



## Part One

# The Dimensions of Anthropology

**I**n Part 1 we'll explore the two different dimensions of anthropology. Those dimensions are academic (theoretical) and applied (practical) anthropology.

Anthropology is the scientific and humanistic study of the human species. It is the academic field that most systematically explores biological and cultural diversity in time and space. Anthropologists explore every aspect of human diversity: past, present, and future; biology, society, language, and culture. Anthropology compares ways of life, and the people who lived them, from radically different times and places. Anthropologists work in varied contexts, including colleges, universities, museums, government agencies, businesses, and organizations.

The academic field of anthropology as a whole is known as “general” or “four-field” anthropology. The latter name is based on its four subfields: physical (biological), archaeological, cultural, and linguistic anthropology. Cultural anthropology

examines the cultural diversity of the present and the recent past. Archaeology reconstructs behavior and social life by studying material remains. Physical anthropologists study human fossils, genetics, and bodily form and growth. They also study nonhuman primates (monkeys and apes).

Linguistic anthropology considers how speech varies with social factors and over time.

Besides its four subfields, anthropology has the two dimensions mentioned above: academic and applied anthropology. Applying anthropology in the world beyond anthropology entails identifying, assessing, and solving problems that affect human beings in North America and abroad. The knowledge

and methods of all four subfields, alone and in combination, are used to apply anthropology. Key aspects of anthropology, whether academic or applied, include its distinctive observation-based approach to gathering data, its comparative approach, and its focus on cultural diversity.





# 1

# WHAT IS ANTHROPOLOGY?



## Overview

Anthropology is the scientific and humanistic study of the human species. It is the exploration of human diversity in time and space. Anthropology confronts basic questions of human existence: how we originated, how we have changed, and how we are still changing.

Anthropology is holistic. Holism refers to the study of the whole of the human condition: past, present, and future; biology, society, language, and culture. Anthropology is also comparative and cross-cultural. It systematically compares data from different populations and time periods. Anthropology's four subfields are cultural, archaeological, biological, and linguistic anthropology.

Culture is a key aspect of human adaptability and success. Cultures are traditions and customs, transmitted through learning, that guide the beliefs and behavior of the people exposed to them. Cultural anthropology examines the cultural diversity of the present and the recent past. Archaeology reconstructs behavior by studying material

Chapter Outline
<b>Overview</b>
<b>Human Adaptability</b> Adaptation, Variation, and Change
<b>General Anthropology</b> Cultural Forces Shape Human Biology
<b>The Subdisciplines of Anthropology</b> Cultural Anthropology Archaeological Anthropology Biological, or Physical, Anthropology Linguistic Anthropology
<b>Applied Anthropology</b> <b>Anthropology and Other Academic Fields</b> Cultural Anthropology and Sociology Anthropology and Psychology
<b>Science, Explanation, and Hypothesis Testing</b>

remains. Biological anthropologists study human fossils, genetics, and bodily growth and development. They also study nonhuman primates (monkeys and apes). Linguistic anthropology considers how speech varies with social factors and over time. Anthropology's two dimensions are academic and applied. Applied anthropology uses anthropological knowledge to identify and solve social problems.

Anthropology is related to many other fields, including the sciences and the humanities. There are links to both the natural sciences (e.g., biology) and the social sciences (e.g., sociology). Anthropologists bring their distinctive cross-cultural perspective to the study of economics, politics, psychology, art, music, literature—and society in general. As scientists, anthropologists attempt to identify and explain cultural differences and similarities and to build theory about how social and cultural systems work.

*For a multimedia presentation of this Overview, see the Virtual Exploration*



## Hot Asset in Corporate: Anthropology Degrees

USA TODAY NEWS BRIEF

by Del Jones

February 18, 1999

“Been on any digs lately?” Anthropologists are used to hearing that question after announcing their profession. People often confuse anthropology with archaeology, which is one—but only one—of anthropology’s subfields. Many anthropologists do dig in the ground, but others dig into the intricacies of cultural diversity and everyday behavior. More and more businesses are hiring anthropologists because they like its characteristic observation of behavior in natural settings and its focus on cultural diversity. Thus, as we see in this article, Hallmark Cards has hired anthropologists to observe parties, holidays, and celebrations of ethnic groups to improve its ability to design cards for targeted audiences. Anthropologists go into people’s homes to see how they actually use products. This permits better product design and more effective advertising.

Don’t throw away the MBA degree yet.

But as companies go global and crave leaders for a diverse workforce, a new hot degree is emerging for aspiring executives: anthropology.

The study of man is no longer a degree for museum directors. Citicorp created a vice presidency for anthropologist Steve Barnett, who discovered early warning signs to identify people who don’t pay credit card bills.

Not satisfied with consumer surveys, Hallmark is sending anthropologists into the homes of immigrants, attending holidays and birthday parties to design cards they’ll want.

No survey can tell engineers what women really want in a razor, so marketing consultant Hauser Design sends anthropologists into bathrooms to watch them shave their legs.

Unlike MBAs, anthropology degrees are rare: one undergraduate degree for every 26 in business and one anthropology Ph.D. for every 235 MBAs.

Textbooks now have chapters on business applications. The University of South Florida has created a course of study for anthropologists headed for commerce.

Motorola corporate lawyer Robert Faulkner got his anthropology degree before going to law school. He says it becomes increasingly valuable.



Corporate anthropologists employ varied techniques, including ethnographic observation and focus groups, such as the one shown here, which is being videotaped through a two-way mirror in California.

“When you go into business, the only problems you’ll have are people problems,” was the advice given to teenager Michael Koss by his father in the early 1970s.

Koss, now 44, heeded the advice, earned an anthropology degree from Beloit College in 1976, and is today CEO of the Koss headphone manufacturer.

Katherine Burr, CEO of The Hanseatic Group, has masters in both anthropology and business from the University of New Mexico. Hanseatic was among the first money management programs to predict the Asian crisis and last year produced a total return of 315% for investors.

“My competitive edge came completely out of anthropology,” she says. “The world is so unknown, changes so rapidly. Preconceptions can kill you.”

Companies are starving to know how people use the Internet or why some pickups, even though they are more powerful, are perceived by consumers as less powerful, says Ken Erickson, of the Center for Ethnographic Research.

It takes trained observation, Erickson says. Observation is what anthropologists are trained to do.

SOURCE: Del Jones, “Hot Asset in Corporate: Anthropology Degrees,” *USA Today*, February 18, 1999, p. B1.



Many anthropologists are educators, working in colleges, universities, and museums. Many other anthropologists, like the ones discussed in this news article, work outside of academia, for example, in business. Cultural anthropologists focus on cultural diversity and the intricacies of everyday behavior and social life. A more biologically oriented anthropologist might advise an engineering team in designing accommodations, such as spacecraft seating, that have optimal fits with human anatomy. Anthropologists study human beings wherever and whenever they find them—in the Australian outback, a Turkish café, a Mesopotamian tomb, or a North American shopping mall. Anthropology is the exploration of human diversity in time and space. Anthropology studies the whole of the human condition: past, present, and future; biology, society, language, and culture. Of particular interest is the diversity that comes through human adaptability.

## Human Adaptability

Humans are among the world's most adaptable animals. In the Andes of South America, people wake up in villages 16,000 feet above sea level and then trek 1,500 feet higher to work in tin mines. Tribes in the Australian desert worship animals and discuss philosophy. People survive malaria in the tropics. Men have walked on the moon. The model of the *Starship Enterprise* in Washington's Smithsonian Institution symbolizes the desire to "seek out new life and civilizations, to boldly go where no one has gone before." Wishes to know the unknown, control the uncontrollable, and bring order to chaos find expression among all peoples. Adaptability and flexibility are basic human attributes, and human diversity is the subject matter of anthropology.

Students are often surprised by the breadth of **anthropology**, which is the study of the human species and its immediate ancestors. Anthropology is a uniquely comparative and **holistic** science. Holism refers to the study of the whole of the human condition: past, present, and future; biology, society, language, and culture. Most people think that anthropologists study fossils and nonindustrial, non-Western cultures, and many of them

do. But anthropology is much more than the study of nonindustrial peoples: It is a comparative field that examines all societies, ancient and modern, simple and complex. The other social sciences tend to focus on a single society, usually an industrial nation like the United States or Canada. Anthropology, however, offers a unique cross-cultural perspective by constantly comparing the customs of one society with those of others.

People share society—organized life in groups—with other animals, including baboons, wolves, and even ants. Culture, however, is distinctly human. **Cultures** are traditions and customs, transmitted through learning, that govern the beliefs and behavior of the people exposed to them. Children learn such a tradition by growing up in a particular society, through a process called *enculturation*. Cultural traditions include customs and opinions, developed over the generations, about proper and improper behavior. These traditions answer such questions as: How should we do things? How do we make sense of the world? How do we tell right from wrong? What is right, and what is wrong? A culture produces a degree of consistency in behavior and thought among the people who live in a particular society.

The most critical element of cultural traditions is their transmission through learning rather than through biological inheritance. Culture is not itself biological, but it rests on certain features of human biology. For more than a million years, humans have had at least some of the biological capacities on which culture depends. These abilities are to learn, to think symbolically, to use language, and to employ tools and other products in organizing their lives and adapting to their environments.

Anthropology confronts and ponders major questions of human existence as it explores human biological and cultural diversity in time and space. By examining ancient bones and tools, we unravel the mysteries of human origins. When did our ancestors separate from those remote great-aunts and great-uncles whose descendants are the apes? Where and when did *Homo sapiens* originate? How has our species changed? What are we now and where are we going? How have changes in culture and society influenced biological change? Our genus, *Homo*, has been changing for more than one million years. Humans continue to adapt and change both biologically and culturally.

## ADAPTATION, VARIATION, AND CHANGE

Adaptation refers to the processes by which organisms cope with environmental forces and stresses, such as those posed by climate and *topography* or terrains, also called landforms. How do organisms change to fit their environments, such as dry climates or high mountain altitudes? Like other animals, humans use biological means of adaptation. But humans are unique in also having cultural means of adaptation. Table 1.1 summarizes the cultural and biological means that humans use to adapt to high altitudes.

### Interpret the World Atlas Map 1

Map 1 shows global topography, including mountains, hills, lowlands, and plains. Mountainous terrains pose particular challenges, those associated with high altitude and oxygen deprivation. Consider four ways (one cultural and three biological) in which humans may cope with low oxygen pressure at high altitudes. Illustrating cultural (technological) adaptation would be a pressurized airplane cabin equipped with oxygen masks. There are three ways of adapting biologically to high altitudes (the mountainous regions shown in Map 1): genetic adaptation, long-term physiological adaptation, and short-term physiological adaptation. First, native populations of high altitude areas, such as the Andes of Peru and the Himalayas of Tibet and Nepal, seem to have acquired certain

genetic advantages for life at very high altitudes. The Andean tendency to develop a voluminous chest and lungs probably has a genetic basis. Second, regardless of their genes, people who grow up at a high altitude become physiologically more efficient there than genetically similar people who have grown up at sea level would be. This illustrates long-term physiological adaptation during the body's growth and development. Third, humans also have the capacity for short-term or immediate physiological adaptation. Thus, when lowlanders arrive in the highlands, they immediately increase their breathing and heart rates. Where in North America would you expect to experience such a reaction? Hyperventilation increases the oxygen in their lungs and arteries. As the pulse also increases, blood reaches their tissues more rapidly. All these varied adaptive responses—cultural and biological—achieve a single goal: maintaining an adequate supply of oxygen to the body.

As human history has unfolded, the social and cultural means of adaptation have become increasingly important. In this process, humans have devised diverse ways of coping with the range of environments they have occupied in time and space. The rate of cultural adaptation and change has accelerated, particularly during the past 10,000 years. For millions of years, hunting and gathering of nature's bounty—*foraging*—was the sole basis of human subsistence. However, it took only a few

**Table 1.1** Forms of Cultural and Biological Adaptation (to High Altitude)

Form of Adaptation	Type of Adaptation	Example
Technology	Cultural	Pressurized airplane cabin with oxygen masks
Genetic adaptation (occurs over generations)	Biological	Larger “barrel chests” of native highlanders
Long-term physiological adaptation (occurs during growth and development of the individual organism)	Biological	More efficient respiratory system, to extract oxygen from “thin air”
Short-term physiological adaptation (occurs spontaneously when the individual organism enters a new environment)	Biological	Increased heart rate, hyperventilation

thousand years for **food production** (the cultivation of plants and domestication of animals), which originated some 12,000–10,000 years ago, to replace foraging in most areas.

Between 6000 and 5000 B.P. (before the present), the first civilizations arose. These were large, powerful, and complex societies, such as ancient Egypt, that conquered and governed large geographic areas. Much more recently, the spread of industrial production has profoundly affected human life. Throughout human history, major innovations have spread at the expense of earlier ones. Each economic revolution has had social and cultural repercussions. Today's global economy and communications link all contemporary people, directly or indirectly, in the modern world system. People must cope with forces generated by progressively larger systems—region, nation, and world. The study of such contemporary adaptations generates new challenges for anthropology: “The cultures of world peoples need to be constantly rediscovered as these people reinvent them in changing historical circumstances” (Marcus and Fischer 1986, p. 24).

## General Anthropology

The academic discipline of anthropology, also known as **general anthropology** or “four-field” anthropology, includes four main subdisciplines or subfields. They are sociocultural, archaeological, biological, and linguistic anthropology. (From here on, the shorter term *cultural anthropology* will be used as a synonym for “sociocultural anthropology.”) Of the sub-

For current news about anthropology, see the OLC Internet Exercises



fields, cultural anthropology has the largest membership. Most departments of anthropology teach courses in all four subfields.

There are historical reasons for the inclusion of four subfields in a single discipline. American anthropology arose more than a century ago out of concern for the history and cultures of the native peoples of North America. Interest in the origins and diversity of Native Americans brought together studies of customs, social life, language, and physical traits. Anthropologists are still pondering such questions as: Where did Native Americans come from? How many waves of migration



American anthropology arose out of concern for the history and cultures of Native North Americans. Ely S. Parker, or Ha-sa-no-an-da, was a Seneca Indian who made important contributions to early anthropology. Parker also served as Commissioner of Indian Affairs for the United States.

brought them to the New World? What are the linguistic, cultural, and biological links among Native Americans and between them and Asia? Another reason for anthropology's inclusion of four subfields was an interest in the relation between biology (e.g., “race”) and culture. More than 50 years ago, the anthropologist Ruth Benedict realized that “In World history, those who have helped to build the same culture are not necessarily of one race, and those of the same race have not all participated in one culture. In scientific language, culture is not a function of race” (Benedict 1940, Ch 2). (Note that a unified four-field anthropology did not develop in Europe, where the subdisciplines tend to exist separately.)

There are also logical reasons for the unity of American anthropology. Each subfield considers variation in time and space (that is, in different geographic areas). Cultural and archaeological anthropologists study (among many other topics) changes in social life and customs. Archaeologists have used studies of living societies and behavior patterns to imagine what life might have been like in the past. Biological anthropologists examine evolutionary changes in physical form, for example, anatomical changes that might

have been associated with the origin of tool use or language. Linguistic anthropologists may reconstruct the basics of ancient languages by studying modern ones.

The subdisciplines influence each other as anthropologists talk to each other, read books and journals, and associate in professional organizations. General anthropology explores the basics of human biology, society, and culture and considers their interrelations. Anthropologists share certain key assumptions. Perhaps the most fundamental is the idea that sound conclusions about “human nature” cannot be derived from studying a single nation or cultural tradition. A comparative, cross-cultural approach is essential.

We often hear “nature versus nurture” and “genetics versus environment” questions. Consider gender differences. To what extent do male and female capacities, attitudes, and behavior reflect biological, or cultural, variation? Are there universal emotional and intellectual contrasts between the sexes? Are females less aggressive than males? Is male dominance a human universal? By examining diverse cultures, anthropology shows that many contrasts between men and women reflect cultural training rather than biology.

## CULTURAL FORCES SHAPE HUMAN BIOLOGY

Cultural forces constantly mold human biology. For example, culture is a key environmental force in determining how human bodies grow and develop. Cultural traditions promote certain activities and abilities, discourage others, and set standards of physical well-being and attractiveness. Physical activities, including sports, which are influenced by culture, help build the body. For example, North American girls are encouraged to pursue, and therefore do well in, competitive track and field, swimming, diving, and many other sports. Brazilian girls, by contrast, have not fared nearly as well in international athletic competition involving individual sports as have their American and Canadian counterparts. Why are girls encouraged to excel as athletes in some nations but discouraged from engaging in physical activities in others? Why don't Brazilian women, and Latin American women generally, do better in most athletic categories? Does it have to do with “racial” differences or cultural training?



Years of swimming sculpt a distinctive physique: an enlarged upper torso, a massive neck, and powerful shoulders and back. Shown here is the Dutch swimmer Inge de Bruijn, who won multiple medals at the 2000 summer Olympics in Sydney.

Cultural standards of attractiveness and propriety influence participation and achievement in sports. Americans run or swim not just to compete but to keep trim and fit. Brazil's beauty standards accept more fat, especially in female buttocks and hips. Brazilian men have had some international success in swimming and running, but Brazil rarely sends female swimmers or runners to the Olympics. One reason Brazilian women avoid competitive swimming in particular is that sport's effects on the body. Years of swimming sculpt a distinctive physique: an enlarged upper torso, a massive neck, and powerful shoulders and back. Successful female swimmers tend to be big, strong, and bulky. The countries that produce them most consistently are the United States, Canada, Australia, Germany, the Scandinavian nations, the Netherlands, and the former Soviet Union, where this body type isn't as stigmatized as it is in Latin countries. Swimmers develop hard bodies, but Brazilian culture says that women

should be soft, with big hips and buttocks, not big shoulders. Many young female swimmers in Latin America choose to abandon the sport rather than the “feminine” body ideal.

**Understanding Ourselves** Our parents may tell us that drinking milk and eating vegetables promote healthy growth, but they don’t as readily recognize the role that culture plays in shaping our bodies. Our genetic attributes provide a foundation for our growth and development, but human biology is fairly plastic. That is, it is malleable; the environment influences how we grow. Identical twins raised from birth in radically different environments—e.g., one in the high Andes and one at sea level—will not, as adults, be physically identical. Nutrition matters in growth; so do cultural guidelines about what is proper for boys and girls to do. Culture is an environmental force that affects our development as much as do nutrition, heat, cold, and altitude. One aspect of culture is how it provides opportunities and assigns space for various activities. We get to be good at sports by practicing them. When you grew up, which was it easiest for you to engage in—baseball, golf, mountain climbing, or fencing? Think about why. ~

Cultural factors help explain why African Americans excel in certain sports and whites excel in others. A key factor is degree of public access to sports facilities. In our public schools, parks, sandlots, and city playgrounds, African Americans have access to baseball diamonds, basketball courts, football fields, and running tracks. However, because of restricted economic opportunities, many black families can’t afford to buy hockey gear or ski equipment, take ski vacations, pay for tennis lessons, or belong to clubs with tennis courts, pools, or golf courses. In the United States, mainly white suburban boys (and, increasingly, girls) play soccer, the most popular sport in the world. In Brazil, however, soccer is the national pastime for all males—black and white, rich and poor. There is wide public access. Brazilians play soccer on the beach and in streets, squares, parks, and playgrounds. Many of Brazil’s best soccer players, including the world-famous Pelé, have dark skins. When blacks have opportunities to do well in soccer, tennis, golf, or any other sport, they are physically capable of doing as well as whites.

Why does the United States have so many black football and basketball players and so few black swimmers and hockey players? The answer lies mainly in cultural factors, including variable



This Brazilian soccer team won the 2002 World Cup, defeating the German team shown on the right. What contrasts do you notice between the two teams? How do you explain them?



The 2002 German National Soccer Team.

access and opportunities. Many Brazilians practice soccer, hoping to play for money for a professional club. Similarly, American blacks are aware that certain sports have provided career opportunities for African Americans. They start developing skills in those sports in childhood. The better they do, the more likely they are to persist, and the pattern continues. Culture—specifically differential access to sports resources—has more to do with sports success than “race” does.

## The Subdisciplines of Anthropology

### CULTURAL ANTHROPOLOGY

**Cultural anthropology** is the study of human society and culture, the subfield that describes, analyzes, interprets, and explains social and cultural similarities and differences. To study and interpret cultural diversity, cultural anthropologists engage in two kinds of activity: ethnography (based on field work) and ethnology (based on cross-cultural comparison).

*For a quiz on the subdisciplines of anthropology, see the Interactive Exercise*



**Ethnography** provides an account of a particular community, society, or culture. During ethnographic field work, the ethnographer gathers data that he or she organizes, describes, analyzes, and interprets to build and present that account, which may be in the form of a book, article, or film. Traditionally, ethnographers have lived in small communities (such as Arembepe, Brazil—see “Interesting Issues” on page 12) and studied local behavior, beliefs, customs, social life, economic activities, politics, and religion. What kind of experience is ethnography for the ethnographer? The box offers some clues.

The anthropological perspective derived from ethnographic field work often differs radically from that of economics or political science. Those fields focus on national and official organizations and policies and often on elites. However, the groups that anthropologists have traditionally studied usually have been relatively poor and powerless, as are most people in the world today. Ethnographers often observe discriminatory practices directed toward such people, who experience food shortages, dietary deficiencies, and other

aspects of poverty. Political scientists tend to study programs that national planners develop, while anthropologists discover how these programs work on the local level.

Cultures are not isolated. As noted by Franz Boas (1940/1966) many years ago, contact between neighboring tribes has always existed and has extended over enormous areas. “Human populations construct their cultures in interaction with one another, and not in isolation” (Wolf 1982, p.ix). Villagers increasingly participate in regional, national, and world events. Exposure to external forces comes through the mass media, migration, and modern transportation. City and nation increasingly invade local communities in the guise of tourists, development agents, government and religious officials, and political candidates. Such linkages are prominent components of regional, national, and international systems of politics, economics, and information. These larger systems increasingly affect the people and places anthropology traditionally has studied. The study of such linkages and systems is part of the subject matter of modern anthropology.

**Ethnology** examines, interprets, analyzes, and compares the results of ethnography—the data gathered in different societies. It uses such data to compare and contrast and to make generalizations about society and culture. Looking beyond the particular to the more general, ethnologists attempt to identify and explain cultural differences and similarities, to test hypotheses, and to build theory to enhance our understanding of how social and cultural systems work. Ethnology gets its data for comparison not just from ethnography but also from the other subfields, particularly from archaeological anthropology, which reconstructs social systems of the past. (Table 1.2 summarizes the main contrasts between ethnography and ethnology.)

### ARCHAEOLOGICAL ANTHROPOLOGY

**Archaeological anthropology** (more simply, “archaeology”) reconstructs, describes, and interprets past human behavior and cultural patterns through material remains. At sites where people live or have lived, archaeologists find artifacts, material items that humans have made or modified, such as tools, weapons, camp sites, and buildings. Plant and animal remains and ancient garbage tell stories about consumption and activi-

**Table 1.2** Ethnography and Ethnology—Two Dimensions of Cultural Anthropology

Ethnography	Ethnology
Requires field work to collect data	Uses data collected by a series of researchers
Often descriptive	Usually synthetic
Group/community specific	Comparative/cross-cultural

ties. Wild and domesticated grains have different characteristics, which allow archaeologists to distinguish between gathering and cultivation. Examination of animal bones reveals the ages of slaughtered animals and provides other information useful in determining whether species were wild or domesticated.

Analyzing such data, archaeologists answer several questions about ancient economies. Did the group get its meat from hunting, or did it domesticate and breed animals, killing only those of a certain age and sex? Did plant food come from wild plants or from sowing, tending, and harvesting crops? Did the residents make, trade for, or buy particular items? Were raw materials available locally? If not, where did they come from? From such information, archaeologists reconstruct patterns of production, trade, and consumption.

Archaeologists have spent much time studying potsherds, fragments of earthenware. Potsherds are more durable than many other artifacts, such as textiles and wood. The quantity of pottery fragments allows estimates of population size and density. The discovery that potters used materials that were not locally available suggests systems of trade. Similarities in manufacture and decoration at different sites may be proof of cultural connections. Groups with similar pots may be historically related. Perhaps they shared common cultural ancestors, traded with each other, or belonged to the same political system.

Many archaeologists examine paleoecology. Ecology is the study of interrelations among living things in an environment. The organisms and environment together constitute an ecosystem, a patterned arrangement of energy flows and exchanges. Human ecology studies ecosystems that include people, focusing on the ways in which human use “of nature influences and is influenced

by social organization and cultural values” (Bennett 1969, pp. 10–11). Paleoecology looks at the ecosystems of the past.

In addition to reconstructing ecological patterns, archaeologists may infer cultural transformations, for example, by observing changes in the size and type of sites and the distance between them. A city develops in a region where only towns, villages, and hamlets existed a few centuries earlier. The number of settlement levels (city, town, village, hamlet) in a society is a measure of social complexity. Buildings offer clues about political and religious features. Temples and pyramids suggest that an ancient society had an authority structure capable of marshaling the labor needed to build such monuments. The presence or absence of certain structures, like the pyramids of ancient Egypt and Mexico, reveals differences in function between settlements. For example, some towns were places where people came to attend ceremonies. Others were burial sites; still others were farming communities.

Archaeologists also reconstruct behavior patterns and life styles of the past by excavating. This involves digging through a succession of levels at a particular site. In a given area, through time, settlements may change in form and purpose, as may the connections between settlements. Excavation can document changes in economic, social, and political activities.

Although archaeologists are best known for studying prehistory, that is, the period before the invention of writing, they also study the cultures of historical and even living peoples. Studying sunken ships off the Florida coast, underwater archaeologists have been able to verify the living conditions on the vessels that brought ancestral African Americans to the New World as enslaved people. Another, even more contemporary, illustration of archaeology is a research project begun

# Interesting *Issues*

## Even Anthropologists Get Culture Shock

I first lived in Arembepe (Brazil) during the (North American) summer of 1962. That was between my junior and senior years at New York City's Columbia College, where I was majoring in anthropology. I went to Arembepe as a participant in a now defunct program designed to provide undergraduates with experience doing ethnography—firsthand study of an alien society's culture and social life.

Brought up in one culture, intensely curious about others, anthropologists nevertheless experience culture shock, particularly on their first field trip. Culture shock refers to the whole set of feelings about being in an alien setting, and the ensuing reactions. It is a chilly, creepy feeling of alienation, of being without some of the most ordinary, trivial (and therefore basic) cues of one's culture of origin.

As I planned my departure for Brazil in 1962, I could not know just how naked I would feel without the cloak of my own language and culture. My sojourn in Arembepe would be my first trip outside the United States. I was an urban boy who had grown up in Atlanta, Georgia, and New York City. I had little experience with rural life in my own country, none with Latin America, and I had received only minimal training in the Portuguese language.

New York City direct to Salvador, Bahia, Brazil. Just a brief stopover in

Rio de Janeiro; a longer visit would be a reward at the end of field work. As our prop jet approached tropical Salvador, I couldn't believe the whiteness of the sand. "That's not snow, is it?" I remarked to a fellow field team member . . .

My first impressions of Bahia were of smells—alien odors of ripe and decaying mangoes, bananas,

and passion fruit—and of swatting the ubiquitous fruit flies I had never seen before, although I had read extensively about their reproductive behavior in genetics classes. There were strange concoctions of rice, black beans, and gelatinous gobs of unidentifiable meats and floating pieces of skin. Coffee was strong and sugar crude, and every tabletop had



**Figure 1.1** Location of Arembepe, Bahia, Brazil.

in 1973 in Tucson, Arizona. Archaeologist William Rathje has learned about contemporary life by studying modern garbage. The value of "garbology," as Rathje calls it, is that it provides "evidence of what people did, not what they think they did,

what they think they should have done, or what the interviewer thinks they should have done" (Harrison, Rathje, and Hughes 1994, p. 108). What people report may contrast strongly with their real behavior as revealed by garbology. For example,

containers for toothpicks and for manioc (cassava) flour to sprinkle, like Parmesan cheese, on anything one might eat. I remember oatmeal soup and a slimy stew of beef tongue in tomatoes. At one meal a disintegrating fish head, eyes still attached, but barely, stared up at me as the rest of its body floated in a bowl of bright orange palm oil . . .

I only vaguely remember my first day in Arembepe (Figure 1.1). Unlike ethnographers who have studied remote tribes in the tropical forests of interior South America or the highlands of Papua New Guinea, I did not have to hike or ride a canoe for days to arrive at my field site. Arembepe was not isolated relative to such places, only relative to every other place I had ever been . . .

I do recall what happened when we arrived. There was no formal road into the village. Entering through southern Arembepe, vehicles simply threaded their way around coconut trees, following tracks left by automobiles that had passed previously. A crowd of children had heard us coming, and they pursued our car through the village streets until we parked in front of our house, near the central square. Our first few days in Arembepe were spent with children following us everywhere. For weeks we had few moments of privacy. Children watched our every move through our living room window. Occasionally one made an incompre-



An ethnographer at work. During a 1980 visit, the author, Conrad Kottak, catches up on the news in Arembepe, a coastal community in Bahia state, northeastern Brazil, that he has been studying since 1962. How might culture shock influence one's research?

hensible remark. Usually they just stood there . . .

The sounds, sensations, sights, smells, and tastes of life in northeastern Brazil, and in Arembepe, slowly grew familiar . . . I grew accustomed to this world without Kleenex, in which globs of mucus habitually drooped from the noses of village children whenever a cold passed through Arembepe. A world where, seemingly without effort, women . . . carried 18-liter kerosene cans of water on their heads, where boys sailed kites and sported at catching houseflies in their bare hands, where

old women smoked pipes, storekeepers offered *cachaça* (common rum) at nine in the morning, and men played dominoes on lazy afternoons when there was no fishing. I was visiting a world where human life was oriented toward water—the sea, where men fished, and the lagoon, where women communally washed clothing, dishes, and their own bodies.

This description is adapted from my ethnographic study *Assault on Paradise: Social Change in a Brazilian Village*, 3rd ed. (New York: McGraw-Hill, 1999).

the garbologists discovered that the three Tucson neighborhoods that reported the lowest beer consumption actually had the highest number of discarded beer cans per household (Podolefsky and Brown 1992, p. 100)!

## BIOLOGICAL, OR PHYSICAL, ANTHROPOLOGY

The subject matter of **biological, or physical, anthropology** is human biological diversity in time and space. The focus on biological variation



Archaeological anthropology reconstructs, describes, and interprets human behavior through material remains. In Grosse Point Park, Michigan, these high school students have made pottery using online information from an archaeological dig in Egypt.

unites five special interests within biological anthropology:

1. Human evolution as revealed by the fossil record (paleoanthropology).
2. Human genetics.
3. Human growth and development.
4. Human biological plasticity (the body's ability to change as it copes with stresses, such as heat, cold, and altitude).
5. The biology, evolution, behavior, and social life of monkeys, apes, and other nonhuman primates.

These interests link physical anthropology to other fields: biology, zoology, geology, anatomy, physiology, medicine, and public health. Osteology—the study of bones—helps paleoanthropologists, who examine skulls, teeth, and bones, to identify human ancestors and to chart changes in anatomy over time. A paleontologist is a scientist who studies fossils. A paleoanthropologist is one sort of paleontologist, one who studies the fossil

record of *human* evolution. Paleoanthropologists often collaborate with archaeologists, who study artifacts, in reconstructing biological and cultural aspects of human evolution. Fossils and tools are often found together. Different types of tools provide information about the habits, customs, and life styles of the ancestral humans who used them.

More than a century ago, Charles Darwin noticed that the variety that exists within any population permits some individuals (those with the favored, or adaptive, characteristics) to do better than others at surviving and reproducing. Genetics, which developed later, enlightens us about the causes and transmission of this variety. However, it isn't just genes that cause variety. During any individual's lifetime, the environment works along with heredity to determine biological features. For example, people with a genetic tendency to be tall will be shorter if they are poorly nourished during childhood. Thus, biological anthropology also investigates the influence of environment on the body as it grows and matures. Among the environmental factors that influence the body as it develops are nutrition, altitude, temperature, and disease, as well as



Forensic anthropologist Kathy Reichs at work. Like other forensic anthropologists, Dr. Reichs, and her mystery novel alter ego, Temperance Brennan, work with the police, medical examiners, the courts, and international organizations to identify victims of crimes, accidents, wars, and terrorism.

cultural factors, such as the standards of attractiveness we considered previously.

Biological anthropology (along with zoology) also includes primatology. The primates include our closest relatives—apes and monkeys. Primatologists study their biology, evolution, behavior, and social life, often in their natural environments. Primatology assists paleoanthropology, because primate behavior may shed light on early human behavior and human nature.

## LINGUISTIC ANTHROPOLOGY

We don't know (and probably never will) when our ancestors acquired the ability to speak, although biological anthropologists have looked to the anatomy of the face and the skull to speculate about the origin of language. And primatologists have described the communication systems of monkeys and apes. We do know that well-developed, grammatically complex languages have existed for thousands of years. Linguistic anthropology offers further illustration of anthropology's interest in comparison, variation, and change. **Linguistic anthropology** studies lan-

guage in its social and cultural context, across space and over time. Some linguistic anthropologists make inferences about universal features of language, linked perhaps to uniformities in the human brain. Others reconstruct ancient languages by comparing their contemporary descendants and in so doing make discoveries about history. Still others study linguistic differences to discover varied perceptions and patterns of thought in different cultures.

Historical linguistics considers variation in time, such as the changes in sounds, grammar, and vocabulary between Middle English (spoken from approximately AD 1050 to 1550) and modern English. **Sociolinguistics** investigates relationships between social and linguistic variation. No language is a homogeneous system in which everyone speaks just like everyone else. How do different speakers use a given language? How do linguistic features correlate with social factors, including class and gender differences (Tannen 1990)? One reason for variation is geography, as in regional dialects and accents. Linguistic variation also is expressed in the bilingualism of ethnic groups. Linguistic and cultural anthropologists collaborate in

# Beyond the *Classroom*

## The Utility of Hand and Foot Bones for Problems in Biological Anthropology

### Background Information

STUDENT:	Alicia Wilbur
SUPERVISING PROFESSOR:	Della Collins Cook
SCHOOL:	Indiana University
YEAR IN SCHOOL/MAJOR:	Junior and Senior/ Anthropology
FUTURE PLANS:	Ph.D. in Biological Anthropology
PROJECT TITLE:	The Utility of Hand and Foot Bones for Problems in Bioanthropology

---

**How does this account suggest common problems of interest to more than one subfield of anthropology? Does the research have implications for cultural and applied anthropology as well as for biological and archaeological anthropology?**

**T**he large, well-preserved skeletal series from west-central Illinois, housed in the Department of Anthropology at Indiana University, has been the focus of many archaeo-

logical and bioanthropological research projects over the years. I became interested in the use of hand and foot bones to determine the stature and sex of the individuals buried in those mounds. This information is important for both archaeological and biological studies of past peoples and their cultures, but is also relevant to modern forensic and mass disaster situations. In both archaeological and modern situations, the human remains recovered may be extremely fragmentary. A

single hand or foot can play an important role in identifying modern victims of crime or mass disasters.

Most equations used for estimating adult stature or determining sex from skeletal material are constructed from data on modern Europeans or modern Americans of European or African extraction. Because body proportions differ between populations, applying these equations to skeletal remains of other groups may give inaccurate results. A benefit of my study was that it was constructed on Native American remains and thus could be used for modern Native Americans' remains in forensic cases or mass disasters.

I measured femurs (the thigh bone) and hand and foot bones for 410 adult skeletons and used statistical methods to predict the sex of the individuals, with accuracies exceeding 87 percent. Stature estimation also was found to be possible with hand and foot bones, although the range given was too large to be

studying links between language and many other aspects of culture, such as how people reckon kinship and how they perceive and classify colors.

## Applied Anthropology

Anthropology is not a science of the exotic carried on by quaint scholars in ivory towers. Rather, it is a holistic, comparative, biocultural field with a lot to tell the public. Anthropology's foremost professional organization, the American Anthropological Association, has formally acknowledged a public service role by recognizing that anthropology has two dimensions: (1) academic anthropology and (2) practicing or **applied anthropology**.

The latter refers to the application of anthropological data, perspectives, theory, and methods to identify, assess, and solve contemporary social problems. More and more anthropologists from the four subfields now work in such "applied" areas as public health, family planning, and economic development.

In its most general sense, applied anthropology includes any use of the knowledge and/or techniques of the four subfields to identify, assess, and solve practical problems. Because of anthropology's breadth, it has many applications. For example, the growing field of medical anthropology considers both the sociocultural and the biological contexts and implications of disease and illness. Perceptions of good and bad health, along with actual health



useful in a court of law. Still, estimates resulting from these equations may be useful for delimiting a range of possible heights for preliminary identification purposes.

The project was published in the *International Journal of Osteoarchaeology* in 1998. While running statis-

tical analyses on the hand and foot data, I noticed a discrepancy in the body proportions of one female adult. Upon carefully examining the rest of her skeleton, I discovered a suite of skeletal anomalies that suggest a rare genetic syndrome called Rubinstein-Taybi Syndrome that affects many

organs. Symptoms include delayed growth, mental retardation, and abnormalities of the head and face, including widely spaced eyes and an abnormally large nose. Affected individuals also may have abnormally large big toes and thumbs. There also may be breathing and swallowing difficulties.

It may yet prove possible to analyze DNA from this sample to determine if my diagnosis is correct. If so, it would be the earliest known case of this syndrome. Knowing that this individual lived to mid- to late adulthood with several physical and mental disabilities tells us something about her culture.

These types of studies on skeletal material are important for the information they give us about the past and also for their relevance to modern problems. Future research will focus on genetic and infectious diseases that beset ancient peoples as well as application of this work to modern problems.

threats and problems, differ among cultures. Various societies and ethnic groups recognize different illnesses, symptoms, and causes and have developed different health-care systems and treatment strategies. Medical anthropologists are both biological and cultural, and both academic and applied. Applied medical anthropologists, for example, have served as cultural interpreters in public health programs, which must fit into local culture and be accepted by local people.

Other applied anthropologists work for international development agencies, such as the World Bank and USAID (the United States Agency for International Development). The job of such development anthropologists is to assess the social and cultural dimensions of economic development.

Anthropologists are experts on local cultures. Working with and drawing on the knowledge of local people, anthropologists can identify specific social conditions and needs that must be addressed and that influence the failure or success of development schemes. Planners in Washington or Paris often know little about, say, the labor necessary for crop cultivation in rural Africa. Development funds are often wasted if an anthropologist is not asked to work with the local people to identify local needs, demands, priorities, and constraints.

Projects routinely fail when planners ignore the cultural dimension of development. Problems arise from lack of attention to, and consequent lack of fit with, existing sociocultural conditions. One example is a very naive and culturally incompatible



Medical anthropology studies health conditions from a cross-cultural perspective. In Uganda's Mwiri primary school, children are taught about HIV. Can you imagine a similar lesson in the primary school you attended?

project in East Africa. The major fallacy was to attempt to convert nomadic herders into farmers. The planners had absolutely no evidence that the herders, on whose land the project was to be implemented, wanted to change their economy. The herders' territory was to be used for new commercial farms, and the herders, converted into small farmers and sharecroppers. The project, whose planners included no anthropologists, totally neglected social issues. The obstacles would have been evident to any anthropologist. The herders were expected readily to give up a generations-old way of life in order to work three times harder growing rice and picking cotton. What could possibly motivate them to give up their freedom and mobility to work as sharecroppers for commercial farmers? Certainly not the meager financial return the project planners estimated for the herders—an average of \$300 annually versus more than \$10,000 for their new bosses, the commercial farmers.

To avoid such unrealistic projects, and to make development schemes more socially sensitive and culturally appropriate, development organizations now regularly include anthropolo-

gists on planning teams. Their team colleagues may include agronomists, economists, veterinarians, geologists, engineers, and health specialists. Applied anthropologists also apply their skills in studying the human dimension of environmental degradation (e.g., deforestation, pollution). Anthropologists examine how the environment influences humans and how human activities affect the biosphere and the earth itself.

Applied anthropologists also work in North America. Garbologists help the Environmental Protection Agency, the paper industry, and packaging and trade associations. Many archaeologists now work in cultural resource management. They apply their knowledge and skills to interpret, inventory, and preserve historic resources for local, state (provincial), and federal governments. Forensic (physical) anthropologists work with the police, medical examiners, the courts, and international organizations to identify victims of crimes, accidents, wars, and terrorism. From skeletal remains they may determine age, sex, size, ethnic origin, and number of victims. Applied physical anthropologists link injury patterns to design flaws in aircraft and vehicles.

**Table 1.3** The Four Subfields and Two Dimensions of Anthropology

Anthropology's Subfields (General Anthropology)	Examples of Application (Applied Anthropology)
Cultural anthropology	Development anthropology
Archaeological anthropology	Cultural resource management (CRM)
Biological or physical anthropology	Forensic anthropology
Linguistic anthropology	Study of linguistic diversity in classrooms

Ethnographers have influenced social policy by showing that strong kin ties exist in city neighborhoods whose social organization was previously considered “fragmented” or “pathological.” Suggestions for improving education emerge from ethnographic studies of classrooms and surrounding communities. Linguistic anthropologists show the influence of dialect differences on classroom learning. In general, applied anthropology aims to find humane and effective ways of helping the people whom anthropologists have traditionally studied. Table 1.3 shows the four subfields and two dimensions of anthropology.

## Anthropology and Other Academic Fields

As mentioned previously, one of the main differences between anthropology and the other fields that study people is holism, anthropology's unique blend of biological, social, cultural, linguistic, historical, and contemporary perspectives. Paradoxically, while distinguishing anthropology, this breadth is what also links it to many other disciplines. Techniques used to date fossils and artifacts have come to anthropology from physics, chemistry, and geology. Because plant and animal remains often are found with human bones and artifacts, anthropologists collaborate with botanists, zoologists, and paleontologists.

As a discipline that is both scientific and humanistic, anthropology has links with many other academic fields. Anthropology is a **science**—a “systematic field of study or body of knowledge that aims, through experiment, observation, and

deduction, to produce reliable explanations of phenomena, with reference to the material and physical world” (*Webster's New World Encyclopedia* 1993, p. 937). Clyde Kluckhohn (1944, p. 9) called anthropology “the science of human similarities and differences.” His statement of the need for such a science still stands: “Anthropology provides a scientific basis for dealing with the crucial dilemma of the world today: how can peoples of different appearance, mutually unintelligible languages, and dissimilar ways of life get along peaceably together?” (p. 9). Anthropology has compiled an impressive body of knowledge that this textbook attempts to encapsulate.

Anthropology also has strong links to the humanities. The humanities include English, comparative literature, classics, folklore, philosophy, and the arts. These fields study languages, texts, philosophies, arts, music, performances, and other forms of creative expression. Ethnomusicology, which studies forms of musical expression on a worldwide basis, is especially closely related to anthropology. Also linked is folklore, the systematic study of tales, myths, and legends from a variety of cultures. One might well argue that anthropology is among the most humanistic of all academic fields because of its fundamental respect for human diversity. Anthropologists listen to, record, and represent voices from a multitude of nations and cultures. Anthropology values local knowledge, diverse worldviews, and alternative philosophies. Cultural anthropology and linguistic anthropology in particular bring a comparative and nonelitist perspective to forms of creative expression, including language, art, narratives, music, and dance, viewed in their social and cultural context.

## CULTURAL ANTHROPOLOGY AND SOCIOLOGY

Cultural anthropology and sociology share an interest in social relations, organization, and behavior. However, important differences between these disciplines arose from the kinds of societies each traditionally studied. Initially sociologists focused on the industrial West; anthropologists, on nonindustrial societies. Different methods of data collection and analysis emerged to deal with those different kinds of societies. To study large-scale, complex nations, sociologists came to rely on questionnaires and other means of gathering masses of quantifiable data. For many years, sampling and statistical techniques have been basic to sociology, whereas statistical training has been less common in anthropology (although this is changing as anthropologists increasingly work in modern nations).

Traditional ethnographers studied small and nonliterate (without writing) populations and relied on methods appropriate to that context. “Ethnography is a research process in which the anthropologist closely observes, records, and engages in the daily life of another culture—an experience labeled as the fieldwork method—and then writes accounts of this culture, emphasizing descriptive detail” (Marcus and Fischer 1986, p. 18). One key method described in this quote is participant observation—taking part in the events one is observing, describing, and analyzing.

In many areas and topics, anthropology and sociology now are converging. As the modern world system grows, sociologists now do research in developing countries and in other places that were once mainly within the anthropological orbit. As industrialization spreads, many anthropologists now work in industrial nations, where they study diverse topics, including rural decline, inner-city life, and the role of the mass media in creating national cultural patterns.

## ANTHROPOLOGY AND PSYCHOLOGY

Like sociologists, most psychologists do research in their own society. But statements about “human” psychology cannot be based solely on observations made in one society or in a single type of society. The area of cultural anthropology known as psychological anthropology studies cross-cultural variation in psychological traits.

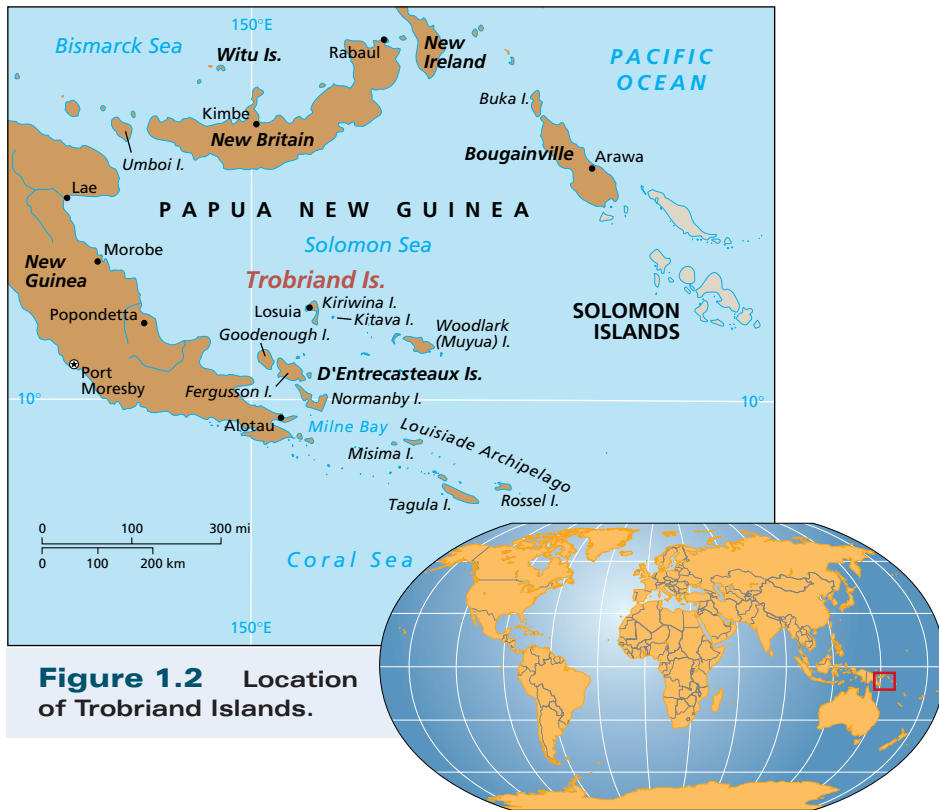
Societies instill different values by training children differently. Adult personalities reflect a culture’s child-rearing practices.

Bronislaw Malinowski, an early contributor to the cross-cultural study of human psychology, is famous for his field work among the Trobriand Islanders of the South Pacific (Figure 1.2). The Trobrianders reckon kinship matrilineally. They consider themselves related to the mother and her relatives, but not to the father. The relative who disciplines the child is not the father but the mother’s brother, the maternal uncle. One inherits from the uncle rather than the father. Trobrianders show a marked respect for the uncle, with whom a boy usually has a cool and distant relationship. In contrast, the Trobriand father–son relationship is friendly and affectionate.

Malinowski’s work among the Trobrianders suggested modifications in Sigmund Freud’s famous theory of the universality of the Oedipus complex (Malinowski 1927). According to Freud (1918/1950), boys around the age of five become sexually attracted to their mothers. The Oedipus complex is resolved, in Freud’s view, when the boy overcomes his sexual jealousy of, and identifies with, his father. Freud lived in patriarchal Austria during the late 19th and early 20th centuries—a social milieu in which the father was a strong authoritarian figure. The Austrian father was the child’s primary authority figure and the mother’s sexual partner. In the Trobrianders, the father had only the sexual role.

If, as Freud contended, the Oedipus complex always creates social distance based on jealousy toward the mother’s sexual partner, this would have shown up in Trobriand society. It *did not*. Malinowski concluded that the authority structure did more to influence the father–son relationship than did sexual jealousy. Like many later anthropologists, Malinowski showed that individual psychology depends on its cultural context. Anthropologists continue to provide cross-cultural perspectives on psychoanalytic propositions (Paul 1989) as well as on issues of developmental and cognitive psychology (Shore 1996).


**Understanding Ourselves** How much would we know about human behavior, thought, and feeling if we studied only our own kind? What if our entire understanding of human



**Figure 1.2** Location of Trobriand Islands.



Bronislaw Malinowski is famous for his field work among the matrilineal Trobriand Islanders of the South Pacific. Does this Trobriand market scene suggest anything about the status of Trobriand women?

behavior were based on analysis of questionnaires filled out by college students in Oregon? A radical question but one that should make you think about the basis for statements about what humans are like. A primary reason why anthropology helps us understand ourselves is the cross-cultural perspective. One culture can't tell us everything we need to know about what it means to be human. Earlier we saw how cultural forces influence our physical growth. Culture also guides our emotional and cognitive growth and helps determine the kinds of personalities we have as adults. Among scholarly disciplines, anthropology stands out as the field that provides the cross-cultural test. How does television affect us? To answer that question, study not just North America in 2003 but some other place—and perhaps also some other time (such as Brazil in the 1980s; see Kottak 1990). Anthropology specializes in the study of human variation in space and time. 

## Science, Explanation, and Hypothesis Testing



A key feature of anthropology is its comparative, cross-cultural dimension. As was stated previously (see p. 10), *ethnology* draws on ethnographic, as well as archaeological, data to compare and contrast, and to make generalizations about, societies and cultures. As a scientific pursuit, ethnology attempts to identify and explain cultural differences and similarities, test hypotheses, and build theory to enhance our understanding of how social and cultural systems work.

In their 1996 article “Science in Anthropology,” Melvin Ember and Carol R. Ember stress a key feature of science as a way of viewing the world: Science recognizes the tentativeness and uncertainty of our knowledge and understanding. Scientists strive to improve understanding by testing *hypotheses*—suggested explanations of things and events. In science, understanding means *explaining*—showing how and why the thing to be understood (the explicandum) is related to other things in some known way. Explanations rely on associations and theories. An association is an observed relationship between two or more variables. A theory is more general, suggesting or implying associations and attempting to explain them (Ember and Ember 1996).

A thing or event, for example, the freezing of water, is explained if it illustrates a general principle or association. “Water solidifies at 32 degrees” states an association between two variables: the state of the water and the air temperature. The truth of the statement is confirmed by repeated observations. In the physical sciences, such relationships are called “laws.” Explanations based on such laws allow us to understand the past and predict the future.

In the social sciences, associations usually are stated probabilistically: Two or more variables *tend to be* related in a predictable way, but there are exceptions (Ember and Ember 1996). For example, in a worldwide sample of societies, the anthropologist John Whiting (1964) found a strong (but not 100 percent) association or correlation between a low-protein diet and a long postpartum sex taboo—a prohibition against sexual intercourse between husband and wife for a year or more after the birth of a child.

Laws and statistical associations explain by relating the explicandum (e.g., the postpartum sex taboo) to one or more other variables (e.g., a low-protein diet). We also want to know why such associations exist. Why do societies with low-protein diets have long postpartum sex taboos? Scientists formulate theories to explain the correlations they observe.

A **theory** is an explanatory framework that helps us understand *why* (something exists). Returning to the postpartum sex taboo, why might societies with low-protein diets develop this taboo? Whiting's theory is that the taboo is adaptive; it helps people survive and reproduce in certain environments. With too little protein in their diets, babies may develop a protein-deficiency disease called kwashiorkor. But if the mother delays her next pregnancy, her current baby, by breastfeeding longer, has a better chance to survive. Whiting suggests that parents may be unconsciously or consciously aware that having another baby too soon might jeopardize the survival of the first one. Thus, they avoid sex for more than a year after the birth of the first baby. When such abstinence becomes institutionalized, everyone is expected to respect the taboo.

A theory is an explanatory framework containing a series of statements. An association simply states an observed relationship between two or more known variables. Parts of a theory, by con-



This child's bloated body is due to protein malnutrition. This condition, known as *kwashiorkor*, comes from a West African word meaning "one-two." This refers to the practice in some societies of abruptly weaning one infant when a second one is born. With no mother's milk, the first baby may get no protein at all. What are some cultural ways of fending off kwashiorkor?

trast, may be difficult or impossible to observe or to know directly. With Whiting's theory, for example, it would be hard to determine whether people developed the sex taboo because they recognized that it would give babies a better chance to survive. Typically, some elements of a theory are unobservable (at least at present). In contrast, statistical associations are based entirely on observations (Ember and Ember 1996).

If an association is tested and found to recur again and again, we may consider it proved. Theories, by contrast, are unprovable. Although much evidence may support them, their truth isn't established with certainty. Many of the concepts and ideas in theories aren't directly observable or verifiable. Thus, scientists may try to explain how light behaves by postulating that it consists of "photons," which can't be observed even with the most powerful microscope. The photon is a "theoretical construct," something that can't be seen or verified directly (Ember and Ember 1996).

Why should we bother with theories if we can't prove them? According to the Embers, the main


value of a theory is to promote new understanding. A theory can suggest patterns, connections, or relationships that may be confirmed by new research. Whiting's theory, for example, suggests hypotheses for future researchers to test. Because the theory proposes that the postpartum taboo is adaptive under certain conditions, one might hypothesize that certain changes would lead the taboo to disappear. By adopting birth control, for instance, families could space births without avoiding intercourse. So, too, might the taboo disappear if babies started receiving protein supplements, which would reduce the threat of kwashiorkor.

Although theories can't be proved, they can be rejected. The method of *falsification* (showing a theory to be wrong) is our main way of evaluating theories. If a theory is true, certain predictions should stand up to tests designed to disprove them. Theories that haven't been disproved are accepted (for the time being at least) because the available evidence seems to support them.

What is acceptable evidence that an explanation is probably right? Cases that have been personally selected by a researcher don't provide an acceptable test of a hypothesis or theory. (Imagine that Whiting had combed the ethnographic literature and chosen to cite only those societies that supported his theory.) Ideally, hypothesis testing should be done using a sample of cases that have been selected randomly from some statistical universe. (Whiting did this in choosing his cross-cultural sample.) The relevant variables should be measured reliably, and the strength and significance of the results should be evaluated by using legitimate statistical methods (Bernard 1994).

**Understanding Ourselves** Science is a powerful tool for understanding ourselves. Properly, science isn't rigid or dogmatic; scientists recognize the tentativeness and uncertainty of knowledge and understanding, which they try to improve and enhance. Working to confirm laws, refine theories, and provide accurate explanations, scientists strive to be objective. Science relies on unbiased methods, such as random sampling, impartial analytic techniques, and standard statistical tests. But complete objectivity is impossible. There is always observer bias—that is, the presence of the scientist and his or her tools and methods always affects the outcome of an experiment,

observation, or analysis. Through their very presence, anthropologists influence the living people and social conditions they study, as do survey researchers when they phrase questions in certain ways. Statisticians have designed techniques to measure and control for observer bias, but observer bias can't be eliminated totally. As scien-

tists, we can only strive for objectivity and impartiality. Science, which has many limitations, certainly is not the only way we have to understand ourselves. Nevertheless, its goals of objectivity and impartiality help distinguish science from ways of knowing that are more biased, more rigid, and more dogmatic. 

## SUMMARY

---

1. Anthropology is the holistic and comparative study of humanity. It is the systematic exploration of human biological and cultural diversity. Examining the origins of, and changes in, human biology and culture, anthropology provides explanations for similarities and differences. The four subfields of general anthropology are (socio)cultural, archaeological, biological, and linguistic. All consider variation in time and space. Each also examines adaptation—the process by which organisms cope with environmental stresses.
2. Cultural forces mold human biology, including our body types and images. Societies have particular standards of physical attractiveness. They also have specific ideas about what activities, for example, various sports, are appropriate for males and females.
3. Cultural anthropology explores the cultural diversity of the present and the recent past. Archaeology reconstructs cultural patterns, often of prehistoric populations. Biological anthropology documents diversity involving fossils, genetics, growth and development, bodily responses, and nonhuman primates. Linguistic anthropology considers diversity among languages. It also studies how speech changes in social situations and over time. Anthropology has two dimensions: academic and applied. The latter uses anthropological knowledge and methods to identify and solve social problems.
4. Concerns with biology, society, culture, and language link anthropology to many other fields—sciences and humanities. Anthropologists study art, music, and literature across cultures. But their concern is more with the creative expressions of common people than with arts designed for elites. Anthropologists examine creators and products in their social context. Sociologists traditionally study urban and industrial populations, whereas anthropologists have focused on rural, nonindustrial peoples. Psychological anthropology views human psychology in the context of social and cultural variation.
5. As scientists, anthropologists attempt to identify and explain cultural differences and similarities and to build theory about how social and cultural systems work. Scientists strive to improve understanding by testing hypotheses—suggested explanations. Explanations rely on associations and theories. An association is an observed relationship between variables. A theory is more general, suggesting or implying associations and attempting to explain them.

## KEY TERMS

---

See the flash cards



**anthropology** The study of the human species and its immediate ancestors.

**applied anthropology** The application of anthropological data, perspectives, theory, and methods to identify, assess, and solve contemporary social problems.

**archaeological anthropology** The study of human behavior and cultural patterns and processes through the culture's material remains.

**biological anthropology** The study of human biological variation in time and space; includes evolution, genetics, growth and development, and primatology.

**cultural anthropology** The study of human society and culture; describes, analyzes, interprets, and explains social and cultural similarities and differences.

**culture** Distinctly human; transmitted through learning; traditions and customs that govern behavior and beliefs.

**ethnography** Field work in a particular culture.

**ethnology** Cross-cultural comparison; the comparative study of ethnographic data, of society, and of culture.

**food production** Cultivation of plants and domestication (stockbreeding) of animals; first developed 10,000 to 12,000 years ago.

**general anthropology** The field of anthropology as a whole, consisting of cultural, archaeological, biological, and linguistic anthropology.

**holistic** Interested in the whole of the human condition: past, present, and future; biology, society, language, and culture.

**linguistic anthropology** The descriptive, comparative, and historical study of language and of linguistic similarities and differences in time, space, and society.

**physical anthropology** See biological anthropology.

**science** A systematic field of study or body of knowledge that aims, through experiment, observation, and deduction, to produce reliable explanations of phenomena, with reference to the material and physical world.

**sociolinguistics** Investigates relationships between social and linguistic variations.

**theory** An explanatory framework, containing a series of statements, that helps us understand *why* (something exists); theories suggest patterns, connections, and relationships that may be confirmed by new research.

*For more self testing, see the self quizzes*



## CRITICAL THINKING QUESTIONS

1. Which do you think is more unique about anthropology: its holism or its comparative perspective? Can you think of other fields that are holistic and/or comparative?
2. Besides race and gender, what are some other areas in which anthropology's biocultural, four-field approach might shed light on current issues and debates? Would sexuality be such an area?
3. Many other disciplines are limited by their focus on powerful people and elites. How have your professors in other classes tried to justify, or compensate for, such limitations?
4. Besides the examples given in this chapter, think of some other problems or issues in the modern world to which applied anthropology might contribute.

5. What are some theories, as defined here, that you routinely use to understand the world?

### Atlas Questions



Look at Map 1, "World Topography."

1. Which continent is most mountainous?
2. What are plateaus, and where are they located?
3. Which continent is least diverse in terms of terrains?

# SUGGESTED ADDITIONAL READINGS

---

## **Clifford, J.**

1988 *The Predicament of Culture: Twentieth-Century Ethnography, Literature, and Art*. Cambridge, MA: Harvard University Press. Literary evaluation of classic and modern anthropologists and discussion of issues of ethnographic authority.

## **Endicott, K. M., and R. Welsch**

2001 *Taking Sides: Clashing Views on Controversial Issues in Anthropology*. Guilford, CT: McGraw-Hill/Dushkin. Thirty-eight anthropologists offer opposing viewpoints on 19 polarizing issues, including ethical dilemmas.

## **Fagan, B. M.**

2001 *People of the Earth: An Introduction to World Prehistory*, 11th ed. Upper Saddle River, NJ: Prentice-Hall. Introduction to the archaeological study of prehistoric societies, using examples from all areas.

2002 *Archeology: A Brief Introduction*, 8th ed. Upper Saddle River, NJ: Prentice-Hall. Introduction to archaeological theory, techniques, and approaches, including field survey, excavation, and analysis of materials.

## **Geertz, C.**

1995 *After the Fact: Two Countries, Four Decades, One Anthropologist*. Cambridge, MA: Harvard University Press. A prominent cultural anthropologist reflects on his work in Morocco and Indonesia.

## **Harris, M.**

1989 *Our Kind: Who We Are, Where We Came From, Where We Are Going*. New York: HarperCollins. Clearly written survey of the origins of humans, culture, and major sociopolitical institutions.

## **Marcus, G. E., and M. M. J. Fischer**

1999 *Anthropology as Cultural Critique: An Experimental Moment in the Human Sciences*, 2nd ed. Chicago: University of Chicago Press. Different types of ethnographic accounts as forms of writing, a vision of modern anthropology, and a consideration of anthropologists' public and professional roles.

## **Nash, D.**

1999 *A Little Anthropology*, 3rd ed. Upper Saddle River, NJ: Prentice-Hall. Short introduction to societies and cultures, with comments on developing nations and modern America.

## **Podolefsky, A., and P. J. Brown, eds.**

2002 *Applying Anthropology: An Introductory Reader*, 7th ed. Boston: McGraw-Hill. Essays focusing on anthropology's relevance to contemporary life; a readable survey of the current range of activities in applied anthropology.

## **Wolf, E. R.**

1982 *Europe and the People without History*. Berkeley: University of California Press. Influential and award-winning study of the relation between Europe and various nonindustrial populations.

# INTERNET EXERCISES

---

1. News in Anthropology: Look at Texas A&M University's "Anthropology in the News," <http://www.tamu.edu/anthropology/news.html>, which contains links to articles relevant to anthropology.
    - a. After reading the chapter in the textbook and reading some recent news articles, do you think anthropology is more or less relevant to your life?
    - b. Look at the variety of topics discussed. Are the connections between the articles and anthropology clear to you? Were they clear to you before you read this chapter?
    - c. Examine the first 10 articles. Which subfield of anthropology does each article relate to most closely?
    - d. Browse the list of article titles. What are some of the current hot topics in the news about anthropology?
  2. Careers in Anthropology: Go to the American Anthropological Association's Jobs Page (<http://aaanet.jobcontrolcenter.com/search/results/>) and Northern Kentucky's list of organizations in their area hiring anthropologists (<http://www.nku.edu/~anthro/careers.html>).
    - a. What kinds of organizations are hiring anthropologists?
    - b. What kinds of qualifications are these employers looking for? Do they require a graduate degree, or are they seeking people with an undergraduate degree in anthropology?
    - c. What subfields are being sought by employers?
- Note that these are just two job listing pages on the Web, and there are many others. If you have an interest in a field of anthropology that is not listed on these pages, use a web search engine to research what kinds of jobs are available. A good place to start is <http://www.aaanet.org/careers.htm> for more information on careers in anthropology.

See Chapter 1 at your McGraw-Hill Online Learning Center for additional review and interactive exercises.