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THE CHANGING WORLD

An essential foundation for an informed regional geography is an ability to understand places and regions as components of a constantly changing global system. In this

sense, all regional geography is historical geography. Built into every place and each region is the legacy of a sequence of major changes in world geography. One of the key features of this aspect of human geography, however, is that the sequence of changes has not been the same everywhere. We can best understand these changes and their consequences for different places and regions by thinking in terms of the world as a changing, competitive, political-economic system.

We need also to think of the changing world as dependent upon how we alter our physical environment through the economic, political, and socio-cultural systems we create. The environment that surrounds us provides us with what we need to produce and enjoy the worlds we live in. Understanding the limits and resources that the natural world furnishes is just as important as understanding the strengths and weaknesses of the social systems we have created to organize our lives. Human geography as a discipline emphasizes the fact that humans are part of nature and our practices as sophisticated developers and users of technology and culture have implications not only for the economy and politics but for the air, land, and water we depend upon. Thus the world of regions we currently operate within are as dynamic, in the physical environmental sense, as they are in the political and economic one.

The Earth System

The physical and biological characteristics of places make distinctive contributions to our understanding of regional geography because they provide constraints on, and opportunities for, human activities. Many geographers view physical and environmental conditions as highly dynamic and best understood if one thinks of Earth as a system, in which humans play an important role. **Earth system science** helps us understand global patterns of geology, climate, and ecosystems and how they have changed over time and space, producing a physical geography that is dynamically shaped by both natural forces and human impacts. Physical geographers work with other Earth scientists to understand the functioning of the Earth system and with human geographers to interpret the interactions between the Earth system and social, cultural, economic, and political circumstances.

The fundamental Earth system processes that shape world regions are plate tectonics, atmospheric circulation, and ecosystem functioning. Plate tectonics explains the formation of continents and mountain ranges, atmospheric circulation shapes the pattern of world climates, and ecosystem characteristics affect the geography of vegetation, the cycling of key minerals, and the location of animals and other key organisms.

Plate tectonics

The theory of **plate tectonics** explains how Earth's outer layer, or crust, is structured and has changed over time. This layer, which is from 50 to 100 kilometers (31 to 62 miles) thick, is composed of about a dozen large "plates" of solid rocks floating on a layer of molten material. These plates move very slowly over the more fluid deeper layer and interact at their boundaries, where the resulting tensions are responsible for most of the world's volcanic, earthquake, and mountain-building activity. The continents sit on the plates and emerge from the oceans where Earth's crust is thicker or where the rocks are lighter and therefore more buoyant. At the core of each continent is a region of old (500 million years or older) crystalline rocks called a **continental shield**. Shield areas often contain many important minerals.

Plate tectonics builds on theories about **continental drift**, associated with Alfred Wegener (1880-1930), a German geophysicist who nearly a century ago hypothesized that landmasses had moved relative to each other, and across Earth's surface, over millions of years. He noted the remarkable fit of the South American and African continents and was also intrigued by plant and animal fossils found in both South America and Africa, organisms that he thought unlikely to have swum or to have been transported across the Atlantic Ocean by some other means. According to Wegener's theory, the earliest continent was a single landmass called Pangaea that formed where molten lava emerged from the ocean floor about 225 million years ago (see **Figure 2.1**).

This supercontinent slowly shifted position, and about 200 million years ago it broke up into two pieces, Laurasia to the north and Gondwanaland to the south. Laurasia was eventually split by narrow ocean gaps into North America and the landmass of Europe and Asia. Gondwanaland split into South America, Africa, Antarctica, India, and Australia.

As parts of Gondwanaland drifted north they connected with Laurasia, most notably where India collided with Asia causing the uplifting of the Himalayas. The permanent connection between North and South America occurred around 5 million years ago.

Figure 2.1 Plate Tectonics and Continental Drift

At a **convergent plate boundary**, where plates are moving toward each other, one plate may sink under the other in a process called **subduction**. This results in uplift of the upper plate, thus creating mountains, and melting of the other plate as it moves down into Earth, with associated volcanic pressures and earthquakes (**Figure 2.2**). Usually an ocean plate moves under a continental plate, as it does along the west coast of South America. At convergent boundaries, plates may also collide, pushing the surface into steep folds associated with mountain ranges such as the Himalayas and Alps. Collision and compression can also result in the fracturing of rocks in a process known as **faulting**, displacing rocks horizontally and vertically.

Figure 2.2 Plate Convergence and Divergence

At a **divergent plate boundary**, where plates are moving apart, molten rock from deep within Earth may reach the surface through cracks to form volcanoes, and the tearing of Earth's crust may result in earthquakes along what are called fault zones. Much of this activity occurs on the ocean floors, but plates can diverge within continents also. On continents, the spreading of the plates may cause blocks of crust to drop, creating a steep-sided **rift valley**, with high, flat plateaus on either side. One example of this is the Rift Valley of East Africa (**Figure 2.3**). Plates may also slide past each other horizontally at a **transform boundary**, creating a zone of earthquakes, an example of which is the San Andreas fault in California. The current configuration of the plates is shown in **Figure 2.4**, which also shows the major zones of fracturing and faulting and of mountain building (also called *orogeny*). This map helps to explain the major landforms of different world regions and highlights the key zones of earthquake and volcanic activity. For example, we can see where the sinking (or subduction) of the Pacific, Cocos, and Nazca plates under the North and South American plates has caused the uplift and folding of the Rocky Mountains and Andes and has created zones of active volcanoes and earthquakes (**Figure 2.5**).

Figure 2.3 Rift Valley

Figure 2.4 Major Plates

Figure 2.5 Creation of Himalayas

Within the major continents, other more local processes--erosion, weathering, and sedimentation--create important regional landforms. *Erosion* occurs when water and wind move across the land surface, picking up material and transporting it to other locations. In some cases, heat and the characteristics of water or rocks cause chemical changes and breakdown of material in the process called *weathering*. Erosion has affected many of the world's great mountain ranges, moving material to lower regions and depositing it in a process called *sedimentation*. Extensive areas of deposited sediment occur in the large river basins such as the Amazon and across some of the vast plains such as the North American prairies. Erosion and weathering have been critical in the development of better soils and, over the longer term, in the formation of layers of *sedimentary rocks*. Over time, organic material in sedimentary basins can compress and form reserves of oil and coal. Igneous rock is formed when hot molten material approaches Earth's surface and solidifies and crystallizes. When existing sedimentary or igneous rock undergoes physical or chemical change under conditions of high temperature and pressure, metamorphic rocks, which often contain valuable minerals, are formed.

Weather and Climate

Earth scientists have combined an understanding of basic physics with information about global patterns of temperature and precipitation to provide explanations of atmospheric circulation, the global movement of air that transports heat and moisture and explains the climates of different regions. Whereas **weather** is defined as the atmospheric condition (for example, a rainy or freezing day) at a particular time and place, **climate** is the typical or average condition over a much longer time period and at different seasons (for example, a place with wet, cool winters and hot, dry summers).

A simple model of atmospheric circulation is based on variations in the input of energy from the sun and the configuration of the major continents and mountain ranges. The spherical shape of Earth, the tilt of its axis, and its revolution around the Sun mean that the sunlight does not hit all parts of Earth's surface at the same angle (**Figure 2.6**). As Earth moves around the Sun, the angle at which sunlight hits Earth varies according to the seasons. The Sun's rays hit Earth most directly and focus the greatest solar energy and heat at the equator in March and October, at the latitude of the Tropic of Cancer (23.° N) in the northern hemisphere in June, and at the latitude of the Tropic of Capricorn (23.° S) in the southern hemisphere in December.

Figure 2.6 Seasonal Incidence of Sun's Rays by Latitude (diagram)

The constant high inputs of solar radiation at the equator produce warm temperatures throughout the year and this warmer air has a tendency to rise into the atmosphere, creating low pressure at ground level, and cooling and condensing into clouds that

eventually generate heavy rainfall. This process is called *convectonal precipitation* and is typical of the equatorial climate with high temperatures and rainfall year round.

The cooler air that rises high into the atmosphere moves out from the equator toward the poles and eventually sinks over tropical latitudes (23.5°N and S) creating a zone of high pressure (see **Figure 2.7**). As the air moves toward the surface, it becomes warmer and drier, holding so little moisture by the time it reaches ground level that these regions are characterized by the very low rainfall, sparse vegetation, and warm, dry conditions of desert climates.

Figure 2.7 air masses or winds??

When the sinking air reaches ground level it diverges and some of the air flows back towards the equator where it converges with the heated air and rises again. This vertical circulation of air from the equator to the tropics is called the *Hadley cell*, and the zone of convergence near the equator is called the **inter tropical convergence zone (ITCZ)** (see **Figure 2.8**).

Figure 2.8 Atmospheric Circulation (in profile and on globe)

The spin of Earth drags air flowing back from the tropical latitudes to the equator into a more east-to-west flow and creates a major wind belt called the *trade winds* that blow from east to west between the dry tropics and the equator. Air moving from the tropics toward the poles is similarly pulled by Earth's spin into a major west-to-east flow called the *westerly winds*. Within each of these major wind belts more complex processes produce high-speed jet streams that can meander across the continents driving weather systems and the paths of major storms. Where atmospheric circulation brings contrasting air masses with different temperatures and other characteristics into contact along what is called a front, the collision and movement of one air mass over another often produces cyclonic precipitation.

The seasonal variation associated with the tilt of Earth's axis and associated changing orientation of the northern and southern hemispheres toward the Sun (the northern hemisphere facing the Sun more directly in June than in December) means that the zones of rising and sinking air, and the major wind belts, move northward in June and southward in December, with corresponding shifts in the zones of rainfall and dry conditions.

When winds blow across warmer oceans they tend to pick up moisture and when moisture-laden air encounters a landmass, especially coastal mountains, it condenses into rainfall or snow. Precipitation associated with mountains is called orographic precipitation and may result in the formation of a dry rainshadow region on the inland, or lee, side of the mountains where sinking air that has lost its moisture becomes even drier. The trade winds flow across the oceans in tropical latitudes and frequently produce rain on east facing coasts in what is sometimes called the trade wind climates (see **Figure 2.9**).

Figure 2.9 Orographic Rainfall on a Trade Wind Coast (diagram)

Similarly the westerly winds bring rain as they blow from the oceans onto western coasts. The regions on the margins of the trades, and of the equatorial rainfall zone, have highly seasonal climates with a distinct rainy season. Seasonal shifts in pressure and wind belts mean that the westerlies move nearer the equator in December and to the pole in June, resulting in distinct wet and dry seasons on the margins of the westerly circulation. When the global circulation shifts southward in December, storms spinning out of the northern hemisphere westerlies bring rain to the poleward margins of drier regions in the northern hemisphere.

This simple model of the atmospheric circulation produces a pattern of global climate with regions of warmer temperatures nearer the equator, and of wetter regions at the equator, on east coasts in the tropics, on west coasts in temperate regions, and in the complex region where warmer air flowing toward the poles meets colder air flowing toward the equator along the polar front and the major jet stream. This general pattern helps explain the climates and the associated interaction with human activity of each of the major world regions (see **Figure 2.10**).

Figure 2.10 : Maps of major climate zone, one of temperature, one of rainfall and one of general climate zones

Ecosystems

Atmospheric circulation and the associated patterns of world climates are the major influences on the global distribution of **ecosystems** - the complexes of living organisms and their environments in particular places. For example, North American ecosystems include the Sonoran Desert ecosystem, with its characteristic species such as the saguaro cactus adapted to dry conditions, and the prairie ecosystem of tall grasses, traditionally grazed by bison. When ecosystems are grouped into larger classifications, defined by the major vegetation type such as desert, forest, or grassland, these large zones of similar climate and other organisms are called **biomes**.

Warmer temperatures and higher rainfall are generally associated with more abundant vegetation. For example, the high rainfall and warm temperatures of the equatorial regions are associated with the lush vegetation of the tropical rainforest ecosystems or tropical forest biome. The hot, dry conditions of the deserts are associated with sparser shrubs and drought adapted plants and animals of the desert ecosystem. Colder deserts with slightly more rainfall produce the short grasses that are typical of the steppe or prairie ecosystems. The cold, drier conditions of regions nearer the poles correspond to a landscape of frost-resistant mosses, shrubs, and grasses called tundra. Just to the equatorward side of the tundra, as temperatures and rainfall increase slightly, we find the evergreen conifer boreal forest ecosystem (sometimes called the taiga). The westerly winds produce wet coastal climates in the regions where they are dominant and are associated with the towering conifer forest ecosystems. Similarly the trade winds in warmer regions produce tropical rainforests on the east coasts of many continents. **Figure 2.11** shows the world distribution of ecosystems.

Figure 2.11 Map of world ecosystems

In those regions where precipitation is highly seasonal as a result of shifts in major wind and pressure belts, we find several distinctive ecosystems. In warmer regions with a pronounced dry season (between the rainforests and deserts) we find the savanna ecosystem of extensive tall grasslands, mixed with deciduous trees towards the wetter margins. The Mediterranean ecosystem of scrub and dry forest is found in regions where the seasonal shift of the westerly winds brings rainfall only in the winter season. The global pattern of ecosystems is also influenced by geology and soils. In all regions, high-altitude plateaus and mountains have distinctive ecosystems associated with cooler temperatures or higher rainfall. In other regions the physical structure or chemical composition of the soils produces particular ecosystems, and erosion and volcanic activity may promote or inhibit the overall growth of vegetation.

Geographers are interested in the study of plant, animal and ecosystem distributions known as **biogeography**. They have worked with other scientists to examine global patterns and to understand the relative roles of climate and other factors in determining these patterns. Some of the most interesting questions in studying ecosystems and biogeography are those related to biodiversity - the differences in the types and numbers of species in different regions of the world. There is a general relation between biodiversity and temperature with tropical regions generally hosting a wider variety of species. Although there are broad similarities between the ecosystems of different tropical regions such as Africa and Latin America there are also considerable differences. Some of these differences relate to the ways in which ecosystem structure and composition are influenced by long-term processes of evolution and environmental change, including longer-term changes in climate, and by human modification of the environment. In regions where climate has remained stable over long periods of time, organisms have mutated, migrated, and interbred to form many different species and have adapted to local environmental conditions. If these regions are isolated from others, as in the case of islands such as Australia, the resulting species may be very different from those of other parts of the world. Where climate has changed dramatically, as in areas covered by ice sheets as recently as 15,000 years ago, there may be less diversity as species may have only recently begun to migrate back into the region. The theory of island biogeography suggests that larger islands will have more biodiversity than smaller ones.

Climate change

Although earth system scientists believe that the general circulation of the atmosphere tends to remain the same over centuries, there is considerable evidence that global and regional climates have varied over time. Landscapes show evidence of wetter or drier conditions in the past through remains of animals, vegetation, landforms, and lakes associated with a different climate. Human history records periods of hotter and cooler climates and their impacts on harvests and migrations. Most dramatically, the landscapes of many regions show the marks of ice cover, erosion, and deposition from periods when it was so cold that rivers of ice (called glaciers) or even larger masses (ice caps) covered much of the world. Earth scientists believe that the ice ages, the most recent occurring about 20,000 years ago, were caused by slight changes in the tilt of Earth's axis and its orbit around the Sun and associated changes in the amount of solar radiation reaching Earth (**Figure 2.12**).

Global and regional climates have also been affected by tectonic activity especially volcanic eruptions. The most explosive volcanic eruptions can blast ash and gases high into the atmosphere, blocking sunlight and changing the chemical composition of the air. For example, the explosion of the Krakatoa volcano in Java in 1884 caused a worldwide drop in temperatures and harvest failures in Europe during the "year without a summer."

Figure 2.12 diagram of the major causes of climate changes

Human activity can also change the climate through altering the composition of the atmosphere. Of greatest concern is the possibility that human activity may cause **global warming** associated with increasing levels of carbon dioxide and other gases that trap heat in Earth's atmosphere (the so-called **greenhouse effect**). Carbon dioxide is produced from burning fossil fuels, from cement production, and from deforestation, and the level of carbon dioxide in the atmosphere has increased dramatically with increases in human population and consumption over the last 100 years. Earth system scientists suggest that human-caused increases in carbon dioxide may result in an overall global temperature increase of about 3° C over the next 50 years and regional changes in the amount and distribution of precipitation. Evidence is accumulating that such changes are already occurring (see **Figure 2.13**).

Figure 2.13: diagram of detected changes in climate

The World-System

The modern world-system was first established over a long period that began in the late-fifteenth century and lasted until the mid-seventeenth century. A **world-system** is an *interdependent* system of countries linked by political and economic competition. The hyphenation in the term "world-system," which was coined by historian Immanuel Wallerstein, is meant to emphasize the interdependence of places and regions around the world.

In parts of fifteenth-century Europe, exploration beyond European shores began to be seen as an important way of opening up new opportunities for trade and economic expansion. By the sixteenth century, new techniques of shipbuilding and navigation had begun to bind more and more places and regions together through trade and political competition (**Figure 2.14**). As a result, more and more peoples around the world became exposed to one another's technologies and ideas. But their different resources, social structures, and cultural systems resulted in quite different pathways of economic development. Some societies were willingly incorporated into the new, European-based international economic system faster than others; some resisted incorporation; and some sought alternative systems of economic and political organization.

Since the seventeenth century, the world-system has been consolidated, with stronger economic ties between countries. It has also been extended, with all the world's countries eventually becoming involved, to some extent, in the interdependence of the capitalist system. There have, however, been many instances of resistance and adaptation, with some countries (Tanzania, for example) attempting to become self-sufficient and others (China and Cuba, for example) seeking to opt out of the system altogether in order to pursue a different path to development—communism. Today, the

overall result is that a highly structured relationship between places and regions has emerged. This relationship is organized around three tiers: *core*, *semiperipheral*, and *peripheral* regions. These broad geographic divisions have been created through a combination of processes of private economic competition and competition among states.

Figure 2.14 Merchant vessels of the Dutch and English East India Companies

The **core regions** of the world-system are those that dominate trade, control the most advanced technologies, and have high levels of productivity within diversified economies. As a result, they enjoy relatively high *per capita* incomes. The first core regions of the world-system were the trading hubs of Holland and England. Later, these were joined by manufacturing and exporting regions in other parts of Western Europe and in North America; later still, by Japan.

The success of the core regions depends on their dominance and exploitation of other regions. This dominance, in turn, depends on the participation of these other regions within the world-system. Initially, such participation was achieved by military enforcement, then by European colonialism, and finally by the sheer economic and political influence of the core regions. **Colonialism** involves the establishment and maintenance of domination—including political, economic, social, and cultural domination—by a state over a separate and alien society. This domination usually involves some colonization (that is, the physical settlement of people from the colonizing state) and always results in economic exploitation by the colonizing state.

Regions that have resisted or remained economically and politically unable to participate in this process of incorporation into the world-system are peripheral to it. **Peripheral regions** are characterized by dependent and disadvantageous trading relationships, by inadequate or obsolescent technologies, and by undeveloped or narrowly specialized economies with low levels of productivity.

In between core regions and peripheral regions are semiperipheral regions. **Semiperipheral regions** are able to exploit peripheral regions but are themselves exploited and dominated by the core regions. They consist mostly of countries that were once peripheral. This semiperipheral category underlines the fact that neither peripheral status nor core status is necessarily permanent. The United States and Japan both achieved core status after having been peripheral; Spain and Portugal, part of the original core in the sixteenth century, became semiperipheral in the nineteenth century but are now once more part of the core. Quite a few countries, including Brazil, India, Mexico, South Korea, and Taiwan, have become semiperipheral after first having been incorporated into the periphery of the world-system and then developing a successful manufacturing sector that moved them into semiperipheral status.

An important determinant of these changes in status is the effectiveness of states in ensuring the international competitiveness of their domestic producers. They can do this in several ways: by manipulating markets (protecting domestic manufacturers by charging taxes on imports, for example), by regulating their economies (enacting laws that help to establish stable labor markets, for example), and by creating physical and social infrastructures (spending public funds on road systems, ports, educational

systems, and such). Because some states are more successful than others in pursuing these strategies, the hierarchy of three geographical tiers is not rigid. Rather, it is fluid, providing a continually changing framework for geographical transformation within individual places and regions (**Figure 2.15**).

Figure 2.15 The world-system core, semiperiphery, and periphery

It is also important to recognize that core, peripheral, and semiperipheral regions are not monolithic geographies. In other words, there are peripheral areas within core regions and even within core cities, just as there are core areas within peripheral regions and peripheral cities. For example, North America is, generally speaking a core region. Yet within both Canada and the United States there are extensive areas, such as Nunavut in Canada, that do not have widespread access to advanced technologies, have low levels of economic productivity, in the capitalist sense, and have very narrowly specialized economies. The same is true of the periphery where some areas have more in common with the core regions than they do with the areas that immediately surround them. This is certainly the case with Rio de Janeiro in Brazil or Jakarta in Indonesia both of which are core cities in peripheral and semiperipheral countries.

The main outcome of economic globalization has been the consolidation of the core of the world economy. This core is now a close-knit triad of geographic centers (North America, Europe, and Japan (**Figure 2.16**)). These three geographic centers are connected through three main circuits, or flows, of investment, trade, and communication: between Europe and North America, between Europe and the Far East, and among the regions of the Pacific Rim. Within this core of centers and flows, a new hierarchy of regional specialization has been imposed by the locational strategies of transnational corporations and international financial institutions.

Figure 2.16 map of triadic core

Globalization, although incorporating more of the world, more completely, into the capitalist world-system, has intensified the differences between the rich and the poor. According to the United Nations Development Program, the gap between the poorest fifth of the world's population and the wealthiest fifth increased more than threefold between 1960 and 1999. Some parts of the periphery have almost slid off the economic map. In some countries—55 of them, in fact—per capita incomes actually fell during the 1990s. In Africa south of the Sahara, economic output fell by one-third during the 1980s and stayed low during the 1990s, so that people's standard of living there is now, on average, lower than it was in the early 1960s. In 1999, the fifth of the world's population living in the highest-income countries had:

1. 74 percent of world income—the bottom fifth just 1 percent
2. 82 percent of world export markets—the bottom fifth just 1 percent, and
3. 74 percent of world telephone lines, today's basic means of communication—the bottom fifth just 1.5 percent.

Such enormous differences lead many people to question the equity, or fairness, of geographical variations in people's levels of affluence and well-being. The concept of spatial justice is important here, since it requires us to consider the distribution of society's benefits and burdens at different spatial scales, taking into account both variations in people's need and in their contribution to the production of wealth and social well-being.

Meanwhile, differences between the core and the periphery are now less easily captured in terms of the framework of states. Economic and cultural globalization has not been matched by political globalization, or a system of governance that can cope with their powerful forces. Policymakers everywhere lack an adequate framework for coping with the consequences of globalization. Trade policy has come to be governed by powerful transnational corporations, while national governments are unable to deal with large-scale environmental issues. Globalization has fueled global economic expansion but in the process it has widened the gap between rich and poor and made places and regions everywhere vulnerable to rapid and dislocating transformations.

This inequality resulting from globalization is reflected—and reinforced—by many aspects of human well-being. Patterns of infant mortality, a reliable indicator of social well-being, show the same steep core-periphery gradient. For adults in the industrial core countries, life expectancy is high and continues to increase. Life expectancy at birth in Australia in 1995 was 78.2 years, in Canada it was 79.1, and in the United States it was 76.4. In contrast, life expectancy in the poorest countries is dramatically shorter. In Namibia in 1995 life expectancy at birth was 55.8 years; in Ethiopia it was 48.7, and in Sierra Leone it was 34.7. In most African countries, only 60 to 75 percent of the population can expect to survive to age 40.

GEOGRAPHIC EXPANSION, INTEGRATION, AND CHANGE

The modern world-system has been transformed through successive stages of geographic expansion, integration and change. This transformation has affected the roles of individual places and the nature of the interdependence among places. It also helps to explain why places and regions remain distinctive and how this distinctiveness has formed the basis of geographic variability. It is also important to understand that powerful and geographically extensive political and economic systems preceded our current capitalist ones. These early systems preceded capitalism and operated according to different organizational structures, portions of which have been incorporated into and altered by the modern capitalist world-system.

The Growth of Early Empires

The higher population densities, changes in social organization, craft production and trade brought about by the first agricultural revolution provided the preconditions for the emergence of several world-empires. A **world-empire** is a group of minisystems that have been absorbed into a common political system while retaining their fundamental cultural differences. **Table 2.1** lists sixteen world empires and their time frames. A **minisystem** is a society with a single cultural base and a reciprocal social economy. That is, each individual specializes in particular tasks (tending animals, cooking, making pottery), freely giving any excess product to others, who reciprocate by giving up the surplus product of their own specialization. The social economy of world-empires, on the

other hand, The social economy of world-empires can be characterized as redistributive-tributary. That is, wealth is appropriated from producer classes by an elite class in the form of taxes or tribute. This redistribution of wealth is most often achieved through military coercion or religious persuasion, or a combination of the two. The best-known world-empires are the largest and longest lasting of the ancient civilizations—Egypt, Greece, China, Byzantium, Rome. All these world-empires, discussed in greater detail in the following chapters, brought two important new elements to the evolution of the world's geographies. The first was the emergence of *urbanization*. Towns and cities became essential as centers of administration, as military garrisons, and as religious centers for the ruling classes that were able to use a combination of military and theological authority to hold their empires together. As long as these early world-empires were successful, they not only gave rise to monumental capital cities but also to a whole series of secondary settlements, which acted as intermediate centers in the flow of tribute and taxes from colonized territories.

Table 2.1 World-empires, 3000 BC-1750 AD

The most successful world-empires, such as the Greek and Roman empires, established quite extensive urban systems. In general, the settlements in these urban systems were not very large—typically ranging from a few thousand inhabitants to about 20,000. The seats of empire grew quite large, however. The Mesopotamian city of Ur, in present-day Iraq, has been estimated to have reached a population of around 200,000 by 2100 B.C., while Thebes, as the capital of Egypt, is thought to have had more than 200,000 inhabitants in 1600 B.C. (see **Figure 2.17**). Athens and Corinth, the largest of the cities of ancient Greece, had populations of between 50,000 and 100,000 by 400 B.C. Rome, at the height of the Roman Empire (around A.D. 200), may have had as many as a million inhabitants. The most impressive thing about these cities, though, was not so much their size as their degree of sophistication: They were elaborately laid out, with paved streets, piped water, sewage systems, massive monuments, grand public buildings, and impressive city walls.

Figure 2.17 (need a photo of the site of Ur)

The second important contribution of world-empires to evolving world geographies was *colonization*. In part, this was an indirect consequence of the operation of the **law of diminishing returns**. This law refers to the tendency for productivity to decline, after a certain point, with the continued addition of capital and/or labor to a given resource base. Because of the law of diminishing returns, world-empires could support growing populations only if overall levels of productivity could be increased. Some productivity gains could be achieved through better agricultural practices, through harder work, and through improvements in farm technology. But a fixed resource base meant that, as populations grew, overall levels of productivity fell. For each additional person working the land, the gain in production per worker was less. The usual response was to enlarge the resource base by colonizing nearby land. This colonization had immediate spatial consequences in terms of establishing dominant/subordinate spatial relationships between colonizers and colonies. It was also important in establishing hierarchies of settlements and creating improved transportation networks. The military underpinnings of colonization also meant that new towns and cities now came to be carefully sited for strategic and defensive reasons.

The legacy of these important changes is still apparent in today's landscapes. The clearest examples are in Europe, where the Roman world-empire colonized an extensive territory that was controlled through a highly developed system of towns and connecting roads (see Chapter 3, p. 000). Some world-empires were exceptional in that they were based on a particularly strong central state, with totalitarian rulers who were able to organize large-scale, communal land improvement schemes using forced labor. These world-empires were found in China, India, the Middle East, MesoAmerica, and the Andean region of South America. Their dependency on large-scale land improvement schemes (particularly irrigation and drainage schemes) as the basis for agricultural productivity has led some scholars to characterize them as *hydraulic societies*. Today, their legacy can be seen in the landscapes of terraced fields that have been maintained for generations in places like Sikkim, India, and East Java, in Indonesia (**Figure 2.18**).

Figure 2.18 (terraces, irrigation)

The Geographic Foundations of the Modern World

Figure 2.19 shows the generalized framework of human geographies in the Old World as they existed around AD 1400. The following characteristics of this period are important. First, harsher environments in continental interiors were still peopled by isolated, subsistence-level, kin-ordered hunting and gathering minisystems. Second, the dry belt of steppes and desert margins stretching across the Old World from the western Sahara to Mongolia was a continuous zone of kin-ordered pastoral minisystems. Third, the hearths of sedentary agricultural production extended in a discontinuous arc from Morocco to China, with two main outliers: in the central Andes and in MesoAmerica. The dominant centers of global civilization were China, northern India (both of them hydraulic variants of world-empires), and the Ottoman Empire of the eastern Mediterranean. Other important world-empires were based in Southeast Asia, in Muslim city-states of coastal North Africa, in the grasslands of West Africa, around the gold and copper mines of East Africa, and in the feudal kingdoms and merchant towns of Europe.

Figure 2.19 The precapitalist Old World, circa 1400

These more-developed realms were interconnected through trade, which meant that there were several emerging centers of capitalism. Port cities were particularly important, and among the leading centers were the city-state of Venice, the Hanseatic League of independent city-states in northwestern Europe (including Bergen, Bremen, Danzig, Hamburg, Lübeck, Riga, Stockholm, and Tallinn; and affiliated trading outposts in other cities, including Antwerp, Bruges, London, Turku, and Novgorod), Cairo, Calicut, Canton, Malacca, Lisbon, Madrida, and Sofala. Traders in these port cities began to organize the production of agricultural specialties, textiles, and craft products in their respective hinterlands. The **hinterland** of a town or city is its sphere of economic influence--the tributary area from which it collects products to be exported and through which it distributes imports. By the fifteenth century there were several regions of budding capitalism: in northern Italy, Flanders, southern England, the Baltic, the Nile Valley, Malabar, Coromandel, and Bengal in India, northern Java, and southeast coastal China. (See Chapter 3, pp. 000-000, for an extended discussion of the role of Europe in globalizing capitalism).

ORGANIZING THE CORE

The transformation of much of Europe, and later the United States, as core regions beginning with the fifteenth century, was predicated on complex innovations and institutions that stabilized and enabled capitalist political and economic organization to flourish, particularly those central to trade and later industrialization. While all of these institutions and innovations emerged prior to or during the mercantile period, they were stabilized and extended geographically during the industrial period in order to support the requirements of capitalist economic organization. **Mercantilism** was an economic policy prevailing in Europe during the sixteenth, seventeenth, and eighteenth centuries, where the idea of governmental control over industry and trade was first introduced. The following are some of the primary factors that played critical roles in organizing and consolidating the core from the fifteenth century onward:

1. The division of labor that enabled increased productivity.
2. The standardization of time, space, measure, value, and money that allowed for more predictability and consistency in commerce and manufacture.
3. The forging of national identities that affirmed the emergence of a unified and powerful state.
4. The commodifying and controlling of nature.
5. The construction of internal physical infrastructures such as railroads, canals, and communications systems that improved the movement of goods, people, and ideas.

The Division of Labor

All contemporary societies are organized around a division of labor, whether it is a complex or simple one. Furthermore, the division of labor has been a feature of human societies from the earliest times. A **division of labor** is the separation of productive processes into individual operations, each performed by different workers or groups of workers. For example, in many pre-industrial societies, men hunt, trap, and fish while women manage household gardens and tend to children. When the separation of productive processes is based on gender, it is known as a **gender division of labor** (see **Figure 2.20**). Other divisions of labor might be based on skill or vocation, as it was in the medieval period when the system of social and economic organization was based on different groups of artisans and merchants organized into guilds.

Figure 2.20 The gender division of labor

For the world-system core, as it concentrated its role as the dominant economic force around the globe through industrialization, a technical division of labor premised on factory production enabled remarkably greater productivity at the same time that it increasingly divided tasks into many discrete processes and laborers into numerous skill groups. Although an important innovation, the division of labor is not unequivocally beneficial. At one level, the division of labor is ingenious because it enables a substantial increase in individual and collective efficiency due to the increase in skill that specialization provides. At another level, however, the division of labor separates workers from the product of their labor so that they contribute only a small fragment to the whole and may come to feel meaningless in the larger scheme of production. The technical division of labor is a central institutional feature of the economic organization of the core. At the same time that it has enabled the core to be efficient in productive activities in an

unprecedented way, it has also narrowed and segmented individuals' social identities, virtually equating a person's social identity with his or her role in the division of labor.

Standardization of Time, Space, Measure, Value, and Money

Standardization of timekeeping, measurement, currency, and value also became a central requirement for conducting transactions in the daily life of the core as well as in an increasingly interconnected world. At the level of everyday life, standardization of time, for instance, ensured that workers arrived each morning at the factory gate at the same time. Whereas previously national, regional and local time standards or just general daily and seasonal sensitivity to light and dark shaped human activity patterns, the standardization of time meant that sharply defined work schedules and deadlines became part of factory life and daily habits. With the increasing interconnectedness of the globe, the standardization of space—a framework for determining relative location and distance—was also critical (see **Geography Matters: Globalization and the Standardization of Space**).

Other standardizations besides time, however, were also necessary. The standardization of measure, for instance, ensured that replacement parts for a machine would fit all the same machines in any factory anywhere in the world. Furthermore, the prices for goods could be fixed more precisely and consistently through an agreed upon system of weights and measures. Moreover, value—how much a worker was paid and how much a product was worth—came to be defined in terms of money or currency, and the standardization of money simplified and extended the transactions of market exchange. The stabilization of credit—the ability to borrow money—was also an important accomplishment of core industrialization.

Geography Matters 2.1, Globalization and the Standardization of Space

Construction of States and Forging National Identities

Another important aspect of the organization of the core was the increasing political significance of a national population unified around a strong state. While a state is an independent political unit with territorial boundaries that are internationally recognized by other states, a **nation** is a community of people often sharing common elements of culture such as religion or language, or a history or political identity.

Following the overthrow or decline of monarchies in Europe in the late eighteenth to mid-nineteenth century, a number of new republics were created. Republican government, as distinct from monarchy, requires the democratic participation and support of its population. Monarchical political power is derived from force and subjugation; republican political power derives from the support of the governed. By creating a sense of nationhood, the newly emerging states of Europe were attempting to homogenize their multiple and sometimes conflicting constituencies so that they could govern with their active cooperation according to a sense of a common purpose.

An illustration of the process of nation building and its advantages to the state is France. As early as the sixteenth century, the highly centralized French state began actively to discourage the use of regional languages and dialects in official transactions. Following the overthrow of the monarchy in France in the late eighteenth century, the new French republic more actively advanced a policy intended to establish unity among the various

provinces by suppressing the regional languages. The multiplicity of languages was seen as a barrier to stable democracy and egalitarianism. The argument for such a policy was that free people—that is, people no longer subjects of the monarch—must speak the same language (north-central, or Parisian, French) in order to unify France and promote democracy as a way of life (**Figure 2.21**). After all, how could the people create and operate a government if they could not speak to each other? As a result, the regional languages and dialects of France went into a decline, hastened by official government policies spanning an extended period from Napoleon Bonaparte (emperor 1810-1814) to Charles de Gaulle (president 1959-1969).

Figure 2.21 The languages of France in 1789

In addition to enabling the creation of a stable democracy, the construction of a nation also enables the organization of a more extensive and coherent market where buyers and sellers all speak the same language and all have an investment in the success of the economic enterprise. A national identity is built not only upon a common language but also upon a common sense of history and purpose such that individuals feel compelled to defend the nation and to further the objectives of the state.

Diaspora is the term used to characterize the spatial dispersion of a previously homogeneous group. Because of the increasing interconnectedness of the world there has been more opportunity for population mobility which has resulted in the widespread dispersal of Earth's peoples. As such, contemporary members of a nation recognize a common identity, but they need not reside within a common geographical area. For example, the Jewish nation refers to members of the Jewish culture and faith throughout the world regardless of their place of origin. The term **nation-state** is an ideal form consisting of a homogeneous group of people governed by their own state. In a true nation-state, no significant group exists that is not part of the nation.

In fact, few pure or true nation-states exist today. Rather multinational states exist—states composed of more than one regional or ethnic group. Spain is such a multinational state (composed of Catalans, Basques, Gallegos, and Castilians), as is France, Kenya, the United States, and Bolivia. Multinational states are far more typical than homogeneous nation-states. Since the First World War, it has become increasingly common for groups of people sharing an identity different from the majority, yet living within the same political unit, to agitate to form their own state separate from the existing one. The existence of nationalist conflict demonstrates that the project of the state to homogenize its citizens has not always been entirely successful. This has been the case with the Québécois in Canada and the Basques in Spain as discussed in Chapter 1, p. 00. It is out of this desire for autonomy that the term “nationalism” emerges.

Nationalism is the feeling of belonging to a nation as well as the belief that a nation has a natural right to determine its own affairs (**Figure 2.22**).

Figure 2.22 Nationalist conflict around the globe

Commodifying and Controlling Nature

Perhaps the most widespread conception of nature that informed the imperialist practices of the core—and one that has persisted under different labels for thousands of years—is

that humans are the center of all creation, and that nature in all its wildness was meant to be dominated by humans. Judeo-Christian belief insists that Man (as an ideal type), made in the image of God, was set apart from nature and must be encouraged to control it.

While early Christianity held that nature was to be dominated, that idea existed more in the religious and spiritual realm than in the political and social realm. In terms of the conduct of everyday life, it was not until the sixteenth century that Christian theology was coaxed from its isolation and conscripted to aid the goals of science. Before 1500 in Europe there existed a widely held image of Earth as a living entity such that human beings conducted their daily lives in an intimate relationship with the natural order of things. The prevailing metaphor was that of the organism, which emphasized interdependence among human beings and between them and Earth (**Figure 2.23**). Yet, even within this organic idea of nature there are two opposing conceptions. One was of a nurturing Earth that provided for human needs in a beneficent way; the other was of a violent and uncontrollable nature that could cause general chaos in human lives. In both of these views Earth and nature were regarded as female.

Figure 2.23 Commodifying and controlling nature

Francis Bacon (1561–1626) and Thomas Hobbes (1588–1679) were English philosophers who, as prominent promoters of science and technology, were influential in changing the prevailing organic view of nature. Borrowing from the Christian ideology, they advanced a view of nature as something subordinate to Man. Bacon and Hobbes sought to rationalize benevolent nature as well as to dominate disorderly and chaotic nature.

As feminist environmental historian Carolyn Merchant writes:

The change in controlling imagery was directly related to changes in human attitudes and behavior toward the earth. Whereas the nurturing earth image can be viewed as a cultural constraint restricting the types of socially and morally sanctioned human actions allowable with respect to the earth, the new images of mastery and domination functioned as cultural sanctions for the denudation of nature. Society needed these new images as it continued the process of commercialization and industrialization, which depended on activities directly altering the earth—mining, drainage, deforestation, and assarting [grubbing up stumps to clear fields]. The new activities used new technologies—lift and force pumps, cranes, windmills, geared wheels, flap valves, chains, pistons, treadmills, under- and overshot watermills, fulling mills, flywheels, bellows, excavators, bucket chains, rollers, geared and wheeled bridges, cranks, elaborate block and tackle systems, worm spur, crown, and lantern gears, cams and eccentrics, ratchets, wrenches, presses, and screws in magnificent variation and combination.¹

Merchant shows that, by the sixteenth and seventeenth centuries, the power of science was too great for the organic idea of nature. Subsequently, a view that nature was the instrument of Man became dominant in Western culture. This view of nature underlay the “age of discovery” that propelled Europeans to claim Africa, North and South America, and parts of Asia for their own commercial and political uses.

The view that nature was to be controlled by humans was accompanied by the parallel idea that nature was a commodity to be exploited and produced. The word *commodity* is actually of medieval English origin and it means anything which has a use value which means that it has some usefulness to someone. Sheep, rivers, and trees were all referred to as commodities because they could be used to sustain and shelter life. With the rise of capitalism, the popular understanding of use value was replaced by that of exchange value and a commodity came to mean anything useful that could be bought or sold. Production for sale in the market place is what makes things--whether foodstuffs, minerals, animals, even human beings--commodities. Capitalism has made it possible for everything and anything to be a commodity under certain conditions. For example, recent environmental agreements coordinated in Kyoto, Japan have made the right to pollute the air a commodity that can be bought and sold.

The commodifying of nature that accompanied the rise of capitalism was feverishly pursued during the age of discovery as European explorers found new resources to exploit in new places. Unfortunately, the history of the capitalist pursuit of producing commodities often includes the destruction and substantial dislocation of whole social systems so that these commodities could be marketed and made profitable. Important for the development of the interconnectedness of world regions is the fact that the turning of nature into commodities also has a history that is part of the history of the globalization of capitalism. In brief, any commodity has a history that links it to an origin and then outward to other parts of the globe. A commodity is linked to the societies that first recognized its use value, then understood how to enhance that value by cultivating or processing it, and finally began to trade it. But the history of any commodity must also take into account the links that were created to connect it economically, politically, socially, and culturally to other parts of the world. Finally, the history of a commodity is not only about the commodity itself such as wine, tobacco, sugar, oil, or diamonds--commodities treated in the following chapters--but it is also the history of the billions of people who have produced, desired, and consumed the commodities.

In order to market commodities, links must be created between producers and consumers: commodities must be transported from where they are harvested or produced to where they will be consumed. The development of the transportation infrastructure for moving commodities from one part of the world to another or from one side of the city to another is also a significant aspect of the organization of the core of the world-system.

Development of Internal Infrastructures

Within the world's core regions, the transformation of regional geographies hinged on successive innovations in transport technology. These innovations opened up continental interiors for commercial agriculture and intensified inter-regional trading networks. Farmers were able to mechanize their equipment, while manufacturing companies were able to take over more resources and more markets.

Canals and the Growth of Industrial Regions. The first phase of this internal geographic expansion and regional integration was in fact based on an old technology: the canal (**Figure 2.24**). Merchant trade and the beginnings of industrialization in both Britain and France were underpinned by extensive navigation systems that joined one river system

to another. By 1790, France had just over 1000 kilometers (620 miles) of canals and canalized rivers; Britain had nearly 3600 kilometers (2230 miles). The Industrial Revolution provided both the need and the capital for a spate of additional canal building that began to integrate and extend emerging industrial regions.

Figure 2.24 photo of an American or European Canal

In Britain, 2000 more kilometers (1240 miles) of canals were built between 1790 and 1810. In France, which did not industrialize as early as Britain, 1600 additional kilometers (990 miles) were built between 1830 and 1850. In the United States, the landmark was the opening of the Erie Canal in 1825. This breakthrough enabled New York, a colonial gateway port, to reorient itself toward the nation's growing interior. The Erie Canal was so profitable that it set off a "canal fever" that resulted in the construction of some 2000 kilometers (1240 miles) of navigable waterways in the next 25 years. This canal system helped to bind the emergent Manufacturing Belt together.

Steamboats, Railroads, and Internal Development. The scale of the United States was such that a network of canals was a viable proposition only in more densely settled areas. The effective colonization of the interior could not take place until the development of steam-powered transportation: first riverboats, and then railroads. The first steamboats were developed in the early 1800s, offering the possibility of opening up the vast interior by way of the Mississippi and its tributaries. By 1830, the technology and design of steamboats had been perfected, and navigable channels had been established. The heyday of the river steamboat was between 1830 and 1850. During this period, vast acreage of the U.S. interior was opened up to commercial, industrialized agriculture: especially cotton production for export to British textile manufacturers. At the same time, river ports such as New Orleans, St. Louis, Cincinnati, and Louisville grew rapidly, extending the frontier of industrialization and modernization.

By 1860, the railroads had taken over the task of internal development, further extending the frontier of settlement and industrialization and intensifying the use of previously developed regions (see **Geography Matters**, "Railroads and Geographic Change"). The railroad originated in Britain, where George Stephenson engineered the world's first commercial railroad, a 20-kilometer (12.4 mile) line between Stockton and Darlington that was opened in 1825. The famous *Rocket*, the first-ever locomotive for commercial passenger trains, was designed mainly by Stephenson's son Robert for the Liverpool & Manchester line that opened 4 years later. The economic success of this line sparked two railroad-building booms that eventually created a highly efficient transportation network for Britain's manufacturing industry. In other core countries, where there was sufficient capital to license (or copy) the locomotive technology and install the track, railroad systems led to the first full stage of economic and political integration.

Geography Matters 2.2: Railroads and geographic change

While the railroads integrated the economies of entire countries and allowed vast territories to be colonized, they also brought some important regional and local restructuring and differentiation. In the United States, for example, the railroads led to the consolidation of the Manufacturing Belt. They also contributed to the mushrooming of Chicago as the focal point for railroads that extended the Manufacturing Belt's dominance over the west and south. This reorientation of the nation's transportation system effectively ended the role of the cotton regions of the South as outliers of the British

trading system. Instead, they became outliers of the U.S. Manufacturing Belt, supplying factories in New England and the Mid-Atlantic Piedmont. This left New Orleans, which had thrived on cotton exports, to cope with an abrupt end to its phenomenal growth.

Tractors, Trucks, Road Building, and Spatial Reorganization. In the twentieth century the internal combustion engine powered further rounds of internal development, integration, and intensification (**Figure 2.25**). The replacement horse-drawn farm implements with lightweight tractors powered by internal combustion engines, beginning in the 1910s, amounted to a major revolution in agriculture. Productivity was increased, the frontiers of cultivable land were extended, and vast amounts of labor were released for industrial work in cities. The result was a parallel revolution in the geographies of both rural and urban areas.

Figure 2.25 The impacts of the internal combustion engine (photos)

The development of trucks in the 1910s and 1920s suddenly released factories from locations tied to railroads, canals, and waterfronts. Trucking allowed goods to be moved farther, faster, and cheaper than before. As a result, trucking made it feasible to locate factories on inexpensive land on city fringes, and in smaller towns and peripheral regions where labor was cheaper. It also increased the market area of individual factories, and reduced the need for large product inventories. This decentralization of industry, in conjunction with the availability of buses, private automobiles, and massive road-building programs, brought about another phase of spatial reorganization. The outcomes of this phase were the specialized and highly integrated regions and urban systems of the modern core of the world-system. This integration was not simply a question of their being interconnected through highway systems. It also involved close economic linkages between manufacturers, suppliers, and distributors, linkages that enabled places and regions to specialize and develop economic advantages.

ORGANIZING THE PERIPHERY

Parallel with the internal development of core regions were changes in the geographies of the periphery of the world-system. Indeed, the growth and internal development of the core regions simply could not have taken place without the foodstuffs, raw materials, and markets provided by the colonization of the periphery and the incorporation of more and more territory into the sphere of industrial capitalism.

As soon as the Industrial Revolution had gathered momentum in the early nineteenth century, the industrial core nations embarked on the inland penetration of the world's midcontinental grassland zones in order to exploit them for grain or stock production. This led to the settlement, through the emigration of European peoples, of the temperate prairies and pampas of the Americas; the veld in southern Africa; the Murray-Darling Plain in Australia; and the Canterbury Plain in New Zealand. At the same time, as the demand for tropical plantation products increased, most of the tropical world came under the political and economic control--direct or indirect--of one or another of the industrial core nations. In the second half of the nineteenth century, and especially after 1870, there was a vast increase in the number of colonies and the number of people under colonial rule.

The colonization and imperialism that accompanied the expansion of the world-system was closely tied to the evolution of world leadership cycles. **Leadership cycles** are periods of international power established by individual states through economic, political, and military competition. In the long term, success in the world-system depends on economic strength and competitiveness, which brings political influence and pays for military strength. With a combination of economic, political, and military power, individual states can dominate the world-system, setting the terms for many economic and cultural practices and imposing their particular ideology by virtue of their pre-eminence. This kind of dominance is known as hegemony. **Hegemony** refers to domination over the world economy, exercised—through a combination of economic, military, financial, and cultural means—by one national state in a particular historical epoch. Over the long run, the costs of maintaining this kind of power and influence tend to weaken the hegemon. This phase of the cycle is known as *imperial overstretch*. It is followed by another period of competitive struggle, which brings the possibility of a new dominant world power.

Imperialism and Colonialism: Imposing New Geographies on the World

The incorporation of the external arena into the periphery was motivated by several factors among them the basic logic of free trade, investment, and the desire for new territories. Although Britain was the leading world economic and military hegemon in the late nineteenth century, several other European countries (notably Germany, France, and the Netherlands), together with the United States--and later Japan--were competing for global influence. This competition developed into a scramble for territorial and commercial domination. The core countries engaged in preemptive geographic expansionism in order to protect their established interests and to limit the opportunities of others. They also wanted to secure as much of the world as possible—through a combination of military oversight, administrative control, and economic regulations—in order to ensure stable and profitable environments for their traders and investors. This combination of circumstances defined a new era of imperialism. Over the last 500 years, imperialism has resulted in the political or economic domination of strong core states over the weaker states of the periphery. Imperialism involves some form of authoritative control of one state over another (**Figure 2.26**).

Figure 2.26 Maps of the World in 1714 and 1914

Africa, more than any other peripheral region, was given an entirely new geography under imperialism and colonialism. As previously mentioned, colonialism is the establishment and maintenance of political and legal domination by a state over a separate and alien society. Virtually the entire continent of Africa was carved up into a patchwork of European colonies and protectorates in just 34 years, between 1880 and 1912, with little regard for either physical geography or the pre-existing human geographies of minisystems and world-empires. At the same time, the major powers jostled and squabbled over small Pacific islands that had suddenly become valuable as strategic coaling stations for their navies and merchant fleets. Resistance from indigenous peoples was quickly brushed aside by imperial navies with iron steamers and high-explosive guns and by troops with rifles and cannon. European weaponry was so superior that Otto von Bismarck, the founder and first Chancellor (1871–90) of the German empire, referred to these conflicts as “sporting wars.” Between 1870 and 1900, European countries added almost 22 million square kilometers (10 million square miles)

and 150 million people to their spheres of control: 20 percent of Earth's land surface and 10 percent of its population.

The imprint of imperialism and colonization on the geographies of the newly incorporated peripheries of the world-system was immediate and profound. The periphery became almost entirely dependent on European and North American capital, shipping, managerial expertise, financial services, and news and communications. As a consequence of this, it also came to be dependent on European cultural products: language, education, science, religion, architecture, and planning. All of this came to be etched in to the landscapes of the periphery in a variety of ways as new places were created, old places were remade, and regions were reorganized.

One of the most striking changes in the periphery was the establishment and growth of externally oriented port cities through which commodity exports and manufactured imports were channeled. Often, these major ports were also colonial administrative and political capitals, so that they became overwhelmingly important, growing rapidly to sizes far in excess of other settlements. Good examples include Georgetown (Guyana), Lagos (Nigeria), Luanda (Angola), Karachi (Pakistan), and Rangoon (Burma). Meanwhile, the interior geography of peripheral countries was restructured as smaller settlements were given new functions: colonial administration and commercial marketing. As with the interior development of the core countries, transport networks were vital to this process. Railroads provided the principal means of spatial reorganization, and in the colonies of Africa, Central America, and South and Southeast Asia railroad lines evolved into linear patterns with simple feeder routes and limited interconnections that focused almost exclusively on major port cities.

An International Division of Labor

The fundamental logic behind imperialism and colonization was economic: the need for an extended arena for trade, an arena that could supply foodstuffs and raw materials in return for the industrial goods of the core. The outcome was an international division of labor, driven by the needs of the core, and imposed through its economic and military strength. This **international division of labor** involved the specialization of different people, regions, and countries in certain kinds of economic activities. In particular, colonies began to specialize in the production of those foodstuffs and raw materials:

- for which there was an established demand in the industrial core (for example, foodstuffs, industrial raw materials)
- for which colonies held a **comparative advantage**, in that their productivity was higher than for other possible specializations
- that did not duplicate or compete with domestic suppliers within core countries (tropical agricultural products like cocoa and rubber, for example, simply could not be grown in core countries).

The result was that colonial economies were founded on narrow specializations that were oriented to, and dependent upon, the needs of core countries. Examples of these specializations are many: bananas in Central America, cotton in India, coffee in Brazil, Java, and Kenya, copper in Chile, cocoa in Ghana, jute in East Pakistan (now Bangladesh), palm oil in west Africa, rubber in Malaya (now Malaysia) and Sumatra, sugar in the Caribbean islands, tea in Ceylon (now Sri Lanka), tin in Bolivia, and bauxite in

Guyana and Surinam. Most of these specializations have continued through to the present. Thus, for example, 48 of the 55 countries in sub-Saharan Africa still depend on just three products—tea, cocoa, and coffee—for more than half of their export earnings.

This new world economic geography took some time to establish, and the details of its pattern and timing were heavily influenced by technological innovations. The incorporation of the temperate grasslands into the commercial orbit of the core countries, for example, involved successive changes in regional landscapes as critical innovations such as barbed wire, the railroad, and refrigeration were introduced. But the single most important innovation behind the international division of labor was the development of metal-hulled, oceangoing steamships. This development was in fact cumulative, with improvements in engines, boilers, transmission systems, fuel systems, and construction materials adding up to produce dramatic improvements in carrying capacity, speed, range, and reliability. The construction of the Suez Canal (opened in 1869) and the Panama Canal (opened in 1914) was also critical, providing shorter and less hazardous routes between core countries and colonial ports of call. By the eve of the First World War the world economy was effectively integrated by a system of regularly scheduled steamship trading routes (**Figure 2.27**). This integration in turn was supported by the second most important innovation behind the international division of labor: a network of telegraph communications (**Figure 2.28**) that enabled businesses to monitor and coordinate supply and demand across vast distances on an hourly basis.

Figure 2.27 Principal steamship routes, 1920

Figs. 2.28 The international telegraph network, 1900

The international division of labor brought about a substantial increase in trade and a huge surge in the overall size of the capitalist world economy. The peripheral regions of the world contributed a great deal to this growth. By 1913 Africa and Asia provided more exports to the world economy than either North America or the British Isles. Asia alone was importing almost as much, by value, as North America. The industrializing countries of the core bought increasing amounts of foodstuffs and raw materials from the periphery, financed by profits from the export of machinery and manufactured goods. Britain, the leading world power of the period, drew on a trading empire that was truly global (**Figure 2.29**).

Figure 2.29 The British Empire

Patterns of international trade and interdependence became increasingly complex. Britain used its capital to invest not just in peripheral regions but also in profitable industries in other core countries, especially the United States. At the same time, these other core countries were able to export cheap manufactures to Britain. Britain financed the purchase of these goods, together with imports of food from its dominion states (Canada, South Africa, Australia, New Zealand) and colonies, through the export of its own manufactured goods to peripheral countries. India and China, with large domestic markets, were especially important. Thus there developed a widening circle of exchange and dependence, with constantly switching patterns of trade and investment.

Political and Cultural Geographies

Keep in mind that the impact of colonialism was not uniform throughout the globe. The local expressions of colonialism were immensely complex. For example the impact of the British on what we now call India, was substantially different from the impact of the French of what we now call Algeria. Moreover, not only did colonialism affect different places differently because the domestic political, economic, cultural, and social systems of the various colonial powers differed markedly and came into contact with dramatically different existing systems, but also the deployment and the impact of colonialism was experienced differently by different social groups in the colonies. Men and women, young and old, elites and peasants, rural people and urban dwellers, these and others each negotiated and were shaped by colonialism in distinct ways. In short, **culture**, a shared set of meanings that are lived through the material and symbolic practices of everyday life, is a central mediating element in the way groups experience change. Yet, despite the enormous variety that characterizes the impact of colonialism on colonized peoples and places, there are at least two broad repercussions that can be identified.

First, the territorial divisions that reflected colonial boundaries were seldom consistent with preexisting political or environmental geographies. Second, core social institutions—such as legal systems of property ownership—that were transplanted to the colonies disrupted or severely dislocated existing ones. As a result of both political and environmental geographies as well as ethnic geographies were fragmented or reconfigured increasing the potential for conflict or problems.

As mentioned previously, the nation-state was a European invention whose aim was to encourage culturally, geographically, politically, and socially distinct groups to imagine themselves as possessing significant, binding connections to each other. In order to achieve this sense of “imagined community,” the new states of Europe erased and replaced fiefdoms and other forms of feudal political organization through a whole range of practices from the extermination of local languages to the organizing of a national army. In colonizing the periphery, European powers acted in similar though perhaps less conscious ways. As national aggrandizement through the formal incorporation of new territory was often a central aim of imperial efforts, areas were occupied and bounded often without any heed to the political, social, cultural, and environmental relationships that existed before colonization.

For instance, in central Africa, both the British and the French vied for the same territory. In establishing the southern boundary of Niger and the northern boundary of Nigeria, France and Britain fragmented the Hausa city-state that had been established in the eleventh century. Those Hausa people to the north of the boundary became British subjects; those to the south, French. In each case their experience of colonialism was different. Although culturally homogenous when the colonial powers arrived, Hausaland, ceased to exist as a political entity at the beginning of the twentieth century when it was divided between the French and the British. While the new political geographies imposed by colonialism had severely dislocating impacts on numerous cultural groups around the globe, contemporary Hausa people, on both sides of the present borders of Nigeria/Niger have maintained a great deal of interaction, and most of them continue to farm, as they have for many generations, growing millet and sorghum in the sandy soil of the Sahelian desert.

A second broadly consistent impact of colonization for the colonized was the imposition of core social institutions that reshaped or undermined existing ones. Arguably, the most profoundly dislocating social institution to be introduced through colonization were European systems of property rights with respect to land. Throughout the periphery, distinctive land tenure systems existed that determined access to land, largely for farming, herding, or hunting, but also for other sorts of settlement uses. It is unwise to generalize about the types of land tenure systems that existed throughout the periphery as they were far too numerous and varied. Before the British began colonization in the late eighteenth century in present day India, several major types—and lots of local variations-- of tenure systems were in operation. Many of these had been the legacy of previous colonizers stretching back to the Greeks who came to India in the third century B.C. European legal frameworks for acquiring, holding, and selling land ran up against a whole host of existing systems that were based not on ownership rights through monetary purchase but use rights through kinship or communal affiliation.

European land tenure systems and legal frameworks for establishing property rights introduced to North America clashed calamitously with the various Native American ones. American Indian groups believed that land was free to be used and enjoyed by all and that it belonged to or was owned by no one. Indians had no concept of private property rights. Europeans, however, brought with them an arsenal of ideological and legal understandings of land that contradicted existing Indian understandings. There were three central ways in which Europeans formally acquired land: through the doctrine of discovery; treaty negotiation, and the theory of higher use. The doctrine of discovery allowed early European explorers in North America to regard native peoples as conquered subjects of the Crown, and thus any land discovered reverted to the Crown through preemption. Under the doctrine of discovery, Native Americans retained the right to occupy and enjoy the fruits of the land.

Treaty negotiations were a second way in which Europeans acquired land in North America. Treaties were elaborate legal frameworks that recognized Native Americans as independent nations with the ability to negotiate land transfers often through exchanges for other non-land objects. Treaties began to be negotiated while the United States and Canada were still colonies, and representatives of the Crown were empowered to negotiate treaties. Finally, the theory of higher land use allowed the rational purchase and acquisition of Native American lands that were not being put to their highest and best use in the eyes of the Crown and later the U.S. government. As American Indian groups increasingly came to understand the implications of their loss of access to land for hunting, agriculture, and the fundamentals of their way of life, they resisted external acquisition through wars and other forms of hostility and conflict. European frameworks for acquiring land were largely incomprehensible to native groups, as the very notion of land ownership was so fundamentally contrary to their own. In recent years, North American Indian groups have recognized that they have legal recourse to challenge the taking of their lands and they have begun to raise significant and legally compelling challenges based on treaties that continue to have the power of legal documents defensible in a court of law (**Figure 2.30**).

Figure 2.30 Diminishing tribal lands, 1790-2000

Exploration and Exploitation

The scramble to incorporate the periphery into the world-system in the late eighteenth and early nineteenth century was aimed at acquiring territory and cultivating commercial opportunities. Imperialism and colonialism were operationalized through the processes of exploration and exploitation. Exploration is generally understood to mean the growth of knowledge of the globe that occurred as a result of voyages of discovery and scientific expeditions. It should be noted, however, that an alternative view is to see the encounter between the core and the periphery that took place during this period as, more accurately, one of invasion and conquest. Whichever way one looks at the moral issues behind the historical meeting of the core and periphery, it is unquestionable that exploration and scientific discovery went hand-in-hand and that geography as a discipline contributed substantially to both (**Figure 2.31**).

Figure 2.31 a photo of a European geographical society

The experience of the encounter between the core and the periphery was certainly complicated. It is uncontested that the core countries—effectively those of western Europe—transformed existing lands and peoples to meet their own commercial, evangelical, and colonial motives. Furthermore, the encounter between the two worlds was framed by the view that Western civilization was superior to the barbaric rest of the world. Thus, the engagement between “the West” and “the rest” was as much a moral event as anything else. As a result, the core often attempted to “master” the periphery and ended up marginalizing, if not completely destroying, existing and highly developed social, cultural and moral systems. The same thing was largely true of the core’s impact on the natural world of the periphery.

Figure 2.32 provides a theorization of the process of imperialism beginning with exploration and culminating in development via either colonization or the exploitation of people and resources or both. At the beginning of the process, a state perceives a need for exploration. This need is often the result of a scarcity or lack of a critical natural resource. Broadly speaking, in the first phases of imperialism, the core exploits the periphery for raw materials. Later, as the periphery becomes developed, colonization may occur, and cash economies are introduced where none have previously existed. The periphery may also become a market for the manufactured goods of the core. Eventually, though not always, the periphery--because of the availability of cheap labor, land, and other inputs to production--can become a new arena for large-scale capital investment.

Figure 2.32 Principal elements in the process of exploration

The first cases of sustained encounter between the core and the periphery usually resulted in the establishment of trading relations, sometimes even trading settlements as was the case with European contact with Africa during the fifteenth century when the Portugese explored the West African coastline and established a chain of trading settlements. These new opportunities for trade with Europe often dislocated the ongoing patterns of internal trade in the periphery and disrupted political life along with existing economic and religious systems.

After trading links were established, core states would often increase exploration and accelerate exploitation. For instance, by the late eighteenth century European countries had substantial and well-established trade with Africa. Later, between 1880 and 1905, most of Africa was partitioned among Belgium, France, Germany, Great Britain, Italy, and Portugal. At the Berlin Conference (1884-1885), Europe's colonial nations defined their spheres of influence and established rules for future occupation of the globe. European colonization efforts in Africa, Asia, and South America expanded as domestic demand for certain agricultural and mineral products increased. European technology and crops were introduced into their colonies (**Figure 2.33**); mining operations were established (**Figure 2.34**); other natural resources such as fish, animals, and wood products were harvested and shipped back to European markets; and an exchange economy based on money evolved.

Figure 2.33 map of the global transfer of minerals and spices (p. 27 3rd world atlas)

Figure 2.34 map and accompanying table of global crops transfer (p. 29 3rd world atlas)

The classic institution of colonial agriculture was the plantation—an extensive, European owned, operated, and financed enterprise where single crops were produced by local or imported labor for a world market. The first plantations are likely to have been started in the Caribbean only two decades after the first voyage of Columbus in the late fifteenth century. Sugar was the first plantation crop with other crops—both edible and non-edible—following including coffee plantations in India and rubber plantations in Sri Lanka.

Over time, some plantation crops were replaced by others as competition over the production of particular crops between colonies increased or crops in some locations became increasingly susceptible to pests.

Development of Internal Infrastructures

The agents of the physical development of the colonies were explorers, traders, soldiers, missionaries, and settlers. Throughout the colonial periphery, these agents, with the financial, intellectual and military backing of their home countries, constructed transportation systems, water-delivery systems, and communication systems to facilitate commerce. In addition, they instituted tax systems that enabled them to undertake these projects. The building of infrastructure was certainly not something that peripheral regions had the capital (or perhaps even the inclination) to undertake, so it is unlikely that such projects would have been accomplished without the intervention of the colonizers.

It is also true, however, that many of the systems that were established reflected the needs of the colonial powers and not those of the local people. In Zimbabwe, for example, the principal transportation links reflect the main areas of European settlement.

Transportation in the communal areas of the country continues to be inferior (**Figure 2.35**).

Figure 2.35 Main roads and railway lines in Zimbabwe

The most significant legacy of colonialism in terms of infrastructural development is the promotion of urbanization that resulted, following independence, in **overurbanization** which is a condition in which cities grow more rapidly than the jobs and housing can sustain. During the colonial period ports, as has already been pointed out, were critical

connective points to the evolving global economy. Ports encouraged population migration and settlement as opportunities for work acted as attractors to rural people. In colonial cities, the colonial powers have left perhaps their most significant physical legacy in the form of government buildings, roads, bridges, schools and other public structures as well as substantial elite housing and recreational developments and parks. Many of the colonial ports have become the primate cities of independent countries, exhibiting all the problems of large cities throughout the periphery in terms of unemployment, environmental problems, and inadequate housing and public welfare provisions.

GLOBALIZATION AND ECONOMIC DEVELOPMENT

The imperial world order began to disintegrate shortly after the Second World War. The United States emerged as the dominant state within the world-system core. This core came to be called the "First World". The Soviet Union and China, opting for alternative paths of development for themselves and their satellite countries, were seen as a "Second World", withdrawn from the capitalist world economy. Their pursuit of alternative political economies was based on radically different values.

By the 1950s, many of the old European colonies began to seek political independence. Some of the early independence struggles were very bloody, because the colonial powers were initially reluctant to withdraw from colonies where strategic resources or large numbers of European settlers were involved. In Kenya, for example, a militant nationalist movement known as the Mau Mau launched a campaign of terrorism, sabotage, and assassination against British colonists in the early 1950s. Their actions killed over 2000 white settlers between 1952 and 1956; in return, 11,000 Mau Mau rebels were killed by the colonial army and 20,000 put into detention camps by the colonial administration. But by the early 1960s the process of decolonization had become relatively smooth. (In Kenya, Jomo Kenyatta, who had been jailed as a Mau Mau leader in 1953, became prime minister of the newly independent country in 1962.) The periphery of the world-system now consisted of a "Third World" of politically independent states, some of which adopted a policy of nonalignment vis-à-vis the geopolitics of the First and Second worlds. They were, nevertheless, still highly dependent, in economic terms, on the world's core countries.

As newly independent peripheral states struggled to be free of their economic dependence through industrialization, modernization, and trade from the 1960s onwards, so the capitalist world-system became increasingly integrated and interdependent. The old imperial patterns of international trade broke down and were replaced by more complex patterns. Nevertheless, the newly independent states were still influenced by many of the old colonial links and legacies that remained intact. The result was a neo-colonial pattern of international development. **Neocolonialism** refers to economic and political strategies by which powerful states in core economies indirectly maintain or extend their influence over other areas or people. Instead of formal, direct rule (colonialism), controls are exerted through such strategies as international financial regulations, commercial relations, and covert intelligence operations. Because of this neocolonialism, the human geographies of peripheral countries continued to be heavily shaped by the linguistic, cultural, political, and institutional influence of ex-colonial powers, and by the investment and trading activities of their firms.

Deploying and Encountering Development

The rationale whereby the post-war world became more fully integrated was a set of approaches to economic and political transformation known as development theory.

Development theory is an analysis of social change that assesses the economic progress of individual countries. Development theory first came into being as the justification for the rebuilding of Europe and as a weapon against the Cold War threat of communism. It was soon after applied to the situation of newly emerging states in Africa, Asia, and South America struggling under the legacies of colonialism and post-colonialism. Numerous authors, world leaders, and economic policies have been associated with development theory and the development project, but the centerpiece of all mainstream approaches to development is the aim to replicate the prosperity of the core in the periphery by encouraging economic growth through industrialization and modernization. President Truman expressed this view in his inaugural address in 1949. He said: "More than half the people of the world are living in conditions approaching misery. . . I believe that we should make available to peace-loving peoples the benefits of our store of technical knowledge in order to help them realize their aspirations for a better life." The two underlying assumptions of this quote and the core's attitude about development are: (1) that the periphery should aim to be like the core in its pathway to development, and (2) that the economic problem of development in the periphery is poverty and backwardness.

This overall relationship between the economy and levels of prosperity makes it possible to interpret economic development in terms of distinctive *stages*. Each region or country, in other words, might be thought of as progressing from the early stages of development, with a heavy reliance on primary activities (and relatively low levels of prosperity), through a phase of industrialization and on to a "mature" stage of postindustrial development (with a diversified economic structure and relatively high levels of prosperity). This, in fact, is a commonly held view of economic development, conceptualized by a prominent economist, W.W. Rostow (**Figure 2.36**). Most development theorists and practitioners hew to this perspective and view the situation of peripheral and semi-peripheral countries as one in which they must simply be helped to move along a clear path so that eventually they will "catch up" economically.

Figure 2.36 Rostow model

In such a model, an economy is understood to consist of a modern sector(s) and a nonmodern sector(s) with the latter characterized by low labor productivity. If the country or region with these conflicting economic sectors is to develop, then the non-modern sector must be transformed or modernized. In short, economic development occurs when investment rates enable higher levels of industrialization thus raising labor productivity and increasing the GDP per capita levels. The ultimate goal in this staged economic development model is an end period of high mass consumption.

The modernization version of development theory was not without its detractors. Chief among the critics were scholars and policy makers from the periphery who became part of the dependency school of development. The dependency theorists argued that it was not labor inefficiency or absence of modernization that was the root cause of the poverty

in the periphery but rather that the very nature of the core-periphery relationship was such that the core, through economic exploitation had created a state of *underdevelopment* in the periphery. Thus the pathway to development was not the same for the periphery as it was for the core. The progression of the core from undeveloped to developed status was enabled at the direct expense of the periphery. *The core had expressly underdeveloped the periphery by taking the economic surplus generated there and repatriating it to the core.* Moreover, the process of underdevelopment in the periphery had rendered it dependent on the core for inputs of capital and technology. The solution, the dependency school theorists argued, was for the periphery to break off from the capitalist world-system in order to escape active underdevelopment and the status of economic dependence. One way in which the periphery attempted to accomplish this was through import substitution, a practice that is discussed in greater detail in later chapters.

Another critique of development theory was launched by feminists in the 1970s. Their objection to mainstream development theory and policy was that it left out women either by assuming that women had no role to play in development or by failing to recognize that women might experience development differently from men. This criticism came to be widely recognized as a legitimate one, and development theory and policies were revised not only to take account of the differential impact of development on women but to incorporate women directly into development projects. More recently, however, this “women in development” approach has also been criticized by a new generation of feminists who see it as failing to recognize that women’s identities and access to power and resources are also shaped by other important identities such as generation, ethnicity, religion, sexuality, and marital status, just to name a few.

Development theory, like most economic theories, rests on certain simplifying assumptions about the world. The real world, however, is highly differentiated, not just in terms of natural resources, but in terms of demographics, culture, and politics. The assumptions in Rostow’s model, for instance, fit the experience of some parts of the world, but by no means all of it. In reality, there are a variety of pathways to development, and a variety of different processes and outcomes of development. Indeed, this narrow construction of the pathway toward, and the existing conditions necessary for, development ultimately created serious challenges for modernization theory and its policy proponents. At the same time, dependency theory was also seen as seriously flawed. The result has been a reconsideration and restructuring of modernization theory in the form of neoliberalism, the emergence of the idea of sustainable development (see Chapter 1, p. 00), and alternative and critical theories of development advanced more recently by scholars from the periphery.

Neoliberal policies of development have emanated from the core and have been very much associated with the increasing influence of the World Bank and the International Monetary Fund (IMF) over the last 25 years. The **World Bank** is a development bank and the largest source of development assistance in the world. Its goal is to help countries strengthen and sustain the fundamental conditions that will attract and retain private investment. The **International Monetary Fund**, in contrast, provides loans to governments throughout the world. In order to obtain these loans, governments must submit to IMF conditions. This often means rewriting laws so that they are more favorable to foreign investment. Along with the World Bank, the IMF aims to help

countries strengthen their banking system. There have been a number of means by which the World Bank and the IMF have attempted to shape and assist economic development in the periphery. These include neoliberal policies that emphasize privatization, export production, and limited restrictions on imports. The term neoliberal (new liberal) refers to the revival of ideas popular at the end of the nineteenth century promoting free trade and economic integration. **Neoliberalism** promotes a reduction in the role and budget of government including reduced subsidies and the privatization of formerly publicly owned and operated concerns such as utilities. Like modernization theory, the goal of neoliberal development policies is to enable peripheral countries to achieve core economic standards of wealth and prosperity, while recognizing that pre-existing conditions will have to be taken into account to construct a place-specific development path. For the most part, neoliberal development is premised on policies of structural adjustment, focused on market-led economic growth, with the aim of duplicating the economic and political organization of the core.

In response to the revival of modernization theory in the guise of neoliberalism, critics have emerged who question whether the kind of development promulgated by neoliberalism is environmentally and socially sustainable. In practice, sustainable development policies argue for using renewable natural resources in a manner that does not eliminate or degrade them—by making greater use, for example, of solar and geothermal energy, and by greater use of recycled materials. It means *managing* economic systems so that all resources—physical and human—are used optimally. It means *regulating* economic systems so that the benefits of development are distributed more equitably (if only to prevent poverty from causing environmental degradation). And it means *organizing* societies so that improved education, health care, and social welfare can contribute to environmental awareness and sensitivity and an improved quality of life.

A final and more radical aspect of sustainable development is a move away from wholesale globalization toward increased “localization”: a desire to return to a more locally based economy where production, consumption and decision making can be oriented to local needs and conditions.

Since the 1980s, and an apparent failure of existing development theory and policy to modernize the periphery, radical criticism by feminist, postcolonial, and other perspectives has reconceptualized development as violent imposition of core economic values upon the periphery and a means for the core to exercise control over the periphery. As geographers Philip Porter and Eric Sheppard have written, development in the periphery has been predicated on the initial “violence of colonialism, gunboat diplomacy and wars between superpowers; impoverishment; external control over domestic affairs; the dissolution of indigenous institutions and cultures; and environmental deterioration. In short, they [the periphery] have encountered rather than propagated development. . .”¹ As a result of this radical refiguring of development theory and policy, contemporary theorists have called into question the whole grand notion of development and argue instead for indigenous alternatives that empower grassroots movements and promote local knowledge and that can repair the damage done by core development projects. They have shown how development is just one way to think about a very complicated reality, but one that has come to dominate as the only solution to social, cultural, economic, and political crises in the periphery.

The contemporary radical critique of mainstream development theory challenges the core's position that it knows best how to solve the problems of the periphery and further argues that the neoliberal goal of economic development for all states and nations of the world might even be called into question. These challenges are part of a broader critique that argues for the need to recognize the importance of social and cultural factors in the process of economic and political development. Focusing on women and other underrepresented groups, the radical critique of development theory contends that different groups in different places have different access to the power and resources that shape their daily lives.

Six Key Factors of Globalization

The increasing integration of the world-system over the last 25 years has been informed by the theories and policies of development discussed above. The level of globalization that has resulted has been caused by dramatic changes in all aspects of economic life from production to consumption. We treat the five key factors in the following five sections. They include a new international division of labor, an internationalization of finance, a new technology system, the homogenization of international consumer markets, and the proliferation of the transnational corporation.

A New International Division of Labor

The new international division of labor that has accompanied and enabled the most recent round of globalization has resulted in three main changes. First, the United States has declined as an industrial producer, relative to the spectacular growth of Japan and the resurgence of Europe as industrial producers. Second, the **new international division of labor** has involved the decentralization of manufacturing production from all of these core regions to some semi-peripheral and peripheral countries. In 1995, U.S.-based companies employed about 5.5 million workers overseas, 80 percent of whom were in manufacturing jobs. An important reason for this trend has been the prospect of keeping production costs low by exploiting the huge differential in wage rates around the world.

A third result of the new international division of labor is that new specializations have emerged within the core regions of the world-system: high-tech manufacturing and producer services (that is, services such as information services, insurance, and market research that enhance the productivity or efficiency of other firms' activities or that enable them to maintain specialized roles). The most significant reflection of this new international division of labor is that global trade has grown much more rapidly over the past 25 years than has global production, a clear indication of the increased economic integration of the world-system.

The Internationalization of Finance

The second factor contributing to today's globalization is the internationalization of finance: the emergence of global banking and globally integrated financial markets. These changes are of course tied in to the new international division of labor. In particular, they are a consequence of massive increases in levels of international direct investment. Between 1988 and 1996, the flow of investment capital from core to semiperipheral and peripheral countries increased twentyfold. These increases include transnational investments by individuals and businesses as well as cross-border

investments undertaken within the internal structures of transnational corporations. In addition, the capacity of computers and information systems to deal very quickly with changing international conditions has added a speculative component to the internationalization of finance. All in all, about \$100 billion worth of currencies are traded every day. The volume of international investment and financial trading created a need for banks and financial institutions that could handle investments on a large scale, across great distances, quickly and efficiently. The nerve centers of the new system are located in just a few places—London, Frankfurt, New York, and Tokyo, in particular. Their activities are interconnected around the clock (**Figure 2.37**), and their networks penetrate into every corner of the globe.

Figure 2.37 Financial centers/time zones

A New Technology System

The third factor contributing to globalization is a new technology system based on a combination of innovations, including solar energy, robotics, microelectronics, biotechnology, digital telecommunications, and computerized information systems. This new technology system has required the geographical reorganization of the core economies. It has also extended the global reach of finance and industry and made for a more flexible approach to investment and trade. Especially important in this regard have been new and improved technologies in transport and communications: the integration of shipping, railroad, and highway systems through containerization, the introduction of wide-bodied cargo jets, and the development of fax machines, fiber-optic networks, communications satellites, and electronic mail and information-retrieval systems. Finally, many of these telecommunications technologies have also introduced a wider geographical scope and faster pace to many aspects of political, social, and cultural change (**Figure 2.38**).

Figure 2.38 Shrinking world

Homogenization of International Consumer Markets

A fourth factor in globalization has been the growth of consumer markets. Among the more affluent populations of the world, similar trends in consumer taste have been created by similar social processes. A new and materialistic international culture has taken root, in which people save less, borrow more, defer parenthood, and indulge in affordable luxuries that are marketed as symbols of style and distinctiveness. This culture is easily transmitted through the new telecommunications media, and it has been an important basis for transnational corporations' global marketing of "world products" (German luxury automobiles, Swiss watches, British raincoats, French wines, American soft drinks, Italian shoes and designer clothes, and Japanese consumer electronics, for example). It is also a culture that has been easily reinforced through other aspects of globalization, including the internationalization of television, especially CNN, MTV, Star Television, and the syndication of TV movies and light entertainment series (**Figure 2.39**).

Figure 2.39 Global marketing of television programming

The Transnational Corporation

As we discussed in a previous section, the division of labor is one way to differentiate the workforce in order to introduce new efficiencies. The introduction of a division of labor during the mercantile period fostered a new form of commercial organization, which would enable the combination of resources and labor on a much larger scale than was

possible with the individual or even partnerships. This new form of commercial organization was the corporation with limited liability. Although first appearing during the fifteenth century, limited liability corporations really took off during the early days of the American republic when the developing nation had no banks or other established institutions to support economic growth. Groups of individuals incorporated in order to construct roads, create trading or mining groups, or build and operate factories.

The corporation as a form of business organization has a number of advantages. First, it exists independently of its owners (the stockholders). Second, in U. S. law, as well as in most other countries, the corporation is recognized as a legal person with many of the same rights that individuals have such as the right to buy and sell property and to enter into contracts. Third, the corporation is an excellent device for raising vast amounts of business capital by pooling the financial resources of thousands of individuals at the same time spreading the risks of a new venture among many people. Finally--and this is where the notion of *limited liability* comes in--the owners of a corporation are not liable for its debts beyond their investment.

As former colonies gained their independence and neocolonialism emerged as a new form of exploitation of the periphery by the core a new form of imperialism was also emerging in the form of the giant corporation. These corporations had grown within the core countries through the elimination of smaller firms by mergers and takeovers. By the 1960s, quite a few of them had become so big that they were *transnational* in scope, having established overseas subsidiaries, taken over foreign competitors, or simply bought into profitable foreign businesses.

A **transnational corporation** (TNC) has investments and activities that span international boundaries, with subsidiary companies, factories, offices, or facilities in several countries. In 1999 there were 60,000 parent transnational corporations with 500,000 foreign affiliates around the world. In 1997, the top 100 TNCs together held \$1.8 trillion in foreign assets, sold products worth \$2.1 trillion abroad, and employed over six million people in their foreign affiliates (see **Figure 2.40**). Transnational corporations have been portrayed as imperialist by some geographers because of their ability and willingness to exercise their considerable power in ways that adversely affect peripheral states. They have certainly been central to a major new phase of geographical restructuring that has been under way for the last 25 years or so. This phase has been distinctive because an unprecedented amount of economic, political, social, and cultural activity has spilled beyond the geographic and institutional boundaries of states. It is a phase of *globalization*, a much fuller integration of the economies of the worldwide system of states and a much greater interdependence of individual places and regions from every part of the world-system. And the increasing integration of the world economy is increasingly predicated on nongovernmental corporate enterprises that operate at a worldwide scale.

Figure 2.40 Top Twenty Transnational Corporations, 1999 (bar graph)

Transnational Economic Integration

The five key factors of globalization described above have helped to usher in a contemporary transnational world economy highly integrated politically and economically. It is important to keep in mind, however, that the dominant processes both in rivalry within the core as well as in the struggle by the periphery to escape from dependency have

been dominated by conflict and competition. Economic nationalism, whether drawing on practical examples (for example, eighteenth-century Britain, see Chapter 3, p. 000), political ideology (for example, Juan Péron in Argentina and Getúlio Vargas in Brazil in the 1940s and 1950s, see Chapter 8, p. 000) or development theory (for example, neoliberalism, as described in this chapter), continues to dominate global economics and geopolitics.

At the same time that we consider the salience of economic nationalism, we must not underestimate the relevance of the long-term trend among the various national economies towards the progressive integration of local, regional, and national economic systems. What has happened is that the logic of the world economy has in many ways transcended, and in some ways undermined, the scale of nation-states. The logic and apparatus of statehood is not conducive to transnational integration, whether economic or political; but the outcomes of the new international division of labor have forced many states to explore cooperative strategies of various kinds. As a result, the world's economic landscapes now bear the imprint, in a variety of ways, of *transnational* economic and political integration.

Types and Levels of Economic Integration

Figure 2.41 summarizes the history and geography of transnational economic integration since 1945. In practice, integration can be pursued in a variety of ways and at different levels. It can be *formal*, involving an institutionalized set of rules and procedures--for example, United Nations Organization, General Agreement on Tariffs and Trade (GATT)--or *informal*, involving coalitions of interests, such as UN voting blocs. It can be *transnational*, involving attempts to foster integration between nation-states--North Atlantic Treaty Organization (NATO), Organization of Asian Unity (OAU), or the World Trade Organization (WTO)--or *supranational*, involving a commitment to an institutionalized body with certain powers over member states--for example, the European Union (EU). It can be *economic* (WTO, the European Free Trade Association (EFTA)), *strategic* (NATO, the Warsaw Pact), *political* (UN voting blocs), *sociocultural* (United Nations Educational, Scientific, and Cultural Organization (UNESCO), or *mixed* (EU, OAU).

Figure 2.41 Transnational economic integration, 1945-present

The GATT Framework and the WTO

Within the contemporary world-system, economically oriented integration schemes have had to conform to the rules of GATT, a transnational association of most of the world's trading nations formed in the aftermath of the Second World War to promote global free trade and ease the complex trade restrictions that had accumulated. The original GATT agreement (in 1947) reduced the average tariff on goods from over 40 percent to less than 30 percent. Subsequent rounds of renegotiation have brought the average tariff level down to about 5 percent.

Unfortunately, GATT became the victim of its own success. In short, trade issues have also become increasingly complex as more countries have joined the agreement and the world economy has become increasingly globalized and interdependent. The original agreement was written to deal primarily with trade in manufactured goods among core countries, yet by 1990 only about 60 percent of world export earnings came from

manufacturing. Instead, services accounted for an increasing share of world trade; many of the newly industrializing countries (or NICs), such as Indonesia or Taiwan, were not fully subject to GATT rules. And although tariffs on manufactured goods were successfully reduced through the GATT, substantial nontariff barriers (for example, import quotas, import licenses, exchange rate manipulation, government subsidies to domestic industries, special labeling and packaging regulations, and so forth) remained a problem. As a result of the increasing complexity of the trading landscape, GATT renegotiation is an increasingly protracted process. The most recent round of renegotiation, the Uruguay Round, began in 1986 and was not concluded until December 1993. The chief obstacle was disagreement between the United States and the European Union over nontariff barriers in the form of subsidies to farmers. The crowning achievement of the Uruguay round was the creation of the WTO as a replacement for GATT (which had become labeled by wags as the “General Agreement to Talk and Talk”).

Whereas GATT had little ability to enforce its decisions, the WTO is a global body with both judicial and regulatory power. Its framework is a series of agreements that are some 24,000 pages long. These agreements go beyond trade in manufactured goods to cover investment, services, and intellectual property rights. In the words of the organization’s director-general, Renato Ruggiero, the WTO “is writing the constitution of a single global economy.” A significant step toward this was taken in February 1997 when the 68 original members of the WTO signed an agreement to free up their markets to international competition in telecommunications. Currently, the WTO had a membership of nations, with a waiting list of others, including Russia and China.

Many of the WTO’s agreements are derived from GATT rulings, including the provision that each member state shall extend most-favored status to all other member countries. (Thus if, the United States were to lower its import duty on textile products from Canada, it would immediately have to extend that same reduced rate to every other WTO member.) There is, however, an exception to this principle for free trade associations and customs unions, members of which may reduce their tariffs against each other without extending such concessions to remaining WTO members. It is this exception that has provided the basis for regional economic integration within the globalizing world economy. As was discussed in Chapter 1, the emergence and growing power of supranational organizations like the WTO has not occurred without serious opposition (see *Geography Matters: Mobilization Against Globalization*, p. 00).

The Institutional Forms of Integration

In a **free trade association**, member countries eliminate tariff and quota barriers against trade from other member states, but each individual member continues to charge its regular duties on materials and products coming from outside the association. The only significant free trade association has been the European Free Trade Association (EFTA), whose membership now comprises only Iceland, Liechtenstein, Norway, and Switzerland.

Another way to eliminate tariffs between member states, but with a common protective wall against non-members, is a customs union. A **customs union** is an international association organized to eliminate customs restrictions on goods exchanged between member nations and to establish a uniform tariff policy toward nonmember nations.

Where internal restrictions on the movement of capital, labor and enterprise are also removed from the basic framework of a customs union, the result is a **common market**.

Most customs unions have gone at least some way toward common-market status.

Some examples include:

--the European Union: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the United Kingdom

--the Central American Common Market: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua

--the Arab Common Market: Egypt, Iraq, Syria, Jordan

--the Andean Pact: Bolivia, Colombia, Ecuador, Panama, Venezuela

--the Caribbean Community and Common Market (Antigua, Barbuda, the Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent, Suriname, Trinidad and Tobago),

(the Economic Community of the States of Central Africa (Congo (Brazzaville), Central African Republic, Congo (Kinshasa), Gabon, Rwanda, Burundi, and the island republic of São Tomé and Príncipe),

--the Economic Community of West African States (Benin, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo, Burkina Faso, Cape Verde).

A form of integration higher than the common market is the economic union. In addition to the characteristics of a common market, the **economic union** provides for integrated economic policies among member states, as in the EU. The highest form of integration possible would have to involve some form of supranational political union, with a single monetary system and a central bank, a unified fiscal system, a common foreign economic policy, and a supranational authority with executive, judicial and legislative branches.

Although the EU appears to be a success, many other free-trade associations and common markets have been less so. Some of the most difficult obstacles to overcome have been the result of memberships that include nations at very different levels of development, and that involve enormous distances and poorly developed transportation networks. It was in response to such problems that GATT authorized, in 1971, the waiver of the Article 1 most-favored-nation provision for peripheral countries offering concessions to other peripheral countries. As a result, Mexico, for example, could offer to reduce its duty on a product from Bolivia without having to extend the same lower rate to the United States. As a result of the waiver of Article 1, many peripheral countries were free to experiment with a variety of integration models without incorporating internal free trade as a legally binding obligation. The result has been the emergence of a series of trade-preference associations such as the Association of Southeast Asian Nations, or ASEAN (Brunei, Indonesia, Malaysia, the Philippines, Singapore, Thailand) and the Latin American Integration Association (LAIA), formerly the Latin American Free Trade Association (Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay, Venezuela).

The increasing globalization of the world economy has broadened, deepened, and accelerated the trend toward regional economic integration. In 1990, for example, the Andean Pact decided to establish an Andean Common Market by 1996. In the following

year, the pact approved more trade liberalization reforms than it had in the previous 22 years of the pact's existence. In 1989, the ASEAN countries joined with Australia, Canada, China, Hong Kong, Japan, New Zealand, South Korea, Taiwan and the United States to form the Asia Pacific Economic Co-operation group. Their objective was to promote the liberalization of trade as well as cooperation in trade and investment around the Pacific Rim. In 1992, EFTA and the EU agreed to establish a unified free trade zone, the European Economic Area (EEA), with a combined market size of 379 million people.

Meanwhile, Canada, Mexico, and the United States established a trading zone in 1992 with the completion of the North American Free Trade Agreement (NAFTA). This was not only an unprecedented economic integration of core countries with a semiperipheral country but also the first instrument of economic integration to liberalize trade in services. Over a 15-year period, NAFTA is scheduled to phase out tariffs and other trade and investment barriers between the three countries. After nearly a decade, NAFTA has had a significant impact on the reorganization of the economic geography of North America. At the same time that thousands of manufacturing jobs have been transplanted from Canada and the United States to Mexico, the growing Mexican market has become open to U.S. and Canadian automobiles and automobile parts, telecommunications, and financial services. Eventually, there will be total access in agricultural markets, which will rewrite the agricultural geography of Mexico and significantly modify agricultural patterns in the southwestern United States and possibly elsewhere.

Spatial Outcomes of Economic Integration

The expansion of markets and the removal of artificial barriers to trade predictably result in a reorganization of economic geography with respect to two main sets of effects that result in either creating or impairing trade. As national economies become more integrated across political boundaries, *the removal of trade barriers should lead to a more pronounced regional division of labor*, with each region in the larger association tending to specialize in those activities in which it has the greatest comparative advantage. More particularly, production is reallocated from high-cost to low-cost settings—from core to periphery—and a great deal of trade is generated within the association. An additional outcome is that lower costs can, theoretically, be passed on to consumers, thus contributing to improved levels of living. These effects of transnational integration are generally referred to as **trade creation effects**.

Countries that are not a part of the association, however, tend to lose trade. This is because the external tariff wall prevents outsiders from competing effectively with higher-cost inside producers whose output is able to circulate duty-free within the association. To the extent that the old producers were more efficient producers than the new ones, **trade diversion effects** will have taken place, with the result that consumption is shifted away from lower-cost external sources to higher-cost internal sources. Consumers outside the bounds of the association will have to pay more for certain goods, and levels of living may be depressed.

- The result of transnational economic integration has been to reinforce the dominant core-periphery patterns in the world's economic landscapes at the macro scale. Patterns of trade between core economies, for instance, are already so strong that integration is able to draw on a good

deal of momentum. Furthermore, it is relatively easy for core states to meet the political, social, and cultural prerequisites for successful economic integration.

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In the case of peripheral economies, existing patterns of trade offer little realistic scope for the reallocation of output following the removal of trade barriers in trade preference organizations, common markets, or free trade associations. Most peripheral nations produce primary commodities that are exported to the core rather than to each other. Also, most are so short of capital that even pooled resources will not enable them to break free from their functional dependency on trade with core economies. Experience has shown, meanwhile, that it is difficult for peripheral states to meet the political, social, and cultural preconditions for successful economic integration. For instance, cultural differences are too great or very passionately held and political institutions are underdeveloped or often corrupted.

One important response to such problems has been the so-called "North-South dialogue". The most important influence on this dialogue has been the United Nations Conference on Trade and Development (UNCTAD), launched in Geneva in 1964. By the end of the Geneva meetings, a degree of political solidarity had emerged among peripheral countries.

By 1987, the Group of 77 had nearly 130 members and had succeeded in articulating demands for a "New International Economic Order" (not to be confused with the New International Division of Labor). Central to the new order envisioned by the Group of 77 are demands for fundamental changes in the marketing conditions of world trade in primary commodities. These changes would require a variety of measures, including price and production agreements among producer countries, the creation of international buffer stocks of commodities financed by a common fund, multilateral long-term supply contracts, and the indexing of prices of primary commodities against the price of manufactured goods. Such changes have been at the center of discussions in a series of UNCTAD conferences, special sessions of the United Nations General Assembly, meetings of a specially convened Conference on International Economic Cooperation, and successive meetings of the heads of state of the British Commonwealth. Throughout these discussions, however, the core countries in general and the United States in particular have been reluctant to do more than agree to general statements about the desirability of a new international economic order. As a result, it remains true that so far the North-South dialogue has been a failure, and the New International Economic Order has yet to begin.

In practice, therefore, there have been two dominant sets of spatial outcomes of transnational economic integration. One has simply been the reinforcement of the dominant core-periphery structure of the world economy because of the relative success of economic integration between core states. The second has been the imprint of this success on particular regions. This imprint can be discerned in terms of: (1) the effects of trade creation, trade diversion, and socio-spatial tensions within core associations; and, (2) the dislocations experienced within nonmember states. It is important to recognize, however, that other factors besides economics play key roles in the shaping

the prospects for success of any region or subregion (See Geography Matters: The Relevance of Politics and Culture to Economic Development, p. 000).

SUMMARY AND CONCLUSION

Places and regions everywhere carry the legacy of a sequence of major changes in world geography. The evolution of world geography can be traced from the prehistoric hearths of agricultural development and human settlement, through the trading systems of the precapitalist, preindustrial world to the foundations of the geography of modern world. These foundations were cast through industrialization, the colonization of the world, and the spread of an international market economy. Today, these foundations can be seen in the geography of the information age, a geography that now provides a new, global context for places and regions.

The world today is highly integrated. Places and regions have become increasingly interdependent, linked together through complex and rapidly changing linkages that are orchestrated by transnational corporations. Using new technology systems that allow for instantaneous global telecommunications and flexible patterns of investment and production, these corporations span the fast world of the core and the slow world of the periphery. This integration does tend to blur some national and regional differences as the global marketplace brings a dispersion of people, tastes, and ideas. The overall result, though, has been an intensification of the differences between the core and the periphery.

Within this new global context, local differences in resource endowments remain, and people's territorial impulses endure. Many local cultures continue to be resilient or adaptive. Fundamental principles of spatial organization also continue to operate. All this ensures that, even as the world-system becomes more and more integrated, places and regions continue to be made and remade. The new global context is filled with local variety that is constantly changing, just as the global context itself is constantly responding to local developments.

KEY TERMS

biogeography
biome
climate
colonialism
comparative advantage
common market
continental drift
continental shield
convergent plate boundary
core regions
culture
customs union
development theory
diaspora
divergent plate boundary
division of labor

earth system science
economic union
ecosystem
faulting
free trade association
gender division of labor
global warming
greenhouse effect
hegemony
hinterland
international division of labor
International Monetary Fund
Intertropical convergence zone
law of diminishing returns
leadership cycles
mercantilism
minisystem
nation
nationalism
nation-state
neocolonialism
new international division of labor
overurbanization
peripheral regions
plate tectonics
rift valley
semiperipheral regions
subduction
transform boundary
transnational corporation
trade creation effects
trade diversion effects
weather
World Bank
world-empire
world-system

EXERCISES

At the end of each chapter, you will find exercises and activities based on using the Internet, along with some that do not require access to the Internet. This book has its own “home page” on the Internet, where you will find additional resources—maps, photographs, data—as well as exercises and activities that relate to each chapter. You will also find an evaluation checksheet and suggestion form that you can mail to the authors electronically.

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¹ P Porter and E. Sheppard, *A World of Difference: Society, Nature, Development*. New York: Guildford Press, 1998, pp. 97.