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FIGURE 1-1

Nature and culture, entwined in geography. The Tuscany region in the northwestern corner of peninsular Italy contains some of the most elegant cultural landscapes in the world with its rolling hills, contoured grain fields, olive groves, and vineyards.



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Introduction: World Regional Geography

IN THIS CHAPTER

- The power of maps
- The spatial order of the world
- Persistent cultural diversity
- Geopolitics and the specter of terrorism
 - Technology and geography
- The challenge of sustainable development
 - Widening global inequalities
 - The threats of global climate change
- Migrants and refugees in an unequal world

CONCEPTS, IDEAS, AND TERMS

Mental maps [1]	Relative location [11]	Global climate change [22]	Sustainable development [33]
Cartography [2]	Formal region [12]	Anthropocene [23]	Inclusive development [34]
Geographic information system (GIS) [3]	Spatial system [13]	Population distribution [24]	Global core [35]
Geospatial data [4]	Hinterland [14]	Urbanization [25]	Global periphery [36]
Spatial perspective [5]	Functional region [15]	Megacity [26]	Core–periphery relationship [37]
Scale [6]	Natural landscape [16]	Cultural landscape [27]	Core area [38]
Geographic realm [7]	Continental drift [17]	State [28]	Uneven development [39]
Transition zone [8]	Tectonic plate [18]	Sovereignty [29]	Globalization [40]
Region [9]	Pacific Ring of Fire [19]	European state model [30]	Migration [41]
Absolute location [10]	Climate [20]	Geopolitics [31]	
	Holocene [21]	Development [32]	

What are your expectations as you open this book? You have signed up for a course that will take you around the world to try to understand how it functions today. You will discover how interesting and challenging the discipline of geography is. We hope that this course, and this book, will open new vistas, bring new perspectives, raise your awareness of place, and help you navigate our increasingly complex and often daunting world.

You could not have chosen a better time to study geography. The world is changing on many fronts and is doing so ever faster in response to the rapid advancement of communication technologies. The world truly is “shrinking,” and the likelihood has never been greater that your professional career will be taking you to places far from home.

Moreover, the United States is still the world’s biggest economy, with political influence to match. Intentionally or not, the United States is affecting nations and peoples, lives and livelihoods, from pole to pole. That power confers on Americans a responsibility to learn as much as they can about those places, nations, and livelihoods, so that the decisions of their government representatives are well informed. But in this respect, the United States is no superpower. Geographic literacy is a measure of international comprehension and awareness, and Americans’ geographic literacy ranks low. That is a liability, for both the United States and the rest of the world, because such geographic fogginess afflicts not only voters but also the representatives they elect, from local school boards to the federal government.

A World on Maps

Just a casual glance at the pages that follow reveals a difference between this and other textbooks: there are almost as many maps as there are pages. Geography is more closely identified with maps than any other discipline, and we urge you to give as much (or more!) attention to the maps in this book as you do to the text. It is often said that a picture is worth a thousand words, and the same applies to maps. When we write “see Figure XX,” we really mean it—and we hope that you will get into the habit. We humans are territorial creatures, and the boundaries that fence off our 200 or so countries reflect our divisive ways. Other kinds of borders—between religions, languages, wealth, and poverty—partition our planet as well. When political and cultural boundaries are at odds, there is nothing like a map to summarize the circumstances. Just look, for example, at the map of the African Transition Zone in Chapter 7: this corridor’s turbulence and challenges are steeped in geography.

Maps in Our Minds

All of us carry in our minds maps of the world around us: the apartment building or house we live in, the streets nearby, the way to school or workplace, the general layout of our hometown or city. You will know what lane to use when you turn into a shopping mall, or where to park at the movie theater. You can probably draw from memory a pretty good map of your hometown.

These **mental maps** [1] allow you to navigate your activity space with efficiency, predictability, and safety. When you arrived as a first-year student on a college or university campus, a new mental map would have started forming. At first you needed the navigation tool on your smartphone or a hard-copy map to find your way around, but soon you dispensed with that because your mental map became sufficient. And it will continue to improve as your activity space expands.

If a well-formed mental map is useful for decisions in daily life, then an adequate mental map is surely indispensable when it comes to decision making in the wider world. You can give yourself an interesting test. Choose some part of the world beyond North America in which you have an interest or about which you have a strong opinion—for example, Israel, Iran, Russia, North Korea, or China. On a blank piece of paper, draw a map that reflects your impression of the regional layout there: the country, its neighbors, its internal divisions, major cities, water bodies, and so forth. That is your mental map of the place. Put it away for future reference, and try it again at the end of this course. You will have proof of your improved mental-map inventory.

Mapping Revolutions

The maps in this book show larger and smaller parts of the world in various contexts. Some depict political configurations; others display ethnic, cultural, economic, or environmental features. **Cartography** [2] (the making of maps) has undergone a dramatic and continuing technological revolution. Earth-orbiting satellites equipped with remote-sensing technology (special on-board sensors and imaging instruments) transmit remotely sensed information to computers on the surface, recording the expansion of deserts, the shrinking of glaciers, the depletion of forests, the growth of cities, and myriad other geographic phenomena. Earthbound computers possess ever-expanding capabilities not only to organize this information but also to display it graphically. This allows geographers to develop a **geographic information system** or **GIS** [3], bringing geospatial data to a monitor that would have taken months to assemble just three decades ago (see **Box 1-1**).

A parallel map revolution is embodied in the astounding proliferation of navigation systems in cars and on mobile phones. Smartphones enable the use of maps on the go, and many of us, in the developed world at least, have already

Box 1-1 Technology & Geography

Geospatial Data: Understanding Our World

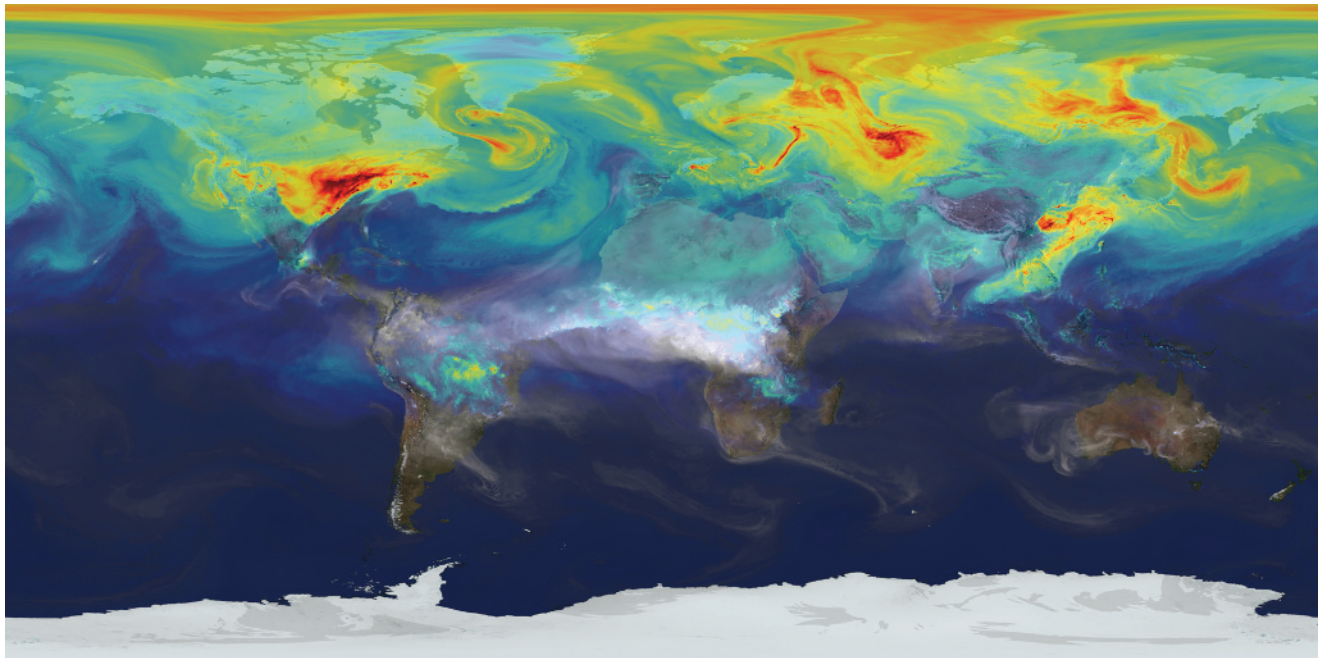
It is estimated that approximately 80 percent of all data contain geographic information that can be mapped. Moreover, the technologies that we use daily, from our automobiles to our cell phones to the Internet, are also aware of our location, and sometimes share it with others without our knowledge. Advances in mapping technology that make use of **geospatial data** [4] are driving innovations such as self-driving cars and trucks; enabling smart cities to improve sustainability; and permitting scientists to monitor the causes and consequences of global environmental change.

The National Aeronautics and Space Administration—NASA—builds instruments and launches satellites to collect and analyze data about the Earth and beyond. By coupling location information to data on wind speed, pollution, and atmospheric conditions, a more complete picture of the Earth's atmospheric dynamics can be obtained. Computer simulations

using such big geospatial datasets reveal temporal and regional variations in the amount of carbon dioxide (CO₂) present in the atmosphere, as well as how pollutants and other emissions (e.g., smoke) travel across North America, China, and Europe.

The image below is a single frame taken from a movie that shows how CO₂ emissions travel around the world. The image shows the situation in January. Emissions of CO₂ (increasing intensities shown from yellow to orange to red) are most visible in the winter months of the northern hemisphere. The integration of geospatial data, technology, and geography increases our understanding of climate change, and can also inform how we respond to this critical issue.

Access your WileyPLUS Learning Space course to interact with a dynamic version of this map and to engage with online exercises and questions.



NASA's Goddard Space Flight Center

become dependent on them to traverse cities, find a store or restaurant, even to move around shopping malls. While the personalized maps on our smartphones allow us to navigate more efficiently, the maps in this book are aimed at better understanding the world and its constituent parts.

Satellites—even spy satellites—cannot record everything that occurs on the Earth's surface. Sometimes the borders between ethnic groups or cultural sectors can be discerned by satellites—for example, in changing house types or religious shrines—but this kind of information tends to require

on-the-ground verification through field research and reporting. No satellite view of Iraq could show you the distribution of Sunni and Shi'ite Muslim adherents. Many of the boundaries you see on the maps in this book cannot be observed from space because long stretches are not even marked on the ground. So the maps you will be “reading” here have their continued uses: they summarize complex situations and allow us to begin forming durable mental maps of the areas they represent.

There is one other point we should make that is especially important when it comes to world maps: never forget that the

world is a sphere, and to project it onto a two-dimensional flat surface must necessarily entail some very significant distortions. Try peeling an orange and flattening the entire peel on a surface—you will have to tear it up and try to stretch it in places to get the job done. Take a look at **Figure 1-1** and note how the Atlantic Ocean and other segments of the planetary surface are interrupted. You can produce a map like this in many different ways, but you will always end up distorting things. When studying world maps, there is nothing like having a globe at hand to remind you of our three-dimensional reality.

Geography's Perspective

Geography is sometimes described as the most interdisciplinary of disciplines. That is a testimonial to geography's historic linkages to many other fields, ranging from geology to economics and from sociology to environmental science. And, in some ways, geography is in the lead because interdisciplinary studies and research are now more prevalent than ever.

Most disciplines focus on one key theme: economics is about money; political science is about power; psychology is about the mind; biology is about life forms. Geography is about the explanation of space on the Earth's surface, also referred to as terrestrial space. Social space (cities, buildings, political boundaries, etc.) as well as natural space (climates, terrain, vegetation, etc.) are not randomly configured. Instead, there generally prevails a particular order, regularity, even predictability about the ways in which space is organized. Sometimes it is the deliberate work of human beings, and sometimes it is the work of nature, but both produce specific patterns. Geographers consider these spatial patterns and processes as not only interesting but also crucial to how we live and how we organize our societies. This **spatial perspective [5]** has defined geography from its beginning.

Environment and Society

There is another connection that binds geography and has done so for centuries: an interest in the relationships between human societies and the natural environment. Geography lies at the intersection of the social and natural sciences and integrates perspectives from both, being the only discipline to do so explicitly. This perspective comes into play frequently: environmental modification is in the news on a daily basis in the form of worldwide climate change, but this current surge of global warming is only the latest phase of endless atmospheric and ecological fluctuation. Geographers are involved in current environmental issues not only by considering climate change in the context of the past, but also by looking carefully at the implications of global warming for human societies. Geographers are acutely aware that

human beings will always be part of nature, no matter how far technology advances.

More generally, think of this relationship between humans and their environment as a two-way street. On one hand, human beings have always had a transformative effect on their natural surroundings, from the burning of forests to the creation of settlements. On the other hand, humans have always been heavily dependent on the natural environment, their individual and collective behaviors very much a product of it. There are so many examples that it is hard to know where to begin or when to end: we eat what nature provides, and traditional diets vary regionally; rivers allow us to navigate and connect with other peoples—or they serve as natural boundaries like the Rio Grande; wars are fought over access to water or seaports; landlocked countries seem to have different global connections than islands; and so forth.

Spatial Patterns

Geographers, therefore, need to be conversant with the location and distribution of salient features on the Earth's surface (**Fig. 1-2**). This includes the natural (physical) world, simplified in Figure 1-1, as well as the human world; our inquiry will view these in temporal (historical) as well as spatial perspective. The spatial structure of cities, the layout of farms and fields, the networks of transportation, the configurations of rivers, the patterns of climate—all these form part of our investigation. As you will find, geography employs a comprehensive spatial vocabulary with meaningful terms such as *area*, *distance*, *direction*, *clustering*, *proximity*, *accessibility*, and many others that we will encounter in the pages ahead. For geographers, some of these terms have more specific definitions than is generally assumed. There is a difference, for example, between *area* (surface) and *region*, between *boundary* and *frontier*, and between *place* and *location*. Sometimes, what at first may seem to be simple ideas turn out to be rather complex concepts.

Scale and Scope

One very prominent term in the geographic vocabulary is **scale [6]**. Whenever a map is created, it represents all or part of the Earth's surface at a certain level of detail. Obviously, Figure 1-1 displays a very low level of detail; it is little more than a general impression of the distribution of land and water as well as lower and higher elevations on our planet's surface. A limited number of prominent features such as the Himalayas and the Sahara are named, but not the Pyrenees Mountains or the Nile Delta. At the bottom of the map you can see that one inch at this scale must represent about 1650 miles of the real world, leaving the cartographer little scope to insert information.

A map such as Figure 1-1 is called a *small-scale* map because the ratio between map distance and real-world distance,



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FIGURE 1-2 **Interactive** This map is an assemblage of nighttime satellite images that show the dominance of electric lighting in certain parts of the world and darkness in others. What does this spatial distribution suggest about the geography of development?

expressed as a fraction, is very small at 1:103,750,000. Increase that fraction (i.e., zoom in), and you can represent less territory—but also enhance the amount of detail the map can exhibit. In **Figure 1-3**, note how the fraction increases from the smallest (1:14,600,000) to the largest (1:14,500). San Francisco is just a dot on Map A but an urban area on Map C. Does this mean that world maps like Figure 1-1 are less useful than larger-scale maps? It all depends on the purpose of the map. In this chapter, we often use world maps to show global distributions as we set the stage for the more detailed discussions to follow. In later chapters, the scale tends to become larger as we focus on smaller areas, even on individual countries and cities. But whenever you read a map, be aware of the scale because it is a guide to its utility.

The importance of the scale concept is not confined to maps. Scale plays a fundamental role in geographic research and in the ways we think about geographic problems—scale in terms of *level of analysis*. This is sometimes referred to as *operational scale*, the scale at which social or natural processes operate or play out. For instance, if you want to investigate the geographic concentration of wealth in the United States, you can do so at a range of scales: within a neighborhood, a city, a county, a State,* or at the national level. You choose the scale

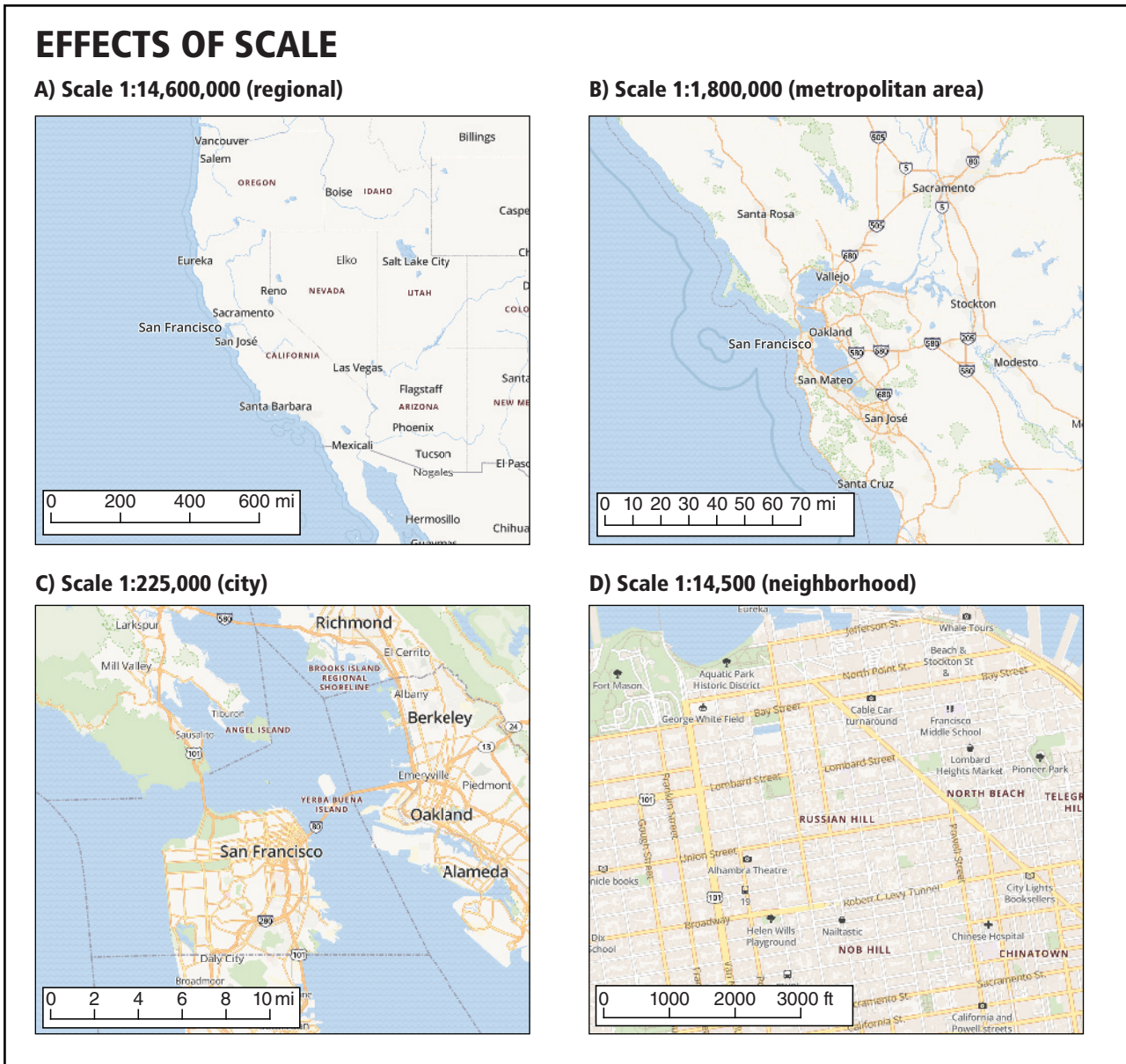
*Throughout this book we will capitalize State when this term refers to an administrative division of a country: for example, the U.S. State of Ohio or the Australian State of New South Wales. Since this term is also synonymous with country (e.g., the state of Brazil), we use the lower case when referring to such a national state.

that is the most appropriate for your purpose, but it is not always that straightforward. Suppose you had to study patterns of ethnic segregation: what do you think would be the most relevant scale(s)?

In this book, our main purpose is to understand the geography of the world at large and how it works, and so, inevitably, we must deal with broad spatial entities. Our focus is on the world's realms and on the main regions within those realms, and in most cases we will have to forgo analyses at a finer scale. For our purposes, it is the big picture that matters most.

World Geographic Realms

Ours is a globalized, interconnected world, a world of international trade and travel, migration and movement, tourism and television, financial flows and Internet traffic. It is a world that, in some contexts, has taken on the properties of a “global village”—but that village still has its neighborhoods. Their names are Europe, South America, Southeast Asia, and others familiar to us all. Like the neighborhoods of a city or town, these global neighborhoods may not have sharply defined borders, but their persistence, after tens of thousands of years of human dispersal, is beyond doubt. We call such global neighborhoods **geographic realms** [7]. Each of the realms possesses a particular combination of environmental, cultural, and organizational properties.



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FIGURE 1-3 Interactive

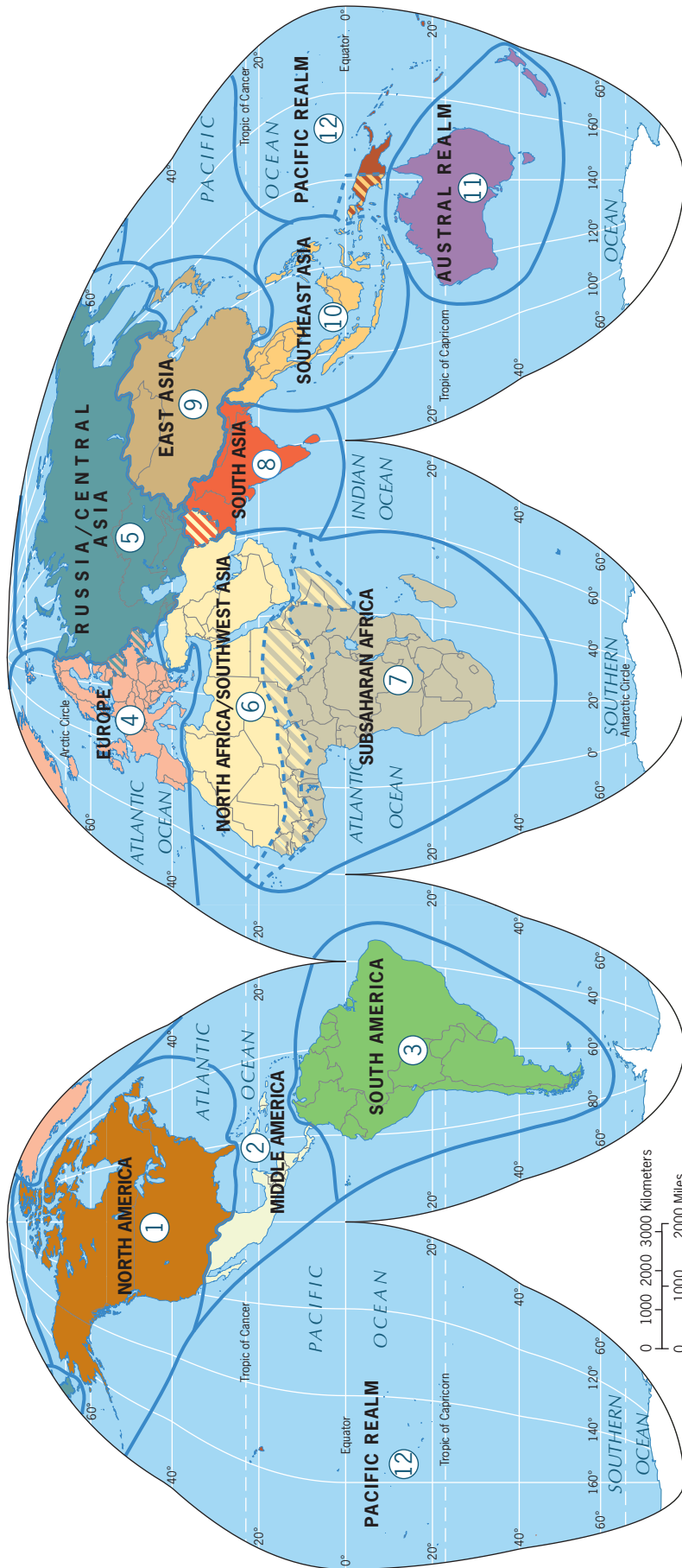
These blended, characteristic qualities are imprinted on the landscape, giving each realm its own traditional attributes and social settings. As we come to understand the human and environmental makeup of these geographic realms, we learn not only where they are located but also why they are located where they are (a central question in geography), how they are constituted, and what their future is likely to be in our fast-changing world. Figure 1-4, therefore, forms the overall framework for our investigation in this book.

Criteria for Geographic Realms

The existence and identification of world geographic realms depend on a combination of factors. Our world consists of a highly complex and variable environment of large and small

continents, enormous oceans and countless waterways, innumerable islands, diverse habitats and cultures, and intricate political geographies. What constitutes a realm depends on the circumstances, but we can still identify three main sets of criteria that apply to all realms:

- **Physical and Human** Geographic realms are based on sets of spatial criteria. They are the largest units into which the inhabited world can be divided. The criteria on which such a broad regionalization is based include both physical (i.e., natural) and human (or social) yardsticks. For instance, South America is a geographic realm because physically it is a continent and culturally it comprises comparable societies. The realm called South Asia, on the other hand, lies on a Eurasian landmass shared by several other geographic realms; high mountains, wide



WORLD GEOGRAPHIC REALMS

- ① NORTH AMERICA
- ② MIDDLE AMERICA
- ③ SOUTH AMERICA
- ④ EUROPE
- ⑤ RUSSIA/CENTRAL ASIA
- ⑥ NORTH AFRICA/SOUTHWEST ASIA

- ⑦ SUBSAHARAN AFRICA
- ⑧ SOUTH ASIA
- ⑨ EAST ASIA

- ⑩ SOUTHEAST ASIA
- ⑪ AUSTRAL REALM
- ⑫ PACIFIC REALM

FIGURE 1-4

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deserts, and dense forests combine with a distinctive social fabric to create this well-defined realm centered on India.

- **Functional** Geographic realms are the result of the interaction of human societies and natural environments, a *functional* interaction revealed by farms, mines, fishing ports, transport routes, dams, bridges, villages, and countless other features that mark the landscape. According to this criterion, Antarctica is a continent but not a geographic realm.
- **Historical** Geographic realms represent the most comprehensive and encompassing definition of the great clusters of humankind in the world today. China lies at the heart of such a cluster, as does India. Most of Africa constitutes a geographic realm from the southern margin of the Sahara (an Arabic word for desert) to the Cape of Good Hope and from its Atlantic to its Indian Ocean shores. Geographic realms are generally defined on the basis of physical features, but they are also the product of historical evolution.

Figure 1-4 displays the twelve world geographic realms based on these criteria. As we will show in greater detail later, waters, deserts, and mountains as well as cultural and political shifts mark the borders of these realms. We shall discuss the positioning of these boundaries as we examine each realm.

Delineating Realms: Boundaries and Transition Zones

Oceans and seas are the most common natural boundaries of the world's realms, such as the South Atlantic to Subsaharan Africa's west or the North Atlantic to North America's east. But where two geographic realms meet, **transition zones** [8], not sharp boundaries, often mark their contacts.

We need only remind ourselves of the border zone between the geographic realm in which most of us live, North America, and the adjacent realm of Middle America. The line in Figure 1-4 coincides with the boundary between Mexico and the United States, crosses the Gulf of Mexico, and then separates Florida from Cuba and the Bahamas. But Hispanic influences are strong in North America north of this boundary, and the U.S. economic influence is strong south of it. The line, therefore, represents an ever-changing zone of regional interaction. Again, there are many ties between South Florida and the Bahamas, but the Bahamas resemble a Caribbean more than a North American society. On the other hand, metropolitan Miami has so many ethnic Cuban residents that it is sometimes referred to as the second-largest Cuban city after Havana.

In Africa, the transition zone from Subsaharan to North Africa is so wide and well defined that we have put it on the world map; elsewhere, transition zones tend to be narrower and less easily represented. In the third decade of this

century, such countries as Belarus (between Europe and Russia/Central Asia) and Afghanistan (between Southwest Asia and South Asia) lie in inter-realm transition zones. Remember, over much (though not all) of their length, borders between realms are zones of regional change.

Transition zones are fascinating spaces: it is almost as if they rebel against a clear ordering of the world's geography. They remind us that the world is a restless and contested place with shifting boundaries and changing geographic fortunes. They challenge the geographer, and, above all, they underscore just how complex the study of geography is.

Geographic Realms: Dynamic Entities

Had we drawn Figure 1-4 before Columbus made his voyages beginning in 1492 (and assuming we had the relevant geographical knowledge), the map would have looked different: indigenous states and peoples would have determined the boundaries in the Americas; Australia and New Guinea would have constituted a single realm, and New Zealand would have been part of the Pacific Realm. The colonization, Europeanization, and Westernization of the world changed that map dramatically. Since World War II, the world map has been redrawn as a result of decolonization and the rise and then demise of the Cold War. That Cold War division between western and eastern Europe has now given way to far-reaching European integration across that geographic realm. Realms and regions are dynamic entities, and their geographies are always subject to change.

Two Types of Realms

The world's geographic realms can be subdivided into two categories. The first are *monocentric* realms that are dominated by a single major political entity, in terms of territory and/or population. North America (United States), Middle America (Mexico), East Asia (China), South Asia (India), Russia/Central Asia (Russia), and the Austral Realm (Australia) are all monocentric realms. They are, in their entirety, heavily influenced by the presence of that single country. It is as if the realm is organized around them.

The second type of realm is *polycentric* in nature. In these, the appearance, functioning, and organization of the realm are dispersed among a number of more or less equally influential regions or countries. Europe, North Africa/Southwest Asia, Subsaharan Africa, and the Pacific Realm all fall into this category. Polycentric realms can be more volatile in some ways, their development determined by the sum of many different parts.

Two of the world's realms are a bit more difficult to categorize. Southeast Asia is a dynamic realm that contains about a dozen countries, some of them regarded as emerging economies. Arguably, Indonesia is becoming the most influential

power, but it would be premature to label this a monocentric realm. The other realm that seems to fall in between is South America. Here it is Brazil that has the biggest population and the largest and most influential economy—but it does not dominate its realm the way the U.S. does.

Of course, some of the dominant powers in the monocentric realms influence events beyond their realm and demonstrate a truly global reach. The United States has dominated world events (though not unchallenged) since World War II, but it soon had to make way for newly emergent powers such as Japan and Germany. Nowadays, China exercises a major influence not just across East and Southeast Asia but around the globe. Our discussion of the various realms will give due consideration to the influence of global trends and outside powers.

Regions Within Realms

The compartmentalization of the world into geographic realms establishes a broad global framework, but for our purposes a more refined level of spatial classification is needed. This brings us to an important organizing concept in geography: the **region [9]**. To establish regions within geographic realms, we need more specific criteria.

Let us use the North American realm to demonstrate the regional idea. When we refer to a part of the United States or Canada (e.g., the South, the Midwest, or the Prairie Provinces), we employ a regional concept—not scientifically but as part of everyday communication. We reveal our perception of local or distant space as well as our mental image of the region we are describing.

But what exactly is, for example, the Midwest? How would you draw this region on the North American map? Regions seem easy to imagine and describe, but they can be difficult to outline with precision on a map. You might suggest that, broadly, the Midwest lies between the Ohio River and the Rocky Mountains. Or you might use the borders of States: certain States are part of this region, others are not. Alternatively, you could use agriculture as the principal criterion: the Midwest is where corn and/or soybeans occupy a certain percentage of the farmland. Each method results in a different delimitation; a Midwest based on physical boundaries is different from a Midwest based on State borders or farm production. Therein lies an important principle: regions are devices that allow us to make spatial generalizations, and they are based on criteria to help us construct them. If you were studying the geography of presidential-election politics, then a Midwest region defined by State boundaries would make sense. If you were studying agricultural distributions, you would need a different definition.

Criteria for Regions

Given these different dimensions of the same region, we can identify properties that all regions have in common:

- **Area** To begin with, all regions have *area*. This observation would seem obvious, but there is more to this idea than meets the eye. Regions may be intellectual constructs, but they are not abstractions: they exist in the real world, and they occupy space on the Earth's surface.
- **Boundaries** It follows that regions have *boundaries*. Occasionally, nature itself draws sharp dividing lines, for instance, along the crest of a mountain range or along a coast. More often, regional boundaries are not self-evident, and we must determine them using criteria that we establish for that purpose. For example, to define a cultural region, we may decide that only areas where more than 50 percent of the population belong to a particular religion or speak a certain language qualify to be part of that region.
- **Location** All regions also possess *location*. Often the name of a region contains a locational clue, as in Amazon Basin or Indochina (a region of Southeast Asia lying between India and China). Geographers refer to the **absolute location [10]** of a place or region by providing the latitudinal and longitudinal extent of the region with respect to the Earth's grid coordinates. A more useful measure is a region's **relative location [11]**, that is, its location with reference to other regions. Again, the names of certain regions reveal aspects of their relative locations, as in *Mainland Southeast Asia* and *Equatorial Africa*.
- **Homogeneity** Many regions are marked by a certain *homogeneity* or sameness. Homogeneity may lie in a region's cultural properties, its physical characteristics, or both. Siberia, a vast region of northeastern Russia, is marked by a sparse human population that resides in widely scattered small settlements of similar form, frigid climates, extensive areas of permafrost (permanently frozen subsoil), and cold-adapted vegetation. This dominant uniformity makes it one of Russia's natural and cultural regions, extending from the Ural Mountains in the west to the Pacific Ocean in the east. When regions display a measurable and often visible internal homogeneity, they are called **formal regions [12]**. But not all formal regions are visibly uniform. For instance, a region may be delimited by the area in which, say, 90 percent or more of the people speak a particular language. This cannot be seen in the landscape, but the region is a reality, and we can use that criterion to draw its boundaries accurately. It, too, is a formal region.
- **Regions as Systems** Other regions are marked not by their internal sameness but by their functional integration—that is, by the way they work. These regions are defined as **spatial systems [13]** and are formed by the areal extent of the activities that define them. Take the case of a large city with its surrounding zone of suburbs, urban-fringe countryside, satellite towns, and farmlands. The city supplies goods and services to this encircling

zone, and it buys farm products and other commodities from it. The city is the heart, the **core** of this region, and we call the surrounding zone of interaction the city's **hinterland** [14]. But the city's influence wanes along the outer **periphery** of that hinterland, and there lies the boundary of the functional region of which the city is the focus. A **functional region** [15], therefore, is usually forged by a structured, urban-centered system of interaction. It has a core and a periphery.

Interconnections

Even if we can easily demarcate a particular region and even if its boundaries are sharp, that does not mean it is isolated from other parts of the realm or even the world. All human-geographic regions are more or less interconnected, being linked to other regions. As we shall see, globalization is forging ongoing integration and connections among regions around the world. Trade, migration, education, television, computer linkages, and other interactions sometimes blur regional identities. Interestingly, globalization tends to have a seemingly paradoxical effect: in some ways, regions and places become more alike, more homogeneous (think of certain consumption patterns), but in other respects the contrasts can become stronger (for example, a reassertion of ethnic or religious identities).

The Physical Setting

Natural Landscapes

The landmasses of Planet Earth present a jumble of **natural landscapes** [16] ranging from rugged mountain chains to smooth coastal plains (Fig. 1-1). Certain continents are readily linked with a dominant physical feature—for instance, North America and its Rocky Mountains, South America with its Andes and Amazon Basin, Europe with its Alps, Asia with its Himalaya Mountains and massive river basins, and Africa with its Sahara and Rift Valley complex. Physical features have long influenced human activity and movement. Mountain ranges form barriers to movement but have also channeled the spread of agricultural and technological innovations around them. Large deserts similarly form barriers, as do rivers, although rivers also facilitate accessibility and connectivity between people. River basins in Asia still contain several of the planet's largest population concentrations: the advantages of fertile soils and ample water supplies that first enabled clustered human settlement now sustain hundreds of millions in crowded South and East Asia.

As we study each of the world's geographic realms, we will find that physical landscapes continue to play significant roles in this modern world. That is one reason why the study of world regional geography is so important: it puts the human map in environmental as well as regional perspective (see, for example, **Box 1-2**).

Box 1-2 From the Field Notes ...

“On the descent into Tibet's Lhasa Gongga Airport, I have a great view of the Yarlung Zangbo Valley, its braided stream channels gently flowing toward the distant east. The Yarlung Zangbo is the highest major river on Earth, running from the Tibetan Plateau into northeastern India where it joins the mighty Brahmaputra River that continues on to Bangladesh where it empties into the Indian Ocean. It was mid-October and the water levels were low. The landing strip of the airport can be seen in the center-right of the photo, on the south bank. The airport is quite far from Lhasa, the Tibetan capital, located about 62 kilometers (40 mi) to its southwest. Despite major road and tunnel construction, it is still more than an hour's drive. The airport had to be built away from the city and in this widest part of the valley because it allows the easiest landings and takeoffs in this especially rugged terrain. It lies at 3700 meters above sea level (12,100 ft), one of the highest airports in the world.”



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Geology and Natural Hazards

Our planet may be 4.5 billion years old, but it is far from placid. As you read this chapter, Earth tremors are shaking the still-thin crust on which we live, volcanoes are erupting, storms are raging. Even the continents themselves are moving measurably, pulling apart in some areas, colliding in others. Hundreds of thousands of human lives are lost to natural calamities of this sort in almost every decade.

More than a century ago, the German geographer Alfred Wegener used spatial analysis to explain something that is obvious even from a small-scale map like Figure 1-1: the apparent jigsaw-like fit of the landmasses, especially across the South Atlantic Ocean. His theory of **continental drift** [17] held that the landmasses on the map were actually pieces of a supercontinent, *Pangaea*, that existed hundreds of millions of years ago. Today we know that the continents are “rafts” of relatively light rock that rest on slabs of heavier rock known as **tectonic plates** [18] whose movement is propelled by giant circulation cells in the red-hot magma below (when this molten magma reaches the surface through volcanic vents, it is called lava).

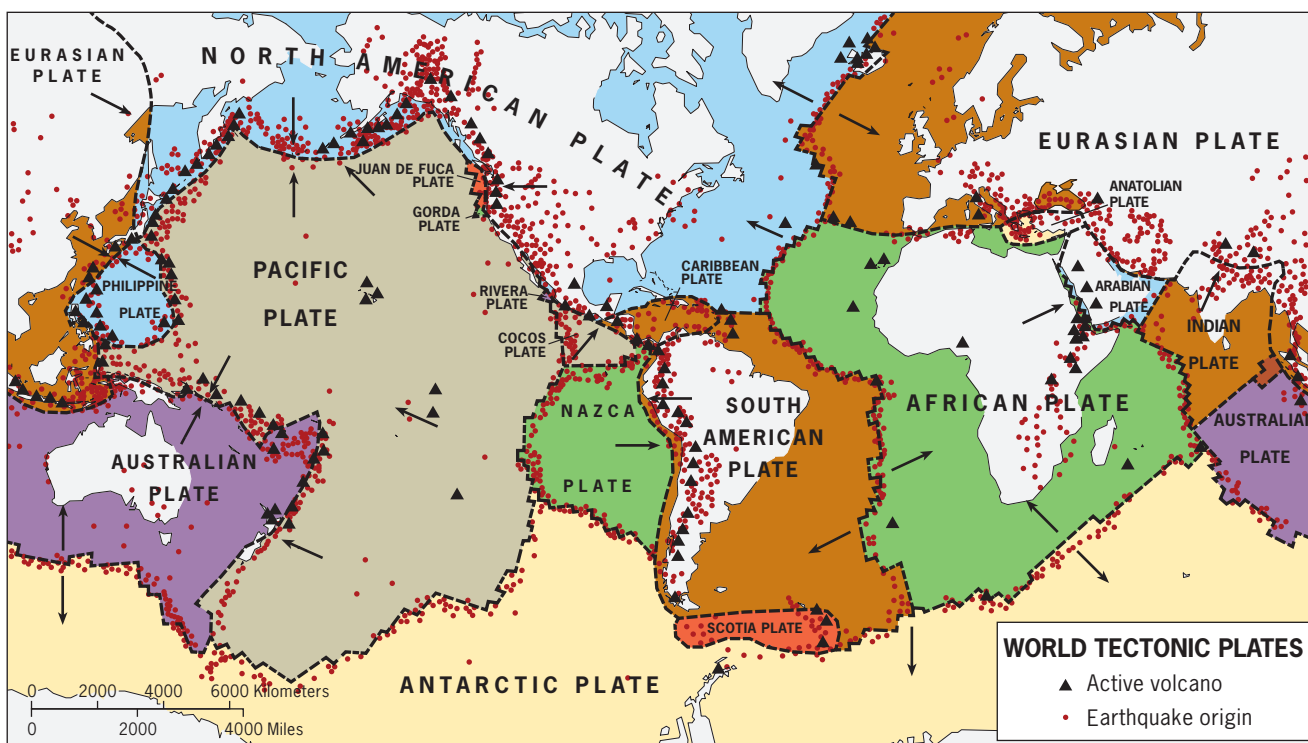
When moving tectonic plates collide, earthquakes and volcanic eruptions result, and the physical landscape is thrown into spectacular relief. **Figure 1-5** shows the outlines of the tectonic plates and the coincidence of earthquakes and volcanic eruptions. The Earth’s largest ocean is almost completely encircled by active volcanoes and earthquake epicenters. Appropriately, this geologic frame is known as

the **Pacific Ring of Fire** [19]. In comparison, Russia, Europe, Africa, and Australia are relatively safe; in other realms, the risks are far greater in one sector than in others (western as opposed to eastern North and South America, for instance). As we shall discover, for certain parts of the world the activity mapped in Figure 1-5 presents a clear and present danger. Some of the world’s largest cities, such as Tokyo and Mexico City, lie in zones that are highly vulnerable to sudden disaster—as indeed occurred with Japan’s huge 2011 earthquake and tsunamis not very far north of Tokyo.

Climate

The prevailing **climate** [20] constitutes a key factor in the geography of realms and regions (in fact, some regions are essentially defined by climate). But climates change: those dominating in certain regions today may not have prevailed there several thousand years ago. Thus any map of climate, including the maps in this chapter, is but a frozen snapshot of our constantly changing world.

Climatic conditions have swung back and forth for as long as the Earth has had an atmosphere. Imagine this: just 18,000 years ago, great ice sheets had spread all the way south to the Ohio River Valley, covering most of the Midwest; this was the peak of a glaciation that had lasted about 100,000 years (**Fig. 1-6**). The Antarctic Ice Sheet was bigger than ever, and even in the tropics great mountain glaciers pushed down valleys and onto plateaus. But then the **Holocene** [21] warming began about 10,000 years ago, the continental and mountain



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FIGURE 1-5



FIGURE 1-6

glaciers receded, and ecological zones that had been squeezed between the advancing ice sheets spread north and south. In Europe, particularly, living space expanded and human numbers grew.

Global Climate Change In the 2020s, we are living in an era of **global climate change** [22], particularly natural global warming that has been accelerated by anthropogenic (human-source) causes. Since the Industrial Revolution, we have been emitting gases that have enhanced nature's **greenhouse effect** whereby the sun's radiation becomes trapped in the Earth's atmosphere. This is leading to a series of atmospheric changes, especially the overall warming of the planet. One important international organization of experts, the Intergovernmental Panel on Climate Change (IPCC), predicts an increase of about 2°C (3.6°F) during the course of the twenty-first century for the world at large, but with significant regional variability (e.g., more at higher latitudes, less at lower latitudes). Precipitation patterns are predicted to become more variable, particularly in regions where they are already seasonal. And without massive intervention through, for example, reductions of CO₂ emissions, the rise in temperature may well exceed 2°C.

This change in mean temperature may seem small but is expected to have significant impacts on global climatic patterns, agricultural zones, and the quality of human lives. With a rise of 2°C, for example, more than half of the world's coral reefs are expected to disappear. The full ramifications are not known, but scenarios are being modeled so that societies can confront the changes that are coming. Leaders of some countries are more skeptical than others, and some have already made greater adjustments than others. One of the most significant consequences of global climate change is that the icecap atop the Arctic Ocean is melting faster than even recent models predicted, with environmental and geopolitical consequences. **Box 1-3** introduces the notion of the **Anthropocene** [23], a new epoch in the evolution of the Earth in which humans seem to have become, for better or worse, the predominant species affecting the natural environment. Climate change figures prominently in the Anthropocene and we will be returning to this issue in various chapters that follow.

Climate Regions We have just learned how variable climate can be, but in a human lifetime most of us see relatively little evidence of this variability—although that

Box 1-3 Global Climate Change: The Anthropocene

About 20 years ago, the Dutch geochemist Paul Crutzen coined the term *Anthropocene* that has come to connote the arrival of a new epoch in the evolution of the Earth system. It indicates that the presence of humans and their influence on the planet has reached “geologic magnitude” in terms of climate, land usage, biodiversity shrinkage, and so on. Think about urbanization, deforestation, air pollution, water consumption, threats to the ozone layer, and the diversion or drying up of rivers. The Anthropocene follows the geologic epoch of the Holocene which started about 12,000 years ago and, before that, the Pleistocene, which lasted about 2.6 million years (see Fig. 1-6). Considering that the Earth is about 4.5 billion years old, geologic time periods unfold at a huge time scale that is hard to reconcile with the identification of a new epoch that is supposed to have arrived merely a few decades ago. But that is precisely why the term *Anthropocene* has resonated: it is not just about science but also a call for action to control what are in some respects devastating human impacts on our planet, including global warming. Indeed, the term is now used widely beyond the discipline of geology, including in geography and other social sciences. Debates concerning the Anthropocene are mostly framed outside geology, particularly in Earth-system science, which focuses on the interactions of human activity and nature along a variety of dimensions. The total Earth system is hugely complex, and it is this complexity—*notwithstanding a wide range of consistently disturbing evidence—that is at the root of (sometimes politically motivated) continued contestation of the notion of the Anthropocene.*



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Well north of the latitude of the Arctic Circle, a small fishing boat slowly makes its way through the melting ice in Disko Bay on Greenland’s west-central coast in the summer of 2017. The shoreline is visible as it protrudes just above the ice (upper right). This is a coastal zone in which several large ice sheets are discharging ever larger slabs of glacial ice into these northern waters of the Atlantic Ocean, where they soon melt and contribute to sea-level rise worldwide. According to the latest estimates, the overall rate of ice depletion from the Greenland Ice Sheet has quadrupled since 2003 as global warming intensified.

may change as a result of global warming. We talk about the weather (the immediate state of the atmosphere) in a certain place at a particular time, but as a technical term *climate* defines the aggregate, total record of weather conditions at a place, or in a region, over the entire period during which records have been kept. **Figure 1-7** may appear rather complicated, but even a glance at this map shows its utility. Devised long ago by Wladimir Köppen and later modified by Rudolf Geiger, it represents climatic regions through a combination of colors and letter symbols. In the legend, note that the **A** climates (rose, gold, and peach) are equatorial and tropical; the **B** climates (tan, yellow) are dry; the **C** climates (shades of green) are temperate, that is, moderate and neither hot nor cold; the **D** climates (shades of purple) are cold; the **E** climates (blue) are frigid; and the **H** climates (gray) prevail in highlands like the Himalayas/Tibetan Plateau and the Andes.

A good way to get a sense of how this map works is to start with a climate with which you are familiar. If you live in the southeastern United States (the large green **C** area extending from near the Great Lakes to Florida), you would feel at home—climatically—in the green area in southeastern South America, in southeastern Australia, and in southeastern China.

If you live in the **B** zones of the U.S. Southwest, either in the tan (Texas) or the yellow (Arizona) area, conditions in much of Australia, southwestern Africa, or the Middle East would be familiar to you. This can even be taken to the city scale. If you enjoy the climate of San Francisco, you will rediscover it in Santiago (Chile), Cape Town (South Africa), Athens (Greece), and Perth (Australia). Details will differ, of course—higher wind incidence or maybe lower overall humidity—but, in general, the similarities will be greater than such differences. And if you live in Canada, you would be prepared for much of Russia and northeastern China.

Even at this relatively small geographic scale, Figure 1-7 can tell us a great deal about entire climate regions. For instance, among the equatorial/tropical (**Af**) climates, the areas with the darkest (rose) shade get the most rain, and it falls year-round, so that this is where tropical rainforests still stand. But in the peach-colored (**Aw**) areas, the rainfall regime is subject to dry seasons, and the vegetation reflects this by its very name: savanna. Much more open space and more widely scattered stands of trees prevail in these tropical grasslands. And a third kind of regime is signified by the **m** after the **A**: for *monsoon*, the annual copious rainy season on which the lives of hundreds of millions of people still depend.

Let us look at the world's climatic regions in greater detail.

Humid Equatorial (A) Climates The humid equatorial, or tropical, climates are characterized by high temperatures all year and by heavy precipitation. In the **Af** subtype, the rainfall arrives in substantial amounts every month; but in the **Am** areas, the arrival of the annual wet **monsoon** (the Arabic word for “season” [see Chapter 9]) marks a sudden enormous increase in precipitation. The **Af** subtype is named after the vegetation that develops there—the tropical rainforest. The **Am** subtype, prevailing in part of peninsular India, in a coastal area of West Africa, and in sections of Southeast Asia, is appropriately referred to as the monsoon climate. A third tropical climate, the **savanna (Aw)**, has a wider daily and annual temperature range and a more sharply seasonal distribution of rainfall.

Savanna rainfall totals tend to be lower than those in the rainforest zone, and savanna seasonality is often expressed in a “double maximum.” Each year produces two periods of increased rainfall separated by pronounced dry spells. In many savanna zones, inhabitants refer to the “long rains” and the “short rains” to identify those seasons; a persistent problem is the unpredictability of the rain’s arrival. Savanna soils are not among the most fertile, and when the rains fail hunger looms. Savanna regions are far more densely peopled than rainforest areas, and millions of residents of the savanna subsist on what they cultivate. Rainfall variability is their principal environmental challenge.

Dry (B) Climates Dry climates are found in both lower and higher latitudes. The difference between the **BW** (true **desert**) and the moister **BS** (semiarid **steppe**) varies but may be taken to lie at about 25 centimeters (10 in) of annual precipitation. Parts of the central Sahara in North Africa receive less than 10 centimeters (4 in) of rainfall. Most of the world’s arid areas have an enormous daily temperature range, especially in subtropical deserts (whose soils tend to be thin and poorly developed). In the Sahara, there are recorded instances of a maximum daytime shade temperature of more

than 50°C (122°F) followed by a nighttime low of less than 10°C (50°F). But the highest temperature ever recorded on the Earth’s surface is not in the Sahara: in 2013, the 56.7°C (134°F) measured in California’s Death Valley a century earlier was officially recognized as the hottest.

Humid Temperate (C) Climates As the map shows, almost all these midlatitude climate zones lie just beyond the Tropics of Cancer and Capricorn (23.5° North and South latitude, respectively). This is the prevailing climate in the southeastern United States from Kentucky to central Florida, on North America’s west coast, in most of Europe and the Mediterranean, in southern Brazil and northern Argentina, in coastal South Africa, in eastern Australia, and in eastern China and southern Japan. None of these areas suffers climatic extremes or severity, but the winters can be cold, especially away from water bodies that moderate temperatures. These areas lie midway between the winter-free equatorial climates and the summer-free polar zones. Fertile and productive soils have developed under this regime, as we will note in our discussion of the North American and European realms.

The humid temperate climates range from moist, as along the densely forested coasts of Oregon, Washington, and British Columbia, to relatively dry, as in the so-called Mediterranean (dry-summer) areas that include not only coastal southern Europe and northwestern Africa but also the southwestern tips of Australia and Africa, central Chile, and Southern California. In these Mediterranean environments, the scrubby, moisture-preserving vegetation creates a natural landscape different from that of richly green western Europe.

Humid Cold (D) Climates The humid cold (or “snow”) climates may be called the continental climates, for they seem to develop in the interior of large landmasses, as in the heart of Eurasia or North America. No equivalent land areas at similar latitudes are found in the Southern Hemisphere; consequently, no **D** climates occur there. Great annual temperature ranges mark these humid continental climates, and cold winters and relatively cool summers are the rule. In



Jacques Jangoux/Alamy Stock Photo



Francesco Riccardo Iacolino/Moment/Getty Images

Contrasting natural landscapes produced by humid-equatorial (**A**) and dry (**B**) climates in the Americas: the tropical-forest-swathed Guiana Highlands of southern Venezuela (left), and the vegetation-free cliffs lining southeastern California’s arid Death Valley (right).

a **Dfa** climate, for instance, the warmest summer month (July) may average as high as 21°C (70°F), but the coldest month (January) might average only 11°C (52°F). Total precipitation, much of it snow, is not high, ranging from about 75 centimeters (30 in) to a steppe-like 25 centimeters (10 in). Compensating for this paucity of precipitation are cool temperatures that inhibit the loss of moisture from evaporation and evapotranspiration (moisture loss to the atmosphere from soils and plants).

Some of the world's most productive soils lie in areas under humid cold climates, including the U.S. Midwest, parts of southwestern Russia and Ukraine, and northeastern China. The winter dormancy (when all water is frozen) and the accumulation of plant debris during the fall balance the soil-forming and enriching processes. The soil differentiates into well-defined, nutrient-rich layers, and substantial organic humus accumulates. Even where the annual precipitation is light, this environment sustains extensive coniferous forests.

Cold Polar (E) and Highland (H) Climates Cold polar (**E**) climates are differentiated into true icecap conditions, where permanent ice and snow keep vegetation from gaining a foothold, and the tundra, which may have average temperatures above freezing up to four months of the year. Like rainforest, savanna, and steppe, the term **tundra** is vegetative as well as climatic, and the boundary between the **D** and **E** climates in Figure 1-7 corresponds closely to that between the northern coniferous forests and the tundra.

Finally, the climates labeled **H**—the unclassified highlands mapped in gray—resemble the **E** climates. High elevations and the complex topography of major mountain systems often produce near-Arctic climates above the tree line, even in the lowest latitudes such as the equatorial section of the high Andes of South America.

Here is an important qualification to keep in mind when studying Figure 1-7: this map is also a still-picture of a changing scene, a single frame from an unspooling film. Global climate never stops changing, and less than a century from now those changes may compel revisions to this map. If current predictions about rising sea levels turn out to be accurate, we may even have to start redrawing some familiar coastlines.

You will find larger-scale maps of climate in several of the regional chapters that follow, but it is always useful to refer back to this Köppen–Geiger map whenever the historical or economic geography of a region or country is under discussion. This world climatic map reflects agricultural opportunities and limitations as well as climatic regimes, and as such helps explain some enduring patterns of human distribution on our planet. We turn next to this crucial topic.

Realms of Population

Earlier we noted that population numbers by themselves do not define geographic realms or regions. Population distributions, and the functioning society that gives them common ground, are more significant criteria. That is why we can identify one geographic

realm (the Austral) with less than 30 million people and another (South Asia) with more than 1.8 billion inhabitants. Neither population numbers nor territorial size alone can delimit a geographic realm. Nevertheless, the map of global population distribution shows some major clusters that are part of certain realms (Fig. 1-8).

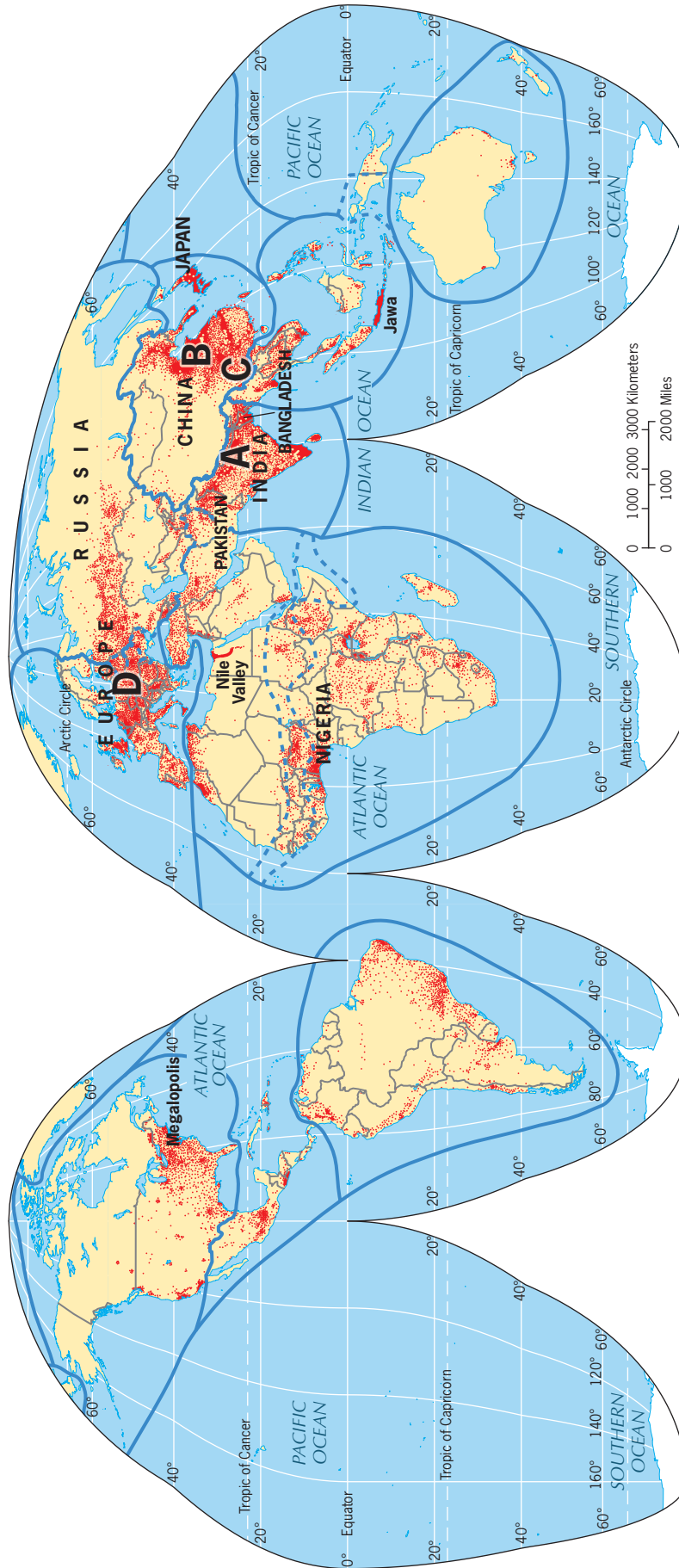
Before we examine these clusters in some detail, remember that the world's human population now rounds off at 7.7 billion (and growing), confined to the landmasses that constitute less than 30 percent of our planet's surface, much of which is arid desert, inhospitable mountain terrain, or frigid tundra. After thousands of years of slow growth, world population during the nineteenth and twentieth centuries grew at an increasing rate. That rate has recently been slowing down, even imploding in some parts of the world. But consider this: it took about 17 centuries following the birth of Christ for the world to add 250 million people to its numbers; now we are adding 250 million about every three years. While the *rate* of population growth has declined in some parts of the world, in absolute terms the global population continues to grow apace and is expected to reach just under 10 billion by 2050.

This raises the important question as to whether there are limits to the Earth's carrying capacity—will there be enough food to go around? That question has become more and more pressing over the past decade due to rapidly rising food prices resulting from increased demand in China and India, a general dietary shift from grains to meat and vegetables, and the use of agricultural resources for the production of biofuels. The actual increase of population is only part of the problem; our growing appetite for certain products is another. And we are not just talking about food—think drinking water, fossil fuels, and minerals as well. Therefore, it seems inconceivable that almost 10 billion people by mid-century could be consuming at the rate we do today in the developed world.

Major Population Clusters

One way to present an overview of the location of people on the planet is to create a map of **population distribution** [24] (Fig. 1-8). As you can see in the map's legend, each dot represents 100,000 people, and the clustering of large numbers of them in certain areas, as well as the near-emptiness of others, is readily evident. By the way, there is a technical difference between population distribution and population density, which is another way of showing where people live. Density maps reveal the number of persons per unit area.

- **South Asia** The *South Asia* population cluster is centered on India and includes its populous neighbors, Pakistan and Bangladesh. This huge agglomeration of humanity focuses on the wide plain of the Ganges River (**A** in Fig. 1-8). South Asia recently became the world's largest population cluster, overtaking East Asia in the early 2010s.
- **East Asia** The *East Asia* population cluster is centered on eastern China and includes the Pacific-facing Asian coastal zone from the Korean Peninsula to Vietnam. Not long ago, we would have reported this as a dominantly rural, farming population, but rapid economic growth and burgeoning urbanization have altered the picture. In China's interior river



WORLD POPULATION DISTRIBUTION

One dot represents 100,000 people

FIGURE 1-8 [Interactive](#)

basins of the Huang (Yellow) and Chang/Yangzi (**B** and **C** on the map), and in the Sichuan Basin between these two letters, most of the people remain farmers. But the booming cities of coastal, and increasingly interior, China are attracting millions of new inhabitants, and in 2011 the Chinese urban population surpassed the 50 percent milestone.

- **Europe** The third-ranking population cluster, *Europe*, also lies on the Eurasian landmass but at the opposite end from China. The European cluster, including western Russia, counts more than 700 million inhabitants, which puts it in a class with the two larger Eurasian concentrations—but there the similarity ends. In Europe, the key to the linear, east-west orientation of the axis of population (**D** in Fig. 1-8) is not a fertile river basin but a zone of raw materials for industry. Europe is among the world's most highly urbanized and industrialized realms, its human agglomeration sustained by factories and offices rather than paddies and pastures.

The three world population concentrations just discussed (South Asia, East Asia, and Europe) account for about 4 billion of the world's 7.7 billion people. No other cluster comes close to these numbers. The next-ranking cluster, eastern North America, is only about one-quarter the size of the smallest Eurasian concentrations. As in Europe, the population in this zone is concentrated in major metropolitan complexes; the rural areas are now relatively sparsely settled.

Toward an Urban World

Geographic realms and regions display varying levels of **urbanization** [25], the proportion of the total population

residing in cities and towns (which globally is estimated around 55 percent today). Some regions are urbanizing far more rapidly than others, a phenomenon we will investigate as we examine each realm. For now, it is important to be aware of the distinction between urbanization level and urban growth rates. The *urbanization level* refers to the proportion of a country's or region's total population living in cities (however defined by national governments). The *urban growth rate*, on the other hand, concerns the growth of the urban population over time, usually on an annual basis. So, for example, the U.S. urbanization level is 82 percent, whereas its yearly urban growth rate is around 1 percent; for Tanzania, the urbanization level is far less, 34 percent, but the urban growth rate is a much higher 5.1 percent. It makes sense that urbanization levels and growth rates are often inversely related: once the percentage of the population already living in cities reaches a certain level, urban growth rates will subside, as has been the case for the United States. Alternatively, when urbanization levels are low, there are ample opportunities for rapid urban growth.

Thus the fastest urban growth rates tend to occur in realms and regions in which a large proportion of the population resides in rural areas, as in Subsaharan Africa as well as South and East Asia. It is also worth noting—in these realms where urbanization levels remain low and urban growth rates are high—that a considerable number of **megacities** [26] have emerged over the past three decades (see **Box 1-4**). These huge urban agglomerations are defined as containing populations of greater than 10 million, and in 2018, 33 of them could be found on the world map. Among the latter, only two are in North America (New York and Los Angeles), whereas eight are located in South Asia and no less than six in China alone.

Box 1-4 From The Field Notes ...

“After a chat with the manager of a high-rise hotel in Mumbai, we are allowed access to the roof in early evening to take shots of the city's mushrooming skyline. In the foreground, waterfront-lining Marine Drive, also known as ‘The Queen's Necklace,’ faces the Arabian Sea as the setting sun shines faintly on some of the low-rise Art Deco apartment blocks that date back to the 1930s. We are at the southern tip of the Mumbai Peninsula, from where the British ruled their South Asian empire during colonial times. Today, the megacity has expanded far beyond this slender peninsula onto the surrounding mainland, and the metropolitan-area population exceeds 23 million. Looking northward, Mumbai's unrelenting densification presents itself as the proverbial concrete jungle.”



Realms of Culture

Try to imagine yourself in northeast Africa, aboard a riverboat on the White Nile, heading upstream (south) from Khartoum, Sudan. The desert sky is blue; the heat is searing. You pass by villages that look much the same: low, square, or rectangular dwellings, some recently whitewashed, others gray, with flat roofs, wooden doors, and small windows. The minaret of a modest mosque may rise above the houses, and there may be a small central square. There is very little vegetation; here and there a hardy palm tree stands in a courtyard. People on the paths wear long white or colored robes and headgear. A few goats lie in the shade, and children are playing on the dusty ground.

All of this is part of Sudan's rural **cultural landscape** [27], the distinctive attributes of a society imprinted on its portion of the world's physical stage. Continue your journey southward on the Nile, and you will soon witness a remarkable transition. Quite suddenly, the square, solid-walled, flat-roofed houses of Sudan give way to the round, wattle-and-thatch, conical-roofed dwellings of South Sudan. You may note that clouds have appeared in the sky: it rains more here, and flat roofs will not do. The desert has yielded to green. Vegetation, natural as well as planted, grows between houses, flanking even the narrow paths. The villages seem less orderly, more varied. You'll see women, often in colorful dresses, carrying water in jars on their heads from a nearby well or the river to their huts. You have traveled from one cultural landscape into another, from Arabized, Islamic Africa to animist/Christian Africa. More broadly, you have crossed the boundary between two geographic realms (see the photo pair below).

Although no geographic realm is marked by only a single cultural landscape, these landscapes can help define both realms and regions. The cultural landscape of the high-rise North American city with its far-reaching suburbs differs from that of Europe; the meticulously organized, terraced paddies of Southeast Asia are unlike anything to be found in the rural cultural landscape of neighboring Australia. Important

variations of cultural landscapes also occur within geographic realms, such as between highly urbanized and dominantly rural (and more traditional) areas, and they can be quite useful in the process of delineating several of the world's regions as well.

The Geography of Language

Language is the essence of culture. Most people tend to feel passionately about their mother tongue, especially when they believe it is threatened in some way. In the United States today, the English Only movement reflects many people's fears that the primacy of English as the national language is under threat as a result of immigration. As we will see in later chapters, some governments try to suppress the languages (and thereby the cultures) of minorities in mistaken attempts to enforce national unity, provoking violent reactions.

In fact, many languages emerge, thrive, and die out over time, and linguists estimate that the number of lost languages is in the tens of thousands—a process that continues. One year from the day you read this, about 25 more languages will have become extinct, leaving no trace. Just in North America, more than 100 native languages have been lost over the past half-century. Some major languages of the past, such as Sumerian and Etruscan, have left fragments in later languages. Others, like Sanskrit and Latin, live on in their modern successors. At present, about 6900 languages remain, half of them classified by linguists as endangered (“hot spots” include the Amazon Basin, the Andes to its west, Siberia, and northern Australia). By the end of this century, the bulk of the world's population will be speaking just a few hundred languages, which means that many millions will no longer be able to speak their ancestral mother tongues.

Scholars have tried for many years to unravel the historic roots and branches of the global “language tree,” and their debates continue. Geographers trying to map the outcome of this research keep having to modify the pattern, so you should take **Figure 1-9** as a work in progress, not the final



PATRICK BAZ/AFP Creative/Getty Images



Cultura Travel/Philip Lee Harvey/Getty Images

Contrasting settlement landscapes in Sudan. To the left, the town of Umm Dawban just north of the capital, Khartoum, which stands in sharp contrast with those in South Sudan (right, the village of Nyaro just south of the Sudan-South Sudan border).

product. At minimum, there are some 15 so-called **language families**, groups of languages with a shared but usually distant origin. The most widely distributed language family, the Indo-European (shown in yellow on the map), includes English, French, Spanish, Russian, Persian, and Hindi. This encompasses the languages of European colonizers that were carried and implanted worldwide, English most of all.

Today, English serves as the national or official language of many countries and outposts, and it remains the **lingua franca** (common second language) of government, commerce, and higher education in many multicultural societies (see Fig. 1-9 inset map). In the postcolonial era, English became the chief medium of still another wave of ascendancy now in progress: globalization. But even English may eventually go the way of Latin, morphing into versions you already can hear as you travel to different parts of the world. For example, in Hong Kong, Chinese and English are producing a local “Chinglish” you may hear in the first taxi you enter. In Lagos, Nigeria, where most of the people are culturally and ethnically Yoruba, a language called “Yorlish” is emerging. It is hard to keep up with the constant evolution of language.

Landscapes of Religion

Religion played a crucial role in the emergence of ancient civilizations and has shaped the course of world history. Hinduism, for instance, was one of the earliest religions that helped shape an entire realm (South Asia). Later, Buddhism, Christianity, and Islam emerged as major belief systems, often splitting up into various branches stretching across realms and regions. **Figure 1-10** shows the current distribution of world religions. Our world has become more complicated in recent times, and its patterns of religion are increasingly diffuse and dynamic. But today, we still find that geographic realms are often dominated by a single religion or family of religions:



NurPhoto/Getty Images

Kumbh Mela (Allahabad, India, February/March 2019) is the world’s largest religious festival, hosting 120 million people in a six-week period. It is held every three years, between four alternating holy places, of which Allahabad (now officially renamed Prayagraj), at the confluence of the Ganges and Yamuna rivers, is perhaps the most sacred of all. Hinduism is the world’s third-biggest religion, with the preponderance of believers living in India.

Christianity in Europe and the Americas, Islam in North Africa/Southwest Asia, Hinduism in South Asia, and Buddhism in mainland Southeast Asia. But the boundaries are usually fuzzy and frequently take the form of transition zones (e.g., between North and Middle America, and especially between North and Subsaharan Africa).

A World of States

Ours is a world of about 200 countries or **states** [28]. As Figure 1-4 and **Figure 1-11** suggest, geographic realms and regions are mostly assemblages of states, and the borders between them frequently coincide with the boundaries between countries—for example, between North America and Middle America along the U.S.–Mexico border. It is also possible for a realm boundary to cut across a state (Indonesia is one), so that state and realm boundaries do not always concur (see the African Transition Zone in Fig. 1-4).

The political territorial organization of the world within a system of states is based on the notion of **sovereignty** [29]. It is a concept from international law, which means that the government of a state reigns supreme within its borders. Normally, states recognize each other’s sovereignty, but this becomes a matter of contention in times of conflict and war. Think, for example, of the ongoing conflict in which Russia is challenging Ukraine’s sovereignty in that country’s eastern provinces next to the Russian border. Or think of China’s refusal to even consider the possible sovereignty of Taiwan.

The European Origins of the Modern State

In the long course of human history, the modern state is a relatively recent invention, and so is the international system of which it forms the cornerstone. The modern state emerged from other varieties of politico-territorial organization that date back to the earliest complex civilizations. In their studies of ancient history, scholars sometimes use the term *polity* or *proto-state* to indicate the difference. Ever since agricultural surpluses enabled the growth of large and prosperous towns, this was accompanied by the more sophisticated and centralized exercise of power and political organization. From these origins, the earliest states took shape.

It was not until the seventeenth century that European rulers and governments began to negotiate treaties that defined the state in international law. That is why the modern state is quite often described as based on the **European state model** [30], with definitions of nationality and sovereignty. Often, the model assumed that the state and the nation were ideally conterminous, so that a **nation-state** would enclose an ethnically and culturally homogeneous people within a national boundary. That was never truly the case (even France, the “model of models,” had its minorities), and today

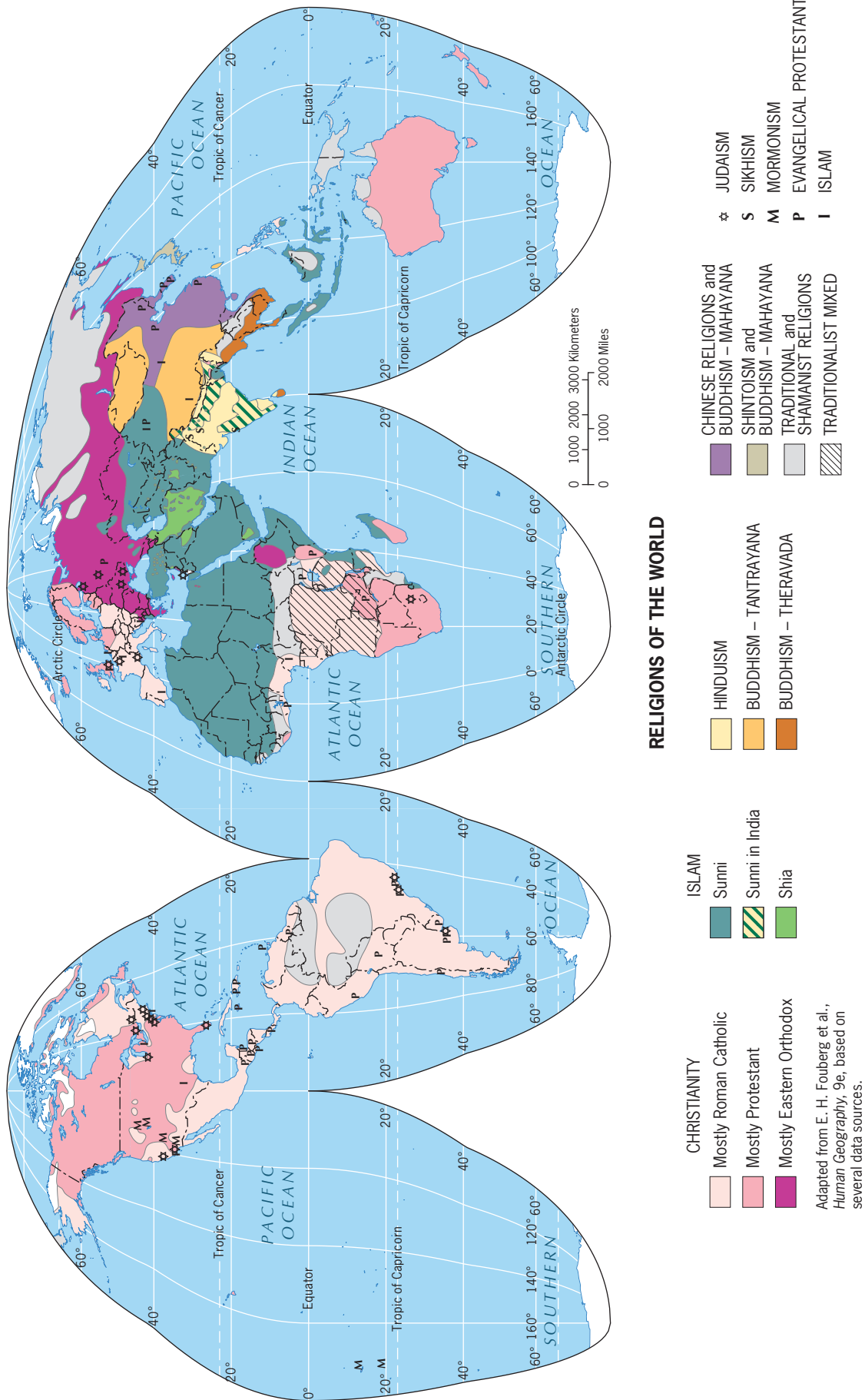


FIGURE 1-10

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the ideal state is defined as a clearly and legally defined territory inhabited by a citizenry governed from a capital city by a representative government. As we shall discover in Chapter 5, not even in Europe itself are all governments truly representative. Nonetheless, the European state model has, for better or worse, been adopted throughout the world.

Although the modern state is a longstanding phenomenon, many states experience external and internal pressures and challenges. For instance, European states are challenged “from above” by the European Union (EU) as member-states transfer some of their power to Brussels (the EU’s headquarters city), mainly because they believe it will be to their economic advantage. States can also be challenged “from below” by ethnic minorities, such as the Kurds in southeastern Turkey, or by regional secessionist movements such as the Catalonians in northeastern Spain.

Power and Geopolitics

As the term **geopolitics** [31] implies, geography plays a major role in the politics of the state, in the international relations among states within realms and regions, and even in warfare and terrorism. Geography does not, of course, explain everything, but it is certainly an essential dimension in the understanding of world politics. A state’s power and influence are related to its size, access to natural resources, location vis-à-vis other states, trading routes, access to waterways, and the like. More than ever today, news reports about conflicts in any part of the world—whether on television, on the websites and hard-copy pages of leading newspapers, or in newsmagazines—are accompanied by maps crucial to the explanation of these clashes.

Even though the role of geography in political affairs can be regarded as fundamental, it certainly does not remain static. Relative geopolitical location itself is subject to change, especially in response to new technologies. For example, states and regions once deemed impregnable because they could not easily be reached by enemies (such as the United States prior to the age of aviation) can swiftly see their invulnerability disappear. It is not hard to imagine how the arrival of long-range missiles, state-of-the-art spy-satellite technology, advances in geospatial and mapping systems, and other high-tech military innovations such as drones can hugely impact a country’s strategic planning and positioning.

The territorial functioning and integrity of many states in this century have further been challenged by the emergence, proliferation, and growing sophistication of terrorist groups. Today’s most heavily contested zones of conflict are found in the North Africa/Southwest Asian realm (e.g., Syria, Iraq, Yemen) where longstanding sectarian disputes have been complicated by the rise of violent, radical organizations such as the Taliban, Al Qaeda, and ISIS. Increasingly, these threats are also being felt far beyond that realm, in places such as western Europe, Russia, and West Africa. You will learn about the geographic dimensions of these and other key conflicts in

the chapters ahead. For now, it is important to realize that the world map of states is far from stable in certain realms and regions, and that states are not the only major geopolitical actors on the global scene.

Geographies of Development

Finally, as we prepare for our study of world regional geography, it is all too clear that realms, regions, and states do not enjoy the same level of prosperity. The field of **economic geography** focuses on spatial aspects of the ways people make their living, and deals with patterns of production, distribution, and consumption of goods and services (see, for instance, **Box 1-5**). As with all else in this world, these patterns reveal significant variation. Individual states report the nature and value of their imports and exports, farm and factory output, and many other economic data to the United Nations and other international agencies. From such information, economic geographers can measure the comparative well-being of the world’s countries. The concept of **development** [32] is used to gauge a population’s economic, social, and institutional growth and overall well-being.

As this definition indicates, the meaning of development is not confined to economics but can be expressed, for example, in access to schools or medical care, democratic institutions, environmental stewardship, social inclusiveness, political freedom, and the quality of governance. Development, therefore, is a broad theme that attracts attention not only from economic geographers but also from geographers who take a more comprehensive approach. In recent years, the dual notions of **sustainable development** [33] and **inclusive development** [34] have emerged as particularly important themes. The first focuses on the long-term viability of economic patterns in relation to the physical environment and natural resources—think of pollution, or finite resources like fossil fuels. The second emphasizes the extent of equal economic (and social) opportunities for different population groups, especially minorities and the poor.

Development in Spatial Perspective

Various schemes to group the world’s states into economic-geographic categories have come and gone, and others will probably arise in the future. For our purposes, the classification scheme used by the World Bank (one of the agencies that monitor economic conditions across the globe) is the most effective. It sorts countries into four categories based on the success of their economies: (1) high-income, (2) upper-middle income, (3) lower-middle income, and (4) low-income. These categories, when mapped, display important regional patterns (see Fig. 1-11). Compare this map to our global framework (Fig. 1-4), and you can see the role of economic geography in the layout of the world’s geographic realms. Also evident are regional contrasts within realms—for instance, between Brazil

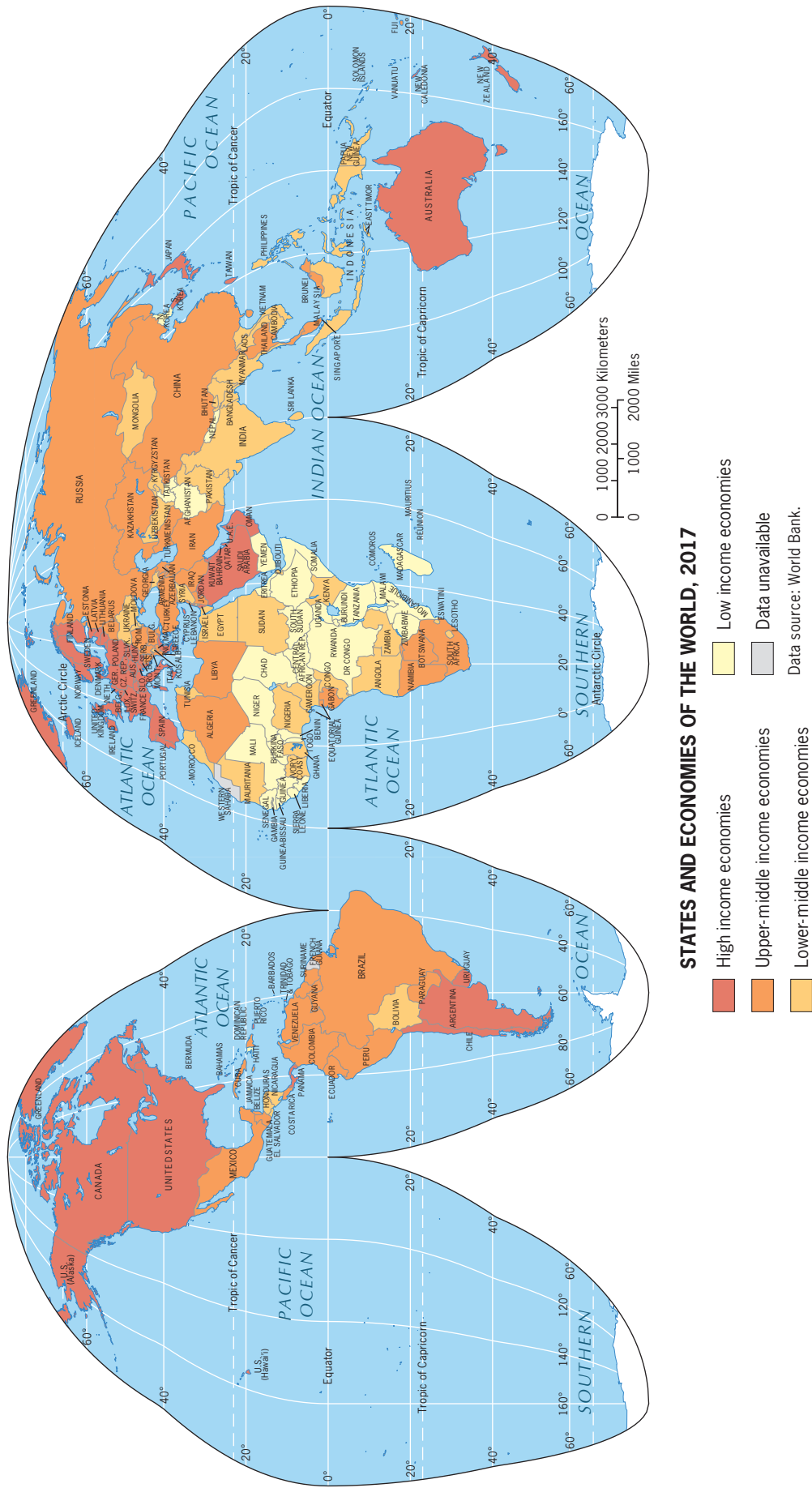


FIGURE 1-11

Box 1-5 From the Field Notes ...

“As I sit enjoying breathtaking views of the spectacular Andean highlands of southern Peru, a farmer slowly comes up the side of the hill with her donkeys. Although incomes for small farmers here are low and life is simple, she exudes an air of confidence and pride; she is at home here, and I am on her turf. She tells me her name is Carmen and when I ask, she says that the donkeys are carrying hay grass to market in the nearby town of Chinchero. Carmen’s family owns a small plot of land on one of these hill-sides, and the donkeys are her main means of transportation. The hay will feed guinea pigs that many rural and small-town Peruvian families keep in their home ... to eat. Guinea pigs are said to be quite tasty, and they are much cheaper than beef as well as a good source of protein. And they can easily be kept around the house until their time comes. Soon she is on her way again, it is probably another hour or so for her to reach Chinchero, down in the valley.”



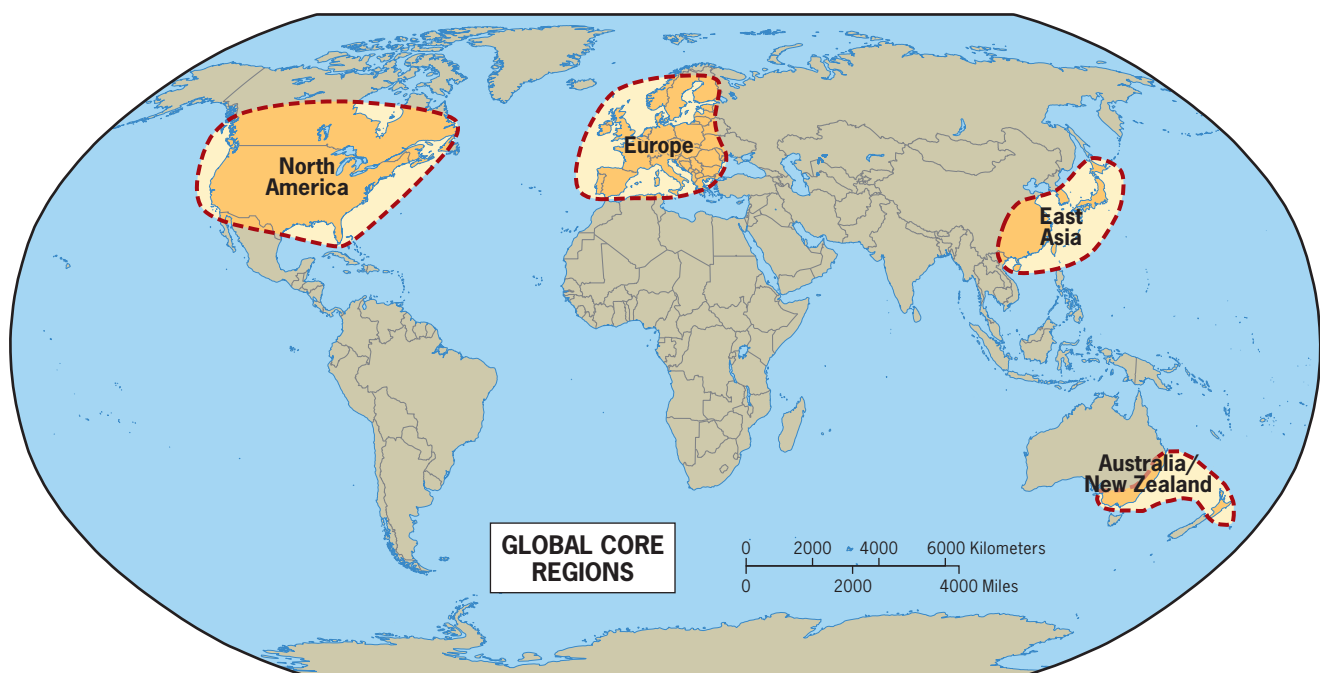
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and its western neighbors, between South Africa and most of the rest of Sub-Saharan Africa, and between west and east in Europe. Thus the geographic scale at which we consider development is of critical importance.

A Complex, Core–Periphery World

The economic success of human societies on the Earth’s surface tends to be concentrated in certain areas while bypassing others. This was true in ancient and more recent historical times, and it is true today. The contemporary world economy—an

integrated, international spatial system—is structured within the framework of a dominant **global core** [35] and subordinate **global periphery** [36]. During the nineteenth century, the core more or less coincided with western Europe, controlling as it did vast areas of the world through its empires. In the twentieth century, the core expanded first to North America and then grew to include Japan, Australia, and New Zealand. By the 1980s, Hong Kong, Singapore, Taiwan, and South Korea had become part of the core as well. And as the twenty-first century opened, the newest entrant stepped forward: Pacific-fronting China. The regions constituting this still-evolving global core are mapped in tan in **Figure 1-12**.



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FIGURE 1-12

Note that the global core is not a contiguous area but rather consists of four dominant regions: North America, Europe, eastern East Asia, and Australia/New Zealand. Moreover, Singapore (not shown in Fig. 1-12) is often considered to be part of the Asian core region as well. Sometimes, the world outside the core is divided into a *periphery* and *semi-periphery*, where the latter comprises countries that occupy somewhat of a middle position between affluence and poverty, between dominance and dependency. Examples of these semi-periphery countries today would be Brazil, South Africa, and Saudi Arabia.

It is also important to keep in mind that **core-periphery relationships** [37] are not limited to the international scale. Countries as well can and do exhibit such patterns at the national scale. China is a particularly good example: its coastal provinces form the core, while the interior and westernmost reaches of the country comprise China's periphery. Except for a few special cases, all countries contain **core areas** [38]. These national cores are most often anchored by the country's capital and/or largest city: Paris (France), Tokyo (Japan), Buenos Aires (Argentina), and Bangkok (Thailand) are only a few notable examples. Larger countries may have more than one core area, such as Australia with its eastern and western coastal cores and intervening periphery. And uneven development also exists at the local scale, especially marking the complex socioeconomic landscapes of urban areas.

The world continues to exhibit major differences in productivity and well-being. One of the most intriguing economic-spatial outcomes of globalization is that a growing number of countries have accelerated their development—but this growth is often confined to specific city-regions, whereas the rest of the country remains quite poor. Figure 1-12, therefore, is provisional: it conveys a broad impression of the global core, but we realize that it is not really a continuous geographic space (and neither is the global periphery). The core-periphery concept is most useful in thinking about the organization of space as well as the geographies of power and dependence. But it is difficult to map precisely, not least because it operates simultaneously at multiple scales. For instance, the United States constitutes part of the global core; its northeastern seaboard anchors the national core area; and New York's Midtown and Lower Manhattan form the core of its largest city.

We also need to add a cautionary note about spatially aggregated statistics. The concept of development, as measured by data that reflect totals and averages for entire national populations, entails certain pitfalls that we should be aware of. When a state's economy is growing as a whole, and even when it is "booming" relative to other states, this does not automatically mean that every citizen is better off and the income of every worker is rising. Averages have a way of concealing regional variability and local stagnation. In very large states such as India and China, it is useful to assess regional, provincial, and even local economic data to discover to what extent the whole country is sharing in development. In the case of India, we should know that the State of Maharashtra (containing the megacity of Mumbai) is far ahead of most other States when it comes to sharing in the national economy. In China, the

coastal provinces of the Pacific Rim still overshadow those of the west. Thus national-level statistics can conceal as much as they reveal, and this is why *inclusive development* is becoming a leading policy goal around the world.

Uneven Development and Spatial Inequalities

Core-periphery relations imply uneven development across space: economic activity tends to cluster around certain location or in certain regions, while others lag behind. The way the global economy works results in **uneven development** [39] and growth at the global scale (for instance, the North American realm is richer and more economically advanced than the South American realm) but also at finer scales. Thus in the United States there is a growing urban-rural divide, where larger metropolitan areas (though not all) gain most employment, production, and consumption, while rural regions lag behind. And a State like Connecticut is substantially more prosperous than a State like West Virginia. At the same time, inequalities are profound (and have been growing) within most metropolitan areas in the United States. We will return to this issue in the chapter on North America and elsewhere in the book.

Globalization

Globalization [40] is fundamentally a geographical process in which spatial relations—economic, cultural, political—shift to the macro-scale. What this means is that what happens in one place has repercussions in places ever more distant—thereby integrating the entire world into a "global village," linked ever more tightly by recent advances in communications and transport technologies. Globalization now comes into our homes via television, computers, and smartphones; news today has never traveled faster, and sometimes even government leaders turn to the Internet on their personal electronic devices to get the latest reports on international events. Note that some places are (much) more globalized and connected than others. Global cities, such as New York, Paris, or Singapore, are major nodes in worldwide networks of production, consumption, trade, and travel (see **Box 1-6**).

Globalization, however, is not all that new. The second half of the nineteenth century, for instance, also witnessed major advances in the intensification of global interdependence. It was particularly affected by such new technologies as the steamship, the railway, and the telegraph, which subsequently were followed by first-generation motor vehicles and aircraft. But with today's newest technologies, the global village is achieving an unprecedented level of long-distance interconnectivity. Accordingly, geography and our knowledge of the world's realms and regions have become more important than ever before in understanding and navigating this transforming macro-spatial reality.

Box 1-6 From the Field Notes ...

“Would you like to float in an ‘infinity pool’ atop a 57-story skyscraper that provides amazing views? You can in Singapore. I spotted this futuristic-looking tower across the water from downtown and thought it would be worth a visit. It turned out to be the massive Marina Bay Sands Hotel (developed by the Sands Corporation of Las Vegas) that opened for business in 2010. Singapore is one of the best examples of a city propelled into prominence by the forces of globalization. Located strategically on one of the world’s busiest shipping lanes (the Strait of Malacca) and possessing a fine harbor, this minuscule city-state was bound to benefit from expanding world trade. It now boasts the busiest transshipment port on Earth, and the city has also become a shopping magnet for elites all across the Southeast Asian realm. Like most ‘world-cities,’ Singapore is a hub of both production and consumption.”



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Globalization and Environmental Challenges

Globalization plays out in various spheres, from the environmental to the cultural to the economic. One of today’s most pressing environmental issues is global warming, which threatens every corner of our planet. It is clear that the problem must be addressed internationally, yet it is far from easy to agree on mitigation strategies. Some countries are bigger polluters than others, some have more resources than others, and some are more developed than others. How to divide the burdens? Countries from around the world have been meeting for many years at United Nations Climate Change Conferences, the most recent one held in Paris in late 2015. The main purpose is to reach agreement on collective reductions in the emission of greenhouse gases so as to limit global warming—but progress has been slow. **Figure 1-13** provides some insight into the geography of greenhouse gases, which emanate locally, yet have global consequences for which we all pay (see **Box 1-7**).

Globalization and Population Movements

Culturally, too, the world is coming closer together. This is apparent in the global spreading of new fashions, music, foods, and other innovations. In a more problematic way, it is also expressed in global migration flows (see **Box 1-8** and **Fig. 1-14**). In the past, **migration [41]** was relatively uncommon because most people were rooted in their home environment, where they lived out their entire lives. When residential relocation did occur, it used to be one-way, with people migrating from one place to another and then staying put. But over the past quarter-century, migration flows have intensified, in part because people increasingly possess better knowledge about opportunities elsewhere. Moreover,

it is now easier to travel back and forth, which allows migrants to maintain close ties with their countries of origin. Not surprisingly, as the number of highly mobile **transnational migrants** has risen, these transients have become major players in the spreading of cultures around the world. Examples include Algerians in Paris, Haitians in Montreal, Cubans in Miami, Mexicans in Los Angeles, Indians in Singapore, and Indonesians in Sydney.

Yet it is also important to keep in mind that people’s mobility is often constrained because certain parts of this highly uneven world are so much better off than others. High-income countries exert the strongest pull on migrants—but all too often they cannot gain access. Millions of workers aspire to leave the poverty of the global periphery and seek a better life somewhere in the core. Trying to get there, every year many of them perish in the waters of the Mediterranean, the Caribbean, and the



dpa picture alliance/Alamy Stock Photo

Children refugees wash themselves in “Camp Moria” on the Greek island of Lesbos, September 25, 2018. Most of the people here have fled wars and violence in Syria, Afghanistan, and Iraq. Their intention is to move elsewhere in Europe, but many have been held in Moria for months under harsh circumstances that include shortages of food, water, and medicines and a lack of proper sanitation.

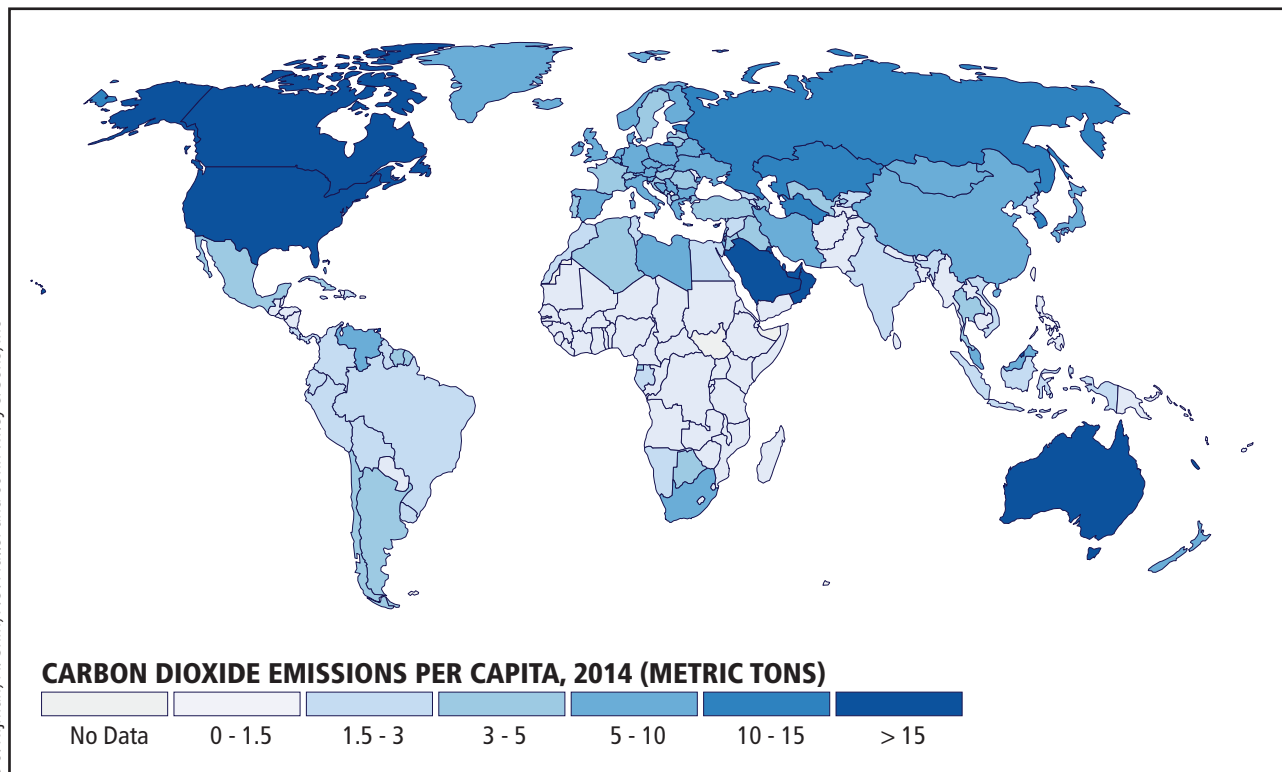
Box 1-7 Geographic Information Analysis

The Geography of CO₂ Emissions

Visualizations can reveal patterns that are difficult to see when using only tables or graphs. Of particular interest is when something like a bird species, or phenomena such as income or CO₂ emissions per capita are geographically clustered, or concentrated, in nearby locations. The corollary to such local geographic clustering is regional geographic variation across a map. What does the map of per capita CO₂ emissions display – more clusters

or more variation? What do you think is related to, or possibly creating, the patterns of clustering and variations that you see on this map? Can you think of another phenomenon that would create similar patterns on a map?

Access your WileyPLUS Learning Space course to interact with a dynamic version of this map and to engage with online exercises and questions.



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FIGURE 1-13 Interactive

Atlantic. Others risk their lives at the barriers that encircle the global core as if it were a gated community—from the “security fence” between Mexico and the United States to the razor wire that encircles Spain’s tiny outposts on North Africa’s shore.

Migration has become a dominant political issue in much of the world, with the governments and populations of more developed countries becoming increasingly opposed to immigration, particularly illegal immigration or the granting of asylum to refugees. Populist politicians across Europe and in the United States have increasingly taken anti-immigrant positions, particularly where it concerns poor, less educated, and ethnically or religiously different migrants or refugees. Interestingly, many of these same countries actually face the growing demographic problems of low birth rates and graying populations, and from a longer-term economic perspective it can be argued that they actually need immigrants to stabilize their populations. Unquestionably, these flows of migrants and

refugees underscore the enormous differences in prosperity and well-being across the world’s realms and regions.

Regional and Thematic Geographies

At the beginning of this chapter, we introduced a map of the great geographic realms of the world (Fig. 1-4). We then addressed the task of dividing these realms into regions, and we used criteria ranging from physical geography to economic geography. The result is **Figure 1-15**. On this map, note that we display not only the world geographic realms but also the regions into which they subdivide. The numbers in the legend reveal the order in which the realms and regions are discussed, starting with North America (1) and ending with the Pacific Realm (12).

Box 1-8 Geographic Information Analysis

Global Migration Flows

The realms and regions of the world are both interconnected and constantly changing. Such linkages and change are clearly apparent when we consider the movement of people from one place to another. To facilitate viewing global migration—or the flow of people among realms—consider the ‘chord diagram’ below. Each realm is assigned a color (e.g., South America is pink), and is identified on the outside of the circle. The thickness of the ‘chords’ or lines that connect the realms together correspond to the number of migrants moving to another realm. For the case of South

America, most migration occurs within the realm itself, and is followed by migrants moving to North America and Europe. Which realms are the destinations of global migration? Which realms are the origins of global migration? Can you think of particular source and destination countries through careful analysis of the chord diagram?

Access your WileyPLUS Learning Space course to interact with a dynamic version of this map and to engage with online exercises and questions.

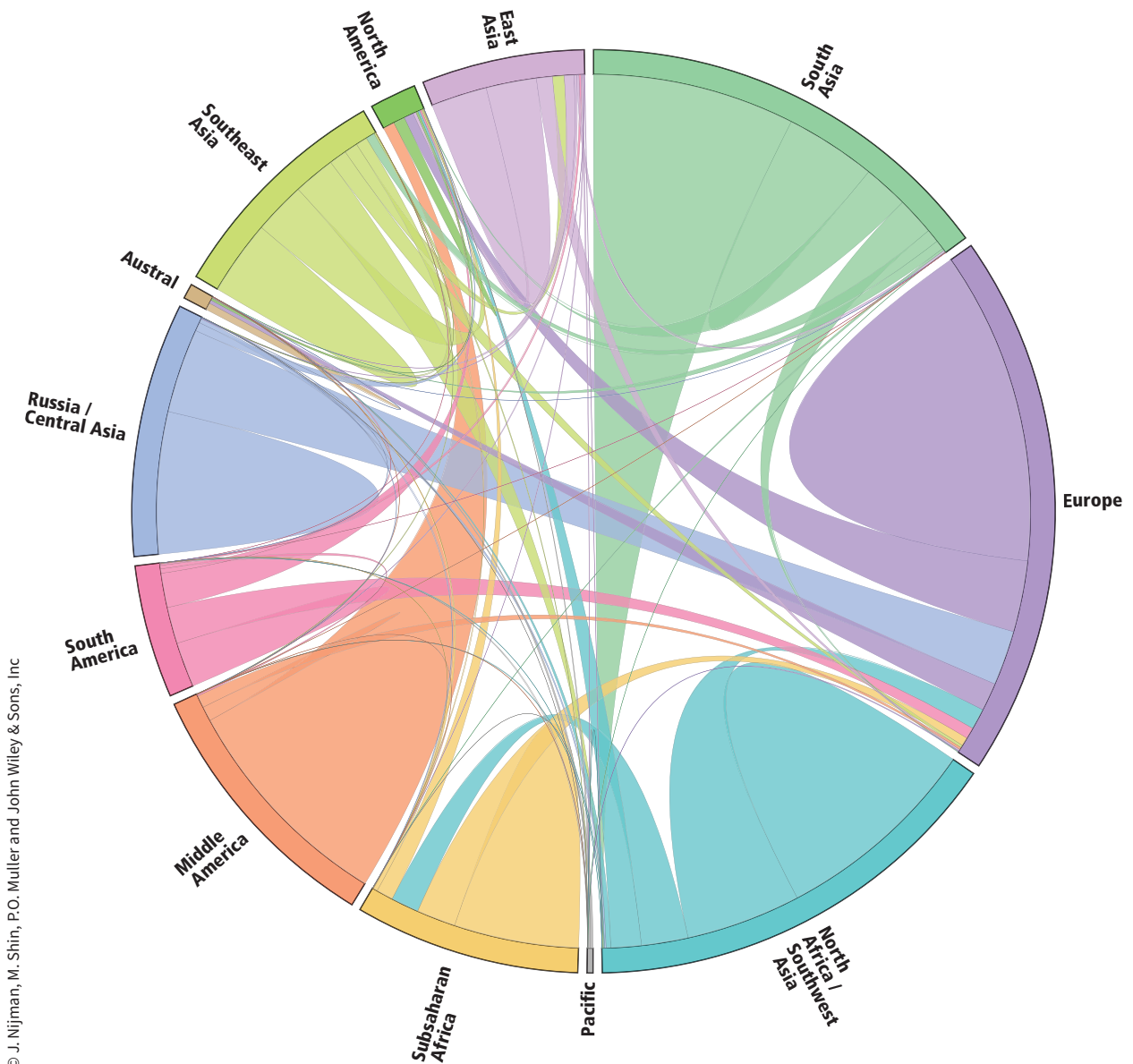
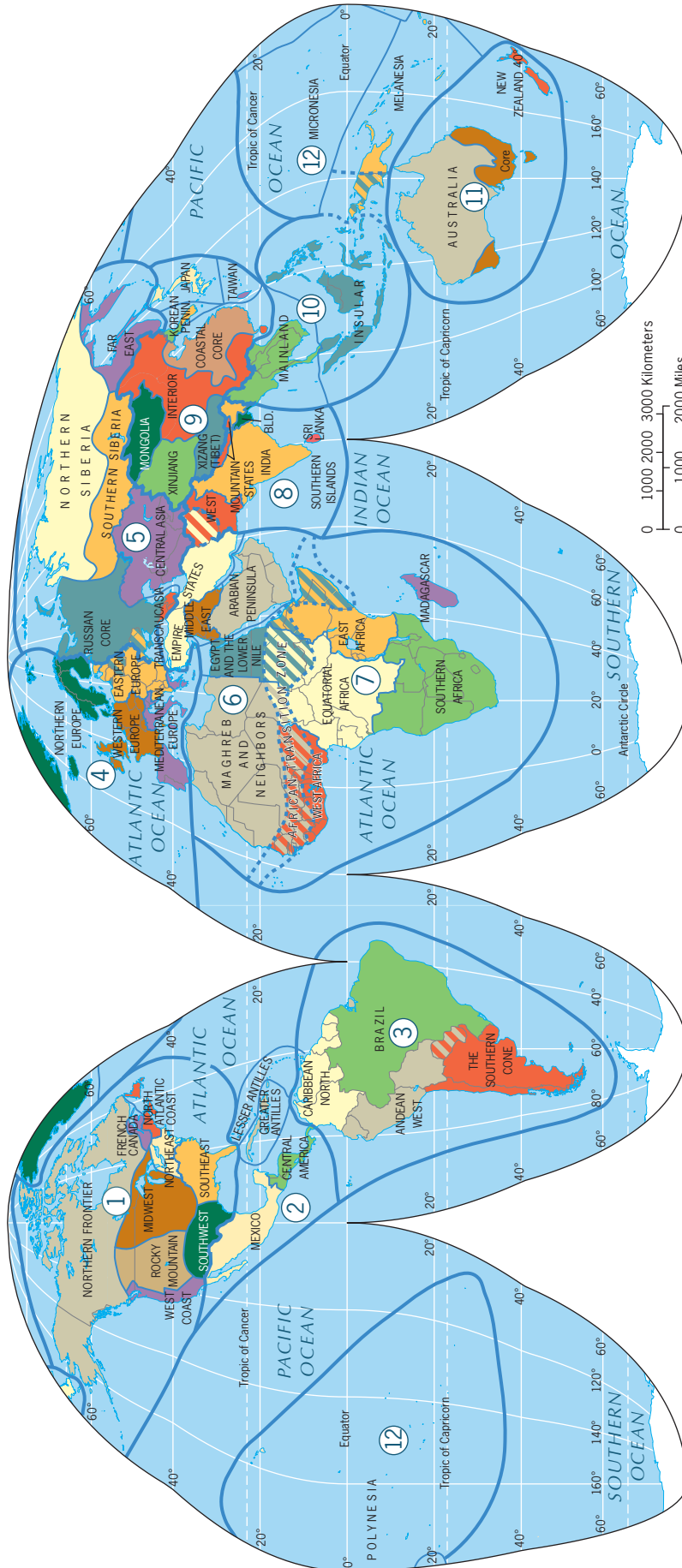


FIGURE 1-14 Interactive

As this introductory chapter has demonstrated, this book does not merely offer a series of descriptions of places and areas. We will combine the study of realms and regions with an overview of geography’s ideas and concepts—the notions,

generalizations, and basic theories that make the discipline what it is. We continue this approach in the chapters ahead so that you will become better acquainted with the world and with geography as a science. By now you are aware that geography



- WORLD GEOGRAPHIC REALMS AND THEIR CONSTITUENT REGIONS**
- ① NORTH AMERICA
 - ② MIDDLE AMERICA
 - ③ SOUTH AMERICA
 - ④ EUROPE
 - ⑤ RUSSIA/CENTRAL ASIA
 - ⑥ NORTH AFRICA/SOUTHWEST ASIA
 - ⑦ SUBSAHARAN AFRICA
 - ⑧ SOUTH ASIA
 - ⑨ EAST ASIA
 - ⑩ SOUTHEAST ASIA
 - ⑪ AUSTRAL REALM
 - ⑫ PACIFIC REALM

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FIGURE 1-15

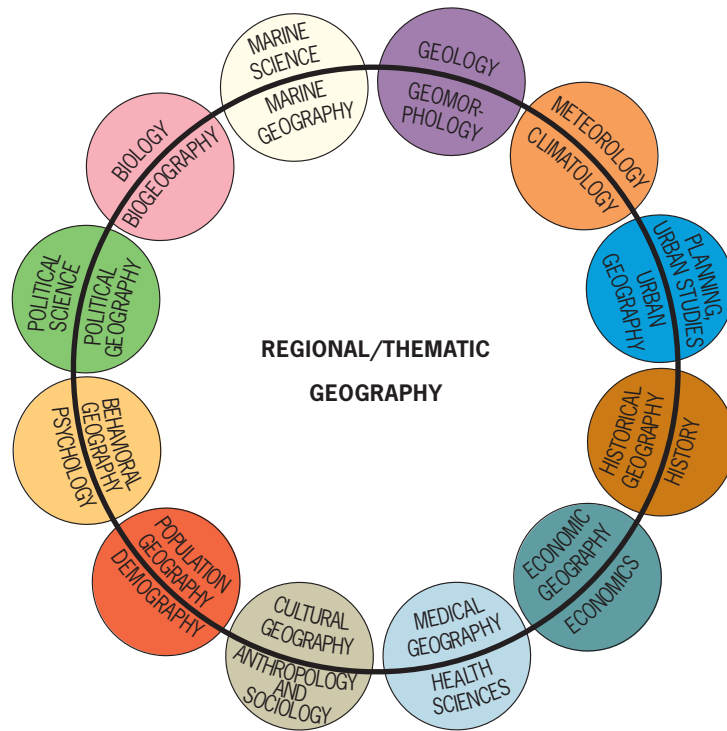


FIGURE 1-16

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is a wide-ranging, multifaceted discipline. It is often described as a social science, but that is only half the story: geography, in fact, straddles the divide between the social and the physical sciences. Many of the ideas and concepts you will encounter involve the multiple interactions between human societies and natural environments.

Regional geography allows us to view the world in an all-encompassing way. As we have seen, regional geography integrates information from many sources to create an overall image of our divided world. Those sources are not random: they represent topical or **thematic geography**. Research in the systematic fields of geography makes our world-scale generalizations possible. As **Figure 1-16** shows, these thematic fields connect closely to those of other disciplines. Cultural geography, for example, is allied with anthropology; it is the spatial perspective that distinguishes cultural geography. Economic geography focuses on the spatial dimensions of economic activity; political geography concentrates on the spatial imprints of political behavior. Other thematic fields include historical, medical, behavioral, environmental, and urban geography. We will also draw on information from biogeography, marine geography, population geography, geomorphology, and climatology (as we did earlier in this chapter).

These thematic fields of geography are so named because their approach focuses primarily on themes, not regions. Take the geographic study of cities, urban geography. Urbanization is a worldwide process, and urban geographers can identify certain human activities that all cities in the world exhibit in one form or another. But cities also display regional properties. The typical American city is quite distinct from, say, the

European or the Chinese city. Regional geography, therefore, borrows from the thematic field of urban geography, but it injects this regional perspective. In the following chapters, we call upon these thematic fields to provide you with a better understanding of the world's realms and regions. As a result, you will gain insights into the discipline of geography as well as the regions we investigate.

We will begin our investigation of the world's realms and regions in North America. This is, after all, where most of you were born and raised—and it is from this geographic realm that your expanding worldview has evolved.

Points to Ponder

- According to some measures, China in 2015 surpassed the United States and became the world's biggest national economy.
- The global human population at the outset of the 2020s is 7.7 billion and is predicted to reach just under 10 billion by 2050. Will there be enough food and water to sustain everyone?
- Global warming is expected to cause a global rise in sea level somewhere between one and two feet by the end of this century. Which cities are most vulnerable?
- Fast forwarding the network society: the number of smartphones in the world was expected to surpass 2.5 billion by 2020. Most of these devices have map navigation capabilities.