

# Basic Concepts

# 1

## Learning Outcomes

*After reading, studying, and discussing the chapter, students should be able to:*

- Learning Outcome 1.1.1:** Summarize differences between geography and history.
- Learning Outcome 1.1.2:** Understand how cartography developed as science.
- Learning Outcome 1.1.3:** Identify geography's contemporary analytic mapping tools.
- Learning Outcome 1.1.4:** Understand the role of map scale and projection in reading maps.
- Learning Outcome 1.1.5:** Explain how latitude and longitude are used to locate points on Earth's surface.
  
- Learning Outcome 1.2.1:** Identify the distinctive features of a place, including toponym, site, and situation.
- Learning Outcome 1.2.2:** Identify the three types of regions.
- Learning Outcome 1.2.3:** Describe two geographic definitions of culture.
- Learning Outcome 1.3.1:** Understand global- and local-scale changes in economy and culture.
- Learning Outcome 1.3.2:** Identify the three properties of distribution across space.
- Learning Outcome 1.3.3:** Describe different ways in which geographers approach aspects of cultural identity such as gender, ethnicity, and sexuality.
- Learning Outcome 1.3.4:** Summarize geographic thought, with application to the geography of inequality.
- Learning Outcome 1.3.5:** Describe the various ways that features can spread through diffusion.
- Learning Outcome 1.3.6:** Explain how places are connected through networks, though inequality can hinder connections.
  
- Learning Outcome 1.4.1:** Describe the three pillars of sustainability.
- Learning Outcome 1.4.2:** Describe Earth's three abiotic physical systems.
- Learning Outcome 1.4.3:** Explain how the biosphere interacts with abiotic systems.
- Learning Outcome 1.4.4:** Compare ecosystems in the Netherlands and California.

## Chapter Outline

**Introduction** Geography is more than rote memorization: Geographers ask where things are and why they are where they are. What are the defining elements of geography, and how have they developed over the course of human history? **Cartography** is the science of map making, and has evolved from prehistoric humans making rudimentary maps of their local environment, to today's societies utilizing electronic devices to make high-quality, precise maps. Geographers use the concepts of **space**, **place**, and **region** to describe unique characteristics of locations on Earth as they happen across different **scales**. They study of the **connections** between human activities and the physical environment, the how these connections impact sustainability, are integral to the discipline of Geography.

### Key Issue 1: Why Is Geography a Science?

Although the earliest humans were practicing Geography, it wasn't until the ancient Greek philosopher Eratosthenes that the discipline was bestowed the name it is known by today—*geo*, from the Greek, meaning “Earth,” and the Greek word *graphy*, meaning “to write,” were combined to describe the study of where things are found on Earth's surface and the reasons for the locations. To contrast history with geography, one could view history as posing questions of *when* and *why*, while geographers ask questions of *where* and *why*.

Two features of human activity encompass the field of human geography as it is covered in this text: culture and economy. Two basic concepts are used by geographers to explain what makes a certain place unique: place and region. A **place** is a specific point on Earth, distinguished by a set of particular traits. Every place occupies a unique geographic location, or position, on Earth's surface. A **region** is an area of Earth defined by one or more defining features. The Earth is partitioned into a number of regions by Geographers, such as the Midwest and Latin America.

To explain the relationships between places, geographers employ three basic concepts: scale, space, and connection. **Scale** is the relationship between the portion of Earth being studied and Earth as a whole. Geographers study a variety of scales, from local to global. **Space** refers to the physical gap or interval between two objects. **Connection** refers to relationships among people and objects across the barrier of space.

A **map** is a two-dimensional or flat-scale model of the real world, made small enough to work with on a desk or computer. **Cartography** is the science of making maps. Maps are used for reference (where things are located) and for communication of the distribution of some feature or features.

**Geography in the Ancient World** Maps have been created for thousands of years. The earliest maps were used as reference tools—simple navigation devices designed to show a traveler how to get from Point A to Point B. Following the mapmakers of the ancient eastern Mediterranean world, European mapmaking and geographic thought became less mathematical and more fanciful, displaying Earth as a flat disk surrounded by mythical figures and fierce animals.

**Geography's Revival** Mapmaking as a reference tool was revived during the Age of Exploration and Discovery. Explorers who sailed across the oceans in search of trade routes and resources in the fifteenth and sixteenth centuries required accurate maps to reach their desired destinations without wrecking their ships.

**Contemporary Mapping** Maps are used by geographers primarily for displaying geographic information and for offering geographic explanation. Maps are the geographer's most essential tool.

**Pinpointing Location: GPS** The **Global Positioning System (GPS)** uses satellites to reference locations on the ground. GPS is most commonly used for navigation. Pilots of aircraft and ships stay on course with GPS. On land, GPS detects a vehicle's current position, the motorist programs the desired destination into a GPS device, and the device provides instructions on how to reach the destination. GPS can also be used to find the precise location of a vehicle or person. Geographers find GPS to be particularly useful in coding the precise location of objects collected in fieldwork.

**Analyzing Data: GI-Science** **Geographic Information Science (GIScience)** is the examination of data relating to Earth acquired through satellite and other electronic information technologies. A **geographic information system (GIS)** is a complex computer system which stores and presents geographically referenced data. GIS is more efficient than pen and ink for making a map: Objects can be added or removed, colors brightened or toned down, and mistakes corrected without having to tear up the paper and start from scratch. Each type of information can be stored in a layer. Separate layers could be created for boundaries of countries, bodies of water, roads, and names of places. Most maps combine several layers and GIS maps permits construction of much more complex maps than can be drawn by hand.

The acquisition of data about Earth's surface from a satellite orbiting Earth or from airplanes is known as **remote sensing**. At any moment a satellite sensor records the image of a tiny area called a picture element, or pixel. A map created by remote sensing is essentially a grid that contains many rows of pixels. Geographers use remote sensing to map the changing distribution of a wide variety of features, such as agriculture, drought, and sprawl.

**Collecting and Sharing Data: VGI** Electronic devices such as smart phones, tablets, and computers are ubiquitous parts of culture the world over today. These electronic devices allow individuals to produce maps and share them with others. **Volunteered geographic information (VGI)** is the creation and dissemination of geographic data contributed voluntarily and for free by individuals utilizing these electronic devices. VGI is part of the wider trends of **citizen science**, which is scientific research conducted by amateur scientists, and **participatory GIS (PGIS)**, which is community-based mapping.

The term **mashup** refers to the practice of overlaying data from one source on top of one of the mapping services. Computer users have the ability to do their own GIS because mapping services provide access to the application programming interface, which is the language that links a database such as an address list with software such as mapping. A mashup map can show the locations of businesses and activities within a neighborhood in a city. The requested information could be all pizza parlors within a mile of a certain address. Mapping software can also show the precise locations of gas stations with the lowest prices or current traffic tie-ups on highways.

**Map Scale** The map's **scale** is the relationship between map units and the actual distance on Earth. Ratio or fraction scale gives the relationship as a ratio, for example, 1:100,000 is that 1 unit on the map equals 100,000 units on the ground. In a written scale units are expressed in a convenient way, for example, "1 centimeter equals 1 kilometer." A graphic scale is given by a scale bar showing the distance represented on Earth's surface.

**Projection** Maps are a planar (flat) representation of Earth's curved surface. Earth is nearly a sphere and is therefore only accurately represented on a globe. Thus, some distortion must result when using maps, especially at small scales (continental or whole-Earth maps). Cartographers must choose a **projection** that results in some set of distortions between shape, distance, relative size, and direction.

**Latitude and Longitude** Mathematical location describes a place's location using a coordinate system such as **latitude** and **longitude**. Longitude is culturally defined as starting at Greenwich, England, and measures degrees of east and west of that line of longitude, or **meridian**. The zero degree longitude line in Greenwich, England, is known as the **prime meridian**. Latitude measures north and south distance with the **equator** (0° latitude) being the line of latitude halfway between the North Pole (90° north latitude) and the South Pole (90° south latitude). A latitude line is known as a **parallel** because all latitude lines are parallel to the equator. The equator is the parallel with the greatest circumference and is the baseline for measuring latitude.

**Telling Time** Longitude plays an important role in calculating time. If we let every fifteenth degree of longitude represent one time zone, and divide 360 degrees by 15 degrees, we get 24 time zones. As the Earth rotates eastward, any place to the east of you always passes under the Sun earlier. Thus as you travel eastward from the prime meridian you are catching up with the Sun, so you must turn your clock ahead 1 hour by each 15 degrees. If you travel westward from the prime meridian, you are falling behind the Sun, so you turn your clock back by 1 hour for each 15 degrees. During the summer, many places in the world, including most of North America, move the clocks ahead 1 hour. **Greenwich Mean Time (GMT)**, or Universal Time (UT), is the master reference time for all points on Earth.

When you cross the **International Date Line** you move the clock back one entire day, if you are heading eastward, toward America. You turn the clock ahead 24 hours if you are heading westward, toward Asia. The International Date Line for the most part follows 180 degrees longitude. However, several islands in the Pacific Ocean belonging to the countries of Kiribati and Samoa, as well as to New Zealand's Tokelau territory, moved the International Date Line several thousand kilometers to the east.

## **Key Issue 2: Why Is Each Point on Earth Unique?**

**Place: A Unique Location** An essential aspect of geography is the process of describing the features of a place. Through these descriptions, similarities, differences, and changes across Earth may be explained by geographers. The component parts, or features, that make each place on Earth distinct may be examined to assist in these descriptions. A feature's place on the Earth may be identified by its **location**, the position that something occupies on Earth's surface.

**Place Names** A place name, or **toponym**, is the most common way of describing a location. Many uninhabited places are even named. Place names sometimes reflect the cultural history of a place, and a change in place name is often culturally motivated. Examining changes in place name geography is a useful insight into the changing cultural context of a place. The Board of Geographical Names was established in the late nineteenth century to be the final arbiter of names on U.S. maps. In recent years the board has been especially concerned with removing offensive place names.

**Site** The term **site** makes reference to the physical characteristics of a place. Important site characteristics include climate, water sources, topography, soil, vegetation, latitude, and elevation. The combination of physical features gives each place a distinctive character. People disagree on the attributes of a good location for settlement. What is considered a good site depends on cultural values.

**Situation** The term **situation** describes a place in terms of its location relative to other places. Understanding situation can help locate an unfamiliar place in terms of known places, or it can help explain the significance of a place. We give directions to people by referring to the situation of a place. We identify important buildings, streets, and other landmarks to direct people to the desired location.

**Region: A Unique Area** An area of Earth defined by one or more distinctive characteristics is a *region*. A particular place can be included in more than one region, depending on how the region is defined. A region gains uniqueness from possessing not a single human or environmental characteristic but a combination of them. The **cultural landscape** is a recurrent theme throughout this text. It represents the total sum of cultural, economic, and environmental forces combining to make distinctive landscapes across Earth.

**Formal Region** A **formal region**, also called a **uniform region**, is a region with a predominant or universal characteristic. Formal regions commonly have well-defined boundaries. The shared feature could be a cultural value such as a common language or an environmental property such as climate. In a formal region, the selected characteristic is present throughout the region. Some formal regions are easy to identify, such as countries or local government units. A characteristic may just be predominant rather than universal. For example, the North American wheat belt is a formal region in which wheat is the most commonly grown crop, but other crops are grown there as well.

**Functional Region** A **functional region**, also known as a **nodal region**, is defined by an area of use or influence of some feature. Often used in economic geography, functional regions have “fuzzy” boundaries as the influence of the central feature decreases over distance. The functional region is organized around a focal point. A good example of a functional region is the reception area of a television station. A television station’s signal is strongest at the center of its service area and becomes weaker at the edge and eventually can no longer be distinguished. At some distance from the center, more people are watching a station originating in another city. That place is the boundary between functional regions of two TV market areas.

**Vernacular Region** A **vernacular region**, or **perceptual region**, is the most ambiguously defined as they rely on a mental conception of a place as belonging to a common region for complex cultural reasons. Such regions emerge from people’s informal sense of place rather than scientific models

developed through geographic thought. A vernacular region is an individual's **mental map**, which is an internal representation of a portion of Earth's surface. A mental map depicts what an individual knows about a place, containing personal impressions of what is in the place and where the place is located.

**Culture Regions** One of the defining characteristics of a region that helps geographers identify regions is **culture**. Culture is a body of customary beliefs, material traits, and social forms that together constitutes the distinct tradition of a group of people. The word culture originates from the Latin *cultus*, meaning "to care for." Culture is a complex concept, comprising two different meanings: to care about (to adore or worship something) and to take care of (to nurse or look after something). Region is analyzed by geographers using both of these aspects of the concept of culture.

**Culture: What People Care About** Important cultural values derive from a group's language, religion, and ethnicity. These three cultural traits are both an excellent way of identifying the location of a culture and the principle means by which cultural values become distributed around the world. These cultural traits are covered in detail in chapters 5, 6, and 7.

**Culture: What People Take Care Of** Another element of culture of interest to geographers is production of material wealth—the food, clothing, and shelter that humans need to survive and thrive. All people consume food, wear clothing, and build shelter, but different cultural groups obtain their wealth in different ways. Various characteristics—such as per capita income, literacy rates, and TVs per capita—distinguish developed regions and developing ones. Most people in developing countries are engaged in agriculture, whereas most people in developed countries earn their living through performing services in exchange for wages. These concepts are discussed in chapters 9, 10, 11, 12, and 13.

**Spatial Association** Different levels of regional analysis can demonstrate dramatically different characteristics. Geographers attempt to explain regional differences by looking for factors with similar distributions. **Spatial association** arises if the distribution of one feature located in a region is related to the distribution of another feature.

### **Key Issue 3: Why Are Different Places Similar?**

**Scale: Global and Local** Scale is an integral element of geographical analysis, especially as it concerns issues of globalization. **Globalization** is a force or process that engages the world as a whole and results in making something worldwide in scope.

**Economic Globalization and Local Diversity** The globalization of economic activities has come as a result of increasing connections between places and the rapid movement of goods and information around the world. Every place in the world is part of the global economy. **Transnational corporations** are often seen as emblematic of this globalization. Transnational corporations conduct research, operate factories, and sell products in many countries, not just where its headquarters and principle shareholders are located. Each place in the world plays a distinctive role in the global economy based on its local assets, as assessed by transnational corporations.

**Cultural Globalization and Local Diversity** Economic globalization is matched with an increasing global influence and spread of some cultures, resulting in more uniform cultural landscapes across the world. Groups with distinctive local cultures may feel threatened by the globalization of culture, causing conflict or a sense of loss. The survival of a local culture's distinctive beliefs, forms, and traits may be threatened by interaction with social customs as wearing jeans and Nike shoes, consuming Coca-Cola and McDonald's hamburgers, and communicating using cell phones and computers. Yet despite globalization, cultural differences among places not only persist but actually flourish in many places.

**Space: Distribution of Features** Geographers think about the arrangement of people and activities found in space and try to understand why those people and activities are distributed across space as they are. Geographers use the concept of **distribution** to describe the spatial arrangement of objects across Earth's surface. Three aspects of spatial arrangement may be used to further describe distribution: density, concentration, and pattern.

**Distribution Properties: Density** **Density** measures the number of features per area of land. Other measures, such as physiological or agricultural density, are based on a subgroup of people or a subtype of land.

**Distribution Properties: Concentration** The extent of a feature's spread over space is its **concentration**. If the objects in an area are close together, they are *clustered*; if they are far apart they are *dispersed*. Geographers use concentration to explain distribution. In a dispersed neighborhood, each house has a large private yard, whereas in a clustered neighborhood, the houses are close together and open space is shared as a community park.

**Distribution Properties: Pattern** The term **pattern** describes whether features are arranged along geometric or other predictable arrangements. Geographers observe that many objects form a linear distribution, such as the arrangement of houses along a street or stations along a subway line. Many American cities contain a regular pattern of streets, known as a grid pattern, which intersect at right angles at uniform intervals to form square or rectangular blocks.

**Cultural Identity and Distribution across Space** Humans often arrange their activities in space according to gender, ethnicity, and sexuality. Most concepts of difference among humans are culturally constructed and changes in cultural concepts of difference are sometimes reflected in changing arrangements. People sharing a common ethnic identity tend to cluster in urban areas. Openly homosexual men and lesbian women may be attracted to some locations to reinforce spatial interactions with other LGBTQIAAP (Lesbian, Gay, Bisexual, Transgender, Queer, Questions, Intersex, Asexual, Allies, and Pansexual)-identifying people. Inequality remains a focus for geographers studying distribution by gender.

**Space: Inequality** Cultural traits, such as gender, ethnicity, and sexuality, impact the distribution and movement of people across space.

**Cultural Identity and Contemporary Geography Thought** The experiences of women differ from those of men, blacks from whites, gays from straights, and boys from girls. Geographers employ a variety

of methods to understand cultural identity and space, including those of poststructuralist, humanistic, and behavioral geography.

**Poststructuralist geography** examines how the powerful in a society dominate, or seek to control, less powerful groups, how the dominated groups occupy space, and confrontations that result from the domination. Poststructuralist geographers conceptualize space as the product of ideologies or value systems of ruling elites.

**Humanistic geography** is a branch of human geography that emphasizes the different ways that individuals perceive their surrounding environment.

**Behavioral geography** emphasizes the importance of understanding the psychological basis for individual human actions in space. Distinctive spatial patterns by gender, race, and sexual orientation are constructed by the attitudes and actions of others. Although it is illegal to discriminate against people of color, spatial segregation persists. In many places in the world, it is legal to discriminate against gays. For geographers, concern for cultural diversity is not merely a political expediency; it lies at the heart of geography's spatial tradition.

**Unequal Access** In the modern world, barriers to interaction are more likely to derive from unequal access to electronics. Internet access depends on availability of electricity to power the computer and a service provider. A person must be able to afford to pay for the communications equipment and service. Countries in Africa, Asia, and Latin America find themselves on a periphery with respect to wealthier core regions of North America, Europe, and Japan. The increasing gap in economic conditions between regions in the core and periphery that results from globalization is known as **uneven development**. In a global culture and economy, every area of the world plays some role intertwined with the roles played by other regions.

**Connections: Diffusion** Recalling the concept of connections from the beginning of the chapter, geographers may analyze three different outcomes of these relationships between people and objects that cross the barrier of space: assimilation, acculturation, and syncretism. **Assimilation** is the process by which a group's cultural features are altered to resemble those of another group. The cultural features of one group may come to dominate the culture of the assimilated group. **Acculturation** is the process of changes in culture that result from the meeting of two groups. Changes may be experienced by both of the interacting cultural groups, but the two groups retain two distinct culture features. **Syncretism** is the combination of elements of two groups into a new cultural feature. The two cultural groups come together to form a new culture.

**Diffusion** **Diffusion** is the process by which a feature spreads across space from one place to another over time. A feature originates at a hearth and diffuses from there to other places. A **hearth** is a place from which an innovation emerges.

**Relocation Diffusion** The term connection refers to the relationships among people and objects across the barrier of space. **Diffusion** refers to the spread of anything from a cultural trait, people, things, or ideas from some point of origin (a **hearth**). Geographers document the location of hearths and the processes by

which diffusion carries things elsewhere over time. The spread of an idea through the physical movement of people from one place to another is termed **relocation diffusion**. When people move, they carry with them their culture, including language, religion, and ethnicity.

**Expansion Diffusion** The spread of a feature from one place to another in an additive process is **expansion diffusion**. Expansion diffusion refers to the growth of an idea to new areas through a hierarchy (**hierarchical diffusion**), popular notions or even contact (**contagious diffusion**), or the spread of an underlying idea divorced from its original context (**stimulus diffusion**).

**Connections: Spatial Interaction** Some places are well-connected by communications or transportation networks, other are not as much. Contact diminishes with increasing distance and eventually disappears. This trailing-off phenomenon is called **distance decay**. In the contemporary world, distance decay is much less severe because connection between places takes less time. Geographers apply the term **space-time compression** to describe the reduction in time it takes for something to reach another place. Interaction takes place through a **network**, which is a chain of communication that connects places. Ideas that originate in a hearth are now able to diffuse rapidly to other areas through communication networks. Distant places seem less remote and more accessible to us.

#### **Key Issue 4: Why Are Some Actions Not Sustainable?**

A **resource** is a substance in the environment that is useful to people, economically and technologically feasible to access, and socially acceptable to use. A **renewable resource** is produced in nature more rapidly than it is consumed by humans. A **nonrenewable resource** is produced in nature more slowly than it is consumed by humans. The use of Earth's renewable and nonrenewable natural resources in ways that ensure resource availability in the future is **sustainability**.

**Three Pillars of Sustainability** According to the United Nations, sustainability rests on three pillars: environment, economy, and society. Sustainability requires curtailing the use of nonrenewable resources and limiting the use of renewable resources to the level at which the environment can continue to supply them indefinitely. The sustainable use and management of Earth's natural resources to meet human needs such as food, medicine, and recreation is **conservation**. Conservation differs from **preservation**, which is the maintenance of resources in their present condition, with as little human impact as possible. Preservation does not regard nature as a resource for human use.

**Sustainability's Critics** Biologically productive land is defined as the amount of land required to produce the resources currently consumed and handle the wastes currently generated by the world's 7 billion people at current levels of technology. The Earth has only 11.4 billion hectares of biologically productive land, so humans are already using all of the productive land and none is left for future growth. Others have said that resource availability has no maximum, and Earth's resources have no absolute limit because the definition of resources changes drastically and unpredictably over time.

**Sustainability and Earth's Physical Systems** A **biotic** system is composed of living organisms. An **abiotic** system is composed of nonliving or inorganic matter. Three of Earth's four systems are abiotic. The **atmosphere** is a thin layer of gases surrounding Earth. The **hydrosphere** is all the water on Earth or

near Earth's surface. The **lithosphere** is Earth's crust and a portion of upper mantle directly above the crust. Only one of Earth's systems is biotic. The **biosphere** is all living organisms on Earth, including plants and animals, as well as microorganisms.

The long-term average weather condition at a particular location is **climate**. Climate may be classified into one of five main climate regions, devised by the German climatologist Wladimir Köppen:

- A: Humid low-latitude climates.
- B: Dry climates.
- C: Warm mid-latitude climates.
- D: Cold mid-latitude climates.
- E: Polar climates.

These five main climate regions may be further subdivided, based on the amount of precipitation and the season in which it falls.

**Ecology and the Biosphere** A group of living organisms and abiotic spheres with which they interact is an **ecosystem**. The scientific study of ecosystems is **ecology**. Living organisms in the biosphere interact with each of the three abiotic systems. Human geographers are especially interested in ecosystems involving the interaction of humans with the rest of the biosphere and the three abiotic spheres. If the atmosphere contains pollutants or its oxygen level is reduced, humans have trouble breathing. Without water, humans waste away and die. A stable lithosphere provides humans with materials for buildings and fuel for energy. The rest of the biosphere provides humans with food.

**Cultural Ecology: Integrating Culture and Ecology** Human geographers are especially interested in the fact that different cultural groups modify the natural environment in distinctive ways. The geographic study of human-environmental relationships is known as **cultural ecology**. **Environmental determinism**, largely dismissed by modern geographers, states that physical factors cause cultures to develop and behave as they do. Environmental determinists believe that human geographers should apply laws from the natural sciences to understanding relationships between the physical environment and human actions. **Possibilism** recognizes the constraints of the physical environment while also crediting human cultures with the ability to adapt to the environment in many ways—including by changing it.

**Sustainable Ecosystem: The Netherlands** A **polder** is a piece of land that is created by draining water from an area. All together, the Netherlands has 2600 square miles of polders. The Dutch government has reserved most of the polders for agriculture to reduce the country's dependence on imported food. The Dutch have also constructed massive dikes to prevent the North Sea from flooding much of the country. A second ambitious project in the Netherlands is the Delta Plan. The low-lying delta in the southwestern part of the country is very vulnerable to flooding. The Delta Plan called for the construction of several dams to close off most of the waterways from the North Sea.

The lowlands in South Florida are environmentally sensitive areas, but have been modified less sensitively than those in the Netherlands. The U.S. Army Corps of Engineers built a levee around Lake Okeechobee during the 1930s, drained the northern one-third of the Everglades during the 1940s, and

diverted the Kissimmee River into canals during the 1950s. These modifications opened up hundreds of thousands of hectares of land for growing sugarcane and protecting farmland as well as the land occupied by the growing South Florida population from flooding. Polluted water, mainly from cattle grazing along the banks on the canals, flowed into Lake Okeechobee. The modification of barrier islands along South Florida's coast by humans has caused a lot of damage.

## Icebreaker

This chapter may seem superficial to many instructors, but keep in mind it is new ground for many students. For example, a 2006 National Geographic/Roper poll of Americans aged 18–24 found the following: “48% of young Americans believe the majority population in India is Muslim. . . . Half of young Americans can't find New York on a map.”

This illustrates the challenge you face as a geography educator. Instead of calling attention to these statistics to your students, consider being positive in your introduction, as introducing this chapter will set the tone for the remainder of the course. This is your chance to emphasize the importance of geographic knowledge of all of your students, regardless of their eventual fields of study.

### What is geography? Why is it important?

A class discussion of what geography is, and why it is important, is always a useful place to start with any geography course. Reasons for the importance of geography will vary by instructor, but a useful example of inquiry is provided in this chapter's presentation of the ways in which the Dutch have altered their environment. Here are some other events to use as examples of geographic relevance at your own discretion:

- The Japanese earthquake and tsunami of 2011. This example is another great one, like the Netherlands, to show the interrelatedness of human and physical geography.
- The September 11, 2001, attack on the World Trade Center (and other targets).
- Ask your students where their footwear, clothing, or cars come from. Is there anything geographic about this?

### What is the name of your town? Where is that? What is it like?

The terminology associated with place and region may be difficult for students to grasp. Explaining how we describe places every day will help build an understanding of how geographers think about place.

Try this method in class: Ask the students individually where they are from until a place name not in the immediate area is encountered. If you are not familiar with the place (or even if you are), ask, “Where is that?”

Explain that the students are using place names, or toponyms, to describe where they are from, but the place name is only useful as long as everyone knows where the place name is referring to.

When a place name is unfamiliar, we need to refer to situation factors (and sometimes site factors) to tell people where a place is.

Mathematical location might seem quite abstract to students, but ask how many can list their addresses and zip codes. While not mathematical in the same way as latitude and longitude or UTM coordinates, the street address does represent a unique description of a discrete place. An Internet mapping program (e.g., Google Maps) can be used to demonstrate these concepts.

## **Challenges to Comprehension**

### **Scale**

Many, including professional geographers, confuse large and small scales. The smaller the scale, the larger the area covered. For example a globe is a very small-scale representation of Earth. Yet many persist in referring to global issues as occurring at a “large scale.”

To avoid confusion, consider referring to scales as “local”, “regional”, or “global.” This also helps emphasize the text’s themes of global vs. local contrasts.

These concepts are reinforced in Chapter 1’s Key Issue 3, Why Are Different Places Similar?

### **Understanding Geographic Information Systems (GIS)**

Students often confuse a geographic information system (GIS) with the Global Positioning System (GPS).

Students rarely understand the importance of GIS to many processes that we take for granted in society. However, there are a variety of Internet resources which demonstrate how much a part of our everyday lives GIS are becoming. Some online examples include:

- Zillow (see “Resources” section)
- Real property databases managed by county or city governments (e.g., the King County parcel viewer at [www.kingcounty.gov/operations/GIS/PropResearch/ParcelViewer.aspx](http://www.kingcounty.gov/operations/GIS/PropResearch/ParcelViewer.aspx))
- Numerous “mashups” available on an ever-changing basis (try [googlemapsmania.blogspot.com](http://googlemapsmania.blogspot.com))

### **Vernacular Regions**

Some have a difficult time with the idea of a vernacular region. The example in the textbook uses a number of overlapping formal regions in an attempt to describe the vernacular region of the South. Consider using another example, especially one without a direction, as these examples can be confusing (students think that a vernacular region must contain compass direction).

## Cultural Landscapes

The concept of a cultural landscape can be misunderstood as a principally environmental landscape. Help students learn about how pervasive cultural landscapes are by showing them some examples from around the world. Note that an Internet search for “cultural landscape” returns a number of results about extraordinary, famous, or unique landscapes; but cultural landscapes are pervasive and students will benefit from being able to interpret the cultural landscape of everyday places like their home towns.

The Great Mirror: Dr. Bret Wallach of the University of Oklahoma has posted a remarkable collection of photographs for the purpose of displaying cultural landscapes at his website The Great Mirror, [www.greatmirror.com](http://www.greatmirror.com).

Another great option is the user-generated content featured on Panoramio ([www.panoramio.com](http://www.panoramio.com)), which is also on Google Maps ([maps.google.com](http://maps.google.com)), indexed under the “More . . . Photos” option. These photos are usually “scenic” features, but it’s possible to find more mundane cultural landscapes, too.

## Assignments

### Review/Reflection Questions

These questions can be used in addition to the “thinking geographically” questions at the end of each chapter. Students can be assigned these questions as homework, they can be given as essay questions on exams, or they can serve as focus questions for in-class discussions.

- Describe the site, situation, and mathematical location of our school (alternative—your hometown).
- Name three formal regions that this school is located within and give a reason for each. Do the same for functional and vernacular regions.
- Describe an element of your culture that appears to be environmentally determined (caused by the natural environment). Can you now provide evidence that this cultural element is only one of many possibilities in the given environment?
- Give a local example of not-so-sensitive environmental modification, as demonstrated in the book’s discussion of the Everglades. Are there multiple ways to achieve the desired result of an environmental modification? Discuss.

For additional review and test prep materials, have your students visit **MasteringGeography™** to access a variety of resources, including interactive maps, videos, GoogleEarth activities, RSS feeds, flashcards, web links, and self-study quizzes.

### Thinking Geographically Questions

*1. Using geographic tools such as maps and GIS is not simply a mechanical exercise. Nor are decisions confined to scale, projection, and layers. For example, should the European country be labeled Czech Republic or Czechia? Czech authorities and citizens do not agree on the proper translation of the country’s Czech name Česky into English.*

Well, I can see how Czech Republic is a sensible solution, as it is a compromise between both parties on the translation of Česky into English. It would also depend on the language used in the rendering of a map – for English maps, Czech Republic may make sense, whereas Czechia or Česky may be better suited for other languages.

*2. What criteria should geographers use to label maps?*

Geographers must use critical thinking skills to best label features on a map. For example, geographers must consider the origin of place names (toponyms), and examine whether the site of a place played a role in it receiving its name, or if cultural factors impacted its naming.

*3. What are elements of the site and situation of your hometown?*

A couple elements of site of my hometown, Chicago, IL, are the Chicago River and Lake Michigan. The Chicago River runs through the city and is dyed green every year for St. Patrick's Day. Chicago is located on the banks of Lake Michigan and significantly influences local weather patterns, producing lake-effect wind and snow. Relative to the rest of Illinois, the situation of my hometown is unique – it is the largest city in the state and is a major hub of economic, political, and cultural activity.

*4. Can you name another place to which your hometown has strong connections?*

My hometown has strong connections to Northwest Indiana, known affectionately as 'The Region.' The South Shore Line runs into another town that I lived in in the area, Chesterton, Indiana, providing public rail access to Chicago. It was also a neat place, as Chesterton was also located on the banks of Lake Michigan, and the skyline of the city was visible from the beach on clear days.

*5. What is an example of a feature that connects your town to another?*

Site: My hometown is located in the northern and western hemisphere. It is located in the midlatitudes. My hometown is in the Mediterranean climatic zone dominated by chaparral vegetation. My hometown borders the Pacific Ocean. I live on a coastal plain with alfisol soils.

Situation: My hometown is about 45 miles from Disneyland and 75 miles from Downtown Los Angeles and Hollywood. Interstate 5 and Pacific Coast Highway run through my hometown and these are very important roads on the West Coast of the United States. My hometown is 5 miles from the San Onofre Nuclear Generating Station, which is one of the major sources of electricity in Southern California. The Camp Pendleton Marine Base is located two miles away from my hometown and is one of the largest military bases on the West Coast of the United States.

*6. If you could live anyplace on Earth, where would it be? Why?*

If I could live any place on Earth, I would live in Talkeetna, Alaska. I first learned of Talkeetna after reading that it was based on Cicely, Alaska, the town featured in the 1990s television drama *Northern Exposure*. After researching more about the town, I learned that they have a vibrant community, with an excellent public radio affiliate. I worked in a radio station for 6 years; ideally, I would have a job at their affiliate and explore the surrounding outdoors during my free time.

7. *How might your choice be altered if you had access to a transportation device (such as available to Harry Potter) that enabled you to travel instantaneously to any place on Earth?*

If this transportation device existed, a lot fewer people would live in urban areas. Many people in the developed world live in an urban area because they need to live near their place of employment. Workers don't want the expense and hassle of very long commutes so they choose to live near their job. If they could instantaneously commute, many workers with families would choose to live in somewhat rural areas. Living in a less congested area is appealing to many people, but rural areas rarely offer many well-paying jobs.

More people would live in temperate climates. Imagine if you could work a well-paying job in Fairbanks, Alaska, but not actually have to move to Fairbanks. You could live in Hawaii, but instantaneously commute to Fairbanks every day during the week. Many people live in the severe climates because they have a good job and family and friends in the area, not because they like subzero temperatures. With instantaneous travel, they could still see family and friends and continue to work their job, but not have to shovel snow to get out of their driveway most mornings.

8. *What activities in your community appear to promote sustainability?*

Southern California has numerous Recycling Centers. Recycling Centers are usually located in the back of large grocery stores. People get money for used plastic and glass bottles at these Recycling Centers. Some of these Recycling Centers will also pay people for their aluminum cans too. There was a tax credit program in California recently that essentially gave money to homeowners who installed solar panels on the roofs of their homes. Wind turbines have recently been built in the nearby desert areas. California promotes sustainability more than a lot of states.

## **Pause and Reflect Questions**

1.1.1: *What are the principal connections from your hometown to other places?*

The principal connections from my hometown, Chicago, IL, to other places is Lake Michigan and the Interstate Highway System.

1.1.2: *What is one main difference between the world maps of Ptolemy (Figure 1-7) and of Ortelius (Figure 1-9)?*

The shapes of the continents are much more developed in the Ortelius map as compared to those in the Ptolemy map.

1.1.3: *State a question you have about the area where you live. Describe a mashup that you could create using GIS that would answer your question.*

Where are all of the grocery stores located in my town, within a 5-mile radius of my home address? I could find out latitude/ longitude coordinates of all of the grocery stores in my town, upload the coordinates to ArcGIS Online, and run the geoprocessing tool 'Near' to determine the answer.

*1.1.4: Compare the sizes of Greenland and South America on the three maps in Figure 1-13. Which of the two landmasses is actually larger? How do you know?*

South America is much larger in area than Greenland. I know this, because in Figure 1-13(a) the world is projected in an equal area manner, and area can be accurately examined.

*1.1.5: Where in the world, other than Newfoundland, is standard time on the half-hour rather than the hour? Why might that country prefer not to be on the hour?*

Iran and the central region of Australia observe standard time on the half-hour. In Australia's case, they may prefer to observe multiple time zones (with one occurring on the half-hour) because their country encompasses such a large area and the half-hour happens to be when the sun is at its highest point during the day.

*1.2.1: What is the origin of the toponym of your hometown?*

My hometown, Chicago, IL, is rooted in the French translation of a Native American word, 'shikaakwa', referring to a wild onion plant that grows in the area.

*1.2.2: What environmental and cultural features might help to define the region of the U.S. Midwest?*

The physical region of the U.S. Midwest is noted for its plains landscape, along with the presence of the Great Lakes. The cultural features of the U.S. Midwest can be noted from the National Public Radio program *A Prairie Home Companion* – the region is known for its Scandinavian immigrant history, prowess in college basketball, and industrial economic history.

*1.2.3: Describe differences that you see between U.S. and South Africa suburbs in Figure 1-23.*

*U.S. suburbs appear to be solidly-built homes with yards and access for motor vehicles, while suburbs in South Africa are compact, with homes built right next to one another, with no access for motor vehicles.*

*1.3.1: Give examples of changes in economy and culture occurring at global and local scales.*

One recent change in the global economy is the exit of the United Kingdom from the European Union – this change signaled significant shifts in economic policy and trade relations between states in the E.U. and the U.K. At the local scale, the state government of Alabama is proposing a state lottery so that deficits can be reduced. Culturally, we are seeing a growing dependence on mobile communications – this change is evident in places all over the world where political unrest is present, and mobile communications are used for organizing purposes. At the local scale, the arrival of Latino/ Latina migrants to the U.S. South over the past thirty years is becoming more apparent, with locally-owned businesses geared toward this population growing in number.

*1.3.2: How would you describe the density, concentration, and pattern of chairs in your classroom?*

In my classroom, the distribution of the chairs is spread throughout the room somewhat evenly – 10 chairs around a central meeting table, and eight office chairs at the perimeter of the room with computers located at each station.

*1.3.3: Using your own campus or school as the example, describe how movement across space varies during the day for students and faculty.*

Depending on whether you're an undergraduate student, graduate student, or faculty member, one's movement across space will vary during a regular day. If you are an undergraduate, movement across wide spaces of campus is regular, as your classes are typically held in multiple buildings. As a graduate student, your classes and office are generally confined to a single building. As a faculty member, you may only split your time between your office and one or two classrooms.

*1.3.4: How does region where you live compare in the percentage of children in poverty?*

Referring to Figure 1-37, the income compared to national average (age 26) is more than 5% below for my region.

*1.3.5: U.S. coins are minted in either Denver or Philadelphia. Take a look at your coins. Do you have more from the mint closer to you?*

Actually, I have more coins from Denver than from Philadelphia, and Denver is located farther away from me than Philadelphia.

*1.3.6: Is your nearest airport a hub? If not, to what hub do most flights go from you nearest airport?*

The nearest airport to me is the Northwest Alabama Regional Airport, which is not a hub. Flights from this airport go to either Nashville, TN or Atlanta, GA – both major hubs.

*1.4.1: What do you think might be the reaction of the men in Figure 1-46b to tourists such as those in Figure 1-46c?*

As the caption of the photo indicates, the men in Figure 1-46b are watching tourists pass by, so I can imagine based on their reaction in that photo that they are not especially excited when tourists such as those featured in Figure 1-46c pass by.

*1.4.2: Why would maps of Earth's hydrosphere, lithosphere, and biosphere be important in the quest for sustainability?*

These types of maps help illustrate the distribution and density of features contained in these maps, allowing for pertinent analysis to be undertaken such that resources are responsibly and sustainably managed.

*1.4.3: How might a bird interact with each of the four spheres?*

A bird, such as a seagull, may fly through the atmosphere, fish for food in the hydrosphere, search for other sustenance in the biosphere, and nest in the lithosphere.

*1.4.4: Which is better positioned to face future threats to sustainability, the Netherlands or California? Why?*

It appears as if the Netherlands is better suited to face future threats to sustainability, as they are more committed financially and socially to combat resource depletion and the effects of climate change (despite 16 percent of the country's land area being reclaimed from the sea as polders!).

## Explore

Use Google Earth to explore the Netherlands coast.

Fly to *Ouddorp, Netherlands*.

1. *Using the ruler, what is the distance (in kilometers or miles) from the pin marking Ouddorp to the coast?*

The distance from the pin marking Ouddorp to the coast is approximately 1.5 miles (I measured 1.64 miles).

2. *How many dams do you see in the image?*

At eye alt 11.85 mi, I see one dam.

3. *Drag to enter street view on the dam to the north of the image. What occupies the top of the dam? A small wind farm is located at the top of the dam.*

4. *Which side of the dam is the open sea, and which side is the protected inland waterway? Which side of the dam contains the marinas filled with boats? Why would the boats be on that side?*

The open sea is to the northwest, and the protected inland waterway is to the southeast. The marina is on the southeastern-facing side of the dam. These boats would not have to deal with the tide everyday – if they wanted access to the open sea, they could go through the lock in the dam.

5. *What is the elevation of Ouddorp? What is the elevation of Visschershoek to the west of Ouddorp right on the coast? What is the elevation of Melissant to the east of Ouddorp further inland? Based on these observations, is the elevation further inland higher or lower than on the coast? Why is that the case?*

Ouddorp has an elevation of 5 feet above sea level. Visschershoek has an elevation of 3 feet above sea level. Melissant has an elevation of 2 feet above sea level. The elevation is relatively lower in Visschershoek and Melissant, with Melissant being the lowest elevation. This is the case because this land was reclaimed from the sea (they are polders).

## GeoVideo Questions

1. *Describe the infrastructure that supports GPS devices.*

The infrastructure that supports GPS devices is made up of a network of 27 satellites in medium Earth orbit. Four of these satellites transmit information to a device on the Earth, determining the device's location by triangulation.

2. *According to the video, how accurate is the current GPS system? What are the limits of GPS technology?*

The current GPS system is accurate, considering that it is operating on technology that is over thirty years old. Accuracy of these systems is dependent on Rubidium atomic clocks that are onboard satellite platforms. These clocks may limit the accuracy of GPS technology; the Galileo project, developed by scientists in the European Union, will send up satellites with clocks that are ten times more accurate than current technology.

3. *Based on what you learned in the video, why do you think the U.S. Navy has decided to reinstate celestial navigation? Explain.*

The U.S. Navy is reinstating celestial navigation as a means to diversify its navigation techniques for its officers, in the event that GPS systems are compromised by a security threat or a technological failure. This is wise, as technology is always being undermined, whether it be by hackers or obsolescence of technology.

## Google Earth Questions

GOOGLE EARTH 1.1 *What are the precise latitude and longitude of the U.S. Capitol building?*

38° 53' 22.73" N 77° 00' 31.79" W

GOOGLE EARTH 1.2 *What characteristics of site and situation are visible in an aerial view of New Orleans?*

Site is low-lying area along the Mississippi River. Situation is near the mouth of the river where it flows into the Gulf of Mexico.

GOOGLE EARTH 1.3 *Fly to Spring Valley, Nevada. Click on the time slider to view historical imagery. How have the properties of distribution of Spring Valley, Nevada, changed over time?*

Density: the site was undeveloped desert in the 1950s and 1960s, and density started to increase in the 1970s. Concentration: housing is clustered on the north side of the image. Pattern: subdivisions have rectangular shapes inside curved shapes.

GOOGLE EARTH 1.4 *How many dams do you see along the southwestern coast of the Netherlands, in the vicinity of the town of Stellendam?*

Three.

## Resources

### Zillow ([www.zillow.com](http://www.zillow.com))

Zillow's mapping interface demonstrates some of the increasingly sophisticated geographic information available over the Internet. Zillow uses data from property records, street addresses, and sales histories to create estimates of property values. This site can be used to demonstrate a number of geographic concepts in addition to the uses of GIS. For example, amenities and/or disamenities are shown to have an influence on property values.

Not all locations are available on this service, but a view of the United States as a whole is an immediately engaging demonstration of how geography matters, as median prices on houses in Midwestern states are significantly lower than east or west coast states.

## **Connections between Chapters**

Chapter 1 does not spend much time introducing the structure and organization of the book, which allows for your own organization. Emphasizing the overarching structure of the book may help your students to approach the subject as holistic rather than just one chapter at a time.

The concepts in Chapter 1 lay the foundations for the remainder of the text. Especially important in Chapter 1 is the vocabulary associated with key geographic concepts, as the concepts associated with distribution, spatial association, and regions recur throughout the text.

Another fundamental concepts introduced with culture is the division between more and less developed countries. This idea is continued in the first paragraphs of Chapter 2. You can reinforce these concepts by providing previews for future chapters. You can also emphasize these concepts by explicitly referring back to the definition when they occur in subsequent chapters.

An overarching theme throughout the text and frequently referenced in the beginning of each chapter is the tension between forces of globalization and attempts to preserve local diversity. Each chapter introduction also references places, regions, where and why questions of geography, and spatial connections.