeologists are one step removed from people; they have access only to their “things.” The advantage of archaeology is time depth; archaeologists can go back millions of years, often studying cultures that are long gone and have no analog in the modern era. Using this diachronic approach, archaeologists can look at how cultures change over time.

In addition to its value as a scientific subdiscipline in anthropology, the knowledge gained through archaeology is important to cultures and individuals. The past surrounds us; the past defines individuals, as well as cultures. For some, it may seem of little consequence; for others, it is their very identity as a people. Every culture has symbols that it uses to remind itself of the past, and archaeology is a critical way of knowing about that past.

Physical (Biological) Anthropology

Physical, or biological, anthropology focuses on the study of biological aspects of human beings, past and present. Physical anthropology is essentially a biological science; it often seems to have more in common

with biology than with the other subdivisions of anthropology. The importance of this subdiscipline in anthropology, however, is its contribution to the holistic understanding of humans. Physical anthropologists focus on both the biological nature of, as well as the evolution of, humans. By studying primates, physical anthropologists are able to contribute to our knowledge about the evolution of our own behavior. Examining fossil hominids allows physical anthropologists to study and understand the evolution of humans as a distinct species. Human variability is another major focus of physical anthropology; physical anthropologists are concerned with human variation, such as the differences in hair and skin color, the differences in blood types, the relationship between behavior and health, as well as the distribution of genetic traits. Using knowledge gained through such studies contributes to increased health and the decreased spread of diseases.

Linguistic Anthropology, or Linguistics

Linguistics is the study of language. Although linguistics is classified as a subdiscipline of anthropology, it often tends to be a discipline of its own, especially at large universities. The task of linguists is to try to understand the structure or rules of a language. They look for different grammar systems and different ways for producing sounds as a way to understand the language, which potentially sheds insight on cultural behavior. Because language is often used as a way of categorizing people and as the primary way through which culture is learned, linguists can help trace relations between people in the present and past. Linguistics also contributes to archaeology by helping to decipher ancient text through the rules of the modern language. The contributions of linguistics to anthropology are undisputed.

Each of these unique subdisciplines in anthropology contributes different aspects to the understanding of humans in the past and present. Rather than focusing on a single aspect of being human, such as history or biology, anthropology is distinct in its holism. These subdisciplines provide the basis for this holistic approach.

— Caryn M. Berg

See also **Anthropology, Cultural; Archaeology; Biological Anthropology; Linguistics, Historical**

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ANTHROPOLOGY, THEORY IN

As the science of humankind, anthropology strives to give a comprehensive and coherent view of our own species within material nature, organic evolution, and sociocultural development. Facts, concepts, and perspectives converge into a sweeping and detailed picture of human beings within earth history in general and the primate world in particular. To give meaning and purpose to both evidences and ideas, theoretical frameworks are offered.

Influenced by the critical thinkers of the Enlightenment and ongoing progress in the special sciences, especially the writings of Charles Darwin (1809–1882) and Karl Marx (1818–1883), the earliest anthropologists were evolutionists. Our biological species, past and present societies with their cultures, and languages were seen as the outcome of evolution.

In physical/biological anthropology, the human animal is compared to the prosimians, monkeys, and apes. Fossils and genes link our species to the four great apes (orangutan, gorilla, chimpanzee, and bonobo). DNA evidence substantiates our very close relationship to these pongids. Furthermore, human beings are seen as the result of hominid evolution in terms of emergent bipedality, implement making, and a complex brain capable of using symbolic language as articulate speech. Of course, interpretations

of the hominid fossil record differ among anthropologists, as do the taxonomic classifications of the unearthed specimens and explanations for the success or extinction of hominid species and their activities.

Anthropologists have interpreted social behaviors and material cultures from different theoretical orientations: evolutionism, historical particularism, diffusionism, structuralism, functionalism, configurationalism, and relativism (among other theoretical approaches to understanding and appreciating societies and cultures). Cross-cultural studies reveal both the similarities and differences among human groups, resulting in important generalizations.

In the middle of the 20th century, two major anthropologists were instrumental in reviving the evolutionary perspective: Leslie A. White and Marvin Harris. If used correctly, then the evolutionary framework gives meaning and purpose to all the facts and concepts in anthropology. A dynamic interpretation of our species, societies, and cultures is in step with the scientific findings in modern geology, paleontology, biology, sociology, and psychology. Overcoming postmodernism and with a growing awareness of global convergence, the forthcoming neo-Enlightenment will return to science, reason, and critical realism.

Theories in anthropology deal with the origin of our species, the development of societies and their cultural elements (for example, technologies, kinship systems, and magico-religious beliefs and practices), and the emergence of symbolic language as articulate speech. New areas of specialization in applied anthropology include forensic anthropology, forensic psychology, multiculturalism, and action anthropology.

As a comprehensive discipline, anthropology has been and remains open to relevant facts, concepts, and theories from the other sciences, for example, ecology, climatology, social psychology, and natural philosophy. More discoveries of fossil hominid specimens and their artifacts, as well as more precise DNA analysis techniques, will set limits to the number of probable explanations for the evolution and diversity of humankind. No doubt, new light will be shed on prehistoric migrations and historic wars.

Combining scientific knowledge with philosophical reflection, anthropologists may even speculate on the future directions of human biosocial evolution. Until now, anthropologists have focused on our planet. However, in the years to come, new areas of

biosocial research will emerge as human beings adapt to life in outer space and on other worlds.

— H. James Birx

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ANTHROPOLOGY, VISUAL

The Need for Visual Anthropology

Since the advent of modern photographic technology (still and moving), the use of visual methods for anthropological documentation and inquiry has been an integral part of the discipline, although it was not formally known as visual anthropology until after World War II. Visual anthropology has been used to document, preserve, compare, and illustrate culture manifested through behaviors and artifacts, such as dance, proxemics, and architecture. As well, archaeologists and primatologists have respectively employed visual methods in their research to capture images of elevations and excavations, and individuals and their behaviors. While critics of visual anthropology cite that it is unscientific in method, only serves to illustrate written ethnography, and does not propose theoretical positions, visual anthropology today is a means for seeing and presenting anthropological thinking in its own right. Over time, visual methods have evolved to foster new research questions and analysis, redefining how visual researchers approach the study of culture.

Visual anthropology, whether photographed, taped, filmed, or written, is a method of observation, but more important, it is a means for developing questions and analyzing data. Visual anthropologists provide their observations for other anthropologists and social scientists to consider in their own work, presenting an alternative way of seeing culture through the lens, which instigates only further inquiry, not certainty. By embracing collaboration between observer and observed and recognizing the relationship between the visual and textual, visual anthropologists have created theoretical objectives that redefine the boundaries of the subdiscipline, exploring new ways to study and understand culture, society, identity, and history. These are the characteristics that separate visual anthropology from documentary film, photography, and journalism; and these are the issues that will promote the use of visual methods in the anthropology of the future.

This entry will discuss several facets of visual anthropology, noting its origins, its significant influences, its current status, and given new innovations in technology, where it will be in the next decade. While important to the evolution of the subdiscipline, this entry will not discuss, analyze, or compare in detail ethnographic films, filmmakers, or their histories and instead will suggest a number of books dedicated to this subject at the end of the piece. Two examples from my own research serve to illustrate different types of photo-elicitation methods, recognizing that these techniques would be impossible to conduct without significant developments in technology and analysis. Inexpensive cameras, faster films, ubiquitous photo-minilabs, more powerful laptop computers, and the digital revolution have facilitated the use of photography and video in the field. Not only can researchers accomplish more, but they can place technology in the hands of the subjects themselves. Furthermore, with Internet access, researchers can immediately distribute data and edited material from the field to share with colleagues, students, and the mainstream public.

Visual Methods

In the late 19th century, anthropologists employed photography and filmmaking as tools to augment their research, as a means for illustration, description, and preservation of people they observed. Although rudimentary, bulky, clumsy, and sometime dangerous,

photographic equipment found its way to the field with the express purpose of quickly gathering accurate information about the local population. Baldwin Spencer, Alfred Cort Haddon, Félix-Louis Regnault, and the Lumière brothers were among the first ethnographers to employ photographic cameras in their research. From 1922 through 1939, government anthropologist Francis E. Williams made thousands of glass plates and negatives of the people in 18 different cultural groups in the Australian colony of Papua (New Guinea). Although Franz Boas had used a still camera since the 1890s, it was not until late in his career, 1930, that he employed filmmaking to capture various activities of the Kwakiutl for documenting body movements (dance, work, games) for his cross-cultural analysis of rhythm. Similarly, Margaret Mead and Gregory Bateson relied on photographs and film as visual tools in their research, because they felt that their images could explain behavior more clearly than they could describe it. Bateson shot hundreds of photographs and hours of film, which they analyzed and published, arguing that their anthropological understanding of the cultural context in which the images were made recognized the linkages between the action and the deep cultural meaning of the images.

Ethnographic film, video, and photography remain the primary methods of visual anthropology as a means to record visual phenomena and obtain visual data. Using qualitative methods, one may seek data to investigate a particular question or seek a question from a set of data. In visual anthropology, one may film a topic of interest or make images and discern patterns and questions from them. Today, visual anthropology spans the spectrum of inquiry and analysis, from materialistic perspectives and positivist analysis to symbolic interpretations and informant participation. The former is represented in ethnographic works capturing culture in situ. Like synchronic slices of life preserved on celluloid, the footage is later used for teaching, documentary, and scientific research. From this point of view, the lens is objective, capturing behavior for preservation, description, and accuracy. At the other end, the most humanistic level, visual anthropology questions the material, the subjects, and the investigators themselves, as an experiential nexus of culture and reflexivity. Moving away from a literal or textual description of visual expression requires a shift to thinking about culture through images themselves. In this case, the visual becomes a medium through which to enhance knowledge and

develop questions that are not possible otherwise. To accomplish this task, the methodology extends beyond the researcher herself and invites the informants to participate in the work itself. Visual anthropology explores visual phenomena and visual systems in the process of cultural and social reproduction. With that in mind, the anthropologist must be open to all visual material, behaviors, and interactions and recognize that by capturing them on film, they inherently modify the content and context of the message and must question their own role in the process in which they are a part.

Within anthropology, ethnographic films are the most popular form of cultural description. Usually shown in classes as teaching aids, anthropologists have relied upon visual material to bring indigenous cultures and behaviors to the classroom so that students can glimpse “the other.” In the 1950s and 1960s, the Peabody Museum at Harvard funded film projects to collect material on cultures from around the world, with the intent of having researchers view these films in lieu of traveling to the field. In this case, as well as others, the use of film to depict culture is laden with the biases emphasizing their interests rather than focusing on the subjects’ priorities. For this and similar reasons, ethnographic film has been criticized for its colonial heritage, citing how filmmakers maintain power over what and who they represent. For example, governments with colonies in Africa and Asia sponsored filmmakers to depict the lives of natives in their colonies. These films were shown to their citizens in support of government programs to civilize the “savages” and bring them Western values and beliefs.

Filmer, Filmed, and Audience: The Triadic Relationship

The positivistic mode of making anthropological films and photographs requires researchers to position themselves as objectively as possible. Critics argue that such objectivity is nullified by subconscious cultural prejudices. When conducting research, one must recognize the inherent triadic relationship between the filmmaker (photographer), the filmed (subject) and the audience (viewer). Although as anthropologists, we want to be culturally relative when we enter another culture, our biases affect how we see the people we live with and the work we conduct. Reflexivity is the recognition of when and how

researchers apply their cultural filters to their observations and fieldwork. In turn, as anthropologists, we are influenced by our notions of who will review our work, that is, the audience (graduate committees, colleagues, popular media, informants, family, and so on). Who we have in mind as audience affects our approach to the final product. We must also consider the relationships between the anthropologist and the subject (observer/observed), as our biases will color the way we portray the subject in print or on screen. The final leg of the triad is the relationship between the subject and the audience. As informants, who do they expect to read the work or see the resulting images? As an audience member, the understanding we already have about the subject affects our perspective of the film. Because there is no direct interaction between audience and subject, the anthropologist becomes the mediator and wields significant responsibility.

However, with innovations in digital and film equipment, it has become easier to give or loan equipment to subjects and have them film their lives. Either means has validity, although it depends upon one's relationship with the subject and one's objectives for the research. Photo-elicitation has become a common method today because it pivots on the idea of participation. By removing the anthropologist from behind the camera and asking the informants to film their lives and events (or working with images people already have), it reassigns the roles of filmer and the filmed and actuates a dialogue between the two. Participant ethnography is an attempt to divert power to the subjects so they can represent themselves to an audience the way they feel is best. Photo-elicitation capitalizes on position and perspective to enhance ethnographic data while respecting the subject's position.

For example, during my early fieldwork in Bolivia, my informants occasionally asked me to photograph objects, people, or events for them, even though I believed these images did not fit into my scope of research. I neglected their perspectives because I was too influenced by what I thought made a "good" photograph as well as my own research initiatives. Eventually, I realized that by taking photos of their interests, I was tapping into information that explained more about them and respected their wish for photos. Later, I gave cameras to these same informants to take photos of their own subjects so we could discuss them. When reviewing their photos, they explained their lives in terms I would not have

otherwise understood. Other times, they commented that they took a photo because they thought Americans would like to see certain aspects of their lives, illustrating their own preconceived ideas about my culture and their audience.

Photo-Elicitation

Social scientists conduct elicitation by showing their informants photographs or other visual media in order to obtain the informants' views of reality based upon their interpretation of the images. Such information may be new to the research or confirm what the researcher may already know. Photo-elicitation seeks to discover how cultural informants experience, label, and structure the world in which they live. However, this technique is affected by the photos the researcher presents, depending very much upon his or her own perspective when taking and editing the photos.

By recognizing the triadic relationship between the observer, the observed, and the audience, the visual anthropologist discovers how content and context affect the communication process. However, simply handing someone a camera, which he may never have used before, in order to express himself does not adequately remove the Western bias from the project. In some cultures, individuals' view of media may be quite different than the anthropologist's. Participation will also require the ethnographer to listen and understand the means through which their informants best express themselves (e.g., art, dance, theater, or oratory.)

There are minimally four types of photo-elicitation techniques that are employed by visual researchers:

1. Photo-elicitation directed at ascertaining the ethno-meanings and ethno-categories of subjects directed at their material cultural environments, and objects or things: photo surveys of homes, stores, parties, families, and others (see the following example of the Rutucha, first hair cutting).
2. Photo-elicitation directed at the examination of the meaning of behavior and/or social processes central to the lives of our subjects.
3. Photo-elicitation based on environmental portraiture, which explores the social conditions under which particular groups of individuals live and most often tries to explore the meaning of their membership in a community (see "24 Horas de Puno" following).

4. Photo-elicitation that more explicitly explores a subject's own *sense of social self* and *biography*, through either contemporary photographs and/or historical images that can be used to trace development of self and biography as perceived by the subject.

In the following ethnographic examples, I illustrate how different photo-elicitation techniques were employed to glean information about relationships, perspectives, customs, and beliefs.

The Andes: Examples of Visual Anthropology in Action

For the past 15 years, I have conducted visual ethnographic research in two urban centers in the Andean Altiplano (Peru and Bolivia). Photography is my primary means of gathering empirical data, which I also use for eliciting information from local residents about their lives as migrants. Specifically, I have focused on how migrants' health care decisions reflect their sense of community. In the early 1990s, I lived with Alvaro Quispe and his family in an impoverished, peripheral neighborhood (*barrio*) in the city of El Alto, Bolivia. El Alto sits above the capital of La Paz and sprawls across the Altiplano, as it is home for more than 500,000 people, many of whom are migrants who work in the capital below. Over the past two decades, Aymara migrants have moved to El Alto (and La Paz) to improve their economic well-being by seeking employment and education. Due to financial constraints brought about by agrarian reforms, collapse of the tin industry, and various government programs (military, health, and education) people have flocked to El Alto to make a better life for themselves, in hopes of improving their opportunities and better supporting their families.

In El Alto, my camera equipment and photographs became points of conversation and contention for myself and my neighbors. Some *barrio* residents vehemently requested that I not take their photos because I may misuse or sell them. However, several of the same individuals later asked me to make images of their families, as a *recuerdo* or keepsake. Taking photographs of family members (especially the elderly) became a means for learning more about family histories and their migration stories. Sometimes I made multiple copies so images could be sent back to the *campo* (countryside) to share, while they

kept one for their wall at home. Others sought my photography as a means to document an event, specifically weddings, high school graduations, baptisms and *rutuchas* (first-hair-cutting ceremonies). Around the *barrio*, I became known as "the gringo who takes photos," which was a good moniker, because people knew I could give them something in return for the many questions I asked, and they understood the role of a photographer, much better than that of an anthropologist.

By taking photographs of events, I provided my neighbors a service that they could not otherwise afford. They invited me into their homes to make images of people or special events, and in return I gave them a stack of photographs, which I could do because of the minilabs in the city. I intentionally did not frequent churches or other venues with my cameras where local photographers made a living, but instead depended on word of mouth to be invited to photograph various events around the *barrio*.

My images created a wide variety of reactions from the families, most of which were positive. When returning photos to a family, everyone would gather around and pass the photos between themselves, laughing out loud and making comments about their appearance. I noted which images created the most discussion and further inquired as to what the photos meant to them. For the most part, residents enjoyed seeing themselves on paper, because "being photographed made them feel important." Frequently, I initiated informal interviews about the people and the subjects of the photos, to glean an understanding of how they interpreted the images, viewed the event, and were related to the people attending. As I discovered, migrants' sense of community was not defined by the geographical space they lived in, but rather the social contacts they maintained, often reflected in the images of those they invited to their parties and events. Two distinct occasions illustrate the method as well as the utility and serendipity of approaching research with a camera in hand.

Rutucha: The First Haircut

Within the first 2 months of my research in El Alto, Alvaro invited me to participate and photograph his 3-year-old daughter Cristina's baptism and *rutucha*. Although these two separate events do not always occur on the same day, the Andean *rutucha* incorporates the Christian baptism, reflecting the influence of

colonial traditions as they both serve to present the child to the society at large.

The baptism was held on a Saturday morning in the Rosario Catholic church in a considerably “middle-class” Aymara neighborhood down in La Paz. Immediately following the service, the *rutucha* took place at Alvaro’s family’s home up in El Alto. At this church, many baptisms are held on the same day, so after several other ceremonies were performed, Cristina’s name was read aloud by the officiant. Alvaro, his wife, and their daughters, the godparents, Srs. Vallejo, and I walked to the baptismal font located at the crossing of the nave and transept. Acknowledging my presence, the Father nodded when I asked to take more than one photo. I documented the ceremony and the celebrants, fulfilling Alvaro’s wish to capture the moment on celluloid. Afterward, both the godparents (fictive) and immediate (consanguinal) kin posed for photos on the church steps. However, once we reconvened at the family’s house in El Alto, the number of guests multiplied fourfold, and my duties as photographer and anthropologist significantly increased as well.

In El Alto, guests announced their arrival at the *rutucha* by lighting small packets of firecrackers and tossing them to the ground. The loud, rapid bursts summoned Alvaro and his wife Silvia to answer the door and invite their guests inside. Upon entering, guests brought with them a case of beer and exchanged the customary greeting with the hosts, involving a friendly hug, a handshake, and another hug. Alvaro’s nephew noted each guest’s name and the number of cases given to his aunt and uncle, so they would later know how many cases to reciprocate at the next special occasion. The guests placed confetti on Alvaro and Silvia’s heads, designating their position as sponsor of the festivity. Along with the baptized daughter, I too became the focus of guests’ attention, having confetti thrown all over me and many comments made about my appearance, cameras, and ability to speak Aymara. Besides their inquiries and observations, I was frequently invited to partake in the free-flowing beer and hard alcohol, noting to always “*ch’allar*” or pour a bit on the ground before taking a sip. The *ch’alla* is a ritual offering of respect for and a sharing of the beverage with the *Pachamama*, or Mother Earth. Around the courtyard, the men stood while their wives and other women sat on wooden benches, both groups drinking, smoking, and talking. Lunch consisted of *sajta de pollo* (chicken

picante) and a half-dozen different varieties of potatoes, which the guests readily devoured. After the nearly 50 guests were sated, the *rutucha* began.

Alvaro set a large wooden table in the middle of the courtyard and draped a colorful handwoven cloth (*manta*) on top. Still in her white baptismal dress, Christina’s mother placed her on the table between a few bottles of beer and woven wool bags (*ch’uspa*). Scared by everyone crowded around her, the child covered her face with a small stuffed animal she held in her hand and nibbled on a slice of orange with the other. Sr. Vallejo, her godfather, addressed the family, remarking on what fine parents she had and how honored he was to be associated with them for the rest of their lives. *Compadrazco* relationships, or godparenthood (fictive kin), are important for migrants’ urban survival, as the godparent relationship solidifies access to resources the migrants may not have otherwise. Alvaro followed his *compadre’s* speech by toasting his guests, who were seated and standing around him in the small dirt courtyard. After other guests toasted the child and her family, Alvaro handed me a large pair of scissors. “As the godfather of the *rutucha*,” Alvaro pronounced, “it is your duty to invite these guests to cut Christina’s hair. Their generosity will reflect their level of commitment to our family. As a foreign friend, you bring prestige to all of us here today.” When originally asked to participate in the *rutucha*, I had assumed it would be only to take photos, not solicit the neighbors for cash on behalf of the daughter. I had not expected to become the sponsor or “*padrino de la rutucha*,” but I was seen as a resource, and it was their way of formally establishing a relationship with me that would benefit them and their need to survive. *Compadrazco* ties solidify trust between the parties, which ultimately leads to relationships as strong as blood (consanguinal) ties.

In my capacity as “*padrino*” I cut a lock of hair from Christina’s head and placed it and a Boliviano note in the *ch’uspa* behind her. Then, I offered the scissors to Alvaro’s brother, Javier. The group scolded me for first asking a family member, and then suggested that I invite one of Alvaro’s neighbors whom I had recently met. Ruben took the scissors and cut a larger patch of hair off of the child’s scalp. Now Cristina began to cry and was comforted by her parents while everyone else chuckled. As the afternoon turned to evening, each guest had cut Christina’s hair two or more times, resulting in a very disheveled coiffure,

and stuffed bags of money, which they said would go toward her education.

In the Andes, women take pride in their long, thick, black hair, usually braided in two long strands that hang down below their waist. Women's hair connotes their femininity, and their hair care and styling are important to their formal appearance. After her *rutucha*, Cristina had only short patches of hair, and although only 3 years-old, she understood what it meant to be without her hair. From that point onward for the following few months, Cristina was embarrassed to go outside with her boyish haircut and wore a floppy hat to cover her bald head.

Two days following the *rutucha*, I gave my photos to Alvaro and Salome. Immediately, they sat down and looked through them all, passing the images between themselves and the other family members present. Laughing and pointing, we relived the party together. At that time, I did not understand the value these images would develop for Alvaro as well as my research. For my friends, the images were more than simple keepsakes, but rather represented a tangible record of their hospitality and networks within the *barrio*. As for my research, the images both documented a cultural ritual and became keys for conversations with local residents, as I gave copies of the images to the neighborhood residents. The images stimulated discussions to verify names, explain relationships, compare occupations, identify political affiliations, and recall geographic locations. Women who looked at Christina's *rutucha* photos always commented on how her short hair made her appear like a boy. At subsequent *rutuchas* I attended while living in El Alto, I asked a friend to videotape the rituals, which we copied for the families and viewed together. Like the photos, the video elicited a great deal of information about the participants, their relationships with each other, and the ritual itself.

One afternoon 16 months later, Alvaro and I reviewed Christina's *rutucha* images, casually sifting through more than 100 photographs I had taken that day. I recognized everyone who had been there, because by that time I had had other experiences with several of them beyond this event. In retrospect, I understood why Alvaro had invited them to his home that day and how they fit into his life in El Alto. The images revealed his definition of "community," because he held those persons in confidence or shared similar political beliefs with them. After months of dissecting what community means to Aymara

migrants by observing their health care decisions, the images made within the first few months of my stay illustrated how community manifested itself politically, socially, and locally, but it took me that long to recognize their underlying message. In reviewing the hundreds of images I made for people in El Alto, it became clear that the common denominator for community is trust, and while trust cannot be photographed, photographs do capture people's associations in their formal and informal environments.

A different experience illustrates how photo-elicitation can be an effective method when conducted by a group focused on one purpose.

24 Horas de Puno: A Participatory Photo Project

In 2003, I was teaching anthropology courses at the National University of the Altiplano in Puno, Peru, when I recognized a useful application of photo-elicitation. Resources being few, I had to figure out how the students in my visual anthropology course could afford to conduct their semester-long project and collect enough material to complete it by the end of the term. Since the class was populated with students from the city of Puno as well as other provincial villages, I modified the concept of *Photovoice*, a participatory photo-elicitation method, to create a project for the entire class. *Photovoice* promotes social change through photography by asking people to record and reflect on their community by using images to stimulate discussion within and beyond the group itself. My interest for the class, and for research, was to engage the students to think about the city of Puno from their own perspectives and experience. As a resident or migrant, what was important to them about the city? How could they make photos that expressed such a view? However, this would not be an ongoing process, because I placed a temporal as well as geographical limit on their exploration. They would only have 24 hours in which to take their photographs of Puno, and they could not venture beyond the city limits. These restrictions made them think about the mundane aspects of life in Puno, instead of recreating the popular image it holds as a tourist town.

The students spent a majority of the semester preparing themselves by studying photography, reading various anthropology texts, practicing their note-taking and interviewing skill, and viewing ethnographic films. As a class, they also began discussing

which places around the city would be best to photograph at various times of day, outlining strategies for covering as much of the city as possible. With a large map of Puno, they divided the urban region into 15 sectors. Students created groups of two and chose at least 4 sectors to explore on foot. The day we would conduct the project held little culturally significant meaning to anyone, so it represented “any day” in the life of Puno. Several other people besides the students were invited to participate, including several Aymara- and Quechua-speaking migrants, colleagues, and friends so they too could add their view of what Puno means to them.

Beginning at 6 a.m. one November day, the groups spread out across the city and photographed Puno for 24 hours. After spending two hours in their chosen sectors, the teams returned to our central headquarters and wrote notes about their observations and experiences. Upon completing their notes, teams returned to the streets but to different sectors to continue the process. Some participants chose to photograph in the afternoon and through the night, instead. As their instructor and the sponsor of the project, I provided the film, processing, and all meals.

Within the 24-hour period, 22 photographers shot more than 2,800 images. The rolls were collected, processed, and returned within a few hours of being shot so participants could edit their favorite images from each roll and augment their notes about the photos. In all, they wrote more than 100 pages of observations about their experiences in the sectors, which they could refer back to once the final edit occurred. From each roll, participants selected their best three images, noting the frame number on the envelope. Two days later, we placed the selected photos on tables by sector. Everyone voted on the photos by placing small stickers near the 25 images they thought best represented Puno. When all of the votes were cast, 46 photographs stood out as most representative of the groups’ understanding of life in Puno. Their group decision abated individual bias about the images and instead became a reflection of how all of the participants envisioned life in Puno, a distribution that did not represent the “best” photos by my standards, but instead those images that participants identified with as being relevant in the discourse about life in their city.

The photographers whose images were selected were asked to write 8 to 10 sentences about each

photo they took, referring back to their notes and including data about the time, place, and subject. More important, they described why they felt the image represented life in Puno and how they specifically related to the subject. After the selected photos were enlarged, matted, and framed, they were displayed with the appropriate text at the university, and later at the mayor’s office in the city center.

The spontaneity of the photography was balanced by the participants’ decisive organization and implementation on where, when, and how to visit each sector. Most revealing were the interpretations participants wrote about their images based upon their earlier notes and observations. As one may presume, there were fundamental differences in approaches toward the photographs themselves, as locals tended to document places or events and noted specific names and people. Migrants’ photos and commentaries, on the other hand, presented a much more abstract perspective of the city. For example, one female resident took a photo of a man in a hospital bed with his son standing to the side. She described his illness, length of time in the hospital, his prognosis, and that it made her sad to see so many sick people in the hospital. On the other hand, a migrant made an image of a shoeshine boy working in an esplanade and explained how this vocation represents the bottom rung on the work ladder for boys who venture to the city to find a better life. He did not mention a name or place, but instead dictated/wrote (in Aymara and translated to Spanish) about the process of finding work in the city as a boy and the progressions migrants go through in order to maintain sources of income. He concluded by stating, “I took the photo to show what it takes to live in the city.” The general pattern of the images demonstrated that migrant photographers drifted toward abstract subjects and explanations, while the urban residents focused on specific aspects of city life. Their perspectives reflected similar dichotomies in the urban/rural divide and surprised the participants when these were pointed out to them.

Overall, the participants embraced the project, taking ownership of the work and responsibility for how they presented their ideas to a larger audience. As a public exhibit, the participants interacted with the general populace by describing their visions of Puno and creating a discourse so others could also reflect on the city they live in. More important, the audience reacted to the contrast between locals’ and migrants’

perspectives, noted in their visual expressions and comments as they browsed the exhibit. Soon after, I scanned the images and shared them with my students in the United States via the Internet, expanding the audience another degree.

The Value of Visual Anthropology

Although they share similar interests in people, visual anthropologists are neither journalists nor documentarians. The ethnographer is someone who establishes and maintains a unique relationship with informants and develops an understanding of the culture within which they live. Furthermore, while the resulting images may document and describe the people and cultures where they live, the anthropologist sees patterns and asks questions of the images themselves—not simply asking informants for commentaries, but seeking deeper meaning within the body of work to develop a theoretical understanding of human behavior. In this case, photos are data, and they are a record of life and people that can be reviewed and analyzed by the researcher, who understands the context in which they were taken and recognizes the content they illustrate. Moreover, they can be interpreted by many different people, to solicit various reactions. Perhaps the slippery nature of interpretation alienates visual anthropology from the more popular written discipline. While photojournalists may spend time with their subjects and broach meaningful and deliberate themes, telling a story and developing behavior theory are ultimately not the same endeavors.

Visual anthropology brings to the discipline a unique, sometimes difficult way of understanding culture. While written and filmic data are edited before distribution, only the researcher understands the context and content in which the notes and images were made. Unlike field notes, which few anthropologists publish, placing images in the public record invites others to criticize the analysis and conclusions, interpretations that the researcher may not necessarily agree with or desire. Because images are interpreted in multiple ways, anthropologists hesitate to make analysis of their meanings and instead prefer to use photos or film exclusively for description. At this point, visual anthropology must redefine itself by transcending the political nature of what it represents and establish new strategies for engaging with the world.

The value of the visual exercise lies in its ability to document and preserve, but most important, in its inherent character of combining knowledge with experience to ask questions of the information conveyed to reach a more profound understanding of the people involved with the research. As a scientific endeavor, visual anthropology continues to probe and explore the relationships between people, illustrating their behaviors and objects, which convey a sense of who they are and their worldviews, but such practice must also acknowledge its position in the process.

New Directions in Visual Anthropology

With the advent of new technologies and innovations that make the world “smaller,” visual anthropology will lead the discipline to an image-based discourse. As more machines (for example, digital cameras, video and audio recorders, handheld computers and satellite phones) become available to capture movement, behaviors, environments, and objects, researchers will employ these technologies to facilitate their work. The World Wide Web, e-mail, instant messaging, Power Point presentations, and other interactive media will transform the one-way street of researcher to colleague/student/classroom—to a discussion between them as the research unfolds and analysis ensues. Internet technology will bring about classroom participation in research and teaching, making the “other” tangible by enabling subjects to be “online” and accessible even when anthropologists are not in the field. However, such a perspective unfortunately applies only to the most developed countries and ignores the people in the world who have never even used a phone, much less a computer. As more powerful, lighter, and inexpensive hardware becomes available, researchers will experiment with its offerings and produce work that expands the boundaries of what we consider visual anthropology.

As technology evolves, the use of the image will also change, not only in format but also in meaning. Images and content will become more arbitrary, blurring the lines between “truth” and observation, vision and experience. Knowledge gleaned from images will therefore be less reliable, but more available, and the potential for learning and experiencing culture increases, while its validity decreases. Visual anthropology will either become more of the language of

anthropology or continue being the subdiscipline that only other visual researchers take seriously. To overcome the inherent bias toward text-based anthropology, visual researchers must change the language of knowledge to one which emphasizes nonverbal levels of understanding and develop alternative objectives and methodologies that will benefit anthropology as a whole. In other words, visual anthropology must provide more than accompanying illustrations and sequence-style films, and develop theories not only obtainable through visual media, but applicable across the discipline. Technology accounts only for the tools to define visual anthropology's future; students and researchers alike must recognize that anthropological communication is founded in observation and that visual methods allow them to describe and discuss culture in ways that complement and expand our understanding of the human condition.

— Jerome Crowder

See also **Ethnographer; Ethnographic Writing; Fieldwork, Ethnographic; Participant Observation**

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VISUAL ANTHROPOLOGY

Visual anthropology is a growing branch of anthropology that has not yet achieved a fully institutionalized status. The union of visual and anthropological elements has so far produced a vast terrain of contested discourses and multiple histories that are so varied in content, method, and quality that they are not easy to reconcile under a single definition, or to encompass under a single theory. In general terms, visual anthropology promotes the use of visual materials such as film, video, photography, and computer-based multimedia for the description, analysis, communication, and interpretation of human behavior. It also examines visual representations of different cultural aspects and how images can be analyzed as artifacts of culture. Historical photographs, for example, are considered as a source of ethnographic data. These two areas of study have dominated the discipline. Other branches of visual anthropology also consider the study of native media and their personal, social, cultural, and ideological contexts and the display of anthropological productions in classrooms, museums, and television.

Much of the debate in visual anthropology has developed about the status of the image. In the past, social scientists considered images as objective evidence and have relied on the accuracy of the camera in recording the surrounding reality. Yet anthropologists have become increasingly critical of this supposed objectivity. Images, such as a photograph or photogram of a documentary film, are not simply transparent windows on the world, but are socially and politically constructed. Despite their social construction, however, images can still provide information on a given culture. They can be used to preserve cultural details and as a way of distancing the anthropologist from the object of study: Through them, the pictured reality is rendered anthropologically strange.

Visual anthropologists now argue that images are always concerned both with the culture of those represented and the culture of those who represent. Anthropologists use visual technology in a reflexive manner, challenging viewers' notions about the

reliability of the images and seeking the participation of those who are studied in constructing their representations. So, while the roots of visual anthropology are in the culture of positivism, its developments have departed from positivist assumptions.

Visual anthropologists have often found themselves working together with scholars from the related fields of visual sociology, film, and performance studies, visual culture, and architecture rather than with fellow anthropologists.

— Luca Prono

ANTHROPOMETRY

Anthropometry is the measurement of the size and proportions of the human body. Anthropometric measurements include those of the whole body, such as weight and stature (standing height). Also, anthropometry assesses specific areas of the body, as with circumference measurements around a body part, like the arm or skull. Furthermore, specific body tissues can be estimated through anthropometry. For example, adipose tissue under the skin (subcutaneous fat) can be measured by collecting skinfold measurements, which consist of skin and fat existing above skeletal muscle. In addition, anthropometric data include various ratios and indices of body dimensions. Such calculated measurements can yield information about the relative size or shapes of the whole body or its parts. Anthropometry has a long history within anthropology, and it has been especially important in the biological and medical areas of the discipline.

Among the many possible anthropometric measurements are stature; weight; circumferences of the head, chest, abdomen, arm, forearm, wrist, buttocks, thigh, calf, and ankle; lengths of body segments such as the thigh and calf; breadths across body parts such as the elbow and hip bones; and skinfolds of various sites that may have subcutaneous fat, such as beneath the shoulder blade, next to the navel, at the top of the hip bone, at the back and front of the upper arm, and at the inner and outer sides of the thigh.

Some of the advantages of anthropometric measurements are that they are relatively easy to collect,

can be performed with simple equipment, and are obtainable with minimal disruption to those being measured. Moreover, because the equipment needed for data collection is portable, anthropometric measurements can be obtained in a variety of settings, including laboratories, hospitals, private residences, community structures, and outdoor environments. Furthermore, as anthropometric data collection is relatively inexpensive, it is useful for gathering information from large samples of individuals and/or collecting data at repeated intervals. One of the drawbacks of anthropometric measurements is that they are less precise than more expensive, invasive techniques. For example, while the anthropometric measurement of circumference at the navel is an indication of abdominal size, a computed tomography (CT) scan of an individual at the navel can show the exact location and quantity of particular kinds of tissues, such as adipose, muscle, organ, connective, and bone.

Particular techniques have been developed to encourage standardization of anthropometric measurements. Such measurement guidelines help ensure that different data collectors are measuring the same aspects of the body in the same way and at the same reference points. In addition, specific equipment and particular features of equipment are recommended to facilitate accurate measurements. For example, the instrument for measuring weight should be a beam scale with movable weights or an electronic digital scale. The preferred equipment for measuring stature is a stadiometer, or a vertical, marked rod with a movable platform that contacts the head. For circumferences, the tape measure used should be narrow, flexible, and nonstretching, so that measurements are not exaggerated. Lengths and breadths of body parts or between reference points on the body require either an anthropometer, which is a marked rod with a movable, perpendicular attachment, or spreading or sliding calipers, which have movable elements along a marked straightedge.

The anthropometric measurements most technically demanding to collect are skinfolds. For accuracy of results, precise suggestions should be followed regarding how and where to lift the fold of tissue. The measurer also needs to know how and where to place the skinfold calipers, a measuring instrument with pressure-sensitive separating jaws that fit over the skinfold, as well as how to manage the exertion of pressure from the calipers to take an accurate reading.

Single anthropometric measurements can be combined into various ratios and indices to represent varied physical characteristics. For example, several indices reflecting aspects of the head have been developed. The cephalic index indicates head breadth as a percentage of head length, while the nasal index shows nasal breadth as a percentage of nasal length. Other indices reflect overall body proportions or shape. The skeletal index indicates sitting height as a percentage of stature, and the intermembral index denotes the length of the arms as a percentage of leg length.

Still other anthropometric indices are used to suggest overall body fatness or distribution of adipose tissue in the body. For example, the body mass index (BMI), which is the ratio of body weight to stature squared, is commonly interpreted as an indicator of total body adiposity. The ratio of waist-to-hip circumferences is frequently used to suggest relative upper-body (also termed *android*) obesity or lower-body (also termed *gynoid*) obesity. One indication of trunk fat relative to limb fat is the ratio of abdominal circumference to arm circumference.

Applications of anthropometry in the study of body composition illustrate one of the major uses of anthropometry within anthropology. In population studies, biological anthropologists have used anthropometric measurements and indices to assess adipose tissue distribution and overall adiposity. Anthropometric data can also be used in prediction equations to estimate more complex aspects of body composition, such as body density and percentage of body fat.

Anthropometric data are used in several other ways by biological and medical anthropologists. In studying patterns of disease and mortality, scientists have investigated connections between anthropometric data such as waist-hip ratio and BMI and risk of various infectious and chronic diseases and death. Furthermore, anthropologists have traced patterns in nutritive status of human groups over time through anthropometric data. Measurements of various body parts are valuable in interpretation of human activity habits, such as the use of certain limbs for a customary activity. In addition, anthropometry has been used in investigating population trends in growth, such as the changes in stature that have occurred with migrations between countries varying in affluence. Adaptation to a variety of environmental characteristics, such as the differences in stockiness between hot-adapted and cold-adapted groups, has been examined through anthropometry. Moreover, anthropometric

data have important historical and future applications in the design of products such as vehicles, furniture, and clothing for businesses and the government.

— Penelope A. McLorg

See also **Biological Anthropology; Genetics, Population; Medical Genetics**

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ANTHROPOMORPHISM

The term is composed of two words of Greek origin: *anthropos* (man) and *morphe* (form, aspect). It defines the attribution of properly human characteristics to nonhuman beings, that is, either divine entities or animals.

Anthropomorphism of Divinities

In many religions, polytheistic or monotheistic, the divine was or is believed to possess external or internal characteristics similar to the ones of humans, as it may be understood by the artistic representations and mythological or sacred books' tradition.

The first-known thinker who severely criticized this attitude was Xenophanes of Colophon (ca 570–480 BC). In some of the fragments of his works that have been saved, Xenophanes condemned famous poets like Homer and Hesiod, who were looked upon as authorities in mythology, because they had presented the Greek gods as full of unacceptable human weaknesses. He also denounces as purely subjective self-projections the current beliefs that men of his time had about the divine, giving as proof the fact that the Thracians represent their gods as being blue-eyed and red-haired like themselves,

whereas the Aethiopian divinities are Black. To illustrate even better the absurdness of these human beliefs, Xenophanes pointed out that if animals were able to create works of art like humans, they would also probably depict their divinities with bodies like theirs.

This critical position against current religious anthropomorphism was followed afterward by many Greek philosophers (especially by Heraclitus, Socrates, Plato, Aristotle, the Stoics and the Neoplatonists), who conceived the divine in a more abstract way.

Anthropomorphism of Animals

In the myths and fairytales of almost all the civilizations that have flourished in every continent, various species of animals have been used as symbolic representations of one or another typical human mental or intellectual character (for example, the lion is “the strong and fearless,” the fox is “the cunning,” the bee is “the industrious,” and so on). These projections are founded on more or less evident equivalences between natural behaviors of these species and human attitudes. They were essentially used to give educative moral examples (such as the Aesopian myths). For some African tribes and for the Siberian shamans, the establishment of a personal connection between a human being and an animal believed to have some particular qualities may lead to the acquisition of these qualities by the human being.

This common way to project human characteristics to animal behaviors influenced many interpretations of animal ethology, which presented themselves as scientific approaches, from Plutarch (AD 50–125) up to the 18th century. Even the famous French entomologist Jean-Henri Fabre (1823–1915) didn’t escape the attribution of such elements to animal species.

Of course, it is undeniable that humans share some common attitudes with the other animal species. But serious scientific analysis describes these elements in a neutral way, without wishing to use the human species as a “model” or a “measure” for the other forms of life and taking care not to make easy transfers of ethological interpretation from the humans to the rest of the animal world.

— *Aikaterini Lefka*

See also **Animism; Ethology**

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AOTEAROA (NEW ZEALAND)

Unlike nearby Australia, Aotearoa/New Zealand is not a multicultural society, but rather, according to local terminology, a bicultural society. The two cultures referred to in this notion are those of the original indigenous people, the Māori, and an emerging indigenous people, the Pakeha. In *te reo Māori*, the Māori language, *pakeha* means stranger; the term is pejorative. In practice, Pakeha now refers not to strangers in general, but rather to New Zealand’s native-born Caucasian majority. Not all members of this group use the term pakeha to identify themselves; some prefer the term “Europeans” while others use the words such as “New Zealander” or “Kiwi.”

These broader terms New Zealander and Kiwi, however, may refer to all citizens or self-identifying long-term residents. As such, New Zealand and Kiwi may refer to Māori, Pakeha, Asians (for example, Chinese, Indians, Malays, and some others), Pacific Islanders (Cook Islanders, Samoans, Tongans, Fijians, and other Polynesians or Micronesians, but rather decidedly neither Māori nor Pakeha). Asians and Pacific Islanders and some others, whether citizens or self-identifying long-term residents, do not figure in the description of Aotearoa/New Zealand as a bicultural society.

Māori Figure Prominently in the Biculturalism of Aotearoa/New Zealand

According to Aotearoa/New Zealand’s founding document, the Treaty of Waitangi, certain northern Māori nobles transferred what the English version



Source: © iStockphoto/Edward Tsang.

describes as “all the rights and powers of sovereignty over their land” to the British Crown; Māori versions generally gloss the English “sovereignty” as *te kawanatanga katoa*, in which *katoa* referred to the nobles, while *kawanatanga* was a neologism combining *kawana*, a transliteration of the English word “governor,” and the Māori term *tang*, meaning approximately “ship,” as in the English “governorship.” Though first written in the treaty, *kawanatanga* had been developed by missionaries to describe the qualities of Christ transcendent and in heaven toward his church. The English version assumes not only the sovereignty of the chiefs but also their ownership and capacity to dispose of land as well as their right to allow strangers to reside upon the land. The legal right of non-Māori New Zealanders to reside in Aotearoa/New Zealand rests upon this provision of the treaty.

Current legal interpretations of the second article of the treaty reserve for Māori the right to practice traditional arts and occupations (for example, fishing) without license, as well as, subject to negotiations, rights in Crown lands, fisheries, waters, and

lake bottoms. These rights are not held by Māori, either in general or as individuals. Rather, such rights in specified lands and waters are held by Māori considered as members of *iwi* and *hapu*, who are now being compensated for their loss of collectively held lands and waters during and following the colonial period. *Iwi* and *hapu* are often somewhat colloquially glossed as “tribe” and “clan” or “subtribe,” respectively; *iwi* translates more literally as “bone.”

In addition, the New Zealand electoral system recognizes two sorts of electorate, one for all New Zealanders and permanent residents regardless of ethnic background and a second set of five electorates reserved solely for Māori who chose to exercise their franchise therein.

While most public business takes place in English, *te reo Māori* remains the only language recognized in law as an official language. All public institutions are now formally identified in both English and Māori. In some formal public circumstances, both Western and Māori protocols receive recognition. The national anthem is now often sung with a version in Māori preceding the English original. Elements of Māori

ceremonial, for example, the *haka* dance/chant performed by the “All Blacks” rugby team before rugby test matches, have become emblematic to New Zealanders of Aotearoa/New Zealand. Most New Zealanders are familiar with and use at least a modest set of Māori words, for example, *Aotearoa*, meaning “the land of the long, white cloud,” a term referring to the land of New Zealand.

In bicultural New Zealand, Māori are *tangata whenua*, the people of the land/placenta. The equation of land and placentas, both indicative of sources of life, also refers back in part to a still common Māori practice of burying placentas in the cemetery special to their *iwi* and *hapu*, in which the baby’s dead ancestors will have been buried and in which eventually the baby should be buried as well. *Iwi* and *hapu*, further, gather for formal occasions on *marae* (yards) specific to each group; visitors as well as persons affiliated with the home group but arriving at the *marae* gate for the first time must be formally welcomed according to the proper protocols before they can come onto the *marae* and into the *whare* (house), which stands upon the *marae*.

Whare share a standard architecture and red color. The carvings depict significant ancestors of the people of the *marae*. Viewed from the inside, the roof beams are a woman’s ribs; *whare* contain the spirit of their people.

While all significant activities in Māori life require both men and women, the protocols reserve formal speech at meetings on the *marae* for men. Notionally, Māori take collective decisions in such meetings with a concern for the effects of those decisions over a period of some seven generations. Any decision taken by an assembled group, however, applies only to the *iwi* and *hapu* represented at the gathering.

While Māori are indigenous, they are not autochthonous. Most Māori histories tell that Māori first arrived in Aotearoa from Hawaiki on one of several *waka* (canoes), *Tainui*, *Te Arawa*, *Aotea*, *Takitimu*, and *Tokomaru* prominently among them. Some Tuhoe tell of their ancestors already being resident in Aotearoa when these *waka* arrived. The people of Whangara Marae on the east cape of the North Island tell of their founding ancestor, Kahuitia te Rangi, also known as Paikea, surviving after his *waka* sank, and then arriving in Aotearoa on the back of a whale; his carved figure can be seen on the ridgepole of the Marae, while his story has been more recently commemorated in Witi Ihimera’s novel *Whale Rider* and the film by the same title.

All Māori should be able to recount their ancestry and the significant events of important ancestors’ lives (understood together as *whakapapa*) back not only to their ancestors’ arrival in Aotearoa, but including, as appropriate, where on the *waka* those ancestors were seated. Knowledge of one’s *whakapapa* establishes in part one’s place in Māori society, for example, one’s legitimate membership in *hapu* and *iwi* as well as one’s relations with other *iwi* and *hapu*. Recently, there have been significant attempts to gather information on *whakapapa* into databases and to distribute this information over the World Wide Web.

In fact, many Māori cannot recount their *whakapapa* with such exactitude. The reasons for this are various. But the most important reasons can be traced to the Māori wars.

Following the signing of the Treaty of Waitangi in 1840, the British attempted to assert their sovereignty over portions of the North Island, notably the Waikato and Northland. To this end, they brought elements of their armed forces along with some of the most sophisticated armaments of the day from Australia to New Zealand. These British efforts failed as Māori leaders improvised solutions, including the first instances of trench warfare, to British strengths.

Despite these Māori successes in the northern regions of the North Island, the New Zealand Company, a private land company organized by the Wakefield brothers and certain of their associates, sought to control the purchase of Māori lands by Europeans. The company subsequently began to advertise land in New Zealand as being for sale, even though the company often did not have legal title to those lands. People from around the British Isles purchased, or thought they had purchased, lands and then immigrated to New Zealand. While Governor Grey sought to limit European migration to the South Island and to the relatively lightly populated portions of the southern North Island, tensions between Māori and Europeans over land grew, leading to wars in Taranaki and subsequently both the King Country and the Waikato. Māori were defeated; their populations were decimated; and effective Māori resistance to British rule ceased, although various revival movements would continue to form. British administration fostered attempts to suppress Māori language and custom; and colonial prejudices encouraged children of Māori-European marriages to take up European customs and in some cases to attempt to pass as Europeans. Particularly during the 20th century,

some Māori moved to larger cities and towns, relinquishing ties to relatives and later knowledge of their specific ancestry.

The transformation of Europeans into New Zealanders was not immediate; many Europeans continued to regard one or another portion of the British Isles as home, even as, in some cases, several generations were born in New Zealand. In the 1860s, prospectors found gold in Otago. The advent of refrigeration meant that New Zealanders could grow lamb for the British market rather than just for local consumption. The European population grew.

A colony and later a dominion of the British Empire, New Zealanders contributed troops to Britain's armies during the Boer and later World War I and II. Along with Australian soldiers, both European and Māori New Zealanders served in the ill-fated assault on Turkish forces at Gallipoli and, later on, Flanders field. Pakeha self-understanding of themselves as New Zealanders and not British began in response to these battles, especially Gallipoli. Dominion status gave New Zealand domestic self-government. Writers such as Frank Sargenson, Janet Frame, as well as later both Barry Crump and Maurice Gee, among many others, began producing short stories and novels about New Zealand subjects for New Zealand audiences; similar movements occurred amongst painters and later moviemakers, with Colin McCahon and Jane Campion being among the most prominent.

New Zealanders debated for many years the virtues of accepting independence in 1947 as part of the British Commonwealth. They understood that as members of the Commonwealth, New Zealand would have privileged access to British markets for its agricultural products, notably lamb. As such, Aotearoa/New Zealand was largely unprepared for the United Kingdom's entrance into the European Common Market in 1959; overnight, New Zealanders went from having among the world's highest per capita incomes to being citizens of an economically marginal country; Pakeha and Māori alike found themselves together.

New Zealand had joined with the United States and Australia in alliance after World War II. During David Lange's Labour government in the 1980s, New Zealand declared itself a nuclear-free zone, thus precipitating a conflict between the U.S. Navy's policy of neither confirming nor denying which ships were powered by nuclear reactors or carried nuclear weapons and New Zealand's refusal to allow such generators or weapons into its ports.

The Lange government also initiated a series of economic reforms, incorporating policies elsewhere associated with Margaret Thatcher and Ronald Reagan. Locally referred to as "Rogernomics," these reforms led to the sale of previously state-owned corporations, a move away from full employment, and an introduction of private health insurance in conjunction with the national health system. *Competition* and *efficiency* became the bywords; restructuring and redundancies became common as New Zealand experimented with giving market forces the greatest feasible influence, while simultaneously opening their market to international trade to a greater extent than any other advanced economy. In large measure, because of its relatively small but well-educated population, New Zealand has also provided international high technology, especially telecommunications, firms with a market for testing innovations prior to their introduction into the larger European and American markets.

Influenced to some degree by America's Black pride movement, against this general background and that of the deep divisions occasioned by the South African national rugby tour in 1981, Māori began a cultural and political revival that continues to this day. As a part of this revival, Māori have reasserted claims to land under the aforementioned terms of the Treaty of Waitangi; these claims and the Māori revival have also evoked ambiguous, sometimes negative, responses from Pakeha. Māori have also revived their language, many of their traditional arts, including carving and their martial arts. Furthermore, some Māori have sought to have Māori artifacts, for example *moko makai* or tattooed heads, returned to Aotearoa/New Zealand either for inclusion in the collections of Te Papa, Aotearoa/New Zealand's national museum, or to the appropriate *iwi* and *hapu*. Ihimera, Alan Duff, and Keri Hulme, among others, have also added to Aotearoa/New Zealand's emerging national literature with novels and stories describing Māori life.

In late 2004, Prime Minister Helen Clark announced that she was poised to initiate a discussion within the Labour Party, and Aotearoa/New Zealand more broadly, concerning the to-date unwritten constitution, the place of the Treaty of Waitangi therein, and the possibility of Aotearoa/New Zealand's reestablishment as a republic.

— Gerald Sullivan

See also **Māori**

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APE BIOGEOGRAPHY

Evolutionary biogeography addresses the historical relationship between geographic space and the processes of biological differentiation, such as speciation and adaptation. Darwin observed that the evolution of related species in different locations required that they also share a common ancestral location he called the “center of origin.” Darwin thought this requirement was so obvious that it constituted a self-evident truth and to call it into question was to appeal to the agency of a miracle. The occurrence of related species in different locations, especially those considered to be separated by geographic or environmental barriers, was explained as the result of their having migrated away from their original centers of origin according to their individual abilities to disperse (walking, flying, rafting, floating, and so on). Dispersal ability was seen to be the key to geographic distribution, and biogeographic evolution was simply a compendium of unique, individual, and unrelated dispersal events. This perspective justified each group being explored in isolation, whether upon the static geography of Darwin’s time or the currently accepted plate tectonic theory of geological history.

Evolutionists following in Darwin’s footsteps did not question his theory of evolution through centers of origin and dispersal. The science of biogeography was reduced to the practice of creating historical

narratives or stories about imagined centers of origin and dispersal routes for each individual group of organisms. These stories were constructed according to prevailing beliefs about evolutionary age, dispersal ability, geological and ecological history, and most important, particular beliefs about how the center of origin could be identified. A variety of contradictory criteria were theorized to identify the center of origin, among the most popular being the location of the oldest fossil or the most primitive (and therefore oldest) member of the evolutionary group. Biogeographic narratives were always a product of prevailing beliefs and knowledge never advanced beyond what was already presumed to be known from geological or ecological history. In this role, biogeography is rendered, at best, a subdiscipline of ecology or systematics, and not a very informative one at that.

Darwin’s theory of geographic evolution faced its first serious challenge from Leon Croizat, who was perhaps the first biogeographer to formally recognize geographic location as an independent source of historical information about the evolution and origin of species. Croizat’s unique approach was first developed in the 1950s and became known as *panbiogeography*. His research program analyzed the geographic relationships between different taxa at different localities using line graphs or “tracks.” Tracks are generally drawn to connect localities over the shortest geographic distance, since that provides the minimum amount of geographic space and therefore the minimum number of ad hoc geographic hypotheses required to explain the spatial relationships. The line graphs allow direct comparison of spatial geometry for groups of organisms and tectonic features (such as ocean basins and geosynclines) associated with earth history. These biological and geological components comprise the raw data of biogeography. Darwin’s predication that dispersal ability would be the key to understanding the evolution of geographic distribution was not supported by this approach. When Croizat compared tracks, he found that supposedly “poor” dispersers could be as widely distributed as “good” dispersers. He also found that animal and plant distributions could be correlated with geomorphologic features, and this suggested that geological history had more to do with the evolution of a distribution than with dispersal ability.

The overlap between tectonic features and multiple distribution patterns suggested to Croizat that geological and biological patterns share a common

history. This shared history may be explained as the result of an ancestor occupying a widespread geographic range across the tectonic feature. Descendant taxa now occur in different localities because each evolved through local differentiation over different parts of the ancestral range, giving the appearance that each had moved to their respective locations. The spatial pattern linking the descendant species is still correlated with the tectonic feature involved with the ancestral dispersal.

Croizat referred to his differentiation model as “vicariant form-making.” For each taxon (whether a species, genus, or family, and so on), the “center of origin” is, in effect, the combined range of the related taxa, rather than a localized part of the range as in Darwin’s theory. With the panbiogeographic method, historical inference is the product of spatial comparisons between distributions, rather than prevailing beliefs about the age of taxa or historical events theorized from other historical disciplines such as geology or ecology. It is this spatial dimension of evolution that is missing from most historical accounts of primate biogeography and evolution.

The biogeography of primates is usually interpreted according to Darwin’s theory of centers of origin, which are usually identified as the location of the oldest fossil. Migrations from the center of origin are then imagined according to the geological age of various fossil members, molecular clock theories, and theories about the sequence of continental connections or their absence. For primates as a whole, the center of origin is assigned to a location in the Old World, apparently because the primitive prosimians are absent in the New World. The presence of monkeys in South America is therefore explained by the theory that their common ancestor either hopped across former islands in the Atlantic or rafted across the sea. Prosimians, even though they represent an older lineage, were somehow unable to make the trip. The possibility that monkeys made the trip from Africa while it was adjacent to South America is usually discounted because it is assumed that the oldest monkey fossil, dated at 35 million years, shows that monkeys did not evolve until after the Atlantic formed earlier in the Cretaceous. Conversely, despite the geographic isolation of Madagascar in the Cretaceous, this was somehow not a barrier to prosimians, while monkeys were evidently unable to make the trip across the Mozambique Channel, even though Darwinian biogeographers frequently invoke

island hopping to account for the presence of myriad other animals and plants on the island. It is this contradictory theorizing that exemplifies biogeographic reasoning that appeals to imaginary centers of origin and dispersal.

Anthropoid evolution is similarly portrayed, with the imagined center of origin swinging back and forth between Africa and Asia according to the fortunes of fossil discovery, sometimes with migrations both ways for monkeys, apes, and even hominids. The result is a biogeographic mess, with primates walking or rafting this way and that and making global migrations by crossing continents, land bridges, or enduring dramatic transoceanic voyages. All of these stories require an imaginary interpretation of fossils as migratory markers and presumptions about the location of older fossils or primitive lineages being at or near the imagined center of origin. Each time an older fossil or more primitive lineage turns up or a new molecular clock theory is produced, the current story will be supplanted by another with the caveat that somehow there has been scientific progress that is different from what was “previously thought.”

A panbiogeographic approach to primate evolution requires only a consideration of how the geographic distribution of any one group compares with biogeographic patterns in general and how these patterns are spatially correlated with geomorphological features. Fossils provide information on the minimal age of fossilization localities currently not represented by extant forms. There is considerable debate over many aspects of primate phylogeny, and there is a great deal of uncertainty about the relationships between early primate fossils and living taxa. The evolution of hominids and apes emerges out of the common ancestor with Old World monkeys and, in turn, the common ancestor to both Old World and New World monkeys and primates in general. To provide this historical context, the spatial biogeography of apes begins with general biogeographic patterns for primates overall, with a focus on the extant primate groups.

The dispersal (in the sense of geographic differentiation) of extant primates involves three principal groupings: prosimians, tarsiers, and anthropoids (monkeys and hominoids). Prosimians show a pattern centered on the Indian Ocean (as a tectonic basin), with lemurs confined to Madagascar and lorises located in Africa, southern India, and Southeast Asia. Lorises include two families, the Galagonidae widespread in Africa, but absent from outside that



continent, and the Loridae in central western Africa, with an eastern boundary at the Rift Valley, India, and Southeast Asia. The spatial break between the western Rift Valley and Southeast Asia is a standard pattern found in other groups of plants and animals. Tarsiers are often seen as being phylogenetically enigmatic due to their many unique features, but they exhibit the unique toothcomb of prosimians and may therefore be seen as an eastern component of the prosimian distribution.

Prosimian biogeography is classic for its concentration in areas around the Indian Ocean, and in this respect, prosimian evolution is similar to many other plants and animals largely or wholly limited to landmasses in the immediate vicinity of the Indian Ocean basin while being largely absent from the Americas and the Pacific. The direct historical inference of this tectonic correlation is that prosimian ancestors were already widely distributed before the formation of the Indian Ocean in the Late Cretaceous and Early Tertiary time, even though the earliest recognized fossils with prosimian affinities (the omomyids) are only about 40 million years old. The biogeographic correlation suggests that the ancestors of lorises and lemurs each emphasized different geographic areas, so that their descendant now vicariate (occupy different areas) with respect to each other. Even the overlap between lorises and tarsiers indicates slightly different ancestral distributions for each group, with modern tarsiers being present in the Celebes and some

Philippine islands where lorises are absent. This current biogeographic pattern for prosimians does not preclude fossil forms of each group occurring in other parts of the prosimian range (lemurs in Africa, for example), but such localities are seen as outside the main centers of evolution for each group as represented by their modern diversity.

Unlike prosimians, anthropoids (monkeys, apes, humans) are found in both the Old and New Worlds, with platyrrhine monkeys in the Americas

and catarrhine monkeys and apes in the Old World. This trans-Atlantic range is also standard for plants and animals in general and may predict the origin of anthropoids in the Late Cretaceous even though their oldest fossil representatives are currently known no earlier than about 35 million years. The anthropoids share with prosimians a distribution range that is currently largely to the south of a major tectonic feature, the Tethyan geosyncline, which extends between Europe and Southeast Asia, with a Caribbean extension prior to the formation of the Atlantic. The geosyncline formed through the closure of the Tethys Sea in from Late Cretaceous and Early Tertiary time. Although living and fossil prosimians and anthropoids do occur north of Tethys, the predominant diversity to the south may reflect the geographic distribution of ancestral diversity that lay more to the south of Tethys than to the north. A contrasting pattern is represented by the Plesiadapiformes, a fossil group first appearing about 65 million years ago. These fossils may represent early primates or primate relatives of uncertain monophyly. As currently recognized, the Plesiadapiformes are distributed to the north of Tethys, over parts of eastern Asia and North America. They are, therefore, largely vicariant (spatially separate) with respect to prosimians and anthropoids. This separation may represent a more inclusive widespread common ancestor that ranged both north and south of Tethys in Mesozoic time.

Apes represent a sister group to the Old World monkeys, and as such they share the same evolutionary age, though they exhibit some highly derived features that separate them from all other primates. The earliest fossil for apes is represented by *Proconsul* at 18 million years, though the lineage must extend to at least the time of the earliest fossil representatives of catarrhine primates at 35 million years. Living apes comprise the small-bodied hominoids, or Hylobatidae, in Southeast Asia representing the sister group of the large-bodied hominoids in Africa (*Pan*, *Gorilla*) and Southeast Asia (*Pongo*). The fossil record for the Hylobatidae may be represented by a late Miocene fossil in China. Neither *Pan* nor *Gorilla* have a recognized fossil record, although there have been suggestions that the putative hominid *Sahelanthropus* may actually be more closely related to gorillas. Only *Pongo* is represented by fossils as well as having recognized fossil relatives, such as *Sivapithecus*, extending the fossil record for this group at least 14 million years.

The biogeography of living and fossil great apes is problematic because of an unresolved conflict between alternative phylogenetic models developed from different lines of evidence. The almost universally accepted model links chimpanzees as the sister group of humans because they share the greatest similarity of DNA base sequence. This pattern of relationship is contradicted by the virtual absence of any uniquely shared morphological similarities between the two groups and by morphological evidence overwhelmingly supporting the orangutans as the closest living relative of humans. Most primate biologists consider the DNA sequence evidence to invalidate the morphological evidence, so the orangutan relationship is generally ignored. What cannot be ignored, however, is the fossil history of primates, which becomes insolvable and unscientific if morphology cannot provide an independently relative source of phylogenetic evidence because fossils lie beyond the reach of DNA analysis. Without morphology, the evolutionary relationships of living hominoids cannot be integrated with their fossil relatives, let alone know what fossils are hominoids (or even primates) in the first place.

As an independent source of evidence for evolutionary relationships among primates, the characters uniquely shared between orangutans and humans may have a dramatic impact on the interpretation of the fossil ape fauna. Of the 40 features uniquely shared

between humans and orangutans, only 14 hard-tissue characters are applicable to fossils, and even less are widely comparable due to incomplete skeletal composition of most fossil apes. Only dental remains are broadly represented, and they also comprise a source of uniquely shared human orangutan characters in the form of thick dental enamel and low molar cusps. When these features are considered for fossil apes, it is possible to separate out a distinct clade allied with humans and orangutans that encompass a range of fossil apes previously seen as mostly peripheral to the evolution of modern apes and humans.

The presence of thick dental enamel and low molar cusps is found in a range of fossil apes that are either generally allied with orangutans or of uncertain status (see Figure 1). The fossil record of orangutans extends into the Pleistocene of Southeast Asia and southern China. Within this geographic range are also the closely related genera *Langsonia* in northern Vietnam (250–300,000 years), *Khoratpithecus* in Thailand (7–9 million years), and *Lufengpithecus* in southern China (9–8 million years). The distributions of these genera are complemented by the mostly vicariant range of *Gigantopithecus* in India and China (2–0.5 million years) and the related genus *Sivapithecus* (*Ramapithecus*) in India (14–10 million years). Other fossil apes with thick dental enamel and low molar cusps include *Ankarapithecus* in Turkey (11–10 million years), *Ouranopithecus* in Greece (9 million years), and *Hispanopithecus* in Spain (10–9 million years). The biogeographic track for these taxa shows a pattern closely conforming to the Tethyan geosyncline (see Figure 1). This correlation suggests an ancestral range along the coastlines of the former Tethys between Europe and Asia that was disrupted during the closure of Tethys by tectonic uplift and subduction. This geological process may have promoted local differentiation of each genus over the ancestral range, so that the “center of origin” of this great ape clade extends across both Europe and Asia, rather than being restricted to any one part of the range.

The Tethyan range of the orangutan clade may also apply to the origin of hominids in Africa. Recognized fossil hominid genera such as *Australopithecus* also exhibit features otherwise unique to orangutans and their fossil relatives, including broad cheekbones with forward facing anterior roots. These orangutan affinities are congruent with morphological evidence, with over 40 known synapomorphies supporting a sister

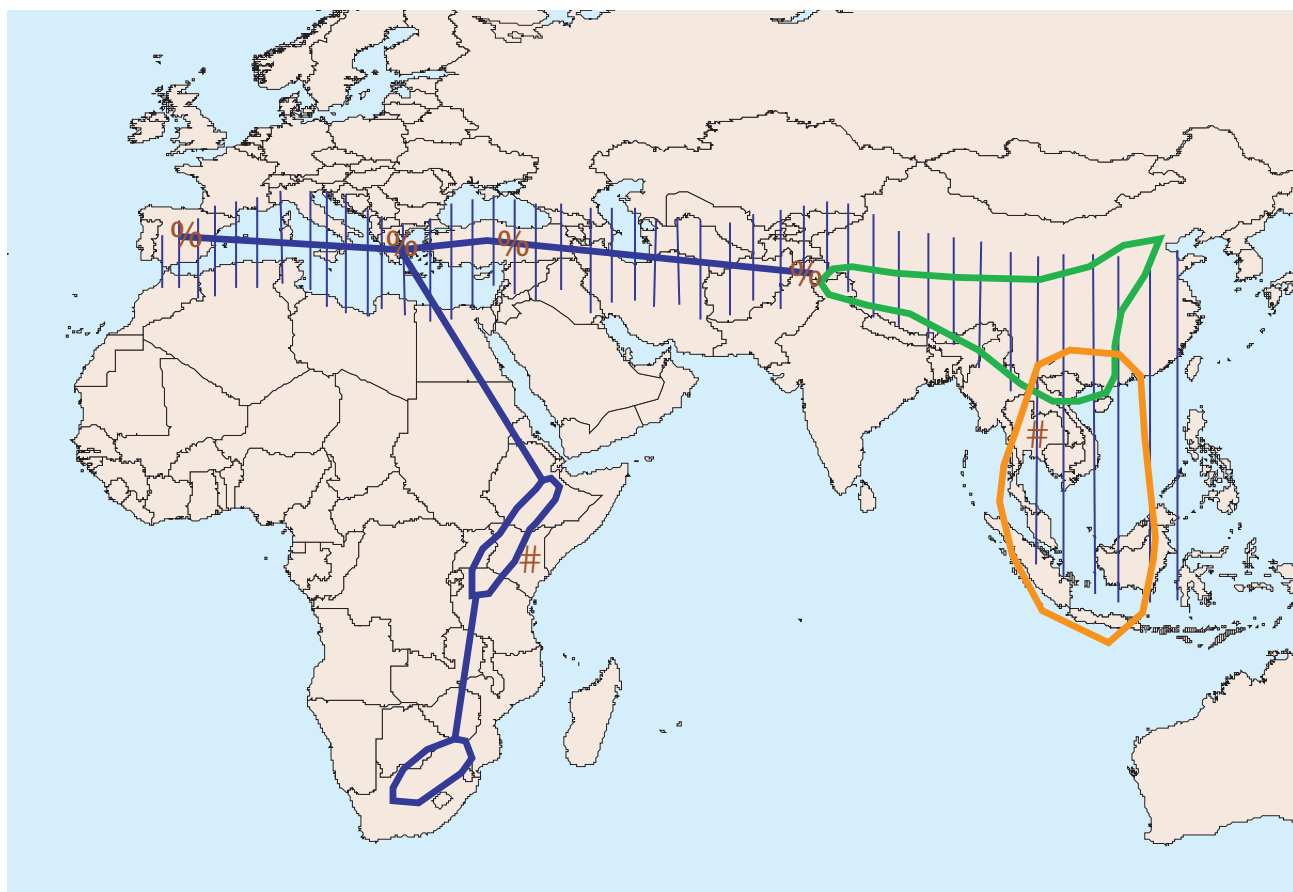


Figure 1 Biogeography of ancestral hominids (excluding *Homo*), orangutans, and their fossil relatives. Generalized localities and taxa distributed as follows: *Australopithecus*—black polygon (Africa), *Orrorin*—yellow circle (Kenya), *Hispanopithecus*—brown square (Spain), *Ouranopithecus*—crimson square (Greece), *Ankarapithecus*—blue square (Turkey), *Sivapithecus*—yellow square (India), *Gigantopithecus*—blue polygon (China, India), Pongo—red polygon (China-Southeast Asia), *Khoratpithecus*—black circle (Thailand), and *Langsonia*—red circle (Vietnam). The Chad locality for *Australopithecus* is not included due to lack of independent verification of the fossil as a member of the genus. Vertical lines—generalized geological range of the Tethyan geosyncline representing former Tertiary coastlines now largely obliterated, of which the Mediterranean Sea remains the largest surviving remnant

group relationship between humans and orangutans. Fossil australopithecine records extend back only about 4.5 million years, whereas the orangutan lineage extends back at least 14 million years, as represented by its fossil relative *Sivapithecus*. Other fossil links may be represented by the proposed 6-million-year African hominid *Orrorin*, but the orangutan relationship for humans would appear to rule out the fossil genera *Ardipithecus* and *Sahelanthropus* being hominids at all.

Even with this very brief biogeographic overview, the evolutionary origins of humans may be seen as the western counterpart to the orangutan in the east, with the intervening geographic space occupied by

now extinct members of the human-orangutan clade across the Tethyan geosyncline and its extension along the Rift Valley in Africa. The biogeographic and evolutionary resolution of the large-bodied hominoids extends the fossil history for the human lineage at least into the mid-Miocene, as indicated by the minimal age of fossilization for *Sivapithecus*. Conversely, the question of what became of large-bodied Miocene apes in Africa may now also be answered by the orangutan affinities of the australopithecines. Isolated fossil teeth identified in the literature as *Australopithecus* conforming to the dental characteristics of orangutans suggest that the Miocene African apes did survive to become what are now

recognized as Plio-Pleistocene hominids. They are bipedal orangutan relatives by another place and another name.

— John R. Grehan

See also **Apes, Greater; Croizat, Leon; Hominid Taxonomy; Hominization, Issues in; Primate Morphology and Evolution; Primatology**

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APE COGNITION

Biological anthropologists use the comparative perspective in their efforts to reconstruct human evolutionary history. As our closest living relatives, primates are often used to frame comparisons and to test hypotheses about various human features. A feature (behavioral, genetic, or anatomical) that appears in all primate species is at least initially assumed to also characterize the last common ancestor of those species; features present in only one form presumably evolved at some point after it diverged, and hypotheses explaining the features are developed in the context of unique aspects of the organism's ecology and anatomy. The large-bodied apes (orangutans, gorillas, chimpanzees, and bonobos) are most

closely related to humans, so those species, particularly chimpanzees, are the preferred ones to compare to fossil and living humans. However, comparisons between humans and other more distantly related species are also informative and serve to demonstrate instances of evolutionary convergences (similar selective pressures lead to similar outcomes in distantly related forms) or features that evolved before the ape/human split as our primate or mammalian heritage.

Students of Darwin assume continuity between species, and they use a comparative approach to understand biology, behavior, and cognition of primates. These evolutionary anthropologists predict that few traits, including cognitive ones, will arise de novo—evolutionary precursors are the norm. In contrast, cultural anthropologists have sometimes focused on the uniqueness of the human mind, particularly with respect to language and culture, and assume gaps in the phylogenetic scale.

The dictionary defines cognition as “the act or process of knowing, including both awareness and judgment; also a product of this act.” These constructs are impossible to observe in humans and nonhumans; thus researchers are left with studying behaviors and defining those behaviors as indicators of a particular cognitive function. The methods of observation and the definitions of behaviors should be used consistently across species to increase the validity of comparisons.

Primatologists are scientists who study the behavior, biology, and evolution of nonhuman primates. The field of primatology draws from individuals trained as psychologists, biologists, or anthropologists, and one's training has a profound impact on research questions asked. Traditionally, primatologists trained as anthropologists studied wild nonhuman primates and used resulting data to model hominids and to better understand modern humans. Primatologists trained as psychologists focused more heavily on cognitive processes, intelligence, and language and usually explored these topics using captive nonhuman primates where experimental conditions are more easily controlled.

Here we trace the quest to understand, however imperfectly, the ape mind. The study of ape cognitive abilities includes research conducted with captive individuals, where more precise control over experimental and rearing conditions are possible, and individuals living in the wild, where relationships

between particular cognitive abilities and aspects of the organism's environment can more readily be explored.

History of Primate Cognition

Studies of nonhuman primate cognition began in the Western intellectual tradition in the early 20th century and were conducted by psychologists. Nadie Kohts studied the perceptual and conceptual skills of a young chimpanzee, Joni, from 1913 to 1916, and compared them to those of her son, Roody. She published her observations in 1935 in Russian in the book *Infant Chimpanzee and Human Child*, which has recently been translated into English (2002). She used a comparative developmental approach and established a tradition of rearing the research subject in a home setting, which was to be revisited later in the century by other scientists. Wolfgang Kohler, a German psychologist, presented a variety of problems to captive chimpanzees. The chimpanzees had access to materials that, when assembled, could be used to obtain a reward, such as bananas. Kohler described his findings in his 1925 book *The Mentality of Apes*. The roots of American primatology can be traced to Kohler's contemporary, Robert M. Yerkes, a psychologist fascinated with the evolution of intelligence. Yerkes explored this subject in captive apes and established what eventually became known as Yerkes Regional Primate Center in Atlanta, Georgia. After Yerkes's pioneering research, primate cognition continued to be studied in laboratory settings by scientists such as William Mason, Emil Menzel Jr., Duane Rumbaugh, David Premack, and Allen and Beatrix Gardner, among others. The realization that cognition could also be examined in wild populations came slowly, in part as a consequence of the long-term ape research of Dian Fossey, Biruté Galdikas, and Jane Goodall. While their projects were not intended to focus on primate cognition, their work demonstrated apes' complex mental abilities, including long memory, tool manufacture and use, and the use of social stratagems. Sophisticated social and cognitive skills were also emerging from data collected from wild baboons by Barbara Smuts, Jeanne Altmann, Shirley Strum, and Joan Silk and from wild vervets by Dorothy Cheney and Robert Seyfarth. The shift to the study of cognition in wild populations offers exciting opportunities to explore relationships between particular cognitive abilities and aspects of

the organism's environment—that is, to understand the evolutionary significance of a particular mental capacity.

Cross-Fostering

Ethologists use the procedure called “cross-fostering” to study the interaction between environmental and genetic factors by having parents of one species rear the young of a different species. Primate cross-fostering projects date to the 1930s, when Winthrop and Luella Kellog raised the infant chimpanzee Gua for a period of 9 months with their son. In the 1950s, Keith and Cathy Hayes cross-fostered the chimpanzee Viki while attempting to teach her to talk. After four years she was able to say four words, *mama*, *papa*, *cup*, and *up*. This research demonstrated that chimpanzees cannot speak, leading to the search for other means of testing language and other cognitive abilities of apes.

Allen and Beatrix Gardner cross-fostered the infant chimpanzee Washoe and immersed her in American Sign Language (ASL). In teaching ASL to Washoe, caregivers imitated human parents teaching human children in human homes. For example, they called attention to objects, expanded on fragmentary utterances, and molded Washoe's hands into the shape of new signs. In a second project, the Gardners cross-fostered four more chimpanzees, Moja, Pili, Tatu, and Dar. All of these cross-fosterlings acquired and used signs in ways that paralleled human children. The size of their vocabularies, appropriate use of sentence constituents, number of utterances, proportion of phrases, and inflection all grew robustly throughout the 5-year cross-fostering process.

In 1979, at the University of Oklahoma under the care of Roger and Deborah Fouts, Washoe adopted a 10-month-old chimpanzee son, Loulis. Human signing was restricted in Loulis's presence to test whether he could learn ASL from other chimpanzees rather than from humans. Loulis began to sign in 1 week, and at 73 months of age had a vocabulary of 51 signs. Washoe, Loulis, Tatu, and Dar now live together at the Chimpanzee and Human Communication Institute (CHCI) at Central Washington University in Ellensburg, Washington. Current research shows that they sign to each other and to themselves. The chimpanzees initiate conversations and maintain topics. When human interlocutors feign a misunderstanding, the chimpanzees adjust their responses appropriately. The chimpanzees' patterns of conversation with

human caregivers resemble patterns of conversation found in similar studies of human children.

Language Training

In 1979, Herb Terrace claimed to have replicated Allen and Beatrix Gardners's cross-fostering project with a chimpanzee named Nim. The young chimpanzee spent 6 hours each day in a classroom while a string of teachers drilled him with questions and demands for signing. If he wanted something, the teachers withheld it until he signed for it. Terrace found that Nim made few spontaneous utterances and often interrupted his teachers. This procedure differed greatly from the Gardners's cross-fostering project, in which the young chimpanzees were treated like children. Terrace's failure to create a comparable environment for language acquisition led to Nim's failures. Later studies showed that Nim made more spontaneous utterances and interrupted less in a conversational context.

In 1972, Francine Patterson began teaching signs to an infant gorilla, Koko, and later Michael. The gorillas acquired many signs and used them in all of their interactions with their caregivers. At the University of Tennessee at Chattanooga, Lyn Miles taught signs to a young orangutan, Chantek, in 1978. He produced signs spontaneously and combined them into phrases. In 1986, Chantek was returned to Yerkes Regional Primate Center where he was born, and the project continued on a modified basis.

Also in the 1970s, David Premack used plastic tokens and Duane Rumbaugh used Yerkish, both artificial systems to examine grammatical skills in chimpanzees. Later Sue Savage-Rumbaugh attempted to train a bonobo, Matata, to use lexigrams, the symbols of Yerkish. While Matata failed to use the lexigrams, her infant son, Kanzi, who was present during training, did use them. Devoid of face-to-face interaction, these studies reveal little about conversational behavior, but they do demonstrate apes' capacities to understand language and to respond appropriately to requests.

Knowledge of the Physical World

From studies of how primates interact with their physical world, scientists make inferences about primates' understandings of (1) object permanence, (2) cause and effect relationships, (3) spatial knowledge, and (4) quantitative abilities, among many

other topics. These skills likely evolved as part of a suite of foraging behaviors that, among other functions, facilitate tracking, finding, and extracting food.

Object Permanence

Object permanence refers to how an individual responds to an object that an experimenter hides. In the 1950s, Jean Piaget devised a series of tests to show the development of object permanence in stages. In one test, the experimenter places an object under a cover while the child watches. If the child lifts the cover, he or she has achieved Stage 4 of object permanence. Later stages are tested by multiple and invisible displacements. Piaget claimed that Stage 6 required mental representation and is achieved by 18–24 months in humans. Chimpanzees and gorillas have been tested and demonstrated Stage 6 object permanence.

Cause and Effect

Ape tool manufacture and use gives us insight into apes' understandings of cause-and-effect relations because the tool is constructed or modified to achieve a particular goal. Gorillas, chimpanzees, bonobos, and orangutans use tools in captivity, but only the latter three have been observed using tools in the wild (presumably the gorilla's leafy diet and great strength renders tools useless in its natural environment). For example, orangutans use sticks to extract honey from bee nests and leaves as gloves to protect their hands from thorny branches. Chimpanzees put leaves on the ground as seats or crumple leaves to sponge water. They use large sticks as clubs and pestles. Furthermore, they use specific tools for specific tasks. For example, in the Tai Forest (Ivory Coast), they use stones to crack hard Panda nuts and wood to crack soft Coula nuts. Some stone anvils have depressions from years of repeated use. Chimpanzees use tool sets to obtain termites from a mound; the different tools are used in a particular sequence to first perforate the mound and then extract the termites. Apes that have had opportunities to observe humans use a tool will use the same tool in the same way. For example, an ex-pet orangutan living at Camp Leakey (Tanjung Puting, Borneo) built a fire with a flint and gasoline, following the tools and techniques used by humans at the camp.

Spatial Knowledge

Tests of spatial knowledge include analyses of how individuals navigate through, or "cognitively map,"

the environment. In the 1970s, Emil Menzel Jr. hid food in various locations in a 1-acre enclosure while a chimpanzee watched. When released into the enclosure, the chimpanzee foraged for the food in the most efficient pattern using a least distance strategy while moving from one item to the next. Researchers studying wild apes, including gibbons, have found that individuals move efficiently through the forest rather than in random patterns.

Quantitative Abilities

Apes' quantitative skills have been indexed in a variety of ways. They are able to distinguish groupings of more or fewer objects in a set. Some chimpanzees have learned to use Arabic numerals to represent numbers of objects in sets ("3" for three jelly beans) and to count the number of objects in a set. Some chimpanzees have learned to add the numbers in two sets to reach a sum (three jelly beans plus four jelly beans totals seven).

Artwork

Captive apes produce drawings and paintings using drawing implements, paints, and brushes. The signing chimpanzees at CHCI provide names for their artistic pieces, and their drawings or representations of a particular object are consistent in appearance from one illustration to the next. For example, pictures labeled as "bird" always have a V shape in them. When asked to draw a berry, chimpanzee Moja usually drew a small round object.

Social Intelligence

Intense sociality is one of the most distinctive characteristics of primates. Species living in large, complex groups might be expected to exhibit behaviors that enhance individuals' abilities to operate effectively in a variety of social arenas with considerable insight into the likely actions of group mates. A long period of dependence on parents' care and long lives contribute to this sociality, as individuals have lifelong relationships that may last 50 years or more. Social intelligence is the study of behaviors that occur in the realm of social interactions.

Learning

While controversial, it is apparent that primates learn by watching and imitating the behaviors of

others in the social group. Young chimpanzees living in the wild spend years observing other chimpanzees cracking nuts with stones or dipping sticks into termite mounds. These foraging skills take years to master, and a chimpanzee may not be fully proficient at them until she or he is 8 years old or older. Field researchers have observed mothers actively teaching their offspring nutcracking skills by careful and slow demonstration. The cross-fostered chimpanzee Washoe modeled signs for her son Loulis, signed on his body, and demonstrated some signs to him, although he learned most of his signs by watching and imitating Washoe and others signing chimpanzees.

Coalitions

Primates form coalitions in which two individuals cooperate and support each other to compete with a third individual. Typically, support goes to a more dominant individual. In these cases, the dominant individual's high status is reinforced, while the lower-ranking supporter may gain status or improved access to resources. Primates also engage in more risky, tactical coalitions in which both coalition partners will benefit from their relationship *if* their coalition is strong enough to overturn (immediately or eventually) the dominant individual. If not, they both stand to lose. Among wild chimpanzees, grooming behaviors are sometimes directed strategically at an individual to obtain or maintain his support in future dominance contests. A dominant chimpanzee, Ntologi, consistently separated two less dominant males when they were together or grooming, apparently because their coalition threatened his status. In his study of captive chimpanzees, Frans de Waal described a dominant male's repeated attempts to break up coalitions between two males ranked below him. Eventually, one of these lower-ranked males displaced the dominant through the assistance of his coalition partner, whose rank was also elevated by the displacement.

In chimpanzee communities, high dominance is not always predicted by mere physical power, but instead is associated with social prowess and the ability to form and maintain coalitions. One chimpanzee at Gombe (Tanzania) famously obtained top rank through his intimidation displays using noisy, empty gas cans pilfered from Jane Goodall's camp. These examples indicate that strategic skills are important in determining one's status.

Chimpanzees of the Tai Forest (Ivory Coast) engage in hunting where individuals take cooperative and

complementary roles. For example, some individuals block the prey's escape route while others chase the prey. Again, such data reflect tactical and strategic skills of chimpanzees because they require an understanding of others' actions and the likely outcome of those actions.

Deception

Tactical deception is defined as "acts from the normal repertoire of the agent, deployed such that another individual is likely to misinterpret what the acts signify, to the advantage of the agent." Byrne and Whiten surveyed primatologists working with captive and wild populations. They obtained 132 descriptions of primate deception that they then categorized into three types. Examples of *active concealment* include a gorilla covering a playface and a chimpanzee covering an erection. *Active misleading* occurs when an individual provides misinformation. For example, as part of usual experimental procedures designed to test spatial knowledge, chimpanzee Belle alone saw the location of food hidden in the enclosure. Rock, a more dominant chimpanzee, often took the food from her when they later were released together in the foraging trial. On several occasions, Belle led her group mates to the wrong location and ran back to enjoy the true food source on her own. On other trials, the experimenters hid a single piece of food away from the main cache. Belle then led Rock to the single piece of food; then she alone rushed back to the main cache. In *counterdeception*, the deceiver is deceived by another. In an example of this, after Belle's misleading, Rock sometimes walked away from her and then suddenly spun around to watch her.

Theory of Mind

Theory of mind is defined as one individual having the ability to take the perspective of another. Tests of theory of mind in human children entail creating situations that show what children know about others' beliefs, knowledge, and attention. For example, in one experiment a child sat in a room with two adults. One adult placed an object in one of three containers and then left the room. The second adult and the child moved the object to another container. The adult asked the child, "When the absent adult returns will he look for the object in its original location, or the new location?" Autistic and very young children answered that he will look in the new location; older children responded that he will look in the original location.

Apes in captivity and in the wild demonstrate skills that fall under the heading of theory of mind. Apes, for example, gesture to others if the receiver is able to see the sender, but if the receiver is oriented so that his or her view is blocked, the sender instead uses auditory or tactile signals. In a test similar to the one given to children described above, an orangutan indicated an object's new location to an experimenter who did not know that the object had been moved during his absence. In another test, captive chimpanzees watched a human put food into a container. In the test phase, the chimpanzees could ask one of two humans to help: the human who hid the food or another human who did not know the food's location. Most chimpanzees chose the knowledgeable human.

Valid Comparisons

Many of these highly inferential studies of social intelligence have found that apes reared in cages perform poorly on tests when compared to home-reared human children or human-reared apes. When the apes demonstrate success, it is often attributed to "enculturation," or the human-rearing conditions, as if this endows the ape with new abilities rather than enabling the normal expression of capacities that are already present. Cage-reared chimpanzees have delays in motor development when compared to their wild counterparts. Likewise, human children reared in orphanages often show delays in motor development, especially when there is a high infant-to-caregiver ratio, as compared to home-reared children. Cognitive research comparing cage-reared apes to human children raised in stimulating environments probably tells us more about the effect of environment on cognitive development than about the cognitive capacities of the two species. We urge caution when interpreting results that claim that a cognitive ability is exclusively human when the comparison subjects include apes reared in restricted, unenriched environments.

Mirror Studies

Mirror studies were developed in the 1970s by Gordon G. Gallup Jr. as an experimental means of assessing an organism's sense of self. When presented with a mirror, many organisms either have no reaction to it or respond to what they see reflected in a social manner. A dog, for example, might ignore or bark at its mirror image. Large-bodied apes use their mirror images for self-inspection, as do human adults

and older children. Experimenters use the dye test to examine responses to mirror images. In this test, the experimenter secretly marks the subject. When the subject sees his or her mirror image, the experimental question is whether the subject touches or inspects the mark. If the subject touches it, he or she has demonstrated the use of the mirror for self-inspection. Researchers argue that apes and human children that inspect the mark have a sense of self.

Imaginary Play

Human children engage in imaginary play in a variety of ways. They use objects as though they are something else, treat inanimate objects as if alive, play roles, and create pretend scenarios. Apes also engage in pretend play. The cross-fostered chimpanzee Viki had an imaginary pull toy, and cross-fostered CHCI chimpanzee Dar played tickle games with a stuffed animal. Wild chimpanzees also engage in pretend play, such as carrying logs as if they were young chimpanzees. The gorilla Koko and the bonobo Kanzi have gone through the motions of eating imaginary objects. Similarly, wild chimpanzee Wanda dipped an imaginary stick into an imaginary termite mound.

Culture

Culture is a central concept of anthropology, and many scholars have devoted their careers to attempting to capture the tangible and intangible aspects of it. Culture is sometimes viewed by anthropologists as being exclusively human—"something humans do." Biologists, however, have developed their own definitions of culture that expand its possible existence to nonhuman and nonprimate forms. Fish biologists Laland and Hoppitt define cultures as "those group-typical behavior patterns shared by members of a community that rely on socially learned and transmitted information." More important than definitions, which exclude or include particular species, are descriptions of the behaviors.

Chimpanzees, orangutans, and humans use a variety of tools to extract foods, and the types of tools they use vary from one region to another. These tool-using traditions are socially transmitted. Monkeys, apes, and humans communicate visually and use various gestures, postures, and facial expression in their interactions with each other. Chimpanzees, bonobos, and orangutans in different regions use different

gestures. For example, chimpanzees at Gombe Stream Reserve in Tanzania grasp an overhead branch during grooming, while just south in the Mahale Mountains the chimpanzees grasp each other's hands during grooming. Researchers working at nine different long-term chimpanzee field sites collaborated and developed a list of 65 behavior patterns. The behaviors were classified in terms of their local frequency of occurrence. There were 39 behaviors that the researchers determined were cultural variants, since they were absent in some communities and customary or habitual in others. The behaviors involved tool use and grooming and courtship behaviors. This same analysis has been applied to orangutans and bonobos, and cultural variants have been identified in both of these species. For example, orangutans in one location place a kiss squeak on a leaf, while in another location they place a kiss squeak on the back of the hand.

— Mary Lee Jensvold and Lori K. Sheeran

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APE LANGUAGE

Language is a collection of symbols that represents objects, actions, and thoughts. It is representational, allowing for the transmission and relocation of information between minds. It can be written, spoken, gestured, and/or signed for purposes of communication.

It is often debated whether or not humans are the only animal possessing language capabilities. In particular, some studies have revealed that great apes (chimpanzees, bonobos, gorillas, and orangutans) exhibit some languagelike qualities. Apes have a larger brain size to body size ratio than all other nonhuman primates. In addition, one of the apes, the chimpanzee (*Pan troglodytes*), shares 98.4% of their deoxyribonucleic acid (DNA) with humans.

Apes typically use scent markings, pilo (hair) erection, facial expressions, and vocalizations, as well as other verbal and visual means of communication. Apes also can communicate with humans, and chimpanzees are capable of forming infrequent human vocalizations in response to human speech. In addition, some apes make the complex hand movements used in American Sign Language (ASL).

Nonetheless, ape language is qualitatively different than human language. Apes do not have a vocal tract that allows them to speak the same way people do. Also, apes do not have the same level of intelligence as humans, which some believe is necessary for understanding and producing speech. Furthermore, ape language is not as complex or expressive as human language.

There have been many studies on the language abilities of the great apes. Research has been conducted on the evolution of language, the acquisition and production of language, as well as strategies for teaching language to humans. The results of some ape language studies have been beneficial to those working on language acquisition in mentally challenged children.

Manual signing, plastic “words,” computer lexigrams, and simultaneous communication have been used in ape language studies. In fact, human curiosity with the language abilities of apes dates back to the 1930s. In 1933, Winthrop and Luella Kellogg raised Gua, a female chimpanzee, along with their infant son, Donald. Over a period of 9 months, Gua was able to understand and respond to about 70 verbal commands. In 1966, another chimpanzee, Sarah, participated in language research designed by David

Premack. Sarah learned to form sentences by placing plastic tokens that symbolized words in a vertical line. Sarah was able to read and write with over 130 words.

In 1967, two psychologists, Beatrice and Allen Gardner, taught Washoe, an infant female chimpanzee, how to use ASL in the same way that parents teach deaf children to sign. After a period of about 3 years, Washoe learned to sign approximately 130 words. Lana, another female chimpanzee, participated in a language study beginning in 1971 at the Regional Centre of Primate Studies at Yerkes. Duane Rumbaugh and colleagues placed Lana in an experimental chamber, where she used a computer lexigram language system to “talk.”

Beginning in 1972, Koko, a female gorilla (*Gorilla gorilla*), learned ASL through simultaneous communication with Penny Patterson. Koko responded to verbal questions and signed novel combinations of words. Researchers noted that at times, Koko even talked (signed) to herself and her dolls.

Nim Chimpsky, a chimpanzee, was raised and taught sign language as if he were human. In 1979, Herbert Terrace developed a language study at Columbia University in which Nim was a subject. In 44 months of training, Nim learned 125 words and was able to combine two- and three-word utterances. However, after reviewing years of data, Terrace concluded that most of the time Nim was not signing spontaneously. Rather, he appeared to be imitating his trainer’s signs.

Chantek, an orangutan (*Pongo pygmaeus*), was taught ASL by Lyn Miles, who raised him as her child. As Chantek’s vocabulary increased, the ideas that he expressed became more intricate. Chantek used signs in combinations and even invented his own signs (for example, “eye-drink” for contact lens solution). Chantek learned over 150 words from 1979 to 1986 and did not simply imitate his caregivers, but used signs to initiate communication. In addition, Chantek was able to comprehend spoken English.

Kanzi, a bonobo (*Pan paniscus*), learned to use language without specifically being trained or prompted to do so. Kanzi accompanied his mother, Matata, when she attended language-learning sessions in 1980 with Sue Savage-Rumbaugh. At the time, Matata was being taught a computer lexigram language. During Matata’s language training, Kanzi often tried to interact with the researchers and sometimes touched the lexigrams on the keyboard. At first, Kanzi received little attention because his mother was the focus of the study. However, one day, Matata was absent and Kanzi used the lexigrams competently, to the amazement

of the researchers. To date, Kanzi has learned approximately 256 lexigram words and can understand 500 spoken English words.

In 1985, Kanzi's sister, Panbanisha, joined the language studies at the Language Research Center in Georgia. Panbanisha, a bonobo or "pygmy" chimpanzee, was co-reared with Panzee, a "common" chimpanzee, to see if there were any differences in language acquisition and production between the two species of chimps. Like Kanzi, Panbanisha and Panzee became linguistically competent without specific training. However, it was found that there were differences in the learning abilities of the two apes. Panbanisha learned symbols sooner and combined words in more novel ways than Panzee. Currently, Panbanisha understands over 3,000 words and uses a vocabulary of 250 words.

Although much has been learned from ape language studies regarding the ontogeny of language, there still is a substantial amount of controversy regarding how much apes' language abilities resemble that of humans. Some research shows that apes do not use language spontaneously (for example, Nim), while other research demonstrates that they do (Chantek). Another point of contention is whether or not apes can form grammatically ordered sentences. Although apes do construct sentences using multiple signs, the sentences are often random and/or repetitious. Notwithstanding, Kanzi does not repeat himself often and appears to understand the grammatical rules about lexigram order.

After Terrace's conclusions that Nim Chimpsky seemed to be mimicking the signs of his trainers and could not grasp syntax, funding for ape language research dwindled. Terrace's findings were a major disappointment to talking-ape enthusiasts. However, the work of Sue Savage-Rumbaugh and colleagues brings an encouraging perspective to those who believe that great apes can acquire and produce language.

— Lisa M. Paciulli and Jacqueline L. Hagen

See also **Apes, Greater; Koko (lowland gorilla); Language; Washoe**

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APE COMMUNICATION

Anthropologists and linguists have long debated the communication abilities of nonhuman primates. Linguists Noam Chomsky and Steven Pinker argue that it is impossible to teach primates how to "talk," while other researchers point to language skills demonstrated by a number of apes observed in language laboratories around the world. Most animal researchers acknowledge that the comprehension skills of nonhuman primates far outreach their ability to produce language. The most notable example of language skills in apes has been demonstrated by Sue Savage-Rumbaugh's work with Kanzi, a bonobo who spent almost 20 years at the Language Research Lab at Georgia State University in Atlanta, Georgia, before being relocated to the Iowa Primate Learning Center in Des Moines, Iowa, in 2004. Kanzi is able to recognize more than 1,000 complex sentences. Savage-Rumbaugh, an animal psychologist, maintains that language is innate to all animals. Studies of bonobos have also shown that they communicate with one another vocally, symbolically, and visually. Verbally, bonobos are able to convey threats, fear, or other emotions by their shrill calls. Symbolically, bonobos leave signs to guide one another toward sanctuary or away from danger.

Visual communication is portrayed through facial expressions and physical postures.

Chimpanzees, who share 99.4% of their genes with humans, have been instrumental in expanding knowledge of the ability of nonhuman primates to communicate with humans. Working with several chimpanzees, including Sarah who was born in 1960 and has since become a celebrity among those who are interested in animal research, animal psychologists David and Ann Premack have taught chimpanzees to comprehend sentences by first teaching them to recognize subjects and actions. The short sentences consisted of such combinations as "cut apple," "wash grapes," or "give banana." Initially, each plastic sign was presented along with its physical counterpart. Subsequent lessons taught the chimpanzees to differentiate between plastic signs of one object and a physical presentation of another. For example, chimpanzees were able to understand that a plastic sign of a banana did not match an actual apple.

To test the ability of chimpanzees to reverse roles in communication as speaker and listener humans automatically do, David and Ann Premack again used plastic signs to teach chimpanzees two distinct languages. One language consisted of words used in production, while the other was made up of words used only for comprehension. Employing the production signs, the chimpanzees were able to make up sentences. The researchers used the second language to produce sentences for the chimpanzees to read. While the chimpanzees understood the words when given to them in the proper context, they did not initially recognize production words offered in the context of comprehension, or vice versa. In subsequent tests, when only a few words were added to the opposite lexicon, with instructors teaching the chimpanzees that words formerly used only in comprehension could now be added to the production lexicon, all chimpanzees successfully accomplished the bidirectional task.

Researchers have repeatedly found that apes imitate the species that raise them. In the case of laboratory animals, apes are likely to imitate the humans who work with them. In fact, some researchers have found that such apes so closely associate themselves with human trainers that when asked to categorize humans and apes, they

see themselves as humans rather than apes. Some researchers posit that the close relationship between researchers and trainers and their subjects makes cross-species communication possible.

— Elizabeth Purdy



APE INTELLIGENCE

Because of their close genetic link to human beings, apes have been closely examined by anthropologists and other scientists who are interested in establishing the evolution of intelligence. While most of the work on ape intelligence has been done with chimpanzees, biologist Robert Shumaker, director of the Orangutan Language Project of George Mason's Krasnow Institute, has spent years testing the intelligence of two orangutans at the National Zoo in Washington, D.C. Two orangutan siblings, 26-year-old Azy and his sister, 24-year-old Indah, relocated in September 2004 to the Great Ape Trust, the new primate sanctuary in Des Moines, Iowa, along with Shumaker. The orangutan is the rarest member of the great ape family. Only a few thousand are thought to exist in the Indonesian wild. All others are either in zoos or in research laboratories.

Through ongoing research, Shumaker and his colleagues contend that they have proved that orangutans have the ability to both use and understand abstract thought.

Communicating through symbolic language, Azy and Indah were taught to identify specific images on a computer screen. For instance, a square preceded all food words, and a circle came before all objects. In this way, Azy and Indah learned to ask researchers for food or to perform tasks such as opening containers. Neither of the orangutans knew how to count.

Shumaker and his colleagues also tested the ability of orangutans to perform quantity judgment tasks by teaching Azy and Indah to think beyond immediate food gratification. They offered the orangutans two food choices with one to six grapes

in each dish. The animals' natural instinct was to choose the dish containing the largest number of food items. During the test, researchers removed the orangutan's first choice and gave them the other as a reward. Ultimately, the orangutans learned that they gained more by choosing the dish containing the smaller amount of food.

Shumaker notes that chimpanzees, even though they are believed to be more intelligent than orangutans, have not mastered this level of abstract thought. In a 1995 study of two chimpanzees, consisting of 400 trials, Sarah T. Boysen and Gary G. Berntson failed to demonstrate this ability in two chimpanzees. Subsequent studies with chimpanzees reported similar results, with the chimpanzees continuously opting for the dish with the most candy. The ability of chimpanzees to act in their own interest is somewhat surprising considering the well-documented ability of chimpanzees to master the ability to count. Earlier studies by Boysen and Berntson, for example, demonstrated the ability of chimpanzees to add arrays of food placed in two or three possible sites. A number of researchers who study chimpanzees insist that Shumaker and his colleagues have not proved that orangutans are more intelligent than chimpanzees.

Overall, Shumaker and his colleagues speculate that an animal's mental ability is dependent on its social environment. Animals such as chimpanzees that must aggressively compete for food with others in their group are less likely to have the option of rational consideration of food choices than are orangutans, which are the least social species in the great ape family.

— Elizabeth Purdy

APES, FOSSIL

Apes and humans, commonly referred to as hominoids, are a closely related group of primates classified together in their own superfamily, the Hominoidea. The living hominoids are subdivided into two families, the Hylobatidae and the Hominidae (see table). The hylobatids or lesser apes (belonging to a single genus, *Hylobates*) are represented by 11 or

so species found throughout Southeast Asia. Humans and the great apes—the orangutan (*Pongo pygmaeus*), the gorilla (*Gorilla gorilla*), the common chimpanzee (*Pan troglodytes*), and the pygmy chimpanzee or bonobo (*Pan paniscus*)—are grouped together in the Hominidae. In the past, the great apes were included in a separate family, the Pongidae, but recent anatomical and molecular studies have shown that the African apes (*Gorilla* and *Pan*) are more closely related to humans than they are to the Asian orangutan. The revised taxonomy better reflects, therefore, the phylogenetic relationships among members of the Hominoidea.

The evolutionary history of the extant hominoids is poorly known, with the notable exception of humans, which have a relatively complete fossil record extending back to more than 4 million years ago. The earliest fossil apes that can be definitively linked to the living hylobatids are known from sites in China dated to less than 1.5 million years ago, while the fossil record for the African apes is restricted to a few possible fragmentary finds reported from the late Miocene and Pleistocene of East Africa, dating back to 6 million years ago. The evolution of the orangutan is, by comparison, much better documented. Fossil teeth from cave sites in Asia dating back to more than 1 million years ago show that orangutans in the past were considerably larger than they are today, and that unlike their living relatives, which are found only on Sumatra and Borneo, they once had a wider distribution in Southeast Asia that extended as far north as southern China. In contrast to the paucity of fossils available to trace the evolutionary history of hominoids over the past 5 million years, there is a wealth of evidence from the Miocene period (23–5 million years ago) to show that apes were once much more common and more diverse in the past than they are today.

The remains of the earliest apelike fossil primates, commonly known as proconsulids, have been recovered from sites in Kenya, Uganda, and Saudi Arabia dating to the late Oligocene and early Miocene (28–16 million years ago). There are a dozen species of proconsulids, ranging in size from the small *Nyanzapithecus harrisoni* (8 kg), which was about the size of a modern-day black-and-white colobus monkey, to *Proconsul major* (60–90 kg), which was the size of a female gorilla. Comparisons of their teeth, jaws, and skeletons indicate that proconsulids exhibited a wide diversity of dietary and locomotor behaviors,

Classification of Fossil and Living Hominoids

Superfamily Hominoidea

Family Proconsulidae

*Afropithecus** (early Miocene, Kenya)
*Heliopithecus** (early Miocene, Saudi Arabia)
*Kamoyapithecus** (late Oligocene, Kenya)
*Mabokopithecus** (middle Miocene, Kenya)
*Nyanzapithecus** (early and middle Miocene, East Africa)
*Otavipithecus** (middle Miocene, Namibia)
*Proconsul** (early and middle Miocene, East Africa)
*Rangwapithecus** (early Miocene, East Africa)
*Turkanapithecus** (early Miocene, Kenya)

Family Hylobatidae

Hylobates (Pleistocene to Recent, Southeast Asia)

Family Hominidae

Subfamily Kenyapithecinae

*Equatorius** (middle Miocene, Kenya)
*Griphopithecus** (middle Miocene, Turkey
and Central Europe)
*Kenyapithecus** (middle Miocene, Kenya)
*Nacholapithecus** (middle Miocene, Kenya)

Subfamily Oreopithecinae

*Pierolapithecus**
*Dryopithecus** (middle to late Miocene, Europe)
*Oreopithecus** (late Miocene, Italy)

Subfamily Ponginae

*Ankarapithecus** (late Miocene, Turkey)
*Gigantopithecus** (late Miocene to Pleistocene, Asia)
*Khoratpithecus** (late Miocene, Thailand)
*Lufengpithecus** (late Miocene, China)
Pongo (Pleistocene to Recent, Southeast Asia)
*Sivapithecus** (middle to late Miocene, Indo-Pakistan)

Subfamily Homininae

*Ardipithecus** (late Miocene to early Pliocene, Ethiopia)
*Australopithecus** (Pliocene, Africa)
Gorilla (Recent, Africa)
*Graecopithecus**
(=*Ouranopithecus*)* (late Miocene, Greece)
Homo (late Pliocene to Recent, worldwide)
*Orrorin** (late Miocene, Kenya)
Pan (Recent, Africa)
*Paranthropus** (Pliocene to Pleistocene, Africa)
*Sahelanthropus** (late Miocene, Chad)
*Samburupithecus** (late Miocene, Kenya)

Uncertain taxonomic status

*Morotopithecus** (early Miocene, Uganda)

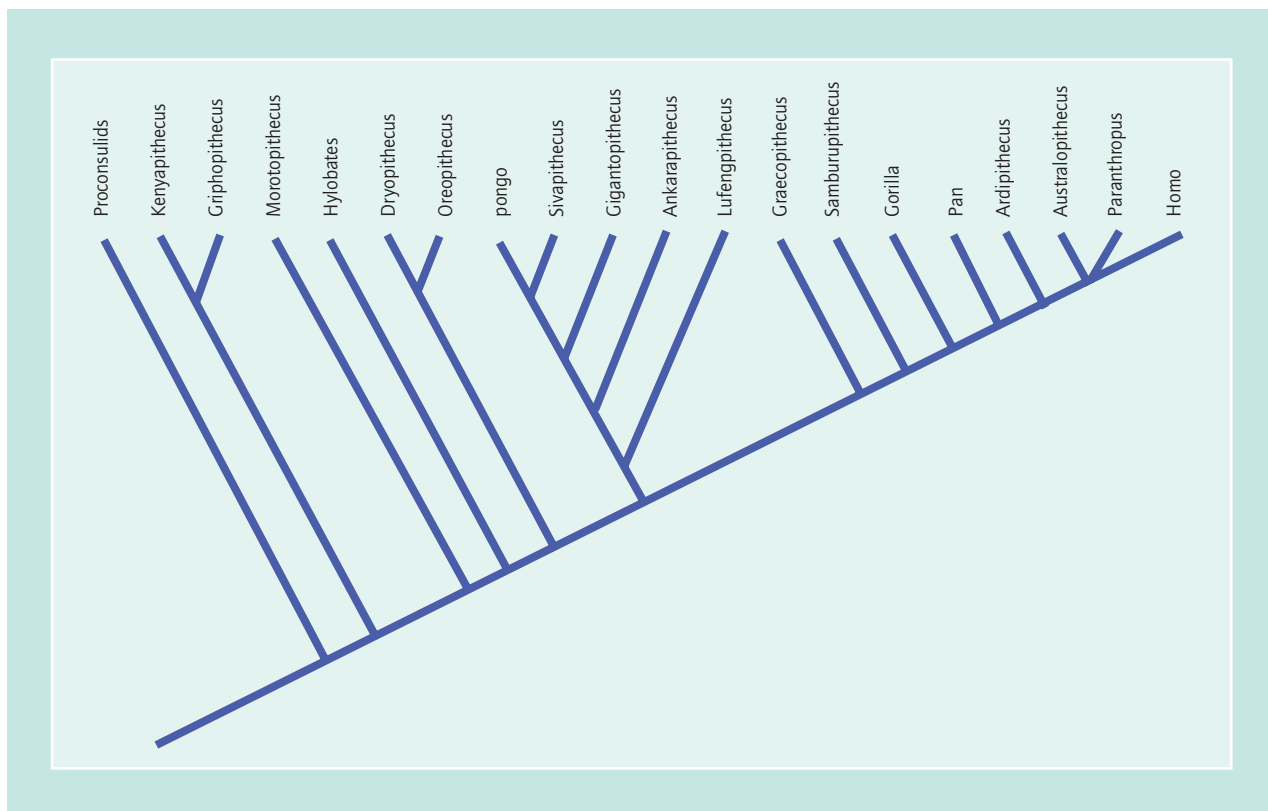
* Denotes extinct apes

but they were typically arboreal quadrupeds that ate various combinations of soft, ripe fruits and young leaves. The best known species are *Proconsul heseloni*, *Proconsul nyanzae*, *Turkanapithecus kalakolensis*, and *Afropithecus turkanensis*. Recent studies have shown that proconsulids represent either the earliest known hominoids or primitive stem catarrhines (the group that gave rise to both Old World monkeys and apes). They are certainly more primitive than any of the living apes, retaining generalized skulls and teeth, and monkeylike postcranial skeletons. However, during the early Miocene, there was at least one species of hominoid living in East Africa, *Morotopithecus bishopi*, which had already acquired some of the unique postcranial features of modern apes. This species, from Moroto in Uganda, dated to more than 20 million years ago, had specializations of the lumbar vertebrae and scapula, not found in the contemporary proconsulids, that indicate that it had developed the stiff-backed, partially upright posture and suspensory forelimbs that are characteristic of modern apes.

During the middle Miocene (16–10 million years ago), conditions in East Africa became drier, cooler, and more seasonal, and open woodland habitats replaced the humid tropical forests typical of the early Miocene. These ecological changes coincided with the appearance in East Africa of more advanced types of apes, including the earliest true hominoids, as well as stem hominids. The best known fossil apes from this time period are *Equatorius*, *Kenyapithecus* and *Nacholapithecus*, which are classified together as kenyapithecines. *Kenyapithecus* is known only from a handful of specimens from the locality of Fort Ternan in Kenya, whereas *Equatorius* and *Nacholapithecus* are represented by large samples of jaw fragments and isolated teeth, as well as partial skeletons, from several localities in Kenya. These apes are more derived than the proconsulids in having thickened enamel on their cheek teeth, more robust jaws, a simian shelf (a distinctive bony buttress on the internal inferior surface of the front of the mandible), and relatively larger upper premolars. Their limb bones indicate that they were probably more terrestrially adapted than proconsulids, and they exhibit a number of specialized features for forelimb-dominated climbing that link them more closely to modern hominoids. *Nacholapithecus*, at least, lacked a tail as in living apes. Another intriguing fossil ape from this time period is *Otavipithecus* from Namibia, dated to approximately 13 million years ago, and the only Miocene hominoid species

recorded from southern Africa. Until recently, it was known only by a single lower jaw fragment, so its relationship to other fossil and extant hominoids has been difficult to establish. However, additional cranial and postcranial specimens of *Otavipithecus* have now been discovered, and these suggest that it was more closely related to earlier proconsulids than to contemporary apes from East Africa.

Up until the middle Miocene, hominoids were restricted to Africa, but during this period they migrated for the first time into Eurasia. The earliest Eurasian hominoid, dated to 16–14 million years ago, is *Griphopithecus*, which has been found in Turkey and central Europe. The teeth and jaws are similar to those of *Kenyapithecus* from East Africa, to which it is probably closely related. Once in Eurasia, hominoids became established over a wide geographical region, extending from Spain and France in Western Europe to eastern China, and they became increasingly diversified during the middle and late Miocene (16–5 million years ago). The best known fossil Eurasian hominoids are *Dryopithecus* (Western and Central Europe), *Pierolapithecus* (Spain), *Oreopithecus* (Italy), *Graecopithecus* or *Ouranopithecus* (Greece), *Ankarapithecus* (Turkey), *Sivapithecus* (Indo-Pakistan), and *Lufengpithecus* (China). Of these forms, *Sivapithecus* is clearly closely related to the living orangutan because it shares many unique specializations of its teeth and cranium with *Pongo*, including thick-enameled cheek teeth, reduced upper lateral incisors and large central incisors, orbits (eye sockets) oval in shape and taller than they are broad, narrow interorbital distance, lack of development of a distinctive bony bar above the orbits, a dished face in profile, and a tiny incisive foramen penetrating the palate. In contrast, the relationships of the other Eurasian Miocene hominoids to each other and to living apes remain contentious. A number of alternative hypotheses about the interrelationships of Eurasian Miocene hominoids has been proposed: (1) that they form a closely related group with the living orangutan, all being derived from a common ancestor that migrated into Europe from Africa sometime during the middle Miocene; (2) that some of the Eurasian hominoids, such as *Dryopithecus* and *Graecopithecus*, are more closely related to the African apes and humans than they are to *Sivapithecus* and the orangutan; and (3) that they represent a diverse group containing primitive hominoids, as well as forms belonging to the orangutan and African great ape lineages (see figure). The later Miocene apes



A cladogram illustrating the evolutionary relationships of some of the fossil and living apes

from Asia, such as *Ankarapithecus*, *Gigantopithecus*, and *Lufengpithecus*, are possibly related to *Pongo*, but if they are, they are certainly more distantly related than is *Sivapithecus* (see figure). The relationships of *Lufengpithecus* from the late Miocene (7–10 million years ago) from southern China are especially problematic, because although its teeth are remarkably similar to those of living orangutans, even when compared with *Sivapithecus* it lacks the specialized features of the cranium shared by *Sivapithecus* and *Pongo*. The recently described fossil ape from the late Miocene of Thailand, *Khoratpithecus*, may provide an important link between *Sivapithecus* and *Pongo*. The absence of a scar on the chin region of the mandible for the attachment of the anterior digastric muscle in *Khoratpithecus* is a peculiarity among hominoids that is found only in orangutans.

The skeletons of *Dryopithecus*, *Pierolapithecus*, and *Oreopithecus* are relatively well known, and they show that these Western European apes were specialized for stiff-backed, forelimb-dominated arboreal climbing, clambering, and suspension, quite similar to modern

great apes, especially the orangutan. Although few postcranial remains of *Lufengpithecus* are known, they indicate a similar locomotor pattern. *Sivapithecus*, by contrast, living in the subtropical woodlands of northern India and Pakistan, was primarily adapted for arboreal quadrupedal running and walking along larger branches, but it also probably spent time feeding on the ground. This is quite different from the uniquely specialized quadrumanous climbing and clambering locomotor pattern characteristic of modern orangutans. Later Miocene Eurasian hominoids were specialized for a variety of different diets, ranging from leafy and fibrous foods in *Oreopithecus*, to hard seeds and nuts in *Graecopithecus*, to soft fruits and young leaves in *Dryopithecus* and *Sivapithecus*.

An ecological shift from moist temperate and subtropical woodlands to drier, more seasonal habitats during the later Miocene coincided with a sharp decline in the diversity of hominoids in Eurasia. This event, which is dated to 9.6 million years ago in Western Europe, has been dubbed the “Vallesian Crisis” (the Vallesian is the European Land Mammal

Age for this time period). The only survivor in Europe toward the end of the Miocene was *Oreopithecus*, a highly specialized relative of *Dryopithecus*, which was isolated on a group of islands in the northern Mediterranean that today form part of Italy. It survived in isolation until about 7 million years ago when the islands became connected to the European mainland and allowed an influx of more competitive mammals, including monkeys. *Lufengpithecus* and *Sivapithecus*, along with the aptly named *Gigantopithecus*, continue in the late Miocene of Asia. The latter ape was the largest known hominoid, with massive jaws and teeth specialized for eating tough, fibrous vegetation, such as bamboo, and an estimated body weight that may have exceeded 200 kg (living male gorillas, by comparison, average only 170 kg). All of these Eurasian hominoids became extinct by the close of the Miocene (5 million years ago) except for *Gigantopithecus*, whose remains have been recovered from Pleistocene cave sites in southern China dated to less than 1 million years ago.

Hominoids also became extremely rare in Africa during the late Miocene. A large fossil ape, *Samburupithecus*, known only by a single maxilla from Kenya (dated to 10–8 million years ago), may represent a close relative of the African apes and humans. Until recently, a few isolated teeth of fossil hominoids from the late Miocene sites of Lukeino and Lothagam (dating to 7–5 million years ago) in northern Kenya were all that were available to document the earliest known occurrence of the human lineage prior to 5 million years ago, but the remains were too scrappy to be confident about their affinities or tell us much about their anatomy. Then, beginning in the mid-1990s, paleontologists working in Ethiopia, Kenya, and Chad made some remarkable discoveries that have helped to fill this critical gap in the fossil record. The recently described *Ardipithecus*, *Orrorin*, and *Sahelanthropus*, dating from about 7 million years ago to 4.4 million years ago, are argued to be the earliest representatives of the human lineage. They each show a combination of features that indicate reduced canine size and bipedal locomotion, both of which are unique features of later human ancestors. Most researchers agree that these fossil hominoids are close to the ancestry of humans, although there has been some debate about the evidence presented in favor of this viewpoint. The earliest definitive record of fossil hominoids that are closely related to humans is known from the Pliocene with the appearance of *Australopithecus anamensis*

from Kenya (4.2–3.9 million years ago) and *Australopithecus afarensis* from Ethiopia and Tanzania (4.0–3.0 million years ago).

— Terry Harrison

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APES, GREATER

Current nomenclature divides the apes into two distinct families: the greater apes and the lesser apes. Historically, apes were classified together in the family Pongidae, which excluded humans. Now there are two families, Hominidae and Hylobatidae. The greater apes comprise the family Hominidae, consisting of gorillas, chimpanzees and bonobos, orangutans, and humans. There has been much discussion on the nomenclature of the great ape. Current DNA evidence implies that humans share a common ancestor with the chimpanzee/bonobo line and that this ancestor is extinct. On the primate family tree, humans separated much more recently than the gorilla did. When looking at the family tree, the four African great apes shared a common ancestor between 8 and 10 million years ago, the orangutan and gorilla separating from the ancestral line prior to chimpanzees, bonobos, and humans.

With the advent of DNA analysis, a new understanding of primate genetic diversity has come about. Chimpanzees, gorillas, humans, and orangutans are all more closely related to one another than any of these four genera are to the gibbons. Humans, chimpanzees, and bonobos share 98.4% of the same DNA sequence. Gorillas share 97.7% of their DNA with humans, chimpanzees, and bonobos. Orangutans share 96.4% of their DNA with humans, chimpanzees and bonobos, and gorillas. One important difference between humans and great apes is humans' comparative low level of genetic variation. Just like cheetahs,

which have little variation in their genes, humans went through a population bottleneck of approximately 10,000 people, which greatly diminished genetic variability. Signs of past bottlenecks are also evident in the populations of western chimpanzees.

All living members of the family Hominidae have no tails and differ from the lesser apes by being larger in size, spending more time upright, having fewer young, and having a higher level of parental investment. Apes have five molars in the Y-5 pattern as compared to the Old World monkeys, which have four molars in a bilophodont pattern. Apes have a more mobile spine compared to Old World monkeys. These are all anatomical adaptations to the apes' vertical hanging and brachiation locomotion. Except for gorillas and humans, all true apes are agile climbers of trees. Their diets are best described as omnivorous, consisting of fruit, grass seeds, and in most cases small quantities of meat either hunted or scavenged, along with anything else available and easily digested. Gorillas, chimpanzees, and bonobos live in Africa, in complex social groups. Orangutans live as solitary individuals in the forests of Indonesia.

Apes' forward-pointing eyes were used to spot potential predators, prey, and social signals. An evolutionary adaptation to a life in socially complex groups gave way to a large, complex brain. Chimpanzees and orangutans are known to make simple tools to extract insects from holes and extract nuts from hard shells. Tool making involves a preconceived image of what the tool will look like. The capacity to visualize the scenario is possible only with an advanced brain. Orangutans have even been observed untying knots, unscrewing large bolts, working out for themselves the steps necessary to achieve a complex task. The hominids were able to master tool use and shape their environment. Great apes also have the capacity to understand and communicate using abstract symbols and gestures, such as American Sign Language.

All ape species, except humans, are rare or endangered. All great ape loss, whether it be caused by habitat destruction, the pet trade, or the bushmeat trade, is a consequence of humans overpopulating the globe



at an alarming rate, resulting in social and environmental changes.

— Gregory Scott Hamilton

See also **Apes, Lesser; Bonobos; Chimpanzees; Gorillas; Orangutans**

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APES, LESSER

Apes, in the past, have been classified as a single group of primates. The current nomenclature divides apes into two distinct families: the greater apes and the lesser



apes. The lesser apes are in the family Hylobatidae, consisting of 11 species that are currently recognized in the family. *Hylobates*, the single genus of Hylobatidae, is divided into 4 subgenera: the Hoolock gibbon (*Bunopithecus*), the Lar gibbon (*Hylobates*), the Concolor gibbon (*Nomascus*), and the Siamang (*Symphalangus*). The term *lesser ape* implies that while the gibbons are apes, they did not pursue the same evolutionary line that gave rise to humans. While gibbons stayed in the trees, great apes engaged more time on the ground.

The English translation for Hylobatidae is “tree walker.” Gibbons live in the forest canopy and infrequently descend to the ground. Because they are above everyone in the forest, they never battle with large predators or compete with other apes on the ground. This lifestyle has enabled them to remain petite and agile. Morphologically, their arms are the most exaggerated and the longest of all the primates. The arms end in long, slender hands, and the thumb is attached to the wrist instead of the palm. They use their hands like hooks to move through the forest. This type of locomotion is called *brachiation*. The

arm-over-arm movement enables the gibbon to gain great speed in the trees. By using their weight like a pendulum, a gibbon can easily overtake a person running on the forest floor. They can cover over 3 m in a single swing. These lesser apes can also leap from a standstill from branch to branch, sometimes more than 9 m in a single leap. With their extremely long arms and their hooklike hands, gibbons are magnificent acrobats, perfectly adapted for a life in the forest canopy.

Lesser apes are similar to monkeys, with longer canines, slender bodies, and two hard buttock pads, called *ischial callosities*. They are similar to the great apes because they do not have a tail. Their skulls resemble those of hominids, with very short rostra, enlarged braincases, and large orbits that face forward. Their teeth are similar to hominids, as well, with similar grinding molars. The canines are prominent but not sexually dimorphic.

At night, the gibbon sleeps high up in the trees, sitting down on the ischial callosities or curled up on its side. It is the only ape that does not build a nest for sleeping. All gibbons are monogamous, and their social group is based on a mated pair and their offspring, averaging 3 to 4 members. A family may have up to 3 to 4 juveniles aged 2 to 3 years apart. All species of *Hylobates* are highly territorial. Defense rarely involves physical contact, but instead calling, chasing, and a whole host of theatrics, such as stick breaking and thrashing of vegetation. The spacing of different groups is accomplished by loud vocalizations that can carry for several kilometers. Siamangs call out about 30% of the day, and other gibbons 80% to 90% of the day.

— Gregory Scott Hamilton

See also **Apes, Greater; Gibbons; Siamangs**

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APOLLONIAN

Apollonian refers to something or someone presenting the main characteristics of Apollo. Apollo was one of the gods of the ancient Greeks, son of Zeus and Leto, and twin brother of Artemis. He was the divinity linked to sunlight but also to the punishment of impiety by the infliction of diseases, protecting health, music, and divination. His Oracle at Delphi was the most consulted one in the ancient world, by persons as well as by whole cities. Apollo was therefore considered as a “guide,” in political and moral matters. At the 7th to 6th century BC, those who were called “the seven wise men” of Greece dedicated to the Delphic Oracle the quintessence of their wisdom, in the form of brief recommendations, which were supposed to illustrate the “apollonian” way of behaving in life. The most well-known of these “delphic precepts” are “Know Thyself,” and “Do Nothing Excessive.”

Inspired by some of the god’s characteristics, the German philosopher and classicist Friedrich Nietzsche (1844–1900) presented his personal interpretation of what might be called “apollonian.” In his book *The Birth of Tragedy from the Spirit of Music* (*Die Geburt der Tragödie aus dem Geiste der Musik*, 1871), Nietzsche considered Apollo as the divine representation of the perfectly plastic beauty (found in the arts of sculpture and epic poetry) of the principles of measure and “individuation.” The “apollonian” way of being underlines the value of the individual and creates the cities.

Dionysus, son of Zeus and Semele, the god of wine, natural fertility, orgiastic festivals, and sacred frenzy, who officially occupied the Delphic Oracle during wintertime, while his brother Apollo was visiting the Hyperboreans, was used by the German philosopher as the symbolic counterpart of Apollo. Nietzsche qualified as “dionysian” the art of music, but also the will for life itself, the dynamic and

explosive essence of nature, a whole to which man is integrated. Dionysian ecstasy delivers man from the limits of his own self and guides him to the original happy unity with the universe. The “dionysian” vision isn’t bound to moral restrictions; it follows the eternal game of life, beyond the notions of good and evil. Nietzsche presented himself as “dionysian” in his way of thinking and being.

With reference to his teacher’s Arthur Schopenhauer (1788–1860) categories, established in his work *The World as Will and as Representation* (*Die Welt als Wille und als Vorstellung*, 1819), the “will” of the world is “dionysian,” whereas the “representation” is “apollonian.”

For Nietzsche, the ancient Greek tragedy resulted from the harmonious meeting of the “apollonian” and the “dionysian” spirit. Its extraordinary aesthetic and metaphysical quality is due to the fact that the tragic poets (up to Euripides, who “destroys” tragedy, according to the philosopher, by introducing too much reasoning on the stage) realized the perfect equilibrium between myth and music, between the original natural passions and their idealized representation.

Nietzsche thought that all true art should be able to do the same. His aesthetic theories are directly connected to his metaphysics, as art, especially music, is for him one of the most important means of revealing the nature of the world and of the human condition.

— Aikaterini Lefka



Source: © iStockphoto/Yusuf Demirelli.

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AQUATIC APE HYPOTHESIS

In 1960, Sir Alister Hardy, a marine biologist knighted for his contribution to the fisheries industry, gave a talk at the British Sub-Aqua Club (a scuba-diving club) and a month later published an article in *New Scientist* on that talk, called “Was Man More Aquatic in the Past?” Although the idea caught people’s fancies and garnered some attention by the newspapers, it showed little sign of the long-lasting popular appeal it would eventually have.

It didn’t happen overnight. Even with the original article and a follow-up transcript from a radio program, it was 7 years before Hardy’s idea got much notice—this time with a two-page write-up by Desmond Morris in *The Naked Ape*.

Elaine Morgan, at the time an Oxford graduate in English and a TV scriptwriter, entered the scene in 1972 with the book *Descent of Women*, the idea for which she got from Desmond Morris’s book. This book proved to be very popular, and in time Morgan followed it up with many articles as well as four more books on the subject (in 1982, 1990, 1994, and 1997).

During the 1980s, other proponents arrived on the scene, chief among them a medical doctor from Belgium, Marc Verhaegen. A 1987 conference on the subject resulted in a book presenting opposing views, *The Aquatic Ape: Fact or Fiction?*

The coming of age of the Internet in the 1990s brought the advent of the online venue for presentation and debate, and this subject proved popular. As with many subjects connected with humans and especially human evolution, much of the debate is rancorous and ill-informed. There are nuggets of gold in the online debate; however, just as with the mineral, finding these nuggets requires a lot of panning.

The Aquatic Ape Theory or Aquatic Ape Hypothesis (aka AAT or AAH—this entry will refer to it as the AAT/H) hypothesizes that humans went through an aquatic or semiaquatic stage in our evolution,

generally said to have occurred during the transition from the last common ancestor we shared with apes (LCA) to hominids (some, like Marc Verhaegen, claim it continued on through virtually the entire span of human evolution). It claims that certain features are seen in human anatomy and physiology that are only seen in humans and aquatic animals and that these constitute conclusive evidence that our ancestors went through an semiaquatic phase in our evolution. Relying heavily on the principle of convergent evolution, it says that life in an aquatic environment explains these features and that a transition from ape to hominid in a nonaquatic environment cannot. The principle of convergence is used to explain these features, and the idea is said to be more parsimonious than other hypotheses.

Their use of the idea of convergence is generally accurate, but generally, they use parsimony to mean that only one cause explains many features (a more accurate term might be “prime mover” or “umbrella hypothesis,” the latter being one that AAT/H critic John Langdon uses).

One problem with the idea is that most of the proponents have been rather vague about the degree of aquaticness to which they refer. One proponent, doctoral student Algis Kuliukas, has come up with an explanation apparently also now endorsed by Elaine Morgan, that water has acted as more of an agent of selection in human evolution than in the evolution of apes such that physical differences between the two may be at least partly explained as adaptations to more efficient movement through aquatic conditions. This definition is perhaps most notable for its vagueness, merely suggesting “more” water use by humans than by apes. Contrast that with the explanation set forth in by Bininda-Emonds, Gittleman, and Kelly: “We consider aquatic carnivores to be those species in which the aquatic habitat inevitably plays a key role in the life-cycle of an individual,” which they then compare to definitions as given by others as they discuss the strengths and limitations of their own definition. The AAT/H definition suggested is not only so vague as to be virtually meaningless, it is notable that this is the first attempt at such an explicit definition, and it has taken over 40 years to show up. There has always been an implicit “how aquatic” definition, however, ascertained by the characteristics the proponents have used to build their case.

The proponents of the AAT/H have almost always been vague about just how aquatic our ancestors

supposedly were, and now tend to say simply those ancestors were “more aquatic” than apes, and often use Alister Hardy’s suggestion that we were less aquatic than otters. Coupled with this, they are often coy about what animals are said to share our “aquatic” features, sometimes simply saying that these features are found in an aquatic setting or that we share these features with “aquatics.” This produces a disconnect between how aquatic most AAT/H proponents claim our ancestors were and what the idea clearly implies on this vital aspect.

The human features said to be accounted for by a semiaquatic past can vary a great deal from one AAT/H account to another, but they form a large and eclectic list, far too large to deal with here (various proponents have suggested sweat, tears, sebaceous glands, the shape of our nose and our thorax, and even being able to cup our hands better than chimps). Probably the most commonly cited features are bipedalism, fat characteristics, and the distribution of human hair. AAT/H proponents concede that bipedalism is not found in any aquatic or semiaquatic mammal. They use a double standard here, as they commonly argue that the idea that hominids evolved bipedality in a terrestrial setting is badly damaged by the fact that no nonhuman terrestrial mammal is predominantly bipedal, yet the fact that no aquatic mammal is bipedal is brushed off as irrelevant.

The mammals with the fat features the AAT/H proponents say are similar to ours are seals, whales, and the sirenia (dugongs and manatees) and for lessened hair, only whales and sirenia and one species of wild pig, the babirusa, which has less hair than other wild pigs and is at home in water but also seems to be, like humans, an exception, since other wild pigs that are at home in the water have plenty of body hair; the babirusa seems to be, like other mammals with lessened body hair (such as some mole rats), an exception among related mammals with similar habits. The pachyderms also have little body hair, and although this is generally accepted as being due to their size and the need for heat loss, this well-established physiological principle concerning volume versus surface area is viewed with suspicion by many AAT/H proponents as they concentrate on water as a guiding factor in evolution. So, the aquatic mammals the proponents say we resemble have all been aquatic for tens of millions of years and are so highly specialized they are virtually, or completely, incapable of living a non-aquatic life. The AAT/H claim that these features

arose in a mammal less aquatic than an otter rings hollow.

So, relative fattiness and body hair loss among aquatic species are actually restricted to only a very few highly specialized aquatic mammals. Even more damaging to the AAT/H is that these features in aquatic animals do not actually resemble those of humans in any but the most superficial manner. This has particular significance in light of the AAT/H claim to be more parsimonious than other theories.

Most humans are fatter than many wild mammals, and we have, on average, less body hair than apes and most other wild mammals. But the characteristics of human hair and fat—the differences between the sexes and during the individual’s lifespan—are not like hair and fat features due to convergent evolution due to environment. Instead, those characteristics in humans seem to be classic cases of sexual selection. They differ considerably between the sexes, change dramatically at puberty, and then change again at the end of the reproductive period of life. (We are also unusual in having rather fat babies, but that seems to be connected to the fact that our infancy and accompanying brain growth is itself a highly unusual affair among primates, or any other mammal.) In aquatic mammals, these fat and hair characteristics either start out similar to adults of their species or become like adults of their species very rapidly after birth. This is also true of other features that AAT/H proponents use or have used as evidence, such as sweat and sebaceous glands.

The problem *vis-à-vis* parsimony is that if these were due to convergence during a semiaquatic past, the AAT/H requires two major changes to these features instead of one: first, ancestral, then similar to aquatic mammals, then sexually selected as in modern humans. Other hypotheses would require only one change, perhaps gradual: first ancestral, then sexually selected, albeit perhaps with some supporting advantages in natural selection (such as Wheeler’s cooling hypothesis or the recent idea that elimination of some parasites had a hand in our present hair characteristics). So, the AAT/H claim to be a more parsimonious explanation for these features falls apart.

Explanations for these discrepancies have been offered. Sometimes proponents actually suggest that the degree of aquaticness in hominids varied between the sexes and during the lifespan, so as to match the characteristics we see today. Since both sebaceous glands and hair are used as evidence, the hypothesis

becomes internally inconsistent, since then females would have to be more aquatic than males to explain hair and body fat, while males would have to be more aquatic than females to explain sebaceous glands; babies would be aquatic to explain hair and body fat, but not very aquatic to explain sweat and sebaceous glands, while these same characteristics in children would mean they were relatively nonaquatic until puberty. These ad hoc explanations seem much more unlikely than the simple explanation of sexual selection.

There are other problems with AAT/H attempts to explain human hair as the result of some degree of aquaticness. The only reasonable suggestion as to why body hair would be reduced is to aid in swimming speed (some take the tack that it just is similar to aquatic mammals and offer no reason for the similarity—however, as mentioned already, it is not really similar). There is, however, conflicting evidence on body hair and swimming speed; it would seem that increasing body hair might work as well as eliminating it, but humans took neither course. We still have body hair, and many humans have quite a lot of it, often curly and just what we don't want for increased swimming speed. That is why competitive swimmers use one or both of two methods—they shave off body hair and recently many have adopted special body suits that increase boundary layer thickness and decrease drag by mimicking the effects of dermal ridges as seen in dolphins' skin or the hair of seals. The one thing competitive swimmers don't want is what we have now, yet what we have now is what AAT/H proponents say was due to adaptation for swimming speed. And then there is the hair on our heads, which is far longer, and often bushier, than that of apes. So, the AAT/H proponents are left with several ad hoc explanations. They have suggested that head hair is explained by a swimming stroke, usually said to be the breast stroke, which leaves the long head hair (and beard in males) entirely out of the water—and this unlikely position is supposed to be one which allows for high swimming speeds creating selection for hair loss. Otherwise, they are faced with claiming that there was intense environmental selective pressure for reduction of body hair but not for head hair. The only other explanation would be that there were two major changes to hair instead of one as required for nonaquatic hypotheses, which destroys their claim of parsimony.

The problem of likely aquatic predators such as crocodiles and sharks being much faster swimmers

than even the best human athletes today is met with the suggestion that we congregated in large groups and the aquatic predators would only catch the slower members. This is unlikely to have helped even if true, since aquatic predators are seldom seen before they strike and would not have to take the slowest swimmers even if the herding idea was true. Still, that is better than Morgan's first attempt to answer the problem of crocodiles, which was to label them "hypothetical." No credible suggestion of how these ancestors would meet the problem of aquatic predators has ever been produced. Another problem for the hypothesis is the fact that while terrestrially we can show how an animal of medium size with a low birthrate can, and still does, deal with predators, by studying chimpanzees, no aquatic or semiaquatic animal of medium size with a low birthrate exists.

A common argument for the AAT/H over the years has been the fact that many humans like to visit the seashore, and many humans like to swim for recreation. This race memory argument has been used by both Hardy and Morgan (Hardy in particular believed in the race memory idea as part of his long-held belief that race memories and telepathy had played a role in human evolution) and carries no more weight, and perhaps less, than Gordon Orians's idea that our liking for certain park settings is based on our evolutionary past on mixed savannas. Lately, the subject of fatty acids for brain growth, specifically DHA and LNA, have been promoted as support for the idea of an aquatic past, since marine fish, especially cold-water marine fish, are rich in DHA. This ignores the fact that these fatty acids are readily available in various plant sources as well as in wild game. Humans (except infants) can synthesize DHA from LNA found in plant foods; infants get it through breast milk.

Some evidence long used as support for the AAT/H has been dropped by its proponents, such as Morgan's contention that sweat and tears were analogous to salt excretion glands, as seen in marine and desert reptiles and birds. The problem here is that even when this notion was first put forward, it ran counter to basic physiological principles in osmoregulation, including the fact that such excretions are never hypertonic, as they would have to be to be part of such a system. When Morgan formally dropped this line of evidence, she claimed it was because new information had been discovered that wasn't available when she first proposed it, but in fact the contrary information was known well before she first brought it up, and some of

that information was in the references she used as the sources for her claims. This does not speak well of the reliability of AAT/H research, and is not unusual.

Morgan has used a passage about bradycardia in seals, the slowing of the heart, as evidence about breath holding before dives. Morgan has also incorrectly stated that hymens are only found in humans and aquatic mammals; that humans, bonobos, and aquatic mammals are the only ones that engage in ventro-ventro copulation; that seals sweat via eccrine glands; that the only nonhuman animals that have been reported—none confirmed—to cry emotional tears are aquatic ones (information to the contrary was in the same book and chapter Morgan used as a source); and that the predominate mode of terrestrial locomotion of proboscis monkeys is bipedal. Morgan also has proved to exhibit something of a free hand when it comes to quotes in some of her AAT/H accounts, leaving out words or context to change their meaning, often without indicating the words are absent.

Marc Verhaegen has a history of dubious research. For example, he has claimed that sea lions are, after humans, the mammals that use sweat cooling the most, but in fact sea lions' sweating mechanisms are not very efficient at all, unlike those of a variety of terrestrial mammals—that information was in sources that he referenced. Verhaegen has also suggested that Neandertal noses acted as snorkels and that ear canal exostoses, seen in a small number of Neandertal and erectus specimens, can only mean they were doing a great deal of swimming and diving. Problems with this are that such exostoses also result from exposure to cold air without swimming or diving, and it seems that a pathological condition would be weeded out in a species that was long adapted for swimming and diving. Other examples of the quality of his research include his description of the rhinoceros as “predominantly aquatic” and using the mountain beaver as an example of an aquatic mammal, apparently confused by the name (the mountain beaver often likes wet areas and burrows and succulent plants, but dampness does not make one aquatic in any realistic sense).

These are far from the only examples of poor AAT/H research, and unfortunately they typify the quality of research one sees when the idea is examined closely.

In recent years, proponents have paid a great deal of attention to the research on chimpanzees and gorillas that wade, along with any information about bonobos wading. This is an abrupt about-face, since

as late as the mid-1990s, most were claiming as evidence the “fact” that common chimpanzees avoided water at all costs (a common misconception disproved well before that). The amount of bipedality in these situations is often wildly overstated by proponents, and another problem the AAT/H faces with these and other primate species that wade or swim regularly is that these species don't exhibit the other changes the AAT/H predicts—changes such as fat and lessened body hair—but this problem is either downplayed or ignored. It is interesting that bonobos and other apes sometimes use bipedality when wading, and it is certainly one of the items on the list of things that apes sometimes use bipedality while doing, but the AAT/H attempts to be far more than one item on a list.

In summary, the AAT/H has been in existence for well over 40 years now, and while it has certainly attracted a following, it hasn't been very convincing to most anthropologists who've looked at it closely. Its proponents tend to use to their advantage the fact that most people accept the proponents' accounts of the features mentioned and assume that the proponents have been somewhat rigorous and honest in testing their theory against the evidence. And few people are conversant with all the varied lines of evidence that its proponents use. Perhaps a greater problem is that most people accept the proponents' claim that they are doing no more than suggesting that humans used water somewhat more than apes during the evolution of our species—certainly a noncontroversial claim, but a disingenuous one as well when you see what features the AAT/H claims as evidence.

— Jim Moore

See also **Adaptations, Biological**

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AQUINAS, THOMAS (1225–1274)

Italian Dominican priest, philosopher, and theologian (Angelic Doctor of the Church), Thomas Aquinas was noted for systemizing theology by infusing ancient Greek philosophy, particularly Aristotle, with divine revelation as depicted by Judeo-Christian faith. Born at Roccasecca to nobleman Count Landulf and Countess Theodora (related to Emperor Fredrick II and Royalty in Spain and France), Aquinas received a classical education from the Benedictine monks at Monte Cassino and later received higher instruction (Trivium and Quadrivium) at the University of Naples. Aquinas, both educated and wealthy, rejected the rewards of the privileged class in favor of a humble and contemplative life associated with religious orders. Although the reasons for Aquinas wanting to join the Order of St. Dominic are a point of speculation, the news of Aquinas's entry into religious life was not well received by all; particularly by his mother Theodora, who imprisoned him for almost 2 years behind the walls of San Giovanni. As he was unrelenting in discerning his vocation, Theodora eventually released him to the Dominican Order.

After close inspection by Dominican superiors and Pope Innocent IV, Thomas Aquinas took his vows and continued his vocation to fulfillment. Among the administrative works, teaching, and ministry, Aquinas attended the University of Paris. Despite conflict between the university and religious Orders over an oath of loyalty, which ultimately caught the attention of both civil and papal authorities alike, Thomas Aquinas received a degree of Doctor of Theology in 1257. Before his death in 1274, Thomas Aquinas was known for his intelligence and reserved nature. Toward the end of his life, Aquinas was said to have had more frequent religious experiences (ecstasy) that would eventually lead him to quit writing in 1273. Aquinas's writings are profound and influential. Among these writings include two important writings: *Summa de veritate catholicae fidei contra gentiles* (1252–1259) and *Summa theologica* (1266–1273). Thomas Aquinas was canonized by Pope John XXII in 1323, and Pope Leo XIII declared Aquinas's written works as the true philosophy of the church in 1879.

Contributions and Perspectives

The influences of Thomas Aquinas upon philosophy (particularly in ethics), theology, and science are

profound. Although his writings are directed toward infidels (Jews and Arabs), heretics, and schismatics, Aquinas infused basic Aristotelian principles with sacred scripture to establish a cogent basis for theology. As put forth by the philosophy of Aquinas (subsequently supported by ecclesiastical authorities), the foundations for Catholic theology are threefold: the existence of God, the existence of humankind (in relation to themselves and to God), and revelation (as per Christ). From the five proofs of God's existence (for example, an unmoved mover, first cause, necessary being, absolute perfection, and intelligence), God not only created humankind (fixed) in His image (intellect) but also instilled a directive, via eternal law, natural law, and revelation, for humankind's theologically justified ontology and teleology. Good (being) and evil (privation) are part of an indeterminable array of theistic determinates. Humankind's existence (as with all existence), from beginning to end (including the eternal soul), is an expression of His will and as the ultimate end in itself. This theological view provided both a geocentric and anthropocentric view of our species.

Thomism, though it has experienced deaths and revivals, remains the cornerstone of Catholic philosophy. Surviving philosophical attacks from Orthodox Greeks, Martan Luther, and the philosophies of rationalists and empiricists, the foundational assertions that provided Thomism its logical cohesion began to slowly erode away in light of critical evaluation and scientific advancements. Ironically, it was science, the same science that was considered in the realm of philosophy, which produced the greatest problem for Thomism. Challenges from Bruno, Copernicus, Kepler, and Galileo had contributed evidence in support of heretical views. However, it was Charles Darwin (1809–1882) who provided a cogent theory based on observations, that being the theory of organic evolution. Consisting of common descent, multiplication of species, gradualism, and natural selection, Darwin provided an explanation for diverse life forms on this planet. The metaphysical implications are evident; the evidence for a God (designer), the soul, and afterlife are rejected in light of evidence and rational explanation. Although the philosophies/theology of Fr. Pierre Teilhard de Chardin incorporates a mystical interpretation of evolution, Pope John Paul II (as with previous popes) reaffirmed Thomism as the foundational philosophy of the Church.

— David Alexander Lukaszek

See also **Religion and Anthropology**

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ARBOREAL HYPOTHESIS

Researchers in biology have often directed their efforts toward elucidating the origins of major phyla or classification groups. While we have paid the most attention to the larger questions of transitions between classes, we are also considerably interested in the origins of orders. Cladistic methodology demands that we identify synapomorphies that define different orders but, as Matt Cartmill pointed out in 1972, it has not always been easy to identify the adaptive shift that accompanied the origin of a new order. The class *Mammalia* has been particularly troublesome in this regard. The interpretation of primate origins is an especially good illustration of the relationship between the characters used to define the taxon and the adaptive zone reconstructed for the order.

Historically, we have considered the primates difficult to define. George Gaylord Simpson stated this explicitly when he wrote that no clear-cut diagnostic adaptation distinguishes primates from other "primitive" placental mammals. The problem is particularly well exemplified by the controversy between those who would assign the treeshrews to the primates, such as Sir Wilfrid E. Le Gros Clark, and those who would not, such as Robert D. Martin and Leigh Van Valen. Workers have sought to define the primates by a distinguishing complex of evolutionary trends instead of defining the order by a single anatomical feature. In *The Antecedents of Man*, Clark summarizes the evolutionary trends, including generalized limb structure with pentadactyly and retention of skeletal elements including the clavicle that are reduced or lost in other mammalian orders; mobile digits, especially the pollex and hallux, for grasping; presence of flat nails and sensitive tactile pads instead of compressed claws; reduction of the snout and olfactory apparatus; elaboration of the visual apparatus and development of binocular vision; and the enlargement and development of the brain, especially the cerebral

cortex. John and Prue Napier suggested additional trends, including the development of truncal uprightness or orthogrady.

**Arboreal Theory:
Elliot Smith, Wood Jones, Clark**

A major paradigm, the *arboreal theory* of primate origins, defines primates by a complex of characters that adapted them to arboreal life. Indeed, we can find virtually all of the trends listed in the preceding section in the writings of the first exponents of the arboreal theory. It was first formulated by Grafton Elliot Smith and his assistant, Frederic Wood Jones, in the early decades of the 20th century by the study of comparative anatomy.

Elliot Smith, a neuroanatomist, was interested in explaining the distinguishing features of primate brains. In his address at Dundee to the Anthropological Section of the British Association for the Advancement of Science, he stated that it was the evolution of the brain and the ability to learn that led to the origin of the mammals, and that we should pay particular attention to the development of the cerebral cortex in primate evolution. Elliot Smith observed that orders of mammals became successful specialists for modes of life that depended on flight, fast running, or aquatic existence. They lost, however, their *primitive simplicity* and *plasticity of structure*. In contrast, the primates did not become narrowly specialized. Elliot Smith considered treeshrews to be insectivores, but he began a tradition in physical anthropology by using them in reconstructing the adaptations that gave rise to the primates. He believed that olfaction was the dominant sense in early mammals, which were essentially terrestrial. Natural selection would favor reduction of the olfactory apparatus and increased development of the neocortex (neopallium) of the cerebrum in arboreal mammals. The arboreal existence favors the development of vision, touch, hearing, agility, and quickness of movement while limiting the utility of smell. Small arboreal early primates could maintain the plasticity of a generalized structure while their brains developed. Elliot Smith pointed to tarsiers as manifesting significant reduction in the size of the olfactory parts of the brain and an increase in the visual cortex of the neocortex. He argued that the entire neocortex was affected by the emphasis on vision rather than smell. The sense of touch also became enhanced, and this

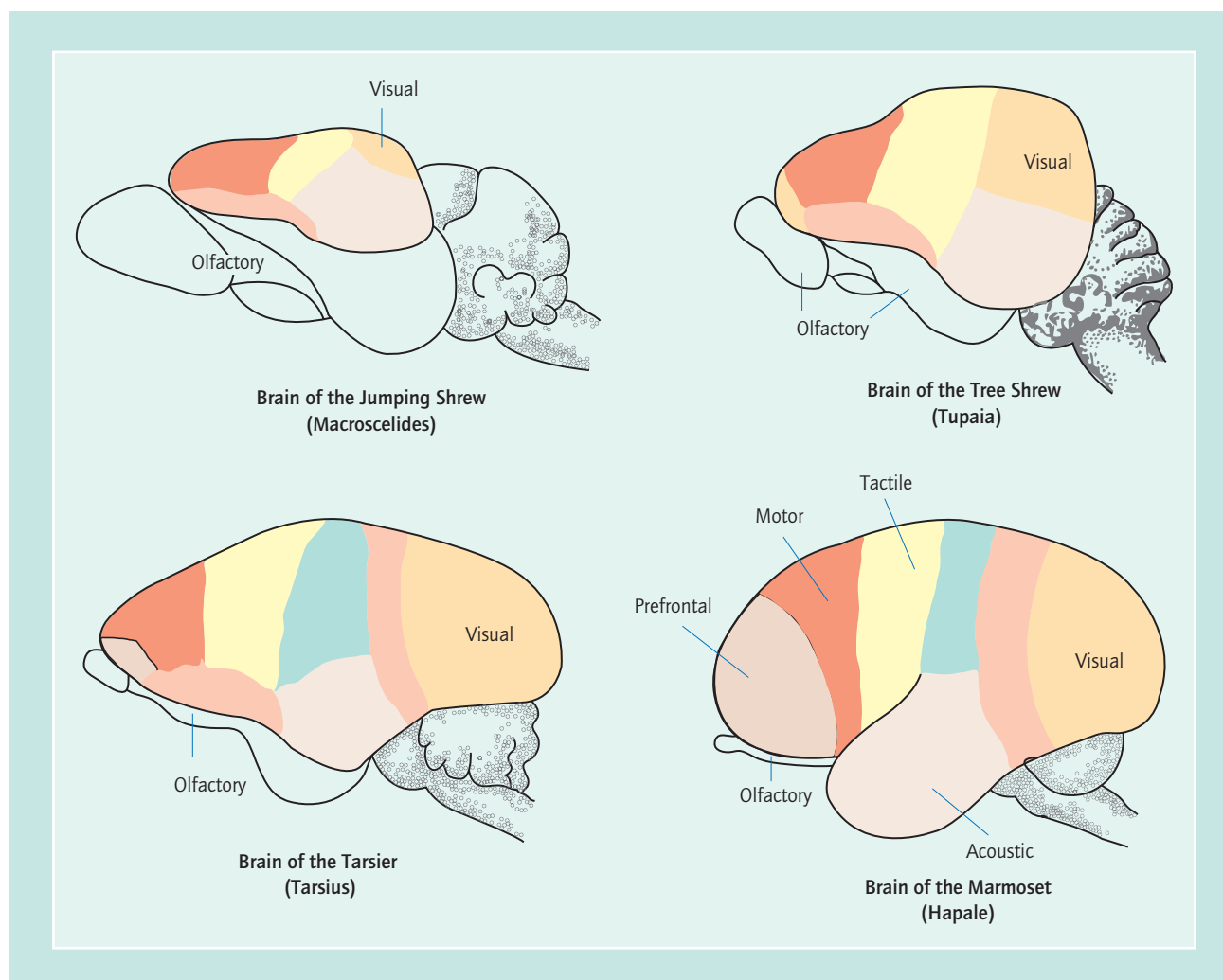


Figure 1 The left side of the brain of an elephant shrew (top left) compared with that of a treeshrew, tarsier, and marmoset

Source: Adapted from G. Elliot Smith (1924), Figure 15. By permission of Oxford University Press.

assisted vision in the conscious appreciation of the environment and in the performance of agile locomotor behaviors. Hearing increased in importance, and the corresponding portion of the cortex expanded. These changes, while increasing the size of the brain and increasing agility, would not modify the primitive characters of the limbs and body. Elliot Smith stated that the interaction of tactile and kinesthetic senses with vision developed the cortex and stimulated the process of specialization of a mechanism for regulating the action of the cerebral cortex (an *organ of attention* to efficiently manage the nervous centers controlling muscles of the body). He ultimately derived the hominin prefrontal area from reliance on vision rather than smell.

Elliot Smith used the figure reprinted here to support his thesis that the olfactory region became

relatively reduced and the visual, tactile, motor, and auditory areas expanded during primate evolution. He related the expansion of the frontal ("prefrontal") region to learning to perform skilled movements and stereoscopic vision. He stated that the changes are the result of adoption of arboreal habits.

Wood Jones, in his landmark *Arboreal Man*, drew his evidence from a wider range of anatomical regions than did Elliot Smith. He discussed sensory and cerebral topics in the latter chapters of his book, but was also concerned with skeletal and muscular evidence. His elaboration of Elliot Smith's thesis reflected his interest in the anatomy of the limbs and emphasizes the functional differentiation of the fore- and hindlimbs. The ancestral primate was arboreal in the late Triassic, and its limbs had not become

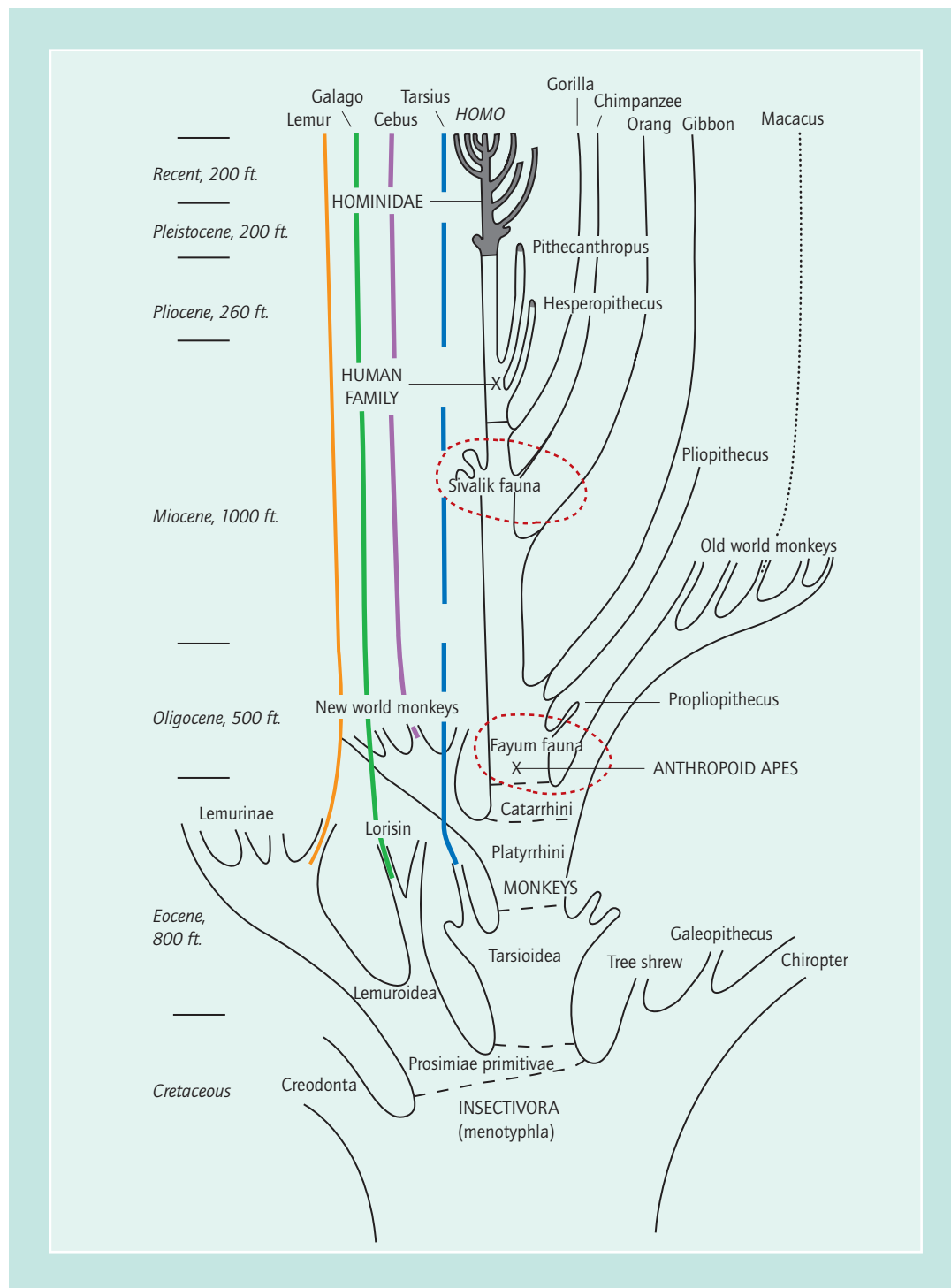


Figure 2 Elliot Smith derived the primates from a group of insectivores that included tree shrews and elephant shrews as Mentophyla. He derived New and Old World monkeys, apes, and hominins from a “tarsioid” ancestor; in a recent classification, Colin Groves assigned the Tarsiiformes as the sister group to the Simiiformes within the Haplorrhini. Elliot Smith used Tarsius as a model for the tarsioid stage, manifesting considerable development of the visual portion and reduction of the olfactory portion of the brain, reduction of the snout, orbital convergence, and binocular vision. He believed, however, that tarsiers are unable to perceive texture and the details of objects. Wood Jones strongly emphasized a tarsier-like, rather than an anthropoid ape, model in human evolution

Source: Adapted from G. Elliot Smith (1924), Figure 2. By permission of Oxford University Press.

specialized for pronograde cursorial locomotion. Locomotion in the arboreal context favored use of the forelimb for grasping supports with the palm against the substrate, retention of a clavicle, and use of the hindlimb parallel to the axis of the vertebral column for supporting the animal. Wood Jones used the term *emancipation of the forelimb* to indicate that the forelimb was no longer used solely for support. Postulated reduction of olfaction, caused by arboreal habits, resulted in the reduction of the facial skeleton. The latter led to a drawing of the eyes toward the midline. The increased specialization of the limbs resulted in a more upright posture with associated changes in the gastrointestinal tract, reproductive organs, and axial skeleton. Indeed, Wood Jones considered arboreal uprightiness to be basal to the development of human terrestrial uprightiness: He explicitly stated that arboreal uprightiness preceded terrestrial uprightiness. In *Man's Place Among the Mammals*, he further proposed that hominins are descended from an orthograde tarsier-like ancestor. To counter the objection that other orders of mammals include arboreal forms, many of which are dissimilar to primates in their adaptations, Wood Jones used two arguments: The first was that arboreal representatives of other orders are secondarily arboreal, that is, their ancestors were terrestrial, pronograde quadrupeds; in his view, this was not true of the primates. Second, his *law of successful minimal specialization* stated that the specializations of other forms of arboreal mammals (such as sloths) imperil their further "evolutionary progress"; in contrast, the primates show the "maximum of possibilities." With his emphasis on the importance of a mobile, grasping forelimb, Wood Jones viewed the use of suspensory postures by the feet as a "pitfall of specialization" and stated that the evolution of a prehensile tail in some New World monkeys has prevented "real [evolutionary] progress."

In the 1971 *The Antecedents of Man*, the influential anatomist Wilford Clark advocates both the arboreal theory and the inclusion of treeshrews within the primates; these two topics are intimately related within Clark's framework of primate evolution. He portrays the origin of the primates in the form of arboreal mammals similar to treeshrews during the late Cretaceous or Paleocene. Reflecting earlier arguments by Elliot Smith and Wood Jones, Clark develops the argument that primates are distinguished by *increased complexity of general organization*, especially in the brain, rather than the elaboration of specializations. The latter was the route

taken by more terrestrial mammalian orders in contrast to primates. Clark views primitive insectivores as tree-climbing animals with claws, nonprehensile hands and feet, small eyes and brains, and a well-developed olfactory apparatus. The hindlimbs and (especially) the forelimbs of primates preserve an *ancient simplicity of structure and function*, although the ability to cling and grasp has been increased by a wider range of movement possible at the shoulder, greater rotatory movements between the radius and ulna, a flexible ankle joint, increased mobility of the digits, and development of digital friction pads. Orbital convergence is considered to be advantageous in the arboreal milieu because it produces overlap of the two visual fields and therefore stereoscopic estimation of distance. Clark also points to the incomplete decussation of optic nerve fibers at the optic chiasm as important in primate stereoscopic vision. He differs from Wood Jones because the latter considers orbital convergence to be a secondary result of snout reduction rather than a feature that would be directly subject to selection. Emphasis on the selective advantage of orbital convergence was consistent with the reconstruction of early primate genera, such as *Hemiacodon*, *Adapis*, *Notharctus* and *Nannopithecus* as vertical clingers and leapers and the conclusion that VCL was the dominant locomotor type in Eocene to Oligocene "prosimians" by John Napier and Alan Walker in the 1970s. Clark relates the evolution of flat nails to increased functional importance of terminal friction pads and believes that pads are more efficient for grasping than are claws.

Visual Predation Hypothesis: A Challenge to the Theory

A major challenge to the arboreal theory is the *visual predation hypothesis*, explicated in the doctoral dissertation and series of papers by Matt Cartmill. Cartmill develops the hypothesis by comparing extant arboreal mammals with regard to limb morphology and locomotion, orbital convergence, and olfactory regression. He believes that it is unclear that primate-like morphology is the most advantageous to arboreal life and may be disadvantageous in certain contexts. He argues, for example, that the degree of orbital convergence manifested in certain primates decreases parallax and would not be valuable in leaping between branches; the slow-climbing, insectivorous slender loris and slow loris actually have more closely approximated orbits than the leaping galagos.

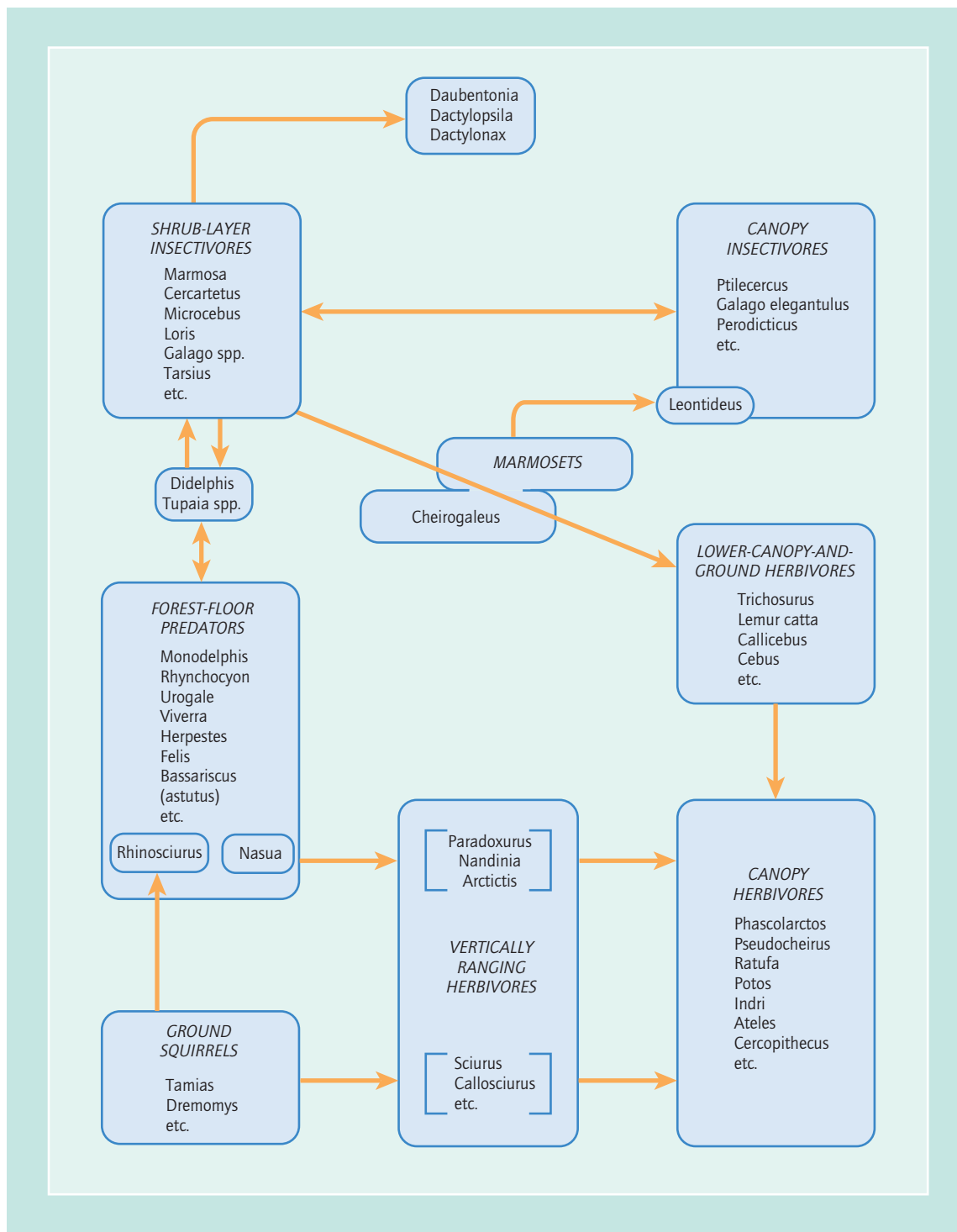


Figure 3 Cartmill excluded taxa such as flying lemurs, bats, and sloths from his analysis. He recognized eight categories in his comparisons of primate adaptations with those of other mammals. The category that contains *Daubentonia* is termed “woodpecker avatars.” Cartmill then discussed grasping extremities, orbital convergence, and olfactory regression. He concluded that primate-like morphology is not necessarily superior in the arboreal context; instead, primate-like morphology is adapted to nocturnal, visually-directed predation on insects in terminal branches

Source: Adapted from Matt Cartmill (1972), Fig. 4-1. Copyright © 1972 by Aldine Publishers. Reprinted by permission of AldineTransaction, a division of Transaction Publishers.

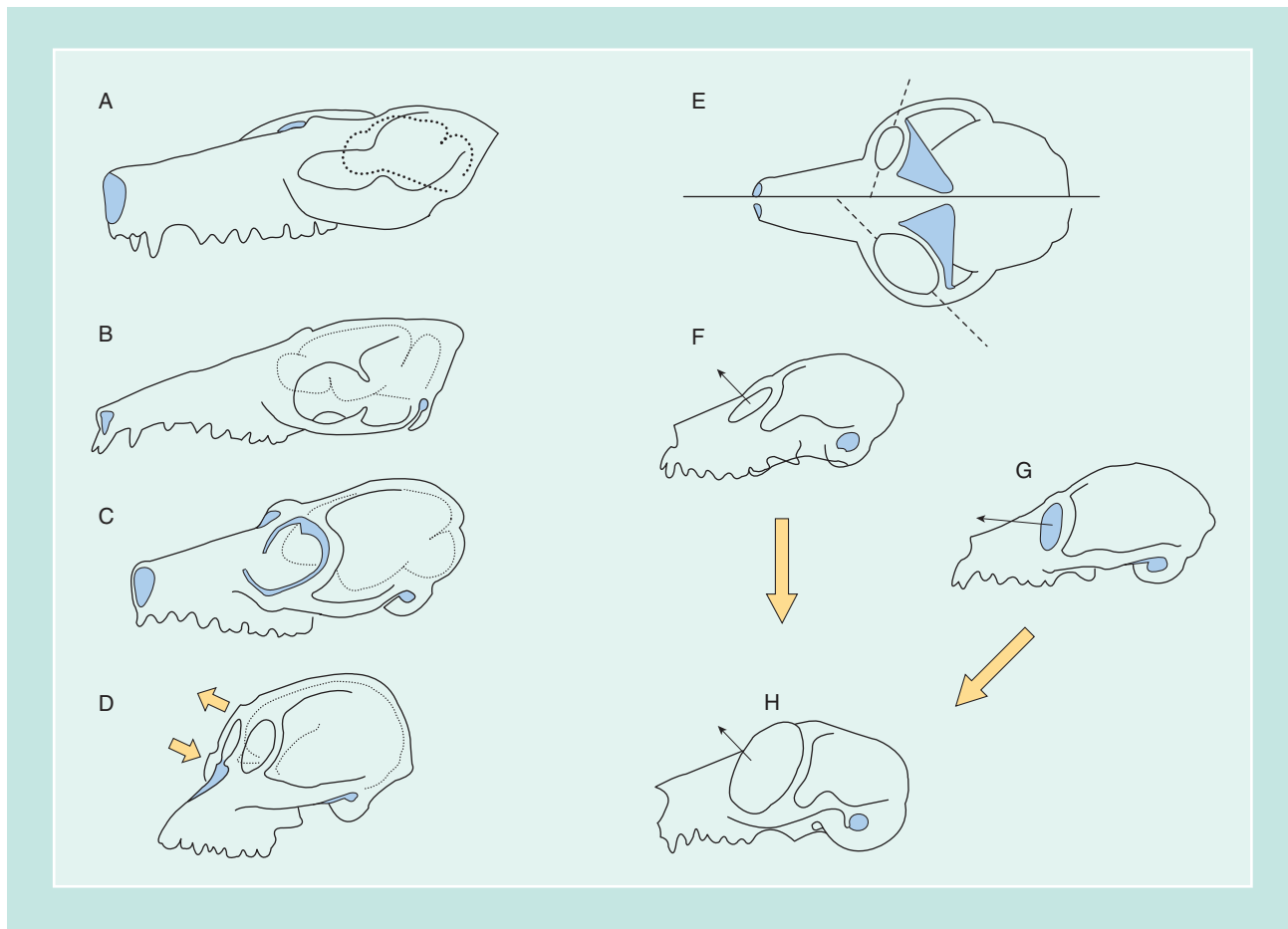


Figure 4 Cartmill's comparison of orbital orientation in the American opossum (A), treeshrew and squirrel (B), "prosimian" (C), and "anthropoid" (D). Drawing E represents a mammal with moderate frontation and approximation of periorbital cones to demonstrate an inverse relationship between relative eyeball size and convergence. Drawings F (for example, *Nycticebus*), G (*Lepilemur*), and H (*G. senegalensis*) compare degrees of convergence and frontation in a discussion of allometric influence on frontation

Source: Adapted from Matt Cartmill (1972), Fig. 4-2. Copyright © 1972 by Aldine Publishers. Reprinted by permission of AldineTransaction, a division of Transaction Publishers.

Cartmill observes that we find primate-like character states in marsupial taxa that hunt and manually capture insects among slender branches. He advocates a primate common ancestor that resembled the extant marsupial "dormouse" possum, mountain pygmy possum, and mouse opossum foraging in forest understory. Major components of his model are the deductions that the prehensile hindfoot is the only shared locomotor specialization in primates and the functional differentiation of the fore- and hindlimbs in arboreal mammals often works in the opposite direction than that postulated by Wood Jones. Cartmill then argues that prehensile ability in the hindfoot allows well-controlled and judicious movements on slender branches during hunting.

Visual convergence and correlated neurological specializations are predatory adaptations and are similar to adaptations seen in felids and owls, allowing the predators to gauge distance to the prey without moving their heads. Cartmill considers claws to be a hindrance to a bush animal that grasps thin supports by opposition of preaxial and postaxial digits and infrequently climbs on larger surfaces. Simplification of the olfactory apparatus is the result of the approximation of the medial walls of the two orbits; this conclusion is more similar to that of Elliot Smith and Wood Jones than it is to that of Clark. He states that other lineages of visually oriented predators have acquired comparable visual field overlap without significant olfactory reduction.

Both the classic arboreal hypothesis and the visual predation hypothesis examine two basic ideas: that “arboreality” is the niche of early primates and that primate morphology is *the* best morphology for an arboreal mammal—ideally and uniquely suiting primates for arboreal existence. Elliot Smith and Wood Jones conclude that these statements are true, but Cartmill determines that primate morphology is not the best morphology for an arboreal mammal and therefore seeks to present an alternative explanation for the suite of primate features. Both schools appear to show a limited concept of *niche*. As G. Evelyn Hutchinson argued in 1958, the niche of an organism is multidimensional. A single tree presents a number of niches for animals depending on factors such as their body size, mobility, and dietary requirements. There is, therefore, no single arboreal niche, and different morphologies may be equally successful in the arboreal milieu and reflect different specific niches. In this context, the visual predation hypothesis may be considered a modification of the classic arboreal theory rather than a completely distinct paradigm. Martin has asserted that a more inclusive answer for primate adaptations is the occupation of a *fine-branch niche* by small- to medium-bodied, nocturnal, and actively foraging early primates. Robert Sussman also advocates a terminal branch setting for early primates in his *mixed diet theory*: well developed visual acuity and color vision and grasping feet and hands would be favorable adaptations for primates foraging in the terminal branches of the successful and active radiation of angiosperms.

An unanswered question is whether ancestral primates and other fine-branch niche mammals (particularly, the ancestors of *marsupial taxa* discussed by Cartmill) converged in their locomotor adaptations or whether the niche was occupied by their common Jurassic ancestor. Cartmill concludes that there is no evidence that primate-like adaptations were present in Triassic mammalian ancestors. Southern Africa has produced a complete skeleton of the late Triassic *Megazostrodon*, which is interpreted as shrew-like in habits and with a grasping hindlimb. The Morganucodonts may have been able to move on both the ground and in trees. While the Cretaceous placental *Zalambdolestes* is long-snouted and lacks the postorbital bar found in undoubted primates, its postcrania indicate that it was a specialized jumping mammal.

Many of the fossil undoubted primates that had earlier been identified as vertical clingers and leapers have more recently been reconstructed as quadrupedal (for

example, subfamily Adapinae): Although quadrupedal primates often leap between branches, there is not the emphasis on recurrent leaping that would be found in dedicated VCL forms. Selection for leaping ability per se would not figure as prominently in the interpretation of morphological characters.

An important question is whether ancestral primates and other fine-branch mammals (particularly, the ancestors of *marsupial taxa* discussed by Cartmill) converged in their locomotor adaptations or whether the niche was occupied by their common Jurassic ancestor. Cartmill concludes that there is no evidence that primate-like adaptations were present in *Triassic mammalian* ancestors. South Africa has produced a complete skeleton of the late *Triassic Megazostrodon*, interpreted as shrew-like in habits and with a grasping hindlimb. The recent description by Qiang Ji and colleagues of *Eomaia scansoria* is that of a 125-million-year-old eutherian adapted for climbing. As John Wible and his collaborators point out, *Cretaceous eutherians* have usually been reconstructed as plantigrade, terrestrial, or scansorial quadrupeds. Based on features of the hands, feet, scapula, wrist, vertebral column, and claws, we view *Eomaia* as capable of grasping and branch walking. Ji and colleagues conclude that *Eomaia* was scansorial (similar to tree shrew *Tupaia*) or fully arboreal (similar to tree shrew *Ptilocercus*), that most basal metatherians were scansorial, and that scansorial skeletal factors are primitive for the earliest known eutherians. There is data that primitive marsupials were also climbers. Homoplasy is a persistent problem; for example, there is evidence that the *Paleocene multituberculate Ptilodus* may have been arboreal with a prehensile tail, but the status of multituberculates as Mesozoic mammals is controversial, and Ji and colleagues maintain convergent evolution in the postcrania of early mammals.

— Paul F. Whitehead

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ARCHAEOLOGY

Archaeology is one of the four subdisciplines of anthropology and is the scientific study of past human culture through ancient material remains. Detailed analyses of these material remains help archaeologists reconstruct and interpret the lifeways of ancient groups. Research themes relating to regional settlement patterns, the evolution of agriculture, the spatial arrangement of large city-states, and the collapse of large empires are often pursued alongside more regionally oriented questions, such as group migration and interaction patterns within a specific valley corridor.

What Is Archaeology, and What Do Archaeologists Study?

Archaeologists are anthropologists who study the material objects, or artifacts, left by past human groups. Artifacts are the tangible portions of culture left by past populations. Examples of artifacts include but are not limited to ancient tools (projectile points, pottery fragments, stone knives, scrapers, bone awls, and fish hooks); food remains and food-processing equipment (animal bones, carbonized seeds, grinding stones, pestles); personal artifacts (buttons, buckles, coins, jewelry, clothing fragments, bone combs); architectural debris (nails, mortar, window glass, bricks, foundation remains); as well as objects used for leisure activities (gaming pieces, clay and stone smoking pipe fragments, musical instruments, writing utensils).

In addition to artifacts, archaeologists study the organic residues, or features, left by past groups. Unlike artifacts, features cannot be removed whole, but are often destroyed during excavation. For this reason, archaeologists keep detailed notes, drawings, and photographs during the excavation of features. Soil samples, designed to recover ancient plant remains, microfossils, pollen, and phytoliths, are also often collected from features. Features include the remains of prehistoric hearths, postmolds from ancient structures, midden debris from garbage dumps, privies, as well as artifact concentrations from work and resource-processing areas.

Artifacts and features are commonly found at sites. Sites are locations containing evidence of human activity. Sites range in size from small resource-processing stations measuring a few meters in diameter, to more elaborate residential sites measuring an acre in size, to large multifamily complexes, which cover dozens of acres. The features of these sites vary with the amount of activity and complexity of the culture group. By example, the complexity of Copan, a large Mayan community, contained an extensive grouping of temples, residences, and specialized procurement stations many acres in size. By comparison, the settlement patterns of the seasonally occupied Schoharie Creek II camp in the Schoharie Valley of eastern New York covered less than a fifth of an acre in size and produced evidence of less than a dozen features. None of these features were elaborate building remains, but rather consisted of the residues of small-hearth, midden, and postmold features.

The Development of Archaeological Theory and Methodology

The history of archaeology dates back centuries and can't be accurately pinpointed to a single event or point in time. Many archaeologists attribute some of the earliest archaeological writings to what has become known as the "Speculative" or "Antiquarian" period dating between 1400 and 1860. This period is largely characterized by local inquiries about the human past. Interest in the past was characterized by an attempt to explain local "finds" and regional differences, often through the natural sciences. Studies centering on the ancient inhabitants of Greece and Rome were popular along with studies designed to confirm the events depicted in the Bible. Discoveries during this period would set the stage for future

scientific studies at the end of the 19th century.

Included among these inquiries was Thomas Jefferson's excavation of an ancient burial mound near his residence in Virginia. Of particular importance was the meticulous record keeping of the various soil layers employed by Jefferson. Jefferson's methodology differs from other 18th-century scholars who merely removed artifacts without consideration to its provenience or context. For this reason, many archaeologists consider this to be one of the earliest professional excavations.

Charles Lyell's *Principles of Geology* was published in 1830 and immediately had a profound impact on archaeology. Lyell's work underscored the importance of stratigraphy and the fact that the same geological processes that were in existence in the past can still be found in present times. This was a departure from previous theories, such as catastrophism, which argued that major catastrophes, such as floods, wiped out past populations and animal species, giving rise to extant species.

During the first quarter of the 19th century, Danish archaeologists C. J. Thomsen and Jan Worsaae constructed a three-age system to explain artifact variation observed in the archaeological collections of the Danish National Museum. The system was characterized by three successive cultural periods, known as the Stone Age, the Bronze Age, and the Iron Age. Specific tool types, behaviors, and technological innovations that coincided with a chronological period of development characterized each period. In North America and Europe, similar evolutionary sequences would be developed to explain local variations in artifacts and would become an important part of archaeological research.

Other important volumes, including Charles Darwin's discussion of evolution in *On the Origin of Species* and Alexander von Humbolt's survey of indigenous populations in *Views of the Mountains and Monuments of the Indigenous People of America*, were also written during this period. Both publications attempted to incorporate the natural sciences when explaining past cultural changes.



Source: © Christine B. Rieth.

Archaeology was developing into a scientific field devoted to the study of the past by the mid-19th century. From approximately 1860 to 1920, archaeologists working in the United States and Europe were concerned with the development of trait lists that could be used to describe the important characteristics of an archaeological culture. Traits lists included the culture group's tools, marriage patterns, political and economic systems, food gathering, and writing systems. The ultimate goal of the construction of these trait lists was to develop a scheme of evolution that could be used to compare and determine the cultural complexity of past groups.

Lewis Henry Morgan's study of the Iroquois of New York is an example of this approach. In *The League of the Iroquois*, Morgan outlined the cultural traits of this group, describing their tools, ceremonies, political organization, and lineage. This information was used to place the society within a unilinear scheme of evolution. Under this scheme, the presence or absence of certain characteristics, such as certain types of tools and the society's ability to participate in certain types of food procurement tasks, formed the basis for its placement. Under this scheme, all cultures progressed along the same sequence of evolutionary stages, with some groups being more advanced than others. Unilineal evolution characterized much of the archaeological work of the late 19th and early 20th centuries. Unilineal evolution would influence neoevolutionary anthropological and archaeological theory of the late 20th century.



Source: © Christine B. Rieth.

The trait lists developed by early archaeologists also helped to formulate new classificatory schemes based on the similarities between artifacts and their relationships to the larger environment. William Flinders Petrie's seriation (or ordering) of pottery in Egypt during the last two decades of the 19th century is one example of how the careful analysis of the attributes of artifacts was used by archaeologists to study changes in tool manufacture over time. Later seriations of pottery and lithic tools would become important forms of relative dating within archaeology.

In addition to trait lists, the range of archaeological cultures studied continued to be diverse. Excavations by Heinrich Schliemann in search of Homer's Troy, Frederick Ward Putnam's excavations at Great Serpent Mound in Ohio, Alfred Kidder's excavations at the Pecos site in New Mexico, Hiram Bingham's excavations at Machu Picchu in Peru, Manuel Gamio's excavations in the Basin of Mexico, and Theodore Bent's excavations at Great Zimbabwe in the Far East are among the projects carried out during this period.

By the end of the period, Americanist archaeology was beginning to shift away from an evolutionary viewpoint toward one centered on cultural relativism. As introduced by Franz Boas, cultural relativism proposed that individual cultures should be studied in their own terms with limited comparison to other societies. Boas proposed that the behavioral practices and material culture of existing societies should be extensively documented before they disappeared.

Only after all facets of the society were documented could meaningful comparisons be constructed. Such ideas would influence archaeology during the first half of the 20th century.

Between 1920 and 1960, archaeologists were primarily concerned with creating historical relationships between culture groups. The creation of such relationships, commonly referred to as the "direct historical approach," assumes that similar traits found between groups living in a particular area can be traced back in time to reveal interrelationships between archaeological

cultures. In some instances, a common ancestry between groups was also proposed.

Important advances in field and artifact analysis techniques were implemented during the 20th century. Included among these techniques was the introduction of dendrochronology and radiocarbon dating within archaeology. The use of dendrochronology to date archaeological sites was first introduced during the early 20th century, providing the first chronometric dates for the past. The technique was developed by A. E. Douglas, and uses tree rings to date carbonized and noncarbonized wood to calendar years. In the American Southwest, where wood preservation is good, this technique has been widely used to date sites several thousand years in age. In other areas, such as the Northeastern United States and northern Europe, where wood preservation is poor, tree ring sequences have been developed for shorter periods of time.

William Libby first introduced radiocarbon (C^{14}) dating as a technique for determining the chronometric occupation of sites in 1949. Radiocarbon dating measures the amount or rate of decay of the radioactive element carbon. The technique had a profound effect on the field of archaeology and provided important chronological information about the human past. Other absolute dating techniques, including potassium-argon, thermoluminescence, and obsidian hydration dating, soon followed and were integrated into archaeometric analyses.

Advances in archaeological field techniques were also developed during this period. Included among these techniques were new developments in field survey and recording. Among the most important techniques was the Wheeler-Kenyon method. The Wheeler-Kenyon method, named after archaeologists Mortimer Wheeler and Kathleen Kenyon, was a field technique whereby large excavation areas were divided into smaller units separated by unexcavated balks, which remained as control samples. Within these smaller units, archaeologists removed soils along cultural and stratigraphic layers with careful recording of the exposed soils occurring. This technique was widely adopted and is commonly used today.

Finally, any discussion of this period would not be complete without mentioning two important archaeological discoveries. Howard Carter excavated the tomb of Tutankhamen in Egypt between 1922 and 1923. In addition to the mummified remains of the king, excavation of the burial chamber produced spectacular goods, including gilded chariots, statues, decorated jars, food remains, ornaments, and personal items needed in the afterworld. Excavations conducted by Leonard Woolley at the royal tombs of Ur in 1926 produced equally impressive goods, including a wooden lyre, inscribed tablets, and remnants of woven mat that lined the burial chamber. As a result of these excavations, public attention was focused on archaeology and the spectacular artifact collections housed in museums.

Archaeology was developing into a highly scientific discipline, which made use of techniques employed in the natural sciences by the 1960s. Coinciding with this change was an attitude away from the direct historical approach toward a new type of archaeology focused on reconstructing human behavior and the cultural processes that guided these behaviors. Led by Lewis Binford, the “New” or “Processual Archaeology” stressed the use of scientific methods to understand past cultural processes. As a result, multiyear projects related to the settlement and subsistence patterns of larger regions were undertaken in areas such as the Basin of Mexico, the Northeastern United States, and the American Southwest.

Federal legislation was enacted to protect archaeological sites threatened by public construction projects in the 1970s. The result was the development of cultural resource management (CRM) as an important venue for archaeological research and advancement within the discipline. Also known as salvage or contract

archaeology, CRM involves “research, conservation, and management of cultural resources within a regulatory framework.” CRM archaeology currently employs nearly half of the archaeologists working in the United States, and each year hundreds of millions of dollars are set aside for the excavation and interpretation of archaeological sites, which cannot be avoided, as a result of state and federally funded construction projects.

Postprocessual archaeology became a leading school of thought during the 1980s. Often associated with British archaeologist Ian Hodder, postprocessualists argue that the scientific study of the past omits important ideological tenants of the human decision-making process by focusing too heavily on the processes that are inherent in the environment. Furthermore, it dismisses individual choice in the creation of the past, focusing solely on the evolutionary processes of the group.

Today, archaeology is a very specialized discipline, with the analysis of archaeological materials often being completed by specialists in such varied disciplines as archaeometric, lithic, ceramic, ethnobotanical, faunal, phytolith, and pollen analysis. In addition to a particular research specialty, most archaeologists also specialize in a particular culture area and/or time period, creating individual experts in such varied topics as Early Iroquoian settlement, Roman pottery, or Mayan Post-Classic subsistence.

Archaeological Methods

The methods used by archaeologists are highly specialized and are dependant upon the project’s research design. A research design is most simply described as a research plan that is used to guide a field excavation. Research designs generally follow the scientific method, with research hypotheses being formulated at the onset of the project. The hypothesis is then tested through archaeological or ethnographic fieldwork and is confirmed, rejected, or refined based on the collected data. Most research designs contain the following items: list of research questions/hypothesis being addressed; the specific methods used to identify and excavate the site; the lab techniques that will be employed to process, conserve, and interpret the site’s remains; and information about the long-term curation, or storage, of the generated materials.

The primary goal of the research design is to identify a research question or hypothesis that will be

investigated as part of the project. Research questions are not haphazardly generated, but result from background research on the prehistory and history of the area, the local environmental and topographic conditions, the sensitivity for artifacts and materials to be preserved after centuries of land use, as well as previous studies on the archaeology of the area. Research questions can be as complex as investigating the settlement systems of a specific valley to something more specific such as defining the date for the earliest appearance of a particular group at a particular site.

Once a research question is formulated, it is important that the archaeologist learn as much about the project area as possible through background research. Often this will include consulting specialists in other disciplines, such as geology to learn about the soils of the region or with botanists to learn about the plant life of the region. In addition, historic maps and other documents should be consulted to assess changes in landscape use, hydrology, and ecology in the area. This information is important and will help the researcher when interpreting the collected data.

One of the primary activities of the archaeologist is to identify and sample archaeological sites. Identifying archaeological sites is a complex process that is based as much on experience as technique. The most common means of finding archaeological sites is by identifying patterns of artifacts or cultural materials on the ground surface. Often, these isolated finds provide clues to the range and type of materials that are located below the ground surface. In other instances, historic maps, deed records, photographs, and oral histories also provide clues to the location of building foundations, privies, and wells. Other noninvasive techniques, including aerial photography, remote sensing, and ground-penetrating radar, have also been employed to locate larger features, such as burials, mounds, and fortifications, associated with sites. Notes, photographs, and maps showing the spatial distribution of the artifacts are usually created and kept as an initial record of the site.

Once a site has been identified, intrusive methods are employed to examine the site. Excavation is a destructive technique that displaces the remains of human activity destroying the spatial arrangement of artifacts in relationship to each other. Once the site is excavated, it can never be replaced or returned to its original state. For this reason, excavation should be completed only under the supervision of a trained archaeologist. Notes about each phase of the excavation

should be kept so that data about the provenience (or three-dimensional placement of the artifact) of each object can be determined in relationship to other site materials.

Before excavating, archaeologists establish a grid system that is tied into a fixed point, or datum, on the landscape. Within the grid system, smaller excavation units, consisting of meterwide squares or rectangular trenches, are designated. The grid system is used to record the horizontal and vertical provenience of each artifact, feature, and excavation unit identified at the site. Since excavation destroys the site, the grid system provides another means of recording the context in which materials are found. After the excavation is over, the locations of artifact recovery can be entered into a computer so that a base map of the site can be generated.

Archaeological excavation can occur in many forms, including vertical excavation, horizontal excavation, or a combination thereof. Vertical excavation consists of uncovering a limited portion of a site so that detailed chronological sequences and successive stratigraphic layers can be exposed. This is in contrast to horizontal excavations, which are designed to expose a limited number of stratigraphic layers across a much wider area of the site. Unlike vertical excavations, horizontal excavations are less concerned with exposing deep stratigraphic sequences. Most archaeologists use a combination of these two excavation strategies depending upon the tested hypothesis and the collection needs of the project.

Dirt and artifacts are carefully removed from excavation units using shovels and trowels. Each stratigraphic layer is removed separately, and the artifacts recovered from each cultural layer are screened through mesh hardware cloth to separate the dirt from the artifacts. The artifacts recovered from each excavation unit and stratigraphic levels are bagged separately. Photographs and plan and profile drawings of important artifacts and features are often made before removal. Once the artifacts are removed, they are returned to the laboratory for cleaning and analysis.

In addition to artifacts, flotation and soil samples may be collected to recover microplant and fossil specimens that might help interpret the site. Flotation is a specialized screening technique that is used to separate organic and inorganic materials. Organic materials, such as seeds, roots, wood charcoal, animal bone, and fish scales, will float and are collected separately for identification. Inorganic materials,

such as lithic projectile points, ceramic vessel shards, fire-cracked rock, heavier bone, and shell will settle to the bottom of the screen, where they can be collected. Flotation is most commonly used to collect very small artifacts that might otherwise be lost during normal screening.

Once the excavation is completed, the recovered artifacts and field data are taken to a laboratory to be washed, catalogued, analyzed, and rebagged for storage. The conducted analyses are dependent upon the research hypotheses being tested. However, most studies start by classifying artifacts by material type, age, decorative attributes, and/or function. Comparisons with regional typological sequences are also conducted to determine how the artifacts fit within larger regional sequences.

Specialized analyses such as radiocarbon dating, ceramic residue analysis, trace element analysis, or lithic use-wear analysis may also be conducted on a sample of artifacts. Specialized analyses often provide more detailed information about how the artifact was used, under what conditions, and how it was manufactured. Since few labs are equipped to complete such analyses, specialists are often hired to analyze objects. Specialists become part of the research team, and their analyses are considered when verifying or rejecting the research hypothesis.

Finally, conservation treatments may be applied to fragile artifacts before they are packed for storage. Often, conservation treatments prolong the life of the artifact, preserving it for use by future researchers. For example, fragile textiles if not properly dried and preserved may rapidly deteriorate once removed from the soil matrix. Insect damage and other types of fungal inclusions may also contribute to the artifact's deterioration. Extensive deterioration undoubtedly limits the research value of the piece and limits the amount of information that can be recovered about its past use.

Some conservation treatments, including the refitting of ceramic artifacts and the treatment of corrosion, may also enhance the artifact's research value and reveal important clues about its past use. For example, conservation of the corroding 1812 *Confiance* anchor



Source: © Christine B. Rieth.

from Lake Champlain in upstate New York revealed detailed maker's marks and original paint along the upper portion of the shank. These clues were important, allowing archaeologists to determine the object's origin and date of manufacturer of the larger shipwreck.

Once the archaeological site has been excavated and the artifacts have been analyzed, archaeologists are ready to interpret the site. This phase of the project is designed to pull together all of the information collected during the project so that the research hypothesis can be confirmed or rejected. Often, the data are entered into elaborate database and statistical programs so that significance of hypotheses and relationships between artifacts can be confirmed. For larger, regional projects, data manipulation using

geographic information systems (GIS) and CADD technology may be employed. GIS and CADD programs have become an important component in modern archaeological research, since they allow the site to be viewed as a three-dimensional plot, making comparisons of individual stratigraphic layers possible across a large site.

Archaeological sites are generally interpreted against existing cultural models and explanatory frameworks. Archaeological models are subject to change as new data are introduced and we refine our understanding of past cultural behavioral processes. Throughout the history of archaeology, theoretical frameworks related to historical particularism, cultural ecology, structural functionalism, unilinear and multilineal evolution, and cognitive archaeology have all been employed to interpret archaeological remains.

Once the archaeologist interprets the site, the results are generally written up either as a research report or other peer review publication. Since archaeology is a destructive science, the field and laboratory records along with the artifacts are often the only remaining evidence of the site. Publication and dissemination of research results to a professional and nonprofessional audience is considered an obligation of the archaeologist, since public funds are directed toward many archaeology projects. In fact, in some cultural resource management projects, a commitment to produce a research report or product revealing the results to the public is written into the project's contract.

While most excavations result in a detailed excavation report complete with details about soil strata, excavation methodology, and raw counts of artifacts, many of these reports are not widely distributed and are largely relegated to the "gray literature" used by other professional archaeologists. Popular articles written for regional journals and national science magazines are also generated as brief summaries of research results. These publications are much more appealing to the public since they are free of the technical jargon and detailed information contained in the more extensive site report.

Archaeology in the 21st Century

In the 21st century, archaeologists have and will continue to face new challenges when reconstructing the past. Included among these challenges are the involvement of Native American groups in reconstructing

their own past history, the increasing destruction of sites at the hands of human and nonhuman factors, and the increasing importance of heritage tourism in promoting the historic resources of a region.

One of the major issues facing American archaeologists in the 21st century involves the relationship between archaeologists and Native Americans over ownership of the past. At the heart of this issue is the debate over the curation of human remains and funerary objects recovered from archaeological sites. The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 has actively sought to involve Native Americans in the protection, interpretation, and curation of sacred or funerary objects. Under NAGPRA, archaeological materials from mortuary contexts are subject to return and reburial if they can be culturally affiliated with a known tribe.

Many archaeologists argue that NAGPRA is not beneficial to archaeology, stating that human remains should be preserved and studied to inform us about the effects of cultural and environmental factors on past human societies. They also argue that if these remains are turned over to Native Americans, access to these remains will be controlled by a few who may not have legitimate ownership over these objects. Native Americans argue that these remains are the descendants of ancestors who resided in North America prior to the arrival of Europeans. NAGPRA is a means of "righting" centuries of wrongful behavior levied against Native Americans following the colonization of the New World. In addition, they argue that they know everything there is to know about their past and do not need to know more through archaeology. These differences invoke spirited exchanges between anthropologists and Native Americans, often resulting in multiyear court cases over the ownership of remains.

Other activities on the part of state and federal governments have also sought to give indigenous groups a role in reconstructing their own heritage. Under the National Historic Preservation Act, acknowledgment of the significance of Traditional Cultural Places (TCPs) has given Native groups an important voice in defining the significance of cultural places and their preservation in relation to the group's cultural beliefs. The establishment of Tribal Historic Preservation Offices (THPOs) to oversee Section 106 compliance on federally funded projects has also allowed Native Americans to have input through review and comment on projects that may

affect cultural resources on reservations or within tribal territories.

Destruction of archaeological sites in the face of human and nonhuman agents will continue to plague archaeology in the 21st century. Common threats to the preservation of sites include damage by development projects, agricultural damage, and looting. The increasing rate of development in North America and Europe has resulted in the destruction of hundreds of archaeological sites at the hands of developers. The United States government enacted Section 106 of the National Historic Preservation Act to protect archaeological sites discovered on federally funded projects and on federally owned lands. This legislation requires developers and federal land managers to take into consideration the impacts of a construction project on cultural resources within the project area. In instances where archaeological sites are identified, the agency, in coordination with the developer, is responsible for either avoiding the site through project redesign or mitigating the adverse effects to the site through archaeological investigation.

Cultural resource management studies, designed to mitigate the adverse effects of these projects, have made significant contributions to our understanding of the past by increasing our knowledge about sites that may not have been considered as a result of academic projects. There are unfortunately few laws and regulations designed to protect archaeological resources encountered through state and privately funded projects. In the future, cooperation between archaeologists and developers is needed to ensure that cultural resources are protected and preserved for future generations.

Natural and cultural factors associated with daily farming activities also pose threats to archaeological site preservation. Repeated plowing often impacts and disperses cultural remains across a wide area. Deep mechanical plowing can damage delicate artifacts and



destroy intact cultural deposits that may be critical to site interpretation. As discussed below, plowing also often brings artifacts to the surface, where they are exposed to collectors eager to enhance existing collections. Other natural factors, including forest clearing and erosion, often expose buried remains, making them susceptible to looting and destruction through environmental conditions.

Destruction of archaeological sites as a result of looting and the antiquities trade continues to plague archaeology. The recovery of artifacts using metal detectors and other techniques, such as probing, result in the destruction of archaeological materials and destruction of the archaeological provenience from which the artifact was recovered. The intent of looters, to recover objects that could be resold online and in private auction houses, often results in important collections being disassembled and scattered across many different institutions, quite often with little provenience information attached.

Although many states have laws preventing the recovery of archaeological remains on state-owned land without written permission, looters often consider historic sites such as battlefields, historic farmsteads, military sites, and submerged shipwrecks as veritable treasure chests for recovering artifacts. Attempts to stop looting on these sites vary by agency and state, with enforcement being difficult when looters often

work in teams equipped with two-way radios and other gear used to signal approaching land managers. Federal and state governments have sought to prosecute looters in extreme cases; however, many looters are never caught, making careers out of destroying archaeological sites.

Recent interest in heritage tourism has helped to fuel the public's interest in archaeology. The National Trust for Historic Preservation defines heritage tourism as "traveling to experience the places, artifacts and activities that authentically represent the stories and people of the past and present." In many countries, including the United States, Canada, and Great Britain, heritage tourism is an important means of strengthening indigenous cultural identity and generating revenue to support preservation projects. Without such funding, preservation of these sites is often not possible. Venues such as St. Mary's City, Crow Canyon Archaeological Center, and Jamestown, which allow the public to visit archaeological sites and participate in excavations under the supervision of professional archaeologists, also serve to educate the public about our common cultural heritage. Only with public support can archaeologists hope to preserve the past for future generations.

— Christina B. Rieth

See also **Binford, Lewis Roberts; Carter, Howard; Dating Techniques; Dendrochronology; Excavation; Fagan, Brian M.**

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ARCHAEOLOGY AND GENDER STUDIES

Deconstructing Gender and Sex

Issues of gender presence and interrelations for the past have increasingly been focused upon in the last two decades in the English-speaking archaeological community. Conkey and Spector are widely credited with the first paper to systematically examine the application of feminist approaches and insights to archaeological practice and theory. Studies were published during the 1970s in Scandinavia, which went largely unnoticed due to the comparatively few archaeologists who understand the Nordic languages, exploring archaeological issues using an explicitly feminist perspective. In 1979, Norway hosted a workshop discussing the androcentric element in archaeological interpretation; however, the proceedings remained unpublished until 1987, when they were distributed in English. The proceedings have largely remained uncited in the literature on the history of gender archaeology, resulting in the incorrect attribution of a late date for the inception of its beginnings.

Fundamental terminology such as *theory*, *gender*, and *sex* requires working definitions, and Hill has identified four core concepts that are being used inconsistently:

1. The methods by which gender studies are incorporated into investigative frameworks
2. The inappropriate, ahistorical usage of ethnographic analogies with prehistoric data
3. An overemphasis upon one line of inquiry and verification
4. The conflation of gender studies with feminist politicking

This is a consequence of gender archaeology's failure to produce significant alternative methodological advances on issues like household organization, ideology, labor division, and production by comparison with traditional processual and postprocessual frameworks.

Hill defines theory as "a conceptual framework that provides the foundation for explanation." With no inclusive, programmatic "feminist theory" having been proposed and taken up as an investigative framework for prehistoric archaeology, a focus point

has been feminist-inspired critiques of androcentrism within archaeology. The critiques of the explicit and implicit androcentrism in existing archaeological theoretical frameworks have contributed in particular to clarifying categories of gender and sex as organizing principles.

It has been argued that gender is not genetically inherited, but a process of structuring subjectivities, whereas sex is biologically determinate and static. However, not all feminists and anthropologists concur with this strict separation. These philosophies, whereby sex is a social construct formed by discursive practices, implicate Western biological anthropology in denying that the same physical characteristics can be used in a cross-cultural capacity to characterize sexual identity. This approach of sexual fluidity has been undermined by the application of DNA analysis to skeletal remains.

Despite the conclusions drawn from molecular results, it must be recognized that the investigations were conceived and the DNA findings interpreted through a culturally mediated Western concept of biology. While a sex-gender divide remains useful, the underlying construct is a distinction between Western scientific views on anatomy and how biology and culture interact from birth through concepts of appropriate role plays, dress code, diet, and occupational activity. This can serve as a useful analytical tool, provided it is recognized the division is not rigid.

Aside from the distinction made between anatomy and the cultural conceptualization of gender, gender studies are concerned with analyzing both males and females. Fieldwork has challenged the notion of a distinct male-female dichotomy, through expanding the categories to include a third or fourth gender in some non-Western societies. Furthermore, ideology of gender is also expressed through various objects, activities, and spatial arrangements in the landscape. Gender is therefore an important social variable, which must not be directly assumed, but rather is interwoven with the social values of the society being studied.

Feminism and Gender Archaeology

Wylie has given three reasons why it has been claimed gender cannot be studied, namely, that women and gender are inaccessible in archaeological contexts, the methodology is too limited to sustain such research, and since identifying women and their activities is

inherently problematic, any reconstructions must be drawn from enigmatic data. In rejecting these objections, Wylie has stated that the sophisticated understanding of gender during the third wave of feminism made women and gender a possible object of study in archaeology. This fails to account for historical differences in the development and impact of feminism in America and Europe. While there was a concern in America with studying the sexual division of labor in historical and prehistoric contexts, gender archaeology in Europe focused more on the symbolic and cultural manifestations of gender. While this development has been attributed to the greater impact of second-wave feminism on American than European academia, Sørensen has noted that the existence of women has always been acknowledged; it is how their presence is understood that has changed.

Gender is socially constructed, with archaeological manifestations varying spatially and temporally. As the social construct of sex class and the learned behavior of being masculine or feminine, activities, behaviors, and role plays are expected of different gender groups. Feminism has highlighted the composition of archaeology's substantive body of knowledge and demonstrated how gendered research is interwoven implicitly into specific theoretical and practical constructs. It shares in common with postprocessualism the rejection of dispassionate objectivity and the separateness of subject and object, favoring nuanced approaches over categorical thinking. Spector has demonstrated how Western classificatory schemes impose foreign values, distorting the original categories and biasing interpretation.

The task of recognizing the inherent bias and developing a more gender-friendly discipline through challenging the status quo rests in integrating gender studies into mainstream archaeological practice. The dangers of adopting an androcentric approach have been highlighted through examining past and current literature on human origins, whereas a gynocentric approach can lead to extremes such as exclusive Mother Goddess interpretations for the Upper Palaeolithic and Neolithic figurines in Europe, the Near East and North Africa. Parkinson has highlighted aspects of Bushmen rights of passage portrayed in Western Cape rock art. Such examples reflect both the advantage and disadvantages of a feminist approach.

Part of the process toward recognizing that gender archaeology is not feminist archaeology is an understanding that whereas feminism is inherently political

with a focus on power relations, gender archaeology concerns social theory, which can be adapted by both feminist and nonfeminist frameworks: Gender is another tool to further analyze the structuring principles and practices of past cultures.

— Michael Brass

See also **Gender; Sex Roles; Sexuality**

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ARCHAEOLOGY, BIBLICAL

Biblical or Near Eastern archaeology reconstructs the histories and societies of the Near East from human ancestors' first migrations out of Africa 1.5 million

years ago to the end of the Ottoman Empire in 1918 CE through archaeological evidence and historical documents.

Geography and Climate

Although the archaic geographic term *Near East* has been largely replaced by *Middle East* in popular and political language, the Near East remains an operative term in archaeological research, alongside *Anatolian*, *Arabian*, *Levantine*, *Mesopotamian*, *southwest Asia*, and *Syro-Palestinian*. The geographic term Near East encompasses the modern countries of Bahrain, Cyprus, Jordan, Iran, Iraq, Israel, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates, and Yemen.

Geography and climate play important roles in shaping Near Eastern life, dictating how and where populations subsist as well as the daily and seasonal measure of time. The 6 million km area is an amalgamation of mountains, plains, rivers, coasts, and deserts that, together, create a dynamic setting for the cultural landscape. Primary mountain ranges begin in the Armenian region, with the Taurus and Pontic ranges extending westward across Anatolia while the Zagros and Elburz Ranges extend eastward into Iraq and Iran. Crossing the Straits of Hormuz, the Hajar Range makes up a large portion of modern Oman. Running along either side of the Rift Valley's extension into the Middle East is a series of mountain ranges: the Lebanon, Anti-Lebanon, and Jabal Ansariye. Along the southern portion of this series is the Hejaz Range, which extends to the tip of the Arabian Peninsula. These features separate and sometimes surround several plains and plateaus of varying shapes and sizes, including the Anatolian and Iranian Plateaus in the west and east, respectively. From north to south, the Zagros and Taurus Ranges give way to the Mesopotamian Rise, the Syrian Steppe, Upper Mesopotamia, and Lower Mesopotamia. There is a similar condition in the Arabian Peninsula: moving west to east from the Hijaz Range is the Arabian Shield, followed by a series of escarpments, plateaus, and deserts until reaching the Persian Gulf.

Access to persistent water sources places a constraint on Near Eastern society, determining the level at which communities can thrive and subsist. Major rivers such as the Nile, Tigris, and Euphrates and minor rivers such as the Orontes, Jordan, Balikh, and Khabur originate in higher elevations and travel

down to the plains, providing water for crops either through flooding or irrigation. Maritime transportation is possible on the larger bodies of water, including the Eastern Mediterranean; the Black, Caspian, and Red Seas; and the Persian Gulf.

The region's climate is characterized by extreme conditions and dictates, as does geography, the distribution of settlements and subsistence practices. The climate is a dry "continental" variant of the Mediterranean climate with wet winters and hot summers. The amount of moisture is often contingent on proximity to coastlines as well as altitude. Rainfall is higher and temperatures lower in the winter months, when colder weather patterns from Eurasia move south and east. The intensity of rainfall and the duration of the rainy season generally decrease from west to east and north to south. Annual rainfall on the Mediterranean Coastal Plain exceeds 600 mm while further south and east, the semidesert zones see 350–600 mm, and the deserts, 0–150 mm.

Disciplinary Methods

Near Eastern archaeologists have traditionally concentrated on the excavation of the region's ancient settlements that range in size from large urban centers and villages to single family homes and temporary encampments. Because natural resources in the region are limited in their distribution, people habitually reoccupied the same location, using the building materials from previously abandoned settlements to construct new settlements. This palimpsest of human occupational activities resulted in deeply stratified artificial mounds easily visible across the region's landscape and known in Arabic as *tall*, in Hebrew as *tell*, in Persian as *tal*, and in Turkish as *höyük*.

Excavation methods of ancient Near Eastern settlements vary from region to region, but almost all rely on horizontal and vertical stratigraphic relationships to understand a site's multiple occupations. Archeologists use both absolute and relative dating techniques to assign dates to architectural and cultural phases. Examples of absolute dating techniques include Carbon-14 and dendrochronology. Relative dating techniques include the seriation of artifact assemblages, especially ceramic vessels, which permit the archaeologist to date strata based on the artifacts they contain.

Landscape survey has played a critical role in the discipline since its days when the early European explorers in the region first identified ancient settlements.

Today, survey is a commonplace practice in archaeological research, not only of settlements but also the myriad features of human construction, such as roads, water wheels, dams, and hunting stations. Survey is also useful in providing relative dates for a site's occupations based on the artifacts that continuously erode from its soil.

Chronology

In charting Near Eastern cultural periods, archeologists have developed subchronologies specific to the region. A sketch of Near Eastern history follows, divided into seven parts.

Paleolithic

The earliest evidence of human occupation in the Near East dates to 1.5 million years ago during the Lower Paleolithic period at Ubeidiya where *Homo erectus* tool assemblages were excavated. Middle Paleolithic (250,000 to 45,000 years ago) settlements of Neandertals and *Homo sapiens* and Upper Paleolithic settlements of *Homo sapiens* were concentrated in caves such as Tabun and Skhul in Israel and now-extinct lakebeds. Paleolithic societies consisted of small nomadic bands depending on hunter-gather subsistence practices and stone tool technologies.

Neolithic

Toward the end of the Paleolithic and throughout the Neolithic period (c. 8,500–5,000 BCE), societies gradually adopted more sedentary lifestyles, building villages and domesticating plants and animals at sites such as Abu Hureyra, Jarmo, Jericho, and Chatal Höyük and Hajji Firuz. Midway through the Neolithic period, ceramic technology was introduced into the region. Village population grew, and along with it, disease increased in Neolithic societies.

Chalcolithic (Copper)

Toward the end of the Neolithic and the beginning of the Chalcolithic Period (c. 5000–3000 BCE), archaeological evidence for social stratification suggests the complexity of political and economic institutions increased. Important Chalcolithic settlements include Chogha Mish, Tulaylat al-Ghassul, and Hacilar.

Bronze

Urbanism, writing, and the introduction of bronze technology mark the Near Eastern Bronze Age



(c. 3000–1200 BCE). Cities such as Megiddo, Ebla, Ur, Mari, Ugarit, Hattusas, and Susa are examples of cities demonstrating monumental architecture and complex political, religious, and economic institutions. Expansive political polities with far-reaching trade networks, such as the Akkadian, Old Babylonian, Hittite, and Elamite Dynasties rise and fall during this period.

Iron

Iron is introduced alongside bronze, ushering in the Iron Age (1200–333 BCE), a period divided between independent states during the first half and vast empires such as the Assyrians, Babylonians, and Persian (Achaemenid) Empires in the second half of the period. Imperial capitals such as Nineveh, Babylon, and Persepolis, as well as smaller cities like Carchemish and Jerusalem are examples of Iron Age urban centers.

Classical

The Classical Period (333 BCE–633 CE) begins with the conquests of Alexander the Great. In the region's western half, the Hellenistic, Roman, and Byzantine Empires dominate and integrate the region with their expansive Mediterranean trade networks. Many of the hallmarks of Classical civilization, such as civic institutions, city planning, and religion are introduced at this time. Examples such as Palmyra in Syria, Petra and Jerash in Jordan, Caesarea in Israel,

and Antioch in Turkey reflect this Classical influence. In the region's eastern half, first the Parthian and later, the Sassanid Empires dominated much of modern Iran, Mesopotamia, and Eastern Turkey, with their capital at Ctesiphon on the Tigris River. Both clashed often with the Roman and Byzantine Empires, as both sides attempted to expand their borders.

Islamic

The Islamic Period begins in 633 CE with the spread of the Muslim faith across the region and ends with the Ottoman Empire's

collapse following the end of World War I in 1918. In the 7th century, the Umayyad, and later, the 'Abbasid Empires replace the weakened Byzantine and Sassanid Empires and establish their capitals, first in Damascus, and later in Baghdad and Cairo. At the end of the 11th century, the European Crusades retake Jerusalem and the Holy Land succeeded in occupying the Mediterranean coastline, leaving the Fatamids and Saljuqs divided between Egypt and Iran, respectively. With the expulsion of the Crusaders in 1291, the Mamluk Empire expanded out of Egypt to control the area formerly under European occupation and often clashed with the neighboring Timurids to the east. From 1516 until 1918, the Ottoman Empire ruled Turkey, North Africa, and the Arabian Peninsula from its capital in Istanbul and from regional capitals such as Damascus and Cairo. The Ottoman Empire declines in the 19th century and is dismantled in World War One. The 20th century sees the division of the region between French and British colonial powers, the establishment of an independent Iran and Turkey, and the eventual founding of the modern nation-states that persist today.

History of Exploration

We can divide Near Eastern archaeology's disciplinary history into five periods: Antiquarian (1500–1798 CE), Imperial (1798–1914), Colonial (1914–1948),

Nationalist (1948–present), and Scientific (1970–present). The Antiquarian period was an era of arm-chair speculation. Scholars rarely visited the region, then under the Ottoman Empire’s control, and instead relied on indirect evidence, such as the Bible and a limited number of antiquities brought to Europe. The Imperial period began with Napoleon’s 1798 campaign to Egypt, an event that the European powers interpreted as the beginning of the Ottoman Empire’s decline. In response, European countries established consulates in the region’s major cities such as Beirut, Damascus, Baghdad, and Jerusalem, and commissioned explorers to investigate the region’s ancient remains. With government as well as private funds, research centers were established to host scholars in Jerusalem, Baghdad, and Beirut. A limited number of excavations took place during the Imperial period, such as W. F. Petrie’s work at Tell el-Hesi in Palestine, E. Robinson in Jerusalem, A. H. Layard at Nineveh in Iraq, and J. de Morgan at Susa in Iran.

The defeat of the Ottoman Empire in World War I launched the Colonial period when the British and French dominated Syria, Lebanon, Iraq, Jordan, and Palestine. Largely considered a golden age by many scholars, the period between 1918 and 1948 saw an explosion of archaeological activity in the Near East. Now in full control of the region’s archaeological resources, archaeologists could organize large multi-year projects with guaranteed security and large indigenous work crews. Examples include the University of Chicago’s excavations at Megiddo in Palestine, Khorsabad in Iraq, and Persepolis in Iran; the University of Pennsylvania’s excavations at Beth Shean in Palestine and Ur in Iraq; and the Danish government’s excavations at Hama in Syria. The Colonial period also saw the development of excavation techniques. Scholars such as the American W. F. Albright and the British K. Kenyon paid greater attention to stratigraphic relationships and developed a system of ceramic seriation, where ceramic forms and styles helped assign a date to the contexts with which they were associated.

The Nationalist period commenced with the establishment of the region’s current political entities and continues to the current day. Now given complete sovereignty over the antiquities within their border, each country established government agencies that managed excavation and preservation projects. Foreign archaeologists continued their work,

although now with the permission of national governments. Departments of archaeology offering degrees in archaeology and sponsoring their own excavations became commonplace in the region’s universities. Hebrew University’s excavations at Hazor in Israel, the University of Jordan’s excavations at Tall Mazar in Jordan, and the Turkish Historical Society’s excavations at Alacahöyük are only a few examples.

Near Eastern archaeology has undergone a period of increased scientific rigor since 1970. While, in previous periods, archeologists focused on reconstructing the histories of ancient Near Eastern societies, they now seek to understand the structure and evolution of the region’s political, economic, and social institutions. Specialists concentrating on, for instance, palaeoenvironment, diet and ancient technologies are now a necessary part of an excavation’s research design. Emerging technologies such as Global Information Systems (GIS) and materials science techniques continue to push the field in new directions and increase scholars’ abilities to understand the region’s dynamic ancient societies.

Contributions to Anthropology

The contributions of Near Eastern archaeology to anthropology are multiple. The region serves as home to many of humanity’s earliest accomplishments and, because of this, anthropological inquiry has proven fruitful here. As the beginning to some of the world’s first sedentary communities, the Near East witnessed agriculture and urbanism’s first moments. Near Eastern societies were among the first to experiment with ceramic, copper, bronze, iron, and glass technologies. Sumerian, an ancient Mesopotamian language, was among the world’s first attempts to compose a systematic writing system using wedge-shaped cuneiform letters. This writing system persisted and was later transmitted to the Greeks, resulting in the invention of the Western alphabet commonly used today. The Near East is the birthplace of three world religions—Judaism, Christianity, and Islam—and the region contains many of their most sacred sites: Mecca, Medina, Jerusalem, Hebron, and Damascus.

— Benjamin W. Porter

See also **Archaeology; Carbon-14 Dating**

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ARCHAEOLOGY, ENVIRONMENTAL

With a varied and lengthy pedigree, environmental archaeology has grown in importance in recent decades. What was once seen just as a loose collection of techniques devoted to sampling past environments has developed into an important theoretical and methodological research perspective. Quite simply, environmental archaeology is the study of past human economic, political, and ritual behavior through the collection and analysis of environmental remains (for example, animal bones, soils, and botanical remains).

Historical Background

Environmental remains did not figure very prominently in the early history of modern archaeology. Researchers and antiquarians of the 18th and 19th centuries primarily focused on architectural remains and their associated material objects. Highly prized

precious metals, ceramics, and other cultural crafts were collected both systematically and quite haphazardly by various individuals, museums, and universities throughout this time period. The remains of mundane meal refuse such as fragmented animal bones and botanicals received little if any research attention and were usually discarded on the spot.

The Danish archaeologist Daniel Bruun was one of the first archaeologists on record to systematically recover animal bones from an excavation. As part of his 1896 Norse excavations in Greenland and his later work in Iceland, Bruun consistently collected the animal bones that were found as part of his research digs. Bruun believed in the possibility of having animal bones identified to species level for the purposes of simple economic and dietary reconstructions. Bruun solicited the advice and skill of Herluf Winge, the head zoologist at the Royal Zoological Museum in Copenhagen, Denmark. Winge's early cross-disciplinary work in zoology and archaeology at the beginning of the 20th century marked an early influence for modern environmental archaeology.

By the mid 20th century, archaeology both in Europe and the Americas was still largely the domain of avocationalists operating with a wide range of methods and with little interest in moving beyond artifact classification. With the writings of the English archaeologist Grahame Clark, archaeology began to interest itself in the economic and ecological aspects of past cultural systems. Clark's 1942 *Antiquity* article "Bees in Antiquity" was the official beginning of his pioneering work in environmental archaeology. From 1949 to 1951, Grahame Clark supervised the excavations of Star Carr in northeastern Yorkshire. Star Carr, with its moist, peaty conditions, revealed a wide range of faunal and botanical material that allowed Clarke the first views of early Mesolithic diet, economy, and ecology. Although Star Carr has been reevaluated more than once in the preceding years as technologies have improved, it remains as the premier example of early integrative archaeology.

Educated in the methods of Grahame Clark and influenced by the ecological theories of Julian Steward and Leslie White, the next generation of environmental archaeologists ushered in a period in which ecological theory reigned supreme. The 1960s and 1970s also witnessed a period during which university programs began to create specific environmental methodologies, such as zooarchaeology, paleoethnobotany, and geoarchaeology. With time,

the ecological approaches and the more economic perspectives were incorporated into the processual theory of Lewis Binford. Throughout the 1970s and 1980s, processual archaeologists made use of the newer specialties such as zooarchaeology and paleobotany in studying past environments and the people that inhabited them. During this period, environmental archaeology was seen more as a collection of various sampling techniques than a coherent theoretical approach.

The postprocessual critiques of the 1980s and 1990s called for a reevaluation of theories and techniques both within archaeology and cultural anthropology. Environmental archaeology has ultimately benefited from the critiques that questioned the overly deterministic systems modeling of processual archaeology. Humans are not passive actors within the social and ecological realms. Rather, humans are active participants in their environment as they create, sustain, and change their cultural adaptations. The physical environment can be seen as a record of present and past human decision making (such as in economies, our social systems, and other decisions), a record that itself is always changing. Out of this period of self-assessment emerged historical ecology. Historical ecology is credited to Carole Crumley, who saw the importance of a theoretical perspective that privileged the physical landscape as the intersection between social and ecological systems. Within historical ecology, this intersection (that is, landscape) could be studied through time as it is a historical record not only of past environment but of past human decision making as well.

Methods

Current research in environmental archaeology makes use of a wide range of techniques and specialties from the natural sciences. The three most commonly studied lines of evidence include soil science, paleobotany, and zooarchaeology. Each of these sciences offers valuable insight concerning prehistoric societies and their ecological interactions. Specialists in these areas can operate both as principal investigators with diverse research goals and technicians providing specific data for a number of ongoing projects.

Soil Science

The study of soils and sediments (pedology) is critical to the understanding of all archaeological sites. With respect to archaeological sites, the study of

soils and sediments involves gaining an understanding of the predepositional (that is, before the site was formed), depositional, and postdepositional (after the site was abandoned) environments. Soil science can provide details on the exact nature of ancient sites. For example, pedology can identify whether a site was near the edge of an ancient lake or river. It can also provide details concerning the vegetation of the immediate site area (heavily wooded) and the climate at the time the site was in use. Landscape and climatic changes can also be tracked after the site has been abandoned with the use of pedological sampling and laboratory techniques.

Soil is sampled using a variety of techniques. Bulk soil is commonly collected from excavated surfaces in liter or larger samples that then undergo chemical testing. Soil can also be collected from archaeological sites in situ in the form of profile samples taken from vertical, excavated surfaces. Profile samples allow soil researchers to study the individual strata or layers of archaeological sites and their relationships to each other. Chemical measures such as pH provide valuable information about the potential survivorship of various artifact classes. More advanced measures can help assess the degrees to which humans have modified their immediate environment (as in field fertilizing). Soil profile studies help researchers understand the duration of site occupation as well as landscape changes after abandonment.

Zooarchaeology

The study of animal remains from archaeological sites (zooarchaeology) is one of the earliest environmental archaeology specialties. Because of more widely available training, zooarchaeology is more commonly used than either pedology or paleobotany. Originally, only the more interesting animal bones were hand selected from archaeological sites for study. Modern excavation methods now include sieve strategies that ensure all excavated material is screened for small bone fragments and other materials.

In the laboratory, with the aid of comparative skeletal collections, attempts are made to identify the element (for example, femur), species, age, and sex of the animals represented in a specific archaeological site. A study of the species present can provide important information concerning the general ecology of the surrounding area, diet, and overall economy of cultural groups. Hunted animals can be taken in the immediate area of the site, or they can be transported

and/or traded over significant distances. In addition, domesticated animals were often a supplement to both hunted species and botanical foodstuffs. Using zooarchaeological techniques, researchers can often clarify these issues and add much to the general understanding of an archaeological site.

Paleobotany

When preservation allows, the recovery and analysis of plant remains can provide some of the most detailed information of all of the environmental archaeology specialties. Plant materials were not only a common source of nutrition but also helped provide shelter, storage, and clothing. In addition, the domestication of certain plants and trees is seen as one of the primary transformative events in human prehistory.

Plant materials are commonly recovered from archaeological sites as part of bulk soil samples. The soil is taken to the laboratory, and the soil undergoes a flotation process, by which plant remains are separated from other less buoyant particles. The recovered plant materials are then separated into two major size classes, macrofossils and microfossils. Macrofossils are remains that can be seen without aid of magnification, while the microfossils have to be studied with various levels of magnification. Seeds and plant fibers are examples of macrofossils. Microfossils include pollen, plant crystals (phytoliths), and fungi.

The recovery and interpretation of plant remains commonly include samples from both within and beyond the limits of the archaeological site. Samples from beyond the site limits allow for the reconstruction of prehistoric vegetation communities. Plant samples from within the site limits aid in the study of food ways and economy.

Environmental Archaeology: Case Examples

As modern computer, mapping, and excavation techniques have continued to improve within archaeology, environmental archaeology has increasingly been seen as necessary to the more complete study of sites and the complex data they contain. The methods of environmental archaeology are commonly used together whenever possible, and they provide the most complete information in these situations. Interdisciplinary research of this sort is logistically difficult and often much more expensive than traditional artifact-focused research. Often, projects of this scale are cooperative

agreements between several universities and research centers, each with their own focus.

While still not utilized in many regions of the world, environmental archaeology has a strong history in both the North Atlantic and the South Pacific. Researchers in these two areas have engaged in international, interdisciplinary projects that have demonstrated the powerful insights of environmental archaeology.

The North Atlantic (Iceland)

Iceland is developing as one of the key research areas within the North Atlantic for several universities participating in environmental archaeology. Iceland provides the rare opportunity of a clear-cut, well-dated dichotomy between prehuman landscape development and progressive human impact in near historic times. As Dave Burney has convincingly argued with reference to Madagascar, Caribbean, and Pacific cases of "human island biogeography," a key issue for all such attempts to use islands as model laboratories for investigation of global human ecodynamics is both an accurate and clearly delineated arrival date for the human actors and a detailed chronology of subsequent proposed human landscape interactions to sort out causality and allow effective scale matching in modeling. The Icelandic case has not only the usual advantages provided by a documentary record over completely prehistoric cases but also probably the best current potential for such tight cross-sample chronological control of any island on earth via the study of volcanic ash layers or tephras.

Near the close of the 8th century AD, Nordic pirates, traders, and settlers began the expansion from their Scandinavian homelands that gave the Viking Age its name and permanently changed the development and history of Northern Europe. In the North Atlantic, Viking Age settlers colonized the islands of the eastern North Atlantic (Faeroes, Shetland, Orkney, Hebrides, Man, Ireland) by circa AD 800. Iceland was traditionally settled circa AD 874, Greenland circa AD 985, and the short-lived Vinland colony survived a few years, around AD 1000, in the Newfoundland/Gulf of St. Lawrence region. Prior to the 1970s, most scholars of the Viking period were philologists, medieval archaeologists, and documentary historians, and the uneven written record for Viking depredations in Europe and the colorful and diverse saga literature of Iceland tended to dominate discussion of the period. Since the mid-1970s, research has shifted,

as multiple projects combining archaeology, ecology, and history have been carried out all across the region, producing a richer understanding of the Norse migrations and placing them in an environmental and economic context. The value of the diverse cases provided by the Norse North Atlantic (initial spread of a homogeneous population into different island ecosystems, subsequent economic and social diversification, total extinction of the Vinland and Greenland colonies) has been increasingly appreciated by environmental historians, natural scientists, and anthropological archaeologists.

Frequent volcanic tephra (ash) layers within soil profiles can be used to define isochrones, or time horizon markers. The three-dimensional reconstructions that can be created by mapping a series of tephra layers allow detailed data on spatial patterns. Each tephra layer marks a land surface at a "moment in time," and multiple tephra layers constrain the passage of time and define the rate at which change has happened across a landscape. Tephra can be used to correlate precisely between cultural deposits in middens, archaeological structures, and distant landscape elements such as boundary walls, geomorphic features, and paleoecological sample sites. Furthermore, as tephra are formed within hours or days, the distribution of any one tephra through soil or in contexts that are not contemporaneous with the initial eruption can be used to identify the pathways taken by sediment through the environment, including temporary sediment stores, reworking of sediments, and movements of sediments within profiles. Tephra (in many areas falling at least once a decade) provide isochrones covering hundreds of square kilometers but require expert long-term study for effective geochemical characterization and conclusive identification. While radiocarbon dates are regularly employed in combination with tephra (and with artifact analyses provide independent dating that has generally supported the tephra chronology), Icelandic tephrochronologies are a key integrative resource for fieldworkers.

Iceland's documentary record (sagas, law codes, annals) provides rich evidence for a socially complex nonstate society that has been employed by historians and anthropologists for studies of Iceland and the development of general theories of chieftainship. Medieval and early-modern documentary sources require critical handling but provide a rich record of landholding patterns, legal codes, stock raising, demography, conflict and competition, and invaluable

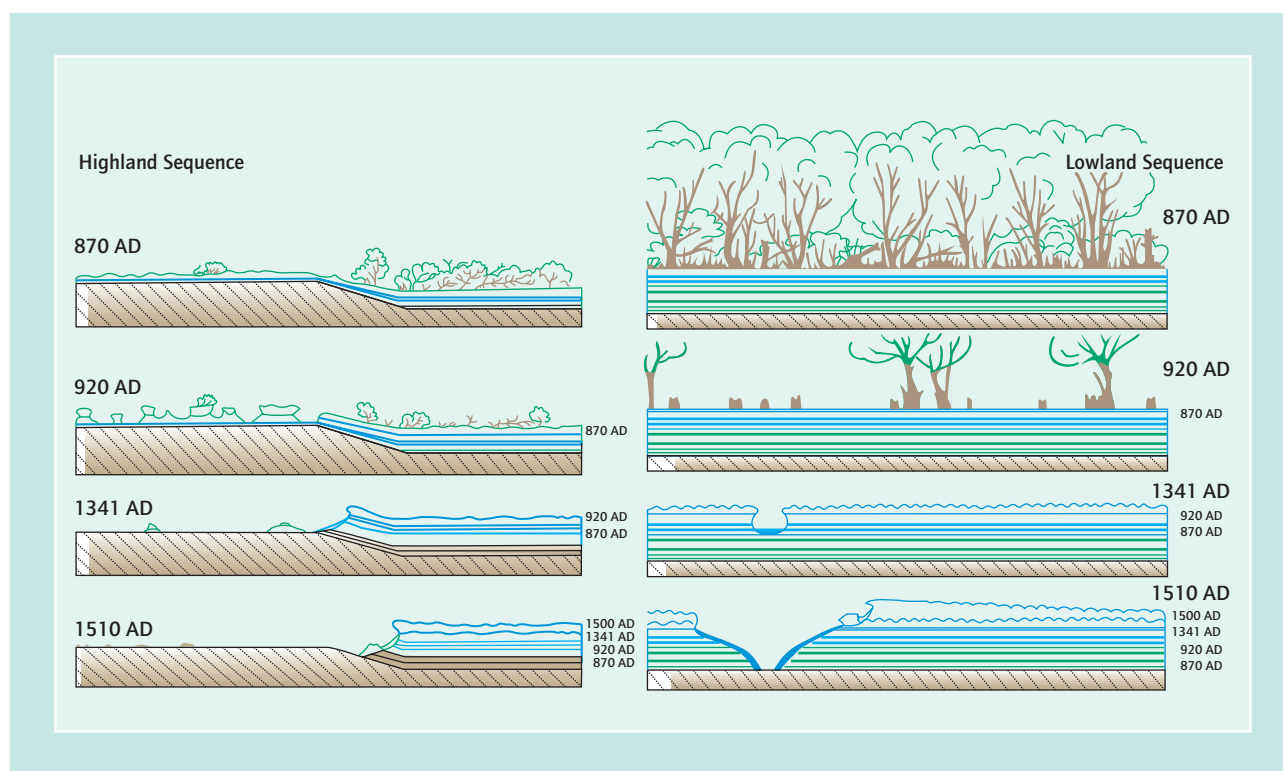
access to internal worldview. Later records produced after the transition to statehood in AD 1264 have provided the basis for historical climatology documenting the impacts of sea ice and early medieval climate fluctuations. A particularly detailed farm-by-farm stock and census record (1703–1712) provides an invaluable synchronic picture of the early 18th century and has been used as a baseline for regional landscape analyses. Icelandic soils, forestry, and agricultural scientists have actively participated in these historical land use projects, and their further collaboration is being aided by special American and Icelandic research agreements.

Since the early 1980s, genuinely interdisciplinary field research by Icelandic, United States, and United Kingdom scholars has provided a mass of new ecological and archaeological data, covering most portions of the country but with special focus on the South and the North. In zooarchaeology, known animal bone collections increased from 4 to over 65, including massive 50,000 to 100,000 identifiable fragment samples spanning the period from first settlement down to the later 19th century. The formation of the FSI (Institute of Archaeology Iceland) in 1995 by a group of Icelandic scholars has further stimulated survey and excavation work and direct cooperation.

Iceland was first settled during the Viking Age, and human impact on local animal, vegetation, soils, and drainage patterns was rapid and profound. By AD 950, 80% of the native woodlands had been cleared, and soil erosion had begun in higher elevations. By the Middle Ages, this loss of ground cover led to more widespread erosion of approximately 40% of the topsoil present before human settlement (see Figure 1). Iceland thus represents an extreme case of preindustrial human impact on the environment increasingly well documented by archaeology, history, and natural science. How the early Icelandic political economy interacted with and was shaped by the natural environment is of considerable relevance to modern societies in the developed and developing world subject to some of the same interactions of economy and landscape, with some of the same long-term results for genuinely sustainable development.

The Pacific (Hawaii)

Although still not fully understood, successive migrations out of Southeast Asia into the Pacific islands fueled the development of a Polynesian culture. By the first half of the second millennium AD,



Human-Induced Land Degradation Profiles From Iceland (AD 870–1510)

Polynesian voyagers had made their way to the Hawaiian archipelago, which had until then been free of human habitation. The Hawaiian Islands are fertile, high islands, and they were ideal for the intensive agricultural methods utilized by Polynesians settlers. Until recently, it was widely accepted that Hawaii's "pristine" presettlement environment was little affected by the Polynesians. Multinational, interdisciplinary research throughout the Pacific has begun to reveal a more complex history of human/environmental interaction. The Hawaiian Islands are among the most intensively studied in this respect as paleobotany, soil science, and zooarchaeology continue to shed new light on the environmental effects of both the Polynesian and later European settlement.

Modern environmentally focused research in Hawaii is first credited to Roger Green and his introduction of the "settlement pattern" approach in the 1960s. The "settlement" approach was primarily concerned with how the first human settlers adapted to specific island habitats. However, after the excavation of the limestone sinkholes at Barber's Point, Oahu, researchers began to question the idea of Polynesians adapting to a static and unchanging environment.

Barber's Point revealed evidence of bird and snail extinctions immediately after the arrival of the first settlers. While the bird remains were evidence of predation, the extinct snails represented changes in the general ecology of the island. In the early 1980s, Patrick Kirch and a team of environmental specialists began a comprehensive research program to fully investigate the ecological impact of Polynesian settlement. Using historical records, pollen, soil, and faunal samples, researchers working in Hawaii have been able to detail the progression of human/environmental interactions since Polynesian settlement.

Accounts from early Hawaiian missionaries and travelers made note of the fern and grasslands throughout the lowland regions of the islands. Pollen diagrams taken from lowland swamp areas of Oahu indicate presettlement vegetation characterized by various palm species, including *Pritchardia*, which is now quite rare. Pollen diagrams showing declines in *Pritchardia* and other now rare lowland shrubs began by AD 800 and advanced thereafter. Researchers suspect that palm forests were cleared to make space for agricultural purposes. These areas never regained their presettlement forest cover, but remained the domain of grasses,

shrubs, and ferns. Additional botanical analyses of charcoal from archaeological sites in Hawaii indicate the initial burning of many dry-land tree species that are now much less represented in the landscape.

The study of various land snail species (terrestrial gastropods) has also helped reveal the changing ecology of early Polynesian Hawaii. Terrestrial gastropods were able to naturally colonize the Hawaiian Islands before human arrival and were represented by over 800 species. These small snails were of little economic importance to early Hawaiians, but their adaptation to very specific ecological habitats make them ideal for recreating the immediate environment of archaeological site areas and their transformation over time. A common gastropod sequence for Hawaiian sites shows closed-canopy forest-adapted snails being replaced with more open-area species.

Zooarchaeology within Hawaiian research has also shown the rather dramatic impact of Polynesian settlement on native bird life. To date, 55 species of birds are known to be native to the Hawaiian archipelago. According to archaeological research, 35 of these species were exterminated between early Polynesian settlement and the first arrival of Europeans. This list of now extinct birds includes flightless geese, a hawk and eagle, as well as several rail species. Researchers believe that the reasons for these bird extinctions are multiple and often intertwined. Many of the bird species were used as food as well as a source of decorative feathers. Polynesian-introduced animals (dog, pig, and rat) were also responsible for the destruction of many bird habitats. Further habitat destruction on the part of Polynesian farmers led to the demise of still other bird species.

Geological and soil research in the Hawaiian Islands has been able to show the tandem effect of a growing population and its increasing demands on the agricultural production of an island environment. From an estimated settlement population of hundreds in the first half of the second millennium AD, Hawaii's estimated population had bloomed to several hundred thousand by the time of European contact in 1778. The demand for more agricultural area is reflected in a general archaeological pattern seen throughout the Pacific. During the initial settlement period, deforestation is prominent as land is cleared for farming and building materials. Due to excessive ground cover removal, highland areas begin to erode. This erosion and associated deposition in lowland valleys is noted in soil profiles throughout Hawaii.

Human Ecology, Past, Present, and Future

The bounded ecosystems of island archipelagos like Hawaii and Iceland provide ideal research laboratories for studying the complex multifaceted interactions of humans and their environment. The interactions between prehistoric political economic systems and the natural environment in which they are intricately imbedded are not fully understood. What has become clear in recent decades is the importance of interdisciplinary research drawing from wide areas of expertise. Individually, researchers cannot fully explore or understand the complex dynamics of human decisions regarding the natural environment in which we all live. With such issues as climate change and global warming receiving more and more attention in recent years, the call for a more thorough understanding of human/environmental dynamics has increased within the United States and Europe. Environmental archaeology provides an anthropologically informed understanding of human ecology with a time depth not available to other perspectives. A well-understood past is important to any discussion of present and future human/environmental conditions.

— Clayton M. Tinsley

See also **Anthropology, Economic; Ecology and Anthropology; Paleoecology; Political Economy; Vikings; Zooarchaeology**

Further Readings

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ARCHAEOLOGY, MARITIME

Maritime archaeology is a subdiscipline of archaeology dedicated to examining prehistoric and historic sites related to aquatic environments. This can include shipwreck sites in an ocean, coastal ports, underwater archaeological remains, or any submerged land structures. The terms used to describe this field of study usually refer to the location of the sites, although shipwrecks found out of water may still be classified as maritime or nautical in nature.

Maritime archaeological sites differ from those found on land in several ways. One is that sites on land tend to include a complex series of occupation by humans over a long span of time, as well as a record of natural occurrences during or between periods of human settlement. This requires that the archaeologist carefully recover the remains within each layer of earth and determine how they are related. On the other hand, underwater sites such as shipwrecks basically represent a brief moment in time. They contain lots of objects that were on board when the ship sank and will usually include those things of everyday use such as dishes and utensils and not necessarily treasure, as typically thought by most people.

When researching underwater or coastal sites, maritime archaeologists are particularly interested in answering questions related to how humans adapted to aquatic environments, where seafaring developed in different parts of the world, methods for shipbuilding, and navigational techniques. For example, where and when were the earliest boats built and what methods were employed in their construction? How have coastlines served as physical or social boundaries and in what ways have they facilitated human expansion, population growth, and the rise of social complexity? How did maritime adaptations develop in different parts of the world and what kinds of watercraft were built as a result?

The field of maritime archaeology is a relatively new discipline. In the mid-20th century, historians and archaeologists who worked in marine (ocean), lacustrine (lake), riverine (river), estuarine (estuary), and other aquatic ecosystems felt the need to better focus their research and move away from the paradigms constructed and used in terrestrial environments. Early work in maritime archaeology often involved locating and recording underwater shipwrecks, but today we would consider the methods

used to investigate and preserve these sites to be quite primitive. As a result, some professional archaeologists initially argued that these expeditions were no more than treasure hunts that did little to advance our understanding of history or archaeology.

The field has advanced beyond this stage and has now incorporated a slew of advanced techniques, such as Global Positioning Systems (GPS), Geographic Information Systems (GIS), Side-Scan Sonars, and Echo Sounders to locate and record shipwrecks and other underwater features. Although similar methods and tools may be used for surveying and excavating both submerged and terrestrial sites, the use of these underwater requires special modification to existing equipment (such as waterproof casings for cameras) and trained divers skilled in archaeological techniques.

Although maritime archaeologists can use a plethora of new technologies to learn about shipwrecks, not everyone agrees that shipwreck sites should be excavated unless the objects found can be properly preserved and undergo conservation. Some argue that important information will surely be lost or taken by looters unless it is recovered quickly and recorded. True treasure hunters have countered that many sites would never be found without their initiative and expertise and that archaeologists are trying to take away their livelihood.

Archaeologists are interested in aquatic environments because they are particularly rich in resources such as mollusks, pinnipeds (such as seals), cetaceans (whales), sea mammals, fish, crustaceans, birds, amphibians, and other animals. As a result, they are habitats that would have been extremely attractive to humans over time and stimulated human groups to exploit and travel on them using watercraft. Coastlines are also quite susceptible to the effects of global and regional shifts in climate, sea level changes, and natural catastrophes. How human beings responded to these changes can tell maritime archaeologists how quickly our species rebounded from such events, the behaviors that resulted from the alteration of these environments (did we continue to live on landscapes that were previously devastated?), and how we developed new technologies to accommodate these changes.

As maritime archaeology has grown from a relatively obscure field of study to one highly specialized and technologically advanced, our understanding of human-water relationships has been greatly illuminated. Archaeologists are no longer interested only in excavating sites and conducting pure research; they

are concerned with protecting and preserving those sites. We have learned investigative techniques that are less intrusive or destructive to the archaeological record. In recent years, many countries have passed laws declaring these sites public monuments and thus protecting them from looting and desecration.

Due to the rise in popularity of this field, many institutions now offer courses and degrees in maritime archaeology. The number of museums that house objects from shipwrecks and other maritime-related archaeological sites has grown significantly and added to the human fascination with and adaptation to aquatic environments.

— Scott M. Fitzpatrick

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ARCHAEOLOGY, MEDIEVAL

Defining Medieval Archaeology

The European Middle Ages or Medieval period begins with the collapse of the Western Roman Empire in the 5th century CE and ends with the European voyages of discovery in the 15th century CE. The millennium-long era starts with the Migration period (ca. 400–600 CE), sometimes known as the “Dark Ages” due to the paucity of written historical sources from this time. During the Migration period, barbarian Germanic tribes overran much of the Western Roman Empire. Roman towns and cities declined, and many Roman industries, such as the pottery industry in Britain, ceased to function. Roman imperial rule was replaced by a series of smaller successor kingdoms. These early successor kingdoms should probably be viewed as chiefdoms rather than small states. Outside the former Western Roman Empire, in regions such as Poland and Scandinavia, an Iron Age way of life continued until about 800 CE. Beginning around the 8th century CE, many regions of medieval Europe

underwent substantial social, political, and economic transformations. Both local and long-distance trade networks expanded; new towns and cities were established; and by about 1000 CE, early states were founded in many parts of northern Europe. The study of these processes is of particular interest to anthropologists, since they parallel the processes by which complex societies developed in other parts of the Eastern and Western Hemispheres.

The History of Medieval Archaeology

Unlike European prehistory, whose roots can be traced back to the early antiquarians of the 17th and 18th centuries, the modern discipline of European medieval archaeology did not develop until the years immediately following World War II. Many European cities, including London, England, and Cologne, Germany, are built on medieval foundations. The destruction caused by bombing during the Second World War made it possible to explore the medieval cores of many modern cities for the first time.

Medieval archaeology in Europe developed from two very distinct and different scholarly traditions. Early medieval archaeologists who worked on the Migration period and other early medieval sites were generally trained as prehistorians. Since written records for the early Middle Ages are often quite limited, Dark Age archaeologists rely almost exclusively on the analysis of material remains, such as artifacts, ecofacts, and features, to reconstruct the lifeways and culture history of the early medieval inhabitants of Europe. For example, the early medieval (ca. 420–650 CE) village of West Stow in eastern England was discovered by a local archaeologist in 1940. The site does not appear in any historical records. Large-scale excavations, which were carried out at the site by Stanley West between 1965 and 1972, were designed to reconstruct the settlement patterns, subsistence practices, and day-to-day lives of the early post-Roman inhabitants of southeastern Britain. Spatial analysis of the houses, outbuildings, ditches, and pits was used to reconstruct the settlement pattern of the village, and studies of the agricultural and animal husbandry practices carried out there were based on detailed analyses of the floral and faunal remains. The methods and techniques used in the excavation and analysis of the West Stow village were those of European prehistory.

By contrast, the early archaeologists who worked in the later Middle Ages were often trained as historians

or art historians. In the 1950s and 1960s, archaeologists working in the later Middle Ages sought to use archaeological data to answer what were essentially historical questions. For example, the initial studies of deserted medieval villages (DMVs) tried to determine whether these villages were depopulated as a result of the Black Death (bubonic plague) in the 14th century or whether their desertion was the result of other late medieval economic and agricultural changes. These questions led Maurice Beresford, an economic historian, to begin excavation of the deserted medieval village of Wharram Percy in northern England. Excavations at the site were conducted over a period of 40 years, and the goals of the project changed through time. Today, studies of DMVs, including Wharram Percy, have moved beyond their historical origins. Studies of deserted medieval villages have examined the evolution of the medieval village landscape through time, drawing on archaeological, historical, and ecological data.

Modern medieval archaeologists try to integrate both historical and archaeological methods to address multidisciplinary questions of urban origins, state formation, and the transformation of the agrarian landscape through time. However, the position of medieval archaeology in the academy reflects its historical roots. Only a few European universities have stand-alone programs in medieval archaeology. In Europe, most medieval archaeologists are attached either to departments of history or to archaeology programs. A similar situation exists in North America. Medieval archaeologists, especially those working in the Migration period and the early Middle Ages, are generally attached to archaeology faculties within anthropology departments. However, some North American medieval archaeologists can also be found in departments of history and art history.

Medieval Archaeology Today

Medieval archaeologists are playing an increasingly important role in modern anthropology. Anthropologically trained archaeologists recognize that the rich archaeological and historical records from the European Middle Ages can be used to address important questions about the processes of cultural change. Large-scale, long-term excavation projects conducted in a number of European cities have traced the origins and growth of urbanism in the European Middle Ages. The 1961 to 1971 excavations at Winchester in

southern England paved the way for many other urban excavation projects. Working with volunteer excavators from British and American universities, Martin Biddle, the director of the Winchester Excavations, explored the history of the city from pre-Roman to postmedieval times. Until the 1960s, scholars thought that modern Winchester retained a Roman street plan. Biddle and his colleagues were able to use archaeological data from a number of sites throughout the town to demonstrate conclusively that Winchester was replanned in the late 9th century in response to the Viking control of much of eastern England. Similar 9th- and 10th-century planned towns have since been identified from other parts of southern Britain. This systematic town planning can be related to the political consolidation of the Anglo-Saxon state under King Alfred the Great.

Since the beginnings of the Winchester project, major excavation projects have been carried out at a number of other important medieval cities throughout northern Europe. Excavations at Novgorod in Russia have revealed a corpus of previously unknown documents written on birchbark, as well as many musical instruments and other examples of fine woodworking. The documents contribute to our understanding of the linguistic history of the Slavic languages, and the instruments shed new light on craft specialization in medieval Russia. Excavations at Trondheim in Norway and Lübeck in eastern Germany have provided new information on the day-to-day lives of the inhabitants of medieval cities, as well as shedding light on the roles played by trade, craft specialization, and political consolidation in the growth of medieval towns and cities. Archaeologists working at sites such as Ipswich, in England, and Dorstad, in the Netherlands, have also examined the role that long-distance and regional trade may have played in the reestablishment of towns in northern Europe between 750 and 1050 CE. Ipswich and Dorstad were two of a number of emporia or trading towns along the North Sea and the Baltic that served as centers of both manufacturing and trade in the time of Charlemagne.

Long-term survey and excavation projects have also examined the process of state formation in many parts of northern Europe. Archaeological and historical data indicate that beginning in the 8th century CE, early Danish kings began to accumulate a social surplus through tax collection. These early kings minted coins and used their accumulated wealth to support the construction of large public works

projects, such as the massive earthwork known as the Danevirke that served as a boundary between Denmark and Germany. Through a comprehensive project of archaeological survey and selected excavations, Tina Thurston of Binghamton University is currently examining the techniques used by the nascent Danish state to incorporate the region of Thy in northern Jutland. Similar projects have been carried out in Scotland and Poland.

One of the most interesting areas of contemporary archaeological research is the study of the Viking colonization of the North Atlantic, beginning about 800 CE. Major excavation projects in York, England, and Dublin, Ireland have uncovered the towns that were established by the Vikings in the British Isles. While the town of Dublin was established by the Vikings, York was a Roman and Anglo-Saxon town that fell to the Viking army in 866 CE. Long-term excavations at the site of Coppergate in York have shown that York's Viking inhabitants were engaged in a number of crafts including woodworking, metalsmithing, and textile production. Detailed environmental studies have also shed light on diet and disease in Viking York. The results of these excavations are presented to the public at the Yorvik Viking Center, which uses archaeological information to re-create York's Viking past.

Archaeologists have also studied the Viking colonization of Iceland and Greenland. Before the 1970s, research on the Viking colonization of these islands was based primarily on the study of the sagas, a series of documents that were written in the mid-12th century and later, long after the initial Viking settlement of Iceland around 874 CE and Greenland about 975 CE. Archaeological research has identified many early sites in Iceland. These sites are located along the north and south coasts of the island, as well as in the northern interior of Iceland. These initial settlements led to massive deforestation in Iceland, as woodlands were cleared for animal pastures and for firewood. In many regions of Iceland, the deforestation was followed by substantial soil erosion, rendering many parts of the interior unsuitable for animal husbandry and agriculture.

Archaeological survey and excavation in Greenland have shown that two Viking settlements were established in the late 10th century CE, a larger eastern settlement and a smaller western settlement. Norse settlers in Greenland combined animal husbandry based on herding cattle, sheep, and goats with seal and caribou hunting. The Norse in Greenland were

unable to grow grain, and they relied on trade with Europe for both staples and luxury goods. The Norse settlements in Greenland were ultimately unsuccessful; the smaller, western settlement appears to have been abandoned by 1350 CE, and the eastern settlement failed by the middle of the 15th century. These studies are important because they reveal the limits of the northern European patterns of animal husbandry and agriculture. Farming practices that were established in northern Europe for millennia proved unsustainable in the more fragile, arctic environments of Iceland and Greenland. This research shows how archaeological and environmental data can be combined to provide a well-rounded picture of medieval settlement and subsistence.

— Pam J. Crabtree

See also **Vikings**

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ARCHAEOLOGY, SALVAGE

Salvage (or compliance) archaeology is performed in response to local, state, and federal historic preservation mandates. Compliance archaeology ensures that cultural resources that are likely to be impacted by construction are properly managed through documentation and excavation before they are destroyed.

Over half of the archaeologists working in the United States today are employed in salvage archaeology. Compliance projects comprise a growing segment of archaeological research, with millions of dollars allotted to projects annually.

Salvage Archaeology in the United States

In the United States, archaeological salvage projects are completed in response to a variety of state and federal laws, including the National Historic Preservation Act (NHPA), National Environmental Policy Act (NEPA), and the Archaeological Resources Protection Act (ARPA). The NHPA is the most important of these laws and establishes a State Historic Preservation Office (SHPO) and officer in each state. The State Historic Preservation officer is responsible for overseeing implementation of the NHPA within that particular state. NHPA also establishes guidelines requiring that state and federal agencies take into account the effect of any undertaking on any archaeological site, building, or property that is within or is eligible for the National Register of Historic Places.

Salvage archaeology has traditionally received involvement from state and federal land managers, highway departments, the Army Corps of Engineers, and SHPOs. Some Native American groups have also become involved in salvage archaeology through the establishment of Tribal Historic Preservation Offices (THPO). Each THPO has a preservation officer who oversees NHPA compliance activities within that tribe's aboriginal territory. The Tribal Historic Preservation Officer usually oversees salvage projects completed on Native American reservations with limited involvement from the State Historic Preservation Officer.

Types of Salvage Projects

There are three types of salvage projects. Phase I (or reconnaissance) surveys are the initial stage and are designed to locate sites within a particular project area. These types of surveys are often completed in two parts. The first part (or Phase IA) involves gathering background information about the project area. Background information is gathered from a variety of sources, including state site files, historic maps, photographs, topographic and soil maps, and oral histories. The second part (often known as Phase IB) involves the identification of archaeological sites through surface survey and subsurface testing.

Subsurface testing often involves the excavation of small shovel tests across the project area to determine whether cultural deposits are located within the project limits. If a site is located and appears to possess much of its original integrity, a Phase II excavation may be recommended.

Phase II (or site examinations) excavations are designed to determine whether the site meets the criteria for eligibility on the National Register of Historic Places. During Phase II excavations, larger square test units and trenches are typically excavated to determine the horizontal and vertical boundaries of the site and assess its chronology. Analyses at the Phase II level are more detailed than those at the Phase I level and include not only an assessment of what was found but also how the resource fits within the local history of the project area.

At the end of a Phase II excavation, a recommendation is made concerning the site's eligibility for the National Register of Historic Places. To be eligible for the National Register, a site must possess one or more of the following characteristics: (a) association with the events that have made a significant contribution to the broad patterns of our history, (b) association with the lives of persons significant to our past, (c) embody the distinctive characteristics of a type, period, or method of construction, or (d) have yielded, or may be likely to yield, information important in prehistory or history.

If a site is determined to be eligible for the National Register and cannot be avoided during construction, a Phase III excavation is initiated. Phase III (or data recovery) excavations are designed to mitigate (or salvage) cultural materials and features within the project area before they are destroyed by construction. Phase III excavations are usually initiated through the preparation of a data recovery plan. A data recovery plan outlines the steps that will be taken to excavate the site, what research questions will be addressed during the excavation, and what types of analyses will be undertaken.

Like Phase II excavations, Phase III excavations are usually accomplished through the excavation of large test units and trenches as well as through archaeological monitoring. These excavations often produce large quantities of artifacts and data that are synthesized to form the basis for the site's interpretation. Unlike Phase I and II excavations, Phase III excavations often have a public outreach component and require that information about the excavation be

disseminated to the public through oral presentations, peer review articles, site tours, Web sites, and/or public displays.

Once a salvage project is completed, the artifacts, field records, and reports generated by the project are processed for curation. The curation, or long-term storage of artifacts, is an important step in any salvage project. The curation of artifacts not only ensures that they are cared for indefinitely, but proper curation allows them to be used by future researchers.

Curation facilities occur in both local and regional settings and may include local historical societies, museums, state and county repositories, and university centers. Curation facilities housing federal collections are required to abide by more stringent rules than those with nonfederal collections. Repositories with federal collections are required to maintain long-term cataloging and conservation systems that meet standard museum and archival practices. In addition, facilities housing federal collections need to keep main collections storage areas that meet local building, safety, health, and fire codes. Failure to comply with these regulations can put important collections in jeopardy causing the data contained within them to be lost to future generations.

— Christina B. Rieth

See also **Excavation**

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ARCHITECTURAL ANTHROPOLOGY

The built environment in which we live as humans is an important matter. The architectural landscape deeply structures our lives. On the other hand, architecture, as

it is produced today in our urbanized environments, is based on too restricted knowledge. Postmodern “theory of architecture” is determined by the conventional history of art. Its narrow concept of aesthetic values prevents scientific research and reasoning by judgments of subjective taste. The wider human condition is not integrated. Humanity appears only marginally as user and is represented by standardized functional needs. Consequently, architectural anthropology maintains that theoretical horizons have to be widened. The term *architecture* is defined in new ways by integrating it into anthropological dimensions, including primatological and paleanthropological considerations. Thus the term *architecture* implies: all what humans and their biological relatives built and build.

In the late 1960s, modern architecture was maneuvered into a crisis. Using the dynamite destruction of a modern habitat district (Pruitt-Igoe) as key incident, Charles Jencks declared the “Death of Modernism” and proposed a new era of “Postmodernism.” Pruitt-Igoe had won an architectural award before but had finally ended up as a slum. However, Jencks’s declaration was felt as a regress into the 19th century’s history of styles by many young architects. The post-modern architectural theory, based on written history related to architecture (e.g., Vitruvianism) now imposed by art historians, was critically questioned as a historicism inadequate for the “anthropological depth” of architecture. The origins of architecture cannot be found in ancient texts.

In the same period, a considerable interest developed for the achievements of traditional “architecture without architects” as proposed by Bernard Rudofsky. Vernacular architecture now was perceived by many as a new domain of research. Books published by Paul Oliver and others made it evident that ethnology had neglected this field considerably. Particularly architects became active in this direction of research. A worldwide movement emerged with numerous international associations that focused on the study of traditional environments (IASTE, University of California, Berkeley). The most important result of these efforts can be seen in the *Encyclopaedia of Vernacular Architecture of the World* edited by Paul Oliver. It is a three-volumed oeuvre in folio size, with about 2,000 contributors worldwide. The basic goal was to globally document traditional architecture and to classify it according to anthropological criteria. The encyclopaedia is a milestone in global house



research. It shows the great variety of house forms in various cultures of the world. It documents traditional aesthetics and the very special structural conditions of related ways of life and social orders often still felt as exotic today.

However, theoretically, the *Encyclopaedia* is not without problems. It rests largely on the level of an anthropology of the house and uses its patterns of explanation from disciplinary anthropology without being conscious of the Eurocentric origins of these interpretations. Many characteristics of house traditions cannot be explained in this framework.

Furthermore, something very important becomes clear if, in regard to materials used, we concentrate our interest on the traditional or ethnological domain of architecture. Besides durable materials, we also find materials of limited durability like wood or even very ephemeral fibrous materials. Evidently, they have the advantage that they can be easily worked merely

by the hand. The hand as the primary tool? Binding, weaving, and so on can be seen as very ancient techniques technologically or anthropologically. We find many types of roofs, walls and floors, mats for sleeping, and so on. Furthermore, there are containers, means of transportation, and cages for animals and the like. All these are important products of this fibrous type.

In the framework of history and prehistory of architecture, such ephemeral equipments are absent. Time has destroyed them. We must either put aside our intentions or change our methods. In the latter case, material culture has to be defined anthropologically. The Viennese school of ethnology, and in particular Karl R. Wernhart, has developed a new method called “structural history” or “ethno-prehistory,” which can be used for questioning the historicism separating the three temporally different disciplines in regard to material culture. Did fibrous materials and fibroconstructive

processes play an important role in prehistory? Was the evolution of culture closely related to objects that were not durable? Were such objects representative for systems of ontologically high values? Such questions can be taken as a good reason to hypothetically introduce a new period into the periodic system of prehistory: (prelithic) fibroconstructive industries. We will have to support this hypothesis more clearly below.

There is a further important point. Architectural anthropology is closely related to Otto F. Bollnow's anthropology of space. In his book *Man and Space*, Bollnow maintained that, in contrast to the homogeneous concept of universal space, essentially a discovery of the 14th century, cultural, or human, space is closely related to the evolution of human dwelling and settlement. This implies, first, that human space perception and space conception originally were formed in small, local settlement units, in which architecture provided the semantic systems for spatial organization. Second, we have to assume a long extension process of spatial perception and conception. In addition, tectonic elements imply vertical and horizontal axial systems (e.g., "access-place scheme" or "vertical polarity scheme"). In the framework of a new "habitat anthropology," we gain new and objective instruments for the reconstruction of basic spatiocultural patterns with often surprising continuities.

These prerequisites allow a new view on the anthropologically defined concept of architecture. It works with five classes: subhuman, semantic, domestic, sedentary, and urban/imperial architecture. These five classes are relatively independent fields of research. Combined with the results of conventional physical and cultural anthropology, they can be taken as a new field of stimulating discussions. This shall be outlined in the following.

Subhuman Architecture

In their book *The Great Apes*, the American primatologist couple Robert W. and Ada W. Yerkes for the first time had systematically collected and studied observations focused on the nest-building behavior of the pongids. They considered nest building as a daily practiced and routinized constructive behavior that produced definitive alterations of the natural conditions of the environment. And they postulated

pongid nest building as the beginning of an "evolution of constructivity."

The work of the Yerkeses was of great influence on the following pongid research. Numerous primatologists, who studied animals in their natural environment, contributed important observations regarding nest-building behavior. Today we have a fairly good view of the enormous protocultural significance of the nest. Particularly women like Jane Goodall, Biruté Galdikas, and Dian Fossey contributed important studies due to their unprejudiced spontaneity and capacity of observation.

However, theories of hominization in general today are dominated by tool-using and tool-making behavior. In a recent book of McGrew, it even circulates as "culture." It is supported mainly by observations of the use of stones for nut cracking or the use of defoliated twigs for ant fishing. However, in the natural environment, these types of tool use are rarely observed. They are not part of a daily routine. But why the tool use dominates is clear. It is considered to be supported by the archaeologically established line of tools.

If, on the other hand, the suggestion of the Yerkeses is taken seriously and the protocultural artifact character of the nest is emphasized, nest-building behavior is much more convincing as protocultural activity.

- It is intimately connected to the life of the pongids. Infants spend about 4 years in the nest of their mother until they can build their own nest. Nest building is learned. The young play with nests. The completed nest produces identification of the producer with his artifact. The nest is also used in case of sickness and imminent death.
- Nest building is a daily routine. Quantitatively too, nests are overwhelming. During its life an individual builds a virtual tower of about a height of 11 times the height of the Eiffel Tower in Paris.
- Construction implies specific physical conditions characteristic for humans: extensive rotation of arms, precision grip, and precise stereoscopic view while controlling constructive processes.
- It has important protocultural characteristics. It requests judgment of constructive conditions, static quality, and so on.
- One can even speak of the psychology of the nest: several observers noted animals expressing coziness when in their nests.

- Night camps are an eminently social arrangement. Furthermore, the night camp of a group shows a strategic organization with a secured inside and a controlled outside, which is spatially not much different from the principles of a human apartment.

Most important is the differentiation of tree and ground nests. Whether tree or ground nests are built depends on various factors. Weight and age of the individuals are important, but also environmental conditions play a decisive role. Tree nests gain their stability from the structural condition of the tree top in which they are built. Ground nests are usually made with rooted plant materials—bamboo stalks in a bamboo grove, for instance. Roots act as natural foundations. On a height of 3 to 4 meters, the stalks are bent, broken, and knotted into stable triangles, thus forming a perfectly stable type of tower. On its top, the nest proper is made with thin and thoroughly interwoven twigs to form a smooth upholstery. Finally, the often heavy animals climb up, position themselves with their body into the central depression of the nest, and spend the night sleeping.

Evidently, the ground nest is a full-fledged work of architecture. But the ground nest is not only a primordial type of architecture. With its material and technical conditions, it provides the ideal environmental setting to plausibly explain another important subject of hominization: the erection of the body and the permanent bipedal locomotion of humans. It is generally assumed that, due to climatic changes in a temporal period between 16 and 11 million years ago, tropical rain forests increasingly vanished and were replaced by open savannahs and this process influenced hominization. Evidently, the loose vegetation at the edge of savannahs is the ideal environment in which this type of tectonic ground nest could be built. Produced routinely by groups, the night camp must also have been of advantage selectively in regard to securely passing the night, also protected in view of nocturnal predators.

But this complex system of constructing behavior and its intimate relations with the life of pongids raises a further complex of questions related to processes of hominization: What were the factors of brain development? What was the main cause for the increase of brain size? Was it language, was it tool behavior, was it due to social interactions? From the position of architectural anthropology, these parameters—seen also in mutual connection—are not apt to explain the

considerable increase of brain size of about 300% between *Homo habilis* and *Homo sapiens sapiens*. Particularly the tool behavior as it is described today with its monotonous processes cannot explain the expansion of the brain.

If, on the other hand, the routined nest building is put into the foreground, the use of early tools as cutters for fibrous materials might have produced the “first architectural revolution.” It was mentioned above that the building of the pongid ground nest is bound to the corresponding biotope (rooted materials). Consequently, tools of the pebble tool type must have freed constructive work from this fixation to biotopic conditions. Materials could now be “harvested” where they grew and could be carried to the “construction site,” where they could be combined with other materials. Signs could now be set up freely, for example, in regard to intensified food control. Material combinations of constructions could be extended. Stable and flexible materials could be integrated at the same place into the same construction. A process of structural differentiation is initiated that might have led to an elementary material culture of the fibrous or fibroconstructive type. Maybe the “traffic signs” made among the bonobo subgroups while on daily migration, as described recently by Sue Savage Rumbaugh, might give some impressions on the level of communication by fibrous signs.

Semantic Architecture

In their important ethnological study on traditional technology, Walter Hirschberg and Alfred Janata showed that fibroconstructive industries are the main part of material culture in traditional societies. They also play an important role in the field of building and dwelling. The ephemera character of the materials and also historic fixations have obstructed the view on the anthropological significance of techniques with fibrous materials. Tools are rarely used; the hand is the primary tool. The autonomy of the processes guaranteed by the ubiquity of the materials hints, too, to temporal depth. But evidently, the conditions of fibrous material culture can only be researched in the ethnographic field.

An example: the material culture of the Ainu as it is presented by Shigeru Kayano with precise technical drawings is of great importance here. Kayano’s book presents about 250 tools and instruments that an archaeologist never finds. A great part of the material

culture of the Ainu reflects their paleo-Siberian roots: simply constructed traps, nets, cages, fish traps, baskets and bags for transport, boats, weapons, tools for various purposes. Toys for children and status symbols are there too, as well as small temporary hunting huts. These objects can easily be retroprojected into Mesolithic times, maybe even into the Upper and Middle Paleolithic. It seems that material culture was much richer than the image archaeology maintains.

Furthermore, the Ainu have an extraordinary topo-semantic sign system: their *inau*. John Batchelor, who was considered an authority on the Ainu, described these signs under the Eurocentric concept of “primitive religion.” But earlier, Willy Kremp discovered the territorial implications of the Ainu signs in the framework of a systematic survey. They are primarily related to dwelling, but in an extensive sense they are also used to control economical “incomes.” The altar behind the Ainu house functions as a coordination point for gift exchange for what all comes in from the wilderness to the house through the distinguished domains of hunting, fishing, collecting, and small gardening. Hitoshi Watanabe has described the river system with mountain- and ocean-oriented contrasts and as it serves as orientation system in this local cosmos. Emiko Ohnuki-Tierney too has contributed important data for the understanding of these environmental orders controlled by signs, but she interpreted the Ainu microcosm macrocosmologically, following Mircea Eliade’s Eurotheological concept.

Japanese agrarian culture too contains numerous indicators of autonomous local cultures with fibroconstructive industries. With the title *Straw (wara)*, Kiyoshi Miyazaki has described this rural straw culture of Japan in a beautiful two-volume study. There are not only coats, bags, shoes, and other practical things but also objects of ontologically high values related to the worldview of Japanese farmers. This fibroconstructive culture is doubtless more ancient than what we know from the Yayoi period of Japanese object culture. Without doubt, it was carried along as vital tradition by the early agrarian settlers. The autonomy of the tradition might have been helpful for local integration.

However, most surprising in Japan are the traditions that have been preserved in the framework of traditional village Shinto: a fibroconstructive topo-semantic system that traditionally survived until today in a surprising density. The elementary technological characteristics appear combined with highest

ontological values (sacrality). The signs are considered as deities or as temporary seats of local gods and are completely integrated into historical Shinto. In the framework of architectural anthropology, the traditions can be considered as archives of local village history. In the framework of cyclic renewal cults, the signs document the early residence of ancient families or of the settlement founder line represented by one or several houses. Since these houses express a moderate hegemony in the villages, the cult supports also the political and social structure of the settlement. Thus what the Western perspective considers as religion appears to a great extent as a traditional local constitution. The fibrous nuclear border demarcation set up at the occasion of the settlement foundation is renewed.

In the case of Japan, we become aware that such fibrous topo-semantic demarcations must have been an important structural characteristic of prehistorical agrarian settlements. Guenther Kapfhammer’s book on alpine traditions of Central Europe shows such demarcations also as maypoles and the like within European folklore. We find them as “fetishes” and “idols” in many traditional cultures of the world. And we find them historically in the framework of the so-called lower mythology of Sir James George Frazer and Wilhelm Mannhardt. Archaeologically, they are known as life-trees in many forms (Bronze Age). Very likely many of the rock-art “tectiformes” had similar functions. Semantic architecture can thus be taken as a universally spread architectural type of predomestic significance. Very likely semantic architecture was the experimental field of architectural form and corresponding symbolic meanings.

We have often mentioned “high ontological values,” that is, high values related to local worldviews. This is an important point, which should be outlined here. The most important results of ethnological research focused on semantic architecture can be seen in the fact that a cognitive principle of autonomous origins could be described. It is expressed with most elementary forms and is produced autonomously by the constructive process, without any preconceived idea of the producer. The expression can be characterized as “categorical polarity” or “coincidence of opposites.” In the tradition of 100 villages researched by the present author, it is clearly shown how the primary geometrical form, essentially as column- or hutlike type, following a trend of local differentiation, enters into dialogue with natural forms via the coincidence

of opposites embedded in the same form as “general principle.” Most strikingly, this happens with a tree form in some villages but also with birds, with mountains, or with a certain type of fish. There are also male-female contrasts, two-headed snakes, fire-spitting dragons, and so on. Somehow a primordial metaphorical world, which, however, has its clear objective background. The convergence of artifact and natural form happens through the categorical polarity of the topo-semantic system, respectively, through the “polar analogy” of both forms. The artificial forms remain dominantly characterized by structural conditions, technically and geometrically.

Regarding the prehistorical question of how humanity discovered natural forms, this can provide models of how the environment was organized by conscious perception. Landscape too seems to be structured according to this principle of polarity. Time can be perceived in polar relations and similarly elementary social hierarchy. The dialogue between semantic architecture and natural form can be used as a model for the cultural perception of nature on the level of categorically polar analogies. Very likely polarity, as a cognitive system, has produced an elementary aesthetic revolution that can still be observed in many traditional societies. And in fact, it structurally survives into many aspects of modern perceptions. Its origins could be assumed in the Middle Paleolithic, that is, between *Homo sapiens* and *Homo sapiens sapiens*. This process of cognition might also have contributed considerably to the increase of brain capacity.

Domestic Architecture

By assuming a primary topo-semantic stratum in the architectural evolution outlined, we gain new indicators for the development of domestic architecture. The so-called shelter theory, that is, the assumption that humanity invented protective roofs or wind-breaks against excessive climatic influences, reveals as functional retroprojection. Huts and houses have to be interpreted as composite developments. We discover basic architectural schemes like the “access place scheme” in which semantic architecture defines the elementary plan with “place- and gate-markers” combined with other elements derived from semantic architecture. House altars and house gods reveal as place markers and sacred doorposts as gate markers. Consequently, as Gustav Ränk has shown, traditional

house plans are often extremely conservative in spite of changing materials and flexible outer form of the houses. The ontologically high ranking demarcations appear fixed by cyclic cults, which were originally focused on their renewal. The fire in the open hearth reveals as an independent construction, which entered the house or the hut while preserving its own ontological autonomy. Similarly the roof. It can be derived as independent development of hutlike signs.

This program was essentially derived from two traditions studied in depth, that is, from various house types of the Ainu and from farmhouses of Japan. Both house traditions, with all variations, are not developed according to functional principles. Both correspond to accumulations of relatively independent elements derived from a predomestic topo-semantic layer, which defined living space with cyclically renewed topo-semantic demarcations. This creates a central and important requisite for the research of houses: related cults must be included into research.

Sedentary Architecture

In the following we discuss an important insight of the approach: the evolution of territorial control and sedentary life. In the Mesolithic, a cultural dimension comes up that can be understood from its developed form but cannot be reconstructed archaeologically with its factual conditions. Here too the ethno-prehistorical method shows a new potential to better understand the phenomenon of the increasing capacity for territorial control and, finally, of permanent sedentarity from its institutional conditions.

We can assume that processes related to territorial control like broad spectrum food collection (Mesolithic), permanent sedentary village cultures (Neolithic), and formations of cities and states with social hierarchy (Bronze Age) were not isolated events but were structurally coherent parts of a wider development.

An earlier study of the present author hinted to sources that support the thesis that topo-semantic territorial demarcations of the fibroconstructive type had been an important equipment of the Middle and Late Paleolithic (grave flowers of Shanidar, tectiformes and female figures in rock art).

The Mesolithic, then, is characterized by increasingly sedentary communities and by the capacity to collect a broad spectrum of food. However, the conditions of

the new level are not clear. On the other hand, comparison with the ethnological situation clearly shows the importance of topo-semantic systems. In the case of the Ainu, it is evident that broad spectrum food gathering is controlled by a fibroconstructive topo-semantic system. In the framework of a categorically polar system, the topo-semantic signs relate the antithetic categories of inside and outside. The fibroconstructive signs form the threshold points of gift exchange between humans and wilderness. Rooted in the intimate space of dwelling, they extend into wider zones of hunting and collecting within the valley as home range of the Ainu. A complex system of categorical polarity also controls time, social role, and communal cooperation. In short, the comparison with the ethnological situation gives us very clear ideas about the structural conditions and ontological principles according to which extended territorial control systems could have evolved.

The Neolithic is prehistorically characterized by permanent agrarian settlements and domestication. More or less permanent occupation of a territory became important with pastoralism and agriculture. However, the question of how settlements were institutionally organized remains open. Architectural anthropology assumes that topo-semantic demarcation systems present already in the Mesolithic period became dominant in Neolithic times. They proved highly efficient in the protection of sedentary life and consequently produced high ontological values among local populations. Crucial are the terms *nuclear border* and *settlement core complex*.

Nuclear border demarcations were set up in the middle of settlements. The fibrous demarcation remains within the controlled zone of the settlement. The categorically polar structure of "semantic architecture" is projected spatially toward the outside, producing village plans with complementary surfaces, functional and nonfunctional domains. First, this must have been effective within regional settlement systems. It developed also a system of ontological values that further protected the settlement. Polarity had become an established ontological value related to the signs. They were used as models of the harmonious organization of space, time, and social organization. This implied also a primary type of aesthetics, which provided value to the settlement as a whole.

The cyclic renewal of the same fibroconstructive demarcations introduced temporal depth into the settlement's consciousness. Furthermore, an elementary

social hierarchy developed within agrarian villages. Through cyclic cultic renewal, the demarcation system remained related to the foundation of the settlement, an aspect that is locally shown in the founder house line. The founder house develops hegemonic claims. In the renewal cult, its representative appears with dominant functions. He is priest and chief or ruler of the settlement. Thus, the topo-semantic system had the function of a traditional local constitution. What we defined as semantic architecture can be taken as a scriptless archive of settlement history, very likely a basic institution of Neolithic village cultures.

Urban and Imperial Architecture

Bronze Age formation of early civilizations is the field where architectural anthropology clearly shows its validity. Due to rich archaeological sources, the anthropological method outlined provides considerable new insights into institutional processes, due to the ontological values related to architecture and also due to the constitutional institutions it came to form in Neolithic times.

Conventional archaeology and history organize the rich Bronze Age finds as the beginning of early high culture. They admire the wealth of forms and attribute these surprising phenomena to the great power of early civilizational invention. For the causes of the enormous social and institutional changes, well-founded explanations are lacking. Some consider new irrigation systems as the main cause, others emphasize new population densities or new market developments.

However, the archaeological interpretation of sources has neglected an important point. The larger part of sources shows obvious indicators of fibroconstructive prototypes in texture and formal structure. This is valid for temples, temple columns, innermost sanctuaries, temple gates, stelae, imperial or regional symbols on thrones, pillars, life trees, and so on.

Walter Andrae was a prominent figure of the German architecturo-archaeological research, which was active in Mesopotamia and ancient Egypt in the 1930s. Andrae has strongly emphasized this aspect of "metabolism" between ephemeral and durable materials in this domain. In his book *The Ionian Column, Built Form or Symbol?* he presented a great quantity of archaeological sources supporting the thesis of a fibroconstructive substrate among predynastic village cultures of the ancient Near East and Egypt. Based on



this substrate, he interprets the Greek columns of the Ionian or Corinthian orders as bundled fibrous plant columns “metabolized” into stone. They are thus placed close to the plant columns of the Egyptian temples.

In other words, what archaeology describes as a highly creative level of “early civilization” reveals basically as a metabolized reproduction of fibroconstructive architecture and material culture of predynastic village cultures, including corresponding sociopolitical structures. The prototypes did not show with the archaeological method.

This leads to an entirely new evaluation of early civilization. Innovations were essentially of technological character. The first cities and empires owed their existence mainly to the “monumentalization” of cyclically renewed fibrous “documents” of the constitutional archives of predynastic villages. They were copied into durable materials, which allowed the spatial extension of empires. Villages could be controlled from impressively built cult centers as the top institution of a monumental theocratic system of territorial control. The material expenditures of the cyclic village cults were centralized on the higher level as taxes and labor. This allowed the accumulation of wealth in the centers. The cyclic time concept of the villages was superseded by linear time, expressed by “eternal” buildings. The evident causality of the cults in the foundation of the villages and the corresponding local

ontology became superseded by complex divine genealogies, with their origins projected into imaginary time depths (myths). As Hermann Kees has clearly described, hegemonic processes then developed on the regional district level as well as on the imperial level with corresponding cults and temples. The originally autonomous agricultural settlement was subdued to centralized control by means of the monumentalized cult system. Theocracy appeared as political form.

Architecture defined in an anthropologically wider framework reveals new aspects of the human condition

with regard to territorial organization and sedentarization as well as in view of the formation of early civilizations. Based primarily on “constructivity,” architecture appears closely related to the subhuman and human existence. But architecture cannot simply be considered as a part of the Eurocentric artist-art scheme, nor can it be reconceived in its conventional circles. The methods have to be extended toward global horizons introducing perspectives of anthropological temporal depths.

— Nold Egenter

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ARCTIC

The Arctic is the region of Earth where the sun never rises for one 24-hour period in the winter and never sets for one 24-hour period in the summer. This area has been demarcated as north of the 66.5° north latitude and includes the northern parts of Alaska, Canada, Greenland, Siberia, and the Svalbard archipelago, which lies 700 km north of Norway. In the summer, the air temperature reaches 22°C (71.6°F), and in the winter, the temperature stays around –50°C (–58°F). In some regions, temperatures have been recorded as low as –70°C (–94°F).

Because of the frigid conditions, the Arctic has long been thought of as uninhabitable and as a border to the edge of the Earth. Notwithstanding, curiosity fueled the desires of some to investigate this little-known territory. The first Arctic explorer was Pytheas, a Greek navigator from the colony of Massilia, around 325 BC. Pytheas christened his discovery *Ultima Thule*, which means “the outermost land.” The present-day location of Pytheas’s “outermost land” is debated, but theories of its location range from Iceland to Norway. After Pytheas came, more explorers, notably, the Norsemen, in the 9th century AD. One of the more famous of the Norsemen to travel to the Arctic was the Viking, Eric the Red, who was banished from Iceland to later discover the territory he named Greenland.

Arctic exploration really flourished toward the end of the 15th century when John Cabot, a Venetian, proposed the idea of a Northwest passage to India. This spurred many attempts to find other trade routes. However, it was not until the early 19th century that the incentive for Arctic exploration changed from commercial to scientific. Much of the outer regions of the Arctic were known at the time, but the interior was still unexplored.

William Parry was the first to attempt the rigorous trek to the interior of the Arctic in 1827. His journey to the North Pole was unsuccessful, but he paved the way for future explorers, including the German Captain Karl Koldewey, the American Charles Francis Hall, and British Captain Sir George Nares. The North Pole was finally reached in 1909 by American explorer Lieutenant Robert Edwin Peary.

With the advent of flight, the Arctic became much more accessible and opened up to research in many areas, such as natural resources, pollution, and climate. Natural resources of the Arctic include oil, petroleum, minerals, and wildlife. In addition, the Arctic is unique and ideal for studies on pollution and climate because of the cold weather, prolonged periods of light and dark, and the virtual absence of anthropogenic sources of pollution.

The first people credited with mastering the extreme Arctic environment were hunters from northeastern Siberia who lived about 40,000 years ago. Some of these hunters crossed the Bering Strait and expanded across Arctic North America. Archaeologists refer to these people as Paleo-Eskimos. (Note: The term *Eskimo* is no longer used and has been replaced by the term *Inuit*.) Arctic dwellers are compactly built, having a



Source: © iStockphoto/Tomasz Resiak.

barrel-shaped torso and short arms and legs, which minimize heat loss. Today, there are almost 120,000 Inuit still living in the far north. Many live with modern comforts to varying degrees in towns or small settlements throughout the Arctic. Through the combined efforts of these local communities, the early explorers, and contemporary researchers, we now know much more about a part of our planet that was once believed to be uninhabitable and partly unknowable.

— Kathleen C. Smith and Lisa M. Paciulli

See also **Aleuts; Eskimos; Inuit**

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ARDREY, ROBERT (1908–1980)

American anthropologist, author, and playwright, Robert Ardrey was known for his contributions to anthropology, the gilded stage, and silver screen. Born in Chicago, Illinois, Ardrey's interest in science and writing were sustained after attaining a PhD from the University of Chicago (1930). Though performing numerous jobs to support his first wife and two children (Ardrey was married twice: Johnson in 1938 and Grunewald in 1960), Ardrey's efforts resulted in numerous plays and screenplays; among the popularized were *The Three Musketeers* (1947), *Madame Bovary* (1948), *The Secret Garden* (1949), *The Adventures of Quentin Durand* (1955), *The Power and the Prize* (1956), *The Wonderful Country* (1959), *The Four Horseman of the Apocalypse* (1962), *Khartoum* (1966), and *Thunder Rock* (1939, 1943, and 1985). However, Ardrey's contribution and popularizing of science stemmed from his major works: *African Genesis: A Personal Investigation into the Animal Origins and Nature of Man* (1961), *The Territorial Imperative: A Personal Inquiry into the Animal Origins*

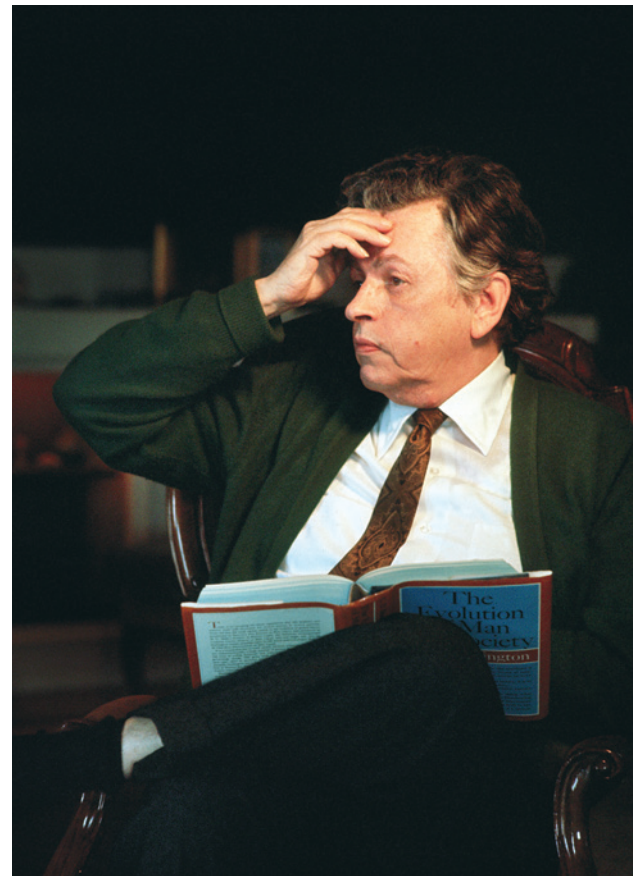
of *Property and Nations* (1966), *The Social Contract: A Personal Inquiry into the Evolutionary Sources of Order and Disorder* (1970), and *The Hunting Hypothesis* (1976). Interested in both human origin and human behavior, the discovery of *Australopithecus* in Africa influenced Ardrey's scientific perspective for the remainder of his life; he died in Cape Providence in South Africa.

Contributions and Perspectives

Robert Ardrey's contributions to the anthropological perspective regarding our species can be considered both iconoclastic and intellectually provocative. Drawing upon the observations of paleontologists, zoologists, psychologists, and work in sociobiology, Ardrey attempted to explain our species behavior, primarily in terms of aggression, within a naturalistic framework. The basis for his speculation regarding human behavior is not grounded in myth, theology, mysticism or unrealistic metaphysics; rather, his view was drawn from scientific speculation based on scientific evidence. As an anthropologist, Ardrey was grounded within an evolutionary structure.

The influence of Charles Darwin (1809–1882) upon science cannot be understated. Darwin's theory of organic evolution created a scientific framework for our species' existence and behavior. Regarding our species' evolution, speculation as to the place where our species evolved varied; for Darwin, our species' origin was in Africa. For others, Asia became the point of constructive speculation. Although Darwin's critique of human behavior falls short of contributions given by sociobiology, the significance of culture and derived behavior was put into an evolutionary framework. However, the physical evidence needed to refine plausible speculations was lacking. Although discoveries of fossil hominids would increase scientific awareness of human origin, it would be the discovery of *Australopithecus* by Raymond Dart that would influence Ardrey's depiction of human behavior.

Based upon the work of Dart and contributions of primatology, Ardrey stated that our primal behavior, similar to that of other primates, is rooted in our evolutionary past (whereas any differences are due to the evolution of the human brain). As depicted by the evidence regarded by Dart, Ardrey supported the belief that our hominid ancestor, *Australopithecus africanus*, was aggressive, skillful (use of tools), and a "culturally advanced" Pliocene killer (killer apes).



Source: © David Lees/CORBIS.

Consequently, human behavior that became romanticized and supported an anthropocentric view was reevaluated as being deeply instinctual primate behavior. Behavior derived from the need of sustenance, reproduction, and territory, closely linked by the complexity of the human brain, modified this instinctual aggressiveness that was depicted by Dart's specimens (evidence). In Ardrey's opinion, unlike earlier evolutionists', our species' moral nature was no different than any other animal's moral nature. This is due to the *territorial imperative*, whereby territory is the principal stimulus in this natural morality. In an evolutionary process, Ardrey depicted that the "moral" life is played and identified within these territories or arenas. The drama and interconnectedness of life, via territorial periphery, creates the probability for instinctual aggression; albeit aggression may not be fatal. Behavior, inter- and intragroup populations, is regulated by what Ardrey terms the "amity-enmity complex" (prompted by external and internal threats), which provides an individual a means for identity, stimulation, and security.

Although Ardrey's portrait of human behavior is devoid of any romanticism or metaphysical autonomy, the truth of the underlying biological factors does not detract from the human experience. Humanity, for all its virtues and vices, is greater than the sum of its biological parts, though the former is solely derived and dependent on the latter. Yet, Ardrey's convincing explanation of human aggression, as with all animal aggression, does not bode well for the human animal that is capable of destruction on a massive scale. Perhaps it was the close affinity with other primates (social, biological, and behavioral) and modern technological advancements that stimulated Ardrey's interests in the present human condition. This is particularly troublesome when considering ourselves progeny of our ancestral "killer apes." Though critics had pointed out cracks and fissures in Ardrey's theoretical framework, Ardrey never wavered from Darwin's sentiments regarding our species in relation to the great apes: We differ only in degree and not in kind.

— David Alexander Lukaszek

See also **Australopithecines; Dart, Raymond A.; Evolution, Human; Missing Link**

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ARGENTINA

Argentina is the second largest country in South America with a population of 39,144,753. Although the official language is Spanish, Italian culture influences the food, music, and traditions of Argentina,

making it unique from other South American countries. Significant numbers of Spanish, Basque, Irish, German, British, mestizo, and other ethnic groups also influence Argentina's cosmopolitan and multicultural society.

Argentina is a republic, declaring its independence from Spain's dominion in 1816. A bright yellow sun with a human face sits in the center of the light blue and white stripes of equal width that make up its flag. Argentina's native population was greatly diminished after 1502 when the Europeans imposed their class system of guaranteed privilege to the rich. With only 1% of the population controlling 70% of the land, the Argentinean economy relied heavily on export of grain and beef. The political system was also controlled by the rich, led by a succession of presidential, military, and civilian governments.

In 1943, a member of the military, which was in power at the time, staged a coup against his own generals to become one of the most memorable presidents for the common people. Juan Peron took leadership among the labor unions of Argentina and was the champion of the working-class people, as was his second wife, Eva. A member of the working class, Eva (affectionately called "Evita") was known for her flamboyant style as well as her extreme generosity and service to the general public. The Peron legacy ended when the economy went sour, Evita died of cancer, and the military again took power.

In the 1960s, the military leadership gripped Argentina with a rule of political violence, responding to armed leftist guerrilla challenges. Ernesto "Che" Gueverra, a martyred leftist revolutionary, emerged as a prominent figure in Argentinean history and folklore during this time. Gueverra was a comrade of Fidel Castro and fought to spread Marxist ideas in Argentina. In response to political opposition, the military declared a state of internal war, known the world over as the "Dirty War," in which approximately 6,000 citizens disappeared between 1976 and 1982. Suspected leftists and members of their families were tortured, raped, and brutally murdered. This had the effect of all but destroying labor unions and any other forms of political organization, that is, except for the Madres (mothers) of the Plaza de Mayo, who met every week in front of the capital in Buenos Aires to protest the kidnapping of their family members and to demand their release. As a result of the actions of the Madres and other human right's groups, Argentines have effectively pressured



Source: © Photo by Philip Douglass, The Douglass Visual Workshops.

the government to reform its structure. And while its torrid past generates little confidence in democratic processes, Argentina now has a democratically elected president. Elected in 2003, Nestor Kirchner addressed the corruption of the supreme court and the federal police. Members were impeached, dismissed, or retired.

Argentina's economy has long suffered from rising inflation and a skyrocketing deficit. Argentina owes over \$21 billion to multilateral institutions. In opposition to dominant global economic influences, including the United States, Kirchner refuses to refinance the debt in terms defined by the International Monetary Fund. Priorities are focused on stabilizing the Argentine peso, reducing the high rates of unemployment, investing in agricultural productivity, stabilizing internal markets, addressing high crime rates, reducing inflation, and securing trade relationships with Brazil.

Argentina makes up most of the southern cone of the continent. The environment is highly varied, consisting of the Andes in the west, highlands in the northeast, the pampas in the east, the Gran Chaco in the north, and the arid plateaus of Patagonia in the south. The fertile grassland plain of the pampas is

home to the capital city of Buenos Aires, built on the wealth of cattle ranching. Here roamed the infamous symbol of Argentina's heritage, the *gaucho*. These nomadic cowboys lived on horseback and off the land. Gauchos dressed in *bombacha* pants and tall leather boots, using *boleadoras* (lassos with three metal balls at the end) to rope cattle. Gauchos played the guitar and demonstrated a wide range of technical capabilities in their performance of the *milonga*, an instrumental solo. They are credited with the growth of Argentina's leather industry and method of barbecuing beef, the *asado*. The gaucho also introduced *yerba mate*, an herbal tea made inside a hollowed gourd, to Argentine culture. Yerba mate is now sipped from gourds coated with silver, often through a silver straw.

The Patagonia region of Argentina contrasts starkly with the bustling pampas region. Frigid temperatures and high winds, due to its extreme southern latitude, make Patagonia barely habitable. The few people who live there are mostly highly adapted indigenous populations, who herd sheep and guanaco. The southernmost point on the continent of South America is located in Argentina and Chile at

Tierra del Fuego, or “land of fire.” It was named thus by the first European sailing explorers, who saw the lights of native campfires on the shore. Another amazing destination for ecotourists from all over the world is Iguazu Falls, located in Iguazu National Park on the border of Argentina and Brazil. The waterfall, consisting of around 275 individual falls, is about 2.5 miles long and drops about 269 feet.

Argentines are religiously devoted to their favorite sport, futbol (soccer). They are always serious contenders for the World Cup soccer tournament, which they won in 1978 and 1986. Argentineans are proud of Diego Armando Maradona, considered by many to be the best soccer player in the world. In addition to the Argentine national team, there are many popular teams in Buenos Aires. The Rio Plate team and Boca Juniors have an ongoing rivalry that creates much excitement in Argentina. Polo is another popular sport. The game consists of a ball and mallet and is played on horseback. It was traditionally played by the gauchos and resembled a game of tag on horseback. Initially, a duck was the intended object to be retrieved from the other team.

Argentines are equally passionate about the tango. Originally considered a statement of social protest by the poor, the tango is a highly intimate and almost obscene dance. It emerged as a sarcastic expression against European wealth and social dominance in the 1880s, representing the sexual relations between prostitutes and their upper-class patrons. During a military takeover of Argentina in 1955, the tango was outlawed for a time in the country because it expressed both social and political freedom for the working class and the people of the slums. *Tango Argentino*, a stage spectacle, was a hit on Broadway and in Paris during the 1980s. The highly technical and musically sophisticated dance form is now the source of much national pride and a major tourist draw in Argentina.

Argentina’s political history has been the subject of many literary and theatrical works. Poet Jorge Luis Borges is internationally famous. The musical production *Evita*, dramatizing the life of Evita Peron and featuring the hit song, “Don’t Cry for Me Argentina” received international acclaim and was followed by an award-winning film. Lawrence Thornton’s novel, *Imagining Argentina*, the story of the “disappeared” of the 1970s, was also released as an international film.

— Elizabeth A. Dyer

See also **Tierra del Fuego**

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ARISTOTLE (384–322 BC)

Aristotle was an ancient Greek philosopher and scientist, one of the key intellectual figures in the history of Western philosophy and culture. He was for centuries authoritatively known as “the Philosopher,” because his philosophy as well as his science dominated Western civilization for about four centuries, after they were resurrected for the European culture in the 12th century. Aristotle’s understanding of a human being as naturally rational and sociopolitical animal makes him a forerunner of naturalistic conceptions of human nature that can be studied empirically.

Life

Aristotle was born at Stagira (known also as the “Stagirite”) in Northern Greece, to the family of physicians at the royal court of Macedon. At the age of 17, he moved to Athens in order to study at Plato’s Academy, where he remained for 20 years until Plato’s death (347 BC). Then, he moved to Assos on the coast of Asia Minor. He was welcomed there by the local tyrant Hermias, whose niece he married later. After Hermias’s execution by the Persians in 345 BC, Aristotle moved to Mytilene on the island of Lesbos, where he met his most famous pupil and associate, Theophrastus. It is thought that there, Aristotle devoted a lot of his time to his empirical studies of marine biology. In 343 BC, he was invited to the royal court at Mieza by Philip II, King of Macedon, in order to become a tutor of his 13-year-old son Alexander. After 3 years of tutorship, Aristotle left his pupil, who became very soon the conqueror of the world, known

as Alexander the Great. In 335 BC, Aristotle was back in Athens, where he set up his own school, the Lyceum. After the death of Alexander the Great in 323 BC, he was forced to leave Athens. He returned to a family estate on the island Euboea, where he died the next year, at the age of 62.

Works

It is estimated (based on book catalogues in Aristotle's ancient bibliographies) that he wrote an unbelievable 550 books, the equivalent of about 6,000 modern pages. But even more impressive than the volume is the range of topics he covered: from philosophy, logic, and natural sciences to psychology, ethics, politics, and aesthetics. Unfortunately, the majority of these works were lost, and among those are all his published texts (which had a form of Platonic dialogues). What has been available for the last 2,000 years, known as *Corpus Aristotelicum*, consists of about 2,000 modern pages, and it is a collection of various Aristotle's lecture notes, esoteric texts for his students, which were not intended for publication. Arrangements of these texts and titles of collections were done by the editor Andronicus of Rhodes, about 250 years after Aristotle's death. This explains various inconsistencies, contradictions, and general inelegance of many of Aristotle's surviving texts, including *Metaphysics*. This is the main reason why we cannot study Aristotle like the majority of other philosophers, such as Descartes or Kant, who have written compact philosophical treatises. Surprisingly enough, these later compilations of Aristotle's working drafts have had some of the most profound effects on the development of philosophy, science, and the whole European culture.

Philosophy and Science

For Aristotle, the universe, furnished with material objects, is a true reality that can be investigated and truly known, and it is not just a shadow of the "other reality," which is more real because it is unchangeable, like a world of eternal Platonic forms or Pythagorean numbers. Aristotle agreed with Plato, that true knowledge (*epistémé*) has to correspond to some unchangeable reality, but he was convinced that such reality is within this permanently changing material world. Of course, it is hidden, and it has to be revealed by a new scientific method, which



he developed. This method is a combination of empirical observations with rational analysis based on induction and deduction. But first of all, language, the medium of all knowledge, had to be transformed into a scientific tool (*organon*) and Aristotle, having done this, established a new scientific discipline: logic.

Paradigmatic fundamental entities of reality for Aristotle were organisms: plants, animals, and humans. This is the reason why Aristotle devoted so much interest to their studies (one quarter of all Aristotle's surviving works are biological) and did it in a such systematic way, setting up biology as a scientific discipline. They are integrated wholes, composites of material stuff and internal principle, which Aristotle called form (*eidos*), nature (*physis*), or essence. This internal principle is a cause of the existence of individual and a cause of what the individual looks like and to which natural kind he or she belongs. Forms/natures/essences are eternal and unchangeable, but

they do not exist (as Platonic forms do) separately from individuals. And they are at the same time integrating principles of composite individuals; they are responsible for goals of individual developments and their functionality. Aristotle believed that essences could be and had to be recognized by his scientific approach, and then finally described in words as definitions. Definitions are combinations of *genus proximum* and *differentia specifica*, and in this way, they reflect a real internal and eternal structure of the world, built up from natural kinds and relationships between them.

Human Nature

According to Aristotle (*Politics*, Book 1), the “human (*anthrôpos*) is by its nature a sociopolitical (*politikon*) animal (*zôion*).” The Greek word *politikos* is usually translated as a political and sometimes as a social, but it is neither of these terms as we understand them today, and therefore it is better to render it by the sociopolitical. Aristotle pointed out that it is human nature to become an integral part of a community, and he believed that the Greek city-state (*polis*) was such a community. Polis is not an artificial structure, set up by human individuals for some pragmatic reasons, but a natural entity like a colony of bees, wasps, ants, or cranes. But Aristotle was quick to stress that the “human is a social animal in a sense in which a bee is not, or any other gregarious animal,” because the human is “alone among the animals, rational” (literally, animals “which have *logos*”). Humans alone have an ethical perception of what is good and what is bad, what is just and what is unjust, and thanks to logic, humans can communicate and share a common view on these and similar matters. The human is a fully realized being, a citizen (*polites*), which means participation in judicial functions and in political offices of a city-state (unfortunately, according to Aristotle, women and slaves were naturally excluded from this). A city-state is a final stage of natural social development, which starts from pair-bonding and household, then goes further, to a larger community of village, and finally ends with the city-state. In Aristotle’s view, human sociality is continually turning to politics as its natural goal.

— Peter Sykora

See also **Scientific Method**

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ARSUAGA, J. L. (1954–)

At present, the codirector of the Atapuerca project, Juan Luis Arsuaga Ferreras (1954–) is one of the two most outstanding Spanish paleoanthropologists. Full professor of human paleontology at University Complutense of Madrid, he has been a member of the research team of Atapuerca site since 1982, when Emiliano Aguirre organized a multidisciplinary group to study this hominid site. In 1991, he became codirector of the Atapuerca research team, which was awarded in 1997 with the Principe of Asturias prize, the most important scientific research award in the Hispanic world. Furthermore, Arsuaga became a member of the National Academy of Sciences of the United States.

Arsuaga is famous worldwide for his finding at Sima de los Huesos, which is a small cavity at the end of a ramp, accessed by a 13-meter vertical shaft, at Cueva Mayor, Atapuerca. The Sima de los Huesos is one of the most productive paleoanthropological sites in the world, because at least 28 different individuals had been identified. Several very well-preserved and almost complete craniums, mandibles, pelvis, femurs, hands, and feet have a mixture of ancient and modern characteristics. Some are similar to their Neandertal descendants and others to their ancestors, the first Europeans. These findings allowed Arsuaga and his colleagues to publish many papers in the most prestigious scientific journals.

In the field of anthropology, Arsuaga is specialist in human skeletal morphology, biomechanics, sexual dimorphism, taphonomy, paleoetology, paleopathology and phylogeny of hominids. His discoveries of several skeletons of *Homo heidelbergensis* in Sima de los Huesos allowed him to propose a new phylogeny for the *Homo sapiens* lineage. Apart from his main research in Atapuerca, he has participated in the

excavations of other hominids sites in Spain and in the Early Pliocene Middle Awash site in Ethiopia.

Several of Arsuaga's books are best sellers in Spain and have been translated to other languages, including English, for example, *The Neanderthal's Necklace: In Search of the First Thinkers* (2002) and *The Chosen Species: The Long March of Human Evolution* (2005). Nevertheless, his most notable book is *El Enigma de la Esfinge* (2001), which is a metaphor to explain the mechanisms and the enigma of the purpose of evolution. His writings are excellent popularizations of his findings in the Atapuerca site, explaining very clearly and rigorously his evolutionary theories regarding the origin of humankind.

— Eustoquio Molina

See also **Atapuerca; Bermúdez de Castro, J. M.; Creationism Versus Geology; Homo Antecessor; Orce**

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ART, UNIVERSALS IN

From a strict anthropological point of view, informed by the recent self-critical turn of the research, it is a debatable issue whether we should admit universals in art. It is equally an open question as to whether art is indeed a universal form of expression and communication. In what follows, we will attempt to lay down the conditions of the possibility of admission of universals in art as well as of considering art itself as one of these universals.

Anthropology has been formed as a social science in the course of 19th century and in the context of the great European colonial states. The European need to understand the non-Western world was concomitant

with the desire to maximize the benefits acquired by the exploitation of the colonies. As a result, for a very long time, anthropology was based on empirical data and fieldwork, without really being concerned for its epistemological status as a science or with questioning its approaches to other cultures. This situation has radically changed in the course of the last 50 years, and anthropologists have systematically criticized the colonial, ethnocentric approach to other cultures as well as the epistemological basis and object of anthropology as a science. The term *reflexive anthropology* indicates that a scientific approach to non-Western societies is difficult and complex and, furthermore, requires both relentless critique and uncompromising alertness as far as questions of method are concerned. There is an increased awareness today of the perils and problems associated with central concepts like *primitive art* for example, which manifest a derogatory attitude to creative aspects of the material culture of non-Western societies, even when accompanied by the best intentions, as in the case of Franz Boas. This is the reason why the adjective *primitive* has almost unanimously been replaced by the term *non-Western* or *small-scale*. Apart from carefully scrutinizing terminology, anthropologists have recently turned their attention to their own society. In cooperation with the rest of human sciences and by implementing in their own society the approach reserved for non-Western societies, anthropologists have often generated impressive results of acute, hermeneutic analysis of Western institutions, customs, attitudes, and modes of behavior. One may here indicatively mention the pioneering work of Mary Douglas, or more recently of Jonathan Culler. If anthropologists tend to criticize the most intimate conventions of their own cultures, it is likely that they will be reluctant to accept unconditionally universals, which are conventions with cross-cultural application.

Art is a universal term that has been employed in the anthropological study of other cultures as an extension of its conventional use in the Western world. There are two interrelated problems concerning this employment: First, there is a serious problem of definition of art, even within European aesthetics, let alone in cultures that lack terms that even approximately translate as art, and second, the notion of art is an instrument of value if it remains undistinguished from *fine art*, a pervasive term in European culture with relatively recent origins in the 18th century, as Goehr indicates. To render a concept of art



Source: © iStockphoto/Dan Brandenburg.

relatively functional in anthropology, it ought not be an instrument of value, restricted to fine art, but should rather be open and meant in the broadest way possible, to allow the analysis of objects from other cultures in their own terms. This is the reason why Anderson attempts to define art via skill and Layton via aesthetic factors, expressive considerations, and communication. However, anthropologists of art should not be limited by the objects included in any of the Western categories of art or by the Western aesthetic categories. Should art serve as a category of cultural differentiation, it needs to be a very accepting category and should indeed arise out of a thorough and careful consideration of all related contexts, attributes, and conditions as they apply to each and every unique case studied.

In the Western world, by “art,” we mostly mean painting and sculpture. In few cases, anthropologists are able to transfer this concept intact to other cultures without making any adjustments. In most cases, they are obliged to adopt a concept that encompasses craft, folk art, the ethnographic artifact, as well as music, dance, architecture, and literary arts, such as myths, proverbs, stories, songs, and the like. The European distinctions between high and low arts or between fine and practical arts are not operative in most of the small-scale societies. Provided that the material culture

of each small-scale society comes first and that the anthropologist is willing to respect this priority, we can find recourse to a great number of definitions for art that anthropologists have furnished us with in the course of their research. Such definitions are interesting not solely for analyzing objects of small-scale societies but also for European culture too. For the study of non-European art has always been intrinsically connected with the interests and research in Western art history and aesthetics.

Art is thus defined through the institutions of society, by recourse to the intention of the artist, to the

attributes of the objects, and in connection with the reception of these objects. There is always a complex interrelation between individual intention, interpretative context, and institutional or attributive definitions that ultimately depends on additional parameters, such as the time and place of the object creation, tradition and the general circumstance of creation, and presentation and reception of the object. Skill, function, religious or ritual meanings, ideas, and aesthetic and expressive factors are attributes, which help understand and delimit artistic objects. We usually find recourse to the category of art when it is impossible to include material objects in more narrowly defined categories. In such circumstances, we have had several definitions of art professed by the field experts: Morphy claims that artistic objects have semantic and/or aesthetic properties used for presentational or representational purposes and that art in general is a system of meaning and communication. Gell has defined art as the technology of enchantment. Levi-Strauss defines art as an ordering system of signs and communication, like language. Anderson maintains that all cultures recognize as artworks certain human-made, material artifacts of significant cultural meaning and of exceptional mental or manual skill, produced in media that make sensuous effects, and sharing stylistic conventions with objects of proximate

geographical and temporal origin. Finally, Layton considers artwork as a ritualistic symbol.

The role of the artist varies significantly from one culture to the other. The artist may incarnate a genius, an idea that is still popular in Europe due to the legacy of romanticism, or may simply be an artisan who knows how to apply the conventions inherited by a cultural tradition, performs a social function, and is indistinguishable from his or her audience. In some societies, the artists are among the privileged classes, and in others they enjoy no distinction whatever. In most cases, however, the artist is that person who has a certain technical aptitude, a capacity of doing or fabricating something that reproduces and propagates the values of the society in which he or she lives. Very often, the artist must conform to certain typologies and rules governing the fabrication of objects and is therefore judged in accordance with them and not by recourse to the intention of producing something. On the other hand, the Eskimo wood-carver works without any intention whatever and in the process accidentally “discovers” a form out of this aimless carving.

When it comes to the category of artwork, the research interests of European and American art history that have placed the emphasis either on form or on meaning and function have always conditioned it. Until the 1960s, the analyses of artworks and culturally significant objects aimed at (a) integrating them in evolutionary or diffusionist hypotheses, (b) revealing their formal properties, or (c) creating types associated with culture areas, tribes, or schools. Since the 1960s, the increasing interest in meaning formation and symbolism has generated a lot of studies of artworks and elements of material culture, often from an interdisciplinary vantage point that combined anthropology, archaeology, art history, and aesthetics and aimed at exploring both meaning and form. The most revealing approach to form is usually through function. What an object does and what it is used for better discloses details of its construction and shape, although there are many cases of practical objects, like weapons and other quotidian, highly decorated tools, whose function is independent from its artistic decoration and only appropriated by it. Artworks and other significant cultural objects perform a number of functions: Biebuyck reports how such objects are used in male initiation ceremonies among the Lega of Central Africa, and Morphy demonstrates the association of art with the sacred and with

images of ancestral power in Yolngu, an Australian Aboriginal people. Often possessing artworks is a sign of power and prestige and secures the status, rank, and control of leaders like in the Tiv, the people of North Nigeria. This is the reason why access by the public to such artworks is either limited or prohibited and, in any case, remains strictly regulated by those who possess or safeguard them. Artworks supplement the social rituals, help maintain the traditions and reproduce the existent hierarchies, become emblems that reflect the unity of social groups, and at times, house the spirits and therefore bring health and success in the endeavors of those that carry them. Form captures semantic, aesthetic, and functional properties of the object; how a formal trait is encoded influences its meaning and effect to others. Artworks and other significant objects generate meaning in an immense variety of ways, which depend on form, function, context, and reception. In any case, understanding this meaning by cultural outsiders requires a careful acknowledgement of all the previously mentioned parameters as well as their integration in large-scale social and cultural settings.

Cultural outsiders always face the temptation and challenge to group things under the heading of style. Style, according to Morphy, denotes the way an object formally communicates meaning and concerns the properties of the work considered as symbol. But style also refers to the formal ways in which different artifacts are similar to each other and may ultimately lead to structural distinctions and properties of the social or cultural system. In his 1962 authoritative study of style, the art historian Meyer Schapiro defined style as a system of forms with quality and meaningful expression, revealing the artist and his world. He even stated how modern artists feel a spiritual kinship with those of primitive societies due to their frank and intense expression and their effective participation in collective life. However, he still called for an adequate theory of style that would thoroughly meet the historical problems and address, at a deeper level, the principles of form construction, the problems of expression, and the processes of social life and emotional behavior. Schapiro had probably sensed the limitations of his theory, which basically point to the problems of the concept of style itself, stemming from its neat separation between form and meaning, between decorative and semantic elements, and from its strong presupposition of creative agency and motivation, behind the form. However, the separation of

form and meaning cannot be absolute, let alone the fact that in many cases of European as well as non-European art, this binary opposition hardly makes any sense.

Style may be a useful concept to the extent that it leads to summoning structural aspects of art and culture, such as principles of representation. Tracing such principles of representation does not mean deciphering whether the evolution of motifs in visual arts works from figurative icons to abstract, noniconic patterns or vice versa, although for a very long time and until Boas's radical criticism of cultural evolutionism, anthropologists were extremely preoccupied with such concerns. Boas authoritatively established that abstract and figurative designs have a long and ancient history that reaches back almost 30,000 years; they emerge independently in different contexts but may also coexist or succeed each other within the same civilization. Thus, style concerns more than questions of technique and method, since it has been noted that civilizations with relatively similar technical methods and apparatuses produce different styles.

Style may also be conscious or unconscious depending on whether it is based or not on explicit motivation. Stylistic conventions like color signification are arbitrary no matter whether they denote likeness or stylization. The concept of style can be studied as a vessel for the crystallization of religious, moral, and social values and for communicating them via the emotional impact of forms. These functions of style allow art objects to be evaluated: In the case of figurative designs, objects are valued in relation to the extent to which they comply with the original represented, whereas in cases of abstract or geometrical patterns, objects have to comply to definite rules passed on by tradition. The process of evaluation is usually reserved for powerful people, who are familiar with stylistic conventions, object placement, context, and how such objects integrate in the larger socioeconomic and religious issues. In cases of geometrical or abstract stylistic conventions of small-scale societies, Western anthropologists must make an extra effort to familiarize themselves with the traditions of such societies if they ever hope to decipher meanings and worldviews.

Still, however, familiarization with tradition and stylistic conventions vitally depends on the worldviews of the observer. A case in point is the issue of split representation, which has drawn attention by many anthropologists. Split representation refers to a

design technique in the art of the North American, northwest coast that Boas was among the first to study. However, Levi-Strauss remarks the analogies of this design technique in areas such as China, Siberia, and New Zealand, which are incompatible geographically and historically. Split representation refers to the painted figure of an animal, divided in half all across its body and open in its interior, in an elaborate, symmetrical manner, representing one individual in front view with two profiles. Split representation is employed for decorative purposes of quotidian objects, like globes, boxes, and columns. For Layton, the motivation behind split representation is the desire to represent well, accurately, and from all possible points of view the elements of the animal figure. For Levi-Strauss, the recurrence of this specific representational method among different cultures so widely separated in time and space denotes a deeper meaning, namely, a deeper and more fundamental splitting between the dumb biological individual and the social person whom he must embody. Split representation thus denotes the personality split, the contrast between the actor and his or her role, and the societal request of strict conformity between this actor and his or her role, a favorite motif in French philosophy and psychoanalysis at the time of Levi-Strauss's texts. The difference between the two views is relative to the difference between two conceptions of anthropology: on one hand, anthropology as a social science of fieldwork, data, empirical analysis, and a limited number of general conclusions and on the other hand, anthropology as a social science that uses fieldwork to extract general principles and universals concerning kinship, social organization, religion, mythology, art, and the like and to establish those key motifs that may explain the vast syncretism of life forms.

The example of split representation makes clear how the approach to non-Western, representational techniques becomes an occasion that brings on surface our own differences, in values, thought, writing, and methods. The recent shift of interest in anthropology toward the study and understanding of presently existing societies probably has to do with the realization that we Westerners, who seek to know the other, are fundamentally unknown to ourselves. The anthropological attitudes of uncompromising thinking, critical alertness, and careful reflection ought now to be also directed to our world in order not only to explain the differences that Westerners

have between them but also to learn from them. Art can indeed be a bridge between Western and non-Western worlds, but has recently been revealed as also a means to better appreciate and safeguard the diversity of Western world.

— Constantinos V. Proimos

See also **Aesthetic Appreciation; Cave Art; Cultural Constraints; Rock Art**

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ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) is the capability of devices or mechanisms and machinery to perform functions usually associated with human intelligence, including scientific systems, reasoning, optimization through experience, and automated motor systems. The American Association for Artificial Intelligence (AAAI) is dedicated “to advancing the scientific understanding of the mechanisms underlying thought and intelligent behavior and their embodiment in machines,” and it aims “to increase public understanding of artificial intelligence, improve the teaching and training of AI practitioners, and provide guidance for research planners and funders concerning the importance and potential of current AI developments and future directions”. It publishes the *Journal of Artificial Intelligence Research*.

What had been the imaginative machines of intelligence in science fiction of the 20th century (from

the writings of Jules Verne, Arthur C. Clarke, and Isaac Asimov to the motion pictures *Forbidden Planet* and *2001: A Space Odyssey*) is now the reality of the 21st century, featuring computers, neural networks, machines, robots, and humanoid robots. Spurred by the technological necessities of outer space explorations by satellites and human missions, gigantic gains in computers and high-efficiency smart technology were made in the latter half of the 20th century.

AI is widely employed in machine tool automation, where artificial neural networks are applied to sophisticated operations by using fuzzy logic and genetic algorithms so that system ranges can be identified, problem solving by conceptualization can occur, and search algorithms can adapt and evolve. Development of AI in machine tool automation has taken place in the study and application of AI systems in science through the computer modeling of a progression of natural systems. Examples of applications are the ATM bank card and PIN, photographic cameras, vending machines, computer chess playing, financial portfolio computer banks, automobile parts systems, speech-responsive computers, sophisticated medical technologies, such as hearing aids and heart chips, computer-designed patterns on textiles, electronic music, and educational and recreational computer games.

In the field of cognitive science, neuroscientists have employed sophisticated computer-driven imaging techniques including CAT, PET, MRI, CST, and other techniques to view and analyze the brain, with insights into the human mind. Their findings suggest that discoveries of the relationship between technology and thoughts and emotions, stress and brain function, and new paradigms of thought and genotypes and disorders are forthcoming. The brain or intranet will be more fully understood, enhanced, and developed.

The Internet has evolved. Intelligent systems have been developed by connecting computer intelligence and the Internet, enabling people to talk to smart computers and build a global communication system, referred to as the “Intelligent Internet” by William E. Halal. Halal described the UCLA Cultural Virtual Reality Laboratory Web site that recreates ancient Rome, Amtrak’s speech recognition software, the Waldorf Astoria Hotel’s video-conferencing system, IBM’s Super Speech Recognition Program, MIT’s Project Oxygen, Wells Fargo’s Speech Recognition

System, Internet Search Engines Voice Recognition Systems, General Motors OnStar driver assistance program, Sprint's voice dialing, AI use to guide human action figures in computer games, Internet avatars or virtual robots, digital TV monitors, and a talking, seeing, listening and learning computer, as examples of the Intelligent Internet.

Humanlike robots such as ASIMO, Honda's humanoid robot, can simulate the walk of a human and can use its arms, walk down stairs, sideways, backward, and around objects. Robots are likely to be used in the same environments as humans, especially in space settlement.

Space settlement includes exploration of outer space, utilization of space materials, and construction of and habitation in space colonies. Prototypical colonies including Biosphere II and NASA's Bioplex Complex employ vast AI technological systems to maintain life support. Space missions to the International Space Station and the planned manned missions to the Moon and Mars necessitate sophisticated AI systems of geographical control, life support, and social\psychological well-being to meet the exigencies and dangers faced by astronauts isolated in an extreme environment. Construction of industrial sites and habitats for humans who migrate from Earth will require advanced AI systems, where life, direction, and functioning are shaped by AI telecommunications more advanced than NASA's Mission to Planet Earth and Earth Observation System, which provides air, water, land, glacier, and pollution data.

— Stewart B. Whitney

See also **Computers and Humankind**

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ARTIFICIAL INTELLIGENCE

The subfield of synthetic anthropology is concerned with examining the ways in which scientific advances, including artificial intelligence, may be used to expand human knowledge and understanding of the cultures in which humans live. At the beginning of the 21st century, one of the most intriguing advances in artificial intelligence has been the development of Project Halo, designed to create a system known as Digital Aristotle (DA), named after Aristotle (384–322 BCE), the Greek philosopher who was thought to possess much of the world's knowledge as it existed in his time. Project Halo is a multistage project undertaken by Vulcan, Inc., that will place the world's scientific and philosophical knowledge into a highly advanced computer system that will ultimately be able to reproduce and explain that knowledge, answer questions based on that knowledge, and generate solutions to problems using the knowledge it possesses. Once the project is completed, scientists with narrow, specialized fields of knowledge will be able to use Digital Aristotle to place their own knowledge into a broader context and identify possible ramifications of an action or solution to a problem. In addition, Digital Aristotle is perceived as a significant advance for teaching science in the nation's schools. The moving force behind the project is Microsoft cofounder Paul Allen.

The 6-month-long Phase I of Digital Aristotle, which was completed in May 2003, consisted of three teams of experts from the fields of chemistry, biology, and physics. Each team entered 70 pages of chemistry textbooks containing all knowledge needed to pass the Chemistry Advanced Placement Examination. Team One was made up of members from SRI International, with assistance from Boeing Phantom Works and the University of Texas at Austin. Teams Two and Three were Cycrop and Ontoprise, respectively. Each team was charged with developing the technology that would allow Digital Aristotle to formulate knowledge, answer questions, and generate explanations using its inputted knowledge. At a cost of approximately \$10,000 per page, Phase I was only partially successful in

achieving its goals of developing the technology needed for the project. Even though all three teams scored only three out of a possible five points, the teams did succeed in identifying problems and suggesting steps to take in subsequent stages.

On February 12, 2004, Vulcan, Inc., announced that Phase II would be completed in three steps. Step One was identified as a six-month design stage, followed by a 15-month stage dealing with implementation of Digital Aristotle. Using the knowledge and technology gained in the first two stages, the proposed 9-month-long Step Three was scheduled to employ three teams that would input chemistry and physics textbooks, which contained the knowledge needed to pass the Chemistry and Physics Advanced Placement Examinations. The three teams were charged with developing the necessary technologies in five fields aimed at making Digital Aristotle a reality: knowledge representation and reasoning (KR and R), knowledge acquisition, understanding of natural language, usability, and system integration. The three teams for Phase II are SRI International, with members from Boeing Phantom Works, the University of Texas at Austin, and the University of Massachusetts at Lowell and Krake; Team Ontoprise, with members from Carnegie Mellon University; and Team ISX, with members from iSoco, Stanford Medical Informatics, the University of Southern California's Information Science Institute, KS Ventures, and Klein Associates.

— Elizabeth Purdy



The Asante (or Ashanti) are a Ghanaian people numbering about 1.5 million (about 15% of the population of Ghana) and centered in the city of Kumasi but also occupying the entire Ashanti region, which is bordered by Brong-Ahafo, western, central, and eastern regions. The Asante are members of the Akan language and cultural group (about 45% of the population of Ghana) which occupies much of central and southern Ghana and includes, in addition to the

Asante, the Adansi, the Agnyi, the Agona, Akim, the Akwamu, the Akwapem, the Bono, the Denkyira, the Fante, the Kwahu (all in Ghana), and the Baoulé of Côte d'Ivoire. Although these peoples have dialectic differences and some cultural differences, their strong cultural and linguistic similarities (Twi, of the Kwa language family) point to common ethnic origins, which have been strengthened by occasional political unities over the centuries.

Asante territory is primarily rainforest, lying just beyond the coastal region. Toward the south, the forest is lush and dense where it is not farmed; north of Kumasi, the forest gradually gives way to savannah. The major rains fall from May until October, with a brief break in late July or August; humidity is constant and high. In December and January, the harmattan winds blow down from the Sahara, and the air becomes parched and dusty. Rivers and streams are abundant; the soil is red laterite, which provides a good building material. Gold, bauxite, and timber are major natural resources for export; cocoa the major cash crop; and yams, cocoyams, maize, and cassava major consumer crops.

History and Political Structure

While their Akan ancestors were probably in the area of central and southern Ghana for several thousand years, the modern Asante are the descendants of the Asante empire, which was at its peak during the 17th through the 19th centuries and was the largest and most powerful kingdom of the Guinea Coast, at one point controlling most of modern-day Ghana from the coast to Yendi, and including parts of what is now Côte d'Ivoire and Togo.

Although iron and agriculture were undoubtedly important factors in the development of civilizations in this region, iron probably becoming common by about 300 AD, it was surely the trade in gold to the Sudanic empires of Ghana, Mali, and Songhai, beginning in the first millennium AD, which led to the eventual wealth and power of the Akan states. Asante gold was traded across the Sahara by these empires, along with kola nuts and ivory from the rainforest region.

Sometime during the 12th or 13th centuries, Akan-speaking people began to enter the region of modern Ghana. Some historians explain this as a migration from the disintegration of the Sudanic kingdoms to the north and from encroaching Islamic

rule, though linguistics suggests a shared ancestry with other southern forest groups such as the Yoruba. In either case, independent villages, perhaps seeking control over the gold mining or the long distance trade (which came to include trade in slaves), began to combine into small states. By the 17th century, the Denkyera (or Denkyira) and Akwamu emerged as the most powerful of these, and after the wars of 1650 to 1670, the Denkyera reigned supreme. Osei Tutu, a nephew of the chief of Kumasi, was sent to Denkyera as a hostage along with regular annual tributes of gold and slaves. Osei Tutu became a general in the Denkyera army, but eventually revolted and fled back to Kumasi, where he succeeded to the Kumasi stool upon the death of the chief, about 1697. Kumasi and other subject kingdoms were being exhausted by their annual payments to Denkyera, and Osei Tutu determined to put an end to this. Sending the Denkyera tax collectors home without their hands, a declaration of war, he defeated the Denkyera army, captured and beheaded their king, and, with the advice and wisdom of his chief counselor and friend, the priest Okomfo Anokye, put together a loose confederation of kingdoms.

It is undoubtedly due to the brilliance of Okomfo Anokye that this loose confederation became such a powerful nation. As recorded in oral history, Anokye had Osei Tutu call together a great durbar of all the chiefs and royalty of the confederation. As the sky turned black and thunder rolled, a golden stool came floating down from the heavens and settled upon the lap of Osei Tutu. Anokye explained that this stool would now contain the soul of their nation and directed that everyone sacrifice to the stool. A medicine was made containing their hair and fingernail clippings, which they poured upon the stool and also drank, thus pledging their allegiance not to the Asantehene himself, but to this stool, the Golden Stool, which came to be the symbol of the new nation.

The Golden Stool is more than a mere symbol, however. To this day, it is kept in secrecy, only being brought out for the most sacred of occasions, such as at the enstoolment of a new king. No one sits on it; instead, it rests on its own stool. It never touches the ground, and Asantes believe that if the stool were ever to be harmed or taken, the nation would cease to exist.

Osei Tutu expanded the army, introduced a more formal organization which better protected the generals, and developed customs of integrating conquered states and their chiefs, gathering them annually at

Kumasi to renew their allegiance to the Golden Stool and to celebrate the unity of the empire, a ceremony known as Odwira. Osei Tutu and his successor, Opoku Ware I, were responsible for further expansion, annexing the northern states of Bono, Gonja, and Dagomba. By 1750, at the death of Opoku Ware, the Asante controlled about 100,000 square miles and a population of two to three million. Osei Kwadwo, the fourth Asantehene, expanded Asante a bit further to the north, thus bringing many Moslems into the kingdom and instituting a period of religious tolerance, even appointing some Moslems to the court. Successive Asantehenes developed a large bureaucracy of professional administrators and craftspeople, as well as well-trained police and soldiers. The *Kotoko* was the highest council of elders, mostly local, and below them was a council of 200 *omanhene*, representatives and chiefs from throughout the federation.

Being inland, the Asante were not as directly affected by British living among them as were the coastal peoples, but they were certainly indirectly affected by their own involvement in the slave trade (both selling and buying; some scholars have attributed Asante power and wealth to their wide use of slave labor) and also by the influx of European goods throughout the 17th, 18th, and 19th centuries. However, the first British to actually visit Kumasi were Thomas Bowdich and a British merchant-governor, John Smith. Bowdich was impressed by the Asante and their capital and wrote glowingly of the broad clean streets and the splendor of the royal palace and the Asantehene's entourage. Nevertheless, the Asantehene, Osei Bonsu, rejected the idea of a resident British governor or missionaries. Smith's successor, Charles McCarthy, and the next Asantehene, Osei Yaw, developed a far more militant relationship, resulting in 5 years of war, but the following British merchant-governor, George Maclean, again initiated a period of peaceful diplomacy, trade, and mutual respect.

The Dutch eventually left Cape Coast, amid some forged documents regarding the rights to Elmina, and the British, under the particularly racist Garnet Wolseley, established occupation of the coast and decided to invade Kumasi. The Asantehene, Kofi Kakari, wanted to take the war to the coast, rather than risk destruction of Kumasi, but the Queen Mother and many of the inner council advised peace. When Wolseley eventually demanded a payment of \$6 million worth of gold plus the imprisonment of the Queen Mother and several others as hostages, the

Asantes could not avoid war, but they were soundly defeated, and Wolseley's army marched into Kumasi, looting and torching the entire city and the royal palace. When the Asantehene finally agreed to the British demand for gold, the shocked population demanded his resignation. With British encouragement, there were several attempted coups in Kumasi, and rivalries developed among the various states. By 1885, the Asante confederacy was a shambles, and only slowly rebuilt after 1894 by Osei Agyeman Prempeh I, perhaps aided by the introduction of rubber and cocoa production.

Despite Prempeh's promises to accept a resident British governor in Kumasi and to submit to British authority, the British were determined to invade. In January of 1896, the British military marched into Kumasi and took captive the Asantehene, Agyeman Prempeh, the Queen Mother, and several other officials. They were imprisoned first at Elmina, then to Sierra Leone, and eventually to the Seychelles, where Prempeh stayed until 1924. The Golden Stool, however, had been carefully hidden and thus escaped the looting and destruction by the British soldiers that followed. British companies poured into the Asante region to mine gold and to extract lumber and rubber, all with the use of forced labor. When the British governor, Frederick Hodgson, finally visited Kumasi and demanded that the Golden Stool be brought out of hiding and that he be seated upon it, the Asantes had had enough. They began preparing for war at the urging of Yaa Asantewaa, the Queen Mother of Edweso. Although the Asante managed to imprison the British for quite some time in their own fort in Kumasi, British forces from the coast eventually retook the fort and destroyed Kumasi once again. Still, the Golden Stool remained unharmed.

There followed a time of relative peace, and eventually, in 1924, Prempeh I was returned to Kumasi, at first only as an ordinary citizen but ultimately ruling Asante until his death. His successor, Nana Osei Agyeman Prempeh II, was enstooled in 1935 and reigned until 1970, his funeral celebrated in the documentary film *A Great Tree Has Fallen*, by Roy Sieber. He was succeeded by Opoku Ware II, who reigned until his death in 1999, when the current Asantehene, Otumfuo Osei Tutu II, was enstooled.

Queen mothers, queen sisters, and other women in this matrilineal society have always had important roles in Asante politics, including specific offices in the royal court and the right to nominate the successor to

the king. Other women, such as wives and consorts of the king and other ambitious women, have acted as advisors to the king and are expected to speak out in times of crisis or dissent.

The role of *okyeame*, sometimes translated as "linguist," is also very important and carries much power. His task is more to present an artistic interpretation of the chief's speech, and thus he can insert his own ideas and thoughts into his elaborations. Even beyond that, in speaking on behalf of the king, he can take liberties in guiding discussion. The Akan prefer indirectness in speech and thus avoid face-to-face encounters across social class lines, particularly in interaction with a chief. Consequently, the *okyeame* is often interpreting for both parties. He also often serves as a chief's advisor and sometimes as a prosecutor or lawyer.

Economics

Traditional Asante economics have been based on three sources: farming, marketing, and craft production. Although these have shifted somewhat over time, all three remain important today. Subsistence swidden horticulture has been the mainstay of the Asante economy for many hundreds of years. The major staples are yams of various kinds, cocoyams, maize, cassava (manioc), oil palm, and plantains; and bananas, oranges, pineapples, beans, onions, tomatoes, okra, egusi, peppers, groundnuts, sweet potatoes, and many other fruits, vegetables, herbs, and medicinal plants are grown widely. Since about 1900, cocoa has become the major export crop.

Many of these crops are interplanted, so that an outsider will not readily recognize an Asante farm. This promotes a balanced use of soil nutrients and allows tall plants, such as plantains, to shelter smaller, younger plants from the blazing sun and pounding rain. Most families have at least two plots of land, so that some can lie fallow while another is under cultivation. Nevertheless, the land is rich enough that fallow periods need not be long, and villages are therefore permanent. The traditional iron machete and short-handled hoe remain the major farm implements, though today they are seldom locally forged. Fishing has also long been important, and fresh and dried fish are a major source of protein. Goats, sheep, chickens, and guineas are also raised; cattle are rare because of tsetse. Traditionally, women did most of the farmwork; men helped clear land, but women did

the planting, weeding, harvesting, and transporting. Still today, most women are farmers, but they also involve themselves in other enterprises, such as crafts or marketing, if they possibly can.

Asante markets are among the largest and most colorful in Africa, and many Asante also engage in long-distance trade. Although women have traditionally been the main farmers in West Africa, Asante women also excel as market traders. Most villages have weekly markets, and towns and cities have daily markets that provide occupations for women who have eschewed farming or who have no access to land. Markets in Asante always have a wealth of fresh fruits and vegetables for sale, as well as products made from local crops, such as cassava flour and gari, jars of rich red-orange palm oil, and jars of hand- or machine-ground nuts. Women also sell live chickens, eggs, and fresh fish; cooked food, such as kenkey and banku, fresh bread, and smoked fish; and packaged foods, which may be Ghanaian made or imported, such as cookies, gum, candy, yogurt, and dried plantain chips. Imported snacks, such as cookies, candy, and chips, have proliferated over the past few years, and along with soft drinks, Milo, powdered instant coffee, and dry cereal seem to be the most common foods in city supermarkets.

Other than food, the most visible products sold at Asante markets are cloth and clothing. Large markets, like Central Market in Kumasi, have lanes and lanes of cloth, locally tie-dyed and batiked, imported lace and synthetic cloth, but mostly the brilliant and infinitely patterned manufactured wax prints for which Ghanaians and other West Africans are famous. Traditional kente and adinkara are generally not sold in ordinary markets, but from individual producers in Bonwire, Ntonso, and elsewhere or in specialized crafts markets catering to tourists and exporters. Manufactured clothing such as men's slacks and shirts, women's blouses, underwear, and shoes, both new and used, are found in and around large markets. Markets are also a venue for other crafts, such as pottery, calabashes, and leather goods, and other production and services; for example, one can have a shirt made, a letter typed, or hair braided.

Market selling is hard work. The items women sell are large and heavy for their monetary value, and women generally must bring them to market in the dark hours of very early morning. They must sit or stand long hours, sometimes in the baking sun if they are not rich enough to pay rent on a covered stall.

Sometimes, they have daughters to send out into the market fringes or lanes to hawk small headloads of goods, but they also have infants or toddlers who must be tended while they work. They must bargain wisely and have good math skills, and they must calculate how much they are likely to sell in a day without having to haul too much home in the evening. Nevertheless, most women prefer trade to farm labor. It gets them into town where they encounter new products and new ideas; it provides them female companions to chat with away from the ears of family members; it affords them a freedom of movement and a privacy they are unlikely to have at home in their village; and it provides an income over which they have full control.

Men also participate in the markets, although in a less central way. They are often the means by which women bring goods to market, as haulers of hand-carts and headloads and as drivers of trotros, taxis, and trucks. Traditionally, men sold gold, slaves, kola, and ivory, but these are not major items today. Men do sell other items in the markets, particularly traditional medicines, beads, fresh meat, metal items, furniture and other large wooden items, leather goods, sandals, and all manner of imported goods, such as cassettes, radios, wallets, watches, and new and used clothing.

A third economic activity very important to the Asante is their craft production. Much of this is for ordinary home use, such as axes, hoes, adzes, knives, and machetes; baskets and calabashes for carrying of ordinary goods; pottery for cooking, eating, and water storage; woodcarving for stools and household implements and furniture; and traditionally, bark cloth and simple weaving for ordinary cloth. Other items, however, are made for religious, festive, and political purposes, such as kente and adinkra cloths, gold jewelry and ornaments for royalty, drums, ceremonial stools, and the like. As in much of Africa, many crafts are traditionally gender specific. Gold, silver, bronze (or brass), and ironsmithing, as well as woodcarving, adinkra stamping, and kente weaving are done by men. Pottery is made by women, and women do much of the sewing, some contemporary dyeing, and some beadmaking. These and other arts will be discussed below.

The Asante are also active participants in local, regional, and international economic enterprises. Kumasi streets are lined with banks, communications centers, airline offices, restaurants, hotels, travel

agencies, and supermarkets, and the Ashanti region is at the heart of the two major mainstays of the Ghanaian economy, gold mining and cocoa production. Cultural tourism also has the potential to become a significant enterprise. Although the coastal cities draw heritage tourists from the United States because of their slave fortresses, Kumasi is surrounded by villages and towns producing traditional arts, which have become emblematic of African culture throughout the diaspora, and those who venture inland to Kumasi find artistic vitality and warm hospitality.

Kinship

The Asante, like other Akan peoples, are famously and proudly matrilineal. Although this does not translate to matriarchy, Asante men and women speak openly of the important roles women play in family life, the economy, and in the political structure, both presently and in the past.

The matrilineage has been one of the most important units of society in Asante, influencing social, religious, and political life. The inheritance of land and other property is traditionally through the matrilineal line, from a woman to her brother or sister or daughter, or from a man to his sister's sons, as are the determination of social and political status. The *abusua*, or clan, thus form the core of a village, and its members hold rights to specific offices in village organization. As ancestors are a major focus of religious belief, matrilineages also become the locus of religious activity. The matrilineage also provides the foundation for strong family ties. Everyone remains close to their mothers, brothers and sisters are great confidants, and men, even when married, retain strong ties to their natal families and in the past carried much responsibility for their sisters and their sisters' children.

Matrilineality may sometimes be accompanied by somewhat more equality for women than is found in patrilineal societies, and this seems to be true of the Asante. Although men's and women's realms are quite distinct, as is typical in Africa, women are important economically, politically, and religiously. Upon marriage, a woman expects to be given land from her husband's lineage, and that land is to be used for growing food for the family. However, women also have rights to their own lineage land, the profits of which are at their own disposal, as are profits from raising chickens, craft production, and so on. Although today

men are seen as "heads of households" in their conjugal families, mothers are generally closer to their children than are fathers, and mothers' brothers may still play an important role in the education of their sisters' children. Married women are expected to be faithful to their husbands, but married men are given considerably more leeway. Polygyny is still practiced to some extent, though often unofficially, since it is not seen as compatible with Christianity or with urban life. The law does not forbid polygyny, but neither does it recognize it in legal matters. When a husband dies, the wife who has been married legally (with a signed marriage certificate) is recognized as the inheritor.

Patrilineality also has its place in Asante culture: a child's spirit comes from the father and his *ntoro*, a named patrilineal kin group, although the rites practiced by these groups seem to have waned. In contemporary society, perhaps because of the British school system, many or most people carry the surname of their father, and today land and material wealth are often passed along from fathers to their sons and daughters. It may also be that with increased mobility and the spreading prevalence of the nuclear family, men's ties to their matrilineages are becoming less important and less effective than in the past.

Religion and Spiritual Life

Asante traditional religion includes a supreme creator, *Nyame* or *Onyankopon*, and a hierarchy of lesser spirits: *atano*, *abosom*, and *mmoatia*. Nearly all prayers begin with the invocation of Nyame, and his name is in many proverbs. Today, his name is used constantly when people express hopes or aspirations, "If God wills it," and in proverbs, which today are used on textiles and pottery, as logos for stores or brands, such as *Gye Nyame* (literally "except God," but meaning that nothing can be accomplished without God's help), and in names of popular restaurants and shops, such as "God's Love Refrigeration" or "God's Grace Fast Food and Catering." *Asaase Yaa*, or Mother Earth, is also frequently invoked in prayer and petitions.

The *atano* and *abosom* are lesser gods who reside in shrines throughout Asante. The shrines usually consist of a brass pan (of European origin) or a clay pot containing animal and plant materials and sacrificial materials, such as chicken blood and raw eggs, and the pan may rest on its own stool within a shrine house or temple or may be placed under or in the forks of a tree. Other items may accumulate in the

shrine room, such as valuable family possessions or personal items of dead priests, and occasionally *akua'ba* (see below), but figures are not made of the deities themselves, nor is figurative art an important part of the shrine. A home may have a special shrine room within the compound, with a white cloth over the door to warn away menstruating women.

The deities reveal themselves by possessing priests or priestesses, mediums through which people can approach the spirits for advice, curing, or other assistance. The priests and priestesses live at the fringes of society so that their interaction with supernatural beings would not interfere with ordinary people's lives, and they are distinctive in their dress: raffia or white cloth skirts, bare feet, and long matted hair (also associated with insane people or, today, drug users). They also have a small group of followers who function as drummers, cooks, and general caretakers of the shrine.

Traditional priests had important and sometimes politically powerful relationships with chiefs. In some states, new deities could not be introduced without the approval of the chief, and priests judged to be charlatans could be killed at the command of the Asantehene. Priests and deities were consulted before military campaigns, often accompanied armies, and were rewarded with land, captives, and emblems of royalty, such as gold and umbrellas. Priests also accompanied chiefs and others on diplomatic missions. Although traditional priests don't seem to serve in this capacity today, some of these important leadership roles may be being filled by important Christian religious leaders, such as Dr. Peter Kwasi Sarpong, the Archbishop of Kumasi and an anthropologist, who wields substantial political and cultural influence today, not just within Ghana but in the international sphere.

The ancestors are also important and revered, and they continue to influence life on earth. They are venerated, not worshipped, and respond to supplication in the form of prayer and libation. To become an ancestor, one must have led an exemplary life and had children, and one must have lived to an old age and died a natural death, rather than from suicide or certain dread diseases, such as smallpox, AIDS, or insanity.

Most ceremonies call for prayer and libation as means to establish a link or communication with God, ancestors, and other spirits. Prayers may include praise, thanks, and petitions for specific personal needs and for general community well-being. Minimally, a

libation may be just a few drops of water or a bit of food dropped on the ground before a meal, but it might also be any kind of drinkable liquid, such as palm wine, soda, or schnapps; more substantially, a sacrifice may include eggs or chickens, or very rarely, sheep. Apparently, even human sacrifices were made in the past, particularly in situations such as the death of a chief, who must be accompanied by servants into the next world. Any adult, man or woman, can offer prayers, libations, or sacrifices, although for major occasions, these are led by a chief, a priest, or the head of a household or lineage. Similarly, while simple prayers and libations may be offered anywhere, major prayers and sacrifices are made on stools, in shrines, or under sacred trees.

Two ceremonies merit special mention: the *Adae* and *Odwera*. *Adae*, held every 21 days, celebrates the ancestors of chiefs and other royalty. The more serious part of the ceremony is held in the sacred stool house of the palace, where the chief priest offers food and drinks to each ancestor at his or her stool and asks their blessings for the community, while the public gathers outside for music, dancing, and recitation of the oral history of the royal family. *Odwera*, an annual celebration perhaps instituted by Osei Tutu I, is celebrated in September for community purification. Prayers for forgiveness are made, shrines are cleaned and purified, a black hen is sacrificed, and the entire community, living and dead, shares a feast to begin the new year cleansed.

Asante religion underwent rapid change in the early days of colonialism. With the government weakened, people turned to new cults, priests, and protective talismans adopted from neighboring cultures, perhaps as a response to the failed government of Kofi Kakari, the fall of Kumasi, the exile of Asantehene Prempeh I, and the eventual annexation of Asante by the British. Some of the new priests had spiritual powers, which they could place in talismans, or *asuman*, which can be hung in doorways as protection from theft or wrapped in leather (and sometimes gold foil) and sewn on *batakari*, cotton smocks imported from the north. Although often called "warrior shirts" or "hunter shirts," as they are believed to protect warriors from injury in battle, they were also worn by chiefs and even the Asantehene.

Today, most Asantes are Christians, and Sunday mornings find cities and villages filled with congregants heading to churches of every major and minor Christian denomination as well as to nondenominational

churches. Many are also Muslim, but neither religion necessarily replaces traditional beliefs. Asante religion has always been dynamic, as suggested by the influx of new deities in the precolonial and early colonial times, and it remains so today, so that people may be devout Catholics in their ordinary thought, speech, and practice and yet may still deeply adhere to the religious beliefs that are inherent to Asante tradition and culture.

The Life Cycle

Asante life begins with a naming ceremony, which marks the beginning of personhood. All Asante and other Akan are named for the day on which they are born (for example, Kwasi or Akosua for Sunday, Kwabena or Abena for Tuesday, Kofi or Afua for Friday, and so on). The father also chooses a name for an infant, usually the name of someone he wishes to honor, and on the eighth day, the father's sister bestows this name on the child with prayers, asking for health, wisdom, and a long life and admonishing the child to be truthful and hardworking. Today, Christian ministers often take over this role. The naming ceremony marks entrance into society, and the child is given a symbol of their gender role in life, for example, a basket for a girl or a machete for a boy. Other names are given that refer to circumstances of birth (twins, for example, or birth order) or to events occurring near the time of birth (a festival day, for example, or a death). Individuals can also add names later in life, for example, a person becoming Christian or Moslem may wish to take a name denoting that a new chief can take the stool name of some predecessor, and today a woman may take up her husband's surname upon marriage.

Puberty rites were celebrated only for girls. The onset of menstruation was celebrated with a week of feasting, singing, and dancing. The girl was seated formally in a public place and received gifts from her parents and the community, and the elderly women counseled her about sexual matters and other wifely responsibilities. From this time forward, she was expected to spend her menstrual periods in a special menstrual house at the fringe of the village and follow many taboos, such as not visiting stool houses, not selling cooked food, and not cooking for her husband. Both these customs and the nubility ceremony itself seem to have been discarded, at least among more educated families. Girls object to being

publicly displayed with their breasts exposed, but as elsewhere where puberty customs are fading, many elders feel this has led to promiscuity and adolescent pregnancy. As a consequence, some Christian churches have instituted a blessing ceremony for girls, which may include Bible lessons, gift giving by their congregations, and special blessings and prayers.

Formerly, girls were expected to marry soon after puberty, and marriages were and are considered a union not just of two individuals but also of two families. Cross-cousin marriages were encouraged, parallel-cousin marriages forbidden, and polygyny and the levirate were practiced. Girls could be betrothed in infancy or even before their birth, and twin girls were promised to chiefs, but none of these are common practices today. The marriage ceremony itself consists of a series of gifts to members of the bride's family, including money, gold, cloth, underwear, drinks, and, today, a Bible. The first is the "knocking" fee, which is followed by the bride price itself, then special gifts to the bride's father, her mother, and her brothers; the women of the family; the girl's church or household deity; and finally, a special gift to the bride herself, in order to buy items for their married life. Today, many people also have court weddings and Christian church weddings, neither of which permit polygyny. Church weddings are usually followed by a large dinner party the next day.

Another religious ceremony practiced by Asante is soul-washing. A person's soul sometimes needs to be pacified after being offended or following some crisis, such as recovery from a terrible illness or escape from a dangerous accident. The celebrant bathes, cuts and cleans his or her nails, dresses in perfumed white cloth, sits before a brass pan with water and white clay, and with offerings of mashed yam, eggs, and liver from a sheep or fowl, apologizes to the personal spirit, asks forgiveness, and asks for blessings for himself, his family, and his people. Finally, the celebrant dips *adwera* leaves in the clay water and sprinkles it on the gathered family to show that their souls are also purified.

Funerals are the most elaborate of Asante ceremonies. Upon death, the in-laws provide items needed for cleansing the body and burial, such as soap, white cloth and clothing, white beads (for a woman), and a pillow and blanket. Traditionally the dead were buried within 3 days of death, though today bodies may be kept at a mortuary until the time of the funeral. During the procession to the cemetery,

the widow or widower would be given a clay pot to throw, indicating that he or she was no longer married. Neither a widow nor a widower were permitted to sleep alone for 6 weeks, and they followed various food restrictions. A widow and her children were looked after by her husband's successor for a year; at the end of the year, she could choose to marry him and remain with the family or she was also free to marry someone else. A widower was free to marry at the end of the 6-week period.

The funeral itself takes place quite some time after the death, because the funeral requires much preparation. Palm wine must be gathered, the funeral grounds prepared, and guests informed. On the day of the funeral, friends and family members gather from noon on, wearing black or other dark colors. The chief female mourners wear red or red and black. They dance up and down the street or funeral grounds several times before being seated to receive the mourners. It is common for there to be hundreds of mourners, and each of them will greet the family (single file, counterclockwise, extending only the right hand, as in all Asante formal greeting). They will be offered drinks and will themselves send up donations of money to the family to help defray the expenses. These gifts are announced, and someone from the bereaved family will thank the donor. At the climax of the celebration, in-law families of the deceased display huge trays of special goods, such as kente cloth, red-and-black cloth, beads, traditional sandals, and silk. These trays of goods are danced up to the family with the accompaniment of drummers. Male relatives may be expected to provide a ram, parts of which become food for the ancestors and are buried in the grave and parts of which may be burned to create soot for the blackening of the deceased's stool if he or she were an officeholder.

Arts in the Life of Asante

In addition to their intriguing political history, the Asante are also celebrated for the splendor and variety of their arts, many of which are becoming popular in the diaspora even as their traditional religious importance may sometimes seem to be diminishing.

As in all West African cultures, the arts serve at least three overlapping functions: religious, royal, and mundane. Religious arts include shrine houses, shrine figures, stools, akua'ba, and funerary items, such as adinkra (or adinkara) cloth. Shrine figures are rarely

seen by outsiders today, except in museums, as shrines themselves are small and private. A few traditional shrines have been preserved by the government and have been rebuilt according to old drawings and photographs, but most old shrines have fallen into decay, and newer shrines are small, secluded, and not welcoming of visitors.

Stools may be ordinary, religious, or political. At one level, an Asante stool is simply something that a person sits upon and is especially brought out for elders or guests. Such stools have small lugs at the sides for easy carrying, and people can carry their stools along when visiting nearby. This mundane use, however, is being replaced by the ubiquitous plastic stacking chair in villages near cities. Stools have a rectangular base and a rectangular seat curving up at the sides. The important design is in the center, and it may be a carved geometric symbol, an animal, or a simple design.

The akua'ba (Wednesday's child) may also be considered a religious item, as its original purpose was to appeal to the deities to promote pregnancy in the woman who is carrying it. The story is that there was a woman, Akua, who badly wanted a child, as do all Akan women. A priest instructed her to have a small image carved and to carry that image and care for it as she would a child. Akua did so and, despite teasing, became pregnant. Today, many women still use the figure, sometimes adorned with beads and earrings, either to cure barrenness or to ensure the safe birth, health, and beauty of the child. Akua'ba are also sometimes used as shrine figures or as memorials for a dead child. Typically, the akua'ba has a flat disk-shaped head, arched eyebrows, small facial features, a ringed neck, a small cylindrical body with tiny breasts and navel, and short, plain, horizontal arms. In the past, terra-cotta figures and heads of both male and female royalty were used for funeral purposes (not burial), but these do not seem to be made any longer.

Adinkra cloth is visible at any festival and has become popularized in the West, perhaps because of the appeal of the symbols. Traditional black adinkra cloth is still made by dyeing the cloth with wood and then inking it with small stamps carved from calabash shells. The black cloth is spread on a board and divided into sections with a four- to six-toothed comb dipped in ink. Each section is then stamped with a single design, but the sections may all have the same design, or the designs may vary from section to section. These designs, used in other Asante arts and

especially popular now on factory cloth and flowerpots, for business signs and stationery, generally represent proverbs, such as “Look back to your ancestors” (*Sankofa*) or “Two brothers should not argue over food” (two crocodiles crossed, sharing the same stomach). These proverbs, as symbols or words, appear in many other Asante arts. While all black or black-and-red cloth is used for most funerals, white cloth with black designs may be used for festive occasions and for funerals of elders.

One must also acknowledge the adaptation of traditional art forms to Christian contexts. Churches are decorated with traditional Asante symbols and cloth, and people wear kente and adinkra cloth to church. Dr. Peter Sarpong has been a powerful advocate for traditional arts and culture and a pioneer in integrating traditional music, dance, and libation into Catholic life, ceremony, and worship.

All African kingdoms and states have engaged the arts for political purposes, but the Asante have excelled in the variety and high visibility of their royal arts. The Golden Stool, discussed above, is certainly the most revered aesthetic symbol of the Asante nation, but there are many other emblems of state in Asante, both of The State and of the member states of the Asante federation. Every chief and high-ranking official has a ceremonial stool of carved wood embellished with silver and gold, bells, amulets, and sometimes a central gold or silver “soul disk.” The basic designs of ceremonial stools carry messages, which may be particular to the chief or chiefdom or may have broader use. For example, a circular shape, the “circular rainbow,” represents the unity of all Asante peoples under the Asantehene; the “wisdom knot” indicates that the chief will rule through wisdom rather than force; and a two-level design indicates variously that a paramount chief has authority over other chiefs or that chiefly power rests upon the power of the people’s will.

In addition to royal stools, chiefs at various levels carry state swords and flywhisks, appear under ornate cloth umbrellas and large fans, may be carried in palanquins, are accompanied by linguists (*okyeame*) carrying staffs topped with golden emblems, wear kente cloth, sandals, and crowns with golden ornaments and a prodigious amount of gold jewelry. The Asantehene is said to wear so many gold bracelets that he cannot lift his arms and so must be accompanied by aides on each side carrying his arms. All of these items are not only splendid in themselves—the glitter

of the gold and the brilliant colors and patterns of kente cloth—but all of them bear symbols that are immediately recognizable to every citizen. The symbols may be simple human or animal figures, such as crossed crocodiles, or may be geometric, but they represent proverbs and other words of wisdom relating to the behavior of the chief or the citizenry. All of these arts are made by specialists, and all of them are men who generally inherit the right and the training matrilineally.

Each of these arts is worthy of an entry in itself, but kente cloth may be the most familiar to Westerners and has indeed been the subject of much research by artists and anthropologists. The origins of kente are obscured in distant history, but one legend is that men were taught to weave by Ananse the spider, a culture hero who is probably the ancestor of America’s Br’er Rabbit. Kente is a very complex and tightly woven fabric made on a typical West African men’s narrow horizontal loom. Early cloths were of indigo and white cotton, but imported silks and eventually rayon in every color have been incorporated and are now considered traditional. Each 4”-wide kente strip consists of a series of patterns, each usually about 3” to 4” long, and usually, today, alternating. When many dozens of these strips are sewn together at the selvages, the effect is a checkerboard of patterns, with the ends usually having more and perhaps more complex designs. Each color carries meaning, and each of hundreds of individual patterns also has meanings, often relating to proverbs or having other political references. Even the way the wearer wraps the cloth around his body carries meaning, such as humility or arrogance or the bearing of a gift. In earlier times, chiefs and kings reserved certain patterns for their own use, and indeed kente was used only by royals or given by them as gifts. Today, however, most people who can afford to purchase a cloth do, and wear them for special occasions, such as religious festivals, weddings, or simply fancy parties. To the chagrin of many elders, kente strips are now exported to decorate American graduation robes or baseball caps, and kente-like designs are machine printed on cheap commercial cloth and made into bags, shirts, and other tourist items.

Perhaps no arts can properly be called “ordinary,” but the Asante make many arts or crafts for every day use. Women make pottery in a huge variety of shapes for various purposes, such as grinding spices, carrying and storing water, and steaming gari, as well as

for cooking and eating. Many villages still fire pots on open wood fires, but others use charcoal-fired kilns instead of or in addition to them. Men carve wooden drums, thumb pianos, and other instruments; bowls and tool handles; and a multitude of tourist items, such as *awari* games, inventive nontraditional masks, and salad bowls. Tie-dye and batik, using beeswax and candle stubs, hand-carved wooden or foam stamps, and commercial dyes have become popular arts encouraged by government and nongovernmental agencies, and people in remote villages wear and sell beautiful hand-dyed fabric.

Bronze and brass, generally cast but also hammered, were traditionally used for *forowa* and *kuduo*, containers used for gold dust, money, pomades, and other valuables and also, famously, for “gold-weights,” tiny figures and symbols made of brass but used to weigh gold. Today, these weights have evolved into a variety of objects, such as hollow beads modeled after earlier gold beads worn by chiefs, bracelets, pendants, bottle openers, nativity scenes, and sometimes quite remarkable sculpture. These items are made by lost-wax casting, a process that can take many days, as the item is first modeled of beeswax, and then an investiture must be built up of many layers, first of a charcoal slip and then of clay mixed with palm nut fiber. When the mold is finally dry, the firing is done on an open-air “kiln” enclosed only on three sides, and the mold must be shattered to remove the cast piece, so that each piece is unique. Like other metal arts in Africa and the world, bronze casting has been traditionally restricted to men, though there is at least one young woman presently casting.

Bead making is another art elevated in recent years to great popularity, both for local use and for broad export. Although most “African trade beads” were actually Italian imports (such as the millefiori beads from Murano), Asantes today pulverize old bottle glass, color it with dyes, and bake it in molds to produce beads of many shapes, colors, and patterns. Traditionally and still used as waist beads by women and seen only by their husbands, these beads have caught the fancy of Westerners and are now sold widely, strung on raffia or cotton string, at bead markets in Kumasi, Koforidua, and Accra.

Asante dancing and music, particularly drumming, are other ancient arts that remain popular today in both traditional and contemporary settings as well as in the diaspora. The same drums played in traditional villages for ceremonies are now found in

Christian churches and at national political events, and young people learn traditional dancing in schools and universities. Highlife (or earlier, “palm wine guitar”) music, which had its origin in late 19th-century Ghana, and is sometimes considered a form of jazz, became enormously popular throughout urban West Africa in the 1920s into the 1970s, and it remains influential in the 21st century in forms such as hip-hop and reggae.

With their wealth of art forms, it may be surprising that the Asante have no history of mask making, even though many of their close neighbors make them and perhaps especially since their very close relatives, the Baoulé in Côte d’Ivoire, are renowned for the beauty and variety of their mask forms. It may be that in Asante, masks were avoided because masked figures could have been viewed as discordant with the power and prestige of royalty, or that the priests and priestesses were so powerful that deities did not need masked impersonators, or that the Asante lacked the initiation societies and secret societies that so often use masks and masquerades in other African cultures.

The Asante have entered the 21st century a proud and flourishing people. They have maintained many of their traditional beliefs and values, and they are proud of their rich history. Though they suffered under the years of colonialism, they emerged at the heart of the nation that led Africa into independence. Their magnificent arts, sought by collectors and major museums the world over, have become symbols of the nation of Ghana and sometimes as symbols of unity for diasporic Africans everywhere. Their warm hospitality, their proud history, their flourishing arts, and the economic and political stability of the region are beacons to business people, visitors, and scholars from around the world.

— Mary Carol Hopkins

See also **African Thinkers; African Thought**

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ASSIMILATION

Assimilation refers to that result of culture change whereby the members of one society modify their behavior and values to become very similar to, or identical with, those of another society possessing a different culture. It is to be distinguished from the potentially rapid processes of culture change due to internal innovation and invention and external borrowing through intermittent diffusion of culture elements from outside the society, and the very gradual process by the absence of exact replication by a younger generation of the beliefs and behavior of an older generation. Innovation and diffusion are ongoing features of human life, and their effects are usually gradual (over many generations), limited to distinct subsets of a cultural system, and, more important, typically greatly modified in turn to mesh with the existing culture.

The process of change giving rise to assimilation, however, is acculturation. Acculturation is the complex and dynamic set of processes resulting from close, prolonged contact between two societies, one of them dominant. This imbalance of power is necessary for assimilative change, since the drastic and total character of assimilation requires that the dominant society monopolize prestige, resources, and force and possess an ideology that rewards and/or demands corresponding change in the subordinate society. There are modifications to both societies in the acculturative situation, the dominant as well as the subordinate. While there have been many studies of contributions by conquered societies to Western

cultures during the extent of European conquest and colonial control (in particular new domesticates), the focus in anthropology has been on what occurs in the subordinate group. Other than physical extinction, assimilation is an extreme result because it consists of a total process of adjustment whereby the subordinate group abandons its cultural forms by adopting those of the dominant society. Assimilation is cultural extinction—language, kinship and family organization, ethos, aesthetics, community organization, religion, technology, and systems of leadership and authority disappear to be replaced by the corresponding culture elements of the dominant society.

Assimilation is a theoretical end point along a continuum of reactions to acculturation. Often, the term is used to refer to a process that is incomplete, for example, “Society B is assimilating,” or “The ‘elites of society B are highly assimilated.’” It is not irreversible, or even unidirectional. Cultural modifications may occur that suggest that a particular society is undergoing this kind of modification only to have it terminated in a nativistic movement. It is, in fact, often difficult to determine whether a society is proceeding through assimilation or achieving a dynamic balance of culture traits from the dominant culture and traditional traits from the subordinate culture.

Several questions can be developed employing a process model: How long is the assimilation process? Assimilation studies have been a staple of sociological approaches toward the immigrant experience in America, with a time span of three generations such that grandchildren have acquired the dominant culture while their grandparents have not. Margaret Mead’s description of the change in Manus society (Admiralty Islands) from a “Stone Age” culture to modernity occurred within a generation. Traditional children she had known in 1928 had apparently in 1953 become Westernized, valuing and practicing Western forms of marriage, government, and religion. Intragenerational transformation would seem probable for individuals, but it would be more likely that societal assimilation would not be complete until members of older generations had passed away.

What drives assimilation? One popularized explanation, especially for the dominant culture (and often adopted by the assimilating subordinate culture), is that the dominant culture is absolutely superior and thus overwhelmingly compelling and attractive. Mead’s account of Manus assimilation attributed the rapidity of the transformation to the much greater

effectiveness of Western political and social forms and the consequent laudable desire by Manus to emulate these. However, it is more likely that the realities of the acculturative setting, with the presence of enforced planned changes (or at least planned prohibitions of traditional ways) by the dominant culture, present subordinate peoples with few choices other than attempts at assimilation. Other strategies to acculturation, such as biculturalism or marginality, active revitalization, and nativism may not be successful. Contrary to a view of subordinate societies as passive victims, anthropologists have usually sought to show that members of subordinate societies have been creative opportunists, actively taking charge of their own response to acculturation, including the adoption of the dominant culture. However, a distinction may be made between internal and external assimilation. *Internal* is an ideological transformation involving the adoption of the values, beliefs, and worldview of the dominant culture, while *external* involves the manifestations of the dominant culture: clothing, dwellings, work schedules, farming practices, and so on. It is difficult to consider that these could be mutually distinct and unrelated processes. The dominant culture typically enforces only external assimilation. Moreover, people's responses in change often are focused on items of material culture that either show promise of material advantage or are viewed as observable markers of prestige. Still, it is the purposeful interest in acquiring ideology, values, and beliefs that drives continuing assimilation, and consequently most studies explaining people's interest in assimilation have looked at such ideological arenas as religious conversion and education.

What is the result? The end product of assimilation would be members of the former subordinate society merging with and becoming indistinguishable from members of the dominant society. However, there is the issue of acceptance by the dominant society, especially when physiological attributes are used to reject former members of the subordinate society regardless of their capability at assimilation. This rejection has become a source of much concern in Western social science, for example, in the study of racism. Many American social scientists have looked at assimilation much more favorably than anthropology has. They view the immigrant experience in America as one in which successful assimilation was desirable, and therefore it was important to determine those social factors that enable it. Anthropology, on the other

hand, views it as destructive (especially in regard to Native Americans) and therefore sought to determine those social factors that held it in check and would enable non-Western groups to maintain their own distinctive cultures and languages.

— John Rhoades

See also **Migrations; Social Change**

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ATAPUERCA

Atapuerca is a World Heritage Site located in Burgos province, Spain. The construction of a railroad at the end of the 19th century, cutting through the foothills of the Sierra de Atapuerca, led to the discovery of several hominid sites. In 1910, the archaeologist Jesús Carballo discovered the Bronze Age site and paintings in the Cueva Mayor, known as the Portalón. In 1964 and 1966, Francisco Jordá carried out excavations, which led to the first estimation of the antiquity of the sites in the Trinchera. Based on the faunal analysis done by Juan F. Villalta, an age of 500,000 years ago was estimated. In 1976, Trinidad Torres undertook an excavation and entered in the Sima de los Huesos in search of bear remains. Among the bones removed were human fossils: mandible, teeth, and cranial fragments. Torres took the human fossils to his doctoral advisor, the paleontologist Emiliano Aguirre, and based on the bears' remains placed the site within the Middle Pleistocene.

Due to the importance of the human remains, Aguirre organized a multidisciplinary group to excavate the main sites, and after he retired, the studies were codirected by Juan L. Arsuaga, José M. Bermúdez de Castro, and Eudald Carbonell. Since 1978, very relevant human remains have been found by this multidisciplinary group in the main sites: Trinchera Dolina, Trinchera Galería, Sima de los



Huesos, Portalón de Cueva Mayor, Trinchera Elefante, and Mirador.

Trinchera Dolina excavations in 1990 yielded a lot of vertebrate bones and in 1993 intensive excavations began of an area of 6 sq m. In 1994, several human fossils were discovered: a handful of upper and lower teeth, a large cranial fragment, and a mandible with a molar wisdom tooth in the process of erupting. Furthermore, 36 human fragments were recovered of at least six individuals. Based on micromammals and magnetostratigraphy, the level was dated of 780,000 years ago. In 1997, a new human species was defined: *Homo antecessor*, the species that discovered Europe.

Sima de los Huesos is the other most important site of Atapuerca. It is a small cavity at the end of a ramp, which is accessed by a 13-meter vertical shaft, after traversing half a kilometer of difficult passages from the current entrance to Cueva Mayor. The Sima de los Huesos is one of the most productive paleoanthropological sites in the world. Since 1987, at least 28 different individuals had been identified as *Homo heidelbergensis*. Several very well preserved and almost complete craniums, mandibles, pelvises, femurs, hands, and feet have a mixture of ancient and modern characteristics.

Some are similar to their Neandertal descendants and others to their ancestors the first Europeans.

— Eustoquio Molina

See also **Arzuaga, J. L.; Bermúdez de Castro, J. M.; Homo Antecessor; Orce; Paleoanthropology**

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ATHABASCAN

It is theorized the Athabaskan were the last Native American group to cross Beringia 10,000 years ago. Their territory (after crossing Beringia) would have started in the subarctic terrain from the Yukon or interior of Alaska, to northwestern Canada. These sturdy peoples of the North not only survived the tundra and nomadic lifestyle of Athabaskan antiquity, following the caribou and other game, but expanded and became many nations. The three main subfamilies are the Northern Athabaskan, Pacific Athabaskan, and Apachean.

The name *Athabaskan* evolved from the Cree word *Athapuscow*, meaning “There are reeds one after another” or “a place where there is grass everywhere,” and originated from the Peace-Athabasca Delta in Canada. Athabaskan has several other spellings; *Athapaskan*, *Athapascan*, and *Athabaskan*. These people have descended from the Na-Dene, the largest phylum of North America, from which the Tlingit and Eyak are also distantly related. *Dene* is an Athabaskan word for “the people,” and the Chipewyan and Navajo groups also call themselves the “Dene.”

Glass beads received in trade in exchange for fur pelts became much treasured by the Athabaskan People, who expressed great artistry and ingenuity in

dramatically transforming the appearance of their clothing and accessories with beautiful floral and totemic patterns. Products made with beads became instantly popular trade and tourist items.

Lifestyles

When traveling, the Athabaskan constructed temporary conical dwellings; they covered the structure of leaning poles with bark, brush, or hides. Their permanent habitation consisted of semi-subterranean dwellings. Birch bark served as a durable and ever-available raw material to form and create essential baskets for carrying and cooking (for example, boiling meat in water with hot stones) and especially for crafting canoes. There were two sizes of sleds used by the northern Athabaskan people, the larger to transport heavy loads and the smaller for personal use. Clothing and accessories (including knives and arrow sheaths) were adorned with porcupine quillwork, especially the men’s clothing. Quillwork was a time-consuming project, requiring hunting of the animal, careful removal and preparation of the quills, and the difficult sewing required to stitch through the thick moose hides, transforming them into works of art with elaborate and intricate floral and woodland motifs.

The potlatch was actively practiced and was a central societal theme for the Athabaskan People. Surplus

foods were stored in family caches and birch bark boxes for the various winter feasts, taking place from late fall to early spring. This was the season to put love into action, as William E. Simeone was told concerning the northern Athabaskan potlatches. For instance, to give a blanket was to “wrap them in love.” The Athabaskan did not hold competitive potlatches to the extent practiced by some of the coastal tribes, such as the Haida and Kwakiutls. As with other northwest coastal tribes, it was important for a chief to know his connections to all of the attendants of the



Salmon catch on the Kuskokwim River

Source: Photograph by Rachel Klein, the Kuskokwim Corporation.

potlatch, to what capacity they would participate, and how they would be either assisted or honored. Potlatches were also times for unmarried clan members to meet other available persons. Since the Athabascan are a matriarchal people, who follow their mother's moiety, it was important for all Athabascan to know the other clan members' moiety, and how they were derived. The Upper Tanana, for instance, have two moieties. The first are the Crow People, or Star People, or the Ones Who Came from the Sky. The second moiety is the Seagull People. It was strictly forbidden for the Upper Tanana to marry within the same moiety.

From the very antiquity of Athabascan people, feasts were held after a successful hunt, especially with bear or caribou. Spiritual observances within a moral universe belief are demonstrated by showing respect for all things, for each other, for all animals, and for all plants, truly a kinship with all life. There were strict ceremonial practices followed for disposing of animal remains, for example, among the Koyukon Athabascan People in Alaska, who lived in close proximity to the Inupiat, their dwellings and lifestyles were very similar; yet archeologists could decipher which cultural group resided there based on the contents of the excavated kitchen midden. If there were remains of an animal the Koyukon held sacred either within or near the dwelling then it was an Inupiat lodge. The Koyukon would return the bones of water creatures to the water, in contrast, to indiscriminately dispose of the fauna. In the videos of *Make Prayers to the Raven*, an elder wonders if the "bad luck" they were experiencing that day was due to going away from the rules (respect for all that is) from "a distant time."

Strict etiquette was observed for bear meat. The women were not allowed to eat certain parts of bear meat until after entering menopause; it was also stated in *Make Prayers to the Raven* that the Koyukon women had not seen certain parts of that video (the women do not attend the "Bear Feast" in the woods). Other restrictions observed were that only men could cook it, certain parts could not be eaten or even given to dogs, and the "best parts" were to be saved and served as an integral part of the spiritual aspects of the potlatch.

As the Athabascan integrated into other surrounding Native groups, there would be a blending of cultures and even mythology. The Athabascan situated close to the Tlingits have nearly identical stories yet



One-Who-Was-Saved-By-The-Land-Otter totem in Klawock, Alaska. The land otters on various places of the body, represent the person turning into a land otter

Source: Photograph by Pamela Rae Huteson.

different hero names; for example, the Tlingits have "Raven," and the Athabascan have "Crow." These similarities are very evident in the stories of Raven/Crow and Whale and Raven/Crow and Brown Bear. There are also parallels between the two cultural groups in the stories of Land Otter Men, or *Kush-da-ka*, as the Tlingits call them. These creatures transform themselves from land otters into men to trick humans to come to live with them and are still believed to exist by the traditional Tlingits.

Divisions

The Northern Athabascan in the Alaskan/Canadian regions was to be divided into approximately 27 language groups. However, due to the intricacy and multifaceted nature of the Athabascan language, it is still being subdivided. It was thought the Eyak also separated from the Athabascan, but through linguistic research, it has been fairly well established that they separated prior to the proto-Athabascan.

Northern Athabascan:

- Alaska: Koyukon, Tanana, Ahtena, Tanaina, Upper Kuskokwim, Holikachuk, Ingalik, and Tanacross
- Northeastern Alaska and Northwestern Canada: Han (Moosehide), and Gwich'in
- Canada: Northern Tutchone, Southern Tutchone, Tagish, Tahltn, Kaska, Mountain, Bear Lake, Dogrib, Yellowknife, Sekani, Carrier, Chilcotin, Nicola, Sarsi, Slave Lake, Beaver, and Kawchottine (Hare)

Around 1,600 years ago, a portion of the Athabascan people migrated from the north to colonize the Pacific Northwest and northern California regions and became the Pacific Athabascan.



Ollie Peterson and Glenn (Tiny) Fredricks cutting salmon in traditional manner, for winter provisions

Source: Photograph by Rachel Klein, the Kuskokwim Corporation.

Pacific Athabascan:

- Oregon: Coquille
- Oregon and California: Upper Umpqua, Tututni-Shasta Costa, Galice-Applegate and Cheto-Tolowa
- California: Hupa, Mattole, Sinkyone-Wailaki, and Cah

Six to seven hundred years ago, the Pre-Apachean group journeyed to Southwest America, to the regions of New Mexico and Arizona, where their culture and technical survival skills morphed and integrated with the local residents, to become the Apaches and Navajo (*Dineh*). This division of the Athabascan kept a “core trait” of the conical dwellings and created several styles of the hogan.

Apachean:

- Puebloan: Apache (Western), Chiricahua, Jicarilla, Mescalero, and Navajo (*Dineh*)
- Plains: Apache (Kiowa) and Lipan

European Introductions

Prior to European contact, the Athabascan had settled into a seminomadic lifestyle. They were already traders by occupation and were ready for fur trade with the Europeans. Beadwork taught to the eastern Athabascan spread quickly to the west and south, as each band created their own significant style. Although quillwork was still crafted, the beads were easy to obtain in any array of sizes and colors, which made them an instant favorite with Athabascan artisans. The legacy of Athabascan beadwork can be found in many major museums around the world.

Present Day

Much work is being done to save the Athabascan language; for example, every spring, an Athabascan Conference is held in a different Athabascan area,

where linguists and other educators meet with the Athabascan communities to discuss ways to preserve their valuable language. Many curriculums have been developed to instruct school students and adults how to carry on their traditional Athabascan cultural heritage. Athabascan authors are also making themselves known in the literary world, for example, Velma Wallis, author of *Two Old Women* (1993), and Jan Harper-Haines, author of *Cold River Spirits* (2000).

Today's Athabascan have integrated modern technology and traditional subsistence; the Coquille People are raising and marketing organic cranberries, and Alaskan Athabascan are participating in the Alaskan fishing industry. Also, building on gambling "games," casinos have also become a way for some Athabascan groups to become self-sufficient. The Athabascan may be a diverse group, but there is a bond that goes very deep, as historically, they have assisted each other in various territorial disputes with other encroaching Native groups, for example. Today, they continue to assist each other to preserve their language and culture, by keeping it viable and relevant for the present and future use for not only their families, but for the family of man as a whole.

— Pamela Rae Hutesson

See also **Aleuts; Native Peoples of the United States**

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AUEL, JEAN MARIE (1936–)

Jean Marie Auel, born on February 18, 1936, in Chicago, Illinois, is the author of the series, *Earth's Children*, a collection of novels revolving around the interactions of Cro-Magnon people with Neandertals. Auel did not come to her chosen craft as a trained writer. Rather, after raising five children and earning an MBA from the University of Portland, she was in a self-described "free-floating state" that left her open to new ideas: She was drawn ultimately to writing the stories of Ice Age ancestors that modern science helped her tell. Auel joins the ranks of writers like J.R.R. Tolkien and J. K. Rowling, who have written epic stories drenched in fictitious history and find large audiences due to their works' imaginative and historical values. While Tolkien and Rowling focus on the magical, Auel's books draw their richness from her study and explorations of the worlds of anthropology and archeology.

Through her fiction, Auel enables readers to discover cultural patterns in ways similar to those of anthropologists in the field. She immersed herself in learning stone tool making, preparing food from caribou brain, processing animal skins, making cordage, and digging roots to guarantee the authenticity of her books. She acknowledges that a bibliography of published material she has read on archeological and anthropological subjects would approach 4,000 entries. She has established working relationships with many professionals and has traveled to Western and Eastern Europe to visit actual sites and caves to enrich her stories.

Auel uses the Stone Age setting to explore gender roles and draws remarkable parallels between the cave society of which she writes and our more contemporary social structures. In Auel's series, the protagonist Ayla comes of age in a Neandertal community ruled by traditions and taboos. She is a feminist from matriarchal prehistory, a resourceful innovator whose solutions to daily living are a source of astonishment for cave men. Ayla's intelligence separates her from other tribe members. Auel's books have also been commended for the ethnobotanical accuracy as well as their anthropological accuracy. They remind us to take nothing for granted, such as the bountiful but limited resources of the earth.

Some historians and anthropologists, however, maintain that Auel's assumptions about Neandertal life are not realistic. They claim that she bases her

view of the Neandertal on the racially motivated science of late 19th-century French anthropology, and many anthropologists have denounced the novels as containing “bad” science and overt racism.

Nonetheless, Auel has received numerous awards for her writing, including an American Book Award nomination for the best first novel and Friends of Literature Award for *The Clan of the Cave Bear* (1981). She is also the recipient of the Scandinavian Kaleidoscope of Art Life Award, Golden Plate Award, American Academy of Achievement, Silver Trowel Award, National Zoo Award, Waldo Award (Waldenbooks), and Persie Award from WIN.

— *Judith A. Dompkowski*

See also **Neandertals**

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AURIGNACIAN CULTURE

The Aurignacian is an early Upper Paleolithic, or Late Stone Age, culture dating to between 34,000 and 27,000 years before the present (BP). Aurignacian artifacts have long been considered representative of the culture of the first anatomically modern humans (*Homo sapiens sapiens*) to migrate into continental Europe. This is currently an issue of intense debate, as some archaeologists argue that Aurignacian artifacts may actually be the result of acculturation whereby migrating populations of anatomically modern humans were interacting with indigenous Neandertal populations and producing what archaeologists recognize as the Aurignacian culture.

Aurignacian artifacts consist mainly of stone and bone tools and reflect the technological capacity to

produce parallel-sided stone blades and the ability to transform organic materials into tools. The average Aurignacian stone artifact assemblage includes a variety of tools, like burins, end scrapers, resharpened flakes, and blades with marginal resharpening. Compared with earlier Paleolithic cultures, Aurignacian stone tools reflect (a) an increase in the number of end scrapers, (b) an overall reduction of resharpened blades, and (c) the emergence of carinated and Dufour-type bladelets. Aurignacian stone tools are often made on nonlocal stone, especially in early assemblages, which were obtained from sources as far as 45 km from where they were found by archaeologists. Understanding of the chronological development of Aurignacian stone tools is hampered by the fact that most Aurignacian assemblages have comparatively low diversity indices and overall small sample sizes. Consequently, the shape of the base of bone projectile points is often used as primary chronological markers instead. For example, Aurignacian Phases I-V are characterized by split, forked, beveled, and unmodified bases, respectively.

The geographic distribution of Aurignacian Culture ranges from “classic” manifestations in continental Europe, particularly southwestern France, to perhaps pre- and proto-Aurignacian in the Levant, the Zagros, the Caucasus, and Central Asia. Far from an in situ European development, archaeologists now think that Aurignacian culture most likely descends from one of these eastern core areas and appeared in Europe through relatively late population movements.

Aurignacian populations were organized into small, nomadic hunting-and-gathering bands that probably occupied a territory of less than 200 sq km. Settlement patterns, at least for the classic Aurignacian, were focused on river valleys in both open and rockshelter sites. Internal site patterning was documented at a series of open sites on the Hornad River in the former Czechoslovakia and consisted of multiple, variably shaped features and postholes. It has been hypothesized that these are the remains of structures with internal hearths.

Paleoenvironmental data indicate the early Aurignacian was marked by a cold, dry, and open steppelike environment, whereas the late Aurignacian saw a warm, wet, and forested environment. This environmental shift is corroborated by changes in Aurignacian stone tool technology and economy. For example, in the Vézère Valley of southwestern France,

the number of burins and thick scrapers increases in later assemblages, which is argued to reflect adaptations to changes in the type and distribution of plants and animals. Early Aurignacian artifact assemblages are dominated by the combination of reindeer and high proportions of nonlocal stone, while later ones contain greater animal diversity (seasonally available small mammals and fish) and a lower proportion of non-local stone. Taken collectively, the environmental and archaeological data are consistent with a pattern of highly specialized hunting and gathering for the early Aurignacian, presumably associated with the acquisition of highly mobile animals, and a more generalized food-getting strategy for later Aurignacian, as an array of diverse, less mobile fauna became locally available.

Artistic expression also begins to take on more importance during the Aurignacian. Examples of decorated bone, antler, and stone blocks have been found at Aurignacian sites in Spain and southwestern France. Some French caves contain geometric configurations such as chevrons, crosses, and parallel lines. Animal figurines, and a possible human form, are known from the German site of Vogelherd. These data are often taken as evidence of an Aurignacian symbolic system, though their actual meaning remains enigmatic. Perhaps stronger, yet no less enigmatic, evidence for an Aurignacian symbolic system comes from the site of Cueva Morin in Spain, where a complex burial ritual was documented. This site is unique because it contains four burials, of which Morin I is the best preserved, and instead of skeletal remains, natural casts of the bodies were found. Careful excavation of Morin I showed that the individual was buried on his back in an extended position. The body appeared to have been mutilated, with the head and feet completely removed. A quartzite blade was found undisturbed near the head, and a large animal was placed on top of the torso, while a smaller animal was placed over the legs. The burial pit was then filled and mounded with earth, sprinkled with red ochre (a natural mineral pigment) and set afire. It is postulated that these burial practices persisted for some time, because they were not disturbed by later occupations at Cueva Morin.

The Aurignacian culture began to diminish around 27,000 BP and eventually disappeared completely as local varieties were replaced by the Gravettian culture during the Middle Upper Paleolithic.

— Phillip R. Hodge

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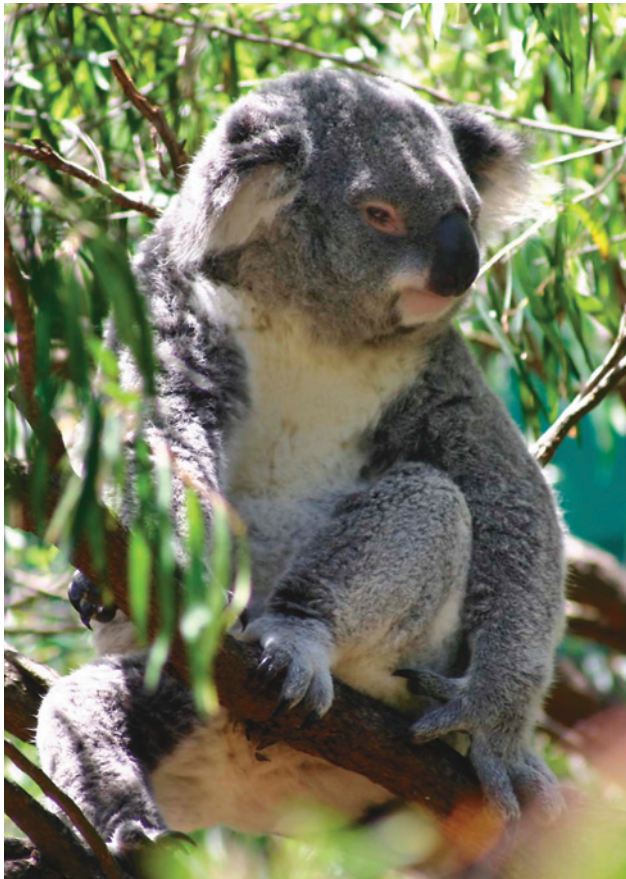


The Commonwealth of Australia is a country, a continent, and an island. It lies completely in the southern hemisphere, southeast of the Asian landmass, between the Indian and Pacific Oceans. The name *Australia* is derived from the Latin *australis*, meaning “southern.” As far back as the second century AD, legends hinted at the existence of an “unknown southern land” or *terra australis incognita*. While maps from the late 1400s show parts of the coastline, the land was not “officially” discovered by Europeans until the 17th century, when a series of expeditions were led by Dutch and Portuguese explorers.

Australia has been separated from other landmasses for millions of years. It is also the lowest, flattest, and aside from Antarctica, the driest of the continents. This long period of isolation combined with unusual terrain has enabled many unique geologic features, environments, plants, and animals to develop.

The Land

For millions of years, Australia was part of the supercontinent of Pangea. As the continent broke apart and began drifting on the surface of the planet, Australia was part of the southern segment of Gondwana. Since severing its last connections with Antarctica and the island of Tasmania in the mid-Cenozoic (about 35 million years ago), Australia has been drifting toward southeast Asia at the rate of about 2 inches per year. Geologically speaking, Australia’s life span as a free-standing continent will be relatively brief.



Source: ©iStockphoto/Kim Meagher.

Australia has been free of volcanoes, earthquakes, and other mountain-building forces longer than any other continent. Wind and rain have been eroding the surface for about 100 million years, making Australia's dominant feature its flatness. The extreme state of erosion in Western Australia has exposed some of the Earth's oldest rocks, dating back 4.3 billion years.

Unique Geologic Features

Uluru, the world's largest single rock, is the most visited landmark in central Australia. *Uluru* is an Aboriginal word meaning "great pebble." It is the largest of a group of about 30 similar dome-shaped rocks rising from the desert floor. These rocks are the remains of a buried mountain range and are collectively known as the Olgas. The Aboriginal name of the Olga Rocks is *Kata Tjuta*, which means "many heads." Uluru's size and color attract visitors from around the world. As the sun travels across the sky, the rock changes from brilliant red to a deep blue color. The Olgas are sacred to the Aborigines. Rock

art found in caves on Uluru is thousands of years old. Sacred areas of the rock are off limits to all visitors, and one must ask permission before climbing marked trails. *Kata Tjuta* lies within Uluru National Park, which the government returned to its Aboriginal owners, the Anangu people, in 1985. Uluru was formerly called "Ayers Rock," after Sir Henry Ayers, a former leader of South Australia, but the Aboriginal people prefer the original names for these sites be used.

The Great Barrier Reef is a 1,200-mile long coral reef running along the Queensland coast of northeast Australia. Coral is created from masses of small marine animals called polyps. As polyps die, they leave their skeletons behind, which form the mass of the reef. New polyps grow on the old, creating a rainbow of colors. The Great Barrier Reef is the largest structure created by living organisms in the world. Parts of it are millions of years old. The reef is home to hundreds of species of fish, mollusks, and other marine life.

Stromatolites are the oldest known fossils in the world, dating back more than 3 billion years. They are even more unusual in that the fossil form was found years before scientists found live specimens still developing. Stromatolites are formed by photosynthesizing cyannobacteria and other microbes that build "reefs" in the same way that coral grows. It is believed that cyannobacteria were most likely responsible for creating our oxygen atmosphere billions of years ago. These bacteria were the dominant life form on the planet for over 2 billion years. Today, they are almost extinct and live in very few locations around the world. One place living stromatolites can be found currently is in the Shark Bay World Heritage Area on Australia's west coast. The extreme salinity of the seawater, limited water circulation, warm temperatures, and presence of calcium carbonate create an environment ideal for the growth of stromatolites. Predators of the microbes cannot survive in this environment, because it has twice the salinity of regular seawater, so the cyannobacteria can grow unchecked.

The Climate

Australia is divided into three major zones. The Western Plateau covers almost two thirds of the continent and is mainly desert, with a few low mountains around the edge. The Central Lowlands are a monotonous, harsh area where most of the rivers and lakes are often dry. The Eastern Highlands is a narrow,

fertile strip of land along the Eastern Coast divided from the rest of the country by the Great Dividing Range. Most of Australia's population lives in this zone of good farming land, with a moderate climate and adequate rainfall.

Recent evidence suggests that the first settlers arriving in Australia 50,000 years ago set fires to clear the land for farming. These burning practices were widespread and could have triggered a cataclysmic change in the weather. The interior of Australia was much wetter 125,000 years ago. The last Ice Age changed the world's weather, but when the glaciers retreated 12,000 years ago, monsoons returned, except for the Australian monsoon. While the Australian monsoon currently brings about 40 inches of rain to the rainforests of the north coast, only about 13 inches of rain annually reach the interior. This suggests that those large fires in the past eliminated the plant population, which decreased the exchange of water vapor with the atmosphere and greatly reduced cloud formation in the interior, resulting in far less rainfall. Fossil evidence indicates that animals living in the interior used to graze on grasses, bushes, and trees that could not survive there under current conditions. The fossil record also displays large charcoal deposits that were most likely caused by widespread fires, also conveniently dated to the time those early settlers arrived.

The Flora

Australia has no large densely forested areas. Plant growth generally consists of grasslands, shrubs, or open forests. Many plants are drought resistant to survive in the harsh, hot climate. Trees tend to have deep taproots to reach water far below the surface. Plant leaves and stems are often light colored or shiny to reflect the sun's rays.

Vegetation in Australia is dominated by two groups of plants. Eucalypts (gum trees) and acacias (wattles) together have more than 1,000 species. Eucalyptus is an evergreen hardwood with tough, thick leaves that retain water. The tree is oily, which feeds wildfires. Lightning strikes frequently cause fires in such an arid environment. Acacias are economically valuable for their timber, their gum, and their edible seeds.

The Eastern Highlands have temperate and tropical rain forests. The temperate zones have seasonal fluctuations, and the tropical areas are always hot. The tropical rainforest areas are along the northern

coast, close to the equator. The Central Lowlands and Western Plateau are desert or semidesert. The temperatures get extremely high during the day and cool very rapidly at night. Rainfall is almost nonexistent. The grasslands and savannas on the borders of the deserts are known as "the bush." The central and western portions together are known as the "out-back," because they are "out back of" the Great Dividing Range.

Since European colonization, Australia has lost 70% of its native vegetation, 45% of its forest, and 75% of its rainforests. Loss of this native plant growth has resulted in the endangerment or extinction of dozens of animal species.

The Fauna

Australia is the home of many unique animals. Monotremes can only be found in Australia, and New Guinea to the immediate north. Monotremes are mammals that lay eggs but nurse their young with milk after hatching. The platypus and the echidna are currently the only monotremes in the world. The platypus is about 2 feet long, has dark brown fur, a bill like a duck, and webbed feet and a tail to help it swim. Plates on its bill help it crush worms, mollusks, crustaceans, and plants for food. They usually live near riverbanks in Eastern Australia. While they can move on land, they move awkwardly on their knuckles. The females lay eggs that hatch within 10 days and nurse their young for about 5 months. Echidnas are spiny anteaters. They have strong bodies with short legs and relatively large feet and claws. They dig up worms, ants, and termites to eat. The females also lay eggs that hatch within 10 days, but when the young hatch, they climb into their mother's pouch for 6 to 8 more weeks. They nurse during that time. The echidna life span is over 50 years. Humans are the only mammals that live longer.

Marsupials are the animals most commonly associated with Australia. A few species of marsupial can be found in South America, but most make their homes only in Australia and Tasmania. Marsupials are mammals that give birth to underdeveloped young, which must then climb into a pouch on the mother to continue growing. Kangaroos, wallabies (small kangaroos), koala bears, wombats, possums, and bandicoots are the best-recognized plant-eating marsupials. Some marsupials are carnivorous. The Tasmanian tiger, a small, fierce hunter, is now believed to be extinct. The

Tasmanian devil is an aggressive black badger-sized creature with a white stripe on its chest. It hunts small mammals and birds at night.

The dingo, considered the native dog of Australia, originated with dogs brought to the continent by traders 3000 to 4000 years ago and abandoned. Dingos were domesticated by Aboriginal people. They were used for hunting and guarding homes. Dingos do not bark, but communicate by howling.

Australia is home to over 700 species of bird. More than half of those are native. The largest birds, the emu and cassowary, are flightless. The emu is the second-largest bird in the world, after the African ostrich. One of the best-known Australian birds is the kookaburra. It is a member of the kingfisher family and has a distinctive loud cackling laugh.

Being an island nation, Australia has close contact with marine life. The Great Barrier Reef off the northeast coast is the largest coral reef in the world and is home to hundreds of exotic and colorful species. Australia is known for its sharks, especially Great Whites, but its coastal waters are also home to whales, giant sea turtles, dugongs (a type of seacow), and dolphins.

Reptiles can be found widely across Australia, including crocodiles, snakes, lizards, turtles, and tortoises. Australia has no alligators, but crocodiles are the largest living reptile in the country. They can be found only in the north. Saltwater crocodiles are the most dangerous to humans, while freshwater crocodiles are mostly harmless. There are about 110 species of snakes in Australia, and about half of them are venomous. The taipan and tiger snake are deadliest, but death adders, copperheads, and brown snakes can all be dangerous to humans. Goannas are lizards that can grow over 6 feet long and can be aggressive if disturbed. Australia is also home to some of the world's deadliest spiders. The funnel-web spider's bite can be fatal to humans, and these large, aggressive spiders will actually chase their prey (including humans) if disturbed.

The People

Native Australians are called Aborigines. *Aborigine* comes from the Latin *ab origine*, which means "from the beginning." Australian natives do not call themselves Aborigines. Europeans coined the name upon arriving on the continent and finding it inhabited. Aborigines refer to themselves by their tribal names.

There are two groups of indigenous people in Australia; Australian Aborigines and Torres Strait Islanders. The Torres Strait Islanders were seafarers who inhabited the small islands in the Torres Strait, which separates Australia from Papua New Guinea to the north. In recent decades, migration from the Torres Strait has been extensive, and most Torres Strait Islanders now live in Australia.

The first Australians appear to have traveled to the continent by raft or boat from Asia at least 40,000 years ago, during the last Ice Age. At that time, the sea level was much lower, leaving far narrower bands of water to cross. While the water was narrower, it was still too far across to see land. It has been speculated that smoke from large brush fires may have encouraged those first settlers to explore.

Nomadic tribes of hunters and gatherers roamed the continent freely, each group having its own language and customs. As the Ice Age ended, the ice melted, the seas rose, and Australia became isolated. The inland lakes dried up, the temperatures rose, and the deserts formed. As the land grew increasingly inhospitable over thousands of years, the Aboriginal people adapted and learned to thrive. They hunted and fished, and gathered fruits, nuts, roots, fungi, and insects. They grew skilled at finding water where there appeared to be none. They were also traders, with trade routes crossing the country. They traded ochre, which is a pigment for painting, boomerangs, shells, stones, tools, and more.

There are approximately 500 recorded tribes of Aborigines. They lived in clans, or family groups. Each clan also incorporated several species of animal, one of which was selected as the totem for that tribe. Each clan had a territory, which included a sacred location where their spirits would return after they die. These places were carefully protected so they wouldn't anger their ancestors. Myths and rituals played a strong role in Aboriginal culture. A rich oral history derives from the Dreaming, or Dreamtime. The Dreaming tells of the creation of the land and people, and stories told today still involve mythic creatures from the Dreaming. Aspects of the Dreamtime are depicted in art found on rock walls dating back thousands of years. The paintings are abstract, incorporating many codes and symbols understood by Aborigines to relate ancestral stories.

The British were the first Europeans to colonize Australia. In 1770, Captain James Cook claimed the land for Great Britain. The first settlement, Port

Jackson, was established in a promising harbor called Sydney Harbor, on the southeast coast. This settlement grew into the city of Sydney. From 1788 to 1852, England used Australia as a penal colony to free space in overcrowded British prisons. More than 160,000 men, women, and children were sent to New South Wales as convicts. After release, few prisoners returned to England. Most established themselves in Australia as farmers or tradesmen.

Australia, if thought about at all in the West, was portrayed as a wild land suitable only for convicts or adventurers. This attitude would change. On January 12, 1836, Charles Darwin sailed into Sydney Cove on the *Beagle*. He was concluding his 5-year study of natural history around the globe and developing his theories about natural selection and its evolutionary role. Darwin made brief forays into New South Wales, sailed on to the island of Tasmania, and concluded his visit on King George's Sound on the southwest shore. He sailed onward from Australia on March 14, 1836. Although he made a brief 2-month visit and remained on the southern coast, Darwin's work stimulated scholarly interest in Australia. To honor his work, the city of Palmerston on the "Top End" (the coast of the Northern Territory) was renamed "Darwin" in 1911.

The Future

As the British colonized Australia, they did not recognize Aboriginal ownership of the land. As Aborigines began to resist the settlers moving into their territory, colonists simply massacred native groups. Tribes were forced to live on reservations in the most hostile areas of the country or on religious missions.

In recent years, the Australian government has begun to acknowledge many decades of mistreatment. A department was established within the government to address Aboriginal affairs. Laws have been passed to return land to its original owners. Aboriginal art is now recognized and in demand worldwide. Painting, storytelling, and folk music are increasingly appreciated. Despite these gains, however, Aborigines are still the most disadvantaged citizens economically.

A history of egalitarianism has made an increasingly diverse population grow with a minimal amount of tension or conflict. Today, Australia is one of the most culturally diverse nations on the planet. Trade and tourism have been a boon to the economy. Australia is a vibrant young nation that has adapted

well to rapid change. The country's greatest challenge, perhaps, will be to meet the demands of the future without losing the traditions that built the nation.

— Jill M. Church

See also **Aborigines; Australian Aborigines; Darwin, Charles**

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AUSTRALIA

In 1993, Australian anthropologist Julie Marcus edited a slim volume of essays on Australian women anthropologists. The essays were derived from papers presented at two conferences on women's issues. The first conference, "When the Voice of the Turtle Shall Be Heard in the Land," took place in Glenelg, Adelaide, in 1990. The second meeting occurred as a workshop at the 1991 session of the Academy of the Humanities. Marcus and the other women who contributed to the volume highlighted the contributions of pioneer Australian anthropologists such as Isobel White, Catherine Berndt, Mary Ellen Murray-Prior, Daisy Bates, and Olive Pink. These women had enormous impact on contemporary female Australian anthropologists.

Australian feminist anthropologists maintain that males have continued to dominate the field of anthropology in large part because of the settler mentality in which Australia was founded. They believe that in the past, women anthropologists often worked without identifying themselves as feminists in order to bypass the prejudices against women academicians. Nevertheless, these women continued to study the anthropology of Australian women, and many of those studies, such as those conducted by Olive Pink and Phyllis Kaberry, have centered on the lives and issues of Aboriginal women who continue to face an entrenched dichotomy of racism and sexism.

The issue of domestic violence among Aboriginal women has been receiving increasing attention in Australia since the 1990s, because it has reached what some consider to be epidemic proportions. Aboriginal women, to a much greater degree than other Australian females, have been marginalized by the colonial traits that linger in Australian culture. High rates of domestic violence are due in part to the Aboriginal practice of men flogging their wives with hammers, knives, sticks, stones, or pickets. This practice frequently leads to murder, rape, incest, and severe physical and mental injuries. As members of a minority population, Aboriginal women often lack the resources to combat violence without outside intervention. However, most scholars feel that the subject of Aboriginal domestic violence has been cloaked in a veil of secrecy because the victims have no desire to expose themselves to community scrutiny. Nor do they wish to face the possibility of being stereotyped by white Australians. While anthropologists Diane Bell and Katherine Burbank have noted that Aboriginal women may sometimes initiate violence, particularly verbal abuse, males instigate most of the violence in Aboriginal communities. Such violence may be a result of the alcoholism rampant in many Aborigine communities, or it may simply be the result of an Aboriginal male exercising what he perceives as his natural right to dominate Aboriginal women. One 1995 study estimated that as many as 46.9% of all Aboriginal women are attacked at some point in their lives compared with 11.4% of the white female population who will be attacked.

In response to a request for information on the status of women in Australia regarding the

implementation of the 1995 Beijing Platform for Action, the Australian government stated in 2000 that it had classified domestic violence as an issue worthy of "national importance." In conjunction with governments in Australian states and territories, as well as with businesses and local communities, the Australian government pledged \$50 million from 2001 to 2005 to support its Partnerships Against Domestic Violence initiative, which included more than 230 separate projects. One of those initiatives included the Australian Domestic Violence Clearinghouse, which was designed to integrate scholarly work on domestic violence with government policies.

— Elizabeth Purdy

AUSTRALIAN ABORIGINES

The societies and cultures of Australian Aborigines have captured the interest of anthropologists for a variety of reasons. In the evolutionist anthropology of the 19th century, they were thought to represent survivals of "Stone Age man." For the French sociologist Emile Durkheim, their religions represented the "earliest" and most pure type of religion. By the beginning of the 20th century, with the demise of evolutionist anthropology, anthropologists became interested in Aboriginal cultures and societies for their intrinsic qualities and in some cases out of a concern for social justice.

A series of ethnographic studies appeared from the late 19th century and through the 20th century, resulting from research among communities living on missions and government stations or on the fringes of country towns such as Alice Springs but largely treating their ways of life as pristine systems. From the mid-20th century, a number of ethnographies dealt with Aboriginal communities living on the fringes of country towns and within larger towns and cities. Anthropological interests shifted in the late 20th century toward studies of the relationships between Aboriginal people and the missions, their position in Australian society, and the history of that relationship.

Prehistory

Archaeologists date the first arrival of modern humans into Australia and New Guinea at about 50,000 years ago. Until the British colonization of Australia, which began in 1788, Australia and its peoples remained relatively isolated. The Australian landmass was periodically joined to the islands of New Guinea at times of low sea level to form the continent of Sahul. Following the end of the last such glacial period about 12,000 years ago, rising sea levels separated Australia from New Guinea, and Tasmania (and other smaller islands) from the mainland. Nevertheless, social intercourse continued, at least sporadically, across the Torres Strait, and in recent centuries, Macassan visitors voyaged on the summer monsoon winds from what is now Sulawesi, to the north coast of Australia, to gather *bêche-de-mer*. Despite these northerly contacts, Aboriginal people across the continent retained a hunting, gathering, and fishing mode of subsistence across the continent, although it can be argued that they practiced a form of “cultivation” through various kinds of interventions in the reproduction of food species, particularly through the use of fire to burn off the understory. Aborigines developed complex cosmologies, rituals, and forms of kinship and social organization and were linguistically very diverse; and their forms of society and culture were also quite diverse.

Population

The first systematic attempt at estimating the pre-colonial population was that of A. R. Radcliffe-Brown, who arrived at a minimum population of 300,000. This estimate has recently been revised upwards on the grounds that the early estimates neglected the effects of smallpox, which ravaged the populations of many areas ahead of the British frontier. Archaeologists now consider a figure between 500,000 and a million to be plausible. Population densities probably ranged from about one person per 200 sq km in the arid zone to perhaps one person per 2 to 3 sq km on coasts with rich marine and terrestrial resources, and along the lower Murray River.

Ecology

In the 1920s and 1930s, Norman Tindale and Donald Thomson carried out pioneering studies of Aboriginal

relations to the environment. The systematic study of relationships between Aboriginal communities, territories, and resources in remote regions did not begin until the late 1950s, however, fostered by developments in cultural ecology and by archaeological interest in ethnography. The best of the later research took place in the Western Desert and northeast Arnhem Land, for example, in the research of Richard Gould and Nicolas Peterson.

Overall, Australia is the most arid of continents, but Australian environments are nonetheless very varied, from the monsoon climate of the tropical north, through the low and unreliable rainfall of the arid zones with their sandy and stony deserts, to the temperate climate of the southeast with its year-round rainfall; and vegetation varied from the rainforests of the east and north coasts to the deserts of the arid zone.

The richer resources on some of the coasts and the major Murray-Darling River system enabled some Aboriginal peoples to live a relatively sedentary life. Conditions elsewhere, however, required higher degrees of mobility. But people everywhere, even the least mobile, combined living in a home base with “logistical mobility”; that is, people made food-collecting and hunting forays out from the home base, usually traveling no further than could be accommodated within a day. People moved home base a few times a year on the rich coasts of eastern Cape York Peninsula, but (in a study by Richard Gould) nine times in 3 months in the Western Desert, where the search for water in particular dictated movement. The size of the foraging range was in the vicinity of 30 to 100 sq km in northeast Arnhem Land and 3,000 sq km in the Western Desert.

The average size of the home base varied from about 20 to 50 people in the tropical north but about half this range in the Western Desert. People came together in larger numbers from time to time, around seasonally rich resources or permanent water sources, using the opportunity to conduct major ceremonies such as male initiation. Movement in some regions exhibited a markedly seasonal pattern. In the tropical north, for example, people were very mobile in the dry season but constrained by summer rains to remain in larger camps on high ground.

Technologies

Some of the very early amateur ethnographers, such as K. Langloh Parker, exhibited a keen interest in



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Aboriginal technologies, a concern that became pushed into the background with the development of structural functional anthropology. The basic technology was similar everywhere, with men using spears (and harpoons on the coast), throwing sticks, and using facilities including fish traps, while women deployed the hardwood digging stick and various kinds of containers. The use of larger facilities such as nets and fish traps varied greatly according to region, as did the use of watercraft. Fire was the main instrument for converting the physical properties of raw materials and foods, and the main motive power remained human muscle power, except for limited use of wind power for watercraft in Arnhem Land in recent centuries. Some notable regional variants included the use of a wide variety of fish traps in Arnhem Land, the extensive use of nets in the grassland and woodland of New South Wales, and the double-layered raft of the west Kimberley coast.

Organization of Production

Anthropologists did not theorize Aboriginal “economy” adequately until the 1980s, with the work of scholars such as Jon Altman. The ethnographic record is therefore patchy. The organization of production appears to have been similar in all regions. There was a marked division of labor along gender lines, with women usually hunting small game, gathering vegetable foods, and in some regions fishing. Men hunted larger game, including marine mammals

and reptiles on the coast, and fished. In all regions, the size of work teams varied from working solo, through small single- and mixed-gender teams (two-five people) and larger teams of mixed or single gender (six or more people). The organization of work varied with the task, from working in parallel to a simple division of labor around one or more items of equipment. Cooperative teams drew both on single-hearth groups and across several-hearth groups of the home base residence

group (“band”). Men were probably the more mobile, especially where watercraft were involved.

Identities

In the classical models of Aboriginal social organization synthesized by A. R. Radcliffe-Brown, Aborigines were organized into “tribes,” “hordes,” “clans,” and family groups. Research conducted from the 1970s has changed anthropological views and led to the reinterpretation of early ethnography. What were regarded as endogamous tribes are predominantly language identities. Commonly, people related named languages to specific areas of land (and waters), though not always with clear boundaries, so that a person belonged both to a language and its territory, even if he or she did not speak the language. Some individuals had dual- or multiple-language identities (one from each parent). Language varieties in the Western Desert had a context-dependent, “shifting” character, while in some areas, such as Gippsland, regional identities dominated, so that people identified as “northerners,” “people of the sandy islands,” and so on.

According to the classic models, “tribes” were everywhere divided into patrilineal “clans.” Again, recent research has shown Aboriginal social organization to have been more diverse than this model suggests. In the Western Desert, groups of mixed composition owned clusters of totemic ancestral sites (most commonly waterholes) and adjacent areas, on

the basis of place of birth, place of conception, place of male initiation, depth of knowledge, and other grounds, so that membership of these groups overlapped considerably. Place of birth seems to have been the main basis of attachment to country in north central New South Wales, but in many regions, patrilineal groups were the dominant form of land-holding groups. Individuals enjoyed a variety of complementary connections and associated rights, for example, in a person's mother's country, spouse's country, through adoption, links to a grandparent's country, and so on. These connections formed the basis for preferences about where to reside, hunt, and gather. Residence groups formed around a variety of attachments to areas of land and waters defined by totemic ancestral sites, but with a bias toward patrilineal ties in regions where land was held by patrilineal groups.

Religion and Cosmology

Early studies such as those of K. Langloh Parker and W. E. H. Howitt wrote of Aboriginal ceremonies, myths, and magic but did not classify doctrines and practices as "religion." The concept of "totemism" played a central role in syntheses such as those of Sir James Frazer. Durkheim, however, saw Aboriginal doctrines and practices as those of a primal "religion," and that view was taken up in the writings of W. E. H. Stanner. More recently, the concept of "Dreamtime" or "the Dreaming" has become a popular way of representing Aboriginal cosmology, ritual, and ancestral "law."

Myths about totemic ancestors who took the identities and some of the characteristics of natural phenomena and species appear in all regions. Mythologies speak of a creative period in which totemic ancestors traveled and left their substance, powers, and traces of their activities in land and waters. Some regions, such as the Western Desert and the Kimberley, emphasize long, cross-cutting journeys across the land. Others, notably the southeast, give some emphasis to the sky, the final domain of a single ancestral figure, pair, or family. Many localities related to the "sky-being" as well as having local totemic identities. In some regions, such as eastern Cape York Peninsula, ancestral journeys are minimal, and localities are highly differentiated by their totemic associations.

Ceremonies reenact ancestral events, and participants identify with totemic ancestors through body decoration, song, and mimetic dances. But people

draw on this basic pattern to achieve many social ends; ceremonies include female puberty rites, male initiation, the revelation of secret objects and dances, exchange, mortuary rites, and dispute settlement.

Many approaches to Aboriginal religions neglect their "magical" instrumental aspect. In many regions, men combined the role of magician, sorcery, rain-maker, and healer. These "clever men" were also leaders of totemic ancestral ceremonies. Furthermore, in many regions, including the Western Desert, eastern Cape York Peninsula and the Kimberley, totemic ancestral sites were places where the enactment of rituals was believed to ensure the supply of rain, plant and animal resources, and human fertility. In some regions, people believed that ancestral powers could be drawn on to harm one's enemies, as with sorcery practices, and people of a number of regions enacted rituals associated with so-called love magic.

Kinship and Marriage

The analysis of the structure of Aboriginal systems of kinship and marriage became something of a minor industry in structural functionalist and structuralist anthropology, where kinship was taken to be more or less synonymous with social structure. Their elaboration is due to their relationship in a variety of ways with marriage bestowal, moiety, semimoiety, section and subsection systems, and patrigroup and matri-group membership. Potential spouses are defined in terms of kin relatedness, usually some kind of cross-cousin. As Claude Levi-Strauss has shown, modes of kin classification reflect patterns of exchange relations and marriage networks. And as a number of scholars have demonstrated, marriage occupied a central place in Aboriginal political economy and was related to varying levels of polygyny.

Exchange

Claude Levi-Strauss represented Aboriginal marriage systems as systems of exchange of rights in women. However, marriage in which people exchanged rights in a person as a spouse for goods and services formed part of wider networks of distribution and exchange of goods and services. Broad patterns of distribution appear to have been similar across Australia, with women's product (small game, vegetable foods, and so on) being distributed primarily within their own hearth group and men's product (including larger

game) being distributed more widely within a residence group, partly according to customary obligations, such as to one's wife's parents. Wider networks of exchange, so-called trade, were composed partly of chains of hand-to-hand exchanges, partly of barter at certain locations and partly of long-distance travel to acquire goods (such as *pituri*, native tobacco). Some exchange items such as pearl shell travelled vast distances from their places of origin. The form of marriage networks and exchange networks varied from the asymmetrical chains of the western Kimberly *wurnan* system to diffuse networks of dispersed affinal alliance.

Governance

Unlike Africa, where British colonial administration involved indirect rule, fostering anthropological research on indigenous politics and law, the anthropology of these subjects in Australia remained relatively undeveloped, with some exceptions such as the research of Nancy Williams. Debates centered around the nature of authority and the existence or otherwise of "chiefs" and "councils" of elders. The neo-Marxist analyses of the late 1970s extended the focus to gender relations.

Relations of power and authority were shaped along age and gender lines, and there were no chiefly offices or specialized governmental institutions. "Ancestral law" was framed through more or less shared doctrines about totemic ancestors, enacted in regional ceremonies, and male initiation and revelatory rites worked in part as formal modes of socialization. Networks of kin enforced norms and took redressive action through a pattern of what Ronald Berndt called "self-help." Within these similarities, resources of power and the degree of inequality varied from region to region.

Aborigines and Australian Society

Anthropologists such as the Berndts, Marie Reay, and Jeremy Beckett made studies of Aboriginal communities in southern towns and cities in the mid-20th century. From the early 1980s, younger scholars began to move toward studies of the relationship between Aborigines and the missions, the history of Aboriginal relations to the state, the economy of Aboriginal townships, race relations, and the social life of Aboriginal people of mixed descent living in or on the fringes of southern towns and cities.

Following the initial penal settlements, colonization proceeded rapidly in the southeast and southwest of the continent from the early 1800s, spurred by the gold rushes. This process had devastating effects on Aboriginal populations as the result of violence and introduced diseases. The frontier moved across the northern and central parts of the continent rather later, as farming spread north along the east coast and the pastoral frontier moved north and west. Only in the remote north and in parts of the arid zone less suited to cattle did Aboriginal communities escape large-scale disruption and destruction. In most parts of the continent, Aboriginal people were moved onto missions and government stations under protectionist policies. By the 1930s, the enumerated Aboriginal population was reduced to some 60,000.

The result of the varied history of colonization and of the varying forms of agriculture, mining, industry, and urban development was that Aboriginal people came to live in a wide variety of relations with non-Aboriginal communities. Some Aboriginal communities had formed on missions and government stations in remote regions. Aboriginal people who became the labor force for the pastoral industry were able to maintain their relations to land, their social organization, and their religious life to a considerable extent. In some regions, Aboriginal groups attached themselves to small-scale producers such as miners and buffalo hunters. In the southeast, Aboriginal people of mixed descent, after being ejected from the missions, formed a mobile labor force, working as pickers in the farms and orchards. After the mechanization of farm production and the introduction of award wages, levels of employment fell, and Aboriginal people migrated in increasing numbers to towns and cities.

By the early 1970s, race-based legislation such as the protectionist policies of the late 19th and early 20th centuries and the assimilationist policies of mid-century had largely ended. Aboriginal people were accorded both the rights of non-Aboriginal citizens, such as the right to vote and access to mainstream welfare provisions and special rights. The Whitlam Labor government (1972–1975) ushered in a federal policy of "self-determination" and introduced the Aboriginal Land Rights (Northern Territory) Bill, enacted by the government of Malcolm Fraser. Some states followed with various forms of land rights legislation. In 1992, the finding of the High Court in the Mabo case overturned the legal doctrine of *terra nullius* and opened the way for Aboriginal communities

to make native title claims to vacant Crown land and some pastoral leases. The formation of the Aboriginal and Torres Strait Islander Commission transformed the administration of indigenous affairs, with the establishment of a separate arm of government and a structure of local representatives, regional councils, and the commission. The scope of the commission's powers were limited, however, and the commission was dismantled by the conservative government of Prime Minister John Howard. The reelection of this government in 2004 promises a further transformation of the administration of indigenous affairs, rolling back special rights and access to welfare provision and increasing incentives to engage in mainstream economic activities. Aboriginal people continue, however, to suffer from poverty, be overrepresented in prisons, and have lower life expectancy than the non-Aboriginal population of Australia.

— Ian Keen

See also **Aborigines; Australia; Durkheim, Emile; Radcliffe-Brown, A. R.; Totemism**

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AUSTRALOPITHECINES

Australopithecine is the informal adjective designating members of the taxonomic subfamily Australopithecinae, which with the Homininae constitute the family Hominidae. The Hominidae are humans, human ancestors and collateral species after the

lineage branched from that leading to chimpanzees. Recently, paleontologists, influenced by evidence from genetics that apes and humans are more closely related than traditional taxonomy reflected, have pulled African apes into the Hominidae, with repercussions right down the taxonomic scale. Under the new scheme, gorillas are in the subfamily Gorillinae and chimpanzees and humans are in the Homininae. The Homininae is divided into two tribes, the Panini for chimpanzees and Hominini for our own lineage. Our tribe, the Hominini, is divided into two subtribes, the Australopithecina (less formally “australopiths”) and the Hominina, which contains only the genus *Homo*.

Except for specialists, the new taxonomy hardly affects the australopithecines. There is but a single difference: “australopithecines” are now referred to as “australopiths.” The old and new schemes are given in the table. Taxa in bold are discussed in this entry.

Australopiths as a group differ from chimpanzees and other apes in possessing more robust, less protruding (i.e., more orthognathic) faces. Australopith mandibles lack a “simian shelf” (a ridge of bone behind the chin that joins the two sides of the jaw) and are more robust. Australopiths have a shallower supratoral sulcus (groove behind the browridge) and a more caudally oriented nuchal plane (that is, the attachment of the neck muscles faces downward, reflecting a vertical spine). Australopith incisors are slightly smaller to much smaller than chimpanzees, molars and premolars are larger, dental enamel thicker to much thicker, and canine less projecting though still roughly triangular. Whereas ape lower first premolars have a sloping face that sharpens the back of the upper canine when the individual closes its mouth, australopith first premolars start out a little more molarlike in early species and have lost all evidence of this honing shape by 2.5 million years ago (Ma). Australopith canines typically wear from the tip, rather than along a knife-like rear edge, as in apes. The robusticity of the skull is thought by many to reflect an adaptation to chewing more fibrous foods. Fruits in open habitats are less succulent and more fibrous than the fruits chimpanzees eat, and australopiths likely also included fibrous underground storage organs in their diet.

Australopith skulls differ from those of *Homo* in having cranial capacities of less than 700 cc and usually < 600 cc. Australopiths have more prognathic (protruding) faces. All australopiths lack a true external

Traditional and Revised Ape and Human Taxonomy

Traditional Taxonomy

- Superfamily Hominoidea (apes and humans; informally “hominoids”)
 - Family Hylobatidae
 - Genus *Hylobates*
 - Family Pongidae (great apes; informally “pongids”)
 - Genus *Pongo*
 - Genus *Gorilla*
 - Genus *Pan*
 - Family Hominidae (humans and relatives; informally “hominids”)
 - Subfamily Australopithecinae (informally “australopithecines”)
 - Sahelanthropus*, *Orrorin*, *Ardipithecus*, and *Australopithecus* (see below)
 - Subfamily Homininae (informally “hominines,” but rarely used)
 - Members of the genus *Homo* (more detail below)

Revised taxonomy

- Superfamily Hominoidea (apes and humans; informally “hominoids”)
 - Family Hylobatidae
 - Genus *Hylobates*
 - Family Hominidae (great apes and humans; informally “hominids”)
 - Subfamily Ponginae
 - Pongo pygmaeus* (orangutan)
 - Subfamily Gorillinae
 - Gorilla gorilla* (gorilla)
 - Subfamily Homininae (chimpanzees and humans, “hominines”)
 - Tribe Panini (chimpanzees and bonobos; informally “panins”)
 - Pan paniscus*
 - Pan troglodytes*
 - Tribe Hominini (hominids in the old scheme; informally “hominins”)
 - Subtribe Australopithecina (informally “australopiths”)

Genus and Species

	Dates
<i>Sahelanthropus tchadensis</i>	(6.5 Ma [6–7 Ma])
<i>Orrorin tugenensis</i>	(~6 Ma)
<i>Ardipithecus kadabba</i>	(5.8–5.2 Ma)
<i>Ardipithecus ramidus</i>	(4.4–4.2 Ma)
<i>Australopithecus anamensis</i>	(4.2–3.9 Ma)
<i>Australopithecus afarensis</i>	(3.6–2.9 Ma)
synonym: <i>Kenyanthropus platyops</i>	
synonym: <i>Australopithecus bahrelghazali</i>	
<i>Australopithecus aethiopicus</i>	(2.3–2.7 Ma)
<i>Australopithecus boisei</i>	(1.4–2.3 Ma)
<i>Australopithecus africanus</i>	(2.5 Ma [2–3 Ma])
<i>Australopithecus garhi</i>	(~2.5 Ma)
<i>Australopithecus robustus</i>	(~1.9–1.5 Ma)
<i>Australopithecus “habilis”</i>	(1.9–1.4 Ma)

Subtribe Hominina (informally “homins”)

- Homo habilis* (OH 7 and ER 1470 e.g.)
- Homo erectus* (including “ergaster” and “antecessor”)
- Homo sapiens* (including “heidelbergensis” and “neanderthalensis”)

nose, but rather they quite resemble chimpanzees in this feature. Aside from cranial capacity, the skulls of earliest *Homo*, *Homo habilis*, as exemplified by ER 1470 and OH 7, are quite like those of South African australopiths.

Postcranially, australopiths differ from chimpanzees and vary in the direction of modern humans in having a large calcaneus (heel bone), a robust tibial platform, a valgus femur, a quite humanlike pelvis, a long lower back, short fingers, and longer, more powerful thumbs.

Postcranially, australopiths differ from *Homo* and vary in the direction of chimpanzees in possessing body weights of 25–60 kg, with males at the high end, females at the low. That is, australopiths were sexually dimorphic, with females somewhere between one half and three quarters of male body weight, versus 85% in humans. The long bones of australopiths were more robust, that is, they have thicker walls than those of chimpanzees, which are in turn more robust than humans. Australopiths had long curved toes, some gripping capacity of the big toe (perhaps with the exception of *A. robustus*), the absence of the a ball of the foot (swelling at the base of the big toe), a robust peroneal groove of the fibula (suggesting a gripping great toe), short legs, small femoral heads, small knee joints surface that are particularly small from front to back, long arms with particularly long forearms, a robust lateral epicondylar crest on the humerus (suggesting powerful elbow flexing), topographically distinct elbows suggesting greater stability, curved robust fingers with concavities on the inner surface to accommodate large tendons to flex the fingers, scapula or shoulder blade with tilted-up joint surfaces, large joint surfaces above the waist and small joint surfaces below the waist, cone-shaped rib cages, ribs that are round in profile, and small vertebrae. These features suggest that australopiths were bipedal when walking on the ground but bore weight with their arms more often during their daily routine than do modern humans, presumably in trees. Australopith knee joints are less stable and have greater flexibility than modern human knees. Human knee joints are designed more for stability than mobility; to accomplish this they are shaped so that the joint surfaces of the femur and tibia conform closely. The round surface of the femoral joint surface has a concave or cup-shaped complement on the tibia. The knee of *A. afarensis* is more apelike, with the tibial joint flat or even convex, so that it conforms

less closely to the round femoral joint surface, allowing more mobility.

A number of australopith features are neither chimpanzeelike nor humanlike. All the specimens we possess show evidence of having six lumbar vertebrae, versus five in humans and four in great apes. The base of the great toe, far back in the foot, is unique. In humans, this joint is flat, making the big toe a relatively rigid strut. In chimpanzees, the joint is a modified ball-and-socket joint that allows mobility in all planes—the great toe joint has the mobility of the human thumb. In *A. afarensis* the joint has a hingelike function, allowing the toe to swing side to side so as to allow the gripping of moderate-sized objects. As with a hinge, it is rigid in all other planes so that the great toe was as stiff in toe-off as that of humans. The pelvis, while human-shaped, is extraordinarily broad, with a birth canal that is quite wide from side to side, not only broader than necessary to give birth but far broader than that. The femoral necks are longer than those of humans or chimpanzees and more highly angled. The femur is valgus; that is, the femora angle inward, giving australopiths a distinct knock-kneed appearance, whereas ape femora have no such angle, yielding a rather bow-legged appearance. The australopith femur is not just valgus, it is even more valgus than that of humans, a hyperhuman condition.

The wide pelvis and short femur have been interpreted by Kevin Hunt as having evolved to lower the center of gravity, thereby increasing balance on unstable substrates. The wide pelvis allows internal organs to ride lower in the body cavity, and short legs lower the center of mass still more. With short femora and long femoral necks, the knees must angle in more to reach the center of the body. Owen Lovejoy suggested that long femoral necks increase the mechanical advantage of muscles that stabilize the pelvis. These long necks are needed because the wide and unwieldy pelvis of australopiths requires more force to stabilize, and long femoral necks give hip musculature better leverage. The smaller angle of the femoral neck and the more valgus femur are insignificant consequences of short legs. Imagine the letter Z as a rather tall character. The upper horizontal represents the femoral neck, the lower the knee. If the Z is shorter, as the femur is in australopiths, the angle the top horizontal makes with the descending line is tighter, and the descending line makes a greater angle with the lower horizontal. The Z is more valgus.

All australopith features considered together suggest a small robust-jawed, bipedal ape with considerable arboreal competence. Curved robust fingers function to reduce stress on the fingers during arm hanging, and inferred large flexor tendons are required to grip branches during arm hanging. Short fingers are an adaptation to foraging among small branches. Wide hips and short legs make balancing in trees easier. Tilted-up shoulder joints give chimpanzees and australopiths a cranial set to the shoulder, meaning that they are more comfortable with their arms above their heads than at their sides, stressing the shoulder joint less during arm hanging. Cone-shaped torsos evenly distribute stress on the rib cage during arm hanging. Long, curved lateral toes are used for gripping branches while collecting fruits in trees bipedally. A large calcaneus, dual-function great toe, valgus femur, humanlike hips, and long femoral necks suggest considerable terrestrial bipedal competence. Their adaptation was likely that of eating fruits in trees, supplemented with leaves and blossoms, and falling back on underground storage organs (like carrots or potatoes) during times of fruit scarcity. Given their small size and inferred arboreal competence, they likely slept in trees.

While these traits are rather consistent right through the lineage, each species has its peculiar adaptations.

Sahelanthropus Tschadensis (6.5 Ma [6–7 Ma])

Sahelanthropus is represented by a well-preserved skull and fragments from at least six individuals. Not surprisingly, this earliest (purported) hominin has the smallest australopith cranial capacity, 350 cc. The brow ridge is similar in shape to that of later australopiths in lacking a chimpanzeelike depression or groove behind the browridge, but the brow is unusually thick. The zygomatics or cheek bones of *Sahelanthropus* recede from the face so that the center of the face is more prominent than the sides. Most other australopiths have laterally prominent zygomatics; in the more robust species, as one traces the zygomatics from the nasal opening toward the side of the face, they project ever farther forward, leaving the nose as the most depressed area on the face and the outer margins of the zygomatics the most prominent. *Sahelanthropus* lacks this dish-shaped face and has more receding but still robust zygomatics. The face is less prognathic than chimpanzees or later australopiths, more like that of later australopithlike habilines such as ER 1813. Molars are smaller and tooth enamel

thinner than in *A. afarensis* and later australopiths, intermediate between them and chimpanzees. The foramen magnum, the opening for the spinal cord, is placed forward, and the neck muscles were oriented downward, both evidence of bipedality. Though more apelike than later australopiths, unlike apes the canines wear at the tip, have only minor honing morphology on the lower premolar, and lack a space between the canine and premolar. Some canines have shoulders or basal tubercles, resembling the later *A. anamensis*.

Orrorin Tugenensis (~6 Ma)

There is no braincase or face for this species. There are, however, teeth from both the upper and lower jaws and fragments of mandible. As with *Sahelanthropus*, the cheek teeth are smaller than later australopiths. Dental enamel is thicker than that in either *Sahelanthropus* or the later *Ardipithecus*. A humerus is unremarkable and like other australopiths. A finger bone is curved, or typical for an australopith. Most remarkable is the femur, for which there are two specimens, one rather complete. The femoral head is small and the femoral neck long compared to humans, but both are more humanlike than they are in *A. afarensis*. The angle of the femoral neck is great, though this trait is ambiguous since it is shared by humans and chimpanzees. This upward orientation reduces the effective femoral neck length. Long femoral necks offset the stresses of a very wide pelvis, and low shaft-neck angles in most australopiths are interpreted as related to more valgus femora, which is in turn a consequence of short legs. Chimpanzees have short legs, but because they do not walk upright, they have neither the valgus femur, the tight angle of the neck, nor the long femoral neck of australopiths. The morphology of *Orrorin* therefore suggests that if it is a biped, its pelvis is narrow, its legs are long, or both. Although other features are humanlike, interpretation is complicated by short femoral necks and upward-angled necks in chimpanzees. Although unlikely, it is possible *Orrorin* is not a biped.

Ardipithecus Kadabba (5.2–5.8 Ma)

The species is defined by fragments of a mandible, clavicle, ulna, and humerus. All are quite similar to earlier and later hominins. A complete toe bone and fragments of hand phalanges are curved, robust, and indistinguishable from other australopiths. Loose teeth include incisors, canines, premolars, and molars.

Canines differ in some minor details from other early hominins and retain some elements of a canine/P3 honing complex that sharpens the back side of ape upper canines. This feature is variable in early hominins, leaving the *A. kadabba* similar to other species. The cheek teeth are the size of other early hominins, if not slightly larger. The cheek teeth have slightly thicker enamel than *Sahelanthropus*, *Orrorin*, and the later *A. ramidus*.

Ardipithecus Ramidus (4.2–4.4 Ma)

The cheek teeth of *A. ramidus* are small—as are other early australopiths—but are largely within the range of the later *A. afarensis*. The enamel is intermediate between chimpanzees and *A. afarensis*. The canines are similar to *A. afarensis* but slightly more chimpanzeelike. Postcrania have not yet been described, but are said to differ in significant ways from *A. afarensis*. Perhaps they resemble *Orrorin*.

Australopithecus Anamensis (3.9–4.2 Ma)

This species has many more specimens than earlier australopiths. The canines, though within the range of *A. afarensis*, can be placed between *Ardipithecus* and *A. afarensis* in a graded series from slightly chimpanzeelike to less chimpanzeelike. As in *Sahelanthropus*, some canines have shoulders or basal tubercles that are uncommon in *A. afarensis*. The mandible is quite robust, but the left and right cheek teeth rows are parallel to one another, as is the case in chimpanzees, whereas *A. afarensis* has slightly divergent tooth rows. In profile the chin is straighter and more receding than that of *A. afarensis* or the earlier *Sahelanthropus*. Cheek teeth are the size of *A. afarensis*, but the deciduous molars and premolars are distinctly smaller and more apelike. That is, adults are like later species, juveniles like earlier species. Specimens discovered earlier had more vertically implanted upper canines than *A. afarensis*, but later finds differ less. This species has a smaller and therefore more apelike ear opening than later hominins, though this feature likely varies more than appreciated at first. The postcranial skeletal elements are indistinguishable from *A. afarensis*.

Australopithecus Afarensis (2.9–3.6 Ma)

A. afarensis is the exemplar of early hominins, as described above. Its zygomatics protrude forward laterally more than *Sahelanthropus* but less than the later *A. africanus*. Cranial capacity is near 400 cc, the

slightest of increases from 350 cc in *Sahelanthropus*. Canines and first lower premolars are more apelike characters than later australopiths, but the trait varies, with some individuals apelike, and others not at all. Incisors are smaller and cheek teeth larger than early australopiths. Enamel is thick. This species alone of the early hominins discussed so far gives us information on rib cage shape, base of great toe morphology, pelvic shape, arm-to-leg-length comparisons, calcaneus (heel) shape, scapula shape, and sexual dimorphism.

Australopithecus Aethiopicus (2.7–2.3 Ma)

This robust australopith was a shock when it was discovered in the mid-1980s. It combines enormous cheek teeth with incisors and canines that are unreduced from the presumably ancestral *A. afarensis* condition. Although the lateral zygomatics are so prominent the face is dishd, the face is as prognathic (protruding) as any previous australopith, if not more so, and is quite apelike. The preserved skull has a crest on the top, a condition present when chewing muscles are larger than the area of the braincase can accommodate. Previously, large cheek teeth had been expected in species that specialized on grinding, which meant small incisors and retracted faces. In life, the species presumably subsisted on piths, roots, and seeds. Its cranial capacity is 400 cc, the same as *A. afarensis*. Large incisors and prognathic faces are interpreted as adaptations to stripping or pulling the hard outer layer off piths. Postcrania are unknown.

Australopithecus Boisei (2.3–1.4 Ma)

The most classic of robust australopithecines has, compared to its presumed ancestor *A. aethiopicus*, smaller incisors and canines, a bizarrely robust mandible, and a considerably more orthognathic (pulled-back) face. The main chewing muscle, temporalis, is more vertical and larger anteriorly, presumably oriented to maximize chewing power and endurance. The small incisors suggest that stripping was not significant, that food items were small, or at least small before they entered the mouth. There are no known postcranial bones.

Australopithecus Africanus (2.5 Ma [2–3 Ma])

Long the prototype for australopiths, this species from South Africa was first named by Raymond Dart in 1925. It varies from *A. afarensis* in some of the same ways *A. boisei* varies from *A. aethiopicus*.

Compared to *A. afarensis*, its incisors are smaller and its cheek teeth larger. The canine has lost nearly all ape features, and resembles the incisors. Studies of wear on the teeth suggest that *A. africanus* was a fruit eater that supplemented its diet with pith, leaves, and seeds. Cranial capacity is 450 cc, or still quite apelike. The face is more dished than *A. afarensis*, and exhibits canine pillars, ridges that pass from the canines up to either side of the nose, and are believed to reinforce the face from the forces of chewing. Whatever their function, such reinforcements are not found in *A. afarensis*, despite its robust mandible and large cheek teeth. Postcranially, *A. africanus* has longer arms and shorter legs than *A. afarensis*, and a scapula that is quite apelike, probably more apelike than Lucy. The pelvis is broad but not quite as broad as that of Lucy. *A. africanus* retains all other features of the hand, arm, legs, and feet found in *A. afarensis*. That is, it is a terrestrial biped and an arboreal arm hanger/biped.

Australopithecus Garhi (~2.5 Ma)

A. garhi has a robust face like that of other non-robust australopiths, a more projecting jaw than typical. Molars and premolars are huge, of *A. boisei* proportions. Canines are very broad and appear to function as premolars. An associated femur fragment is suggested by the discoverers to suggest the hind limbs are long for an australopith, though not humanlike. The claim is controversial because the forearm is also extraordinarily long (perhaps indicating that the individual is merely large, rather than possessing humanlike limb proportions), the femur is incomplete and its length therefore uncertain, and there is no comparable male complete femur for *A. afarensis* to compare. Other postcrania are similar to those of other australopiths. Cranial capacity is estimated at 450 cc, or at the *A. africanus* mean. Its discoverers argue that nearby tools and cut marked animal bone belong to *A. garhi*, suggesting it is in the *Homo* lineage. Others argue it is a unique offshoot unrelated to later hominins.

Australopithecus Robustus (~1.5–1.9 Ma)

This South African species appears to have evolved from *A. africanus*, and it differs from it as *A. boisei* differs from *A. afarensis*. Despite facial similarity to *A. boisei*, studies suggest it had a different growth pattern, and its teeth are dramatically smaller. Its closest

relative was more likely *A. africanus* than *A. boisei*. Compared to *A. africanus*, it has a more dished face, smaller incisors, larger molars, more vertical chewing muscles, a more robust face, larger zygomatics, and the presence of a sagittal crest to anchor huge chewing muscles. Cranial capacity is reported at 475 cc. Since *Homo* also occurs at the same site, postcranial attributions are difficult. However, most craniodental fossils are *A. robustus*, meaning postcranials probably are too. The femoral head and neck and pelvic fragments are much like *A. afarensis* and *A. africanus*. Fingers are straight, less robust, and fingertips are broad, all as in humans; the elbow joint is not topographically distinct, suggesting it less often bore body weight. The toes are much more humanlike than *A. afarensis* and *A. africanus*.

Australopithecus "Habilis" (1.4–1.9 Ma)

A number of specimens in East Africa are too small to be *Homo* but have been pooled with *Homo habilis* for want of a better solution. The type specimen of *H. habilis* is OH 7, which has a cranial capacity of 700–750 cc, or similar to that of ER 1470 at 780 cc. If ER 1470 is the same species as OH 7, which the cranial capacity and other features suggest, *H. habilis* retained the large teeth and flat face of its australopith forebears. Often associated with ER 1470 is a long ER 1472 femur, as long as that of later humans. These large-bodied, robust-faced, large-brained hominins may have evolved into *Homo erectus*. Persisting during the time of both *H. habilis* and *H. erectus* are fossils of a smaller-brained, smaller-toothed, often more delicate-faced species. Some skulls are quite similar to *A. africanus*, particularly OH 24 with its distinct canine pillars and flat face. Others, for example, ER 1813, have reduced zygomatics and the first hint of an external nose. Their cranial capacities range from 500 to 600 cc. Similar to these is another small specimen, OH 62. This specimen has postcrania that display the classic australopith features associated with a partly arboreal lifeway. Because most paleontologists placed these fossils in *H. habilis*, they have no official species name of their own. All are too small to be in the genus *Homo*, but they are different enough that they may ultimately be placed in more than one species. For now, they are left as the still-australopith-like last hangers-on of the glorious australopith tradition that began 6.5 Ma and ends with the extinction of *A. "habilis"* and *A. boisei* at 1.4 Ma.

To simplify, australopiths can be divided into roughly seven groups based on current knowledge. *Sahelanthropus*, *Orrorin*, and early *Ardipithecus* are all fragmentary, all share somewhat small cheek teeth, somewhat large incisors, somewhat thin enamel, and more apelike canine/lower premolar honing complex than later australopiths. They may be all closely related, and in fact one describer of *Ardipithecus kadabba* has suggested that they all belong to a single species. If so, all were bipedal in a way that is significantly different from the bipedalism of later hominins. We can add *Ardipithecus ramidus* to this group and label them Poorly Known Early Probable australopiths (PKEPs).

PKEPs likely gave rise to a second group, the *A. anamensis* and *A. afarensis* lineage, which are similar enough to one another to suggest they are a single, evolving lineage. Compared to PKEPs, they have larger cheek teeth, thicker enamel, smaller incisors, and less apelike canines.

Presumably branching off the *A. anamensis/afarensis* lineage was an East African lineage that evolved a more robust face, more muscular jaws, and much larger cheek teeth very rapidly, and then slowly evolved smaller incisors and a more retracted face. This group began with *A. aethiopicus* at 2.7 Ma, evolved into *A. boisei* near 2.3 Ma, and persisted well into the reign of *Homo erectus*, going extinct only at 1.4 Ma and perhaps even later.

In South Africa a descendent of *A. afarensis* evolved slightly larger cheek teeth, slightly smaller incisors, and slightly more reinforced faces. *A. africanus* not only retained all the apelike characters of Lucy, but likely even converged on apes slightly, evolving longer arms and shorter legs. *A. africanus* had a South African robust offshoot, *A. robustus*, that evolved even more robust faces. Despite a superficial resemblance to *A. boisei*, evidence suggests it grew differently than *A. boisei*, and its molars are considerably smaller, suggesting it is not related to the East African robusts.

In East Africa at 2.5 Ma, *A. garhi* shows only equivocal evidence of more humanlike postcrania, and its specialized teeth leave its role in human evolution ambiguous. The last hanger-on among the australopiths was the variable *A. "habilis."* It retained small brains and more apelike bodies and persisted until 1.4 million years ago.

— Kevin D. Hunt

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AXES, HAND

Hand axes are an artifact type most frequently associated with the Acheulean culture of the Lower Paleolithic or the Early Stone Age. Hand axes are large, bifacially flaked cores. Typically, they are ovate, tear-drop shaped, almandine, or circular, and range from 10 cm to 20 cm in length. Rarely, specimens may reach significantly larger size ranges. Another frequent variant of the hand axe is the so-called cleaver. This variant is also bifacial flaked but is shaped in order to form a squared edge on at least one end. Hand axes are frequently made on large flakes, such as those removed from boulder cores in various regions. In addition, they are often manufactured from large cobbles or nodules of raw material.

The presence of this unique and distinctive artifact type is used almost exclusively as a marker of the Acheulean culture, which dates from around 1.6 my to 200 ky. Despite this, basic bifaces with aggressive hard hammer flaking are also present in the Oldowan industry and may be as old as the earliest stone tool assemblages. In addition, hand axes persist in some stone tool traditions significantly after the end of the Acheulean time range. For example, hand axes persist deep into the Middle Paleolithic of Europe.

John Frere is credited as the first author to formally discuss the archaeology of hand axes, writing in 1797 concerning the English site of Hoxne. For early archaeologists, the distinctive appearance facilitated the recognition of these stone tools as human-made artifacts. Jacques Boucher de Perthes, while excavating at the Acheulean type-site of Saint-Acheul on the Somme River of France, was the first to coin the term

“hand axe,” and recognize them as a formal category of stone tools. In addition, Boucher de Perthes’s recognition of hand axes in association with extinct animal species was instrumental in establishing the antiquity of humans as a species. The recognition of hand axes as human-made stone tools was vital for the recognition of the archaeological remains of the rest of the Paleolithic and matched archaeology with the rapid pace of paleontological discovery. Subsequent discoveries of hand axes in Africa and Asia showed both their spatial and temporal ubiquity.

Hand axes are found in almost all of the temperate Old World, with the possible exception of tropical forest zones and hyperarid regions. Until recently, hand axes were not thought to be present in Southeast Asia, which was instead thought to be divided from Europe and the Near East by the so-called Movius Line, named for Harvard prehistorian Hallam Movius. Recent discoveries in Southeast Asia have called this conventional understanding into question.

The most noteworthy and debated feature of hand axes is their persistence over almost the entire course of the Pleistocene. Over the course of the Acheulean culture, hand axes gradually become thinner and more refined, incorporating technological advances such as soft hammer flake removal and core platform preparation. However, the general shape of hand axes remains extremely constant over time. This is the case both within individual sites that contain records of long periods of time and more generally across the Old World in prehistory. Hand axes from Africa, Europe, and Asia, throughout the span of the Acheulean, share remarkably consistent sets of properties. The persistence of the Acheulean hand axe represents a substantial research problem, with numerous proposed explanations. These possibilities include inherited biological programming for hand axe manufacture, sexual signaling using hand axes, cultural instruction of offspring by parents for the production of hand axes, or simply the functional unity of an effective technological design, which was invented and utilized innumerable times in prehistory. The explanations are too numerous to list here, and there is extremely little consensus concerning this problem.

The function of hand axes is also a frequently debated topic. Boucher de Perthes and other early researchers often suggested that hand axes were hafted, similar to modern axes. There is no evidence for this, however. Currently, there is a sizable set of frequently mentioned possible functions for hand

axes: butchery, woodworking, digging, projectile weaponry, stylized core for flake production, and many more. There is certainly no consensus concerning function, although butchery is probably the most widely accepted. In addition, most current research tends to see unmodified flakes as sharper and therefore more effective cutting tools than hand axes. This notion has built more support for hand axes as sources for useful flakes, especially since bifacial flaking is an effective strategy for maximizing the output of useful flakes from a core. The most likely explanation, and perhaps the reason for the remarkable duration of hand axes as a phenomenon in prehistory, is that hand axes were extremely flexible technological objects and were used for most, if not all, of the functions offered above.

Hand axes have frequently tempted researchers into deep speculation. On the one hand, these unique and distinctive artifacts would seem to offer clues into vital areas of inquiry, such as hominid cognition, language, social structure and cultural transmission, subsistence, population history and movement, and a host of others. However, despite the immense number of cases from which data have been collected, there are extremely few questions concerning hand axes that have been answered unambiguously. It seems unlikely that any simple or easy answers are likely to come. In addition, modern archaeology has become wary of stone tool typology as an analytical technique and therefore less comfortable with research solely concerning hand axes. A more concerted effort is being made to see the variability among hand axes and their context as an aspect of the variability of Paleolithic stone tool assemblages. Still, hand axes represent a fascinating and puzzling research problem that will no doubt engage the interest of investigators long into the future.

— Grant S. McCall

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AYMARA

The Aymara are an indigenous ethnic group of Bolivia and Peru, who occupy the high *altiplano* region surrounding Lake Titicaca. In Bolivia, the Aymara number nearly 2 million, comprising a quarter of the national population, and their concentration in and around La Paz gives Bolivia's capital city a distinctly Aymara flavor. Another 350,000 Aymara live in Peru and some 20,000 in northern Chile. The Chilean Aymara have mostly lost their ancestral language but it is still widely spoken in Bolivia and (to a lesser degree) Peru. Nevertheless, the language can be considered endangered, inasmuch as most speakers today are bilingual, and many bilinguals raise their children as Spanish monolinguals. Traditionally an agricultural people, many Aymara have moved to urban centers in recent decades, with the accompanying cultural assimilation and language loss characteristic of such situations. Many have also migrated to Argentina in search of employment.

Between AD 400 and 1000, Aymara civilization centered on the ancient city of Tiahuanaco (Tiwanaku), the capital of an empire that extended from the western coastal desert to the humid slopes of the eastern Andes. After long-term drought led to the empire's collapse, the Aymara (aka *Collas*) comprised a dozen independent chiefdoms, which were incorporated into the Inca empire during the 15th century. Due to centuries of contact, there are deep parallels between Aymara and Quechua language and culture. The traditional subsistence/tribute economy was based on potatoes and other tubers, high-altitude grains such as *quinua*, and camelids (llama and alpaca), today largely replaced by sheep. Extensive marketing networks between different ecological zones existed for many centuries before European contact.

Traditional Aymara social organization varies by region but typically consists of monogamous, patrilineal,

extended-family households. The *compadrazgo* system of fictive kinship is widespread and essential to social and economic life. *Compadrazgo* ties may be horizontal (between equals) or vertical (crossing class strata and ethnic boundaries). Some communities observe the classical civil-religious hierarchy or *cargo* system, which is formally restricted to men but actually based on conjugal pairs. Communities are grouped into *ayllus*, headed by an informal council of elders (*amautas*). Most Aymara are nominally Catholic, with considerable syncretism from earth-centered indigenous religion, but Protestantism is spreading among the Aymara, as throughout Latin America.

Aymara society was drastically disrupted by Spanish colonization. Many communities were dispossessed of their lands and forced into feudal arrangements with European landowners, or enslaved in the region's rich silver and tin mines. However, many communities were able to maintain their culture relatively intact, due to their remote and arduous high-altitude habitat. The Bolivian land reform of 1953 brought much land back under Aymara control, but drought, low prices, and increasing land pressure have driven many out of agriculture and into the cities. Today, integration into the cash economy and national institutions is more the rule than the exception; the urban proletariat of La Paz is predominantly Aymara. At the same time, increased opportunities



Source: ©Reuters/CORBIS.

for social mobility have given rise to a significant number of Aymara professionals (including social scientists). Even Bolivia's overwhelmingly nonindigenous Parliament now contains some Aymara (and Quechua) deputies. Victor Hugo Cárdenas, Bolivia's vice president from 1993 to 1997, is Aymara.

— *Aurolyn Luykx*

See also **Peru**

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AZTEC AGRICULTURE

Some of the most impressive technological achievements of ancient Mesoamerican societies involved increases in the scale, efficiency, and overall productivity of agricultural land use systems. In late pre-Hispanic times, Mesoamerican farmers devised creative ways to meet the subsistence demands of burgeoning populations. Their solutions, which included terracing, irrigation, and raised fields, produced more food per unit of land than traditional farming methods. Anthropologists describe this process as “agricultural intensification,” which appears in many cases to coevolve alongside population growth and political centralization in the development of complex societies.

Agricultural intensification was a key economic process in the growth and development of the Aztec empire, which occupied highland central Mexico from the early 14th through the early 16th centuries AD. How the Aztec empire fed the large population of its capital, Tenochtitlan, has long intrigued researchers, since most of the city's estimated 250,000 inhabitants at the time of Spanish contact in 1519 were not food producers. Feeding the residents of Tenochtitlan and other urban places in the region was primarily the job of rural farmers. Agricultural intensification and

exploitation of locally available resources provided these farmers with a mixed economy that ensured local prosperity, while supplying urban areas with critically important staple goods and raw materials.

Capitalizing on the mosaic of microenvironments afforded by the Basin of Mexico, Aztec farmers combined three distinct farming techniques: terraced hillslopes irrigated by spring water that was carried long distances through complex networks of aqueducts, dry-farming fields watered by rain or alluvial flooding, and raised fields constructed as long rectangular plots in swamps and shallow lakebeds. These techniques were sometimes combined and supplemented with other methods, such as intercropping and fertilizing. This work, which took place year-round, produced very high yields of corn, beans, squash, fruits, chilies, chia, amaranth, and some species of cactus, all of which circulated widely in periodic community markets and in the Great Marketplace at Tlatelolco near the capital. In addition to providing daily sustenance, these staples were used in other ways in Aztec society, such as to mark social identity and hierarchy during political feasts, to pay tribute in support of the Aztec political economy, and to conduct religious rituals.

Agrotechnologies

One of the greatest challenges for Aztec farmers was the poor condition of highland soils and the lack of arable land. Multiple agrotechnologies were brought together to address these problems. To improve soil quality, Aztec farmers left certain fields fallow for a period of time, and then used slash-and-burn techniques, in which trees were cut down, left to dry, and then set on fire; the resulting ash added nutrients to the soil. To increase the amount of cultivatable terrain, Aztec farmers built terraces along piedmont hillslopes. These terraces, made out of walls of stones, allowed farmers to use more land on the slopes and to move farther up the hillsides than otherwise possible. However, only a limited range of crops could be cultivated on these terraces due to the thin and rocky nature of upland soils. Plus, crops were usually dependent upon available rainwater, which made them susceptible to destruction by drought or heavy runoff from summer rainstorms. To buffer the risk of low productivity from terraced fields, Aztec farmers also created plots of land called *chinampas* (from the Aztec term, *chinamitl*, meaning “square made of cane”), artificial raised fields constructed in swamps and shallow lakebeds from layers of mud and vegetation.

Chinampas, which covered some 9,500 hectares (about 23,500 acres) in the basin's two southern lakes, Xochimilco and Chalco, represented a highly productive form of intensive agriculture that provided up to one half or more of the food consumed in Tenochtitlan. In its most intensive form, cultivation was continuous throughout the year, producing two to four crops that yielded an annual surplus of 16,500 metric tons of corn. Fields were never left fallow; as soon as one crop was harvested, another set of seedlings was put in place. Scarce land was thus not tied up by long-cycle crops growing from seed. Whenever corn was cultivated, ground-hugging cultivars, such as beans and squash, were planted between the rows. Intercropping of this sort helped to keep soil nutrients in balance, since root action and silage of the bushier plants returned to the earth the minerals consumed by corn.

Modern aerial surveys show an overall uniformity in chinampa size and orientation, indicating a planned program of construction. Plots were rectangular fields 2 to 4 m wide (roughly 7 to 12 feet) and 20 to 40 m long (roughly 65 to 130 feet), surrounded on three or four sides by canals. Each plot was bordered by reeds, forming a fence around the plot, which was filled in with mud and decaying vegetation to raise the field surface just above the water level. The proximity of the field surface to the water table provided adequate soil moisture for crops and improved nighttime temperatures, reducing the chance of frosts. Soil fertility was maintained by periodically adding vegetation, household refuse, organic rich silt dredged up from the canal bottoms, and sometimes human excrement. The long and narrow layout between parallel canals, low profile above water, and layering of specific soil types obviated the constant need for irrigation.

Cultigens

The 16th-century Franciscan missionary, Bernardino de Sahagún, compiled an account of Aztec daily life from native informants, entitled "Historia general de las cosas de Nueva España," which included an extraordinarily detailed narrative of cultivated plants and how they were used. These plants included corn, chia, and amaranth, as well as abundant varieties of beans, squashes, fruits, and chilies, all of which were farmed with a single kind of multipurpose digging stick known as the *uictli*.

The principal crop of Aztec farming was corn or "maize" (*centli*), which played an intimate part of the

everyday lives of the Aztec. Maize was a central element to many stories, poems, and songs, as well as creation myths (the gods were said to have fashioned cornmeal into human flesh). Maize was prepared in numerous ways. The ear was consumed, the fiber was used for tea, maize honey was made from the tender canes, the fungus (*cuitlacoche*) was cooked and eaten, and the dry grains were used as the base for making tortillas, tamales, and a variety of gruel drinks. Atoles (*atolli*) were drinks made with maize dough mixed with water and sweetened with some kind of syrup or made spicy with the addition of chili. Pozol (*pozolli*) was a nutritious meal, taken as a drink prepared with *nixtamal* (boiled corn kernels in water with lime) and honey, chocolate, or dry chilies. A similar drink, *yolatloli*, was used as a curative for fever and some diseases.

Along with maize, beans were often served with meals and also included as ingredients in other dishes, such as tamales. Chia (*chiematl*) and amaranth (*huauhtli*) were used like maize in making pozol, and amaranth seeds were sometimes mixed with maize for making tamales. Cakes of amaranth seed dough were used in some religious ceremonies to adorn idols. There were more than one hundred varieties of chili peppers (*chilli*), which were mostly used to season foods, but some were eaten fresh, dehydrated, or smoked and pickled. The many varieties of squashes and fruits were eaten raw or cooked. Some species of flower—bishop's weed, may flower, and zucchini flower—were cooked and used to prepare soups and teas.

Second only to maize, chocolate (*chocolatl* or *xocolatl*) and cotton (*ichcatl*) were essential to both subsistence and political economies. Chocolate beans (*cacao*) sometimes served as a form of currency, especially for use in market exchange, where it was commonly accepted as payment for merchandise and labor. Writing in the mid-16th century, the Spanish priest and historian Bartolomé de las Casas noted that one strip of pine bark for kindling was worth five cacao beans and one turkey egg cost three beans. Chocolate drink (ground, toasted cacao beans mixed with water and sometimes sweetened with honey or maguey syrup) was a prestigious beverage, reserved for people of high rank and consumed during special meals. Like chocolate, cotton was usually reserved for nobility; the woven fibers were often considered a prestige clothing of the elite. Cotton cloaks also appear to have had exchange value as currency. Depending on the quality, one cloak was said to be

worth from 65 to 300 cacao beans. Unlike maize, however, cacao and cotton were grown outside the Basin of Mexico, including Morelos and the coastal regions of Veracruz and Oaxaca, and transported to the basin by means of trade and tribute.

Two types of cactus were cultivated, prickly pear (*nopal*) and agave or “maguey” (*mexcalmetl*). These succulents were important dietary supplements, especially in areas with low rainfall. Nopal and maguey were cultivated using dry-farming techniques, in which available rainfall was usually sufficient for watering crops. Nopal was roasted and eaten as a vegetable or served in tamales. The nopal plant also provided fruit (*nochtli*), which was consumed raw. Maguey provided medicine, fiber, building material, fuel, fertilizer, and intoxicating beverages. The most common fermented drinks were mezcal (*metl*) and pulque (*polihqui*). Pulque was usually reserved for consumption as a curative and on ceremonial occasions, including harvest festivals, rainmaking rituals, birth ceremonies, marriages, and funerals.

Agrarian Ritual

The Aztec considered the complementary themes of rain/moisture, maize and maguey, and agricultural fertility to be crucial to life-sustaining cosmological forces. As such, all agricultural practices were regulated by a calendrical system and a ritual almanac. The creator gods, Cipactonal and Oxomoco, created time in order to organize and plan earthly and divine phenomena and to give them sequence. Earthly time was organized according to the solar year (*xiuitl*), which was divided into 18 months of 20 days, plus 5 “unlucky” days (*nemontemi*). A great deal of the Aztec’s time and energy was devoted to ceremonies throughout the 18 months, most of which was aimed at placating deities of rain and agricultural fertility. These ceremonies coincided with the most critical periods in the agricultural cycle: the primary planting, growing, and harvesting seasons.

Divine time was structured by a ritual calendar (*tonalpohualli*), which consisted of 13 periods of 20 days each, creating a 260 count of days that were each associated with ceremonial observances. Each 13-day period was presided over by a patron deity or deities, including Tlaloc (god of rain) and other gods associated with fertility and agriculture, such as Xipe Totec (god of spring and new vegetation), Chicomecoatl (goddess of foodstuffs, especially maize and sustenance),

Cinteotl (god of maize), and Xilonen (goddess of tender young maize). Each of the 20 days in the period also had a patron deity, who imparted special attributes to these days. For example, the patron of the rabbit (*tochtli*) days was Mayahuel, goddess of maguey, who presided over drinking and drunkenness.

The anthropological significance of Aztec agriculture is revealed in the Aztecs’ intensive and highly diversified agroeconomic system that stimulated specialization in areas of food production. Farmers in the drier reaches of the northern part of the basin specialized in nopal and maguey cultivation, while those in the south took advantage of a wetter climate for maize and bean agriculture; lowland farmers focused on cacao and cotton. Exchange between these regions sometimes enabled staple goods to be used to create and acquire durable valuables that could be amassed and redistributed as loans or gifts for building and enhancing social status and prestige. The Aztec agricultural system also yielded enormous surpluses of foods that enabled urban dwellers to focus their time and energy on non-food-producing enterprises, such as religious observances, governmental services, craft manufacture, and military duty. In this way, intensive agriculture and surplus production were extremely important factors in the development of Aztec society.

— E. Christian Wells

See also **Agriculture, Intensive**

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