

Defining Geographic Scales

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Scale

Scale is an essential geographic tool for creating and interpreting maps. However, scale also has a broader meaning for geographers, as the relationship between any phenomenon and Earth as a whole.

Geographers think about scale at many levels, including global, regional, and local. At the global scale, geographers identify broad patterns encompassing the entire world. At the local scale, geographers recognize that each place on Earth is in some ways unique. Between the local and global, geographers construct a regional scale; a region is an area characterized by a unique combination of features.

Map Scale

When specifically applied to a map, scale refers to the relationship of a feature's length on a map to its actual distance on Earth. Map scale is presented in three ways: a fraction ($1/24,000$) or ratio (1:24,000), a written statement ("1 inch equals 1 mile"), or a graphic bar scale (Figures 1–3). Maps often display scale in more than one of these three ways.

A fractional scale shows the numerical ratio between distances on the map and Earth's surface. A scale of 1:24,000 or $1/24,000$ means that one unit (inch, centimeter, foot, finger length) on the map represents 24,000 of the same unit (inch, centimeter, foot, finger length) on the ground. The unit chosen for distance can be anything, as long as the units of measure on both the map and the ground are the same. The 1 on the left side of the ratio always refers to a unit of distance on the map, and the number on the right always refers to the same unit of distance on Earth's surface.

The written scale describes the relation between map and Earth distances in words. For example, the statement "1 inch equals 1 mile" on a map means that one inch on the map represents one mile on Earth's surface. Again, the first number always refers to map distance, and the second to distance on Earth's surface.

A graphic scale usually consists of a bar line marked to show distance on Earth's surface. To use a bar line, first determine with a ruler the distance on the map in inches or centimeters. Then hold the ruler against the bar line and read the number on the bar line opposite the map distance on the ruler. The number on the bar line is the equivalent distance on Earth's surface.

Special Focus: Scale

The appropriate scale for a map depends on the information being portrayed. At the scale of the entire world, many details must be omitted because there simply is not enough space, but the map can effectively communicate processes and trends that affect everyone. Conversely, a map that shows only a small portion of Earth's surface, such as a neighborhood, can provide a wealth of details about a particular place.

A map of a local area, such as a city neighborhood, may have a scale of 1:10,000, whereas a map of the entire world may have a scale of 1:100,000,000. Otherwise stated, one inch could represent 1/6 mile on a local-scale map and 1,700 miles on a world map.

Spatial Scale

Geographers consider a continuum of scales when approaching space and place. These range from individual and community scales to the global. The following sections discuss three of the most commonly invoked scales by geographers, local, regional and global, and more importantly, the tensions and problems that come with living daily lives that cut across the scales.

Local Scale

At the local scale, humans possess a strong sense of place—that is, a feeling for the features that contribute to the distinctiveness of a particular location on Earth, perhaps a hometown or a vacation destination. Geographers think about the features that make each place on Earth distinctive.

Because all inhabited places on Earth's surface—and many uninhabited places—have been named, the most straightforward way to describe a particular location is often by referring to its place name. The location of any place on Earth's surface can also be described precisely by meridians and parallels, two sets of imaginary arcs drawn in a grid pattern on Earth's surface. A meridian is an arc drawn between the North and South poles (the resultant line is also termed a line of longitude.) A parallel is a circle drawn around the globe parallel to the equator and at right angles to the meridians (the parallel is also termed a line of latitude.)

At the local scale, geographers describe the distinctive site or physical character of each place on Earth. Important features include climate, water sources, topography, soil, vegetation, latitude, and elevation. Geographers also identify each place's situation, which is its location relative to other places. Use of local scale to define a phenomenon frames it so that geographers study greater levels of detail to show how distinctive a site or place is. As with map scale, the level of detail we deal with increases with scale. A large-scale map, such as a 1:10,000 or 1:25,000 map yields street-level detail on a topographic map, just as local-scale analysis provides rich detail about a site. The more you get a closeup view of an issue, the more detailed, specific information one discovers.

Regional Scale

The “sense of place” that humans possess may apply to the scale of a region as well to a specific point. A region can apply to any area larger than a point and smaller than the entire planet. But geographers most often identify regions at one of two scales: either several neighboring countries that share important features such as those in Latin America, or many localities within a country such as those in Southern California.

Geographers identify three types of regions: formal, functional, and vernacular. A formal region, also called a uniform or a homogeneous region, is an area within which everyone has one or more distinctive characteristics in common. The common feature could be a cultural value such as a language, an economic activity such as production of a particular crop, or an environmental property such as climate. In a formal region the selected characteristic is present throughout.

Some formal regions are easy to identify, such as countries or local government units. 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. The formal region of Montana has clearly drawn and legally recognized boundaries, and everyone living within them shares the status of being subject to a common set of laws.

In other kinds of formal regions a characteristic may be predominant rather than universal. For example, the North American wheat belt is a formal region in which wheat is the most commonly grown crop, but other crops are grown there as well. And the wheat belt can be distinguished from the corn belt—a region where corn is the most commonly grown crop.

Geographers typically identify formal regions to help explain larger-scale patterns, such as variations in religion and levels of economic development. The characteristic selected to distinguish a formal region often illustrates a general concept rather than a precise mathematical distribution.

A *functional* region, also called a *nodal* region, is an area organized around a node or focal point. The characteristic chosen to define a functional region dominates at a central focus or node and diminishes in importance outward. The region is tied to the central point by transportation or communications systems or by economic or functional associations.

Geographers often use functional regions to display information about economic areas. 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 activities 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 neighboring city. At some point between the two cities the circulation of the newspaper from the second city equals the circulation of the original newspaper. That point is the boundary between the nodal regions of the two newspapers.

Other examples of functional regions include the reception area of a television station and the trading area of a department store. A television station's signal is strongest at the center of its service area, becomes weaker at the edge, and eventually can no longer be distinguished from snow. A department store attracts fewer customers from the edge of a trading area, and beyond that edge customers will most likely choose to shop elsewhere.

A vernacular or perceptual region is a place that people believe exists as part of their cultural identity. Such regions emerge from people's informal sense of place rather than from scientific models developed through geographic thought.

A useful way to identify a perceptual region is to get someone to draw a mental map, which is an internal representation of a portion of Earth's surface. A mental map depicts what an individual knows about a place, containing personal impressions of what is in a place and where places are located. A student and a professor are likely to have different mental maps of a college campus, based on differences in where they work, live, and eat, and a senior is likely to have a more detailed and "accurate" map than a first-year student.

As an example of a vernacular region, Americans frequently refer to the South as a place with environmental, cultural, and economic features perceived to be quite distinct from the rest of the United States. Many of these features can be measured. Economically, the South is a region of high cotton production and low high school graduation rates. Culturally, the South includes the states that joined the Confederacy during the Civil War and where Baptist is the most prevalent religion. Environmentally, the South is a region where the last winter frost occurs in March and rainfall is more plentiful in winter than in summer.

Southerners and other Americans alike share a strong sense of the American South as a distinctive place that transcends geographic measurement. The perceptual region known as the South is a source of pride to many Americans—and for others as a place to avoid.

Global Scale

Global scale is an increasingly important concept in geography because of globalization. Globalization means that the world is shrinking—not literally in size, of course, but in the ability of a person, object, or idea to interact with a person, object, or idea in another place. People are plugged into a global-scale economy and culture, producing a world that is more uniform, integrated, and interdependent.

The world contains only a handful of individuals who lead such isolated and sheltered lives that they have never seen a television set, used a telephone, or been in a motor vehicle. A few people living in very remote regions of the world may be able to provide all of their own

daily necessities. But even extremely isolated and sheltered people are at least aware that they are connected to some degree with people elsewhere in the world.

Modern technology provides the means to easily move money, materials, products, technology, and other economic assets around the world. Thanks to the information superhighway, companies can now organize economic activities at a global scale.

Geographers observe that globalization has also produced global-scale landscapes of increasingly uniform material artifacts and cultural values. Fast-food restaurants, service stations, and retail chains deliberately create a visual appearance that varies among locations as little as possible so that customers know what to expect regardless of where in the world they happen to be. Houses built on the edge of one urban area will look very much like houses built on the edge of urban areas in other regions.

Regardless of local cultural traditions, people around the world aspire to drive an automobile, watch television, and own a house. The survival of a local culture's distinctive beliefs, forms, and traits is threatened by interaction with such social customs as wearing jeans and Nike shoes, consuming Coca-Cola and McDonald's hamburgers, and other preferences in food, clothing, shelter, and leisure activities.

Underlying the uniform cultural landscape is globalization of cultural beliefs and forms, especially religion and language. Africans, for example, have moved away from traditional religions and have adopted Christianity or Islam, religions shared with hundreds of millions of people throughout the world. Globalization requires a form of common communication, and the English language is increasingly playing that role.

Global-Local Tensions

Geographers recognize that many contemporary social issues result from a tension between forces promoting globalization on the one hand and preservation of local-scale traditions on the other hand. Globalization has not destroyed the uniqueness of an individual place.

Global-local tensions underlie unrest in Iraq, for example. The global scale was the basis for the initial case made by the United States for going to war with Iraq in 2003; Iraq was said to possess weapons of mass destruction that could fall into the hands of terrorists. Strong regional-scale divisions emerged in Iraq after the United States and allied countries invaded Iraq and deposed Iraq's President Saddam Hussein. Iraq's principal ethnic groups were split into regions, with Kurds in the north, Sunnis in the center, and Shiites in the south. Much of the continuing violence in Iraq came at the local scale, because the country is divided into hundreds of federations, tribes, clans, houses, and extended families.

Differences in scale also influence understanding of environmental concerns such as air pollution. Global-scale environmental processes contributing to pollution include global warming through the buildup of carbon dioxide emissions and ozone layer depletion through the

emission of chlorofluorocarbons. At the regional scale, sulfur oxides and nitrogen oxides, emitted by burning fossil fuels, enter the atmosphere, where they combine with oxygen and water and return to Earth's surface as acid deposition. At the local scale, hydrocarbons and nitrogen oxides in the presence of sunlight form photochemical smog, especially above urban areas.

As more people become aware of the elements of global-scale culture and aspire to possess them, local-scale cultural beliefs, forms, and traits are threatened with extinction. Yet despite globalization, cultural differences among places not only persist but actually flourish in many places. The global standardization of products does not mean that everyone wants the same cultural products.

The communications revolution that promotes the globalization of culture also permits the reservation of cultural diversity. Programming, for example, is no longer distributed through a few channels reflecting a single set of cultural values. With distribution through cable, satellite, and computer systems, people have an almost infinite choice of programs, including those in languages with few speakers. With the globalization of communications, people in two distant places can watch the same program simultaneously. Similarly, two people in the same house can watch different programs.

Culturally, people residing in different places are displaying fewer differences and more similarities in their cultural preferences. But although consumers in different places express increasingly similar cultural preferences, they do not share the same access to them. And the desire of some people to retain their traditional cultural elements, in the face of increased globalization of cultural preferences, has led to political conflict and intolerance of people who display other beliefs, social forms, and material traits.

Although every place in the world is part of a global economy, globalization has led to more specialization at the local level. Each place plays a distinctive role based on its local assets. A place may be near valuable minerals, or it may be inhabited by especially well-educated workers. Transnational corporations assess the particular economic assets of each place.

A locality may be especially suitable for a transnational corporation to conduct research, to develop new engineering systems, to extract raw materials, to produce parts, to store finished products or to sell them, or to manage operations. In a global economy, transnational corporations remain competitive by correctly identifying the optimal location for each of these activities. Especially suitable places may be clustered in one country or region, or 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 labor, in which a region's workers specialize in particular tasks. Transnational corporations decide where to produce things in response

to characteristics of the local labor force, such as level of skill, prevailing wage rates, and attitudes toward unions. These same corporations may close factories in locations with high wage rates and strong labor unions.

Geography matters in the contemporary world because it can explain human actions at all scales, from local to global. To capture the simultaneous importance of global and local scales, the term “glocal” has been adopted by some geographers, as well as by some international organizations and Internet sites. The term reflects the idea that global scale processes are acted out at the local scale. For example, this view implies globalization is carried out by individuals making daily decisions about their lives. This means that any change in global or regional processes must start at the local scale. Advocates of “glocalization” call for forces of globalization to take into account local-scale cultural, economic, and environmental conditions. Examples of glocalization can be found in global mass producers, such as McDonald’s, that go glocal by creating items reflecting local cultures and tastes. One can go to a McDonald’s in Maine and see the McLobster beside the Big Mac on the menu.

A generation ago people who were concerned with environmental quality proclaimed, “Think globally and act locally.” Though environmental problems such as pollution and energy depletion were global in scale, actions such as recycling and conservation were local in scale. Contemporary geographers offer a different version of the phrase: “Think and act both global and local.” All scales from local to global are important in geography—the appropriate scale depends on the specific subject.

Further Reading

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Glossary

Formal (or uniform or homogeneous) **region**: An area in which everyone shares in one or more distinctive characteristics.

Functional (or **nodal**) **region**: An area organized around a node or focal point.

Globalization: Actions or processes that involve the entire world and result in making something worldwide in scope.

Glocal: Term used to describe the simultaneous process of global-scale phenomena impacting local scale activities, and the impact local actions can have on global scale processes.

Meridian: An arc drawn on a the map between the North and South poles.

Parallel: A circle drawn around the globe parallel to the equator and at right angles to the meridians.

Region: An area distinguished by a unique combination of trends or features.

Scale: Generally, the relationship between the portion of Earth being studied and Earth as a whole, specifically the relationship between the size of an object on a map and the size of the actual feature on Earth’s surface.

Site: The physical character of a place.

Situation: The location of a place relative to other places.

Transnational corporation: A company that conducts research, operates factories, and sells products in many countries, not just where its headquarters or shareholders are located.

Vernacular (or **perceptual**) **region**: An area that people believe to exist as part of their cultural identity