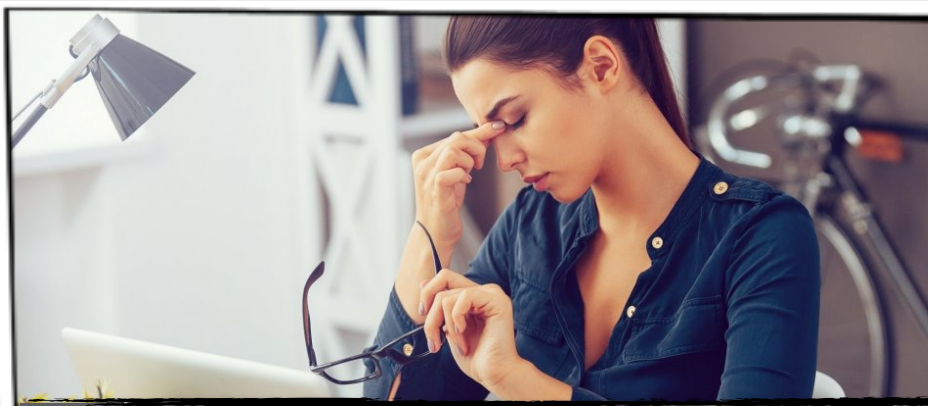


## H. About the Service Sectors

### The Age of Service.

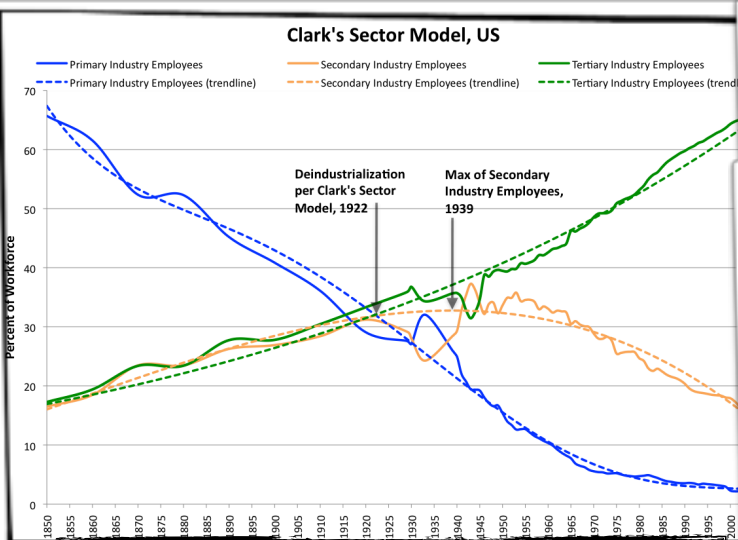
The tertiary sector is the service sector, where humans serve the needs of other humans. The tertiary sector is end of the supply chain. They do not grow any crops, nor manufacture any goods - all of that is already done for them. The job of the tertiary sector is to take the goods that have been grown and manufactured, and serve other people with them. Thus, the tertiary sector is always last as it is always reliant on the other sectors to function well. If there is a bad wheat harvest, there will be less food to serve. If the workers at the phone factory go on strike, there will be less phones for sale at the store.



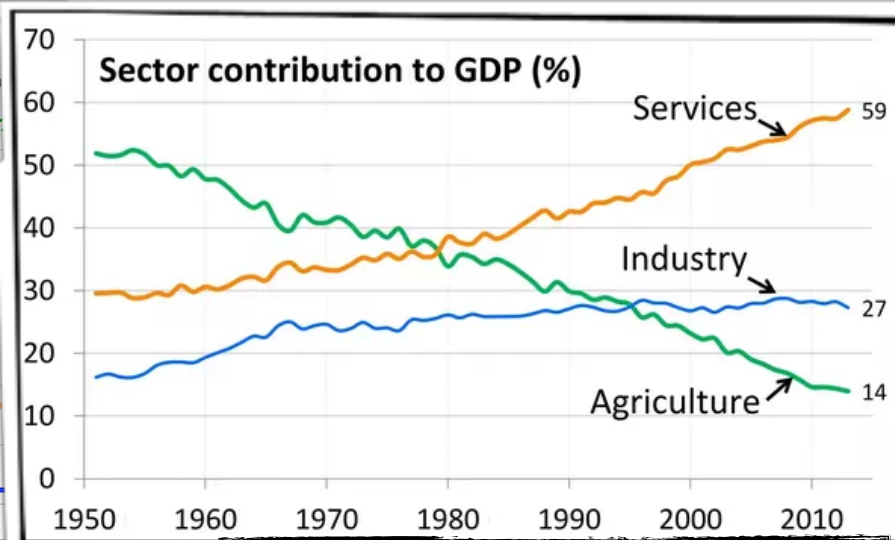
**Application #1.** You just finished a hard 15 hour work shift, finishing up a 60 hour work week. You... are... spent. As you walk to the car, your mind turns to all the things waiting for you at home. What DON'T you want to spend your time and effort doing when you get home?

The tertiary sector serves people in the work they do not want to do for themselves at the end of a hard days work or may not have the skills to do themselves. This is from Application #1: At the end of a hard days work, what do you NOT want to spend your time and effort doing? Cooking, cleaning clothes, child care, yard work, home repair, car work... driving home? When people have money from their work, people will spend it on the services for the tasks they do not want to do themselves. Don't want to cook? Restaurants will be happy to serve you. Don't want to clean? Laundry mats and dry cleaning will be happy to serve you. Lawn care? Timmy will mow your lawn for \$20. Child care? Day cares and drop in child care will be happy to serve you. Don't want to drive home? The Uber driver will be happy to serve you. The retail store will be happy to serve you. Teachers are happy to teach you. The Singer is happy to entertain you. The tertiary sector is comprised of humans serving the needs of humans in exchange for money.

Humanity is entering a new age, where the tertiary sector makes up the fastest growing sector in the world, while making up the largest percentage of human jobs in the Core. In the periphery, over 60% of people subsistent farm in the primary sector. In the semi-periphery, societies meet their food and resource needs with machines and through trade - reducing the need for primary sector workers. Instead, the Semi-Periphery has 30-40 % of its workers in the primary sector and 30-40% in the rapidly growing secondary sector factories. In the core, less than 10% work in the commercial primary sector, thanks to machines and trade. 30% still work in the secondary sector... but that number is decreasing because of deindustrialization: factories reducing staff from automation or closing to move overseas to take advantage of low cost land and labor. Meanwhile, the tertiary sector explodes to 70% of the job market.



USA's Economy Sectors



India's Economy Sectors



## Basics of the Tertiary Sector.

The tertiary sector functions under a different set of principles than the other two sectors.

- **By the People, For the People.** Since the tertiary sector serves the people, the service sector jobs must be located where there are people. The primary sector is environmentally determined, as it must be located where the resource is located. The secondary sector must be located where the business has the least cost, with the highest profit. The tertiary sector, however, is footloose: it has no official "footing" in the earth, or a physical location is **MUST** be established. As long as there are people, there can be tertiary businesses to develop as long as it must be **WITH** the people. Urban centers with higher densities of population have a larger number of tertiary businesses. Smaller urban centers and rural areas have fewer tertiary. As cities grow in size, the number of tertiary jobs increase. If a city shrinks in size, the number of tertiary jobs decrease. With improvements in technology, tertiary businesses have an increased range in who they can reach. A chemical engineer from MIT in Boston can be hired by a company with its headquarters in Florida, have a video conference with a customer in Chicago, and then be flown to Dubai to tour the new facility.

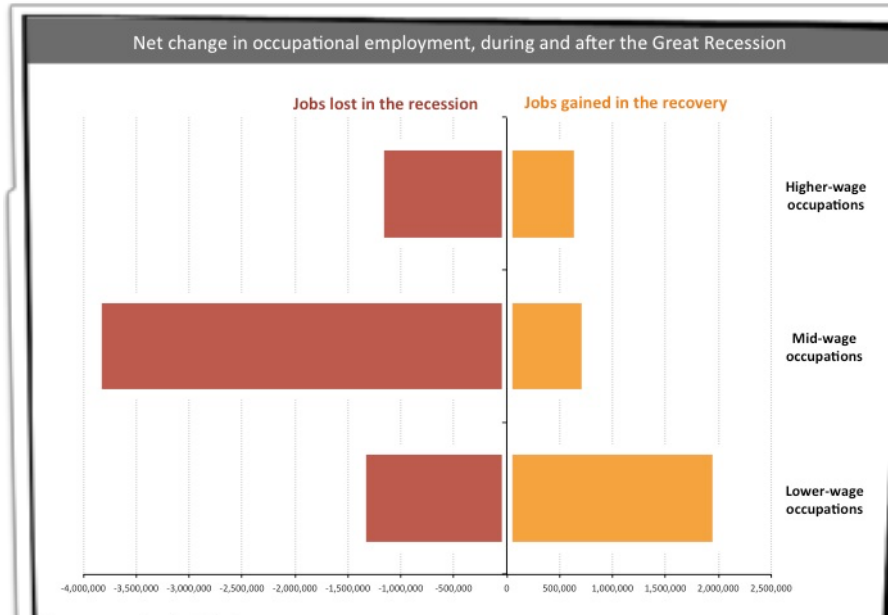
Tertiary jobs are subject to the multiplier effect. For every new secondary or quaternary job, it creates 2-3 tertiary jobs. When new jobs are added to the community's economy, more time is invested into people completing their work, leaving less time for other tasks that need to be done. With the new job, people have more money to spend leading them to spend money on the tasks they either do not want to do or have time to do. The increase of people with money and demand creates the opportunity for someone else to open businesses to fill that need. Restaurants open near the factory to provide lunch during lunch time. Auto repair shops open near home communities to change oil, replace tires, and replace transmissions. Lawn care businesses will mow, trim, and fertilize while workers are at their jobs. Thus, when a new factory opens in a community with 1,000 manufacturing jobs, that will also create 2,000 to 3,000 new tertiary sector jobs. In total, that community will see 3,000+ more people employed because of the one factory.

- **Soft Skills Matter.** Tertiary sector work requires a unique set of skills. While all work requires a strong work ethic, tertiary work requires the ability to collaborate and work together. People must have the right combination of leadership skills, as well as the ability to understand and comply with instructions. This requires strong abilities in written and verbal communication - developing as an effective communicator over multiple mediums. Critical thinking and problem solving are needed to analyze new situations and to come up with solutions for clients. Critical thinking is needed to be able to innovate, design, research, and adapt in an ever-changing work environment. Tertiary work requires a positive attitude. Customers and employers desire workers who are curious and kind, while also displaying confidence in the work they are doing for others. Serving people is not just what you do, but **HOW** you do it.



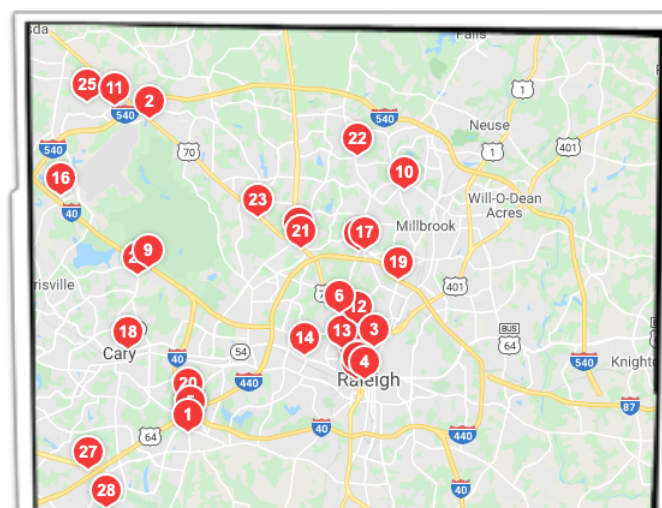


- **Different Skill Levels.** Not all tertiary work is created equal. High skill tertiary jobs demand unique skill sets that require college degrees along with continued professional development. Jobs like teaching, nursing, dental hygienist, car mechanic, banking, real estate and accounting require workers to obtain a unique skill sets. These jobs demand a strong set of soft skills, as the dynamic environments require critical thinking, problem solving, innovation, and strong communication skills. As a result of the higher skill and educational requirement, the high-skill jobs will provide a higher salary. Inversely, low skill tertiary jobs have on-the-job training skill sets, but do not have special educational degree or certification requirements. The tasks tend to be simplified and repetitive. Jobs like being a cashier at a retail store repeats the same set of actions for hours each day. Home/hotel room cleaning, janitor services, lawn care, retail warehouse, pet day care, tour guides, waiters/restaurant staff, call centers, and cashiers are all considered low-skilled tertiary jobs. Low skill tertiary tends to be low pay/minimum wage work that is either unstable or temporary/seasonal. These jobs also have a high turnover rate, with people not staying at one job for very long. When businesses are struggling financially, the low-skilled labor is the first to be laid off.



In the USA since 2008, over 80% of the “new jobs” created on the market place have been “low skilled” jobs.” As automated machinery becomes more sophisticated, they are replacing workers. For example, US factories produce 3x as many goods in 2019 then they did during the 1980s. However, they are hiring 40% less workers, because of automation. Companies are hiring humans for positions that require contact with customers and to create a quality “customer experience,” but many of the “good paying” positions have been automated away.

- **Profit Driven.** Tertiary jobs follow the money. While tertiary work grow in population dense regions, it does not evenly distribute across the entire population. Instead, the tertiary businesses build up in areas where there is the greatest wealth. The wealthiest areas of a city (per capita) have the nicest services and the largest number of services. They are the most fancy restaurants, high quality schools, pharmacies, dentists, grocery stores, car sales and repairs, day cares, soccer and baseball fields, real estate agents... The prosperous regions are never more then 10 minutes from an overwhelming number of options when they are in need of a service. Meanwhile, in the lowest income, the opposite is true. These regions experience a food desert, without access to banks, limited medical facilities, minimal recreation facilities, and low performing schools. The main source of services are from government agencies, because private businesses do not invest into the area.

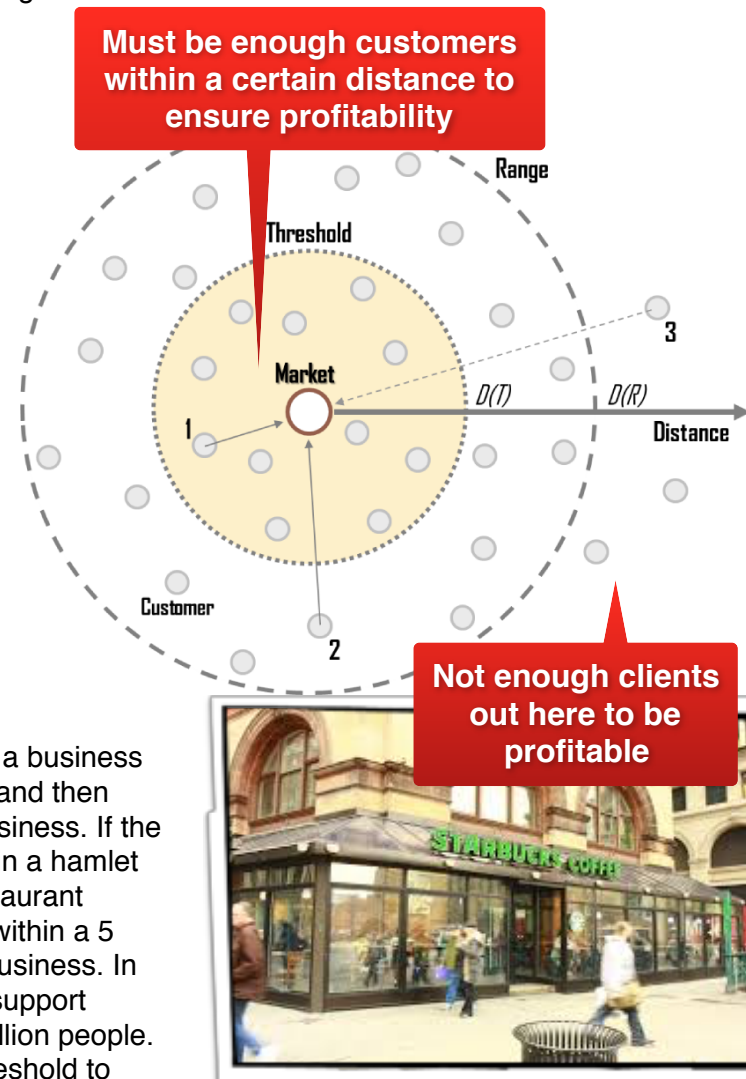


Map of Upscale Restaurants  
#WhereIsTheWealth?

- **Foreign or Non-Local Ownership.** Tertiary and quaternary sector businesses are trending towards massive multinational (or at least multiregional) corporations, with one corporate headquarters and widely dispersed “chains” or storefronts. Multinational corporations are possible because of mass communication and rapid transportation. The common tertiary workers have never met their actual boss who runs the company. In many cases, the corporation headquarters are located in a foreign state, providing instructions and demands to regional managers, who they communicate with the store or chain manager. While there are still some “Ma and Pa” businesses, they are struggling to compete with the economies of scale of the mega multinational corporations.

### Distribution & Agglomeration.

The distribution of tertiary sector businesses is driven by threshold and range. Threshold is the number of clients a business needs to have in order to stay in business. In a restaurant needs 1,000 clients a month, but they only get 800, then they will not make enough money and will go out of business. If that same restaurant has 1,200 clients in a month, then they will remain open and prosperous. The range is the maximum distance a customer will travel for a product or service. Customers will vary their willingness to travel depending on the importance of the product or service. People will only travel 5-15 minutes to fill up their tank with gas, get a cup of coffee or eat at a regular restaurant. They will travel 20-30 minutes for a real estate agent or to purchase technology (laptop, dishwasher, car). The same person will travel 2-3 hours to go to an amusement park, watch their favorite sports team, or watch their most beloved musician perform. Thus, a business must know who their clientele are, where they are located, and then determine the appropriate threshold/range to place their business. If the restaurant above needs 1,000 clients a month, but sets up in a hamlet that has 50 people... they will go out of business. If the restaurant moves into a location that has 5,000 people living/working within a 5 minute range, they have a high chance of doing well as a business. In major cities, the population is so high that businesses can support multiple locations. The metropolitan area of NYC has 20 million people. There are so many people that NYC is able to meet the threshold to support one Starbucks every two blocks!



### USA's Retail Intersections



Due to threshold and range, location matters.

Businesses must know the main form of transportation of their customers. In Europe, most people travel by bus or train. Thus, businesses fight for the locations near the bus stops and train stations. In the USA, people mainly move by using cars. Businesses need to be in a location where there is a high flow of traffic AND where they can have spaces for people to part their cars. Thus, in American metropolitan areas, business complexes develop at the intersections of major roads. The more traffic that flows along a road, the more valuable the intersections become.

2020 by GAPro, LLC



Tertiary businesses will agglomerate to share the costs and benefits of a location. Because there is a shortage of ideal tertiary business locations and a high demand for these locations, businesses are encouraged to agglomerate. Agglomeration is to collect or cluster together. Business will agglomerate together in order to share the costs and benefits of a prime location. Businesses will share a building, dividing the cost of the land, architecture electricity, plumbing, and parking amongst all the businesses in the building. They also share the benefit of similar supply chains. If a truck is delivering goods to a location that is close by, they will charge a small delivery fee to make a second delivery in the area. If a delivery truck has to spend extra time money and gas to go far away, they will charge extra. At the same time, they share the benefit of a prime location, from the exposure of customers going to and from neighboring stores, and of potential labor looking for similar work.

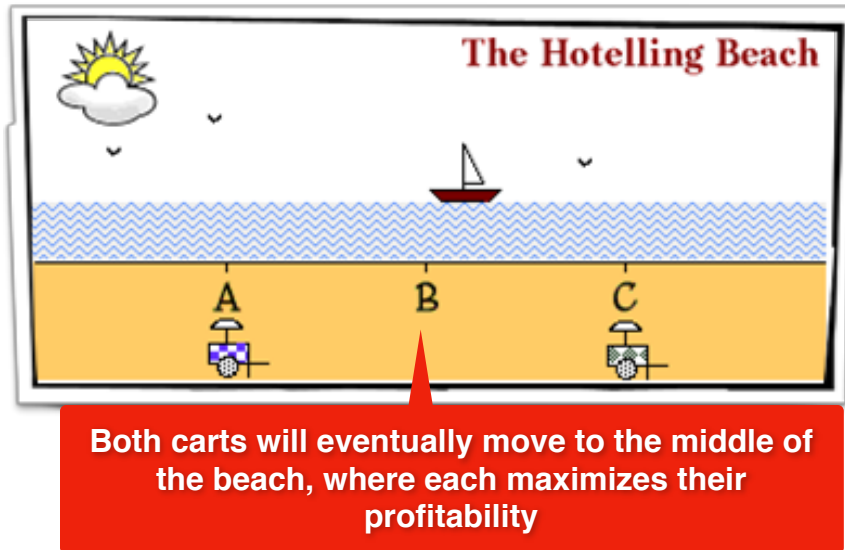
Agglomeration fuels the idea of shopping malls, office towers and vertical architecture. Governments zone land that is ideal for commercial businesses, based on feedback from the business leaders in the community. One developer purchases a parcel of land at the intersection and constructs the building(s). The buildings are divided into storefronts that businesses can rent. The costs of the land, taxes, parking, and utilities are divided amongst the businesses that rent the space. This allows more businesses the benefit of sharing prime locations, paying a MUCH smaller cost by working together, then if they tried to build it all themselves. The more expensive the land and location, the more tertiary businesses will agglomerate - building multi-story buildings to give more businesses access to the location. Restaurants will pay extra for the bottom floor, to give customers easy access to walk in. Office space will be on the upper floors, for businesses like insurance and real estate agents. Again, the higher the business demand for the land, the higher the land value. The higher the land value, the taller the buildings developers will construct to allow businesses to agglomerate and share the costs and benefits of the land. The tallest buildings have coffee shops, restaurants, and retail stores on the bottom floors, with tertiary/quaternary businesses using the office spaces on the upper floors. Another variation is the increase in mixed use zoning, that agglomerates condos/apartments, with office spaces, restaurants and retail spaces into the same building complexes. This creates a market of customers within walking distance (range), to help meet the threshold for businesses. This allows people to walk to work, to food, and to retail from their home.



**Application #2.** Compare these for examples of agglomeration: where in a city will find each? What types of businesses will rent the space in each setting? Why would these businesses be willing to agglomerate instead of just building their own solo business building?

Businesses will agglomerate with other competitive and complimentary businesses. Why can a person travel for 5 miles without any fast food restaurants, but then find four on the same intersection? Customers would prefer if services were distributed evenly across an urban space, giving equal access across the population. However, Harold Hotelling's observed business behavior and developed Hotelling's Theory: businesses will cluster agglomerate in the most competitive spots. They would rather be side-by-side with their competition, competing together in the prime location. For example:

*If two ice cream salesmen are evenly spaced on a 1 mile beach, they will each serve half the customers. However, if one moves closer to the center the beach, they will receive more customers. Through competition, each business will move to where they will be most profitable. This competition ends with the businesses in the center of the beach, side by side, each serving half the beach. Each ice cream cart could not position themselves any better, creating a "Nash Equilibrium" or ideal market scenario.*



Businesses all also agglomerate based off of complementarity. Services will find other businesses who's offerings support and integrate with their own, or whom share a similar clientele. For example: a movie theatre attracts people with cars, extra income, and an enjoyment for experience-based entertainment. Statistics shows the demographic that most frequents movie theaters are 25-50 year olds, followed by 11-24 year olds. What other businesses would like access to a steady stream of 11-50 year olds, with money, transportation, extra time, and a desire for an experience? Novelty restaurants, upscale coffee shops, bars, fancy retail, arcades, bowling lanes, and laser tag (or other indoor styled "extreme" entertainment) all frequently agglomerate with movie theaters. They share the business costs AND they share the benefit of attracting customers with similar desires. Smoothie shops frequently agglomerate near Starbucks, because of the similarities in their customers.



Tertiary services are the last businesses to be established in an urban space. First, an urban space must be the development of a CBD with secondary or quaternary sector companies that will provide jobs and income to the region. Businesses ALWAYS come to a region first. Once businesses are established, then housing will be built for the workers. Construction companies will work with the government to develop land zoned for residential purposes. Once a region has developed a strong residential population, THEN tertiary businesses will develop. A tertiary businesses cannot establish themselves until there is a large enough population to meet the threshold that is within range of commercially zoned land. Populations do not follow Starbucks, Starbucks follows populations.

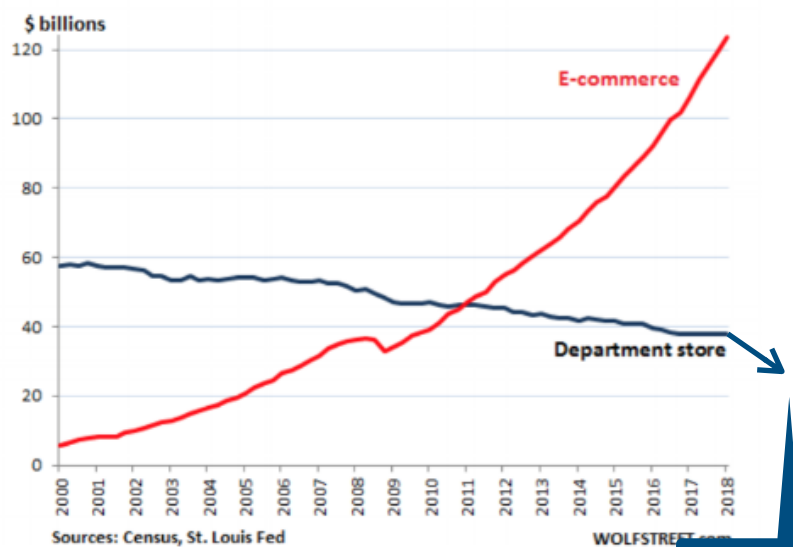


The Internet and e-commerce have become market disruptors, reshaping the tertiary sector. Since the internet and cell phones overcome friction of distance, for certain tertiary businesses, range has become irrelevant. Many industries have moved to being online. In the 1950s, all schools existed in buildings with teachers educating face-2-face classrooms. Those schools could only provide education to students who were within a 10-15 mile range of reaching the school building. Now, there are schools and businesses that use the internet to provide education all over the USA and the world. Teachers send messages to all their students hundreds-to-thousands of miles away in fractions of a second. Teachers in America are teaching English to children in China. Students in separate states can video chat together. Newspapers used to only exist in print form, being passed out on the street or delivered to houses. Now, over 90% of news delivered online. Accountants used to do all their work face-to-face, having to meet with clients to collect their paperwork. Now, accounting software collects customer data and gives advice, with accountants double checking the software and providing customer service.

E-commerce has massively disrupted online retail. Now, people can browse all the products a company provides online and have the product shipped directly to their homes. Companies like Amazon have situated fulfillment warehouses, trucks and vans strategically to allow commonly purchased items to even be delivered in the same day of ordering. Because the online delivery goes from the warehouse to the customer, the companies do not need to pay for land, buildings, or workers. As a result of the lower expenses, e-commerce companies can sell their products at a lower cost than stores with a building to maintain. As a result of e-commerce, face-2-face retail has suffered. Since 2000, retail sales have 50% of its revenue, while e-commerce grew to \$120 Billion in 20 years. Much like deindustrialization, strip malls and large retail malls are dying across America. They are leaving behind empty buildings and unused parking lots on some of the most valuable land a city. Brick-and-mortar retail businesses are now fighting for survival in this digital world, with cities having to figure out what to do with these architectural skeletons.



**E-Commerce v. Department Stores**  
Quarterly, seasonally adjusted



**\$30  
Billion  
in 2019**



Dead Malls in America





## I. Quaternary Sector

### Basics of the Quaternary Sector .

As the great industrial cities of the 1900s faced deindustrialization, they were faced with a tough choice: evolve... or die. Across the USA and Europe, many of the former manufacturing centers are revitalizing themselves as technopoles: regions with an agglomeration of high-tech, innovation based industries drive by data. During their days as elite manufacturers, the cities attract large, dense, and wealthy populations. Many had utilized the wealth to develop a network of high quality universities that were leading the world with their cutting edge research; an agglomeration of elite intellectuals. For example, Pittsburgh had used its prosperous steel industry to established the University of Pittsburgh and Carnegie Mellon University (plus Penn State 130 miles away). Durham had used its tobacco money to establish Duke University and Duke Hospital. Boston was home to Harvard and MIT. San Fransisco had Cal Berkley and Stanford. These elite universities became the engine of the new American economy.

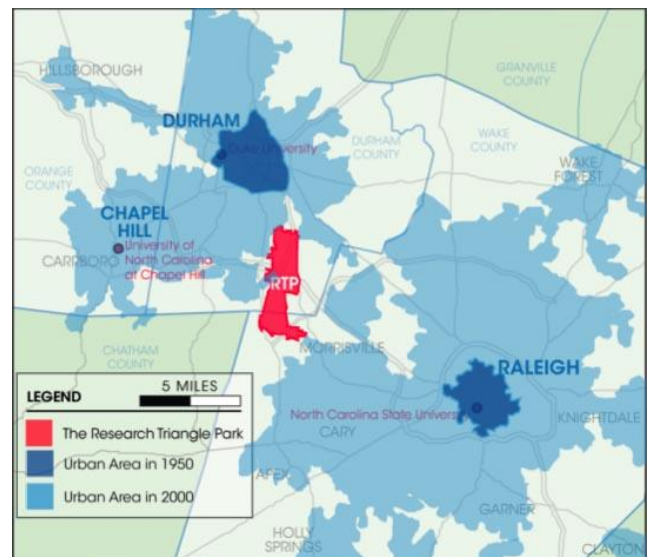
In the 1980s, Government officials and business leaders met together to discuss the future of their great cities. Together, they forged public-private partnerships to promote new high-tech development in their cities. The technopoles focused on attracting and developing businesses in the following industries: computer hardware, computer software, data storage, robotics, communication, biotechnology, pharmaceuticals, medical, electronics, and energy. The new technopoles were built upon three key pillars:

- **Government.** The State and local governments played a key role in attracting and retaining technopoles in their area. First, the government officials zoned special business parks aimed at high tech industries. Because technopoles need high quantities of skilled, educated labor, the land was zoned close to major universities. These zoned areas had the financial incentive of lower tax rates for businesses inside the boundaries, to reduce the business' costs. These zones also had access to government-provided advanced infrastructure, like highways, high speed rail lines, or airports. For example, the city leaders of Raleigh, Durham and Chapel Hill were starting to lose the tobacco industry, which was a big part of the NC tax base. The three cities worked together with the State of North Carolina to create Research Triangle Park (RTP). RTP is located in-between Duke, UNC, and NC State (and down the road from 10 other universities). The city of Raleigh also built Raleigh-Durham International Airport 15 minutes away from the RTP. They sold businesses like IBM on the ability to fly customers and other executives in, take a 15 min drive to the headquarters, and then be back on the plane.

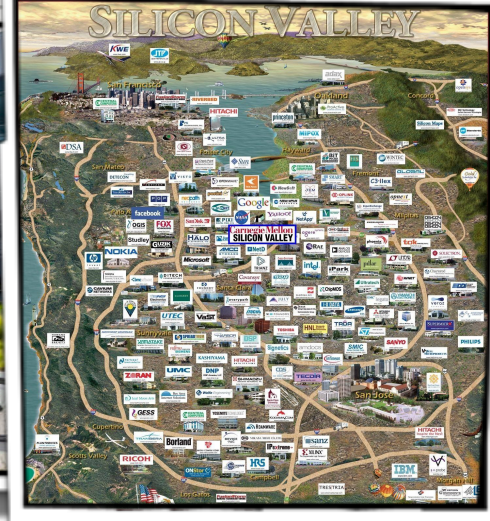
1860: London



2010: London





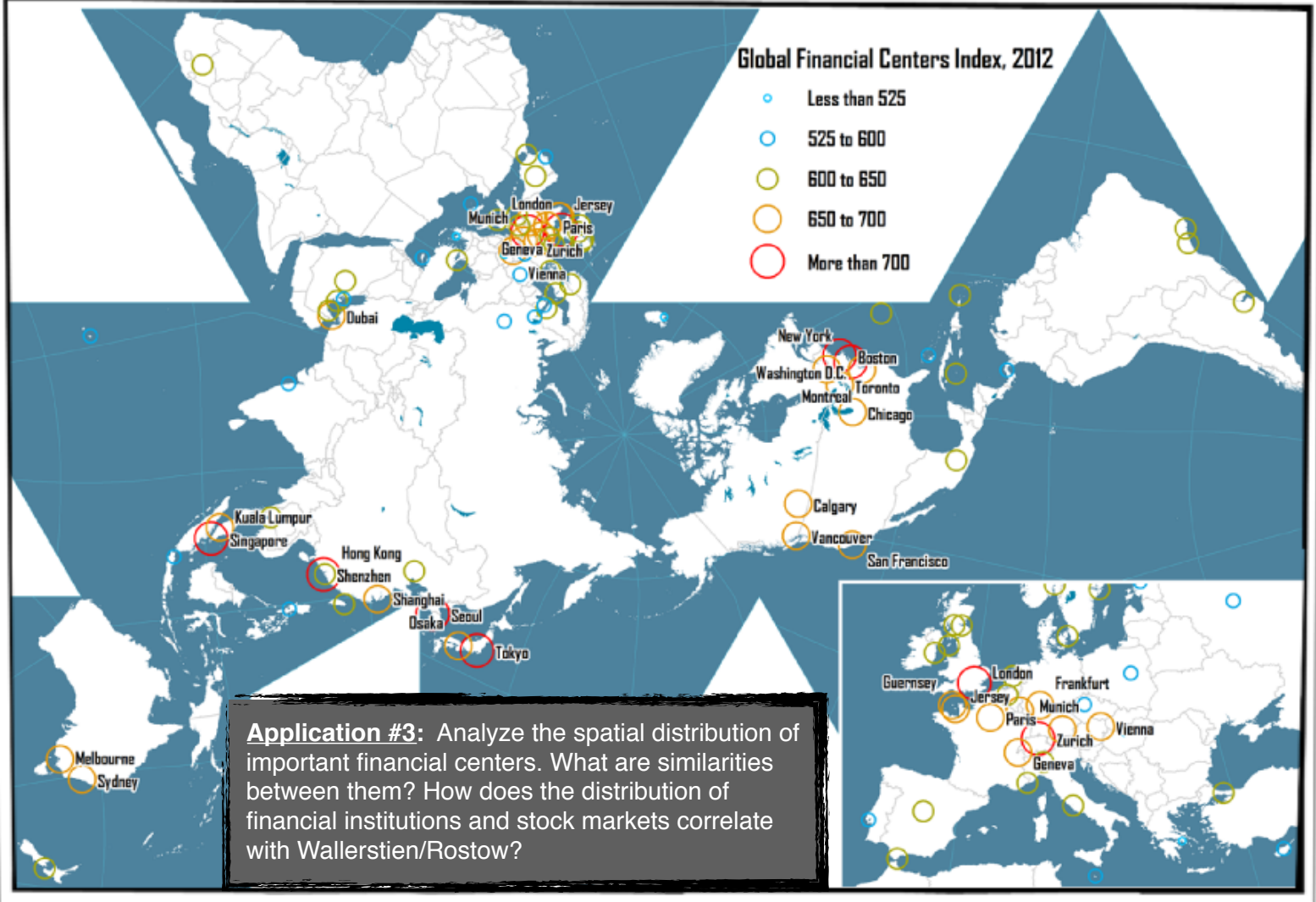


Second, governments incentivized businesses with guaranteed contracts. If businesses came to their technopole, the government would help the businesses meet their threshold by giving exclusive contracts. The government also put their own agencies in the park, to encourage and facilitate interaction through agglomeration. To attract IBM to RTP, the government and NC Public Schools only uses Lenovo computers. Silicon Valley had a strong connection with the government during the 1970s, promoting the work on semi-conductors and vacuum tubes. The sped up development of computers and TVs.

Third, the government helps provide a high quality of life for the high tech employees. Top talent wants a high quality life. They want nice places to live, quality infrastructure, exciting entertainment, good hospitals, parks with walk ways, and great schools for their children. The government uses their role with zoning and incentivizing to create a location where the tech workers want to live.

- **Labor:** Technopoles need advanced labor. High skilled labor is the number one driving force of the quaternary sector, as tech companies will relocate themselves to where the pools of quality talent are located. They need sources of highly trained talent with advanced degrees creative and innovative critical thinkers who can design, engineer and create the unimaginable. They need persistent, well versed, knowledgeable workers that can solve the toughest problems. These people will be responsible for possessing the immense knowledge of their field, while working with and improving the technologies and products for the company. Highly skilled labor markets are best fed from quality research institutions. Thus, technopoles are located within a close distance to a collection of major universities. For example: Research Triangle Park is centered between Duke, UNC and NC State. The Technopole in Boston is situated near MIT, Harvard and Yale. Silicon Valley is located near Stanford and the University of California - Berkley. Seattle is located near Washington and Washington State Universities. These skilled students are used to create the technology of tomorrow.

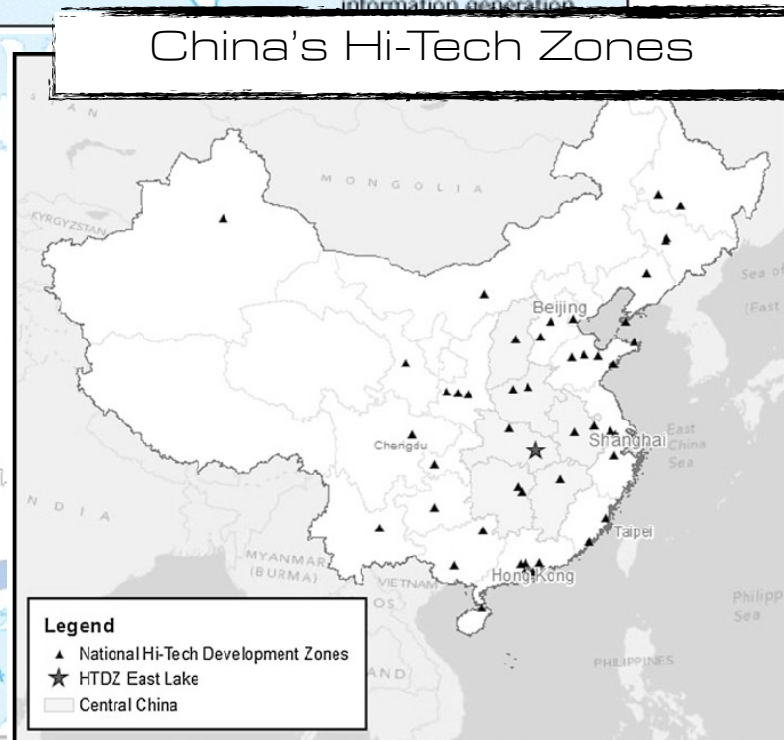
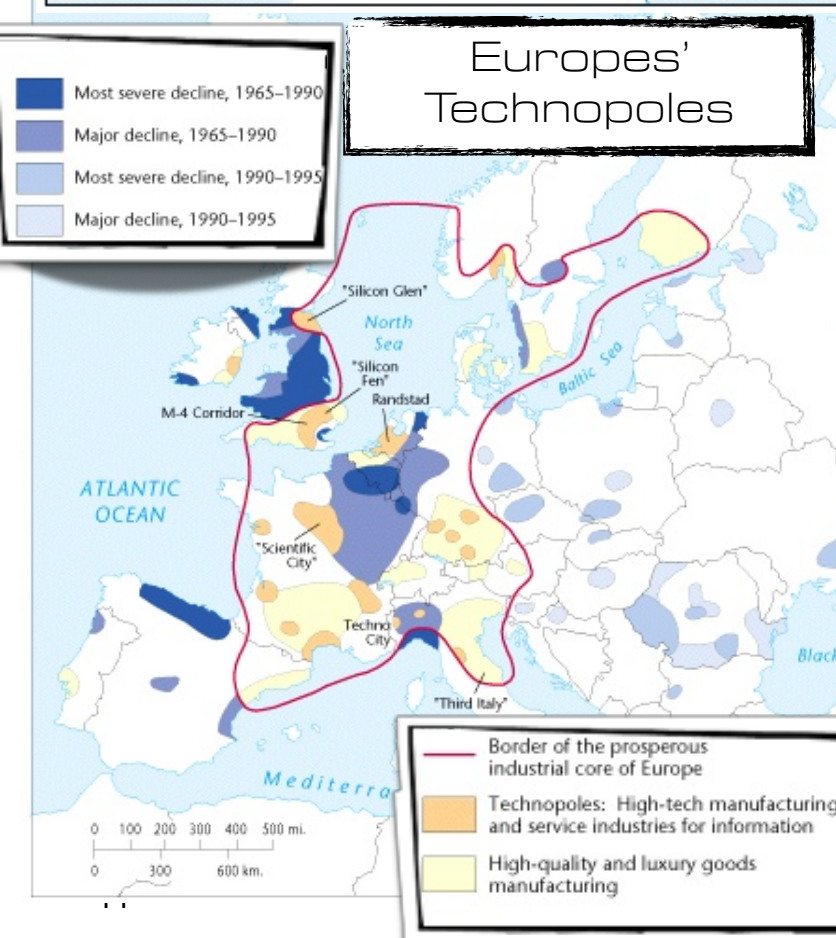
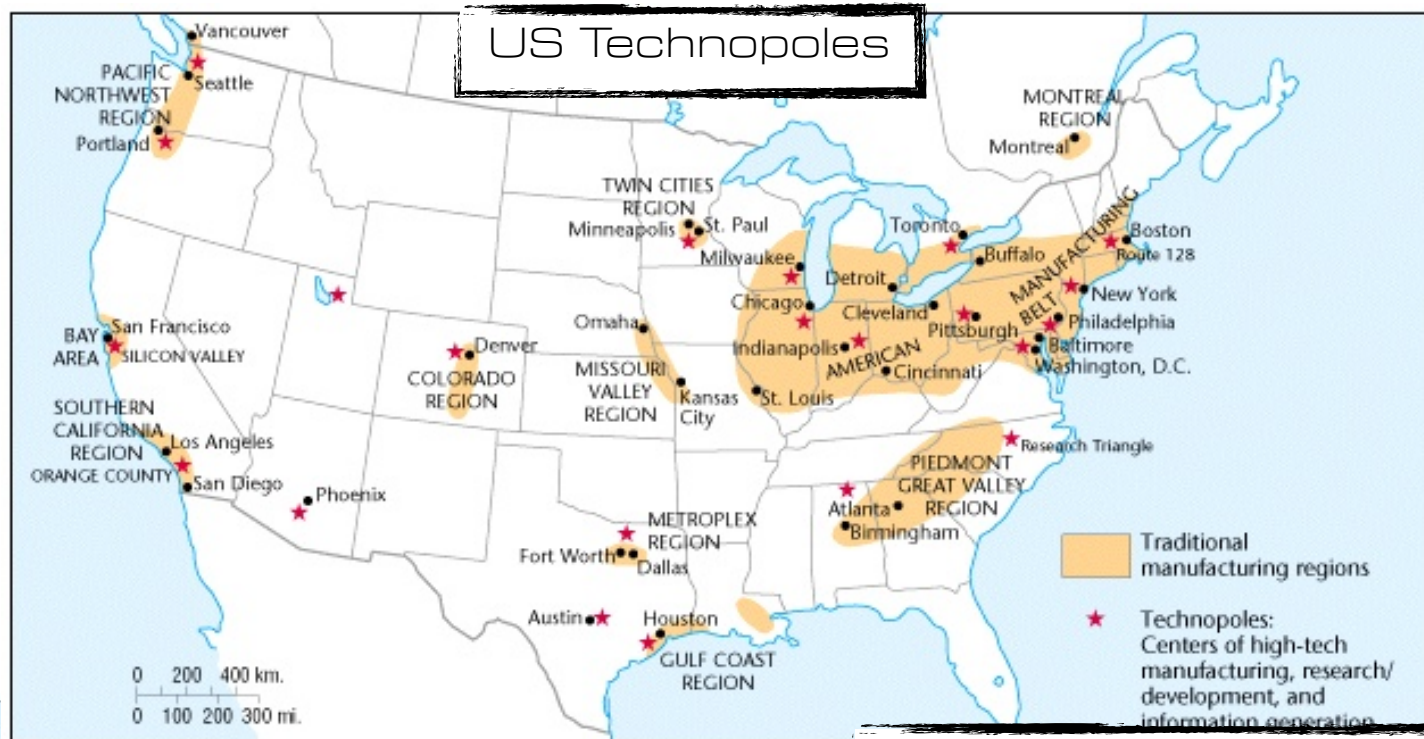
High skilled labor evolved through two paths. The first path were private-public partnerships between the universities and the companies. Before the 1980s, universities purposefully kept themselves away from the corporations. The technopoles brought cooperative relationships between professors who were conducting the cutting edge research and the corporations who were bringing the research to life in their products. The second path was through building relationships with the future students. Universities setup internship programs with the high-tech companies. This developed into a "Try before you buy" system, where the student received valuable experience working with leading experts of major companies and the businesses benefitted from the infusion of young talent. If a company likes an intern, they offer them a contract for employment upon graduation.



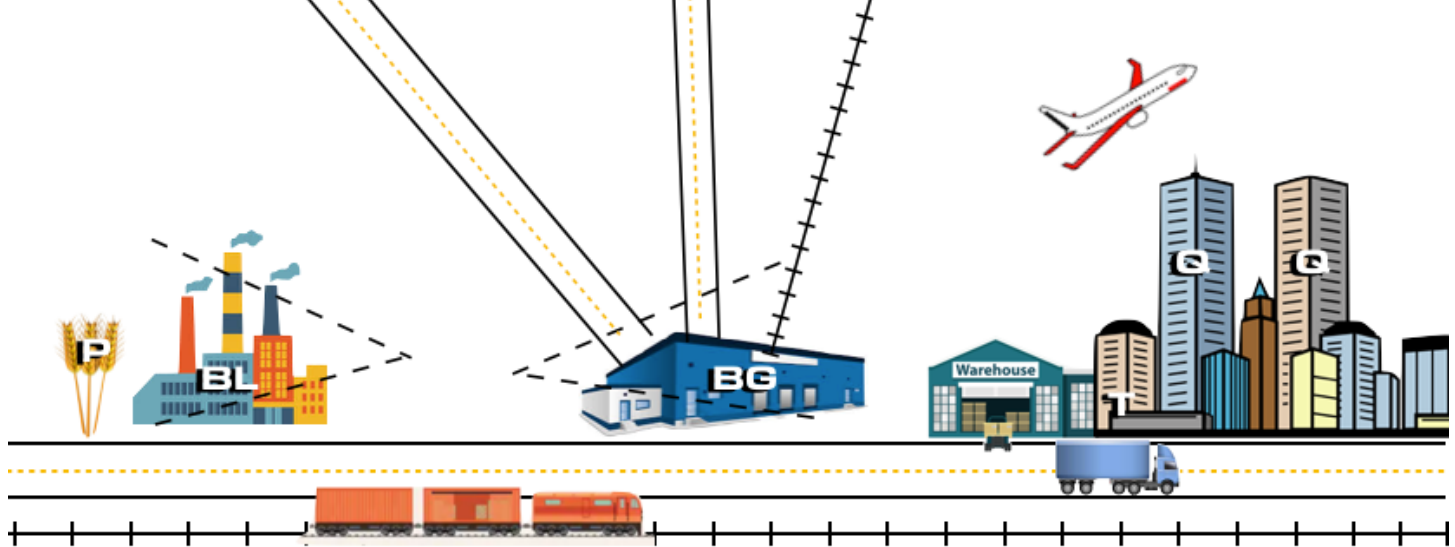
- **Investment.** High tech companies are expensive. The high skilled labor is expensive. The land in major cities by universities is expensive. Keeping up with the ever-changing technology is expensive. Providing the materials needed for innovation - which has 10x as many failed attempts as they have successful - is expensive. However, it is through paying these expenses that innovation and improvement happens. To start an advanced and innovative corporation, it requires a large amount of investment capital to get off the ground. Some investment comes from banks. The core countries developed elaborate banking and stock markets, that have become critical sources for funding new technologies, equipment, and other advancements. Other sources of startup investment are venture capitalists - wealthy investors who put money into startups in exchange for future profits - complementarity companies that the necessary funds in exchange for a share of the profits. Some universities will look to invest into corporations that are looking to advance a shared field of research. This money is used directly to fund the innovation that is advancing technology and building a better tomorrow. Stanford in the 1970s encouraged and nurtured the development of key startups like Hewlett Packard (HP), General Electric, Kodak, Nokia, and Lockheed Martin. Silicon Valley startups account for more than 1/3rd of all the venture capitalist investments in the USA.



Distribution of the Technopoles. Technology companies are agglomerating in high tech zones around the world. In the USA & Europe, the high tech zones have formed in cities that invested into a new technological identity after the loss of their manufacturing. Cities that did adapt have grown in wealth, population and influence. Others did not adapt, like Detroit and Cleveland, which have face bankruptcy. China has been rapidly investing into high tech zones, having established over 100 since the year 2000. It is a part of their plan to catch up to "the West" in wealth and advancement.



**Application #4:** What is the relationship in USA & Europe between their old industrial regions and the new technopoles? Why do you think China is building so many hi-tech zones? What is the different between China's spatial distribution & USA's?



### Primary Sector & Bulk Loss Factories

- Located AT the Resource
- Commodity Harvest & Processed (Losses Size)
- BL Factory near Transportation

### Bulk Gain Factories

- Located AT the Market (or Least Cost Location)
- Located on Transportation
- Product Assembly (Gains Size)
- Connects multiple supply chains w/ parts to assemble.

### Tertiary & Quaternary

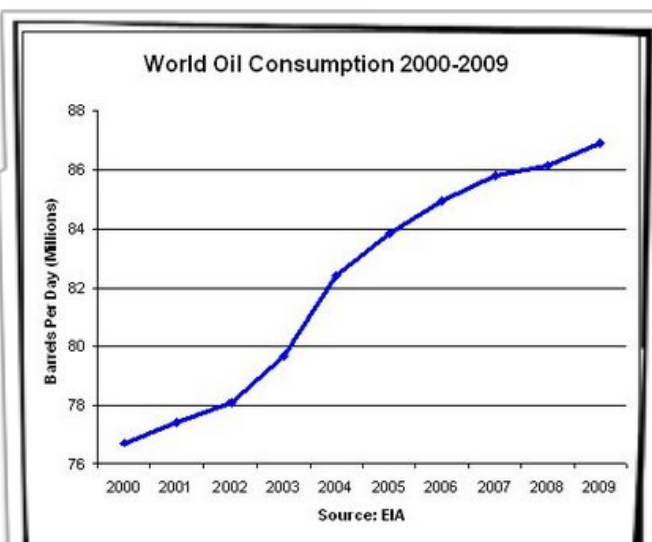
- Located with the People
- Quaternary with the High Skilled people.

Review of Locations. Units 6 & 7 have explored the sectors of the economy in-depth. This is a quick review of how those sectors interconnect and the factors that influence their location.

## J. Sustainability & Productivity

Problems. For the many benefits of Industrialism, there has been substantial negative impact to the environment.

- **Mass consumption's impact on Resources.** The increase in world population and in global development is causing the promotion of mass consumption to have negative impacts on the environment. Those societies who have followed Rostow's Neo-Classical Liberal Plan of development are in pursuit of Stage 5: High Mass Consumption. However, Many of the most mined resources are nonrenewable fossil fuels, that will be endanger of running out in a relatively short time (in the grand scheme of the earth and human history). This is especially true, as China and India develop - each with 1 billion people. The process of mining is causing massive environmental issues in those regions, as the landscape is left completely changed. In forested areas, trees are being cut down at such a fast rate, there is risk of massive deforestation. This is devastating tropical rain forests in South American and Southeast Asia.







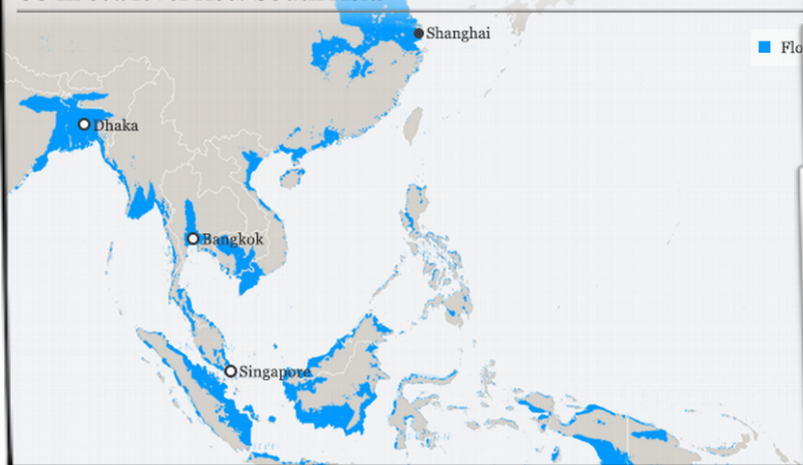
- **Mass consumption's impact on Waste.** Mass consumption has led to mass waste. Humanity has rapidly growing landfills that are using up increasingly more space. The USA alone generates 10.5 million tons of plastic trash... per year. Europe has filled all usable space for landfills, and is now renting space in Africa to place its trash. With East and Southeast Asia rapidly developing, trash is being created and an unsustainable rate. This has created a continent-sized mass of trash in the ocean; totally over 14 billion pounds of trash.
- **Pollution and Global Warming.** The massive production capacities and transportation methods create air and water pollution. This pollution is causing air and water hazards. In many industrial regions like China and India, the air is practically unbreathable. The smog is so thick, it is impossible to see and is causing health issues. Freight ships are one of the world's leading carbon emitters. Just 15 of the megacargo ships produce more greenhouse gasses than ALL the cars in the world combined. Fresh water systems are being polluted at an alarming rate from the dumping of toxic chemicals. Fresh water is already being stressed with agriculture and a growing population, and could be detrimental to vulnerable regions. Water sources are also vulnerable to oil spills, such as the Exxon Mobile Oil Spill in Alaska or the BP Spill in The Gulf of Mexico. All these pollutants and emissions are causing global warming. The ozone is being depleted and the global temperature is rising. This is causing massive changes to important ecosystems, including in important (and fragile) farming regions. Harvests in Central America have been reducing in yield as the temperatures are rising. The polar ice caps continue to melt, causing rising ocean waters. This is predicted to cause flooding in some of the worlds most populated spaces.

**Application #5.** The following maps show the projected lost land when sea-levels rise. What impact will this have to the human population? What impact will this have on manufacturing & the world economy?

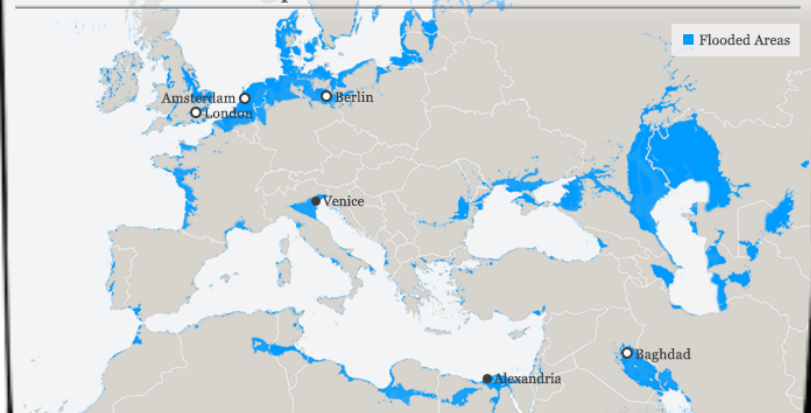
60 m sea level rise: North America



60 m sea level rise: South Asia

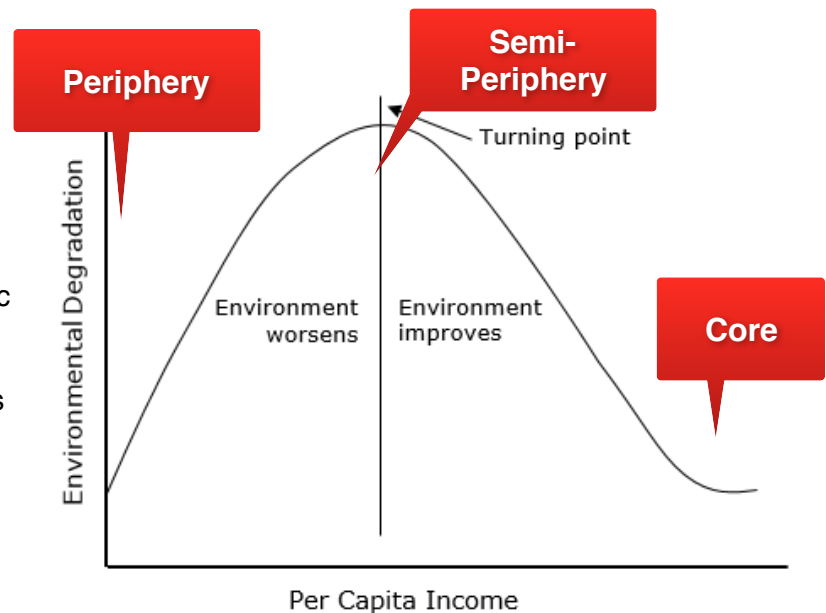


60 m sea level rise: Europe



Solutions. So... what can humanity do?

Kuznet's Curve demonstrates the correlation between development and willingness to invest into environmental issues. As a state is developing, the desire to improve the economy and to end poverty is held at a premium, with little concern for the environment. The economies in the periphery have very little industrialization but a lot of nature; and they are willing to sacrifice that nature for progress. As economies move into Rostow's Stage 3, a tipping point is reached where businesses, citizens and politicians realize their actions are having a negative environmental effect. The more developed the society becomes, the more expendable income they have to invest into the problem - the more actions they are willing and able to take to solve the environmental problems. In theory, by helping societies speed up their development, will improve their ability to help the environment.



A second solution is through government policies. Governments are also able to reserve and zone lands as national parks, protecting the land from development. This would further promote ecotourism, which has improved the foreign tourism travel to places like Costa Rica, Ecuador and Belize. This gives financial incentive to protect the environment. There are also multinational agreements like the Kyoto Accords and the UN Paris Climate Summit in 2016 promoted government intervention to regulate businesses to reduce their carbon emissions.

A third solution is green technology. With improved technologies, corporations can use less emissions in producing their products. There is also the advancement of green energy production like solar, water dams, ocean currents, wind, and geothermal. Nicaragua is becoming a world leader in green energies due to the sunny climate, windy corridors and volcanic activity suitable for geothermal energy. Nicaragua now exports their green-produced energy to the neighboring states - improving life in South America. They are working to become an energy exported into Central America, helping reduce their dependence on fossil fuel imports. Japan is working on energy capture systems using ocean currents. This hydro power sits deep in the water, allowing the natural flow of the tide to turn the turbines and create renewable energy.

A third solution is to promote more conservative consumption patterns, while improving recycling. By consuming less, it will preserve nonrenewable resources and will keep more products from being put into the landfills. Using more recycling methods, it will allow the repurposing of materials, requiring less raw materials to be used and keeping waste from entering the landfills.



## Conclusion

Humanity has made significant progress in the way goods are produced and the quality of life that can be lived. Items are being produced in a globalized fashion that was inconceivable 100 years ago. Yet, for all the advancements, it has come at a substantial cost to human quality of life and to the environment. In a world of increasing population, urbanization and rapid development, humanity must choose what quality of world our incredible industrial capacity will make.



## Ch 12 Standards

	Objective	Knowledge
	<b>Industrialization, past and present, has facilitated improvements in standards of living, but it has also contributed to geographically uneven development.</b>	
<b>7.1 Industrial Revolution</b> Ch 12c	Explain how the Industrial Revolution facilitated the growth and diffusion of industrialization.	As industrialization spread it caused food supplies to increase and populations to grow; it allowed workers to seek new industrial jobs in the cities and changed class structures.
		Investors in industry sought out more raw materials and new markets, a factor that contributed to the rise of colonialism and imperialism.
<b>7.2 Economic Sectors &amp; Patterns</b> Ch 12b	Explain the spatial patterns of industrial production and development.	The different economic sectors—including primary, secondary, tertiary, quaternary, and quinary—are characterized by distinct development patterns.
	<b>Economic and social development happen at different times and rates in different places.</b>	
<b>7.6 Trade &amp; the World Economy</b> Ch 12a, 12c, 12d	Explain causes and geographic consequences of recent economic changes such as the increase in international trade, deindustrialization, and growing interdependence in the world economy.	Complementarity and comparative advantage establish the basis for trade.
		Neoliberal policies, including free trade agreements, have created new organizations, spatial connections, and trade relationships, such as the EU, World Trade Organization (WTO), Mercosur, and OPEC, that foster greater globalization.
		Government initiatives at all scales may affect economic development, including tariffs.
		Global financial crises (e.g., debt crises), international lending agencies (e.g., the International Monetary Fund), and strategies of development (e.g., microlending) demonstrate how different economies have become more closely connected, even interdependent.
<b>7.7 Changes as a Result of the World Economy</b> Ch 12c, 12d	Explain causes and geographic consequences of recent economic changes such as the increase in international trade, deindustrialization, and growing interdependence in the world economy.	Outsourcing and economic restructuring have led to a decline in jobs in core regions and an increase in jobs in newly industrialized countries.
		In countries outside the core, the growth of industry has resulted in the creation of new manufacturing zones—including special economic zones, free-trade zones, and export-processing zones—and the emergence of an international division of labor in which developing countries have lower-paying jobs.

	Objective	Knowledge
	<b>Environmental problems stemming from industrialization may be remedied through sustainable development strategies.</b>	
<b>7.8 Sustainable Development</b> Ch 12a, 12c, 12d	Explain how sustainability principles relate to and impact industrialization and spatial development.	Sustainable development policies attempt to remedy problems stemming from natural-resource depletion, mass consumption, the effects of pollution, and the impact of climate change.
		Ecotourism is tourism based in natural environments—often environments that are threatened by looming industrialization or development—that frequently helps to protect the environment in question while also providing jobs for the local population.
		The UN's Sustainable Development Goals help measure progress in development, such as small-scale finance and public transportation projects.