

Geographic thought enjoyed a resurgence in Europe in the seventeenth century, inspired by exploits of European explorers to establish trading routes and gain control of resources elsewhere in the world. *Geographia Generalis*, written by the German Bernhardus Varenius (1622-1650), stood for more than a century as the standard treatise on systematic geography. Varenius also wrote a description of Japan, but he died before he could complete a more comprehensive work on regional geography.

How Geography Grew as a Science

German philosopher Immanuel Kant (1724-1804) placed geography within an overall framework of scientific knowledge. He argued that all knowledge can be classified logically or physically. For example, a *logical classification* organized plants and animals into a systematic framework of species, based on their characteristics, regardless of when or where they exist. A *physical classification* identified plants and animals that occur together in particular times and places. Descriptions according to time constitute history, and descriptions according to place constitute *geography*. History studies phenomena that follow one another chronologically, whereas geography studies phenomena that are located outside one another.

As modern geography developed, two major approaches emerged. One group of geographers believed that our physical environment causes human behaviour. Another group believed that everything in the landscape is interrelated, but physical factors do not necessarily cause human actions.

Does the Physical Environment cause human actions? Modern geography began with two nineteenth-century German geographers, Alexander von Humboldt (1769-1859) and Carl Ritter (1779-1859). Prior to their work, geographers described the physical and social characteristics of places in great detail but did not explain their observations systematically. Humboldt and Ritter argued that geography should move beyond describing Earth's surface to explaining *why* certain phenomena were present or absent. This is the origin of our 'where', 'why' and 'significance' approach.

Humboldt and Ritter urged human geographers to adopt the methods of scientific inquiry used by natural scientists. They argued that the scientific study of social and natural processes is fundamentally the same. Natural scientists have made more progress in formulating general laws than have social scientists, so an important goal of human geographers is to discover general laws.

According to Humboldt and Ritter, human geographers should apply laws from the natural sciences to understanding relationships between the physical environment and human actions. This geographic approach to the 'why' question is sometimes known as 'cultural ecology' and in the past was insensitively called the 'man-land' tradition. Humboldt and Ritter concentrated on how the physical environment *caused* social development, an approach called **environmental determinism**.

Other influential geographers adopted environmental determinism in the late nineteenth and early twentieth centuries. Friedrich Ratzel (1844-1904) and his American student, Ellen

Churchill Semple (1863-1932), claimed that geography was the study of the influences of the natural environment on people. Another early American geographer, Ellsworth Huntington (1876-1947), argued that climate was a major determinant of civilization. For instance, according to Huntington, the temperate climate of maritime northwestern Europe produced greater human efficiency as measured by better health conditions, lower death rates, and higher standards of living.

Geographers no longer regard environmental determinism as a viable way to explain the relationship between human activities and the physical environment. Instead, the concept of *possibilism* now is widely accepted. This whole school of geographic thought is identified today as the *human-environment approach*.

In a Region, Everything is Related – A second school of geographic thought, regional studies, developed in France during the nineteenth century. The regional studies approach – sometimes called the cultural landscape approach – was initiated by Paul Vidal de la Blache (1845-1918) and Jean Brunhes (1869-1930). It was later adopted by several American geographers, including Carl Sauer (1889-1975) and Robert Platt (1880-1950).

These geographers rejected the idea that physical factors simply determine human actions. Instead, they argued that each place has its own distinctive landscape that results from a unique combination of social relationships and physical processes. Therefore, geographers should start by closely observing the physical and social characteristics of a place. They called this the regional studies approach, stating that the work of human geography is to discern the relationships among social and physical phenomena in a particular study area. Everything in the landscape is interrelated, so physical factors do not simply cause human actions, as environmental determinists had argued.

Today, contemporary geographers reject the extreme position of the environmental determinists that the physical environment causes human actions. They also have considerably modified the regional studies approach. But, these two traditions of geographic thought – human environment relationships and regional studies – remain fundamental to the scientific study of geography.

LOCATION: WHERE SOMETHING IS

The most fundamental concept in geography is **location**, which is *the position that something occupies on Earth's surface*. Geographers identify the location of something in four ways – by place name, site, situation, and mathematical location – to answer the 'where' question.

The dialogue about Miami that opened this chapter illustrates all four methods. The student's first response to the 'where' question was the *place-name* 'Miami'. Which this response failed to accurately indicate the location of Miami, the student then referred to its site characteristics, such as vegetation, topography, and climate. The next response drew on Miami's *situation*, in the city of Oxford and the state of Ohio and near the city of Cincinnati and the state of Indiana. Finally, the student gave two examples of Miami's *mathematical location*.

Place-names

Because all inhabited places on Earth's surface have been named, the simplest way to describe a particular location is by referring to its name. Geographers call the name given to a portion of Earth's surface its **toponym** (literally, place-name).

The name of a place may give us a clue about its founders, physical setting, social customs, or political changes. Some communities take the name of an otherwise obscure founder or early leader, such as the West Virginia communities of Jenkinjones (named for a mine operator) and Gassaway (named for Senator Henry Gassaway Davis). Others adopt the name of a famous person who had no connection with the community. George Washington's name has been selected for one state, countries in thirty other states, and dozens of cities, including the national capital. Most states also contain places named after James Madison and Thomas Jefferson.

Places may be named after important historical events. One of the most straightforward is found in England. The key victory in the Norman (French) conquest of England in 1066 was the Battle of Hastings. The actual battle site, 10 kilometers (6 miles) from the town of Hastings, is now simply known as 'Battle'. After the assassinations of President John F. Kennedy in 1963 and the Rev. Martin Luther King Jr., in 1968, many communities renamed streets, parks, and other places after them.

Some place-names derive from features of the physical environment. Trees, valleys, bodies of water, and other natural features appear in the place-names of most languages. The capital of the Netherlands, called '*s Gravenhage*' in Dutch (in English, The Hague), means 'the prince's forest'. *Aherystwyth*, in Wales, means 'mouth of the River Ystwyth,' and 22 kilometers (13 miles) upstream lies the tiny village of *Cwmystwyth*, which means 'valley of the Ystwyth.' The name of the river, *Ystwyth*, in turn is the Welsh word for 'meandering', descriptive of a stream that bends like a snake.

The name of a place can tell us a lot about the social customs of its early inhabitants. Some settlers select place-names associated with religion, such as Saint Louis, while other names derive from ancient history, such as Athens, Attica, and Rome. A place-name may also indicate the origin of its settlers. Place-names commonly have British origins in North America and Australia, Portuguese origins in Brazil, Spanish origins elsewhere in Latin America, and Dutch origins in South Africa.

Confusion and Name changes – Confusion may also arise if local residents commonly use names other than the official ones. New York City has an abundance of unofficial names for its streets and structures. The Avenue of the Americas is almost universally known by its former name, Sixth Avenue, and the Queensboro Bridge is generally called the 59th Street Bridge. A place having two or more local names presents a quandary to cartographers who need to give the place a label.

The Board of Geographical Names, operated by the U.S. Geological Survey, was established in the late nineteenth century to be the final arbiter of names on U.S. maps. In recent years, the board has been especially concerned with removing offensive place names, such as racial or ethnic slurs.

Places can change names. The city of Cincinnati was originally named Losantiville. The name was derived as follows; *L* is for Licking river; *os* is Latin for mouth; *anti* is Latin for opposite; *ville* is Latin for town – hence, 'town opposite the mouth of the Licking River'. The name was changed to Cincinnati in honor of a society of Revolutionary War heroes named after Cincinnatus, an ancient Roman general.

Names can also change as a result of political upheavals. For example, after World War II, Poland gained control over territory that was formerly part of Germany and changed many of the place-names from German to Polish. Among the larger cities, Danzig became Gdansk, Breslau became Wroclaw, and Stettin became Szczecin.

Names associated with communism throughout Eastern Europe have been changed, in many cases reverting to those used before the Communists gained power in 1917. For example, in Olomouc, a Czech city of 100,000, Lenin Street has been changed to Liberty Street, Red Army Square to Lower Square, and Liberation Street to Masaryk Street (for the first president of democratic Czechoslovakia between 1919 and 1935). Gottwaldov, a Czech city named for a communist president of Czechoslovakia, reverted to its former name Zlin, and Leningrad, the second largest city in the former Soviet Union, reverted to St. Petersburg, Russia.

Someone unfamiliar with foreign languages might have difficulty in identifying the English name for these European countries: Civitas Helvetia, Ostereich, Magyarország, and Suomi. These are the official names for Switzerland, Austria, Hungary, and Finland, respectively.

Money and Politics – Pioneers lured to the American West by the prospect of finding gold or silver placed many picturesque names on the landscape. Place-names in Nevada selected by successful miners include Eureka, Lucky Boy Pass, Gold Point, and Silver Peak. Unsuccessful Nevada pioneers sadly or bitterly named other places Battle, Disaster Peak, and Massacre Lake. In 1959 the Elko, Nevada, county commissioners gave the name Jackpot to a town near the Idaho state border, in recognition of the importance of legalized gambling to the local economy.

What may be the longest community name in the world has an economic origin – the Welsh town of *Llanfairpwllgwyngyllgogerychwyrndrobwlllantysiliogogoch*. The fifty-eight-letter name means 'the Church of St. Mary's in the grove of the white hazelnut tree near the rapid whirlpool and the Church of St. Tisilio near the red cave.' The town's name originally encompassed only the first twenty letters (*Llanfairpwllgwyngyll*), but when the railway was built in the nineteenth century, the townspeople lengthened it. They decided that signs with the longer name in the railway station would attract attention and bring more business and visitors to the town.

Sometimes a place-name is so symbolic that its use can cause great political difficulty – and lost revenue. When Yugoslavia's southernmost republic declared independence in 1991, its leaders wished to call the new country *Macedonia*, the same name it had as a local government within Yugoslavia. But Greece felt threatened by this use of the name, because Macedonia is also the name of Greece's northernmost region. As the home of Aristotle and Alexander the Great, ancient Greek Macedonia was an important cultural hearth for Greece and Western civilization. Further, older Greeks recalled that the communists had promised that, if their side

won the civil war in Greece in 1948-49, they would transfer Greek Macedonia to a new federation comprising the neighbouring countries of Yugoslavia and Bulgaria.

Greece suggested that the new country be called the Slavic Republic of Macedonia, but this name was rejected because only 64 percent of the inhabitants of the new country were Slavs. Using the word *Slavic* would offend Albanians and Turks, who accounted for 21 percent and 5 percent of the new country's population, respectively. The consequence was more than just a quibble over naming real estate: Lack of agreement on a name for the new country delayed diplomatic recognition by other countries and financial support to help it achieve economic development.

Site

The second way to indicate location is by **site**, which is the physical character of a place. Important site characteristics include climate, water sources, topography, soil, vegetation, latitude, and elevation. The combination of physical characteristics gives each location a unique character.

Site factors always have been essential in selecting locations for settlements, although people have disagreed on the attributes of a good site, depending on cultural values. Some have preferred a hilltop site for easy defense from attack. Other people located settlements near convenient river-crossing points to facilitate communication with people in other places.

An island combines the attributes of both hilltop and riverside locations, because the site provides good defense and transportation links. The site of the country of Singapore, for example, is a small, swampy island approximately 1 kilometer (0.63 miles) off the southern tip of the Malay Peninsula at the eastern end of the Strait of Malacca. The city of Singapore covers nearly 20 percent of the island.

In general, the characteristics of a site do not change over time, but human preferences do. The warmer, humid climate in the southeastern United States traditionally retarded population growth, but in recent years, it has become an attraction. People increasingly prefer the climate in the Southeast because they can participate in outdoor recreational activities throughout the year and do not have to shovel snow in winter. At the same time, technological change, especially the invention of air conditioning, has increased the Southeast's attractiveness by enabling people to escape the high heat and humidity.

Human actions can modify the characteristics of a site. The southern portion of New York City's Manhattan Island is twice as large today as it was in 1626, when Peter Minuit bought the island from its native inhabitants for the equivalent of \$23.75 worth of Dutch gold and silver coins. The additional land area was created by filling in portions of the East River and Hudson River. In the eighteenth century, landfills were created by sinking old ships and dumping refuse on top of them.

Because of poor health conditions, the city decided in 1797 to cover all the landfills with soil and gravel and to lay out a new street, called South Street, to halt further dumping in the river. Today, South Street is two blocks from the river. More recently, New York City permitted construction of Battery Park City, a 57-hectare (142-acre) site designed to house more than

20,000 residents and 30,000 office workers. The central areas of Boston and Tokyo have also been expanded through centuries of land filling nearby bays, substantially changing these sites.

Situation

Situation is the location of a place relative to other places. Situation is a valuable way to indicate location, for two reasons – finding an unfamiliar place and understanding its importance.

First, situation helps us find an unfamiliar place by comparing its location with that of a familiar one. We give directions by referring to the situation of a place: "It's down past the court house, on Locust Street, after the third traffic light, beside the yellow brick bank." We identify important buildings, streets, and other landmarks to direct people to the desired location.

For example, even long-time residents of Paris might have difficulty finding the Marmottan Museum by its address, 2 rue Louis-Boilly, because the street is only one block long. The museum, which contains one of the world's largest collections of paintings by Claude Monet, can be found by referring to its situation: one block east the city's largest park, the Bois de Boulogne, near the Muette stop on the metro (subway).

Second, situation helps us understand the importance of a location. Many locations are important because they are accessible to other places. For example, because of its location, Singapore has become a center for the trading and distribution of goods for much of Southeast Asia. Singapore is situated near the Strait of Malacca, which is the major passageway for ships travelling between the South China Sea and the Indian Ocean.

Mathematical Location

Sometimes it is necessary to locate something more precisely. In using an atlas, you probably have used the familiar 'A-1' system of finding a place on a map. Typically, a row of numbers runs across the top of the map, and a column of letters runs down the side. When you look up Cactus, Texas, in the atlas, its map coordinates are given as C-7. You simply find C in the column and look across under the 7, and there is Cactus. But, this general location is accurate only within several kilometers.

Latitude and Longitude – The location of Cactus, or any place on Earth's surface, can be described precisely by drawing an imaginary grid on the globe and then describing the place's location on the grid, using a set of numbers called latitude and longitude. The universally accepted numbering system of latitude and longitude consists of imaginary arcs drawn on the globe.

A **meridian** is an arc drawn between the North and South Poles. All the meridians have the same length and the same beginning and end points. The location of each meridian is identified on Earth's surface according to a numbering system known as **longitude**. One meridian, which passes through the Royal Observatory at Greenwich, England, has been designated by international agreement as the 'starting point' for numbering the meridians. It is labeled as *0 degrees longitude* and is also called the **prime meridian**.

The meridian on the opposite side of the globe from the prime meridian is 180° longitude. All other meridians have numbers between 0° and 180° and are designated 'east' or

'west' to show that they are either east or west of the prime meridian. For example, New York City is located at 74° west longitude, and Lahore, Pakistan is 74° east longitude. San Diego is located at 117° west longitude, Tianjin, China at 117° east longitude.

The second set of imaginary arcs drawn on Earth's surface are **parallels**. These are circles drawn around the globe parallel to the equator at right angles to the meridians. The numbering system used to indicate the location of parallels is called **latitude**. The equator is 0° latitude, the North Pole 90° north, and the South Pole 90° south. New York City is located at 41° north latitude, whereas Wellington, New Zealand is at 41° south. San Diego is located at 33° north latitude; Santiago, Chile at 33° south. Latitude and longitude are used together to identify locations. For example, Cactus, Texas, is at the intersection of 36° north latitude and 102° west longitude.

We can determine the mathematic location of a place even more precisely, if necessary. Each degree is divided into 60 minutes (′), and each minute in turn is divided into 60 seconds (″). For example, the official mathematical location of Paris, France is 48° 51′ north latitude and 2°20′ east longitude. The Observatory building in Paris is located at 48°50′11″ north latitude and 2°20′14″ east longitude. The latitude-longitude system is especially useful for navigation on the sea.

U.S. Land Ordinance of 1785 – In addition to the global system of latitude and longitude, other mathematical indicators of locations are used in different parts of the world. In the United States, the **Land Ordinance of 1785** divided much of the country into a system of townships and ranges to facilitate the sale of land to settlers in the West. The initial surveying was performed by Thomas Hutchins, who was appointed geographer to the United States in 1781. After Hutchins died in 1789, responsibility for surveying was transferred to the Surveyor General.

In this system, a **township** is a square 6 miles on each side. Some of the north-south separating townships are called **principal meridians**, and some east-west lines are designated **base lines**. Each township has a number corresponding to its distance north or south of a particular base line. Townships in the first row north of a base line are called T1N (Township 1 North), the second row to the north is T2N, the first row to the south is T1S, and so on. Each township has a second number, known as the *range*, corresponding to its location east or west of a principal meridian. Townships in the first column east of a principal meridian are designated R1E. The Tallahatchie River, for example, is in township T23N R1E, north of a base line that runs east west across Mississippi and east of a principal meridian along 90° west longitude.

A township is divided into thirty-six **sections**, each of which is 1 mile by 1 mile. Sections are numbered in a consistent order, from 1 in the northeast to 36 in the southeast. Each section is divided into four quarter-sections, designated as the northeast, northwest, southeast and southwest quarters of a particular section. A quarter section, which is 0.5 mile by 0.5 mile, or 160 acres, was the amount of land many western pioneers bought as a homestead. The Tallahatchie River is located in the southeast and the southwest quarter sections of Section 32.

The township and range is still important in understanding the location of objects across much of the United States. It explains the location of highways across the Midwest, farm fields in Iowa, and major streets in Chicago.

Geographers approach to 'Why' question

You have seen how geographers answer the question 'where' question with maps and location – place-names, site, situation and mathematical coordinates. Geographers also ask *why* things are located in particular places, rather than being distributed randomly. Two geographic approaches help answer this 'why' question: area analysis and spatial analysis.

Geographers approach the 'why' question through **spatial association**, the concept that the distribution of one phenomenon across the landscape is scientifically related to the location of other phenomena. For example, the distribution of livestock in Africa's Sahel results from the distribution of watering holes. All geographers collect and analyze geographic information, but they focus on different topics and employ different analytic strategies. Contemporary geographers employ two analytic strategies: (i) **Regional analysis**, or area analysis, integrates the geographic features of an area or place, and (ii) **Spatial analysis**, or locational analysis, emphasizes interactions among places.

(i) Regional Analysis

Neighbouring places can be combined into a region, which is an area of earth defined by one or more distinctive features or trends, such as climate, agriculture, industry, religion, or language. Geography's **regional analysis tradition** is a way of organizing the study of Earth's peoples and environments through identification of regions and description of similarities and differences among them. Certain human activities and environment give regions their unified character and distinguish them from other areas of Earth's surface.

In the past, geographers who used the old regional studies approach identified an area of Earth's surface and described in careful detail as many of its characteristics as they could uncover. When Julius Caesar wrote that 'All Gaul is divided into three parts,' he gave an example of the traditional regional studies approach to geographic explanation. Some introductory geography courses still emphasize the old regional studies approach by organizing much of the syllabus around regions of the world, such as Latin America, East Asia, and Sub-Saharan Africa. This approach selects a portion of Earth and studies the environment, people, and activities within the region.

Today, regional analysis may start by identifying an important characteristic, such as population growth, level of wealth, or energy consumption. Then, geographers search for reasons to explain why that characteristic is greater or more intense in one area than elsewhere. Geographers recognize that the distribution of a characteristic results from a process of movement of people and activities across Earth's surface.

In building a model of explanation, geographers identify regions that are distinguished by one or more unique characteristics and document characteristics that are integrated and interrelated within and among regions.

Region

Geographers employ the concept of region to summarize what is distinctive about an area of Earth's surface. Within a region, the people, activities, and environment will display

similarities and regularities. A region's cultural, economic, and physical characteristics will differ in some way from those of other regions. Geographers identify three types of regions: formal, functional, and vernacular.

(a) Formal Region – A **formal region** is an area in which the selected feature or trend is present throughout. The people, activities, and environment in the region share one or more distinctive characteristics. (It is also called a uniform region or homogeneous region.)

Geographers typically employ formal regions to explain broad patterns. A formal region may display a distinctive cultural characteristic, such as a language, religion, or social custom, or an economic characteristic, such as level of development, pre-dominant type of agriculture practiced, or average income. The characteristic selected to distinguish a formal region often illustrates a general concept, rather than representing a precise mathematical distribution (although it may be quantifiable as well).

Some formal regions are easy to identify, such as countries or local government units within them. Montana is an example of a formal region, characterized by a government that passes laws, collects taxes, and issues license plates with equal intensity throughout the state. We can easily identify the formal region of Montana, because it has clearly drawn and legally recognized boundaries, and everyone living within them is, legally, a Montanan.

In other kinds of formal regions, not everyone necessarily possesses the identifying characteristic. Not every farmer living in the U.S. or Canadian wheat belt grows wheat, nor does every farmer living in the U.S. ranching area raise cattle. Nonetheless, we can distinguish the wheat belt as a region in which the predominant agricultural activity is growing wheat. Similarly, we can distinguish formal regions within the United States characterized by a predominant voting for Republican candidates. Republicans may not get 100 percent of the votes in these regions, nor in fact do they always win. In a presidential election, however, the candidate with the largest number of votes receives all of the electoral votes of a state, regardless of the margin of victory. Consequently, a state that usually has Republican electors can be considered a Republican state.

The previous examples reveal a cautionary step that must be taken in identifying formal regions: The *diversity* of cultural, economic, and environmental factors, must be recognized even while making a generalization. Problems may arise because a minority of people in a region speak a language, practice a religion, or possess resources different from those of the majority. People in a region may play distinctive roles in the economy and hold different positions in society on the basis of their gender or ethnicity.

(b) Functional Region – A **functional region** is an area in which an activity has a focal point. The characteristic chosen to define a functional region dominates at a central focus, or node, and diffuses outward with diminishing importance. Geographers often use functional regions (also known as nodal regions) to display information about economic characteristics. The region's node may be a shop or service, and the boundaries of the region mark the limits of the trading area of the activity. People and activity may be attracted to the node, and information may flow from the node to the surrounding area.

An example of a functional region is the circulation area of a newspaper. A newspaper dominates circulation figures in the city in which it is published. Farther away from the city, fewer people read that newspaper, whereas more people read a newspaper published in a neighbouring city. At some point between the two cities, the circulation of the newspaper from the second city equals the circulation of the newspaper from the first. That point is the boundary between the nodal regions of the two newspapers.

A more contemporary example is television broadcasting. The United States is divided into several hundred functional regions based on television networks. Every television market has an *area of dominant influence (ADI)*, the region in which the preponderance of viewers are tuned to that market's stations. The United States is divided into several hundred functional regions, according to the distribution of the ADIs. The culture disseminated by television stations diffuses to the surrounding region.

An ADI is a good example of a functional region, because the characteristic – people who are viewing a particular station – is dominant at the center and declines toward the periphery. For example, everyone in Des Moines, Iowa, who wishes to watch a program on NBC tunes to Channel 13. In Omaha, Nebraska, 225 kilometers (140 miles) to the west, everyone watching NBC is tuned to Channel 6. With increasing distance eastward from Omaha, Channel 6's signal gets weaker and Channel 13's gets stronger. The percentage of people watching NBC declines for Channel 6 and increases for Channel 13.

The boundary between the Omaha and Des Moines ADIs is the point where an equal number of people watch Channel 13 and Channel 6, near the Cass-Adair country line. Other functional regions in Iowa centered around NBC affiliates include Sioux City's Channel 4 to the northwest, Davenport's Channel 6 to the east, Waterloo's Channel 7 to the northeast, and Rochester Minnesota's Channel 10 to the north.

(c) Vernacular Region – A **vernacular region**, or perpetual region, is one that people believe to exist as part of their cultural identity. Such regions emerge from concepts that people use informally in daily life, rather than from scientific models developed through geographic thought. (In language, the term *vernacular* means everyday language that is used by ordinary people.)

An example of vernacular regions is Americans' frequent use of the terms *sunbelt* and *frostbelt* or *rustbelt* to distinguish two regions in the country. Sunbelt refers to the southern and western parts of the United States. Frostbelt or rustbelt refers to the northern and eastern parts. Several important characteristics distinguish the sunbelt from the frostbelt, including more temperate climate and higher levels of population and economic growth in the sunbelt.

Analysts have difficulty fixing the precise boundary between the two regions. At a conference called "The Sunbelt: A Region and Regionalism in the Making?" participants were given blank outline maps of the United States and asked to delineate the sunbelt. Respondents most frequently cited southern California, from Los Angeles to San Diego, as part of the sunbelt. Other areas of the United States that most participants considered part of the sunbelt included southern Texas, southern Florida, and south-central Arizona. A few considered the sunbelt to

reach as far north as Oregon or Virginia. Similar studies have been done to identify the Midwest and other vernacular regions.

Vernacular or perceptual regions can play a critical role in organizing daily life. For example, students at one university were shown a map of their campus divided into squares. They were asked to indicate in which squares they felt safe walking along at 10:30 P.M. When combined, the responses portrayed a campus divided into regions that were widely regarded as dangerous. Such studies can also determine whether perceptions of safety are uniform among groups or students or vary by age, gender, and ethnicity.

Regional Integration

A region gains uniqueness, not from possessing a single human or environmental characteristic, but a combination of them. Not content merely to identify these characteristics, geographers seek relationships among them. Geographers recognize that, in the real world, characteristics are integrated.

For example, geographers divide the world into formal regions that are more developed economically and those that are less developed. Regions of **more developed countries** (MDCs), such as Europe, North America, and Japan, are located primarily in the northern latitudes. Regions of developing countries, or **less developed countries** (LDCs), are concentrated in the southern latitudes. This north-south regional split underlies many of the world's social and economic problems.

A variety of characteristics – such as per capita income, literacy rates, televisions per capita and hospital beds per capita – distinguish more developed from less developed regions. Geographers demonstrate that the distribution of one characteristic of development is associated with others.

The geographer's job is to sort out the associations among various social characteristics, each of which is uniquely distributed across Earth's surface. For example, geographers conclude that political unrest in the Middle East, Eastern Europe, and other areas derives in large measure from the fact that the spatial distributions of important cultural and physical characteristics, such as language, religion, and resources, do not match the political boundaries of individual countries.

In some cases, geographers can build models to prove that the distribution of one characteristic causes the distribution of another. For example, differences among regions in the rate of population growth are caused primarily by differences in the crude birth rates. But, geographers often hedge their bets. They recognize that one characteristic must be associated across Earth's surface with others, even if the relationship cannot be modeled precisely. Geographers may have difficulty in constructing exact models of cause and effect, because they must integrate many cultural and physical characteristics to explain a region's distinctiveness.

Integrating Cancer Information – Recognizing that the distributions of various cultural and physical characteristics are integrated helps us understand important social problems. For example, the percentage of people who die each year from cancer differs among regions in the United States. The mid-Atlantic region has the highest level, with Maryland ranked first among

the fifty states, followed by Delaware. The rate in Washington D.C., which is adjacent to Maryland, is higher than in any state.

Why does Maryland have the highest cancer rate among the fifty states? Mapping the distribution of cancer among Maryland's major subdivisions (twenty-three counties plus the independent city of Baltimore), as well as the District of Columbia, shows sharp internal variations. The cancer rate in Baltimore City is more than 50 percent higher than in westernmost Garrett Country.

The map of cancer rates by county in Maryland does not communicate useful information to someone who knows little about the distribution of people, activities, and environments within the states. By integrating other spatial information, we can begin to see factors that may be associated with regional differences in cancer.

We can divide the state into two groups of counties: those that comprise part of the region's large metropolitan area, Washington-Baltimore, and those that do not. Thus far, this division does not appear helpful in explaining the distribution of cancer, because we can find high and low rates among both metropolitan and non-metropolitan counties. Within the metropolitan area, however a pattern emerges: The highest cancer rates are in the cities of Baltimore and Washington, whereas the suburban counties surrounding the two cities have lower rates.

Once we recognize that the cities have higher cancer rates than the suburbs, we can integrate that information with a variety of other characteristics. People in Baltimore City and Washington are more likely than suburbanites to have low incomes and low levels of education. As a result of these characteristics, people living in the cities may be less aware of the risks associated with activities such as smoking and consuming alcohol and less able to afford medical care to minimize the risk of dying from cancer.

Among nonmetropolitan counties, Maryland shows a sharp division between the west, where rates are relatively low, and the east, where rates are relatively high. Income and education do not explain the difference, because levels are lower in most of the nonmetropolitan counties than in the metropolitan areas. Instead, we must attempt to integrate other economic and environmental factors into our explanation.

People living in counties on the Chesapeake Bay's Eastern Shore may be especially exposed to cancer-causing chemicals, because higher percentages are engaged in fishing and farming than are people living in the mountainous western counties. The nearby Chesapeake Bay is one of the nation's principal sources of shellfish, and many Eastern Shore residents work in seafood-processing industries. But the Chesapeake Bay also suffers from runoff or chemicals from Eastern Shore farms, which make heavy use of pesticides, as well as discharges of waste from factories, for the most part located in the metropolitan counties on the western side of the bay. Prevailing winds also carry pollutants eastward from industries in the metropolitan areas.

(ii) Spatial Analysis

While accepting that each place or region on Earth is unique, geographers recognize that specific human activities and environmental processes rarely are confined to one location. Rather, they are spread spatially. Thus, a second approach to geographic inquiry is spatial

analysis (also known as locational analysis). Spatial analysis looks worldwide for patterns in the distribution of human actions and environmental processes.

The distribution of a human activity or an environmental condition changes over time. Consequently, geographers study the *movement* or diffusion, of people, goods, ideas, energy, and natural materials (such as water) across Earth's surface. Any place is connected to all other places through these processes of human and environmental movement. Examples abound: People in one place originate an idea and then 'move' it – communicate it – to people in another place. Humans ship their products from one place to place to work, pleasure, or survival. The movement of energy influences a region's climate. The movement of water carves distinctive landforms. All are subject to the geographer's spatial analysis.

Distribution

The regular arrangement of a phenomenon across Earth's surface is known as its **spatial distribution**. Geographers seek patterns in the spatial distribution of people and activities, measure them, and place them on a map. Spatial distribution has three important properties: density, concentration, and pattern.

(a) Density – The frequency with which something exists in a measured area is its **density**. The phenomenon being measured could be people, buildings, dwelling units, cars, volcanoes, or anything. Areas can be measured in square kilometers or miles, hectares, or acres.

The *arithmetic density* is the total number of objects, such as people, in an area. The arithmetic density of the United Kingdom, for example, is 242 persons per square kilometer (627 persons per square mile). This is simply the total population (about 58 million people) divided by the United Kingdom's area (241,595 square kilometers or 93,280 square miles). Arithmetic density is a useful measure of living arrangements in different places.

Remember that a large *population* does not necessarily lead to a high *density*. Arithmetic density involves two measures: the number of people and the area. The most populous country in the world, China, with approximately 1.2 billion inhabitants, by no means has the highest density. The arithmetic density of China is approximately 126 persons per square kilometer (317 persons per square mile), only one-half as high as that of the United Kingdom. Although China has about twenty times as many inhabitants as the United Kingdom, it also has nearly forty times as much land.

High population density is also unrelated to poverty. The Netherlands, one of the world's wealthiest countries, has an arithmetic density of approximately 453 persons per square kilometer (1,173 persons per square mile). One of the poorest countries, Mali, has an arithmetic density of only 7 persons per square kilometer (19 persons per square mile).

Geographers measure density in other ways, depending on the subject being studied. Geographers concerned with the relationship between population growth and food supply often calculate two other densities. *Physiological density* is the number of persons per unit of area suitable for agriculture. *Agricultural density* is the number of farmers per unit area of farmland.

Urban geographers frequently use housing density, which is the number of dwelling units per unit of area.

(b) **Concentration** – How something is spread over an area is its **concentration**. If the objects in an area are close together, they are considered to be clustered. If they are farther apart, they are considered to be dispersed. To compare the level of concentration clearly, one must have two areas with the same number of objects and the same size area, or else the areas must be adjusted to correspond.

Geographers use the concept of concentration in several ways. For example, one of the major changes in the distribution of the U.S. population is greater dispersion. The total number of people living in the United States is growing slowly – less than 1 percent per year – and the land area is essentially unchanged. But the population distribution is changing from *relatively clustered* in the Northeast to more *evenly dispersed* across the country.

Concentration is not the same as density. One area with higher density could have a dispersed population, while another area with the same density could have a clustered population. We can illustrate the difference between density and concentration by the change in the distribution of major league baseball teams in North America. In 1900, the major leagues had sixteen teams, a distribution that remained unchanged for more than half a century. Beginning in 1953, the following six of the sixteen teams moved to other cities:

Braves: Boston to Milwaukee in 1953, then to Atlanta in 1966

Browns: St. Louis to Baltimore (Orioles) in 1954

Athletics: Philadelphia to Kansas City in 1955, then to Oakland in 1968

Dodgers: Brooklyn to Los Angeles in 1957

Giants: New York to San Francisco in 1957

Senators: Washington to Minneapolis (Minnesota Twins) in 1960

These moves resulted in a more dispersed distribution. Before the moves, seven teams were clustered in the three northeastern cities of Philadelphia, New York, and Boston, compared with only three teams after the moves. In 1953, no team was located south or west of St. Louis, but after the moves, teams were located on the West Coast and in the Southeast for the first time.

In addition to the shifts by established teams, the major leagues expanded between 1960 and 1993 from sixteen to twenty-eight teams. The new teams selected the following locations:

Angels: Los Angeles in 1961, then to Anaheim (California) in 1966

Senators: Washington in 1961, then to Dallas (Texas Rangers) in 1972

Mets: New York in 1962

Astros: Houston in 1962

Expos: Montreal in 1969

Padres: San Diego in 1969

Pilots: Seattle in 1969, then to Milwaukee (Brewers) in 1970

Royals: Kansas City in 1969

Blue Jays: Toronto in 1977

Mariners: Seattle in 1977

Marlins: Miami (Florida) in 1993

Rockies: Denver (Colorado) in 1993

Thus, the density of major league teams in North America increased from 16 to 28, and at the same time, the distribution became more dispersed.

(c) **Pattern** – The third property of distribution is the **pattern**, which is the geometric or regular arrangement of the objects. Some phenomena are organized in a regular (geometric) pattern, whereas others are distributed randomly. Geographers observe that many objects from a linear distribution, such as the arrangement of houses along a street or stations along a subway line.

Objects frequently are arranged in a square or rectangular pattern. Many American cities contain a regular pattern of streets, known as a grid pattern, which intersect at right angles at uniform intervals to form square or rectangular blocks. The system of townships, ranges, and sections established by the Land Ordinance of 1785 is another example of a square or grid pattern.

The distribution of baseball team also follows a regular pattern. With the addition of expansion teams in the Tampa and Phoenix areas, the 30 teams are located in North America's 26 largest metropolitan areas (four metropolitan areas have two teams each).

Not all objects are distributed in a regular pattern. The streets in the older parts of European cities are arranged in a random pattern following centuries of haphazard development.

Diffusion

Diffusion is the process by which a feature or trend spreads or moves, across the landscape. A characteristic originates at a hearth or node and diffuses from there to other location. Geographers document the location of a node and the process by which diffusion carries the characteristic elsewhere.

Hearths – The region from which a phenomenon originates is called a **hearth**. How might a hearth emerge? A cultural group must be willing to try something new and be able to allocate resources to nurture the innovation. To develop a hearth, a group of people must also have the technical ability to achieve the desired idea and the economic structures, such as financial institutions, to facilitate implementation of the innovation.

In some cases, an idea, such as an agricultural practice, may originate independently in more than one hearth. In other cases, hearths may emerge in two regions because two cultural groups modify a shared concept in two different ways.

Once a phenomenon appears in a region, it may diffuse to other locations. Geographers observe two basic types of diffusion: relocation and expansion.

(a) **Relocation Diffusion** – **Relocation diffusion** is the spread of a feature or trend by the bodily movement of people from one region to another. People migrate for a variety of political, economic and environmental reasons. When they move, they carry with them their cultural characteristics, such as language, religion and social customs. The most commonly spoken languages in North and Latin America are Spanish, English, French, and Portuguese, primarily because several hundred years ago, Europeans who spoke those languages accounted for the largest number of migrants. Thus, these languages spread via relocation diffusion.

The process of relocation diffusion helps us understand the distribution of AIDS (acquired immunodeficiency syndrome) within the United States. During the early 1980s, New York, California and Florida were the nodes of origin for the disease within the United States.

Half of the fifty states had no reported cases, and New York City, with only 3 percent of the nation's population, contained more than one-fourth of the AIDS cases. In the neighbouring state of New Jersey, the number of AIDS cases dropped with increasing distance from New York City. A decade later, the disease had spread to every state, although California and the New York City area remained the focal points.

Even within cities, such as New York, the distribution of AIDS cases varied sharply among neighbourhoods. At the beginning of 1993, rates of AIDS exceeded 1,500 cases per 100,000 people in Manhattan's Lower West Side, compared with fewer than 400 in most of Queens, Staten Island, southern Brooklyn, and northern Bronx.

(b) Expansion Diffusion – **Expansion diffusion** is the spread of a feature or trend among people from one area to another in a snowballing process. This expansion may result from one of three processes:

- Hierarchical diffusion
- Contagious diffusion
- Stimulus diffusion

(i) **Hierarchical diffusion** is the spread of a feature or trend that originates at a node within a region. That node may consist of a particular place in the region, such as a large urban center. For example, ideas generated in a large city may follow communications channels and bypass isolated rural area until much later. Hierarchical diffusion may also result from the spread of ideas from political leaders, socially elite people, or other important persons to others in the community. The idea may bypass other persons or areas.

(ii) **Contagious diffusion** is the widespread diffusion of a feature or trend throughout the population. As the term implies, this form of diffusion is analogous to the spread of a contagious disease, such as influenza. Contagious diffusion spreads like a wave among fans in a stadium, without regard for hierarchies.

(iii) **Stimulus diffusion** is the spread of an underlying principle, even though a specific characteristic itself apparently is rejected. The early diffusion of agriculture may have taken place according to stimulus diffusion. According to the geographer Carl Sauer, the earliest form of agriculture to diffuse may have been vegetative planting, involving such practices as cutting stems and dividing roots. The specific practice of vegetative planting may not have diffused, but the underlying principle of deliberately transforming vegetation to provide food was accepted.

Whether important cultural concepts diffuse through relocation or expansion diffusion is a very real issue for many countries today. How should today's less developed countries promote development? One alternative – the international trade approach – assumes that a country's economy develops as a result of diffusion of economic practices from more developed to less developed countries. A second alternative – the self-sufficiency approach – assumes that economic development is achieved through a process of innovation inside a country. The health and welfare of a people are vitally affected by the ability of a country's leaders to judge which alternative best suits its region.

Expansion diffusion occurs much more rapidly in the contemporary world than in the past. Modern methods of communications, such as computers, fax machines, and e-mail systems

have encouraged more rapid diffusion of a cultural idea or an economic activity from one place to another. As a result, diffusion can be instantaneous in time, even if the physical distance between two places – as measured in kilometers or miles – is large. Geographers apply the term *space-time compression* to describe the reduction in the time it takes to diffuse something to a distant place.

Interaction

The diffusion of ideas and characteristics fosters cultural integration because people in different regions interact. To achieve interaction, one group must be accessible to the other; interaction fails to occur when the two groups are isolated. The movement of people, goods, and ideas within and among regions is called **spatial interaction**.

Interaction takes place through networks, which are chains of communication that connect places. Today, ideas that originate in one area diffuse rapidly to other areas because of our sophisticated communications and transportation networks. As a result of this rapid diffusion, interaction in the contemporary world is complex. People in more than one region may improve and modify an idea at the same time but in different ways.

A well-known example of a network in the United States is the television network (ABC, CBS, FOX, NBC, and PBS). Each comprises a chain of stations around the country simultaneously broadcasting the same program, such as a football game. Transportation systems also form networks that connect places. Airlines in the United States, for example, have adopted distinctive networks known as 'hub-and-spokes'. Under the hub-and-spokes system, airlines fly places from a large number of places into one hub airport within a short period of time and then a short time later send the planes to another set of places. In principle, travelers originating in smaller towns can reach a wide variety of destinations by changing planes at the hub airport.

Local differences in farming, clothing, settlements, language, and religion arise through centuries of isolation from inhabitants of other regions. Typically, the farther away one group is from another, the less likely the two groups are to interact. Contact diminishes with increasing distance and eventually disappears. This training-off phenomenon is called **distance decay**.

Interaction among groups can be retarded by barriers. These can be physical, such as oceans and deserts, or cultural, such as language and legal systems. We regard the landscape as part of our inheritance from the past. As a result, we may be reluctant to modify it unless we are under heavy pressure to do so. A major change in the landscape may reflect an upheaval in a people's culture.

Acculturation – When two groups interact, the more dynamic and powerful culture is likely to dominate the weaker one. The modification of one culture as a result of contact with a more powerful one is called **acculturation**.

One of two things may happen to the weaker culture through acculturation. First, the weaker culture may be obliterated. For example, most immigrants to the United States quickly lost touch with most of the cultural characteristics of their former home and adopted the cultural traits of their new community. Second, the weaker culture may be transformed into a new

culture, in which a new set of characteristics may coexist with older ones. New patterns emerge through the integration of the two cultures, but elements of the older culture remain.

Cargo Cult – The diffusion of cultural elements from Europe and North America may transform rather than destroy local cultural beliefs. For example, people of the Pacific Island of Tana, part of the country of Vanuatu, worship Prince Phillip, the husband of Britain's Queen Elizabeth, as a god. According to local customary belief, Prince Phillip is a messiah who grew up on Tana Island, and Queen Elizabeth broke with her great council of chiefs to marry him. Prince Phillip was added to the collection of local gods a few years ago when he visited the country, formerly the British colony of New Hebrides. His advance person apparently distributed photographs, which the people regard as holy icons.

The introduction of Prince Phillip as a god in Vanuatu is an example of a **cargo cult**. A cargo cult is a belief that the arrival of a ship or airplane in a locality has spiritual meaning. Several hundred years ago, some American Indians regarded Europeans who arrived on ships as gods.

Belief in a cargo cult persists in Papua New Guinea and other Pacific Ocean islands because American ships and airplanes brought new technology and equipment during World War II. Some residents believe that if they remain faithful, the planes will return with vast wealth. People in Papua New Guinea prepare large wooden planes as female sirens to lure male planes and their cargo from the sky.

Globalization

Globalization refers to actions or processes that involve the entire world and result in making something worldwide in scope. The globalization concept helps human geographers explain why distributions and movements of people, goods, and ideas within and among regions are important.

Globalization means that the world is 'shrinking' – not literally in size of course, but in the time it takes for a person, good, or idea to get from one place to another. People are plugged into a global culture, economy, and environment, and the world has become more uniform, integrated and interdependent.

But globalization has not destroyed the uniqueness of an individual place's culture, economy, and environment. Human geographers understand that many contemporary social problems result from a tension between forces promoting global culture, economy, and environment on the one hand and preservation of local economic autonomy, cultural traditions, and physical conditions on the other hand.

For geographers, globalization has three important dimensions: globalization of culture, globalization of economy, and globalization of environment.

(a) Globalization of Culture

Culture is a concept that can embody the entire spectrum of human behaviour. According to geographer Peirce Lewis, 'the cultural landscape is our unwitting autobiography,' because it reflects in tangible form our tastes, values, aspirations, and fears.

Culture Defined

To understand how culture has globalized, we must first define culture. Webster's Third New International Dictionary offers this definition of **culture**: the body of customary beliefs, social norms, and material traits constituting a distinct complex of tradition of a group of people.

Customary Beliefs – The customary beliefs of a people produce a distinctive culture. Customary beliefs particularly affect population growth, religion, and food. Why do some people have many children, while others choose to have none? Why do some believe in a particular region, while others follow another? Powerful customary beliefs are at work.

Social Forms – A second element of a people's culture is social forms and institutions. A critical social form for any culture group is language, which is the communication of ideas through written symbols, sounds, and gestures. People live and work together and remember the same past by sharing a common language. Facial expressions and other nonverbal communication also carry meaning within a cultural group.

Material Traits – The third element of a culture is its material traits, especially food, clothing, and shelter. All people consume food, wear clothing, and build shelter, but different cultural groups provide these necessities in different ways. Distinctive material traits derive in part from a cultural group's technical knowledge. Some culture have the capacity to transform the natural environment considerably, whereas others do not.

Elements of Globalization of Culture

The trend toward a common global culture, based on shared beliefs, social forms, and material traits, results from several elements

People in different places are displaying less difference in their cultural preferences.

Increased uniformity in cultural preferences is made possible through enhanced communications. Although consumers in different places express increasingly similar cultural preferences, they do not share the same access to them.

The desire of some people to retain their traditional cultural elements, despite increased globalization of cultural preferences, has led to political conflict and market fragmentation in some regions.

Uniform Consumption Preferences – The survival of a culture's distinctive beliefs, forms, and traits is threatened by global diffusion of social customs: wearing jeans and Nike shoes, consuming Coca-Cola and McDonald's hamburgers, and other preferences in food, clothing, shelter, and leisure activities. Regardless of cultural traditions, people around the world aspire to drive an automobile, watch television and own a house. The globalization of culture is based primarily on diffusion of lifestyles and products from more developed countries, especially the United States.

Geographers observe that increasingly uniform cultural preferences produce a 'global' landscape that is uniform in appearance. Fast-food restaurants, service stations, and retail chains deliberately create a visual appearance that varies little among locations, so customers can recognize them regardless of where in the world they happen to be. Houses built on the edge of one urban area very much resemble houses built on the edge of urban areas in other regions.

Enhanced Communications – Cultural groups in different regions share beliefs, forms and traits through enhanced communications. Today, we know a great deal about events around in the world, and we know quickly. Distant places now seem less remote and more accessible to use than they did a few decades ago. We can reach into the everyday lives of people in far-off places.

In the past, most interaction among cultural groups required relocation diffusion – the physical movement of settlers, explorers, and plunderers from one location to another. As recently as A.D. 1800, people travelled in the same ways and at about the same speeds as in 1800 B.C. – they walked or were carried by an animal or sailboat.

Today, travel by motor vehicle or airplane is much quicker. But we need not travel to know about another place. We receive images and messages worldwide at the touch of a button. We communicate instantly with people in distant places through computers and telecommunications, and we instantly see people in distant places on television.

This diffusion of global communication has encouraged globalization of beliefs, social forms, and material traits. Africans, in particular, have moved away from traditional religions and have adopted Christianity or Islam, religions shared with hundreds of millions people throughout the world. People still speak thousands of different languages, traditionally a people's most distinctive social form. But English has become increasingly important as the language of international communication; more than three-fourths of college-age Europeans have learned to speak English.

People living in different places increasingly share tastes in food, clothing, and shelter. The globalization of communication and culture gives a sense that barriers among groups of people have been broken.

Unequal Access to Cultural Elements – People in more developed countries take for granted watching distant events on television, speaking across oceans by telephone, and traveling to distant places by motor vehicle and aircraft. Elsewhere in the world, people may regard such devices as novelties, perhaps recently experiencing them for the first time. The world still contains a handful of people who are so isolated and sheltered that they have never seen television, used a telephone, or ridden in a motor vehicle. Even these people are aware that such devices exist, but access to them is a distant aspiration. Knowledge of these devices is global, but the ability to purchase them is not.

Access to communication and transportation is restricted by an uneven division of wealth worldwide. Even within a region, access may be restricted because of uneven distribution of wealth or because of discrimination against women or minorities.

Maintaining Local Traditions – As more people become aware of global culture and aspire to possess its elements, extinction threatens local cultural beliefs, social forms, and material traits. Yet, despite globalization, differences among places not only persist but flourish in many places. After all, global standardization of products does not mean that everyone wants them. And when the same message or image is transmitted simultaneously around the world, people in different places may not derive the same meaning from it.

The communications revolution that promotes cultural globalization also permits preservation of cultural diversity. Television, for example, is no longer restricted to a handful of channels displaying one set of cultural values. With the distribution of programming through cable and satellite systems, people in many countries have a choice of hundreds of programs rather than a handful. The proliferation in programming enables people in English-speaking countries to watch programs in other languages, such as Spanish in the United States, Welsh in the United Kingdom, or Gaelic in Ireland.

Local cultural traditions may be transmitted around the world. Chinese, Ethiopian, Greek, Italian, Mexican, and Thai restaurants may coexist side by side along a single street in Chicago, London, or Toronto.

It is ironic that, with the globalization of communications, people in Oregon and South Africa can watch the same soccer game, yet with the fragmentation of broadcasting, two people in the same house can watch different programs. Groups of people on every continent may aspire to wear jeans, but jeans buyers may live with someone who prefers khakis. In a global culture, companies can target groups of consumers with similar tastes in different parts of the world.

Strong determination to retain cultural traditions in the face of globalization can lead to intolerance of people who display other beliefs, social forms, and material traits. Political disputes, unrest, and wars erupt in places such as southeastern Europe, East Africa, and the Middle East, where different cultural groups have been unable to peacefully share the same space.

(b) Globalization of Economy

The trend toward global cultural sameness is a product of the *world economy*. Companies and workers that once were unaffected by events elsewhere now share a single economic world with each other companies and workers. The fate of an autoworker in Detroit is tied to investment decisions made in Mexico City, Seoul, Stuttgart, and Tokyo.

Globalization of the economy, in which national borders and differences become less important, has resulted from several trends:

1. Instantaneous global movement of money by companies
2. Increasing control of investment by large transnational corporations
3. Global investment flows from three more developed core regions – North America, Western Europe, and Japan
4. Specialization in the location of production

1. Global Movement of Money

Historically, people and companies had difficulty moving even small sums of money from one country to another. International monetary transfer involved cumbersome procedures, and funds could be frozen for several weeks until all the paperwork cleared. Most governments prohibited the removal of large sums of money beyond their borders, and in the case of communist countries, no money at all could be removed without government approval.

Modern communication and transportation provide the technical means to easily move money – as well as materials, products, technology, and other economic assets – around the

world. Thanks to the electronic superhighway, companies can now organize economic activities across vast distances.

Banks, corporations, and other financial institutions can operate worldwide in part because the decision centers that command the global economy – New York, London and Tokyo – are located in different time zones. When Tokyo's stock market closes, at 3 P.M. local time, it is 6 A.M. in London, only 3 hours before the opening of the day's trading there. The stock market opens in New York at 9.30 A.M., while London's is still open. When the market closes in New York at 4 P.M., it's 6 A.M. the next morning in Tokyo, only 3 hours before the opening of the Tokyo market the next day. Consequently, investors can react immediately to changes in the value of gold, the rate of exchange between the dollar and the yen, and other constantly shifting elements of the global economy.

2. Transnational Corporations

Globalization of the economy has been led primarily by transnational corporations, sometimes called multinational corporations. A transnational corporation conducts research, operates factories, and sells products in many countries, not just where its headquarters are located.

Most transnational corporations have their headquarters in one of three regions – North America (especially the United States), Western Europe (especially the United Kingdom, Germany and France), and Japan. Transnational corporations also locate most of their factories and markets within these three regions. The United Nations reports, however, that in 1994, transnational corporations employed 61 million people in the core regions and 12 million elsewhere.

An increasing percentage of investment reaches Latin America, Africa, and Asian countries outside Japan. U.S. transnational corporations are most likely to invest in Latin America. Western European transnationals are most likely to invest in Eastern Europe and Africa. Japanese transnationals are most likely to invest in Asia.

Since the 1980s, governments in the three regions where transnational corporations are based have changed tax codes and regulations that hindered transnational operations. Other countries where transnational corporations wish to invest have changed laws and bureaucratic procedures that prevented transnationals from operating within their borders.

3. Investment Flows from Three Core Regions

Although transnational corporations have increased investment worldwide, improved communication has enabled them to concentrate their key decision makers in North America, Western Europe, and Japan. The global economy is increasingly centered in these three core regions. From 'command centers' in New York, London, and Tokyo, orders are sent instantly to factories, shops, and research centers around the world.

Meanwhile, 'nonessential' employees of the companies can be relocated to lower-cost offices outside the major financial centers. For example, Fila maintains headquarters in Italy but has moved 90 percent of its production of sportswear to Asian countries. Mitsubishi's corporate offices are in Japan, but all of its VCRs are produced in other Asian countries.

Countries in Africa, Asia, and Latin America contain three-fourths of the world's population and nearly all of Earth's population growth, but they find themselves on a periphery, or outer edge, of global investment decisions made by transnationals. As a result, the global economy has increased the disparity between the levels of wealth and well-being in the core and in the periphery. This widening gap is logically called **uneven development**.

4. Specialization in the Location of Production

Every place on Earth is part of the global economy, but each plays a distinctive role, based on its particular assets. A place may be near valuable minerals, or it may be inhabited by especially well educated workers. Transnational corporations assess the economic assets of each place.

A place may be especially suited to conducting research, to developing new engineering systems, to extracting raw materials, to producing parts, to storing finished products, to selling them, or to managing operations. In a global economy, transnationals remain competitive by correctly identifying the optimal location for each of these activities. Suitable places for each activity may be clustered in one country or region, or they may be dispersed around the world.

As a result, globalization of the economy has heightened economic differences among places. Factories are closed in some locations and opened in others. Some places become centers for technical research, whereas others become centers for low-skilled tasks. Changes in production have led to a spatial division of labour, in which a region's workers specialize in particular tasks. Transnationals decide where to produce things in response to characteristics of the local labour force, such as skill level, prevailing wage rates, and attitudes toward unions. Transnationals may close factories in regions with high wage rates and strong labour unions.

(c) Our Global Environment

We regard the physical environment as a large collection of resources. **Resources** are substances that have value or usefulness. We can deplete some resources, such as energy, and endanger the survival of living things. Through pollution, humans can alter or damage other resources, especially air and water. Some of these effects are local, some regional, and some global.

Some human impacts on the environment seem trivial or even contradictory. Why do we plant our front yards with grass, water it to make it grow, then mow it to keep it from growing tall, and impose fines on those who fail to mow often enough?

Other human impacts on the environment are based on deep-seated cultural values: Why does one group of people consume the fruit from deciduous trees and chop down the conifers, while another group chops down the deciduous trees for furniture while preserving the conifers as religious symbols?

Possibilism

Nineteenth-century environmental determinists believed that the physical environment caused human actions, but modern geographers reject this environmental determinism in favour of possibilism. According to **possibilism**, the physical environment may limit some human

actions, but people have the ability to adjust to their environment. People can choose a course of action from many alternatives in the physical environment.

For example, the climate of any location influences human activities, especially food production. From one generation to the next people learn that different crops thrive in different climates – rice requires plentiful water, whereas wheat survives on limited moisture, and it actually grows poorly in very wet environments. On the other hand, wheat is more likely than rice to be grown successfully in colder climates. Thus, under possibilism, it is possible for people to choose the crops they grow, to be compatible with their environment.

A people's level of wealth can influence their attitude toward modifying the environment. A farmer rich enough to possess a tractor may regard a hilly piece of land as an obstacle to avoid while plowing vast expanses of flat land, whereas a poor farmer with little land may regard hilly land as the only opportunity to produce food for survival through hand cultivation.

This human environment approach explains many global issues. For example, world population growth is a problem if the number of people exceeds the capacity of the physical environment to produce food. But people can adjust to the capacity of the physical environment by controlling their numbers, adopting new technology, consuming different foods, migrating to new locations, and other actions.