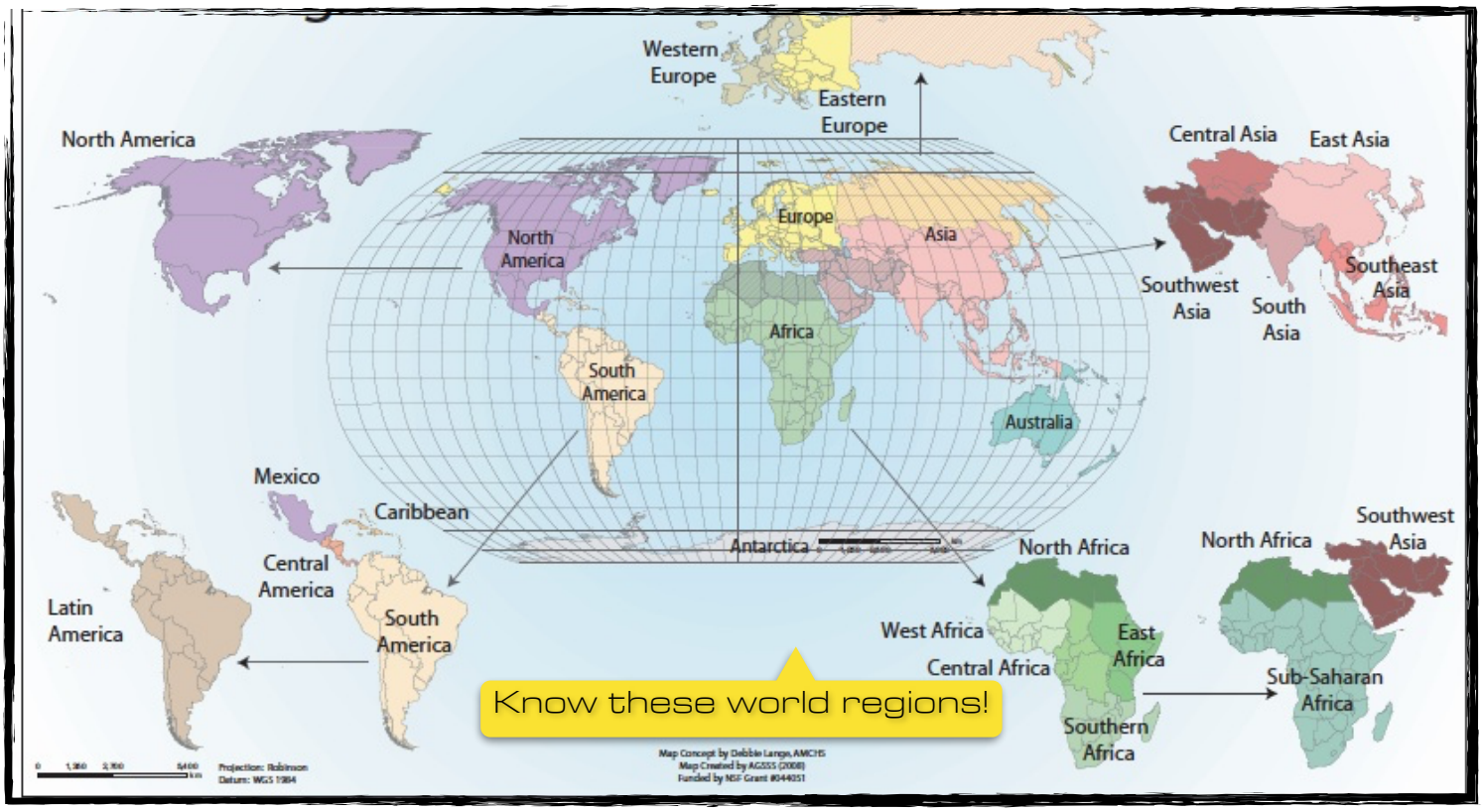
G. Organizing Space

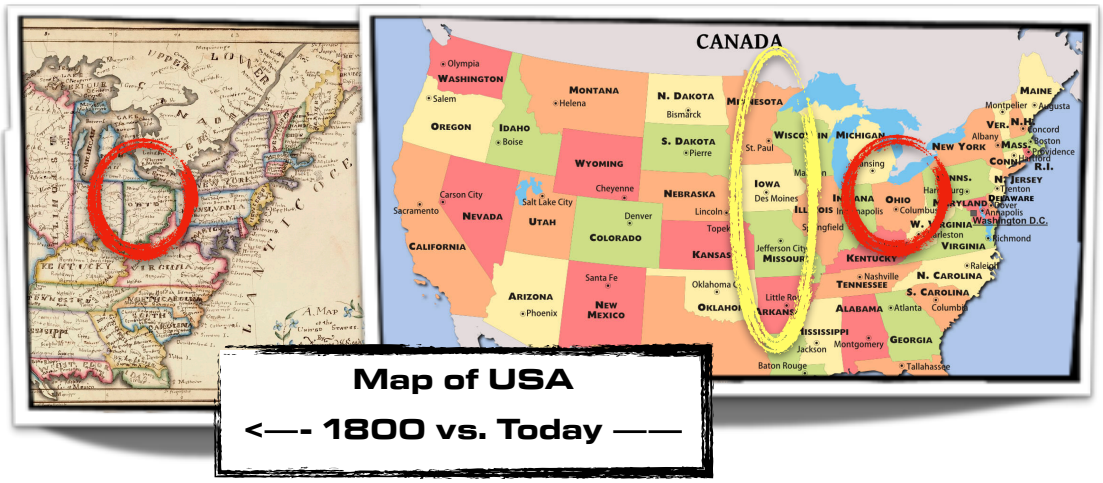
Regions: Making Order Out of Chaos

STANDARD: Geographers analyze complex issues with Spatial Perspective: Defining Regions



In a massive world filled with countless objects and data, Human Geographers divide the world into regions, or imaginary categories, to help create a sense of order. Regions are spaces that share at least one aspect in common, that most people can agree upon. By simplifying the world into regions, it allows for human geographers to analyze, compare, discuss and problem solve. Regions can be confusing - and even seem contradictory - thus, a few guiding principles are beneficial to understanding regions:

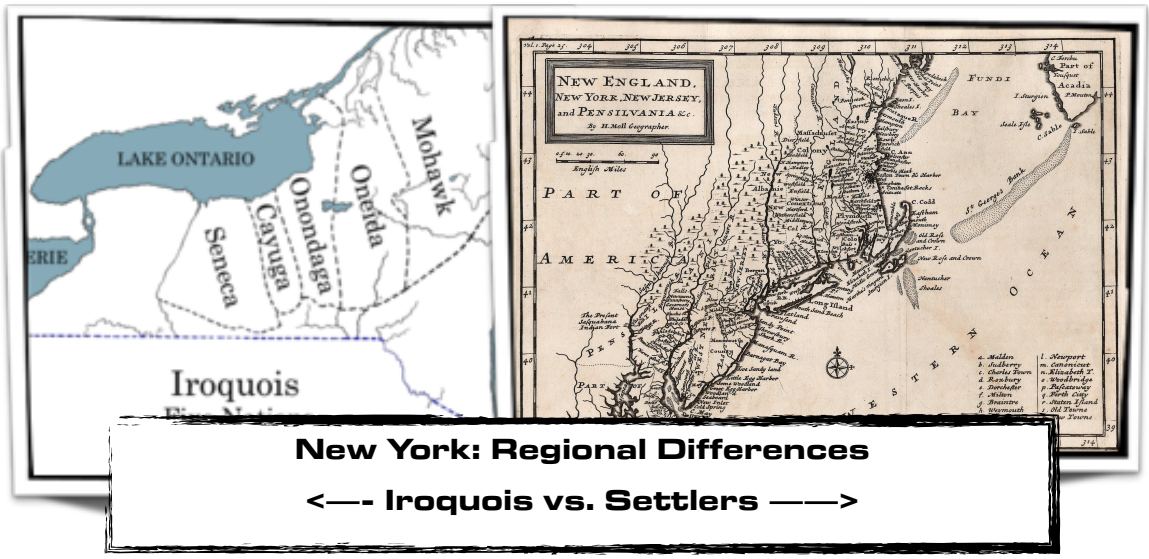
- Regions are imaginary. They are human constructs, built to make the world easier to understand.
- Regions can be created by anyone.
- Regions can vary in size from just a few houses or streets to multiple countries to multiple continents. They can be as big or as small as the situation requires.
- Regions can be created at any scale: global, regional, national, local… People even create regions within their own homes.
- Regions can, and do, overlap. For example: New York City is a part of the East Coast, New England, the Rust Belt, and the Eastern Time Zone to name a few. As a result, one location or space can be considered a part of multiple regions.
- Regions are transitional. As people and circumstances evolve, regions evolve. Regions do not have the same definition or meaning over time. For example: In the 1800s, Ohio and Michigan were the "Midwest." In the early 2000s, most Americans would think that the "Midwest" would be Iowa, Nebraska, or Kansas because it is now… in the Middle… before the "west."

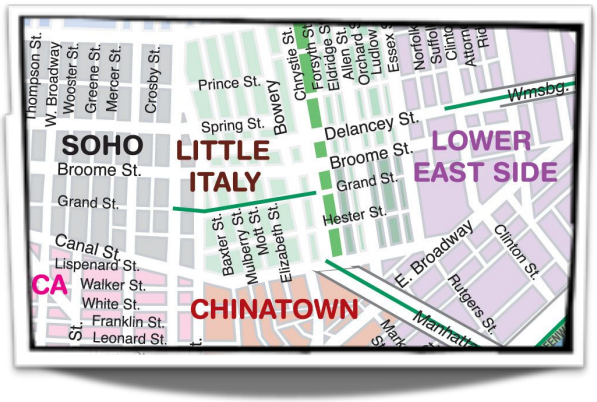


Map of USA

<—- 1800 vs. Today ——

- Regions are not always agreed upon. Different groups of people may define regions differently. It is common that different groups construct regions based upon the way they see the world, and that those perspectives will not always agree. For example: The Iroquois (Haudenosaunee) viewed upper New York as Iroquois territory. The English settlers viewed it as an uninhabited "Wild" region to be claimed and tamed. The people of Basque view their land as belonging to the Basque people. The Spanish government disagrees, drawing maps showing the Basque territory as a part of the Spanish controlled region. Since regions are imaginary constructs by groups of people… this is common and to be expected.





Regions are created based on loose generalizations focusing on one aspect either the people or land have in common. These unifying generalizations can include, but are not limited to: shared landscape features, a commonly spoken language, shared ethnicities, shared religions, unifying political organizations and/or economic activities. This is important to understand as it is easy to find exceptions or outliers within a region. For example: within New York City, there is a region referred to as Little Italy, because of the large number of Italian migrants that moved into that area. Even though it is casually referred to as Little Italy, not everyone in the region is Italian. West Virginia is a part of "Coal Country" where a large percentage of American coal is mined and refined. However, not every person in "Coal Country" works in a coal mine or as a part of the coal industry. Thus, when thinking about regions, find one common thread the area has in common, but hold onto it loosely.

Scaling Regions

Regions can be identified across every scale.

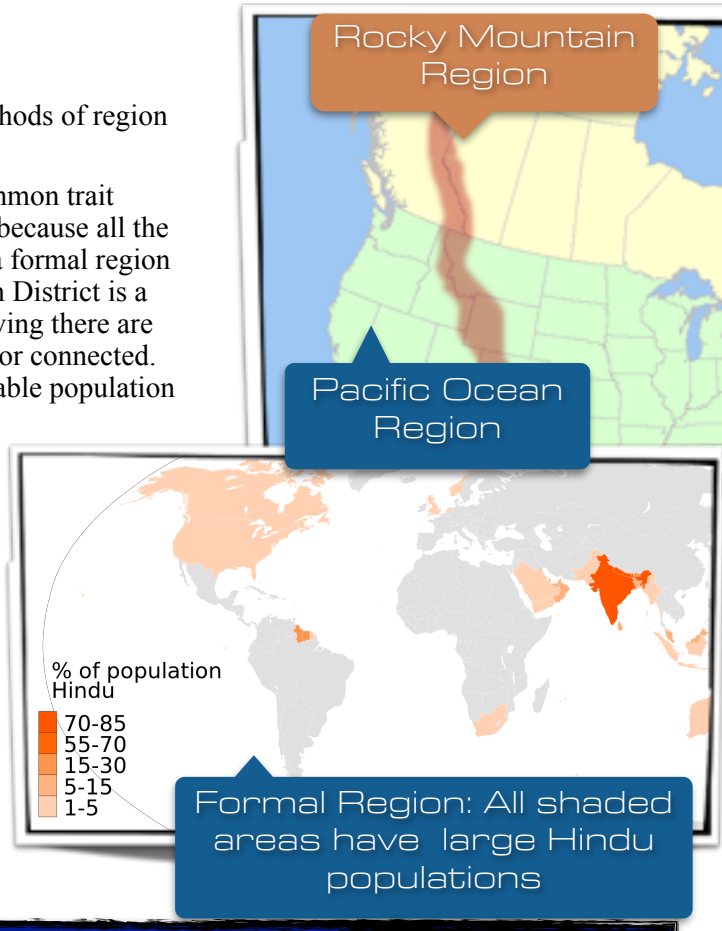
- At a local scale, regions can be formed based on tribal heritage/family connections, neighborhood location, school communities, or people in a similar economic situation. For example, in American inner cities, governments identify regions of the city as Pink Ghettos: areas of the city with a large concentration of single, unemployed mothers with children living in poverty. The Central Business District (CBD) is where the headquarters of most wealthy, central cities are located.
- At a national scale, regions can take the form of cities, metropolitan areas, or economically related spaces. For example: the Research Triangle Region (the cities of Raleigh, Durham, and Chapel Hill in North Carolina) shares common transportation systems, common businesses, and common government organizations. Silicon Valley in California is a region that consists of San Francisco, San Jose, and Santa Clara - sharing economic similarities of technology development.
- At a continental or global scale, a region can be a country/state - like the USA, China, or France - that share common laws, leaders, and political institutions. A region can form around certain economic or cultural activities: Tobacco Road, the Rust Belt, and the Sun Belt. Regions can be formed from language or religious attributes: English speaking areas, Spanish speaking Regions, Bible Belt, Muslim region, or Hindu region.

Types of Regions

There are three basic types of regions, each focusing on different methods of region formation and creation:

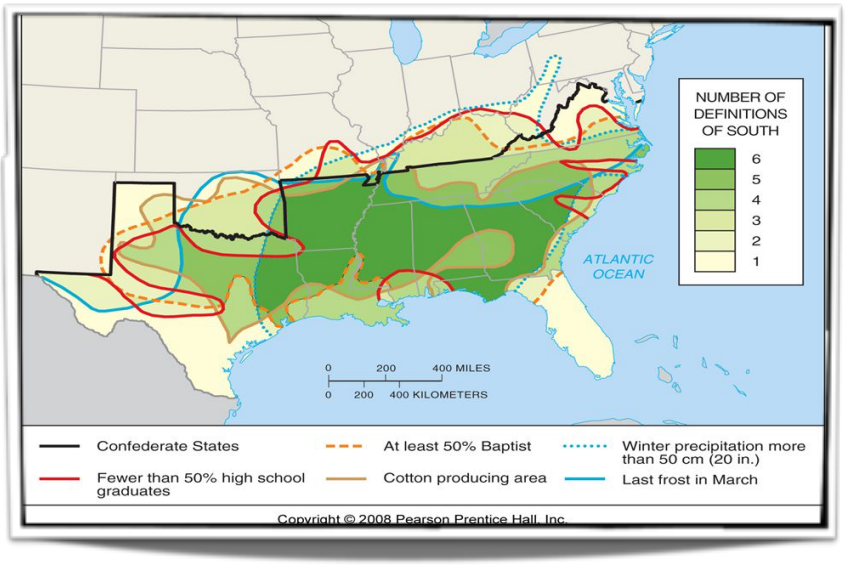
- **Formal Regions.** Formal Regions are areas that share a single common trait proveable by data. The Rocky Mountain region is a formal region because all the land touches the Rocky Mountains. The Mediterranean Region is a formal region because all of the land borders the Mediterranean Sea. The Muslim District is a formal region in Paris, France because a vast majority of people living there are Muslim. Formal regions can exist, even if the land is not touching or connected. For example: Hindu Regions of the world are areas that have a sizable population of people that follow the Hindu faith, even though those areas are not always directly connected.

  Political borders are the most strict and specific examples of formal regions. A country, state, county, city, or township all have very specific boundaries or borders. The borders are recognized and agreed upon by the government and the citizens. The people living inside those borders must follow the same government leaders, obey the same laws, follow the same policies, share the same transportation systems, etc. Again, all formal regions must share one trait in common, verifiable by facts or data. For Example: Canada is a formal region. Bangaldesh is a formal region. Indonesia is a formal region. Within the USA, each of the 50 states is a formal region. Every county, parish, city, municipality, town, village, and hamlet is a formal region.



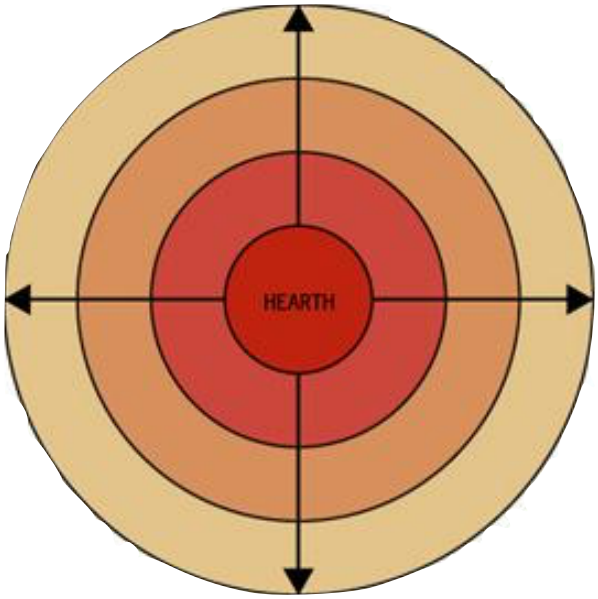
APPLICATION #1 Go to a scalable online map (like Google Maps). Examining with where you live, create a list of all the formal regions you currently live in. Change from local, regional, to global scale

- **Perceptual or Vernacular Regions.** This type of region is based upon what people believe or perceive to be true, but cannot be proven with hard facts. Most perceptual regions are fiercely debated. Which countries do you think are a part of "The Middle East"? Most would agree that Iraq, Iran, Israel and Saudi Arabia would be included, but what about Egypt? Is Egypt the Middle East… or North Africa? Or is all of Muslim North Africa also a part of the Middle East? On the eastern side, most would agree that Afghanistan is included in the "Middle East," but what about Kyrgyzstan or Turkmenistan? Are they "Central Asia" or "Middle East"? Or are they both (because one area CAN be a part of multiple regions)? The answer: it is a perceptual region based off of feelings or beliefs, so there is no "correct" answer.



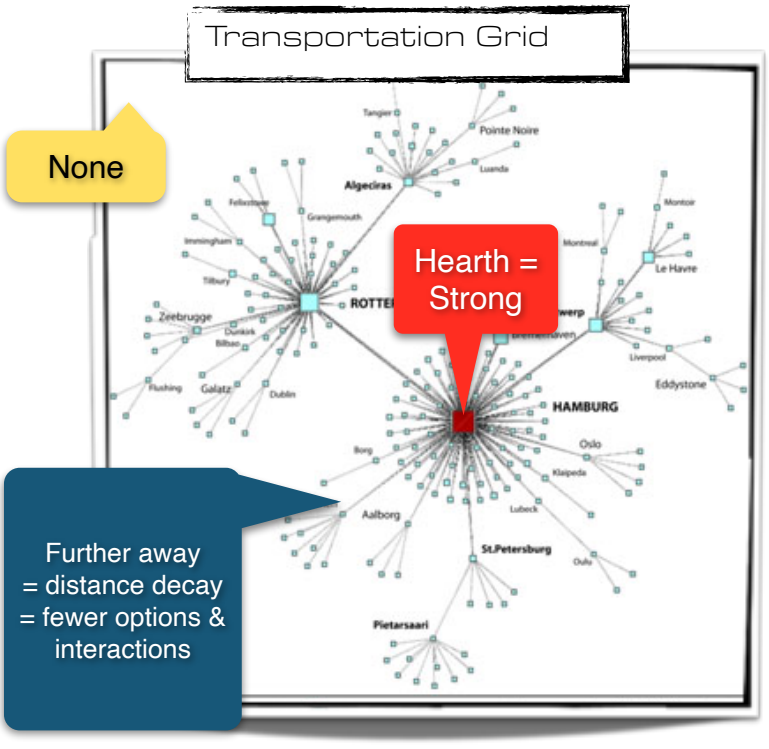
APPLICATION #2 What States Do you consider to be "the South"? Is West Virginia? Maryland? Texas? What about "The West? Make your list and then ask and then ask 3-5 other people what states they consider to be in each region.

- **Functional or Nodal Regions.** Perhaps the hardest type of region to explain, functional regions are based on activities, actions, and interconnectivity. The root word of Functional Regions is *function* - meaning they are tied to activities of a particular purpose or use. Functional regions can be based on the service area of certain economic activities, business services, transportation, utilities, sanitation, power grids, and communication (radio signals and cell phone towers).



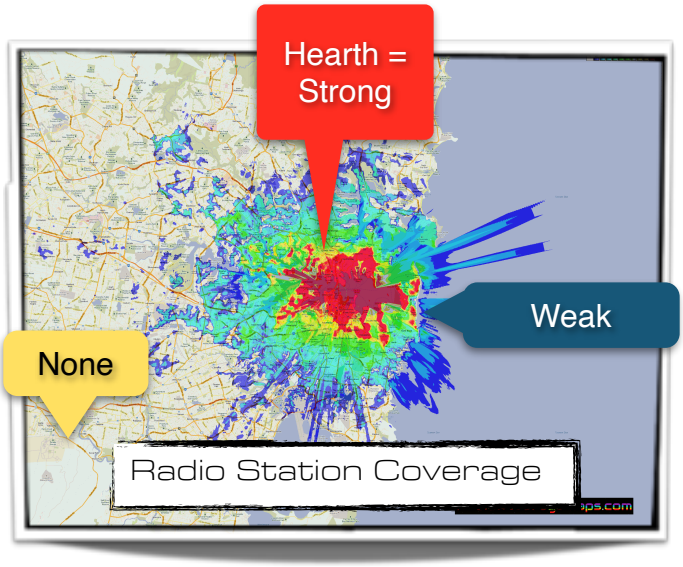
  Functional regions have a gradation - a series of changes or stages. Each of these functional regions also has a center point, or hearth. The Hearth is the origin of the activity and where the connection or activity is strongest or most frequent. For example, electricity is most accessible immediately adjacent to the power plant. The largest quantity of accessible clean water is at the water filtration plan. The further away a person moves from the hearth, the quality and accessibility to the service begins to degrade as the service experiences distance decay. Distance decay is when the strength of service or opportunity weakens the farther away a person moves from the hearth. This is because of the friction of distance. The greater the distance a service has to travel, the increased effort/time/energy that is needed to continue. Houses close to the water filtration plant have easy access to clean water while a house 5 miles away has medium access because of the additional time, cost, and energy needed to provide access. A house 100 miles away from the source has minimal-to-no access to the clean water from that water filtration plant, due to the increased friction of distance (time/effort/energy).

In summary, the closer a person is to the hearth, the stronger the connection and interaction they have with the phenomenon. The farther away, the weaker the influence (distance decay).



This is a very abstract concept, and the example of transportation is a useful illustration. At the center of a city, transportation options are abundant; there are multiple intersecting highways, bus stations where passengers can get onto multiple bus lines, train stations where multiple train lines intersect, subway systems, and possibly sea ports allowing for passenger and cargo boats to dock. In the hearth there are A LOT of transportation options. A couple miles from the city center, distance decay allows fewer transportation options. There may only be one highway intersection or one train station with two train line options. The bus and subway services have ended and do not reach out that far. 20 miles away, the transportation options are even more reduced: the 6 lane highway ends and becomes a 2 lane road. The one train line has one small train stop. In the city center (hearth) there were MANY options, away from the city center, there are very few.

Other Examples:



- Radio stations. When a person is close to the radio tower (the hearth of the radio signal), the signal is strongest. As a car drives further from the tower, the signal weakens until it is completely lost to static.
- Cell Phone Towers: Near the tower there is a strong connection and plenty of available service. Far away from the tower, the service is weak and disappears.
- Power Stations. Near the power stations, there is plenty of available and accessible electricity. The further away, distance decay kicks in and it is harder and more costly to connect to the few power access points. When a location is far enough away, it can no longer receive power.
- Water utilities and sanitation. Near the utilities and treatment centers, clean water and sanitation are plentiful. Move too far away, and service is no longer available.
- Economic activity. In the Central Business District (CBD), the hearth of the city, there are an abundance of businesses and strong economic activity. The further away a person moves, economic activity experiences distance decay. Tall business towers are replaced by shopping malls and, eventually, small run down convenient stores. Move far enough away from the CBD and all economic activity is lost.

Because functional regions are about interconnectivity, they are highly influenced by technology. As transportation and communication technologies improve, the larger a functional region becomes. For instance, if a pizza delivery person needs to walk to deliver pizza, the functional region would be less than half a mile as they would not be able to travel very far to provide their service. If the pizza delivery person uses a bicycle, they may be able to service one mile effectively. If a car is used, they can easily service 5-10 miles. The functional region improves as the technology improves. Another example is the radio. When radio was first developed, a radio station could be picked up for a couple miles. As technology improved, radio stations could be heard for dozens of miles. With satellites and the internet, a broadcast can now be heard globally.

APPLICATION #3 Create a list of the functional regions you currently exist in. If you get stuck, explain the concept to your parents and ask them for other ideas.

Key International Regions You Need To Know By Name

H. Understanding Interconnectivity

History of Human Interconnectivity

STANDARD: Describe spatial patterns, networks & relationships

Humans are interconnected creatures. The human body cannot be still or silent; it is constantly moving and changing. Just as the brain functions by constantly making connections, humans are wired for connection with other humans. As the world's population has exploded past 7.5 billion people, and with recent advancements in technology, people are more regionally and globally interconnected than ever before.

Historically, the world was not always so interconnected. Until the 1800s, humanity had three options for movement: by foot, by animal, or by boat. A traveller by foot could traverse 15-20 miles in one day, assuming good weather conditions and decent roads. By horse, a rider could achieve 30-40 miles a day; again, assuming good weather and quality roads. If pulling a cart or heavy load, that number drops to 10-15 miles. If riding through the mountains, a good horse might accomplish 5-9 miles within a day. By boat, sailors could achieve 50-60 miles per day with the aid of the wind and a strong current, but could not sail *against* the wind and current - they were bound to one direction of travel. Using the USA as an example; it is 3,000 miles by land from the Atlantic coast of North Carolina to the Pacific coast of California. By foot or horse-drawn-cart, this trip would take 150-200 days if conditions were perfect. In 1522, Magellan became the first human to sail around the world, taking 3 years to make the full voyage. Since all communication required either writing or face-to-face speaking, the movement of information across long distances was a slow and arduous process.

Human interconnectivity is subject to friction of distance: the greater the distance required for the interaction, the more time/money/effort will be needed. The increased time, money and effort will reduce the amount of interconnectivity between people groups. Put another way, the closer two people/places are, the more interaction and connectivity. The greater the distance between people/places, friction of distance causes a decrease in interactivity, resulting in distance decay. Under the conditions stated above, individuals mainly interacted with others within 1-3 miles of their homes. Cities mainly interacted with other nearby cities within 20-30 miles, and countries mainly interacted with other nearby countries.

At the dawn of the 1800s, technology began to transform the rate of interconnectivity. The first steam engine was invented in England and people began to use machines to increase their speed of travel. This phenomenon is called space-time compression (sometimes seen as time-space compression): the ability to travel farther distances in less time. Early trains could travel 20 miles per hour (mph), which equates to 200 miles in a 10-hour day. By the 1900s, locomotive speeds had increased to 60 mph, and (with no other stops) could theoretically achieve over 600 miles in a 10-hour day. Steamboats could travel 190-200 miles in a day. That NC-to-California trip that used to take 150 days by horse could now be done in 5-6 days by train. If that wasn't fast enough, there was the invention of the telegraph and telephone. These devices allowed humans to send communications over wires, and a message could be sent in a matter of minutes (if there was a cable connected to that location).

During the 1800-1900s, the amount of movement and interconnectivity exploded. Goods, people, and ideas moved to all available landmasses. People began to connect and frequently interact with cultures oceans away. The economic and political activities of the world steadily became intertwined and interdependent. For example, in the 1830s, the British used Carolina Tobacco, mixed with opium from India to start a drug war in China. In 1914, one assassination in a small Eastern European country brought the entire world to war; a thought unimaginable 50 years before. This was followed by a second World War almost two decades later. As a result of the intercontinental interconnectivity, economic and political leaders started using a new term: globalization: the political, cultural, economic interconnection and interdependence of people from around the world.

The 1950s-2000s produced technological advances that put interconnectivity into hyperdrive. The invention and commercialization of the airplane revolutionized human movement. A commercial airliner can travel 590 mph, achieving the Atlantic to Pacific trip across the USA in a mere 5 hours. A person can have breakfast in Boston, lunch at the Golden Gate Bridge, and have late night ice cream back on the Brooklyn Bridge. Modern military aircraft travel at speeds of 2,000-4,000 mph. These aircraft could circle the world in 10 hours… compared to Magellan's initial three year voyage.

Communication took an even more impressive leap forward. Through the use of lasers and electromagnetic radio waves, communication devices now send messages at the speed of light: 186,282 miles per SECOND. Through the use of networked satellites, cell phone towers, computers, and wires (also known as the internet), humans send messages "instantly." Some McDonald's are now even using call centers in India to process drive through orders. When a person pulls up to the outdoor menu and places an order, they may be talking to a person in India. The worker in India inputs the order into a computer and sends the order back to the workers at the local McDonalds. The driver pulls forward 20 feet to pick up their food, but their "order" has travel thousands of miles.

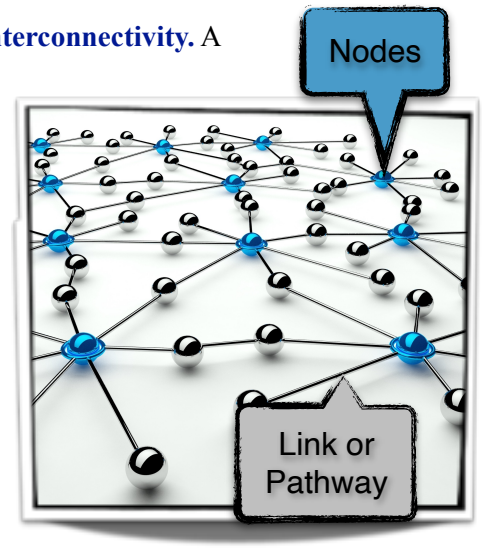
Thanks to these impressive space-time compression improvements, the world is experiencing a phase of globalization unlike anything humanity has ever known. The political, economic and cultural systems have become highly intertwined and interdependent. A person in the USA can go to their local grocery store and buy bananas from Chile, coffee from Ethiopia, sugar from Brazil and pot holder from China... all within 100 ft of each other, all while video conferencing with friends in Europe. A bad business deal in the USA loses Chinese stockholders money. An earthquake in Indonesia triggers aid workers from Canada to come in relief. The death of the American Pop-Icon Michael Jackson caused crowds to mourn and grieve on six continents. The Apartheid racial policies in South Africa were responded to with punishment from Europe.

APPLICATION #4: Create a list of other positive and negative consequences that have resulted from increased global interactions. Do you feel the world is better or worse off because of globalization?

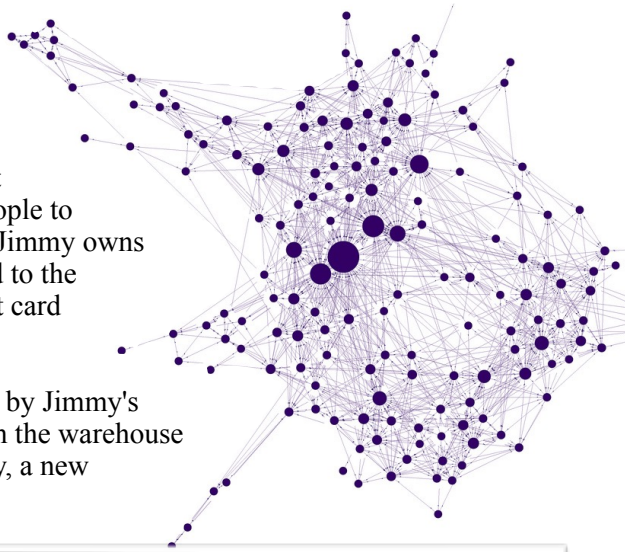
Every second that passes yields a further integration of once distinct and isolated cultures, resulting in a range of consequences. On the positive side, there has been an explosion of information creation and peaceful communication around the world. As a result, places that were once isolated and impoverished are now experiencing the fruits of industry and economic prosperity. On the downside, the interaction of cultures has caused cultural blending. Over 1/4 of native or indigenous cultures and languages have gone extinct (#ethnocide). Also, many accuse the global economic powers in western countries of using globalization to exploit impoverished workers around the world.

Networks as Interconnectivity

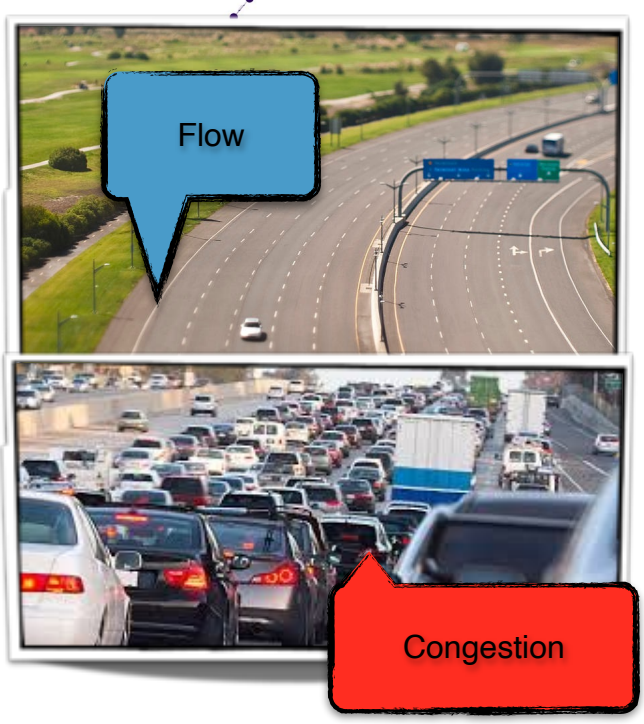
Networks are collections of links between "nodes" and are at the core of human interconnectivity. A node on a local scale can be a person or a group of people, like a business or school. On a national scale, a node can be a town or city. On a global scale, a node can be a country or multinational business. As "nodes" become interconnected by lines of transportation and communication, they form pathways through which people, goods, and ideas flow. A pathway could be roads upon which people flow from their home to the grocery store and back home again. A pathway could be a cellphone tower allowing ideas from a mother in Texas to reach her daughter working in Abu Dhabi via a text message. When multiple nodes link together, they form a web or a network.



The type of network determines what is "flowing" through the nodes. Through communication networks of wires, towers ,and radio-waves flow knowledge, culture, language, information, and messages. Through transportation networks of roads and trails flow people, materials, and goods. Through banking networks flow wealth between companies, governments, and businesses. Through political networks flow policy, laws, and treaties that govern societies. Through urban networks flow people, materials, wealth, businesses, etc.



Every network has a minimum threshold and maximum capacity. A network's threshold is the minimum number of participants needed to support and sustain the network. If a "node" on the network does not have enough people to meet its threshold, that "node" of the network will fail. To illustrate, imagine Jimmy owns a restaurant along a highway. Jimmy's restaurant is a "node" that is connected to the transportation network with the highway, the financial network with his credit card machines, and the communication network with his phone and computer. For Jimmy's restaurant to stay in business, the threshold he needs to meet is 100 customers a day. For 20 years, 150 people flowed along the highway, stopped by Jimmy's restaurant bringing their goods, money, people, and ideas. Trucks flowed from the warehouse nodes along the highway to Jimmy's restaurant to keep him supplied. One day, a new highway opens which bypasses Jimmy's town. As a result people no longer drive (or flow) past Jimmy's restaurant. Jimmy now has 5 customers a day. Jimmy can no longer afford to stay in business, and Jimmy closes his restaurant.

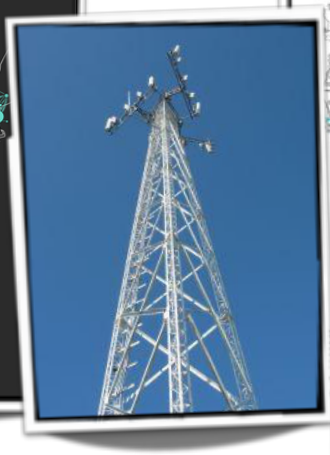


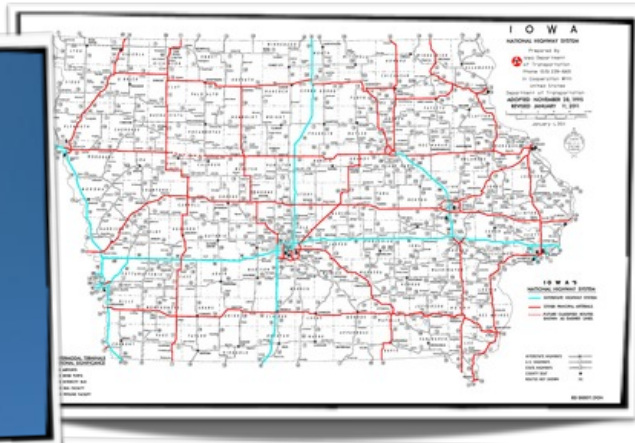
The opposite of threshold is capacity. Every network has a capacity: the maximum limit to the amount that can "flow" through its pathways. When more items are trying to flow through the network than it has the capacity to handle, there is too much congestion and all activity will be slowed, stopped, or blocked. As an example, in Florida a highway links the cities of Orlando and Tampa. At 12am, very few people drive on the highway, so goods and people flow quickly along the pathway from Orlando (node) to Tampa (another node). At 5pm, when 300,000 people are trying to flow from their businesses to their homes, the highway reaches its capacity and becomes congested. This creates traffic jams, causing people and goods to flow slowly.

Networks create interdependency. Nodes in a network can become dependent upon each other and on the pathway that connects them. If a node fails or if a pathway breaks, it can cause a chain reaction across the network. For example, if a farmer's crop is destroyed by a fire, the grocery store and restaurant that normally buys food from the farm will have less to put on its shelf, resulting in fewer sales. The people who buy from the grocery store will have fewer food options. Thus, the activity on one farm affects all of the businesses and people linked to it. Similarly, in 2016 a highway in Atlanta collapsed, which dramatically impacted the businesses and residents the highway linked together. Businesses struggled because of the loss of the "flow" of customers and supplies. Residents suffered because they had to reroute their daily path to work and faced problems of congestion. One breakdown on one highway had a ripple affect across the network of thousands of businesses and millions of people around Atlanta as well as along the Atlantic coast.

Networks Can Be Found Across all Scales

- **Local Scale.** A network may describe a series of roads linking households and businesses, allowing goods and people to flow around the city. Networks may also describe the flow of water and electricity from the water or power station out to people's homes along a pathway of pipes and wires; or how people access cellphone service and the internet through wires and cellphone towers; or the flow of food from farms to local grocery stores and restaurants.





- **Regional Scale.** Regionally, networks describe the relationship between cities connected by highways, trains, and airports. People flow between cities, as they travel to visit or migrate to a new location. Goods and services also flow as they are traded between businesses. As a result, wealth flows between people, businesses, and banks along the financial networks within these cities. City, county and regional governments work together to build and maintain roads, ports, pipelines, power grids, and cellular towers to increase the capacity and flow along larger networks.

- **Global Scale.** Multinational organizations, global businesses, and national governments are linked together in a global web. Information traverses the globe through computers and satellites. Business and political leaders travel internationally by plane. Goods are placed in containers and cross oceans through shipping lanes, entering and exiting countries through sea-ports. Migration policies and border patrols control the flow of people from one country to the next.

APPLICATION #5: Reflect on your life and how you function in the world. What networks do you use on a day-to-day basis? What would your life be like if all those networks suddenly disconnected?

STOP Close your eyes and recall the headings, main ideas, etc from memory. Don't move on until you got 90% correct.