chapter 19

Sociology of Environments: The Natural, Physical, and Human Worlds

ON AUGUST 23, 2005, the summer's twelfth tropical depression formed over the Bahamas. Soon it was upgraded to a Category 1 hurricane named Katrina. In a busy hurricane season, most of the world didn't pay much attention as it made landfall in Florida, caused little damage, weakened into a tropical storm, and blew off into the Gulf of Mexico. But then the warm water strengthened it into a Category 5, with winds of 175 miles per hour, the most intense hurricane to ever hit the gulf. On August 28, New Orleans Mayor Ray Nagle ordered a mandatory evacuation of the entire city. By the morning of August 29, only 20 percent of the 1.3 million residents remained, mostly those too poor or sick to move. Shortly after landfall, a storm surge breached the levees in several places. Four-fifths of the entire city was under water.

So far this doesn't sound very much like the introduction to a chapter in a sociology textbook. Read on.

We think of people and the natural and built environments in which they live as separate, even conflicted, realms. Sociologists are interested in the dynamic relationships among the human, the physical, and the urban environments.

During the subsequent days and weeks, news reports described a city in chaos, with snipers, rapes and murders, people dying of hunger and exposure, bodies lying unattended in the streets. (Later it turned out that many of the reports were exaggerated or even made up.) National Guard

and federal troops were mobilized, but were they in New Orleans to distribute food and water or to keep looters away from the pricey boutiques on Canal Street? Why did they take so long to arrive? Most of the survivors were poor and African American. And the spin of the news reports—African Americans "looting" but White people "searching for food"—suggested that the disaster was bringing long-hidden prejudices to light.

We think of human beings, the cities they live in, and the physical world of tropical depressions as separate realms, sometimes even conflicted ones. As the events leading up to and following Hurricane Katrina demonstrate, they are related, even interdependent. The hurricane, the flooding of New Orleans, and the aftermath are parts of the same story. Cities "create" the countryside. "Natural disasters" have human causes as well as human consequences. All three environments—the human, the urban, and the natural—constrain and construct human action, help create and sometimes help destroy each other. Sociologists are vitally interested in the dynamic relationships among the human, the physical, and the urban environments.

The Human Environment

Humans are a social species. We want—and need—to be around other people most of the time. People who go off by themselves on purpose are often considered strange, socially inept, or even psychologically disturbed. Every time a serial killer or mass murderer is apprehended, newshounds rush to broadcast a neighbor saying, "He was a loner, kept to himself most of the time," as if somehow being alone explains murderous thoughts.

A major part of our environment is the mass of other people around us, simply doing what people do: being born and growing up, moving into town and leaving town, getting sick and getting well, living and dying. **Demography** is the scientific study of human populations and one of the oldest and most popular branches of sociology. Demography is used to calculate health, longevity, and even political representation, as the census is the basis for allocation of congressional seats. Demographers are primarily concerned with the statistics of birth, death, and migration (Yaukey and Anderton, 2001).

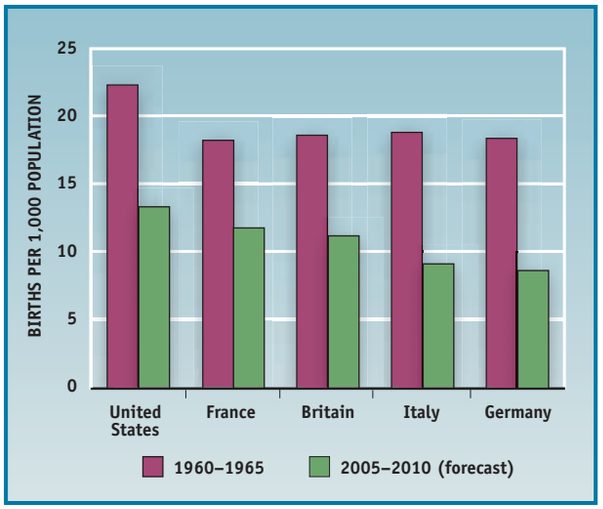
Being Born

Demographers use two birth measurements: **fertility** (the number of children that a woman has) and **fecundity** (the maximum number of children that she could possibly have). Women are physically capable of having a child every nine months, so in the years

between menarche (the onset of menstruation) and menopause (the end of menstruation) they could give birth over 20 times (their fecundity). However, in the United States, women have an average of 2.08 children each (their fertility) (Hamilton, et al, 2006; U.S. Census Bureau). (Figure 19.1) (Men are not counted because they could produce thousands of children if they found enough partners. King Sobhuza II of Swaziland [1899–1982] fathered 210 children with his 70 wives.)

Demographers measure fertility with the number of live births in the country per year. They measure fecundity with the **fertility rate,** the number of children that would be born to each woman if she lived through her childbearing years with the average fertility of her age group. Poor countries often have a fertility rate of four or more (it's 6.84 in Somalia), while in rich countries, the fertility rate often drops to less than two (1.61 in Canada) (CIA World Factbook). Very high fertility rates spell trouble: Children do not contribute to the economy until they are older, but they must be fed, clothed, educated, and given health care, thus putting a severe strain on already impoverished families. Women with so many children cannot participate in the labor force, putting even more strain on the family economy. As the children grow into adulthood, there will not be enough jobs to accommodate them, resulting in widespread unemployment. On the other hand, more children means more potential support for aging and infirm parents.

FIGURE 19.1 **The Birth Dearth**



Source: "The Birth Dearth" from "German Demography: Cradle Snatching," *The Economist,* March 18, 2006, p. 55.

However, very low fertility rates are also a problem, suggesting that the population is aging faster than it can be replenished with new births. Fewer people participate in the workforce as they grow old or retire, but at the same time they continue to require housing, food, transportation, and health care, again putting a strain on the economy. The low number of births means that in about 20 years there will not be enough adult workers to fill critical jobs in business and technology, putting the country at an economic disadvantage. On the other hand, lower birth rates mean that adults have far more geographic and occupational mobility.

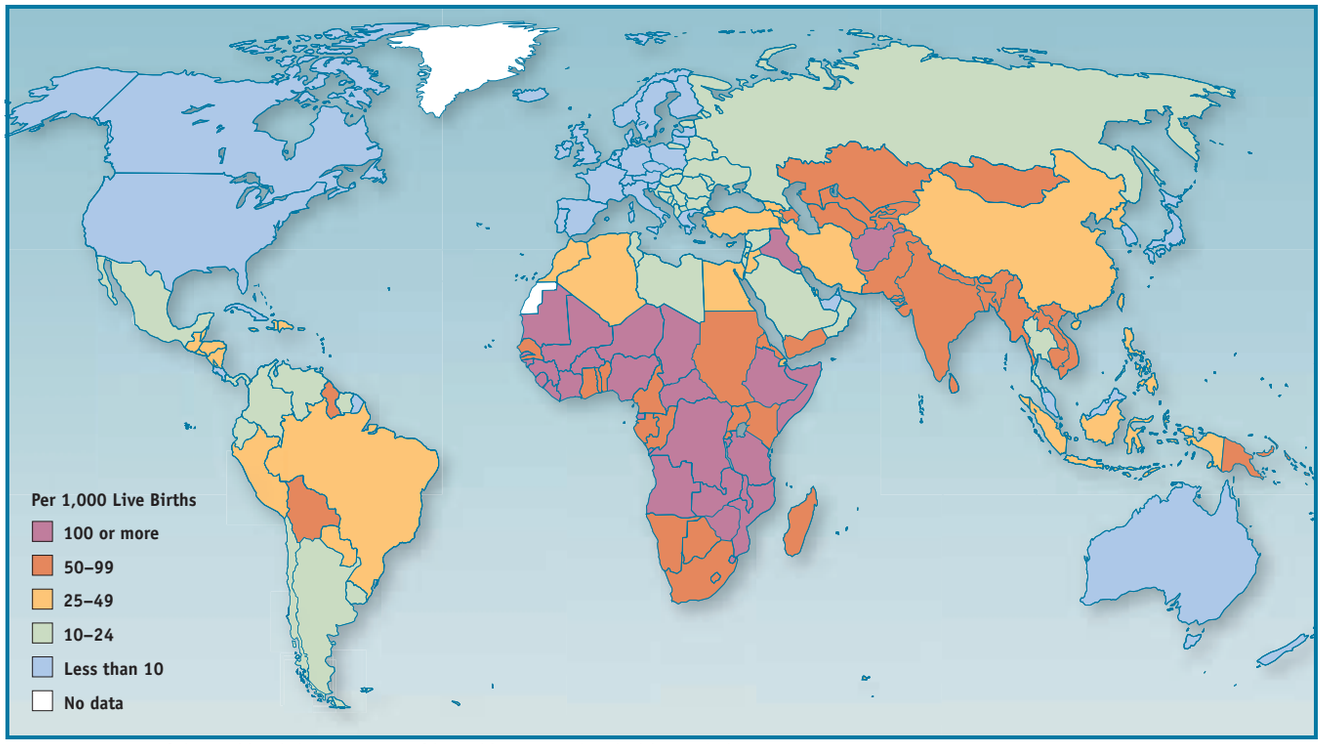
Dying

Of course, everyone dies sooner or later, but the **mortality rate,** or the number of deaths per year for every thousand people, can tell demographers a great deal about the relative health of the country. In the United States, the mortality rate is 8.25; every year, a little over eight people in every thousand die. Most wealthy nations range between 8 and 12.

Strangely, poor nations can have either higher or lower mortality rates. A low mortality rate, as in Guatemala (6.81) or Tonga (5.35), does not necessarily mean that the people there enjoy a high **life expectancy** (the average number of years a person can expect to live). In fact, in Guatemala, it's rather low, 64.31 for men and 66.21 for women. It usually means that the fertility rate is so high that the proportion of older people in the population goes down. In the United States, about 12 percent of the population is 65 or older. It's 3.3 percent in Guatemala and 4.2 percent in Tonga (CIA World Factbook).

A higher mortality rate, as in Afghanistan (20.99) or Zambia (20.23), usually signifies that, due to famine, war, or disease, many people do not live to see old age. AIDS is causing a significant decline in population growth in many low-income countries. In some sub-Saharan African countries, 10 percent or more of the adult population is infected with HIV—37 percent in Botswana, which also has the highest mortality rate

FIGURE 19.2 **Infant Mortality Rate in the World**



Source: From Maps of the World website, www.mapsoftheworld.com. Reprinted with permission.

in the world (29.36). Most people cannot afford the expensive medications necessary to keep HIV from developing into AIDS, so their life expectancy is low (CIA World Factbook). The majority are in their prime childbearing years, which also contributes to the population decline. They are also in their prime economic years, so these countries are experiencing reversals in economic and social development.

Demographers are especially interested in the **infant mortality rate,** the number of deaths per year in each thousand infants up to one year old (Figure 19.2). As you might expect, the infant mortality rate is extremely low in wealthy countries (4.31 in France), and extremely high in poor countries, especially in sub-Saharan Africa: It's 70.49 in Nigeria and 192.5 in Angola (that is, one out of five babies born die during their first year of life). Because infants are more vulnerable to disease and malnutrition than adults or older children, the infant mortality rate correlates with the effectiveness of the country's health care, the level of nutrition, and innumerable other quality of life factors. In Angola, for instance, fewer than half of all children have been immunized for measles, only 30 percent have access to adequate sanitation, and only 10 percent sleep under mosquito netting (to guard against malaria) (UNICEF, 2003). The infant mortality rate serves as a proxy for the overall health of the country and can guide policy makers in their allocation of funds for hospitals, medical care, and pregnancy counseling.

Moving In, Moving Out

In addition to people being born and dying, demographers are interested in their physical movements, as they leave one territory (*emigrating*) and take up permanent residence in another (*immigrating*). People emigrate and immigrate either voluntarily or involuntarily. Most wealthy countries have sizeable populations of voluntary immigrants. In 2000, the United States granted citizenship to 898,000 foreign nationals.

Canada was second (214,600 new citizenships), followed by several European countries and Australia (OECD 2004).

Over 46 million people living today emigrated from their home territory involuntarily. Thirty million were lured or abducted into forced labor or the global sex trade, and 16 million are refugees, victims of political strife, war, or natural disasters. Iran hosts the most refugees (nearly two million), followed by Germany, Bosnia, Pakistan, and Rwanda (UNESCO 2002).

▲ **Many refugees cluster in places where their ethnic group has gained a foothold. There are 18,000 Hmong, political refugees from Laos, in the United States, almost all in a few cities in Minnesota, Wisconsin, and California. Here, Hmong third graders join a class in St. Paul, Minnesota.**

Voluntary migrants usually have two sets of motives for their move, called *push factors* (reasons they want to leave their home territory in the first place) and *pull factors* (reasons they want to settle in this particular territory). The most common push factors are a sluggish economy, political and cultural oppression, and civil unrest—not enough to force them to leave, but enough to make their lives at home miserable. A slight downturn in one country's economic fortunes often leads to a rise in immigration in others. The most common pull factors are the opposite: a good economy, political and cultural tolerance, and civil stability. Because rich countries offer superior jobs and education and a great degree of political and cultural tolerance, they tend to receive the most voluntary migrants. Most Scandinavian countries offer citizenship, health benefits, and educational access the second you land on their shores, so they have become magnets for enterprising migrants from Turkey and Pakistan.

Another extremely important pull factor is having someone you know in the territory you intend to immigrate to. People don't like to start out afresh in areas where they know no one and where possibly no one speaks their language or understands their culture, so when they have a choice, they often move to where family and friends are already located. Many relocate to follow a romantic partner.

On arrival, new immigrants tend to cluster in the same neighborhoods, both because racism and discrimination prevent the easy mobility they had imagined and because they come with few financial resources, and old friends and relatives offer free places to stay and possibly even jobs. The nineteenth- and early twentieth-century immigrants to New York didn't live scattered all over the city but in carefully defined neighborhoods—Greek, Hungarian, Irish, Polish, and so on. Sometimes entire villages relocate to the same neighborhood in the new country.

Many refugees cannot afford to leave their home countries, or else authoritarian governments forbid them to leave. It takes the concerted efforts of humanitarian agencies to get them out. When China took control of Tibet in 1959, thousands of Tibetans moved into exile in neighboring India. Many others have followed since. Church and secular agencies around the world created programs to relocate them, until today the 140,000 Tibetan refugees are living in host countries around the world. There are 5,000 in about 30 cities in the United States and Canada.

There have been four major flows of immigration in modern history (Pagden, 2001):

1. Between 1500 and 1800, as Europe began to establish colonial empires around the world, millions of English, French, Spanish, and Portuguese citizens emigrated to the sparsely settled regions of North and South America, South Africa, and Oceania. Some were forced to leave as punishment for a crime, but most chose to leave voluntarily, drawn by the promise of wealth or political freedom in the colonies.

2. At about the same time, Europeans transported over 11,000,000 East and West Africans to their New World colonies in North and South America and the Caribbean to work as slaves. Eventually they came to form a substantial part of the population of the United States, the Caribbean, and many regions of South America, especially Brazil. Because they maintained so much cultural continuity with their African homeland, they are now sometimes called "The African Diaspora," and the two regions (Africa and the New World) are studied together in Africana Studies departments of universities (Gomez, 2004; Thornton, 1998).

3. Beginning in about 1800, East Asians began to emigrate from China and to a lesser extent other countries, with motives similar to those of the Europeans who settled the New World (Takaki, 1998). They immigrated to major cities in the United States, Latin America, Africa, and the Middle East. Today Brazil has the largest population of Japanese ancestry (1.5 million) outside of Japan, and 50 percent of the population of the United Arab Emirates consists of South Asian nationals (CIA World Factbook). In fact, because there are even more South Asian migrants—25,000,000—than African forced migrants, culture scholars have begun to refer to an "Indian Diaspora" on the model of the African Diaspora (Bates, 2001).

4. Between about 1880 and 1920, millions of Southern and Eastern Europeans emigrated as they faced increasing political and economic strife as their countries modernized. These included the political traumas of unification in Italy, pogroms and forced conscription in Russia, and economic depression across Europe. High school textbooks in the United States tend to portray only immigrants arriving at Ellis Island, but they also settled in Canada, South Africa, Australia, New Zealand, and Latin America. By 1914, 30 percent of the population of Argentina was foreign born, speaking Italian, Russian, Polish, Czech, English, Yiddish, and German. In some districts, the percentage was as high as 50 percent (Shumway, 1993).

Did *you* know?

Most people know that Australia was originally a penal colony to thin out the population of Britain's overflowing jails, but did you know that the province of Georgia was founded in 1732 as a penal colony for British criminals (mostly debtors)? Later, criminals were transported to other cities in the South, where plantation owners could bid on them along with the African slaves. It is estimated that a quarter of all British colonists during the eighteenth century, some 50,000 people, arrived that way (Coleman, 1991).

Studying Immigration

The **immigration rate** is the number of people entering a territory each year for every thousand of the population. The **emigration rate** is the opposite, the number of people leaving per thousand. However, few territories are so terrible that they cannot attract at least a few immigrants, or so wonderful that no one ever decides to emigrate (although some authoritarian states forbid their citizens from emigrating). Therefore demographers study the changing population by examining the **net migration rate,** the difference between the immigration and emigration rates in a given year.

Because rich countries offer the greatest educational and job opportunities and the most freedom from oppression, more people want to move to them than to leave, so they tend to have positive net migration rates (5.9 in Canada, 3.31 in the United States, 2.18 in Germany). A negative net migration rate means that more people are emigrating than immigrating, suggesting that the country is too poor to offer many jobs or else is undergoing a political crisis (Iran, –2.64; Mexico, –4.57). The lowest net migration rate in the world is in Micronesia, where 21 more people per thousand leave than arrive every year. With one-fifth of the population unemployed, palm trees and ocean breezes haven't been sufficient incentive to stick around (CIA World Factbook 2006).

Internal migration means moving from one region to another within a territory. The average American moves 11 times during his or her life—more for young, middle-class professionals. Most of these migrations occur within the same city or to

adjacent cities, as people seek bigger and better residences while staying "close to home." A surprising percentage occur across county lines, however. In the United States, demographers classify as "significant" only those moves out of the county. This is not always an accurate measure. For instance, if you move from Upland, California, to Needles, on the Arizona border, the 219 miles will not be considered "significant" because you're still in San Bernardino County. But if you move a mile down the road to Claremont, you've changed to Los Angeles County, and demographers will take notice.

▲ **Internal migration has shifted a significant proportion of the population from the industrial Northeast and Midwest (the "Rust Belt") to the South and Southwest (the "Sun Belt"). Some cities have declined, while others, like Raleigh, North Carolina, have boomed.**

Young college-educated people are more likely to move out of the county—75 percent of the single ones and 72 percent of the married ones moved between 1995 and 2000. Married or single, they have fewer long-term responsibilities to tie them to a place, no kids to take out of school or houses to put up on the market. Also, people looking for jobs that require a college degree often conduct a national job search instead of a local search; over 20 percent of people who moved significant distances in 1999–2000 said they moved because of a "new job" or "job transfer," by far the most popular reason (Schachter, 2001).

Internal and international migration are regulated by similar push and pull factors: People want jobs and freedom. Two million African Americans moved from the rural South to the urban North between 1900 and 1940, to escape stagnating rural economies and oppressive Jim Crow laws. Another five million moved north between 1940 and 1970 (Lemann, 1992). Since World War II, there has been an ongoing migration of young gay men and lesbians from small towns to big cities, to escape from the homophobia and heterosexism back home (Weston, 1995). This simultaneous push (discrimination) and pull (attraction of a community) created and sustain the now well-established gay ghettos in San Francisco, New York, Miami, Atlanta, and other major cities (see Levine, 1979).

Today most internal migration flows from the cities of the Northeast and the Midwest, where economies are stagnating—the so-called Rust Belt, from the reliance on heavy industry and especially the homes of the steel and auto industries—toward places with high economic prospects, the Sun Belt of the New South—Texas, Tennessee, Georgia, Florida—and the Southwest, especially Arizona, California, and Nevada (Table 19.1). Between 1990 and 1997, 4 percent of the population of Pittsburgh moved away, while Atlanta added 22 percent. The trend continued in 2000 through 2004, with huge gains for Sun Belt cities like Phoenix, Las Vegas, Dallas, and Atlanta, and big losses for Boston, Detroit, and Chicago (U.S. Census Bureau).

TABLE 19.1

Biggest Population Gains and Losses, 2000–2004

GAINS		LOSSES	
Riverside–San Bernardino, CA	325,842	New York, NY	–844,058
Phoenix, AZ	194,392	Los Angeles, CA	–471,118
Las Vegas, NV	168,463	Chicago, IL	–252,997
Tampa, FL	145,580	San Francisco, CA	–243,934
Atlanta, GA	124,106	San Jose, CA	–174,295

Note: Los Angeles is second in losses, but adjacent counties are first in gains—these changes may simply be a matter of people moving to the suburbs and just outside city limits
Source: Frey, 2005.

▲ **Migration takes place because people may be pushed out of their communities by discrimination or pulled to a welcoming community elsewhere. In the 1970s, "gay ghettoes" emerged in most major American cities, notably San Francisco (shown, the Castro district) and New York.**

An influx of new immigrants, either internal or international, can provide new talent for the community, but it also puts a strain on the local infrastructure, as utility companies, school districts, real estate, and retailers try to deal with the influx. Meanwhile, the territories losing population experience a loss of talent, failed businesses, deserted downtowns, and a "sinking ship" feeling.

Population Composition

Comparing births and deaths, emigration and immigration, can give demographers only a partial understanding about what's going on in a country or region. They also want to know the **population composition**—that is, the comparative numbers of men and women and various age groups.

The male:female ratio is never 50:50. Due to physiological differences in X and Y chromosomes, 106 boys tend to be born for every 100 girls. A significantly lower birth ratio suggests that environmental pollution is having an impact on the human body at the chromosomal level (Davis, Gottlieb, and Stampninsky, 1998). A significantly higher ratio, especially in countries where boys are strongly preferred over girls—for instance, China (109), South Korea (110), and Guam (114)—suggests to demographers that women are more likely to choose abortions if they find that they are carrying girls. Some may even engage in the once common but now outlawed practice of infanticide (killing the newborn).

After birth, the ratio of men to women decreases in every age group because men are more likely to die in accidents, warfare, and of certain diseases. If the ratio is too high or not high enough, demographers conclude that the country is especially unpleasant or unattractive for men or women. During the middle years of life (ages 15 to 64), the highest disproportion of men to women occurs in countries that draw a substantial number of male foreign workers (there are 2.28 men for every woman in Qatar). On the other side of the coin, countries that lose many men to foreign employment tend to have a disproportionate number of women (there are 0.92 men for every woman in Puerto Rico). The greater the disproportion, the more likely that men and women interested in heterosexual unions will not be able to find appropriate partners.

Did *you* know?

The situation of women (both a "surplus" of women and severe gender discrimination) in many countries in Asia and the former Soviet Union has created a cottage industry of "mail-order wives." American men are invited on websites to select foreign brides who are "unspoiled by feminism." In 2001, the U.S. government issued over 17,000 "fiancée" visas, most for women who had never met their future husbands in person. About half of the brides were from Asia and half from Eastern Europe and the former Soviet Union.

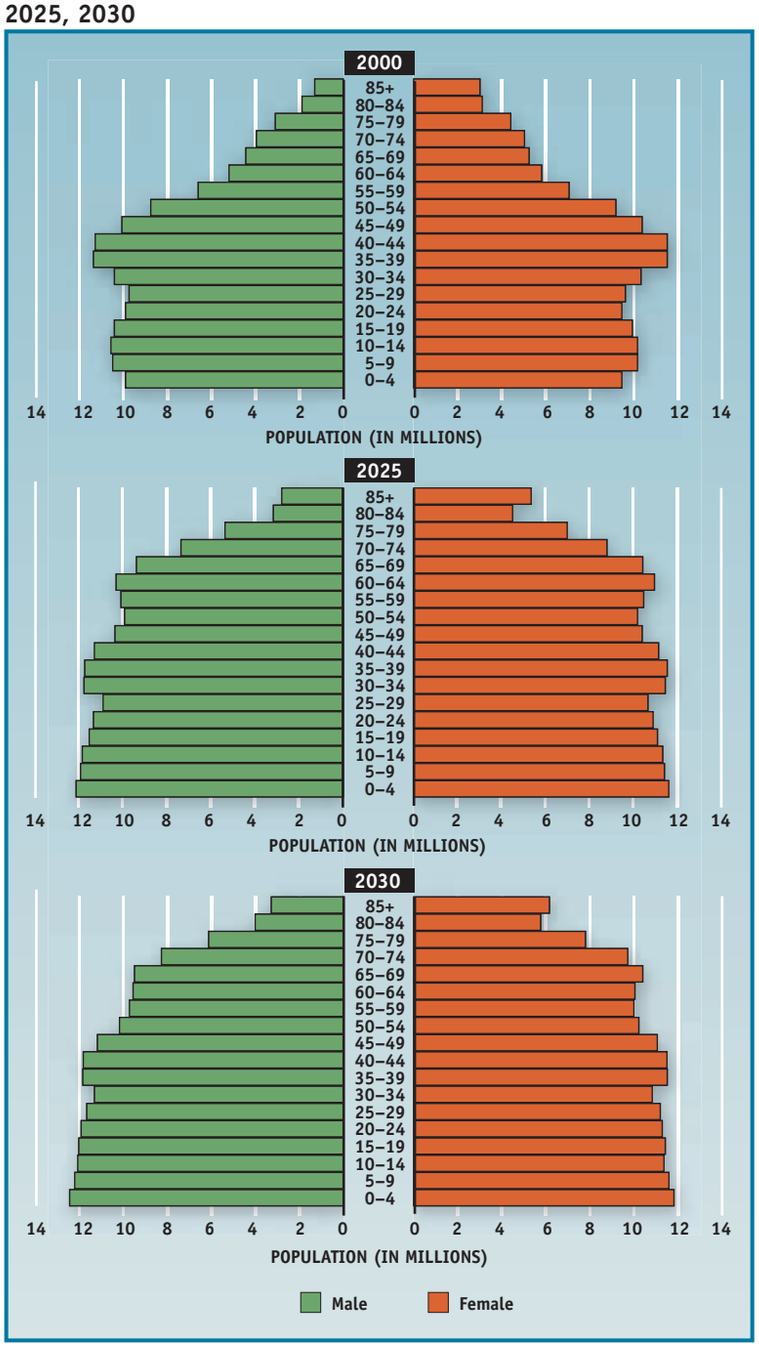
The distribution of people of different age groups can best be represented by a graph called a **population pyramid,** which shows five- or ten-year age groups as different-sized bars, or "blocks" (Figure 19.3). Many poor countries, like Mexico, have "expansive pyramids" that look like real pyramids. They have a broad base to signify a high fertility rate, and every "block" gets smaller as the age group shrinks due to accident, disease, or other mortality factors, until the highest block (the elderly) is very small. Rich countries often have "constrictive pyramids." The base is not very broad because the fertility rate is not very high, but there's a big block of middle-aged and older people. Some countries, like Italy, even look somewhat top heavy because the middle and apex of the pyramid is bigger than the base; there are many more people over 30 than children. A few countries have "stationary pyramids," which look like pillars. Because few people in each age group die of accident or disease, every block is about the same size, beginning to shrink only a little beginning with the 60-year-olds. Demographers predict that while the United States is slightly constrictive now, it will be more stationary by 2030 (Young, 1998). In the United States, the higher fertility rates of

immigrants help account for a less-constrictive pyramid than in some other wealthy countries ("As They Don't Like It," 2005).

Population pyramids can also be divided by gender, with men on one side and women on the other. If one of the blocks is larger on one end than the other, it means that men or women far outnumber the other sex in that age group. In the United States, women begin outnumbering men around the age of 70, but in India, they begin outnumbering men around the age of 40.

Demographers use population blocks to determine current and future social service needs of the society. In the United States, the baby boomer block has been a bulge in the pyramid, working its way upward since the 1950s, allowing demographers to predict a need for more child-oriented facilities, then more colleges and universities, and now more facilities for elderly people.

FIGURE 19.3 **U.S. Population Pyramid Summary 2000, 2025, 2030**



Source: U.S. Census Bureau, International Data Base, 2007.

Population Growth

Cities and countries grow or shrink for a variety of reasons: **natural population increase** (the number of births every year subtracted by the number of deaths), immigration and emigration, and changing boundary lines when territories are annexed or lost. But the world as a whole grows for only one reason, natural increase, and it is growing fast, at a rate of 1.3 percent per year. As of this writing, there are 6.5 billion people living on Earth, but by the time this book is published, it will probably be 6.75 billion. If you are 20 years old today, you can expect to see the world's population reach 8 billion before your fortieth birthday, and 9 billion long before you retire (Cohen, 1995).

How did we get so many people? And what are we going to do with them?

For thousands of years, children meant prosperity. They started working alongside their parents as soon as they could walk, thus adding to the family's economic productivity. In the absence of Social Security and retirement communities, they meant the difference between being taken care of in old age and being thrown out onto the street. Women were pregnant as often as they could be. With a high infant mortality rate and virtually no effective medical care, only about half of the babies born survived to age 14 (Kriedte, 1983), so it was prudent to have as many children as possible to ensure that one or two would survive to maturity.

Try It Understanding Population Pyramids

MyLab

Developed by Katherine R. Rowell, *Sinclair Community College.*

OBJECTIVE: Understand population data and apply them to potential policy issues.

STEP 1: Plan

Understanding the distribution of population within a country by age and sex is important in understanding future issues that may develop. This activity requires you to examine the population pyramids of three developed (mostly wealthy) countries and compare them to three developing (mostly poor) countries. To compare and contrast, choose the year 2000 for information on the population of the countries you choose.

STEP 2: Research

Go to the International Database of the U.S. Census Bureau (www.census.gov/ipc/www/idb) and choose your six countries (keep in mind three are to be developed, and three should be developing, based on year 2000).

For each country, either print out the pyramid or save the diagram in a document file.

STEP 3: Compare

Write a one-page paper comparing and contrasting the pyramids. Did you notice any patterns? What seem to be the main population issues facing the developed countries? What seem to be the main issues facing the developing countries? What do you think the future holds?

Take a look at the information provided by the Population Reference Bureau website (www.prb.org) and search for the World Population Clock, 2006.

How does this information compare to your overall thoughts? Based on world population data, what population issues do you see in the world? Explain in a short paragraph.

STEP 4: Discuss

Be prepared to turn in your work for this activity in class and to discuss and share your results.

In modern societies, most children survive to adulthood, so it is imprudent to give birth to more than you expect to raise. And, far from meaning endless prosperity, they are an economic burden. For the first 20 years or so of their lives, parents provide their room, board, braces, medicine, school supplies, books, toys, and probably an allowance, while at least in the middle classes the children contribute little or nothing to the family budget (they may have a part-time job, but it's usually for their own spending money). When they grow up, they move away and contribute no money to their household of origin; in fact, many modern parents resist the idea of their children's giving them anything at all. However, a significant minority of young middle-class adults—even after they go to college—continue to live at home, relying on financial support (familial cleaning, catering, and laundry services) and other forms of life support.

Fewer children, therefore, make more economic sense than lots of children. But tell that to men and women in cultures where a household with ten children is infinitely more prestigious than a household with just one—or, heaven forbid, none. Even if they grudgingly admit that it might be a good idea to limit the number of their children, they may be unaware of birth control techniques, or they are unable to acquire the proper devices.

Even where urban populations find children an economic liability, in the absence of social safety nets like Social Security and elderly care facilities, people may want large families to ensure care in their old age. High fertility may be encouraged for religious or political reasons. Also, if women's opportunities are limited, childbearing, especially at an early age, is one of the few roles open to them.

Low infant mortality plus the prestige of large families meant that beginning about 1750, the world's population started to inch upward (Table 19.2). Then the inch became a foot. Not only the population itself, but the rate of increase started to climb. It was this climb that sparked the growth of demography as a field of sociological study.

In 1900, the world's population was about 1.7 billion. During the twentieth century, it quadrupled to over 6 billion, due to plummeting infant and maternal mortality rates (the result of improved health care for both pregnant women and their infants and of better neonatal nutrition) and dramatically increased longevity. Although the peak slowed a bit after 1970, due to a declining fertility rate in rich countries and the world pandemic of HIV/AIDS, we are still gaining 77 million people each year, or the equivalent of the entire population of the United States every four years.

Ninety-six percent of the population growth is taking place in poor countries. Somalia, one of the poorest countries in the world, adds 3.38 percent to its population every year. This means that the people having the most children are precisely the ones least economically capable of providing for them. Many rich countries, on the other hand, have a stable population, and some are in decline. Demographers consider a population growth rate of 0.4 percent or so stable, but in 40 of the 42 countries in Europe, the growth rate is lower than that, and in some it is actually shrinking. The birth rate and immigration rate are too low to replace those who die and emigrate.

TABLE 19.2

World Population Milestones

- 1 billion in 1804
- 2 billion in 1927 (123 years later)
- 3 billion in 1960 (33 years later)
- 4 billion in 1974 (14 years later)
- 5 billion in 1987 (13 years later)
- 6 billion in 1999 (12 years later)

Source: United Nations Population Division. Fact Monster/Information Please® Database, © 2005 Pearson Education, Inc. All rights reserved.

How High Can It Go?

Thomas Robert Malthus (1766–1834), an English economist and clergyman, was one of the first to suggest that population growth might spin out of control and lead to disaster (1798). Though the population of England was only about 6 million at the time, **Malthusian theory** held it would increase by geometric progression, doubling in each generation—a man and a woman would have four children, and those four would have eight, and those eight sixteen, and so on. However, because farm land has a limited fertility, even with new technology, food production can only increase by arithmetic progression—20 tons becomes 40, then 60, then 80, and so on. Eventually—and quite rapidly—there would be more people than food, leading to starvation on a global level.

While in principle his theory made sense, Malthus failed to foresee several cultural trends. First, the birth rate in England began to drop around 1850 as children were increasingly seen as an economic liability and people began to use birth control. Also, Malthus underestimated human ingenuity—irrigation, fertilizers, pesticides, and selective breeding have greatly increased farm productivity. So the population did not increase quite as fast as he thought, and there has been no global starvation. Yet. In rich countries, the problem is often quite the opposite—we consume far more than we need to survive.

Karl Marx was highly critical of Malthus's basic assumption that population growth would be a source of hardship for the masses. He argued that unequal distribution of resources was a far more significant factor. To Marx, the problem was that the rich get richer and the poor get babies. The political question was not how to reduce the number of babies but how to get the poor some of those riches.

But Marx has been criticized for failing to take uneven population growth into account as a contributing factor in global inequality. For example, India is the second most populous country in the world, with a little over a billion people in 2005. Its population increases by 18 million per year, with an expected 50 percent increase by 2050. It currently faces a severe water shortage. This is not a resource that can be redistributed. As its population increases, its quality of life will get lower, resulting in a widened inequality gap in high-income countries.

Migration and fertility rates also affect the age demographics of a society. Russia loses 0.37 percent of its population every year, becoming older and grayer. ▼

In 1968, Paul Ehrlich published *The Population Bomb,* which put a modern take on Malthus. He argued that even a moderate 1.3 percent population increase would soon spin out of control. Before the year 3000, he predicted, Earth's population would grow to 60 million billion, or 100 people for each square yard of the world, including the oceans and mountaintops. Of course, we would run out of food and usable water long before that. Ehrlich predicted that the first mass starvations would begin in the 1990s. He turned out to be slightly off as well. Millions of people are malnourished across the world, but not nearly as many as he predicted. Erlich later argued that an increased population combined with an alarming depletion of natural resources can only lead to chaos. His solution was a global effort to achieve **zero population growth**—where the number of births does not exceed the number of deaths. This would involve not only global stability in population but a decrease in poor countries and a redistribution of resources to those countries.

Demographic Transition

Frank Notestein (1945) argued that population growth is tied to technological development. **Demographic transition theory** holds that the population and technology spur each other's development. This transition has three stages:

1. *Initial stage.* The society has both a high birth rate and a high death rate, so the population size remains stable or else grows very slowly. Preindustrial societies were all at this stage.
2. *Transitional growth stage.* Industrialization leads to a better food supply, better medical care, and better sanitation, all resulting in a decrease in mortality at all age levels. However, the sociological prestige of large families has not decreased, so the birth rate remains high, and the population explodes. This is what Malthus observed, and it precipitated his theory of exponential growth.
3. *Incipient decline stage.* Social forces and cultural beliefs catch up with technology. Both the birth and death rates are low, so population growth returns to minimal levels. Zero population growth is rare, but many industrialized countries like Germany are coming close.

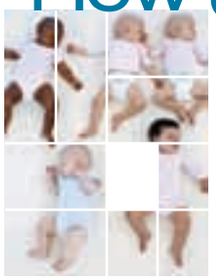
This theory has been criticized for two reasons. First, it always works in the same direction, from high fertility/high mortality to high fertility/low mortality as technology increases, and then to low fertility/low mortality as social norms catch up. However, there have been many instances in history where the mortality rate moved from low to high, such as the periods immediately after the fall of the Roman Empire and the Mayan Empire. In contemporary sub-Saharan Africa, the high rate of HIV infection is offsetting the birth rate and causing countries to move backward, from stage two to stage one (high fertility/high mortality).

Second, it is not technology that causes a decrease in the mortality rate—but rather the sociology, the changes in personal and public health practices. Several major medical discoveries in eighteenth and nineteenth centuries led to little change in the mortality rate. But when the public accepted the germ theory of disease, and therefore they began to sterilize implements, pasteurize their milk, immunize their children, wash their hands, and bathe regularly—then the mortality rate declined.

Decreasing the Rate of Flow

A number of organizations and nations have come together to try to decrease the population explosion. In the United States, Population Connection promotes the

How do we know what we know?



Life Expectancy

You can go online or to an encyclopedia and find the life expectancy for men and women and different ethnic and occupational groups in every country in the world. But how do we know that a baby born today is likely to live to be 61, or 66, or 78, or 100? It's not easy.

First we have to find the crude death rate, the percentage of people of each age who were alive last year but are dead this year. For instance, if last year's records indicated that there were 1,000,000 people of age 30, and this year there are 900,000 people of age 31, then 30-year-olds have a 90 percent chance of seeing their thirty-first birthday, and their crude death rate is 10 percent. From this we can construct a life table, a list of the probabilities that persons of age *X* will live to see age *X*+1, *X*+2, and so on. To find the life expectancy of the population, we take the mean of all the probabilities for a person of age 0 (a newborn baby).

Notice that the measure of life expectancy cannot predict the future. If the life expectancy in the country is 75, that doesn't mean that newborn babies will live for 75 more years, or that people who are 30 now have 45 years left to live. It is really a measure of how long people are living at this moment in time.

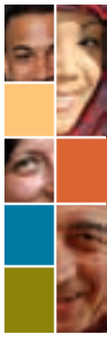
replacement level of only two children per family. The organization's website contains updates and policy briefs about different pressing environmental issues and has branches on many college campuses.

Several countries have started protocols intended to decrease overpopulation. In China, a family planning law was mandated in 1980. Although known worldwide as a "one child per couple" law, it is actually calculated by neighborhoods rather than couples: Each neighborhood has a maximum number of births it can have per year. If a couple wants to have a child, they must apply for a "pregnancy permit." They may be permitted to have more than one, if the neighborhood has not met its quota, and if there are extenuating circumstances (such as if they work on a farm, if their first child was a girl, if their first child is disabled, and so on), or they may not be permitted to have a child at all. Illegal pregnancy means losing privileges, paying fines, and even losing their jobs. Globally, some commentators worried about compromising personal freedom, and others worried about women accidentally getting pregnant and then being forced to have an abortion. However, the measures have been successful. China has reduced its growth rate to 1.1 percent per year, half that of other poor nations.

The Urban Environment

In the U.S. farming town of Dekalb, Illinois, only 65 miles from downtown Chicago, live people who have never ventured to the city. Not to go to a Cubs game or the Art Institute, not to shop at Macy's. When questioned, they seem surprised—who in their right mind would want to go into Chicago? It's crowded, dirty, ugly, expensive, and dangerous. Meanwhile, in the high-rise condos of Chicago's Gold Coast live people who have never ventured more than five miles west of the Loop. When they are questioned, they also seem surprised—where else is there to go? They're surrounded by nonstop excitement, cultural diversity, artistic innovation, and economic promise. Beyond Chicago there is nothing but small towns stuck in the 1930s, populated by narrow-minded bigots.

We think of cities as the capitals of civilization—culturally alive, commercially dynamic, exciting. We also think of cities as the centers and incubators of many of



Sociology and our World

Bare Branches

What happens when men are told constantly that they are worthless, a disgrace to their ancestors, and a failure to their country, unless they produce sons? And then modern medical techniques allow them to determine the sex of their children early in the pregnancy, early enough for an abortion? And strict birth control policies allow only one child per couple, unless it's not a son—then they can keep trying?

A lot of sons get born, and not very many daughters.

And, 20 years later, there's a new generation of young men who have been told constantly that they are worthless unless *they* produce sons. Except now there are fewer women around for them to produce the sons with.

In China they are called "bare branches," these men who do not produce sons, mostly not due to physiological malfunction or lack of heterosexual interest, but due to the lack of female partners. (The phrase refers to the bare branch on the family tree.) And their numbers are increasing. Nationwide, 2,000,000 more boys than girls are being born every year. By 2020, that will mean 40 million more young adult men than women (Lim, 2004), a population the size of Spain. The Chinese government fears widespread rape, prostitution, and other sex crimes, but unless it can change 2,500 years of Confucian teachings and give these men a purpose in life besides having sons, the psychological consequences may outweigh the sociological.

our most central social problems—crime, poverty, racial and ethnic antagonism, more crime. But it's not one or the other—it's both. The two sets of social issues are linked and interacting. To a great extent, one cannot exist without the other.

The City: Ancient to Modern

When people depend on farming for sustenance and don't have cars, they must live within walking distance of their farmland. Throughout most of human history, and in many undeveloped countries today, they have lived in villages scattered across the farmlands, with a population of only a few hundred, so small that everyone knows everyone else and is probably related through blood and marriage. Between 8,000 and 5,000 BCE, technological innovations in agriculture began to produce food surpluses, so some people could take on nonfarming jobs, mostly as priests and artisans. They could live in larger settlements—but not too much larger because 99 percent of the population had to be within walking distance of the fields or cattle. Many archaeologists name Çatalhöyük, in modern-day Turkey, as the first city. In 7000 BCE, it was home to 10,000 people—a tiny village today, but then by far the most populous settlement in the world (Mumford, 1968; Yoffee, 2005).

Most ancient cities grew up along major rivers, where enough food could be produced to feed a large nonfarming population. It still took up to 75 farmers to feed one nonfarmer, so these cities had to be small by modern standards. Most had no more than 10,000 residents. At the end of the first century BCE, a few cities in China and India reached a population of 300,000, and Rome was probably unique throughout the ancient world for its population of nearly one million.

The number of "large" cities stayed about the same throughout the Middle Ages and the Renaissance. For all of their fame as centers of Western civilization, European cities were surprisingly small. Of the ten most populous cities in the world in 1500, four were in China, three in the Middle East, and two in India. Only one was in Europe: Paris, reaching number eight with a population of 185,000 (about the size of Dayton, Ohio, today). Beijing, China, number one, had a population of 672,000

(about the size of Memphis, Tennessee, today) (Chandler, 1987).

When the Industrial Revolution began around 1750, agricultural productivity increased exponentially, farming jobs began to diminish (a trend that continues today), and manufacturing took precedence. Factories needed hundreds of workers all in the same place, so thousands of people left the farms to move to the city (another trend that continues today). England and Western Europe became urbanized first, and then the United States.

▲ **Cities, both ancient and modern, are often situated near major waterways—for trade, hygiene, and agriculture. This 1853 painting depicts the 9th century Assyrian palaces of Ashurnasirpal II.**

The Founders conceived of the United States as a nation of "gentlemen farmers," living on rural estates with their families and servants, with only a few towns scattered about. In 1790, only 5.1 percent of the population was urban. New York, the biggest city, had a population of 33,000. Philadelphia had 28,500 people, and Boston 18,000 (U.S. Census Bureau, 1998). These were small towns even by eighteenth-century standards; compare them to Paris, which had a population of 525,000 in 1790.

The former colonial empires in Africa, Asia, and Latin America urbanized more slowly. By 1900, nine of the ten most populous cities in the world were located in Europe or the United States; the most populous, London, had a population of 6,400,000, ten times the population of Beijing in 1500. Today we can tell rich from poor countries by the percentage of the population that lives in urban areas rather than rural areas: 97 percent in Belgium, 90 percent in the United Kingdom, 79 percent in Japan, as opposed to 31 percent in Mali, 25 percent in Vietnam, and 16 percent in Ethiopia (United Nations, 2006).

Ironically, where urbanization is high, people moving from rural areas have their choice of many cities, but where urbanization is low, there are fewer choices. Thus, poor countries with a high rural population are more likely to have megacities (cities with populations of 5,000,000 or more). Only six of the world's 40 megacities are in the United States or Western Europe, but over half are in poor countries (Table 19.3).

Estimates of the population of the city itself are often misleading because suburbs and adjacent cities can double or triple the urbanized population, and in some regions the cities have blurred together into gigantic megacities. For instance, Chicago has an "official" population of about 2.9 million, but the PMSA (Primary Metropolitan Statistical Area), including all of the outlying suburbs and cities, brings it up to 8.6 million. Thus sociologists more often use "urban agglomerations"—a central city and neighboring communities linked to it, for example, by continuous built-up areas or commuters.

The number of people in a city is not always a good measure of what it feels like to live there. Does it feel crowded? Are the houses crammed together, or are there wide spaces between them? Is every inch of land built up, or are there open areas, such as parks, lawns, and public squares? Are the streets narrow and clogged with cars? A better measure of how crowded a city feels is **population density,** the number of people per square mile or kilometer. Generally, older cities will have a larger population density, because they were constructed before the automobile allowed cities to spread out. Older neighborhoods will be more dense than newer neighborhoods.

TABLE 19.3

World's Largest Cities (Urban Agglomerations), 2007

Tokyo	Japan	33,400,000
Seoul	South Korea	23,200,000
Mexico City	Mexico	22,100,000
New York	USA	21,800,000
Mumbai	India	21,300,000

Source: www.citypopulation.de/World.html

▲ **Urban demographers measure population density, which considers both the number of people and the area of the city itself. Some new expanding cities, like Mumbai, India, are extremely crowded, as people stream to the city from the countryside.**

The most densely populated cities in the world are constricted; that is, there is no place for them to expand outward. Malé, capital of the Maldive Islands, is the most densely populated city on Earth, with 48,007 people per square kilometer (the total population of 81,000 is crammed onto a small atoll in the Indian Ocean). By contrast, New York has a population density of 10,292 (except on the island of Manhattan, which goes up to 25,849).

The more recently the city was founded, the lower the population density: Oklahoma City, founded in 1889, has a population density of 836 per square kilometer. Though cities with low population densities don't seem crowded, they have a downside. Everything is scattered, so it takes time and gas to get anywhere. If you live on one side of Oklahoma City and work on another, you can drive up to 90 miles.

Fortunately, most people don't. The average commute in Oklahoma City is 18.6 minutes, well below the national average of 25 minutes, and far lower than the 38.6 minutes in New York City or 30.3 minutes in Philadelphia (U.S. Census Bureau, 2002).

The Countryside

The U.S. Census Bureau used to define *urban* as living in an incorporated area with a population of 2,500 or more. However, so many people live in unincorporated areas adjacent to big cities or small towns that have been engulfed by big cities, that many demographers suggest a change from a simple dichotomy of city and countryside to a rural–urban continuum, nine levels from #1 (county in a metropolitan area with 1,000,000 people or more) to #9 (counties not adjacent to a major metropolitan area and with no city over 2,500). By that figure, 93.9 percent of the U.S. population was rural in 1800, 60.4 in 1900, and only 19 percent in 2000 (Northeast-Midwest Institute, 2002).

The decline of rural populations can be attributed to the decline of farm jobs, a move into the cities, and an expansion of the cities, so the farmland of 100 years ago—or even 30 years ago—is today's gated condominium community. Sociologists noticing the decline of rural areas theorized that the "survivors" in the countryside would lose their civic spirit and small-town values. Public perception of rural areas became increasingly negative. Coupled with the ideas of strong communities and kinships are also assumptions about closed-minded, backward "hicks" who are afraid of modern life and antipathetic to progress and science, as in televisions shows from *The Beverly Hillbillies* to *My Name Is Earl*.

However, in another trend, many small towns and rural areas have bounced back. Many city dwellers have found rural areas a pleasant alternative to the crowds, crime, and the feeling of isolation of the big city. Satellite TV and the Internet make the countryside as wired as the big city, and interstate highways mean that those who live there can still enjoy the big city's cultural attractions easily (only a few places in the United States are more than two hour's drive from a sushi bar) (Doyle, 2004).

Globalization increasingly impoverishes the countryside, both by concentrating agricultural enterprises into larger and larger agribusinesses and by locating engines of industrial development in or near urban areas. Poverty and hunger are the ironic consequences of farm foreclosures and economic concentration in urban areas. Rural

areas have higher rates of poverty than do urban areas, and rural Americans are more likely than city dwellers to use food stamps—despite the relative proximity to farms (National Rural Health Association, 2006). Rural areas in the United States also have increasingly higher suicide rates than cities—with all their urban alienation (National Association for Rural Mental Health, 2007).

Yet the scale and speed of migration from the countryside to cities has slowed in rich countries like the United States and in the European Union compared with poor and developing ones, especially in Asia and Africa. The United Nations reports that today's global urban population of 3.2 billion will rise to nearly 5 billion by 2030, when three out of five people worldwide will live in cities. (U.N. World Urbanization Prospects, 2005). This surge of migrants will generally come into urban environments whose minimal infrastructure, squalid slums, and air and water pollution already make them fundamentally difficult and dangerous places to live and work. Already over 90 percent of the urban population of Ethiopia and Uganda, two of the world's most rural countries, live in slums, as do nearly 60 percent of city dwellers in South Asia and 30 percent in Latin America. The city of Delhi draws 75 percent of its drinking water from the Yamuna River, into which untreated city sewage is dumped, right along with farm and industrial waste (*Economist*, 2007).

Suburbs

Before the twentieth century, members of the upper classes always had at least two houses, one in the city and the other in the country, for weekend and summer visits (one of the most popular magazines for the upper class is entitled *Town and Country*). Everyone else had to live a mile or two at most from where they worked (don't believe the stories your grandparents tell about walking 20 miles to work and back, in three feet of snow, uphill in both directions). Once Henry Ford's mass production made automobiles affordable, people could live much farther from work, as much as five or ten miles, and, once limited-access highways grew up, 20 or more miles. What's more, the rapid migration of large numbers of Blacks from the rural South to northern cities in the decades after the Civil War, especially to cities that were home to expanding industries like automobiles and steel, led to racial fears of crime and violence. The White middle classes began moving out of the cities altogether, into outlying areas called **suburbs,** where their houses were separate from the others, with front and back yards, just like upper-class estates, instead of the cramped apartments and townhouses of the cities. The expression "a man's home is his castle" arose during this period (Jackson, 1987). And the natural boundaries (rivers and the like) were the moats that were to protect these miniestates from the now-dangerous cities.

The first mass-produced suburb, Levittown, opened in an unincorporated area on Long Island in 1951. By the time it was finished in1958, there were 17,311 houses, plus shopping areas, churches, and recreation centers.

Suburbia has also received its share of detractors. Folksinger Malvina Reynolds complained that the suburbs were made of "Little Boxes," that were "all made out of ticky-tacky, and they all look just the same," not only the houses but the people: identical families, White, middle-class, heterosexual, husband, wife, 2.5 kids. Many comedies of the 1950s begin with long lines of cars driven by identically dressed wives, who drop identically dressed husbands off at the train station for their identical commutes into the city. Suburbs were criticized as deadening, soul destroying, isolated. They stifled creativity. They created a generation of robots—of "men in gray

Did *you* know?

The world's first suburb was probably Brooklyn, New York, founded as a village in 1834 just across the river from Manhattan, an easy commute by ferry, yet set in a rustic, rural environment. By 1860, this suburb had been incorporated into a city, and in 1898, Brooklyn voted to become a borough of New York. Today Brooklyn is the fourth most populous "city" in the United States, with 2.5 million residents (Jackson, 1987; Snyder-Grenier, 2004).

▲ We often think that the great suburban boom in the 1950s was spurred by the do-it-yourself nuclear family, but it actually was supported by the single largest infusion of federal funds toward that end: the GI Bill (which promised interest-free loans and educational subsidies for returning veterans), the interstate highway system, massive roads, and school construction.

flannel suits" and "Stepford wives." But people still moved there in huge numbers.

Why? Safety, or assumed safety—because cities were increasingly seen as crime infested, poor, and populated by more "dangerous" minorities. Comfort—one could have a larger home, with all the new technological amenities, like televisions and barbecue pits. Ease of life—including the ability to have a car. Suburbs promised "the good life," and Americans followed the call.

During the 1960s, suburbs grew four times faster than cities due to the "White flight" of White, middle-class residents. (The history of the American suburb is intimately connected to the history of Black migration to large Northern cities.) Jobs and amenities went with them. Downtown stores closed one by one as gigantic suburban shopping malls opened. Downtown movie palaces (with one movie playing) closed as gigantic multiplexes opened next to the shopping malls (12 or more movies playing on peanut-sized screens). Downtown businesses relocated to "business parks" in the suburbs. Because the middle classes and the poor rarely saw each other anymore, they often had enormous misconceptions about each other.

Once suburban areas had their own jobs and amenities, they were no longer simply "bedroom communities," empty during the day as the workers trekked into the city for their jobs, but cities in their own right, called "edge cities," with their own economic focus (often high tech). Sometimes they are called "beltway cities," because they are clustered around the interstate highways that loop around major cities. You might live in the edge city of Grand Prairie, Texas, and work in Fort Worth, 22 miles away, though you are actually in a suburb of Dallas, 13 miles away. But it hardly matters because you depend on the nearby edge cities of Irving and Arlington to shop. Downtown is just for jury duty.

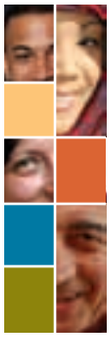
The Sociology of Commuting: Separate and Unequal

In 1900, rich and poor walked to work; in cities, they took streetcars and trolleys. Then the automobile arrived and quickly engulfed every other mode of transportation. If you were middle class or working class, you drove your own car; if you were poor, you took the bus. Only very large, very congested cities still had streetcars or trolleys (the last of Los Angeles's famous Red Cars stopped running in 1961), along with light-rails to transport commuters to and from the suburbs, like the Long Island Railroad in New York or the BART (Bay Area Rapid Transit) in San Francisco.

Commuting to work exaggerates class, race, and gender inequalities. The average driving commute in California is 26 minutes per day—it nearly doubles to 47 minutes if you take public transportation. ▼

As more and more jobs moved out of the cities into the suburbs, middle-class suburbanites found their commute easier. But poorer people who lived in the suburbs without cars had a problem. The suburbs had new, sleek buses running direct routes many times a day. City buses were all old and decrepit, and their routes were "local" (with many stops), with infrequent, inconvenient hours (often they stopped running at 6:00 p.m.). Even more annoying, the suburban and city routes didn't intersect well. They were set up as distinct systems, and the ones in the suburbs received the greater amounts of money (Bullard and Johnson, 1997).

A colleague recently told me of this experiment. He asked the Chicago Metro Transit to plan a trip from a fictitious "job" at the Oak Mill Mall in the near-north Chicago suburb of Niles to a fictitious "home" at 3501 S. Lowe Avenue (actually an



Sociology and our World

Celebration, Florida

Celebration, Florida, is a "created suburb," laid out by the Disney Corporation in a rural area a short commute from Orlando and opened in 1996. Disney "imagineered" a small town right out of its own nostalgia movies. According to its website, Celebration is a " place where memories of a lifetime are made, it's more than a home; it's a community rich with old-fashioned appeal and an eye on the future" and "people are connecting in ways that build vibrant, caring, and enduring traditions."

Such vibrant, caring, and enduring traditions come with a hefty price tag (bungalows start at $443,000 and cottages at $524,000), and there are more regulations than in a convent or military barracks. Every new resident must abide by a "Declaration of Covenants" that dictates everything from how long cars may be parked on the street to the number of occupants per bedroom (two). Residents are seen as "representatives" of the Disney vision of America, performers just as much as the costumed Mickeys and Goofys who roam Disney World.

Much of Celebration seems geared more toward tourists than to its residents. The Market Street shopping area contains six upscale restaurants and 14 shops selling jewelry, dolls, and gifts—but there is no grocery store, drugstore, or gas station. The list of activities and civic organizations includes a nondenominational community church, a Rotary Club, Little League, the D.A.R. (Daughters of the American Revolution), and a chapter of the Republican Party (but not the Democratic Party).

Some 8,000 people believe that it is worth being on constant display to live in a clean, well-maintained, safe community. And they are not alone. Disney may be the most famous example, but some 40,000,000 Americans are now living in privately owned communities that regulate how long you can park in the street and with whom you can share your bedroom (Ross, 2001).

inner-city police station). The distance was 19 miles, about the average suburban commute. Even with heavy traffic, driving such a distance takes about 40 minutes. But using public transportation proved quite a challenge. Assuming that he got off work at 9:00 p.m., when the malls close, he would need to take three buses and a metro rail, with four chances of missed connections. If everything worked like clockwork, he could reach his bus stop by 11:00 p.m., and walk the remaining two blocks, making it home by 11:10, more than three times longer than it takes a commuter in a car. If he was unlucky and missed a connection, he would be stranded, because he was catching the last bus of the day.

Revitalizing Downtown

During the 1980s and 1990s, many cities fought back, trying to revitalize their downtowns with hip shops, restaurants, and entertainment venues that would attract suburbanites looking for an evening of fun. Some especially hip young professionals even moved back in search of diversity and excitement, buying cheap houses and renovating them. Sometimes they take over whole downtown neighborhoods, raising the property values so much that poor and even middle-class people can no longer afford to live there (a process called **gentrification**). More commonly, cities annexed the suburbs, and any outlying areas that might become suburbs, so they could charge property tax. For example, one day in 1970, Indianapolis annexed all of Marion County, city, suburb, and farmland, in a plan with a name right out of *Matrix*: "Unigov."

Suburbs and edge cities are increasingly difficult to distinguish from inner cities. They have their own problems with traffic, crime, congestion, and pollution. Edge cities often have greater ethnic diversity than inner cities, in spite of "White flight" (Palen, 1995). For instance, the edge city of Hawthorne, California, between Los Angeles and Long Beach, is 44 percent Hispanic and 33 percent Black. The problems of poverty, unemployment, high rents, and inadequate housing are no longer confined to the inner city. In Hawthorne, 20 percent of the residents are below poverty level, and 74 percent rent rather than own their homes.

As suburbs expanded outward, it was inevitable that they would meet the suburbs of adjacent cities, until they all combined into one gigantic city, a **megalopolis.** Megalopolises span hundreds of miles. You can drive from Nashua, New Hampshire (north of Boston), to Fairfax, Virginia (south of Washington, DC), through ten states and a bewildering number of city and county jurisdictions, without ever hitting unincorporated territory.

Megalopolises face enormous structural problems. Their sheer size compounds the problems of air and water pollution, traffic congestion, crime, and joblessness. Civic improvement projects are often stalled by red tape, as different jurisdictions argue over whose responsibility it is. The sociologists and social commentators who worried about the loss of social identity as people moved from villages to cities are even more worried about loss of social identity in a megalopolis. What happens to civic pride? Do residents have any sense of place at all, or is every place identical to them? Do they have any sense of guardianship—who peers through windows to make sure there are no vagrants outside or keeps tabs on the neighbors and alerts the police to suspicious activity? Is the megalopolis just another word for urban anomie (Gottmann and Harper, 1990)?

Sociology and the City

Many early sociologists were fascinated and appalled by life in cities. Ferdinand Töennies (1855–1936) theorized that families, villages, and perhaps neighborhoods in cities formed through *gemeinschaft,* or "commonality" (1957). They shared common norms, values, and beliefs. They had an instinctive trust; they worked together because they cared for each other. Instead, cities and states formed through *gesellschaft,* or "business company." They had differing, sometimes contradictory, norms, values, and beliefs. They had an instinctive mistrust. They worked together toward a definite, deliberate goal, not because they cared for each other but because everyone was acting to his or her own self-advantage. Siblings operate through gemeinschaft—they care for each other no matter what. But business partners operate through gesellschaft—they might not like each other or the product that they're selling. In a memorable scene from the musical *Chicago* (2002), Velma Kelly and Roxy Hart acknowledge that they hate each other, but they decide to form a musical act together anyway; personal feelings are irrelevant if there's money to be made.

Most sociologists today translate gemeinschaft and gesellschaft as "community" and "society," as two underlying motives for cementing bonds between people. Moving to the city undermines kinship and neighborhood, the traditional sources of social control and social solidarity. As a society industrializes and becomes more urban, gemeinschaft is ripped apart, and what emerges is a new society based on gesellschaft, where instinctive community is unknown or a sentimental dream out of Hallmark cards and *The Cosby Show*. In short, the personal freedom that the city provides comes at the cost of alienation.

The concepts of gemeinschaft and gesellschaft have been used most frequently to compare small towns and villages, where presumably everyone is one big happy family, with big cities, where presumably interpersonal connections are based on manipulation and fear. However, they can also be used to compare the "big happy family" of inner cities with the "isolation" of the suburbs.

Shortly after Töennies, Emile Durkheim took his own look at villages and cities and theorized that village life was so much nicer because there was little division of labor. Almost everyone did the same work; they shared norms and values. Durkheim called this **mechanical solidarity,** a connection based on similarity. In the cities, by contrast, everyone was different: They worked at different jobs, they had different norms and values, they disagreed on what was right and wrong. What held them together was what

he called **organic solidarity**—connections based on interdependence. Organic solidarity was more stable (if not as "nice") than mechanical solidarity because this interdependence meant that each individual was necessary to the functioning of the whole.

After working with the villagers of the Yucatan, anthropologist Robert Redfield (1941) decided that the division was not a matter of settlement size or division of labor, but between rural (or "folk") and urban social networks. Folk societies are certainly characterized by homogeneity and a low division of labor, but more importantly, the social networks are based on family. Family is everything. There are no friends or acquaintances. People who are not related to you by blood or marriage are by default enemies, unless you create sorts of fictional kinship ties in clans (presumed descent from a common ancestor) or in the common tradition of "blood brothers."

In urban societies, family is less important. Geographic mobility is greater, as is the emphasis on "chosen" communities—workplaces, neighborhoods—over kinship. You might call your mother on her birthday and see the entire family over the Christmas holidays. "Secondary relationships"—friendships, work relationships—are more significant. In villages, kinship ties ensured that the person walking toward you would not rob or murder you. In cities, there was no such guarantee. There had to be rules of courtesy, and there had to be laws. The origins of the rituals such as shaking hands (to show you had no weapons) begin in these new environments of strangers. Urban societies are more diverse, heterogeneous, and in constant flux.

In "The Metropolis and Mental Life" (1902), the great German sociologist Georg Simmel worried about the overstimulation of the city environment. You are surrounded by so many sights and sounds, so many other humans, that you can't pay attention to everything. So, you pay attention to nothing. You develop a "blasé attitude." It is not that you are cold and unfeeling; it's that you have only enough brain cells to concentrate on your immediate concerns. If someone falls to the sidewalk in front of you, you might pass him or her by, assuming that someone in authority will provide the necessary assistance; anyway, it's none of your business.

On the other hand, in *The Death and Life of Great American Cities* (1961), urban analyst Jane Jacobs found that busy streets were not a source of overstimulation at all. Life happened on the street: Children played there; neighbors sat on stoops to gossip with each other; there was a sense of solidarity and belonging. In contrast, in the suburbs no one knew anyone else, and the streets were deserted except for people hurrying from their cars into their houses. Even deviance is under control in the city. Although many strangers are coming and going all the time, they are under constant scrutiny by people in the houses, who are making sure that nothing bad happens. The more gazing through windows, the less deviant activity occurs. But in the suburbs, no one is peering through windows, and deviance can go undetected.

Cities presented problems that villages never faced, in building and street construction, transportation, distribution of food and other goods, social stratification, and deviance and social control—not to mention sanitation. However, they provided the leisure for creative thought, at least in the upper classes. If it weren't for cities, there would be no literature, art, or science. Some people find alienation in the city, a sense that no one knows you or cares what happens to you, but others find community, a belonging that they could never find in the villages (Abrahamson and Carter, 1996). (This is reminiscent of the good news and bad news about college choice. The good news in a small college is that everyone knows you. The bad news is that . . . everyone knows you.)

Sociologists from Durkheim to Simmel to contemporary planner Jane Jacobs argued that, although frequently criticized as alienating and impersonal, urban neighborhoods are teeming with life and foster the development of cohesive communities. ▼

Human Ecology

Looking at the spatial patterns of the city, sociologists noted that they share many characteristics in common with biological ecosystems. Both are based on the cooperative efforts of many specialized groups to distribute resources, eliminate waste, and maintain life. Even groups that seem scary and destructive serve a function: Predators are necessary to eat the herbivores and keep their population down, or else there would be so many of them that they would destroy the entire forest. In the same way, criminal activity demonstrates to the law-abiding population the limits on their behavior and creates a sense of "normalcy." Both human and biological systems are also extremely interdependent. A tiny problem with the smallest element can have catastrophic consequences for the whole. Just as the extinction of a "minor" species can destroy an entire ecosystem, the destruction of the roads leading into a city can lead to starvation and chaos in just a few days.

Human ecology arose as a discipline of the social sciences that looks at the interrelations of human beings within a shared social environment—the physical size and shape of the city, its social and economic dynamics, and its relationship to other cities and the natural world.

Urbanization. One of the most influential early studies of human ecology was Louis Wirth's "Urbanism as a Way of Life" (1938), drawing Durkheim and Töennies together to suggest that the move from villages to cities is not merely a change of residence but a change in the way people think and feel. He argued that people lose their kinship ties when they move from villages to cities; and, in the city, the size of the population, density, and social diversity make new social ties impossible to find. Therefore, they do not interact with people on more than a superficial level, resulting in loneliness and a feeling of rootlessness. Being around so many people leads to sensory overload, but now it makes city dwellers feel stressed and bad-tempered—this is why when you walk down the street in a village, passersby will say "hello" to you, but in a city they pretend that you don't even exist.

Wirth also explained the rise of crime in the cities. With no kinship ties, there is no consensus about what norms should be followed, and even when an act occurs that most people agree is deviant, they cannot rely on informal networks to maintain social control. They must call social service agencies or the police. (Such ideas echo those of Sutherland and Coleman, cited in Chapter 6, Deviance and Crime.) However, these agencies are not as effective as informal ties, because formal mechanisms rely only on punishment and sanctions for those who get caught; so crime and other forms of deviance soar. Again, human ecology can explain both why cities are terrible places compared to villages and why suburbs are terrible places compared to cities.

The Urban Village. Herbert Gans (1962, 1968) disagreed with these human ecologists. He found that social networks are around the same size in both the city and the small town. You do not try to make friends with the 5,000,000 people around you. You find community in a series of smaller worlds, people who share your tastes, interests, and socioeconomic background, just as you would in a village. Even slums, which to outsiders seem so threatening and merciless, can provide a strong sense of belonging to people.

Gans (1968) found five types of people in the city:

- Cosmopolites—artists and intellectuals.
- Young, single professionals—people who would later be called Yuppies (young urban professionals, a term coined in the 1980s).
- Ethnic villagers—immigrants.

- The deprived—poor, often ethnic minorities.
- The trapped—poor elderly people.

Concentric Zones. Sociologists Robert Park and Ernest Burgess (1925) studied how human ecology affected the use of urban space in the city. Inequalities of race and class (later sociologists added gender and sexual orientation) affected the distribution of resources. They believed that cities develop according to "concentric zones" of activity. These look much like the different zones in an archery target. Zone 1, the center of the city, is the political and cultural heart of the city, site of the most important businesses and government facilities and retail trade.

Zone 2 is an area of manufacturing and wholesale trade, providing the goods to sell in zone 1. It is also a zone of "social disorganization." Park and Burgess noted a large immigrant population (during this period immigrants were presumed sources of social disorganization). There are many transients and "hobos." Because no one has a sense of responsibility for the community, deviant activities such as crime, prostitution, and drunkenness, which would be swiftly dealt with in other zones, are allowed to flourish.

As people become upwardly mobile, they move away from the city core into zone 3 (working-class residential) and then into zone 4 (middle-class and upper-class residential). Or, if they are downwardly mobile, they move into a zone closer to the city core. Zone 5 is a commuter zone.

The concentric zone theory may have characterized Chicago, at least for a period before middle-class flight to the suburbs.

▲ **The television series *Friends* exemplified the idea of the urban village. The six main characters live in New York, but they inhabit a small neighborhood on the Upper West Side. They run into each other and patronize the same coffee shop (Central Perk) day in and day out. They virtually ignore anyone outside of their circle of friends.**

Global Urbanization

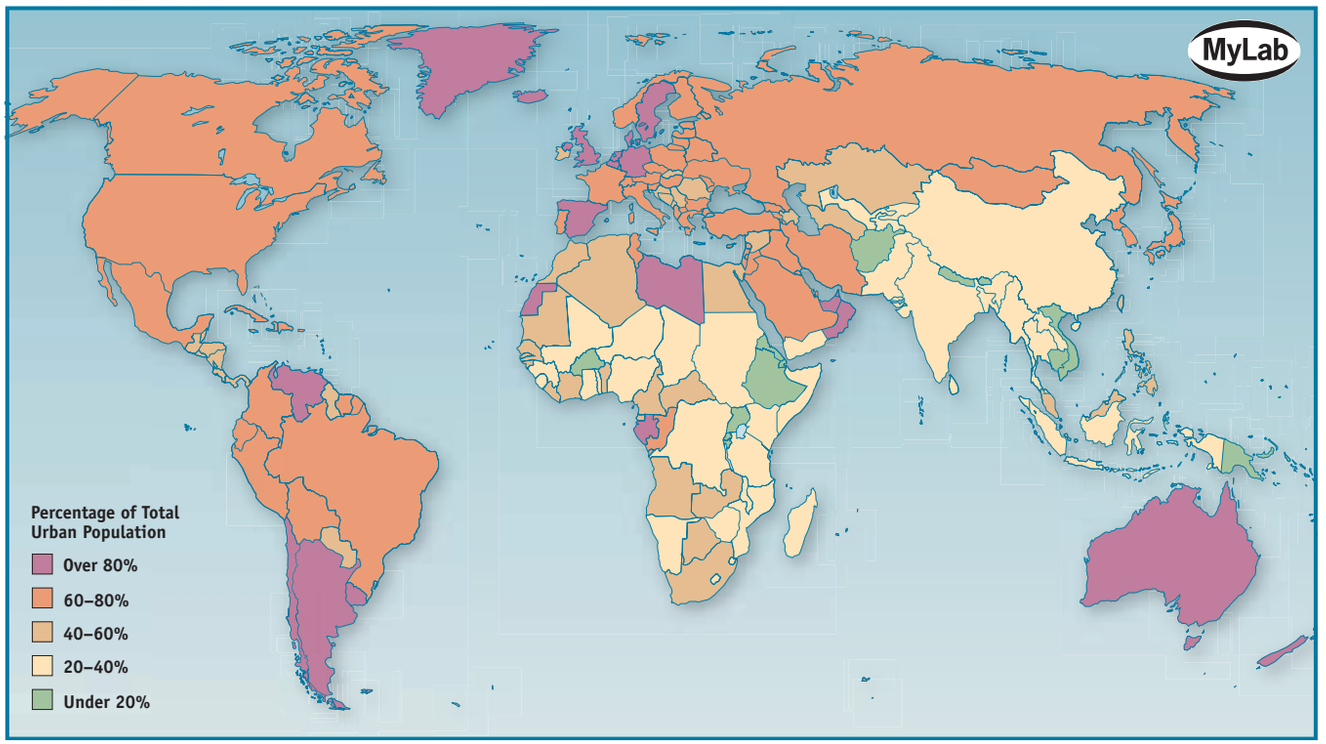
For many years, urbanization was considered a sign of development, a sure sign that the nation was becoming richer and more prosperous. Recent trends suggest a more complicated picture (Figure 19.4). In 2000, 75 percent of the population of Latin America lived in urban areas, about the same as in the industrialized United States. Nearly half lived in cities with over one million inhabitants, and there were seven cities with more than 5 million: Mexico City, São Paulo, Buenos Aires, Rio de Janeiro, Bogotá, Lima, and Santiago. But the vast numbers of individuals moving to the city did not find sudden wealth.

Nearly half of the population of Latin America (43.4 percent) lives in poverty, many in urban areas. More than one-third of urban dwellers live in slums. These vast neighborhoods in these cities lack adequate sanitation, housing, utilities, and police protection.

The gap between rich and poor is more noticeable in these urban centers than anywhere else in the world. In Rio de Janeiro, neighborhoods catering to tourists have a homicide rate of about 4 per 100,000. But in the favelas, slums only a few blocks away, the homicide rate can be as high as 150 per 100,000, among the highest in the world (Vander Schuerer, 1996).

Many cities around the world have global rather than local ties (Chase-Dunn, 1985). They are command centers not only of their own countries but also of the global economy. They are intimately involved in innovation and creation, producing not manufactured goods but information. They are more interdependent on each other than on the countries where they happen to be located. And they share a common culture of consumption. In New York, London, Tokyo, and, to a lesser

FIGURE 19.4 **Urban Population of the World**



Source: From Maps of the World website, www.mapsoftheworld.com. Reprinted with permission.

extent, the second tier of global cities—Jakarta, Milan, Singapore, Rio de Janeiro—businessmen and women armed with high-tech communication devices hold meetings in board rooms, read the *Financial Times* in English, and relax with American mass culture.

In 1991, Saskia Sassen introduced the term "global city." She noted that New York, London, and Tokyo are actually located in three different countries on three different continents, with two languages in common use, so one might expect significant cultural differences. However, they have so many multinational ties that their exact location is meaningless. There are 2,500 foreign banks and financial companies in New York, employing one-quarter of all of the city's financial employees. National boundaries make little sense when the horizon of expectation for a city resident is the entire world.

The Natural Environment

Sociologists understand that the natural environment—the physical world, or more precisely, animals, plants, and the material substances that make up the physical world—is also organized into **ecosystems,** which are interdependent systems of organisms and their environment. Even if you have lived in Los Angeles your whole life and have never seen an open space other than a vacant lot, you are still participating in biological and geological ecosystems. You still breathe the air of the natural world. You drink its water, eat its food, and depend on its natural resources as raw materials for your

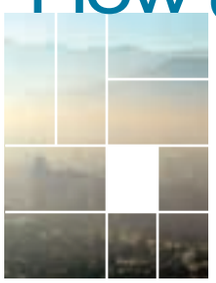
manufactured products. Local natural disasters like fires and floods can disrupt your life as quickly as human warfare, and there are global environmental changes, slow-moving disasters, that threaten to disrupt all human life on the planet.

Early sociologists often theorized that the social world was a subcategory of the natural world. Herbert Spencer (1820–1903) argued that biological, social, psychological, and moral systems are all interrelated (2002). Others tried to analyze the impact of social life on the natural world. Ellsworth Huntington argued that Northern Europeans were so "advanced" because they lived in a tough climate, with harsh winters and the need to grow crops (1915/2001). Because they had to struggle to survive, they became industrious and hardworking. Meanwhile, people in tropical climates never had to worry about winter, and they could pick fruit right off the trees, so they became fat and lazy. He was wrong; sustenance in the tropics is no easier than in the north. There were "primitive" hunter-gatherers in the cold climates and advanced technological civilizations in the tropics.

After the first few decades of sociological thought, however, social sciences tended to ignore the environment, leaving it to the biologists, the geologists, and maybe the geographers. Sociology was about people, they figured, so why bother to worry about air and water pollution? Supplies were limitless, and even if they weren't limitless on Earth, we would soon be moving into space to mine the asteroid belt.

Then, during the 1970s, people began to envision Earth not as an infinite space, but as a small, fragile community, "Spaceship Earth" (Schnaiberg, 1980). If we weren't going to be going to other planets, we had to make do with Earth, and it wouldn't last forever. Keep digging up iron and pumping out oil, and eventually there won't be any left. And, if we weren't going to be moving out to other planets, we had to make sure Earth stayed amenable for human life. The two most public environmental concerns

How do we know what we know?



Indexes

Which city has the highest level of air pollution? It's difficult to tell because there are so many types of pollutants: suspended particles, sulfur dioxide, nitrogen dioxide, carbon monoxide, and so on, with many different concentrations. Sulfur dioxide becomes hazardous for sensitive groups at a concentration as low as 0.145 ppm (parts per million), but carbon monoxide has to reach a concentration of 9.5 ppm before it has a negative effect on health. Particulate matter (solids suspended in gas, as in smoke) is not even measured in ppm, but in micrograms per cubic meter, and the hazardous proportion varies depending on the size of the particle.

When the different parts of a phenomenon are measured in different ways, sociologists and other scientists often construct an index to look at them all together. First, they must *standardize* the parts. Instead of looking at parts per million or micrograms per cubic meter, for instance, they classify each concentration as low, medium, and high. Then they must *weigh* the parts. If some of the pollutants represent a greater hazard than others, then they should be worth more, perhaps getting a doubled score. The Environmental Protection Agency has created an air quality index based on the concentrations of seven pollutants: nitrogen dioxide, sulfur dioxide, carbon monoxide, two sizes of particulate matter, and ozone (calculated two ways):

0–50	Good
51–100	Moderate
101–150	Unhealthy for sensitive groups
151–200	Unhealthy
201–300	Very unhealthy
301–500	Hazardous

So, according to these indices, what U.S. city has the worst air pollution problem? Bakersfield, California, with 142 days over 100 in 2003. Riverside, California, comes in second with 141. Los Angeles had 112. But cities elsewhere were considerably lower: New York City 14, Philadelphia 22, Memphis 13. (see www.airnow.gov)

of the 1970s were conservation, avoiding the depletion of natural resources, and pollution, avoiding "fouling our nest" (Schnaiberg, 1980).

At the same time, some sociologists began to criticize the discipline for being too "anthropocentric," or focused on human beings (Catton and Dunlap, 1978). They began to look at the social production of conservation and pollution, how issues were framed as problems, how public perceptions and public policy could change, and the success or failure of environmental movements (Buttel, 1987). They looked into the role of technology in causing and potentially solving environmental problems (Bell, 2004; Hannigan, 1995; King, 2005). Finally, they looked at the problems themselves, what impact they were having on social relations, and how they might change social life in the future.

Energy

In 1900, even if your house was wired for electricity, you couldn't do much with it besides turn on electric lights. In 1930, you might have an electric telephone and radio; in 1960, an electric refrigerator, oven, and television set. In 2005, you would have a microwave oven, two or three television sets, a stereo system, several cell phones, a DVD-VCR combo, a personal computer or two, and, in the garage, at least two cars. Our energy needs have skyrocketed. Sociologists want to know: What are the social implications of dependence on oil and the search for sustainable energy sources, like solar and hydroelectric? What sorts of political arrangements and business environments promote reliance of which types of energy (Rosa, Machlis, and Keating, 1988; Smil, 2005)?

The United States is by far the world's largest energy consumer, but not when consumption is calculated on a per capita basis (total amount of energy consumed divided by the population). In 2003, the United States consumed 339 million BTU (British thermal units) of energy per capita; those countries with higher per capita rates tended to be either very cold (Norway), oil-producing nations (Kuwait, Norway, Qatar, United Arab Emirates), or small, underpopulated remote countries with very small and very wealthy populations where any essential service requires lots of energy to transport and provide (Netherlands Antilles, U.S. Virgin islands, Gibraltar).

Only about 15 percent of energy consumed in the United States in 2005 came from renewable sources like nuclear, hydroelectric, geothermal, solar, or wind generators. The other 85 percent of our energy came from nonrenewable resources, especially oil and natural gas, by-products of millions of years of fossilization that stayed in the ground, undisturbed, until very recently. This is similar to global rates of consumption; worldwide, only 13.1 percent of the energy supply is from renewable sources like tide, solar, wind, and geothermal (*Economist,* 2007).

Americans are 5 percent of the world's people, yet the United States consumes at least 25 percent of every type of energy. Americans use about 20 million barrels of oil per day, far more than any other country in the world. Most wealthy countries use less than 2 million. At current levels of consumption, presuming no dependence on foreign oil, we have enough for 20 years (Roberts, 2005). And Americans use 64.4 billion cf (cubic feet) of natural gas per day, again far more than any other country in the world, twice as much as number two (Russia, with 38.8 billion cf). At current levels of consumption, we have enough for 34 years.

In addition, the United States produces 2.638 tetrawatt-hours of nuclear energy per million population per year, about the same as Bulgaria produces with six nuclear reactors. Sweden has 11 nuclear reactors and produces 7.288 tetrawatt-hours of nuclear energy per million population per year. Because we have invested so little in nuclear power in the past decades, our plants are old and inefficient, and there has been little effort to remain competitive.

Vanishing Resources

Globally, forests are being depleted at the rate of one acre per second, depriving the world of a gigantic natural storage capacity for harmful carbon dioxide. Forests are unique in their capability to convert CO_2 during photosynthesis into carbon compounds that are then stored in wood, vegetation, and soil humus, a process called "carbon sequestration." Through this natural process, the world's forests store about one trillion tons of carbon—about one-and-a-half times the total amount found in the atmosphere. Deforestation, the clearing of these forests for crops and development, accounts for about 25 percent of all human-made emissions of carbon dioxide in the atmosphere—roughly the same amount as is produced by the United States, the world's largest polluter. Deforestation is often accomplished by burning, contributing to as much as 10 percent of the greenhouse effect (Bonnicksen, 2000). And, of course, the products that the forests might provide are also gone forever. The depletion of tropical rain forests is particularly disturbing because they cover only 7 percent of Earth's surface but account for up to 80 percent of the world's plant species, most of which have not been tested for medicinal effect.

Deforestation also results in the loss of topsoil because the cleared land is quick to erode. Covering huge stretches of land with concrete buildings and roads also increases erosion because there is nowhere for rainwater to go but onto undeveloped land. (Concrete also absorbs heat, as you will know if you have ever tried to walk barefoot over concrete in the summertime, thus leading to an increase in global warming.) An estimated 26 billion tons of topsoil is being lost per year, transforming arable land into desert. The process of desertification can be seen in many parts of the world, especially sub-Saharan Africa.

Desertification, combined with the increased water use necessary for an increased population, means that the world is quickly losing groundwater—water tables are falling in large swaths of many countries around the world, including the Great Plains and Southwest of the United States, most states in India, the entire northern half of China, and throughout the north of Mexico (Brown, 2005).

A final natural resource that we are quickly depleting is animal and plant species. We don't know exactly how many species there are—new ones are being discovered every day. But we do know that species are becoming extinct at a rate 1,000 times greater than before technological civilization, at a rate of 100 per day, usually as their natural environment is destroyed and they cannot adapt to their new surroundings. The U.S. Fish and Wildlife Service lists 1,120 endangered animals, including such "common" animals as the brown bear, the fox, the otter, the prairie dog, and the red squirrel, as well as 748 endangered plants. Only a few hundred species have a specific economic or aesthetic value to humans, but we won't know which ones do and which do not if they disappear before we can test them. More important, however, is the contribution every species, even the most seemingly insignificant, makes to the delicate interbalance of an ecosystem. When an insect species goes instinct, the plant that it pollinated will die out soon, and then all of the animals that subsisted on that plant.

Environmental Threats

The natural environment is not only natural—it is "social" in that there is a constant interaction between the natural and the built environments, between people and the places where they live (and don't live), between nature and culture. The environment is today threatened by several human-created problems.

What do you think? 19.1

MyLab

Environmental Threats and Science

A great deal of controversy surrounds the topic of environmental threats. Some people attribute the threats to political maneuvering, while others blame real-world behavioral consequences. So, what do you think?

Many of the claims about environmental threats are greatly exaggerated.

- ❍ Strongly agree
- ❍ Agree
- ❍ Neither agree nor disagree
- ❍ Disagree
- ❍ Strongly disagree

Modern science will solve our environmental problems with little change to our way of life.

- ❍ Strongly agree
- ❍ Agree
- ❍ Neither agree nor disagree
- ❍ Disagree
- ❍ Strongly disagree

See the back of the chapter to compare your answers to national survey data.

Pollution. There are three major sources of water pollution: domestic waste, industrial waste, and agricultural runoff. Indoor plumbing in urban areas means a huge amount of human waste, which is usually treated with toxic chemicals and then dumped into the nearest river. Many industrial processes require huge amounts of water, which is then dumped, along with more toxic chemicals. The petroleum industry is particularly problematic; every year billions of gallons of oil are routinely deposited into the ocean during tank cleaning and other operations. Agricultural runoff includes not only topsoil but toxic pesticides and fertilizers. When it all ends up in the water supply, it can cause a huge number of unspecified health problems in humans. Even tiny changes in freshwater or saltwater habitats can kill microorganisms, undersea plants, and fish, as well as every animal that feeds on them.

Air pollution is concentrated in urban areas, the result of carbon monoxide, sulfur dioxide, and nitrogen oxide from cars, heaters, and industrial processes. These gases have a profound impact on the lungs and circulatory system; breathing the air in downtown Tokyo is the equivalent of smoking a pack of cigarettes every day. The gases have similar negative effects on every animal trying to breathe the same air, and when toxic gases combine with water molecules in the air, they can return to Earth as acid rain; enter lakes, rivers, and oceans through groundwater runoff; and destroy the ecosystems. Or they can rise up to the ozone layer, a band of oxygen isotopes 10 to 30 miles from Earth's surface, and bond with them, thus eliminating their effectiveness in shielding Earth from ultraviolet radiation. These invisible rays cause skin cancer, cataracts, and damage to the immune system and contribute to an increased production of carbon dioxide, which contributes to global warming.

Garbage. In 2003, the United States produced 236,000,000 metric tons of municipal solid waste, or MSW (household waste and waste from civic maintenance, like mowing

What do you think?

19.2

MyLab

What Are We Willing to Do?

Regardless of whether environmental threats are exaggerated or not, they do exist. Most environmental advocates say we have to change our behavior in some ways to avert crises. Some people are very willing to change their behavior, but others discount the threats or do not see them as immediately relevant. Most people probably fall somewhere in between and engage in such activity as watching fuel consumption and recycling. So, what do you think?

How often do you make a special effort to sort glass or cans or plastic or papers and so on for recycling?

- ❍ Always
- ❍ Often
- ❍ Sometimes
- ❍ Never
- ❍ Not available

See the back of the chapter to compare your answers to national survey data.

parks and sweeping streets). Fourteen percent was incinerated, and 30.6 percent recycled or composted, but 54.5 percent went into garbage dumps. (BBC, 2005)

Many other countries are not as good at recycling. In poor countries, it typically doesn't happen at all: 100 percent of waste goes into landfills. But even rich countries have a spotty record: 42 percent of municipal waste is recycled in Germany, but only 12 percent in the United Kingdom, 11 percent in Iceland, and 7 percent in Australia (BBC, 2005).

Landfills pose two major problems. First, most of the garbage isn't biodegradable. Petroleum-based products, plastics, and styrofoam stay there forever, which means that the landfills fill up. A third of American landfills are already full, and by 2020, four-fifths of them will be full. There will be no place to put the garbage anymore.

When the garbage is biodegradable, it degrades into toxic chemicals, which seep into the groundwater and increase water pollution or into the air to increase air pollution. Degrading waste also increases the world's heat level, contributing to global warming.

A particularly problematic kind of waste comes as a by-product of nuclear energy. Nuclear reactors produce waste that will be radioactive for thousands of years.

Garbage is among the most immediate environmental concerns, especially in countries with high levels of consumption. The United States dumps more than half of its garbage in landfills, but by 2020, 80 percent of those landfills will be "land-full." ▼

Global Warming. Since the nineteenth century, the global temperature has increased by about 0.6 degrees Celsius (1.08 degrees Fahrenheit), primarily because carbon dioxide, aerosols, and other gases released by human technology are prohibiting heat from escaping, resulting

Did *you* know?

Some nuclear waste products will remain radioactive for 24,000 years—long after our civilization is forgotten. When the U.S. Department of Energy applied for permission to build a depository at Yucca Mountain, Nevada, they worried that future civilizations might be unaware that twenty-first-century Americans happened to bury radioactive materials there. How to warn them? Signs in English won't work—what if no one can decipher the long-dead English language? They decided on markers using six languages and a variety of symbols. In case everything is unknown to our descendants, they made the markers look unpleasant and foreboding, to give people an instinctive feeling of dread. Unfortunately, they can't be sure that what we find unpleasant will not be considered beautiful in 20,000 years—just consider the short time it took for polyester leisure suits to shift from hip to hideous.

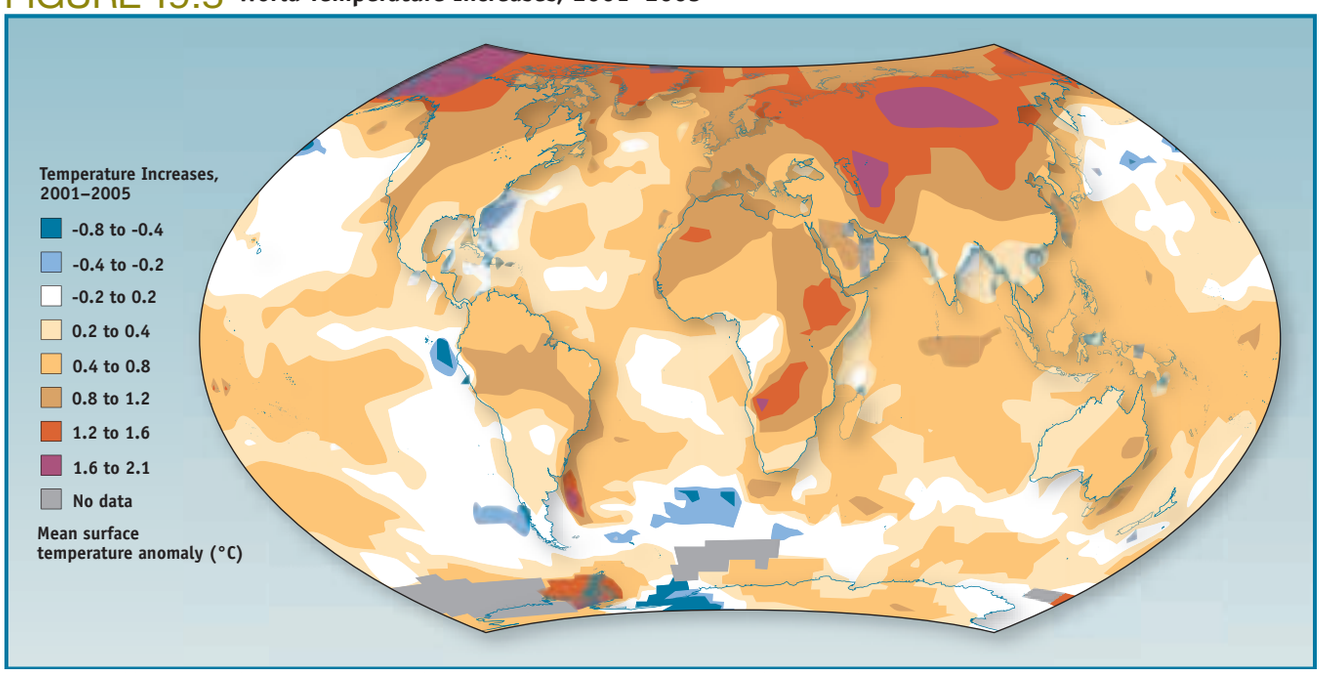
in a greenhouse effect. Many regions are already seeing an environmental impact: in Alaska and Canada, permafrost is thawing; 90 percent of the world's glaciers are in retreat. Because most of the world's major cities are on or near the ocean, a rise in the sea level due to melting glaciers and ice sheets could be catastrophic, like Hurricane Katrina with 200 million refugees. Other possible effects include a proliferation of hurricanes and extreme weather events, droughts and desertification, and the extinction of species as their ecosystems are destroyed. And most scientists believe that it is only going to get worse: during the next century, temperatures will rise by at least 1 degree Celsius, and possibly 5 degrees Celsius (Houghton, 2004; Speth, 2005). Sociologists attempt to calculate the social ramifications of such climate shifts—where people will move, how they will survive—or even *if* they will survive (Figure 19.5).

The Sociology of Disaster

A disaster is a sudden environmental change that results in a major loss of life and property. It can be human orchestrated, such as a terrorist attack, or it can originate in nature, such as an earthquake or flood. Or it can be both. Bioterrorism would involve unleashing a deadly disease like anthrax and causing a "natural" epidemic. The only operative term is "sudden," so that it comes upon people with little or no warning (Figure 19.6).

For many years, sociologists were not much interested in disasters. They were interested in the social upheaval of wars and migration more than in fires and floods. The Johnstown Flood of 1889 received little note.

FIGURE 19.5 **World Temperature Increases, 2001–2005**



Source: Hugo Ahlenius, United Nations Environmental Programme/GRID-Arendal, 2006. www.grida.no. Used by permission.

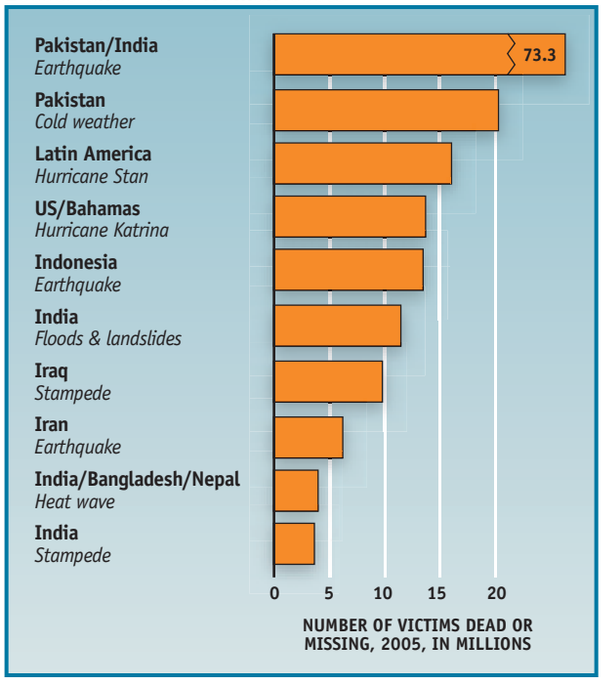
But with so many things that could go wrong and are going wrong, sociologists are taking note (Erikson, 1995; Wisner, 2003).

One of the earliest sociological studies of a disaster was Kai T. Erikson's *Everything in Its Path* (1978), about the human response to a dam that burst and flooded Buffalo Creek in Logan County, West Virginia. One might expect survivors to experience long-term psychological trauma after losing many of their loved ones and everything they owned, but Erikson probed more deeply to investigate how they lost their individual and communal identity: The "furniture of self" had vanished.

In 1995, a week-long heat wave in Chicago was responsible for over 700 deaths. This was not a sudden catastrophe, so why were so many people unprepared? Eric Klineberg (2003) investigated the social conditions that led to and compounded the disaster. He found the obvious, that many poor and elderly people—and most of them Black women—had no air conditioning. Some were not aware of the neighborhood "cooling systems" or were afraid to go to them. Others did not realize that they were in danger; the news media downplayed the disaster, treating it as little more than a human-interest story.

The Asian tsunami of December 2004 that killed over 200,000 people may be too recent for a significant number of sociological studies, but they are certainly forthcoming, as is the study of the aftermaths of Hurricane Katrina and Rita, as well as theorizing about the meaning of disaster in a sociology that has been too frequently concerned with societies as orderly and cohesive.

FIGURE 19.6 Catastrophes: Biggest Insurance Losses and Worst Human Costs



Source: From "Catastrophes: Biggest Insurance Losses and Worst Human Costs," *The Economist*, March 4, 2006. Copyright © 2006 by the Economist Newspaper Group. Reproduced with permission of Economist Newspaper Group in the format Textbook via Copyright Clearance Center.

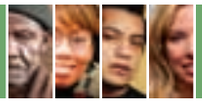
Environments in the 21st Century

What do we do now? Do we sit alone in our room, waiting for the next hurricane, earthquake, tornado, nuclear accident, or biological pandemic, or a more gradual catastrophe caused by global warming, air pollution, desertification, or overpopulation? Do we play video games, eat nachos, and await the Apocalypse?

If Katrina and its aftermath have taught us anything, it is that we should be prepared. With foresight and planning, we can avoid some catastrophes altogether and lessen the impact of others. And one of the most important tools we have is a recognition of how the physical, urban, and human worlds interconnect. The connections between the natural world, social life, and the ways that technology shapes and transforms both arenas is the heart of sociological investigation. Nature is nurture—that is, the natural world does not exist except in relationship to the social and built worlds. City and countryside create each other; people are part of the ecosystem and also its greatest threat. Ignoring the interconnection nearly always leads to disaster. Recognizing and working with it may lead to a future.

Did *you* know?

With the exception of 9/11 terrorist attacks, the top ten most costly catastrophes in U.S. history have all been natural disasters—five of them hurricanes—and *all* of them have occurred since 1988 (Steinberg, 2000). According to environmental historian Ted Steinberg, this has far more to do with the political capacity of cities and states to prepare for and respond to natural disasters than some mysterious increase in the severity of the events. They may be disasters, but politics makes them calamities.



Chapter Review

1. *What is the human environment?* Humans are social; other people are part of our environment. Sociologists called demographers study the social environment by examining birth, death, and infant mortality rates as indicators of the overall health of a population. They also look at immigration and emigration of a territory and the push and pull factors that compel people to move. Immigration has both positive and negative consequences, such as the spread of culture and the strain on resources.

2. *How does a population grow?* Cities and countries grow through natural growth (births minus deaths), changing boundaries, and population movement. The highest population growth is in the poorer countries. Malthusian theory holds that population growth is geometric and leads to inequality. Marx disagreed and said it is the unequal distribution of resources among the increased population that leads to inequality. Zero population growth was Erlich's solution and entails a global effort to curtail population growth. Many organizations and nations are trying to stem population growth, which demographic transition theory shows is tied to technology.

3. *How do urban, rural, and suburban areas compare?* Cities develop along with emigration resulting from technological and agricultural advances. Richer countries have a higher concentration of people in cities; poorer countries have fewer cities, but they tend to be megacities. Rural areas often have more poverty, exacerbated by globalization, which results in jobs moving to cities. The invention of the automobile led to the development of suburbs because people could drive to work and escape the negative aspects of urban living. Also, as minorities move into cities, wealthier White residents often move outward.

4. *What do sociologists know about cities?* Sociologists study both the pros and cons of cities by examining what holds people together, including the common bonds of community and the interdependence inherent within. Durkheim distinguished between mechanical solidarity, based on connection, and organic solidarity, based on interdependence. Sociologists also look at the difference between urban and rural areas in terms of social networks. In urban groups, family networks often hold less importance while secondary relationships like work and friends become more important. In addition, Georg Simmel found that cities were so overstimulating that people tend to ignore other people and events, which can lead to alienation and its associated problems.

5. *What are the effects of urbanization?* Wirth found that migrating from rural to urban areas changes the way people think and feel and leads to rootlessness and crime. Gans disagreed; he found urban dwellers have social networks, or urban villages, comparable to rural ones. Burgess studied the effect of human ecology on the use of space and found that race and class affected the distribution of resources. He developed a concentric zone model of cities. While urbanization leads to positive developments in richer countries, it often leads to poverty and crime in poorer ones. Globalization causes cities in developed countries to be very similar with regard to culture.

6. *How are the natural and social worlds connected?* In the 1970s people began to focus on conservation and pollution, and sociologists began to pay attention to the interrelationship of society and nature. With technological developments, energy needs increase. The United States, at 5 percent of the world's population, consumes 25 percent of its energy resources. Worldwide, natural resources are vanishing as forests are being depleted for crops and development, and loss of topsoil is leading to desertification. Sociologists also focus on how the natural environment is affected by the social world through things such as pollution, garbage, and global warming and the ways in which people combat these problems with technology.

Key Terms

Demographic transition theory (p. 628)
Demography (p. 618)
Ecosystems (p. 640)
Emigration rate (p. 622)
Fecundity (p. 618)
Fertility (p. 618)
Fertility rate (p. 619)
Gentrification (p. 635)
Human ecology (p. 638)
Immigration rate (p. 622)
Infant mortality rate (p. 620)
Internal migration (p. 622)
Life expectancy (p. 619)
Malthusian theory (p. 627)
Mechanical solidarity (p. 636)
Megalopolis (p. 636)
Mortality rate (p. 619)
Natural population increase (p. 625)
Net migration rate (p. 622)
Organic solidarity (p. 637)
Population composition (p. 624)
Population density (p. 631)
Population pyramid (p. 624)
Suburbs (p. 633)
Zero population growth (p. 628)

What does America think?

19.1 Environmental Threats and Science

These are actual survey data from the General Social Survey, 2000.

Many of the claims about environmental threats are greatly exaggerated. Less than 30 percent of respondents agreed or strongly agreed with this statement, and almost 43 percent disagreed or strongly disagreed. Those in the middle and upper classes were most likely to disagree, while those in the lower class were most likely to agree. Age and race differences were not significant.

Modern science will solve our environmental problems with little change to our way of life. Almost 50 percent of respondents disagreed or strongly disagreed with this statement, while only 22 percent agreed or strongly agreed. Those in the upper class were most likely to disagree.

CRITICAL THINKING | DISCUSSION QUESTION

1. Why do you think there are social class differences in the survey responses?

19.2 What Are We Willing to Do?

These are actual survey data from the General Social Survey, 2000.

How often do you make a special effort to sort glass or cans or plastic or papers and so on for recycling? Almost 33 percent of respondents said they always recycle, while 24 percent said they often recycle. Those in the upper class were much more likely to say they always recycle (50 percent), and those in the lower class were more likely to say they never recycle (16.2 percent), although that percentage was still relatively low.

CRITICAL THINKING | DISCUSSION QUESTION

1. What do you think explains the social class differences in responses?

▶ Go to this website to look further at the data. You can run your own statistics and crosstabs here: **http://sda.berkeley.edu/cgi-bin/hsda?harcsda+gss04**

REFERENCES: Davis, James A., Tom W. Smith, and Peter V. Marsden. General Social Surveys 1972–2004: [Cumulative file] [Computer file]. 2nd ICPSR version. Chicago, IL: National Opinion Research Center [producer], 2005; Storrs, CT: Roper Center for Public Opinion Research, University of Connecticut; Ann Arbor, MI: Inter-University Consortium for Political and Social Research; Berkeley, CA: Computer-Assisted Survey Methods Program, University of California [distributors], 2005.