REMINDERS

- ➢ Two <u>required</u> essays (10% of your grade) were due on April 17.
- ✓ Late penalty now applies (better than a zero!).
- ✓ Must submit missing essays by May 12, 2020 to avoid a ZERO grade.

- ❑ EXAM III – **Final Exam**

Tuesday, May 19, 2020 from <u>9 AM</u> – 11 AM on BlackBoard

Covers Part III of the course.

- ❖ Extra Credit: "Think Geographically" Essays from <u>any five</u> of Chapters 4-12 or
- ❖ The 3rd topic from required essay list plus 4 chapter essays.
  - – Last day to submit is May 12 but it is best to do them as you read a chapter.

Atlas Extra Credit III for final exam is available on the course home page and BlackBoard. Answer sheet is DUE MAY12 by 11 PM.

<u>TEXTBOOK READING FOR PART III</u>

Selected parts of Chapters 6-12

FREE REMOTE TUTORING IS AVAILABLE from the HC Skirball Learning Center

GEOG 101
PART III

22
Economic Geography

Chapters 9 and 12

Prof. Anthony Grande
Hunter College Geography

150 years 1870 - 2020
HUNTER

Lecture Topics for Part III

- ✓ **I Intro. to Human Geography**
  - ✓ A. Environmental Perception
  - ✓ B. Cultural Landscape
  - ✓ C. Cultural Realms and Diversity
  - ✓ D. Toponomy: Place names
  - ✓ E. Geog. in World Affairs/Current Events
- ✓ **II Living on the Earth**
  - ✓ A. Habitat
  - ✓ B. Demography
  - ✓ C. Medical geography
  - ✓ D. Dealing with population growth
  - ✓ E. Biogeography/Ecology
- ➢ **III Economic Geography**
  - A. Sectors of the Economy
  - B. Food, Agriculture and Fisheries
  - C. Globalization
  - D. Economic Development
  - E. Location Theory, Time-Distance and Economic Activity

EXAM III – **Final Exam**

Tuesday, May 19 from 9-11 AM on BlackBoard

Covers only Part III topics of this course.

- **IV Urban Geography**
  - A. Settlement
  - B. Worldwide Trends
  - C. Geographic City
  - D. Urban Landscape Development
  - E. Patterns within the City
- **V Political Geography:**
  - A. Control/Demarcation/Use of Space
  - B. Nation Building
  - C. Geoeconomics
  - D. Geopolitics/World Affairs

Read chapter 11; look over extra credit III

GEOGRAPHIC RELEVANCE

When you link of a successful, profitable retail enterprise or the value of real estate…
what word (geographic aspect) **comes to mind?**

LOCATION

LOCATION!

LOCATION!!

GEOGRAPHY of ECONOMICS

Chapters 9 and 12

- **Covers the geographic** (spatial) **aspects of an area's economy and development** and the **ability of a population to provide for itself outside of the bare necessities for existence.**

- Just existing on the bare necessities is known as **<u>subsistence</u>** and is associated with a self-sufficient agrarian society in "Stage 1" of the *Demographic Transition Model.*

ECONOMIC GEOGRAPHY

❖ **<u>Economic Geography</u> is the application of geographic principles and tools to people's activities, businesses and governmental functions,** including military activities.

- The study of the **spatial variation** on earth of activities related to the **production, exchange and consumption of goods and services leading to the accumulation of wealth**.

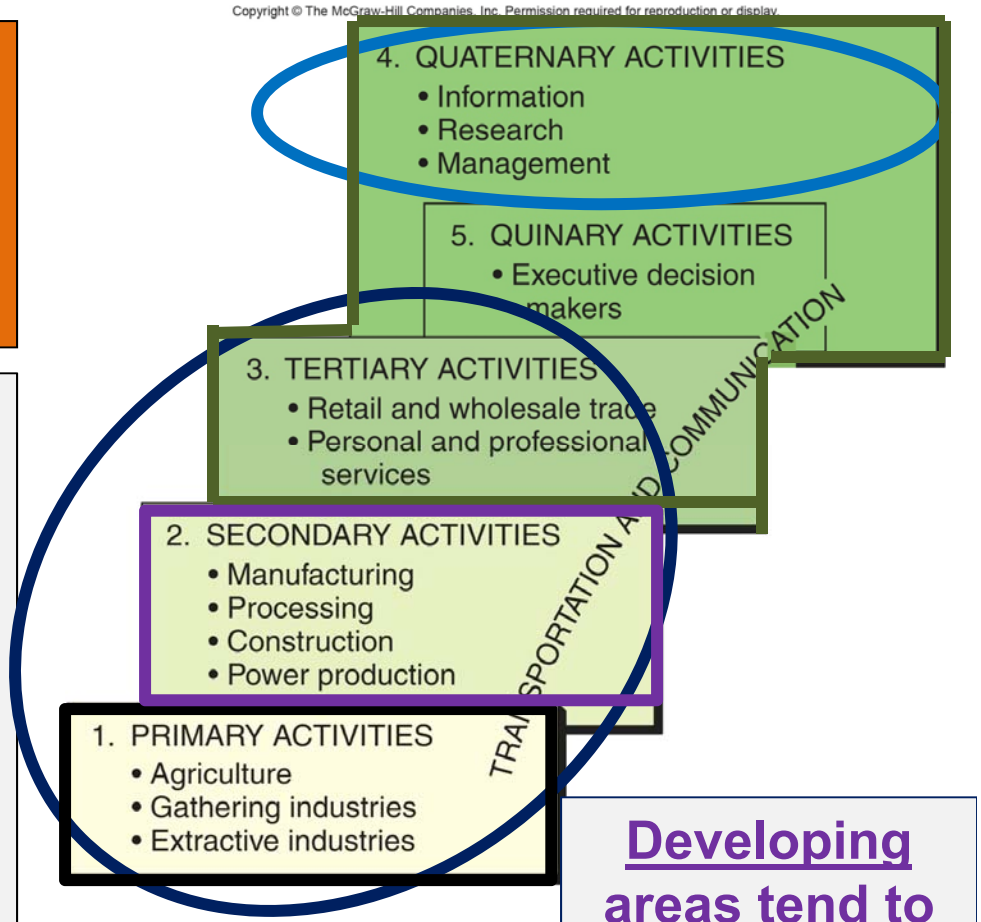
✓ It relies heavily on maps, analytical methods and models in search for explanations.

Sectors of Economic Activity

There are three main sectors of economic activity:

1. **Primary:** taking from nature
2. **Secondary:** processing and creating
3. **Tertiary:** selling and serving

- We can add a **4th sector: Quaternary** which is data collection and management.



The less developed an area, the higher the percentage of the work force is found in the primary activities, esp. food production.

The more developed an area, the higher the percentage of the work force is in the tertiary and quaternary sectors.

Developing areas tend to focus on secondary activities, especially manufacturing

Food Production and Agriculture
as an economic activity

❖ **Food is a basic human need.**

- After air, food and water are the basis of life on earth.

- **Acquiring food is the oldest human activity.** *(relates to the push/pull/stay factors when selecting a place to live).*
- **Food collection** is the original "survival activity" for people (first gathering, then hunting, and later agriculture).

✓ We have seen that **the amount and quality of food affects population growth and distribution** *(population geography; climate change)*

– and not everyone can acquire enough nourishment to lead full and healthy lives *(medical geography).*

http://www.fao.org/home/en/: review the UN Food and Agriculture web pages from last lecture.

Agriculture Terms

- **Arable land:** land that can be plowed for cultivation.
- **Nonagricultural land:** area too hot, too cold, or too dry for agriculture; cannot produce food to sustain a population.
- **Subsistence agriculture:** food produced for oneself and one's family.
- **Commercial agriculture:** food produced for sale.
- **Polyculture:** raising a variety of crops.
- **Monoculture:** specializing in one product.
- **Economies of scale:** greater earnings per unit produced by expanding the area used and/or the number of units produced.

Variables Determining Types of Agriculture

This is a combination of an area's physical characteristics and human adaptation, culture and technological development.

1. **Natural environment** (climate, water, soil)
2. **Most productive crops** in that environment (best suited for conditions)
3. **Level of technology** (ability to cope with environmental and economic situations)
4. **Market orientation and transportation** (who is buying/using and how does it get there)
5. **Production for human or animal consumption** (consumer's quality expectations) **or non-consumption** (industrial use)

Hearths (origins) of the World's Food and Livestock

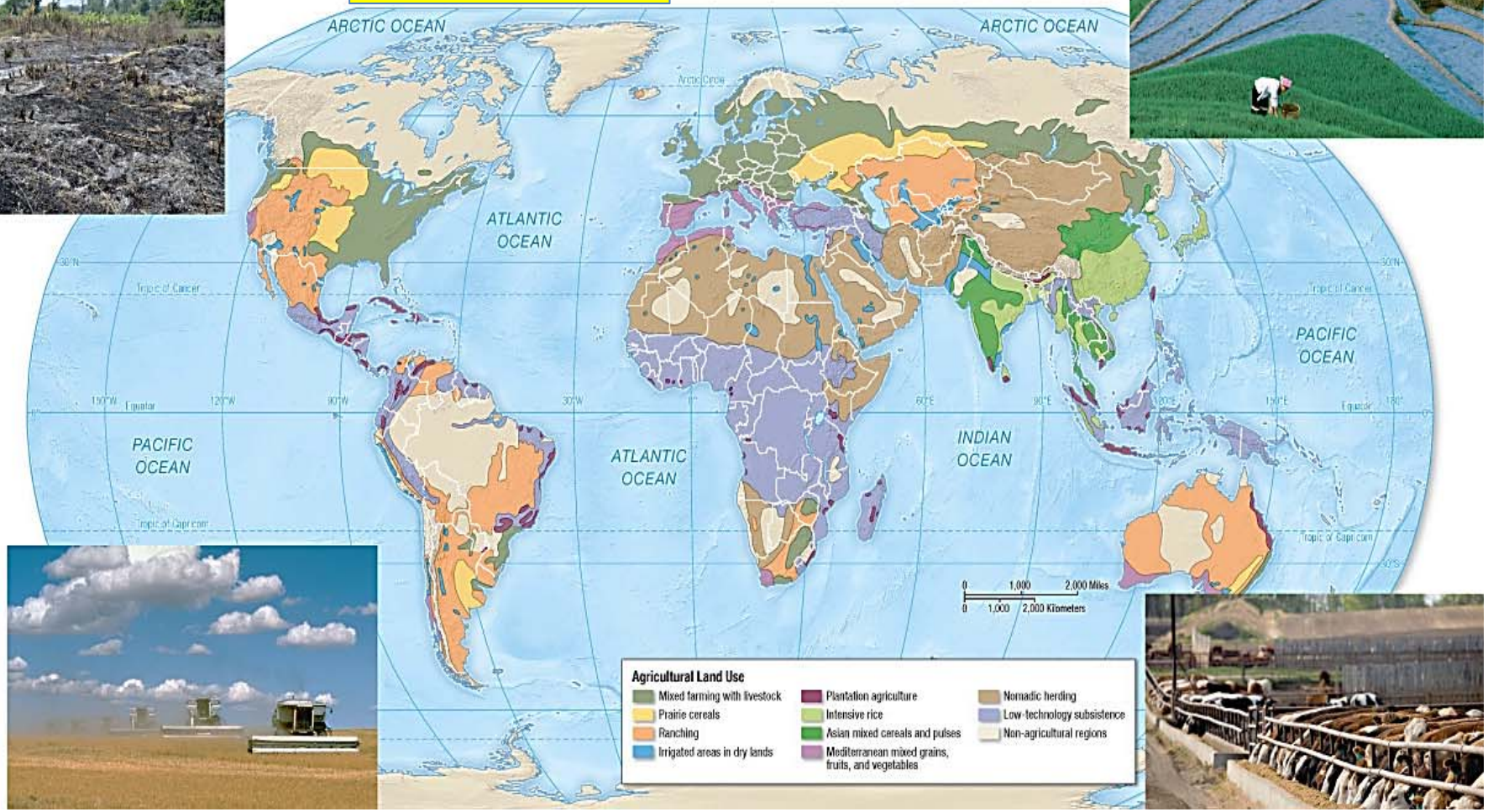
Fig. 9.2 textbook

Agricultural hearths are studied in cultural geography.

World of Agriculture

Worldwide, there are many types of agricultural land uses. Different methods of working the land to produce food are influenced by local climate, landforms, economics and cultural preferences.

Fig. 9.14 textbook



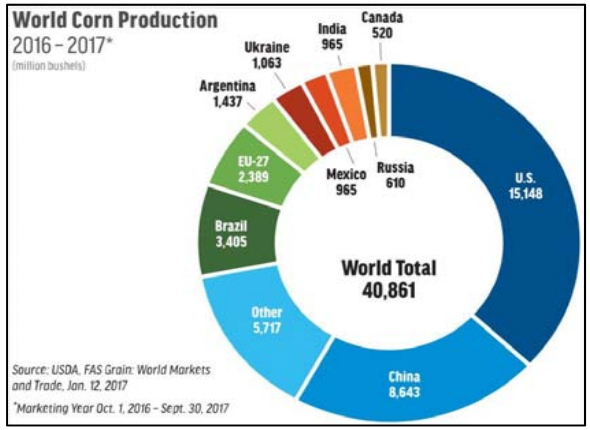
Many Varieties of Agriculture

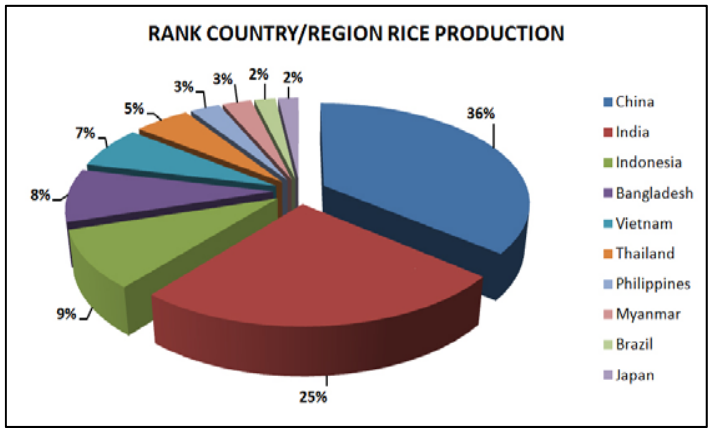
- Nomadic herding
- Subsistence farming
- Intensive rice farming
- Mixed grains w legumes
- Mixed farming w livestock
- Prairie grain farming
- Mediterranean agriculture

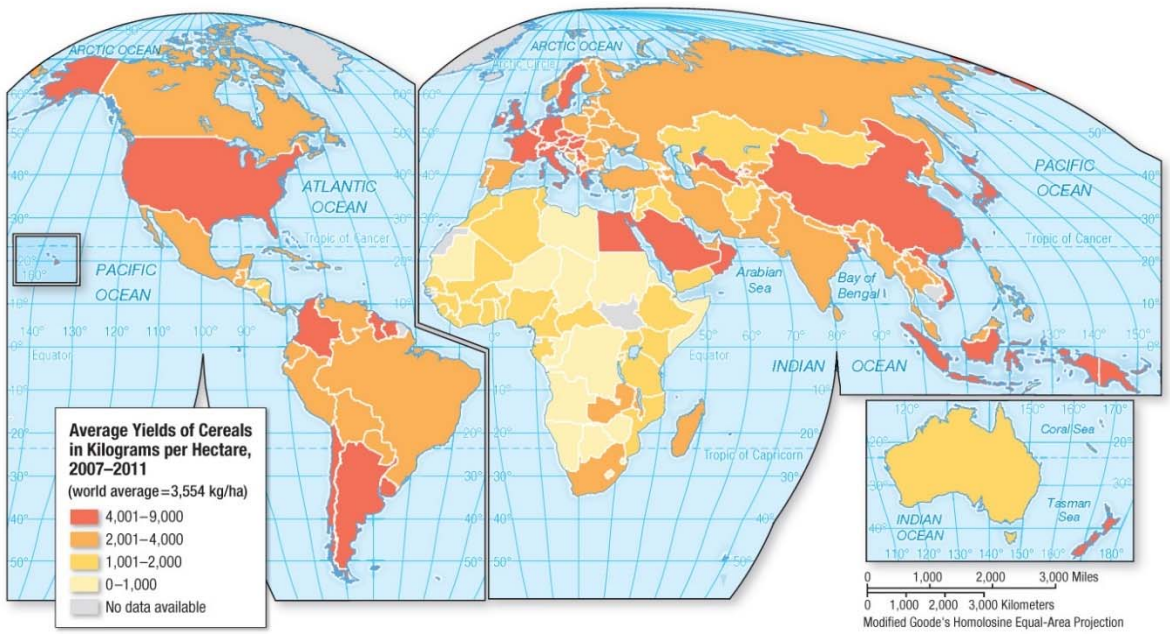
- Plantation farming
- Ranching
- Irrigated agriculture
- Govt settlement schemes
- Urban agriculture
- Horticulture
- Floriculture
- Fishing (as a food source)
- Aquaculture

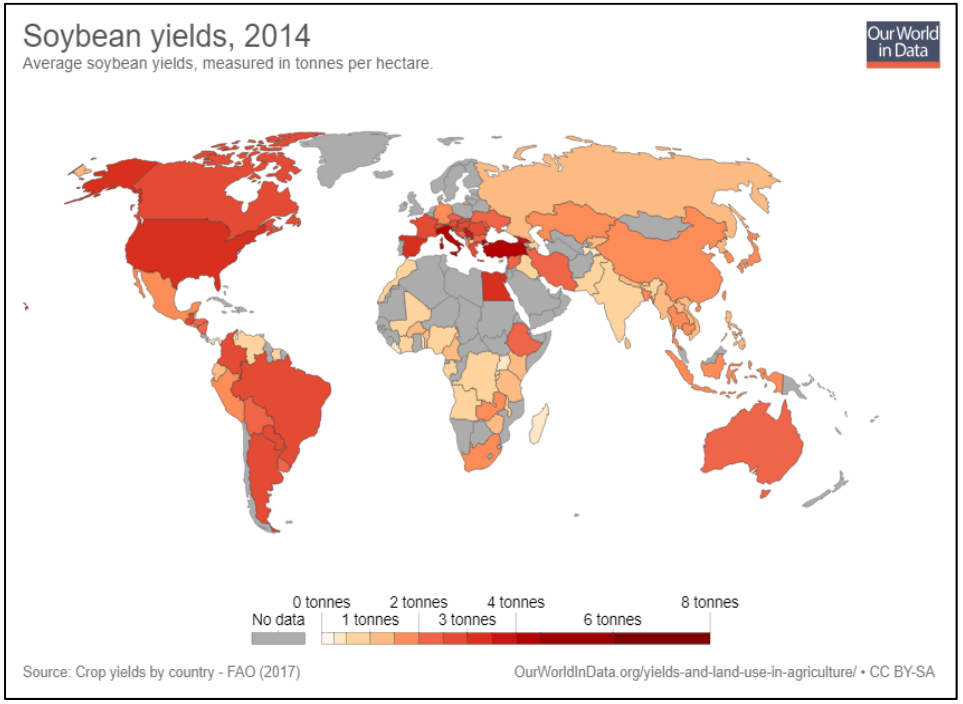
This is studied in cultural geography.

Agricultural Productivity varies by region









http://www.fao.org/faostat/en/#country

http://www.fao.org/faostat/en/#rankings/commodities_by_country

Remember Malthus?

Thomas Malthus predicted in 1798 that world population would increase faster than the food supply, creating cycles of mass starvation.

- Since 1798, the human population has increased from 1 billion to c.7.79 billion.
- The mass starvation he predicted has not occurred.

WHY? > >

Because people have come up with new technologies to produce, store and move food supplies.

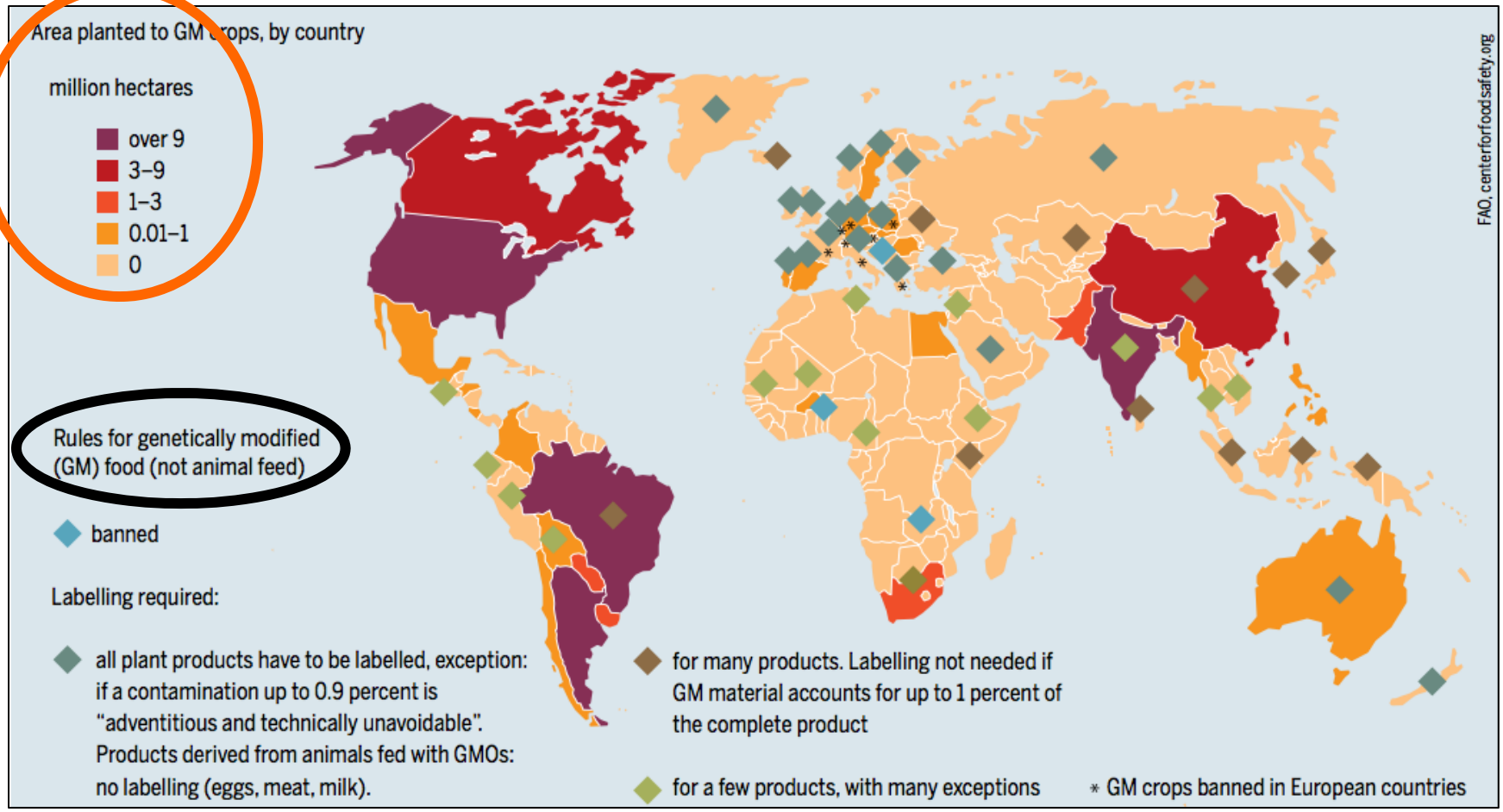
- **New crops**
- **Crop transplants**
- **New cropland**
- **Irrigation technologies**
- **Transportation and storage advances**
- **Chilling/refrigeration**
- **Biotech and genetic engineering**
- **Improved protection against spoilage and pests**
- **Advanced monitoring technology**

Scientific Revolution in Agriculture

- **It began in 18th century Europe** with the application of science to agriculture.
  Farm machinery increases yields.
  Improvements in transportation, trade, and storage of agricultural products increases supplies.
- **Green Revolution** (20th century)
  Advances in **biotechnology** in the US.
  This gave the world a variety of new techniques for modifying organisms and their physiological processes for specific applied purposes.
- The **21st century** has brought opposition to genetically modified crops and cloning.

Gene splicing
Recombinant DNA
Genetic modification
Cloning
Bio-farming
Faster growth
Increased quantities
Specified qualities
Resistance to disease
Resistance to insects
Resistance to severe weather (as drought/ heat/cold)

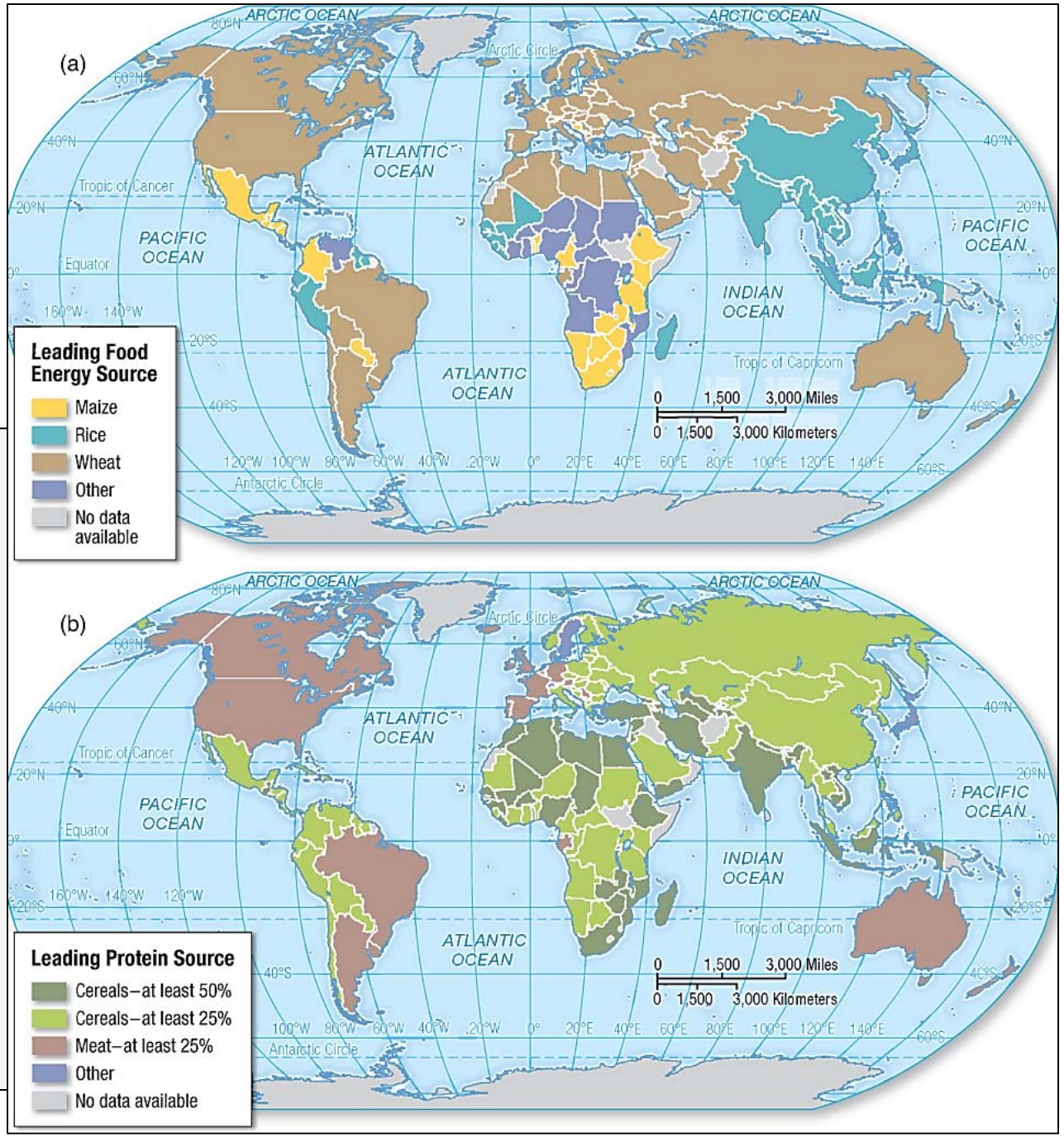
World Acceptance and Rejection of Genetically Modified (GM) Crops



World Dietary Sources

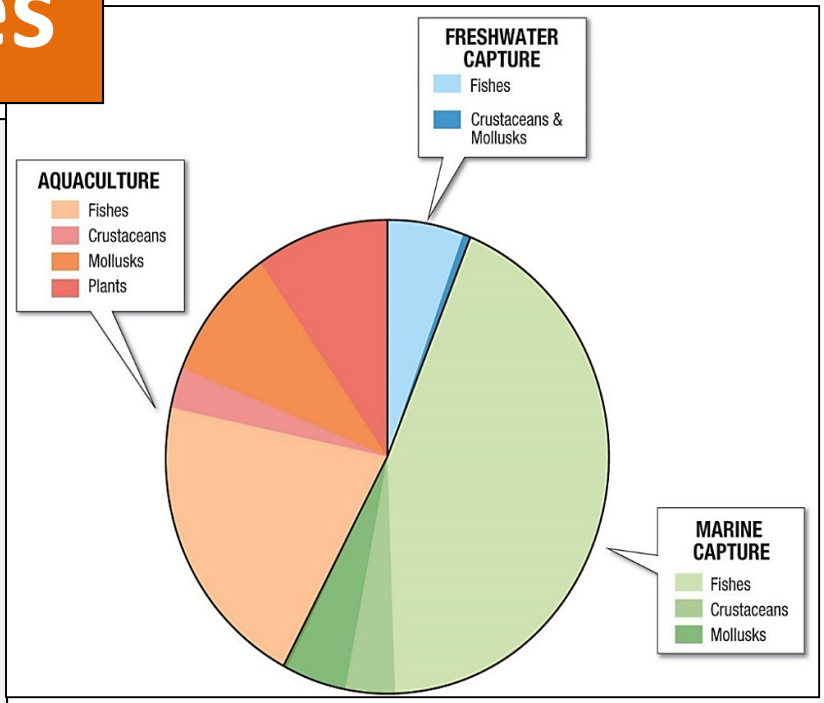
These maps show the products that are the sources of energy and protein by country.

- ✓ **Now we have to think about the affects of climate change on food production.**



Aquatic Food Supplies

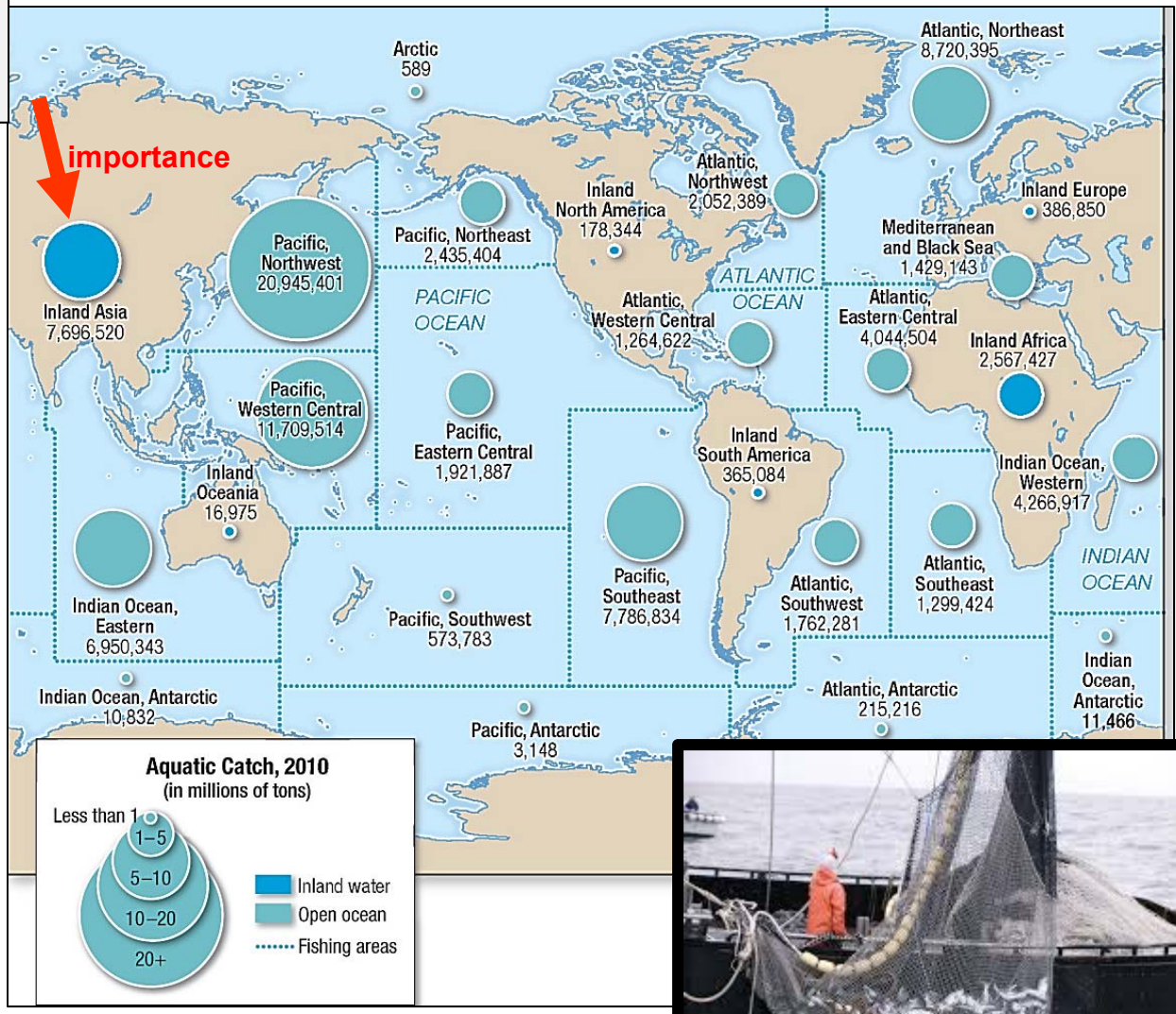
- **Aquatic foods (fresh and salt water sources)** includes fish, crustaceans, mollusks, aquatic mammals, amphibians, plants, and other aquatic life.
  - Supplies **2%** of the world's daily **calories** and **8%** of the world's daily **protein**.
  - Many areas of the world rely on protein from the oceans to supplement local food supplies.
  - **Overfishing and depletion of the seas is a major problem that is difficult to regulate.**



Bycatch: species unintentionally caught and killed.
Habitat reduction: overdevelopment of coastal areas and changes in water temperature.
Pollution: reduces habitat quality.

❖ **Fishery:** an area where particular kind of fishing takes place.

World's Major Fisheries



This is studied in cultural geography and **political geography.**

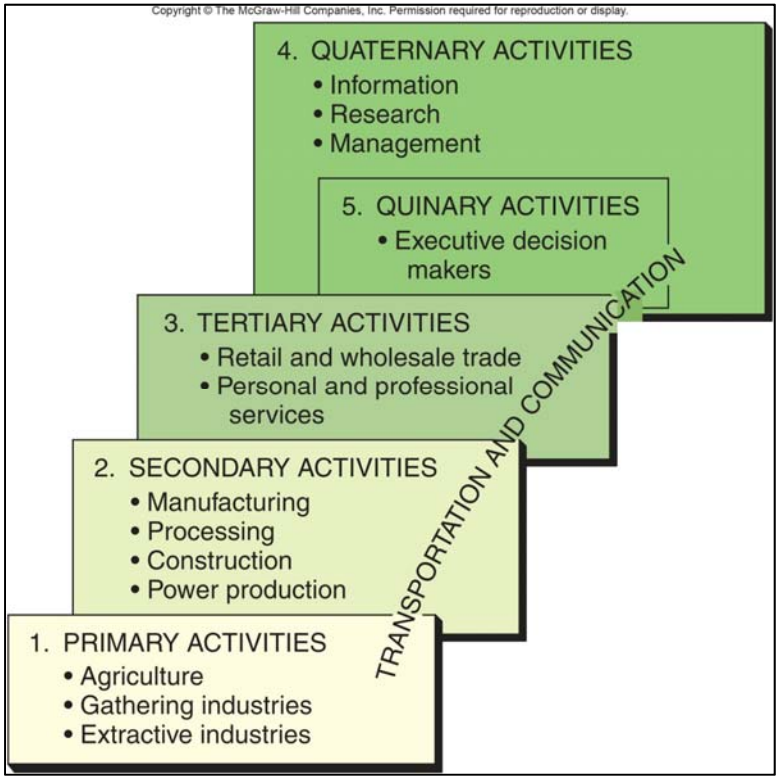
Globalization

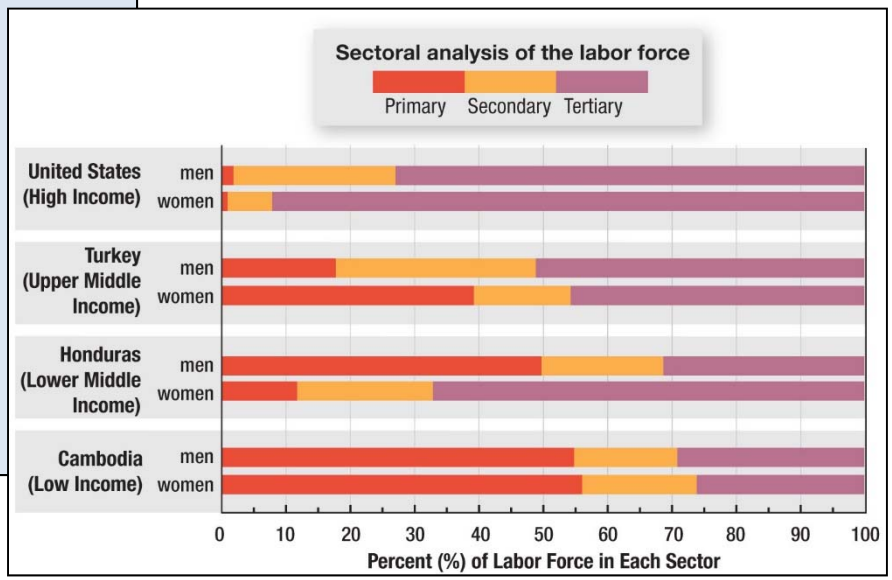
- **Economic Globalization:** Refers to the emergence of a global economy based on free trade, internationalized production and free flow of capital between countries **(chapter 12).**
- **Cultural globalization:** Refers to the emergence of a global culture that tends to flatten out cultural differences between nations due to the global flow of particular products **(Chapter 7).**
- **Political globalization:** Refers to the growing importance of international organizations; spread of universal values and norms; national markets and economies are opened to international actors **(Chap. 11)**

Economic Development

PRODUCTIVITY includes

- **Consumption –** "appetite" for resources, goods and services
- **Income –** profit realized from being productive
- **Spatial interaction –** quality of transportation and communication systems
- **Division of work force –** structure of the work force

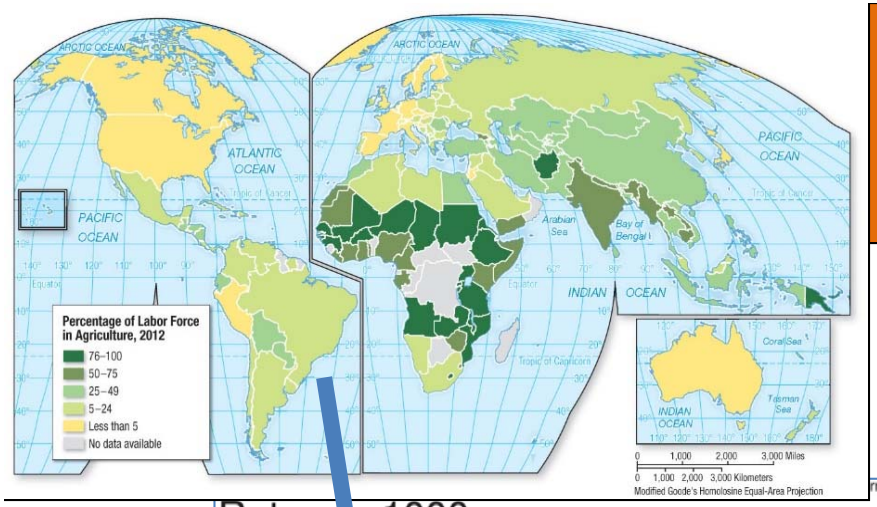


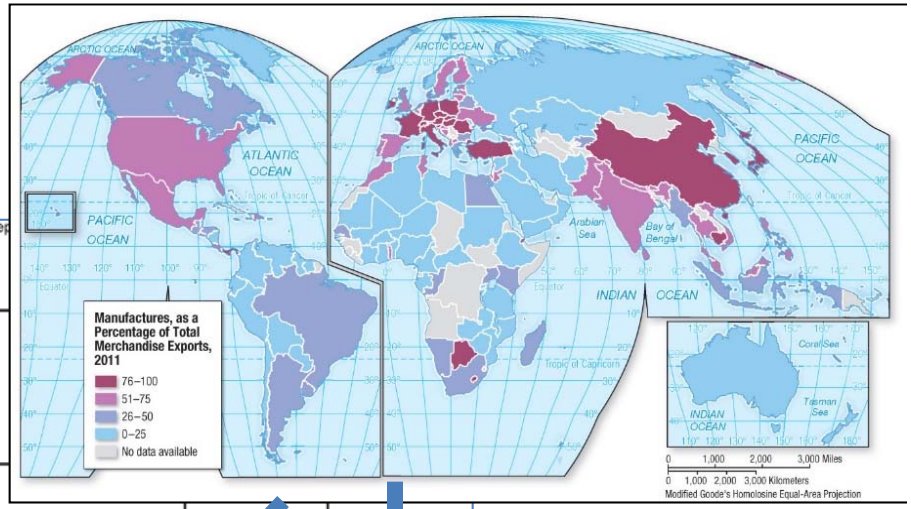


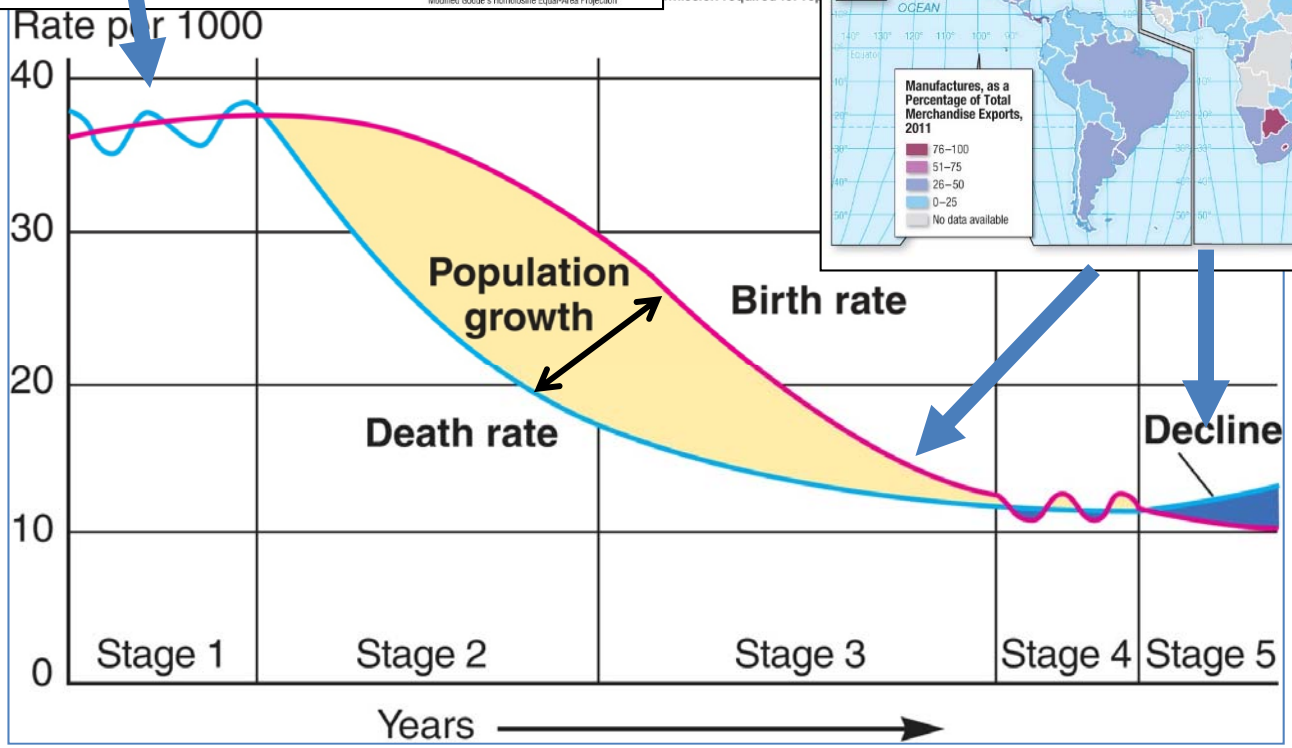
Economic Development

- **RELATIONSHIP TO THE LAND CHANGES with economic development**
  - **Population –** demographic transition model
  - **Natural Resources –** use and conservation
  - **Environmental Issues –** concerns for environment; assessing methods and profits
  - **There is a movement away from the land** (both physical and mental) **as development progresses.**

Economic Development and Demographic Transition







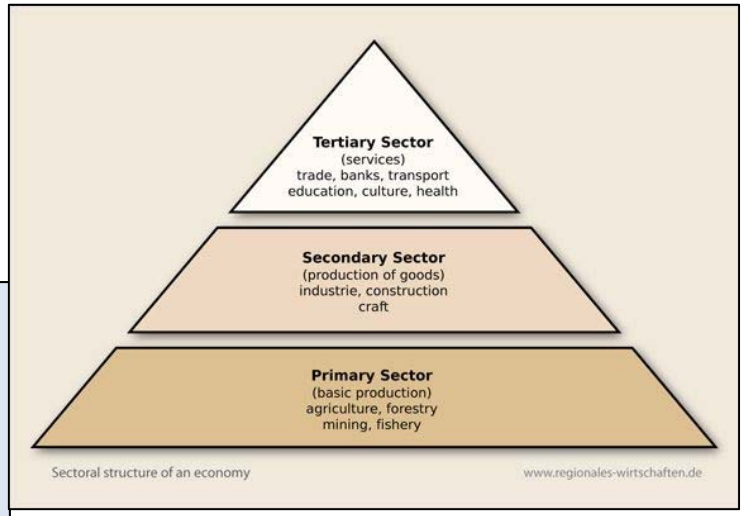
1. Agrarian society 2. Industrialization established **3.Urban/ economic** 4.Highly developed **5. Post-industrial**

Sustainable Economic Development

❖ **Economic aspects of sustainable development and resource management include:**

- ✓ **Population vs. habitat** – an assessment of needs
- ✓ **Movement of people to the cities** - industrialization
- ✓ **Increased use of raw materials/resources** – result of industrialization and economic development
- ✓ **Changing sources of energy** – from biomass to fossil fuels to alternative sources
- ✓ **Innovation technology** – coping with the environment
- ✓ **Comparative advantage** – do what you can do best
- ✓ **Choice** – specialize and trade **OR** be self sufficient

Economic Development



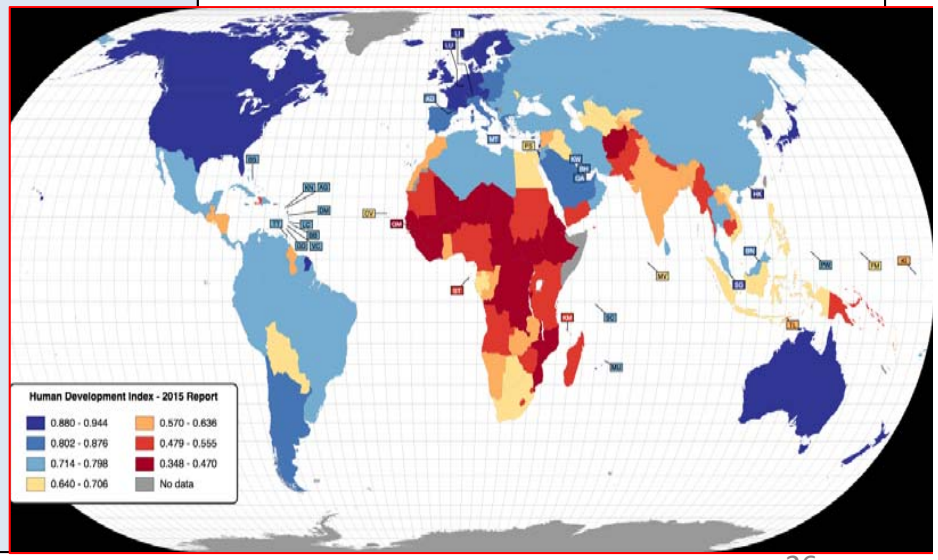
Geographers look at economic development at all levels from local to international to access quality of life within an area (HDI = Human Development Index).

There are 3 spatial aspects of HDI analysis:

1. **Productivity.**
2. **Relationship to the land.**
3. **Use of resources.**

(Plus numerous cultural ones)

Human Development Index



7 Principles of Location Theory and Economic Landscapes

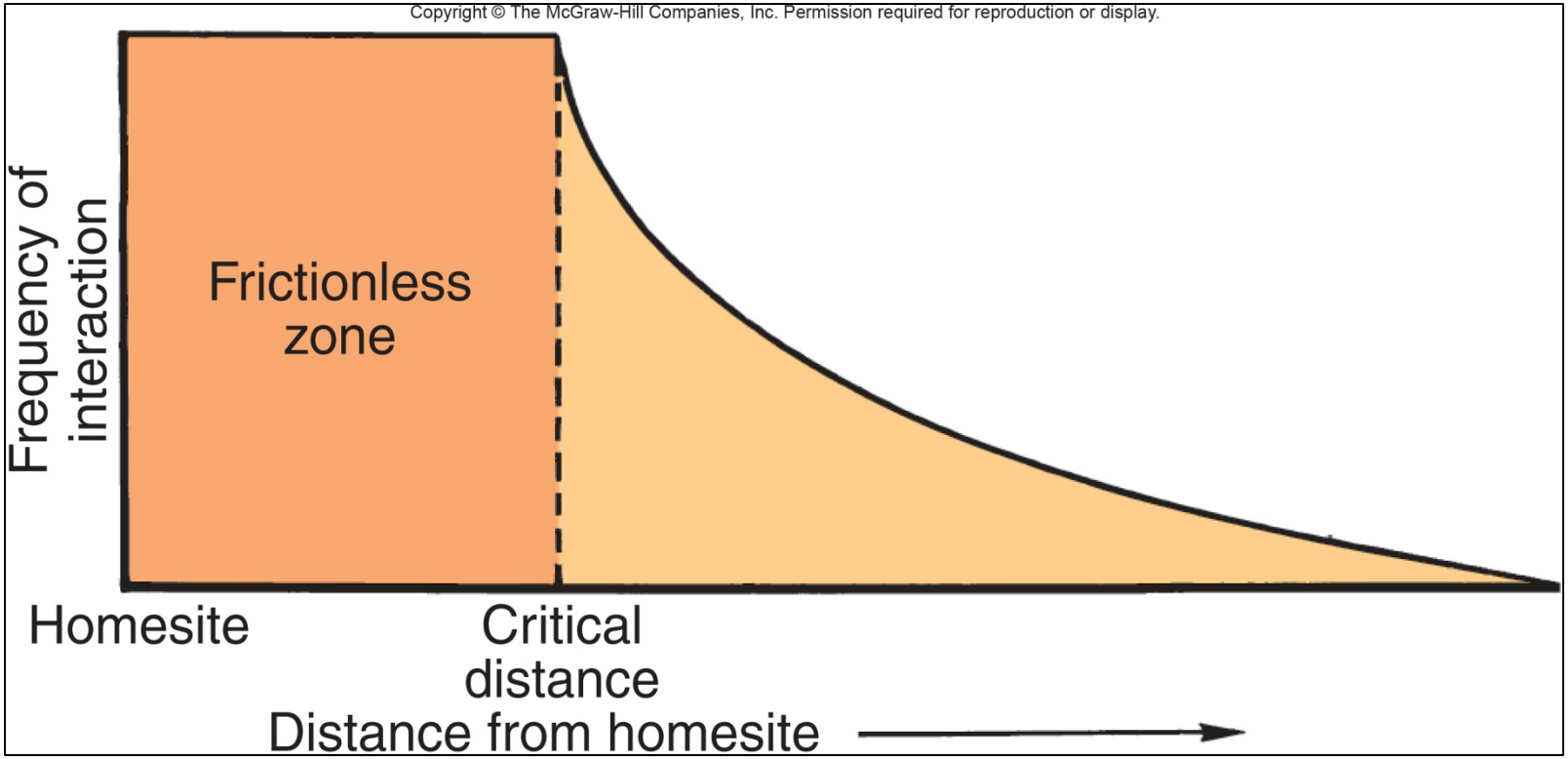
1. **Distance** (how near or far)
2. **Accessibility** (how easy is it to get to)
3. **Spatial interaction and movement** (complementary assistance and support)
4. **Diffusion** (spread)
5. **Transportation system and networks** (connectivity)
6. **Comparative advantage** (best suited)
7. **Agglomeration** (clustering)

Principles of Location Theory and Economic Landscapes

1. Distance:

How near or far?

There are linear, time and perceptual (mental) **distances to deal with.**



Principles of Location Theory and Economic Landscapes

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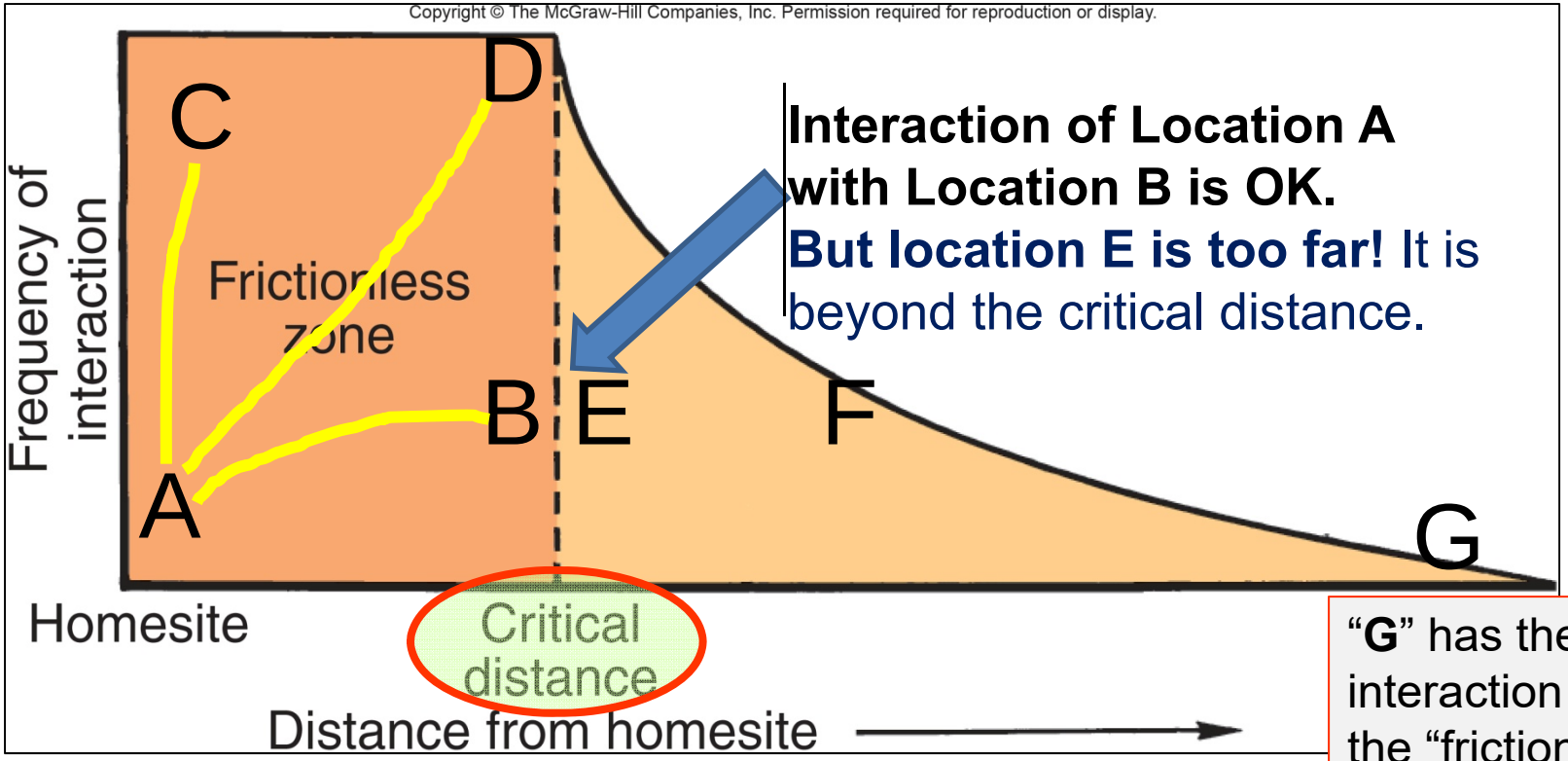


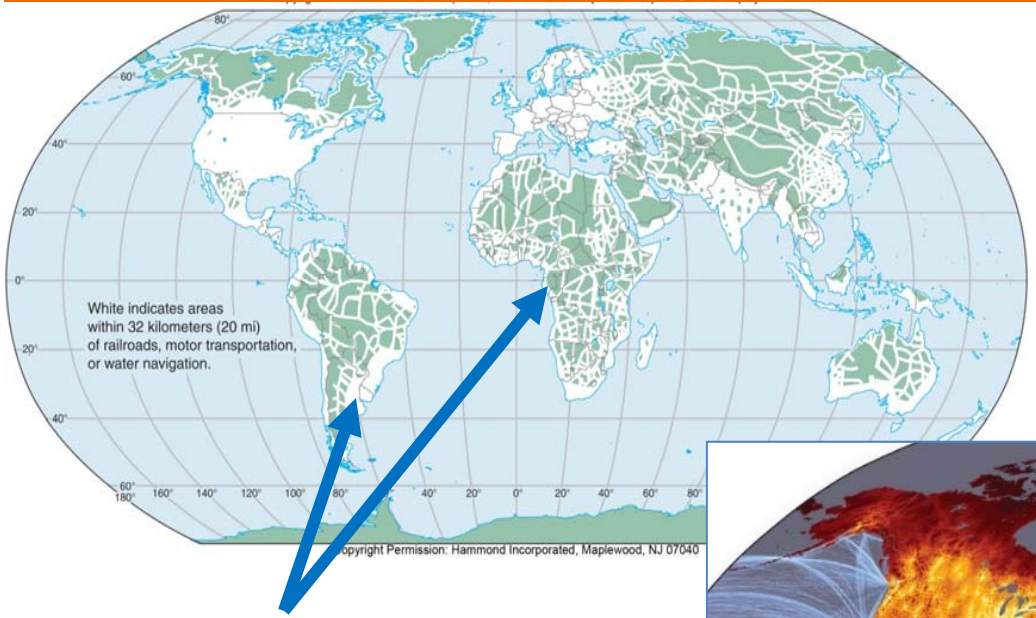
"**G**" has the least interaction with the "frictionless zone."

Principles of Location Theory and Economic Landscapes

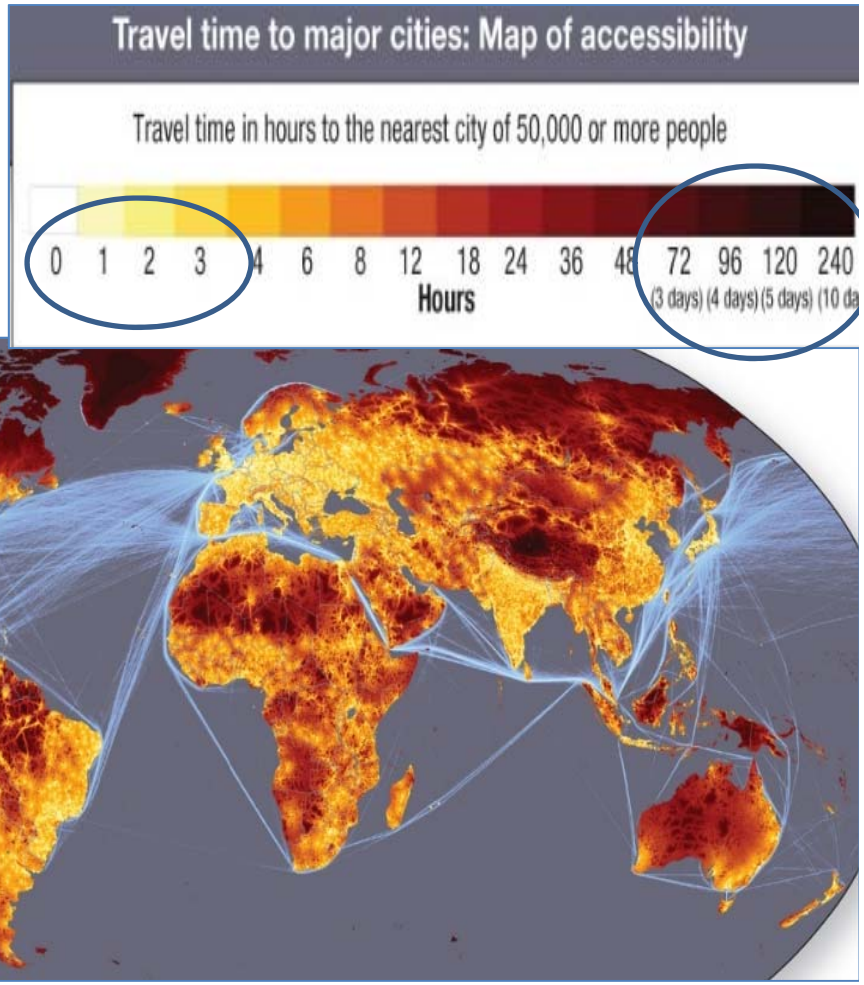
2. Accessibility: Ease to get to.

Close by but difficult to reach?

Cost per mile?



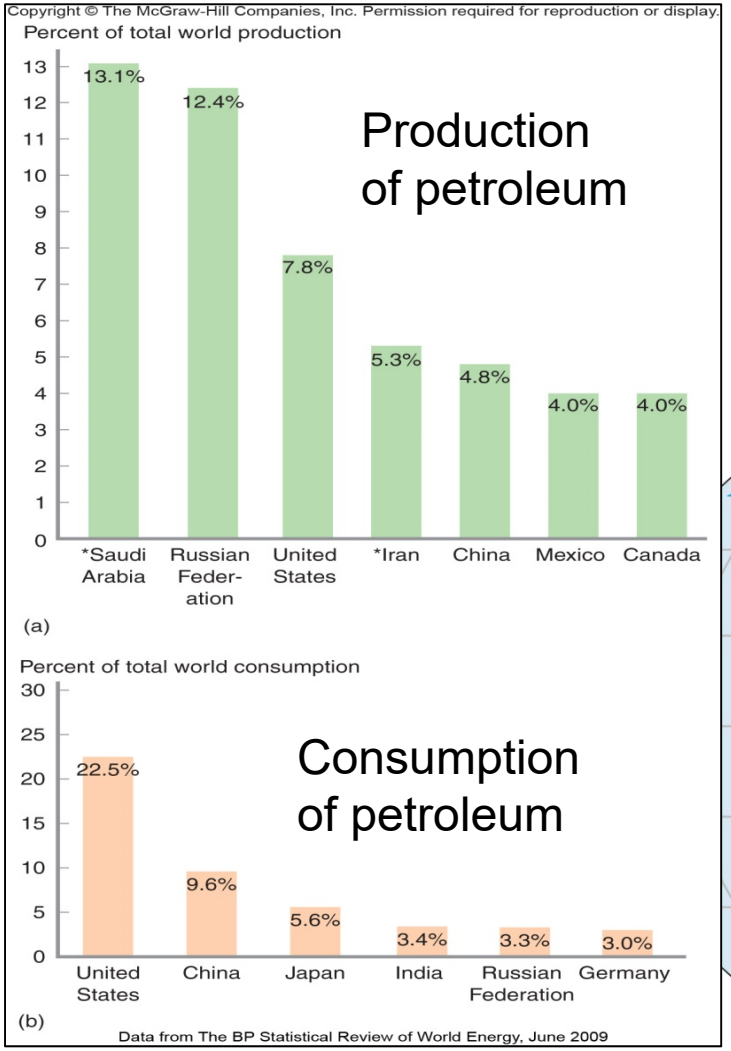
White on the map indicates areas within 20 miles of a major transportation route.

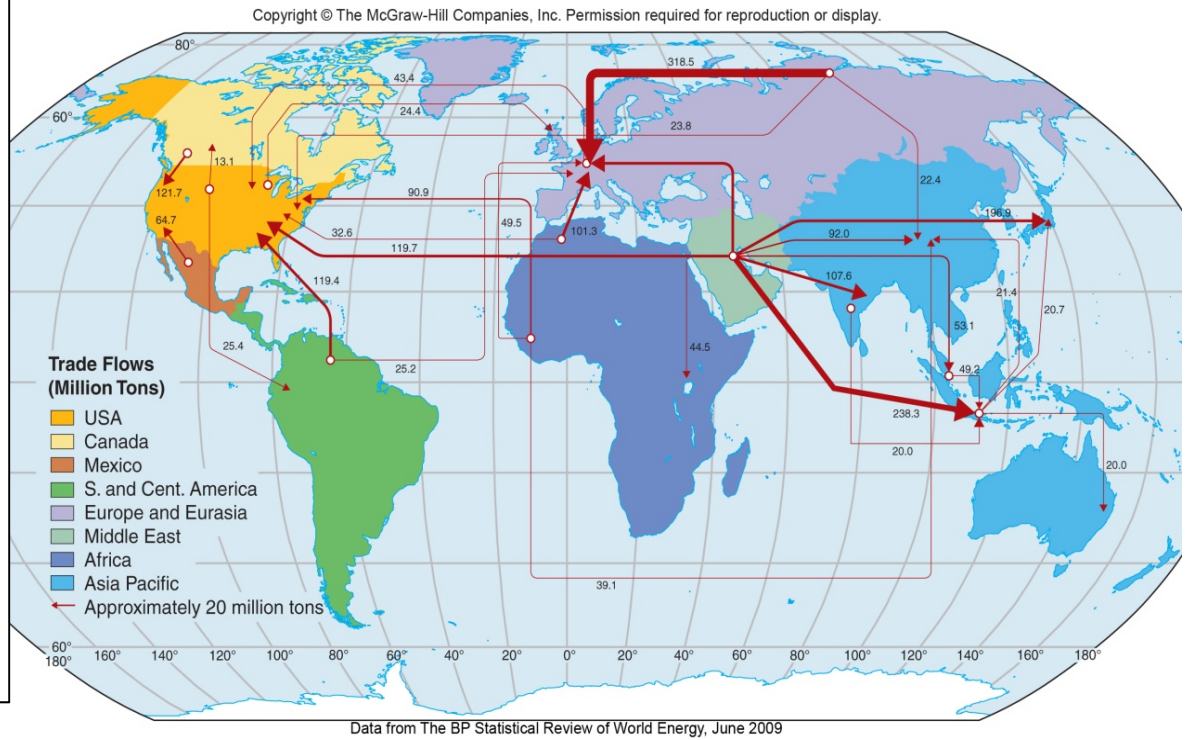


Principles of Location Theory and Economic Landscapes

3. Spatial interaction and movement (complementarity):

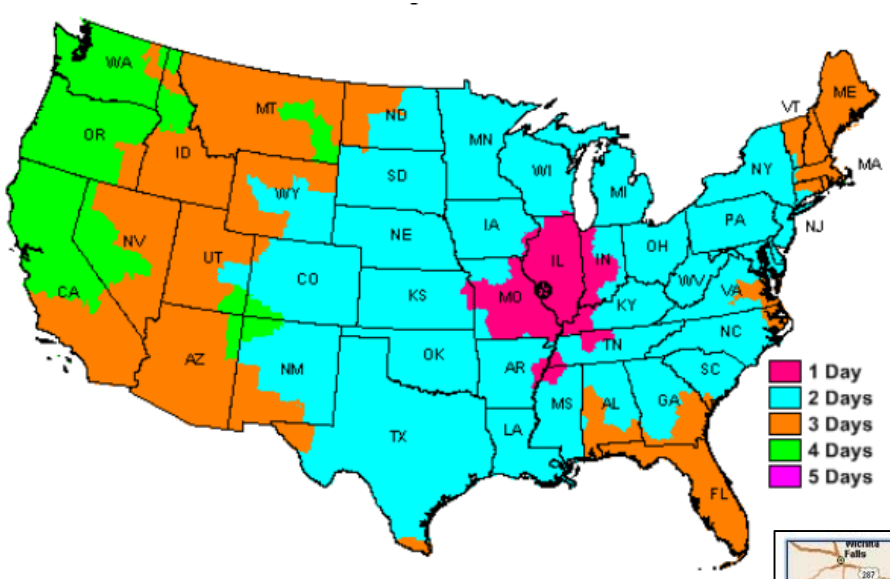
- Production vs. Need.
- Mutual help.
  - ✓Where made/where used is the basis of all trade.





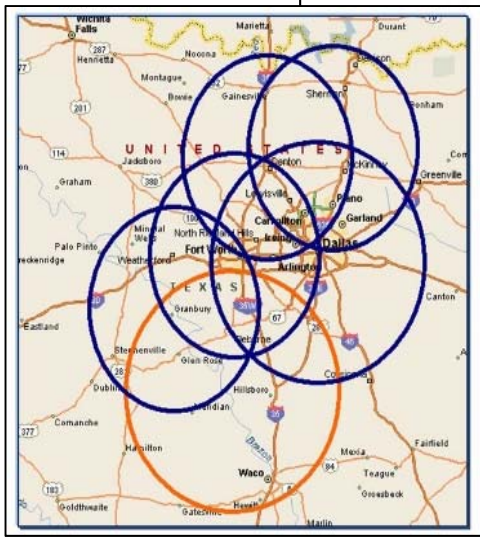
Principles of Location Theory and Economic Landscapes

4. Diffusion = Spread: Movement away from point of origin and eventually to a new site.



Service areas

St. Louis-based specialized grocery store estimated delivery time using FedEx Ground service.



5. Transportation Systems and Networks: Connectivity

❖ **Transportation system is composed of nodes and linkages:**

- Points (locations) are **nodes**
- Routes are **linkages**

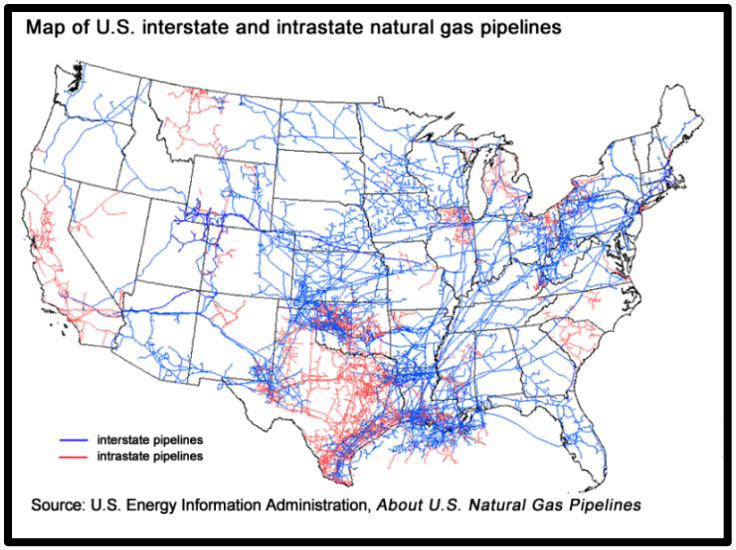
❖ **Network:** A system with more than one route to get from point A to point B.

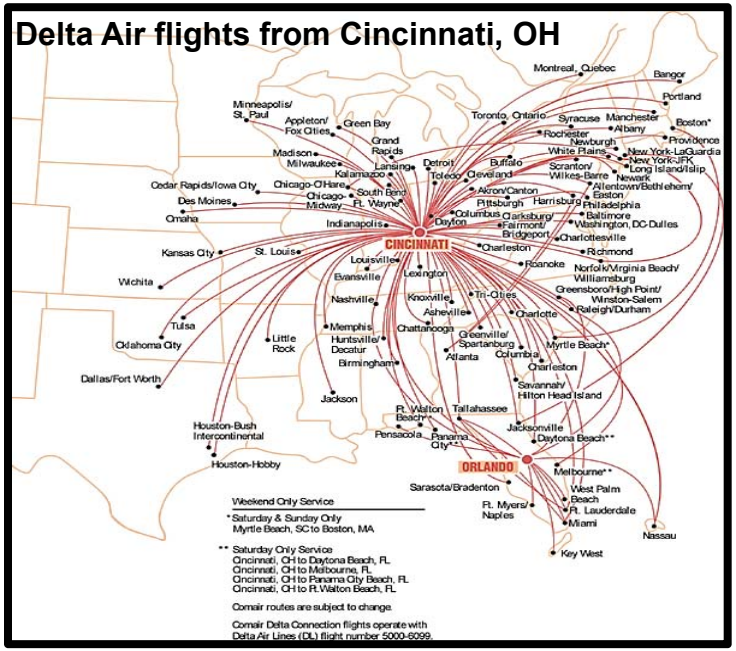
➢ **The goal** is to coordinate the movement of people, goods and vehicles in order to efficiently utilize routes and to reduce costs and improve delivery times.

✓ The pattern of movement facilitates interaction (#3) and diffusion (#4).

Principles of Location Theory and Economic Landscapes

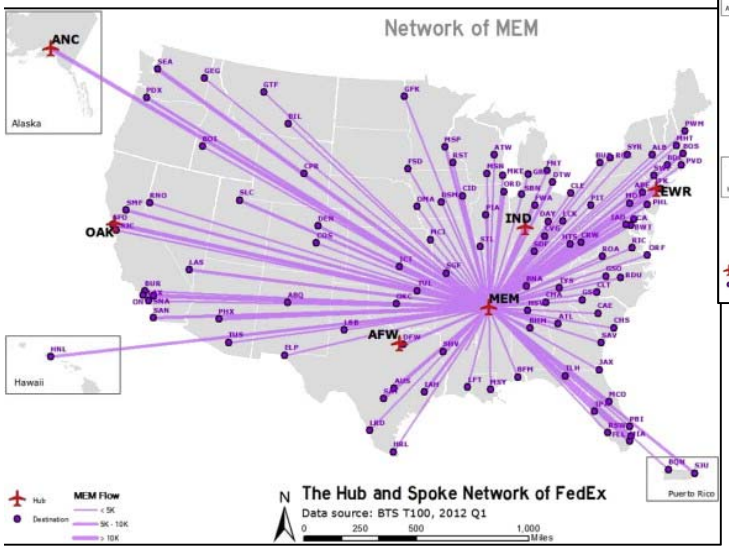
Examples of Networks: Going from Point A to Point B.



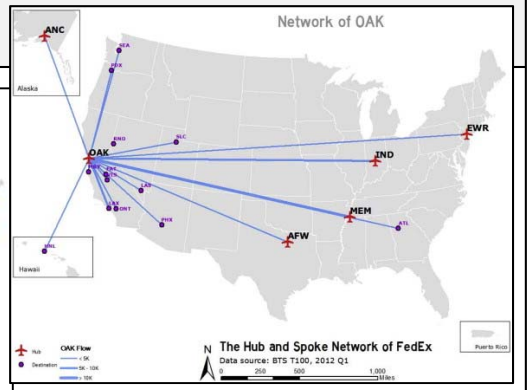


FedEx's Hub and Spoke Network

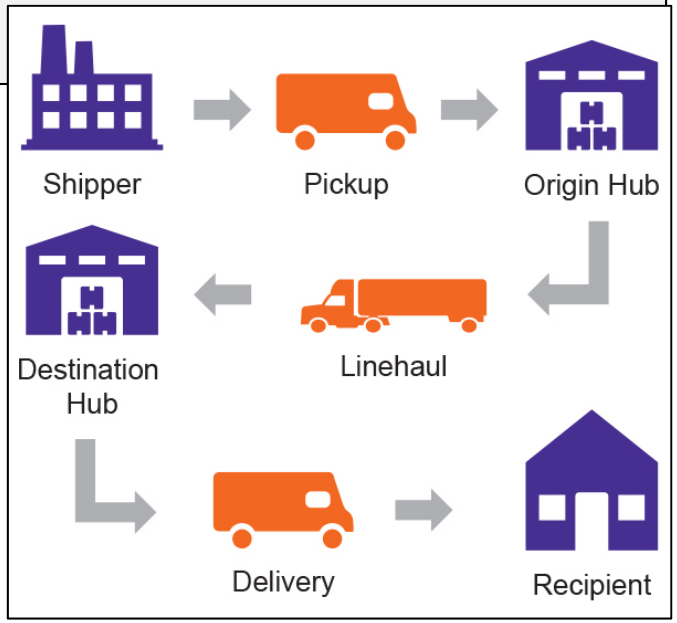
FedEx started out using just Memphis, TN as its hub. Now Memphis handles just over 50% of all packages, with **15 other air hubs** around the US and Canada. There are **37 ground hubs** serving regional deliveries and over **550 local pick up** points all to ensure next day or 2nd day service.



Main hub is Memphis, TN

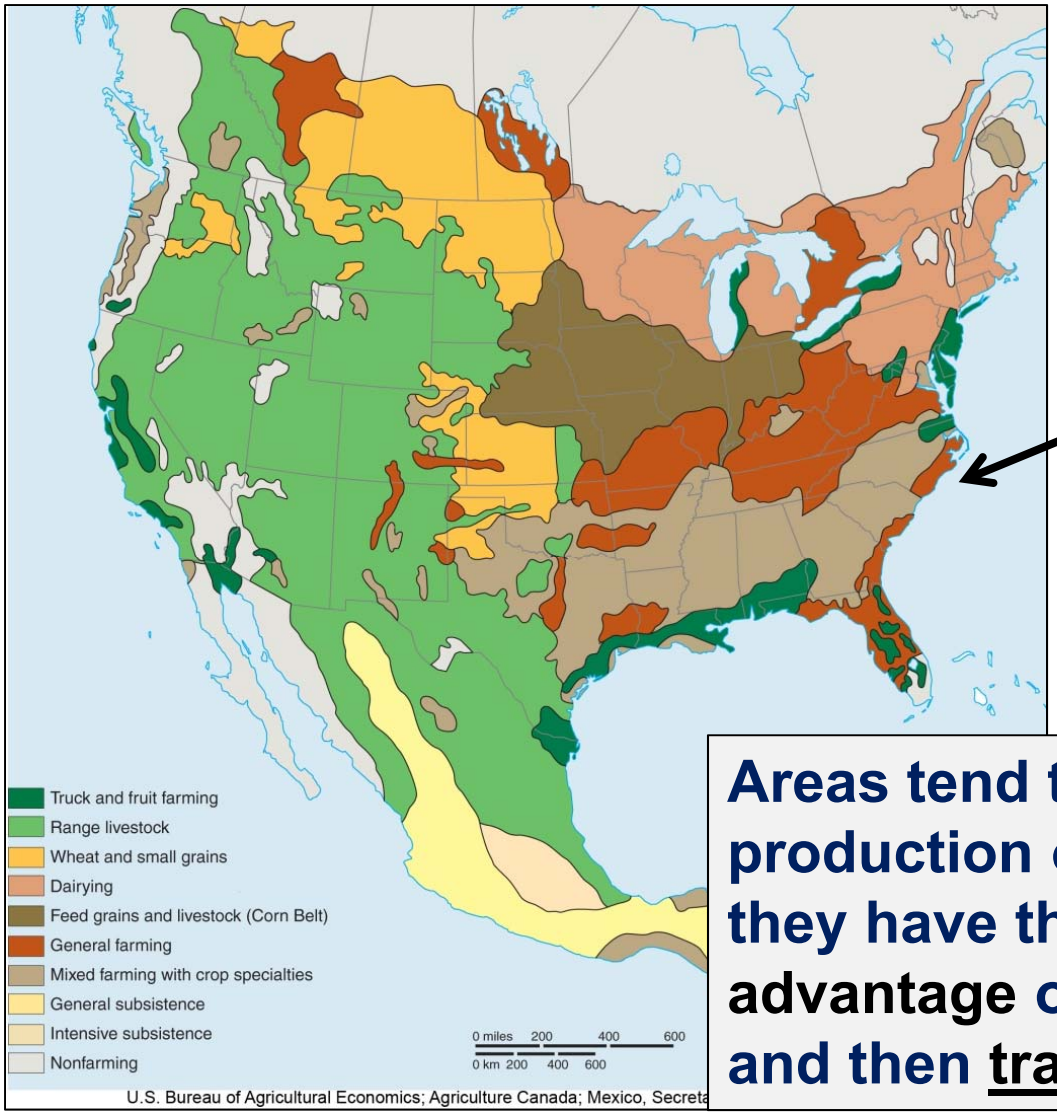


Oakland, CA is one of the regional hubs.



Principles of Location Theory and Economic Landscapes

6. Comparative Advantage: Best suited

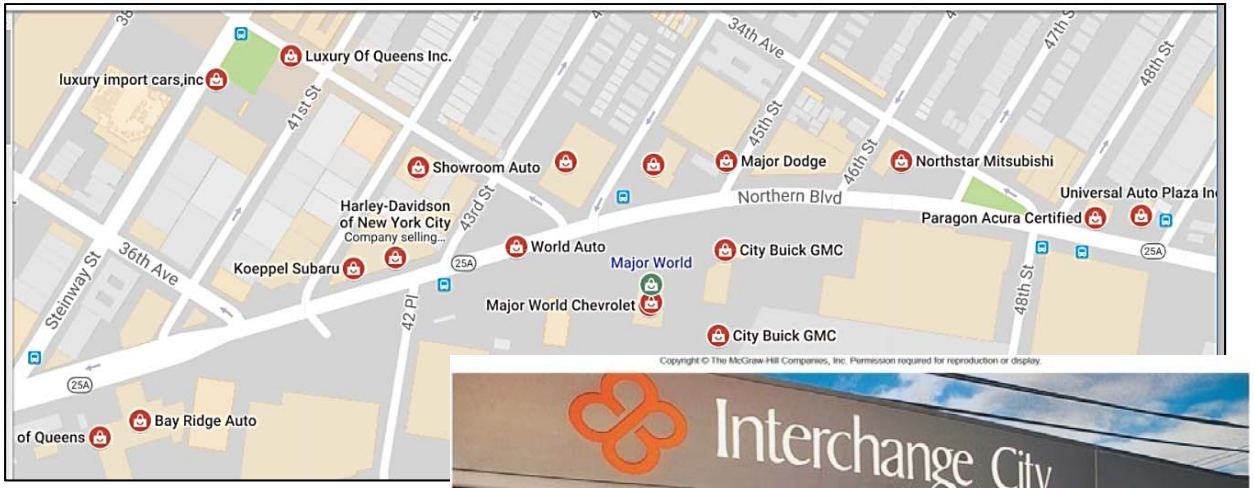


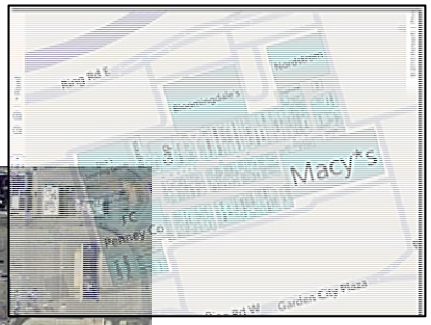
Areas tend to specialize in the production of items for which they have the greatest relative advantage over other areas and then trade for the rest.

Principles of Location Theory and Economic Landscapes

7. Agglomeration = clustering:
Concentration for mutual benefit.

- ✓Main Street USA
- ✓Shopping mall
- ✓Auto dealerships
- ✓Industrial park
- ✓College campus





Roosevelt Field Shopping Mall, Nassau Co., NY

Geography of Economic Activity

LOCATION LOCATION LOCATION

GOAL! To **find** a **location** for the chosen activity involving **minimum cost** and resulting in **maximum profits**.

HOW? Spatial analysis.

Spatial decision-making processes.

FINAL CHOICE = Best location at the **least cost** for **maximum profit** from what's available within a geographic area.

Geographical Spatial Analysis

- **Start with EXISITING CONDITIONS**

1. **Location**
   - a. Site
   - b. Situation
   - c. Focal points (nodes)
   - d. Hierarchy (levels of activity)
2. **Transportation Factors**
   - a. Linkages (connects the nodes)
   - b. Time-Distance
3. **Spatial Patterns are analyzed**
   - a. Where (distribution)
   - b. Why (land use)
   - c. Relationships (patterns of interaction)
4. **Economic Factors are considered**
   - a. Supply and Demand
   - b. Environmental Issues
   - c. Resources
   - d. Political issues

Geographical Decision-making

VARIABLES INCLUDE:

1. Comparative Advantage (best suited)

2. Human Elements: the people factor: (cultural, political, historical, social, economic, technical ability)

3. Agglomeration (clustering for mutual benefit)

4. Environmental Concerns (care about environment, perception, compliance, sustainable development)

5. Transportation Characteristics (existing routes and equipment, reliability, performance, cost of change)

6. Time-Distance Variables (spatial interaction at minimum cost)

TIME-DISTANCE

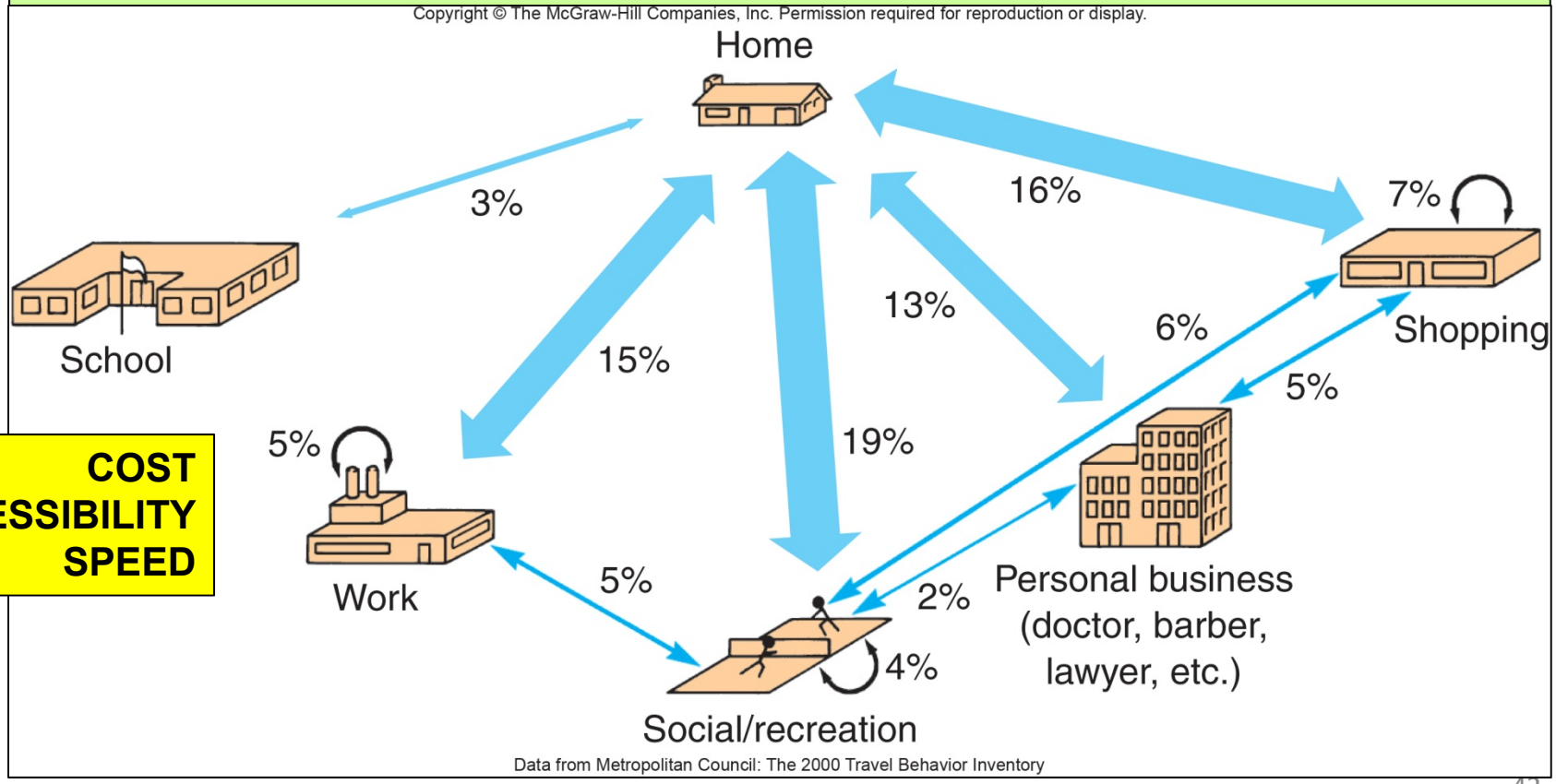
Time-distance variables must be included in any analysis of **spatial inter-action** especially with regard to **manufacturing and providing services** (the secondary and tertiary economic sectors).

There are **seven time-distance variables** that need to be taken into consideration.

1. **Percentage of time traveling** (need to keep operating expenses and down-time to a minimum)
2. **Hierarchy of need** (willingness to travel)
3. **Cost factor** (component factors)
4. **Orientation factor** (where made or where used?)
5. **Spatial margin of profitability** (how near or how far? adds to cost of the product or service)
6. **Land use and land value** (along with modes of transporta-tion and routes used)
7. **Timely manner deliveries** (for both raw materials and finished products)

TIME-DISTANCE VARIABLES

1. Spatial interaction as a percent of time spent traveling between places.



COST
ACCESSIBILITY
SPEED

Tracking a Person's Whereabouts with Cell Phone Apps: Time and Distance

This is also done within large stores, shopping centers and neighborhoods to track shoppers' movements (paths) and to offer coupons or other incentives.

This map was created using cell phone location data (embedded GPS) **over a 4 month period: 8,600 location hits or an average one hit every 21 min.**

Shows that most of the time the person stayed local, did home-to-work round trips, and went once to Newark Airport.

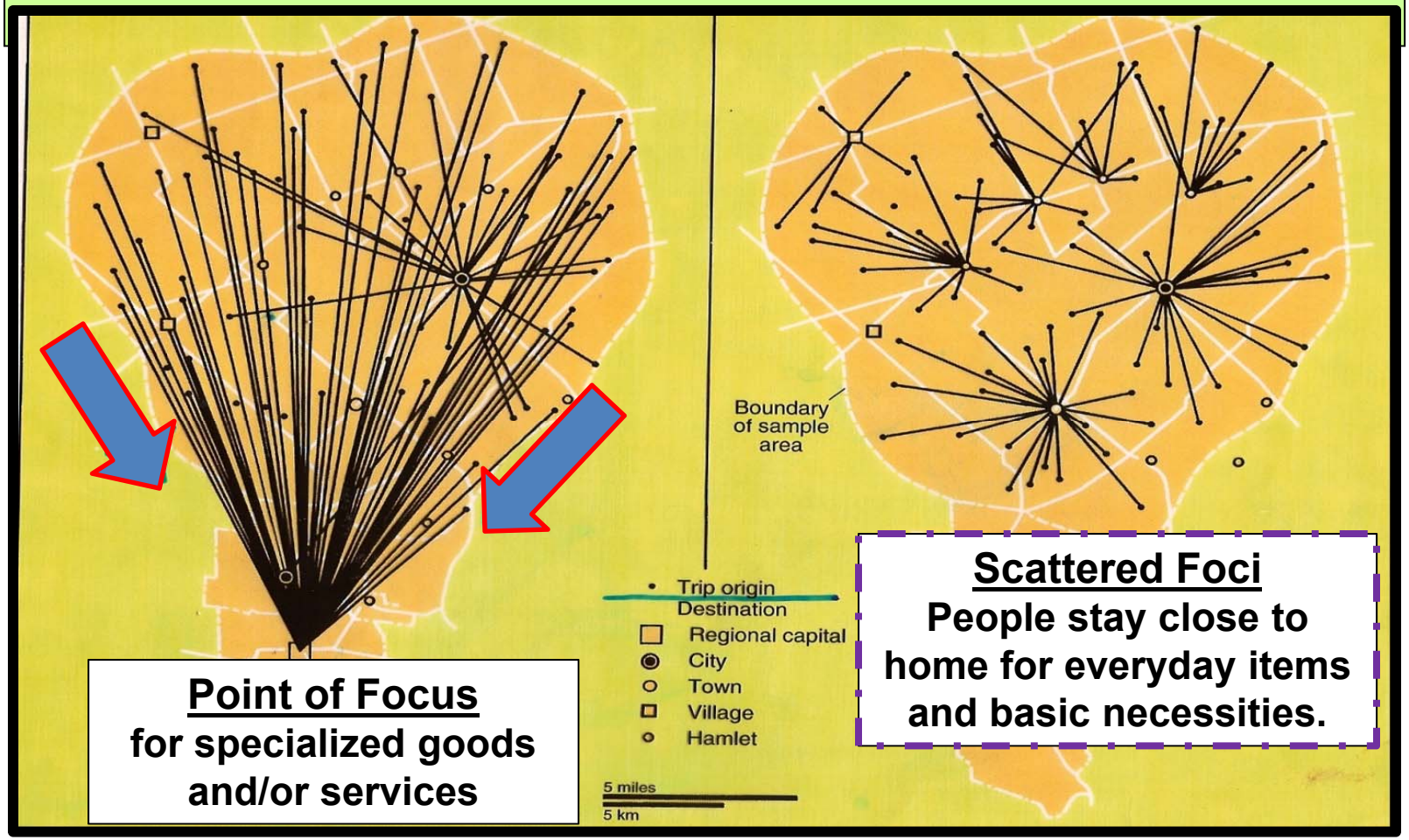
Data includes date, time of day, duration of stay and frequency of visit to the pinned site.

https://www.nytimes.com/interactive/2018/12/10/business/location-data-privacy-apps.html?module=inline

TIME-DISTANCE VARIABLES

2. Spatial interaction by hierarchy of need.

People will travel further for specialized goods and services.

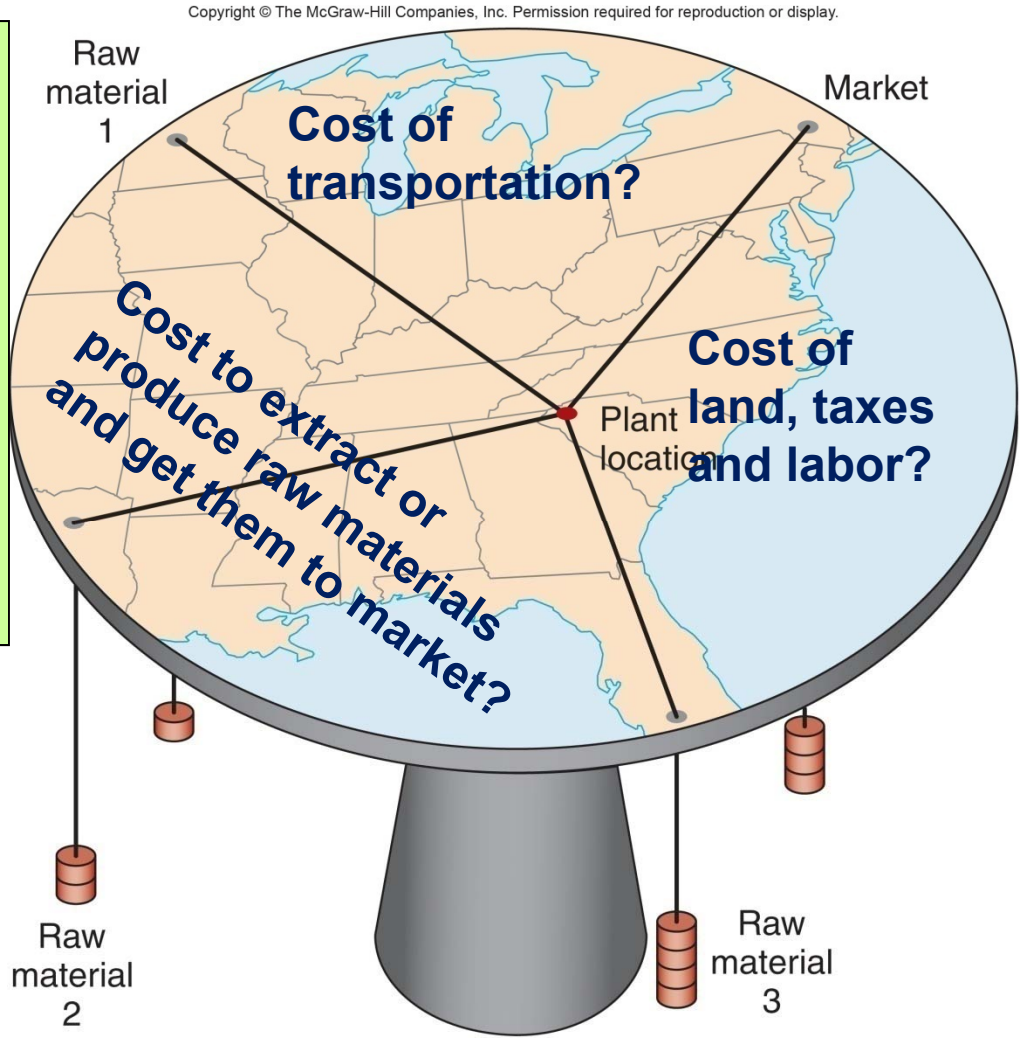


TIME-DISTANCE VARIABLES

3. Spatial interaction as a cost factor.

Where is it more profitable to locate?

What is the cost of raw materials, transportation, land, labor and taxes?



TIME-DISTANCE VARIABLES

4. Spatial interaction as an orientation factor.

Market orientation or raw material orientation?

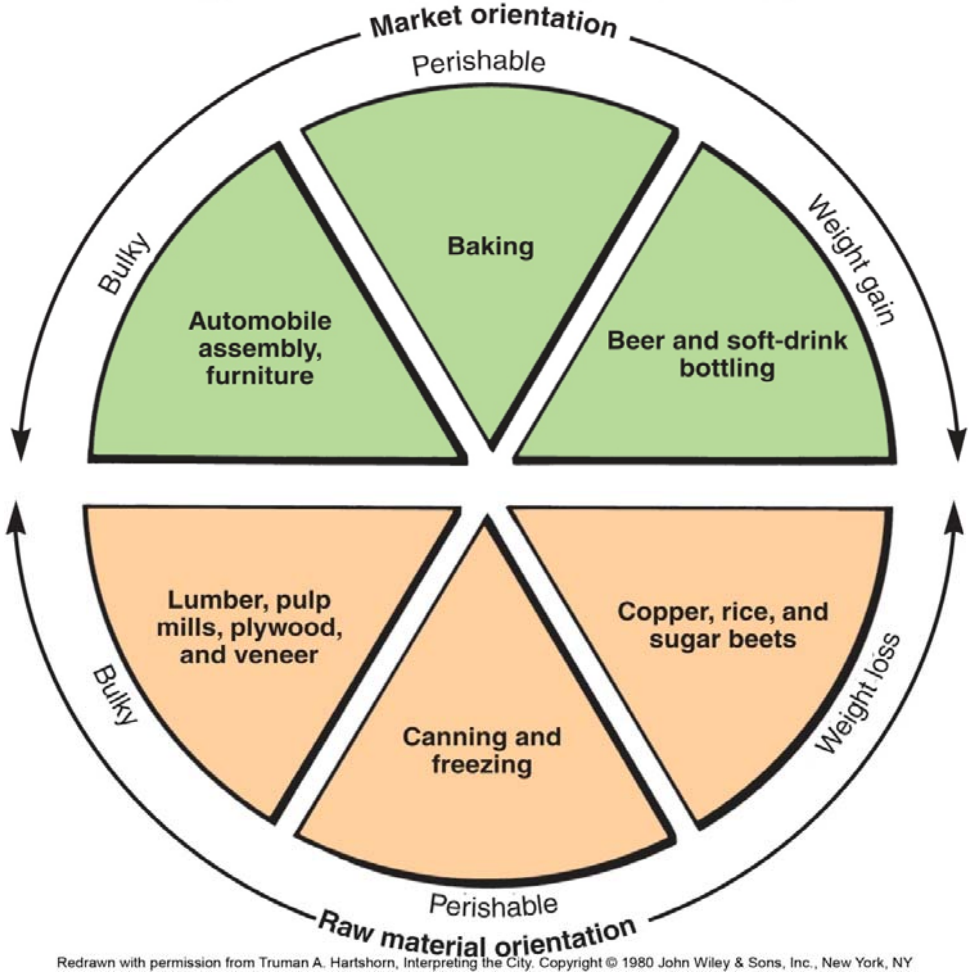
Bulky? Difficult to move?

Weight gain?

Weight loss?

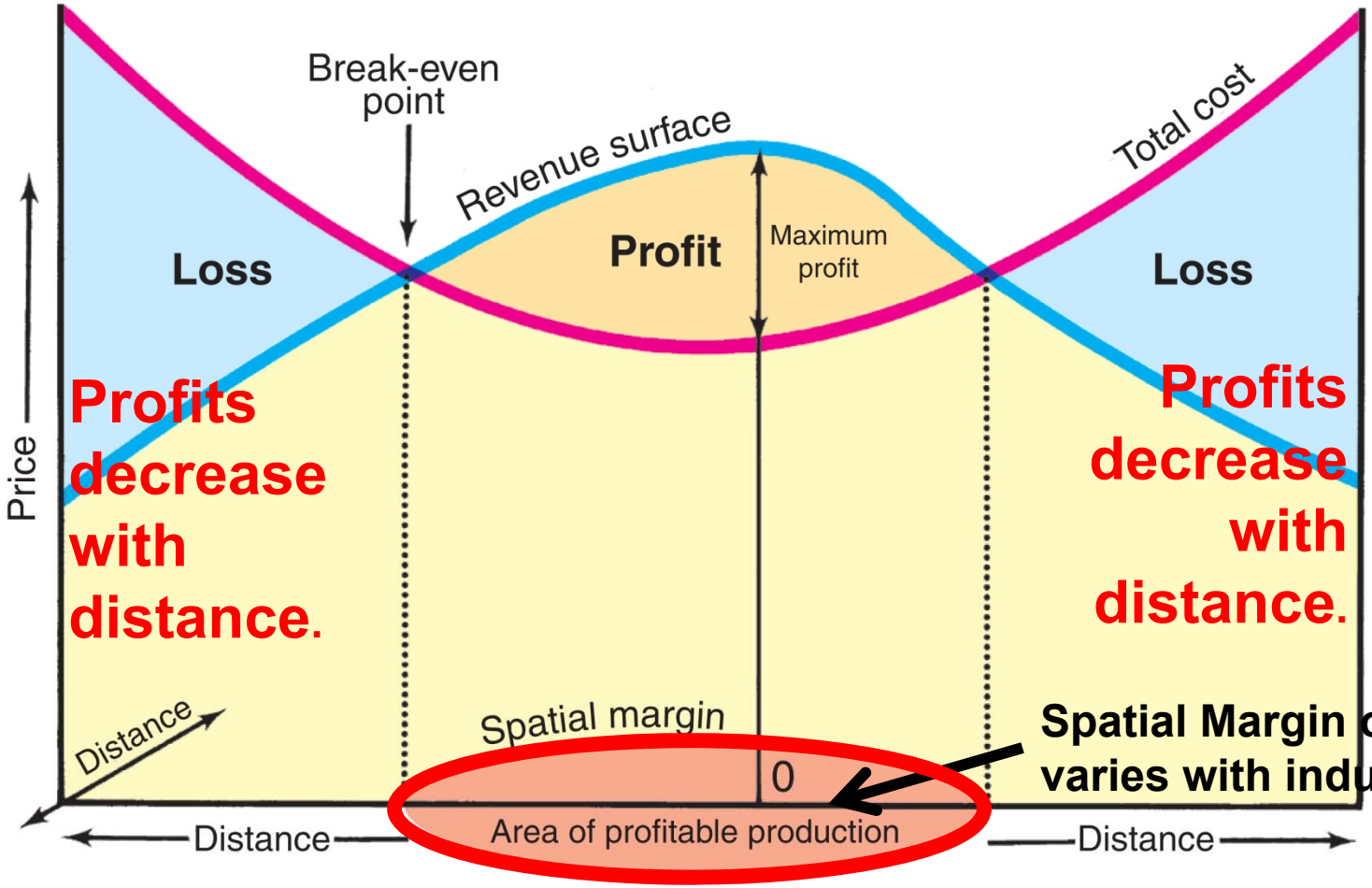
Perishable before processing?

Perishable after processing?



TIME-DISTANCE VARIABLES

5. Spatial interaction as a margin of profitability.



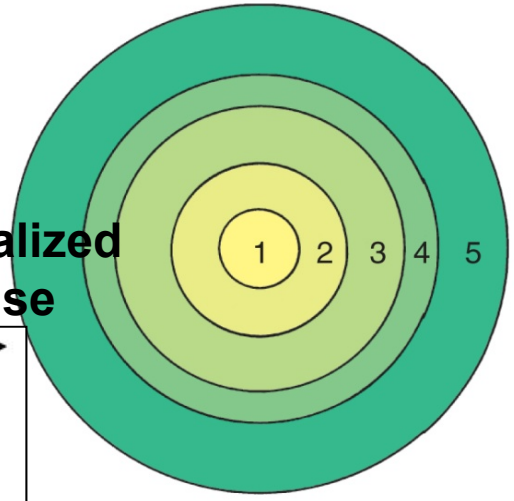
Spatial Margin of Profit varies with industry.

TIME-DISTANCE VARIABLES

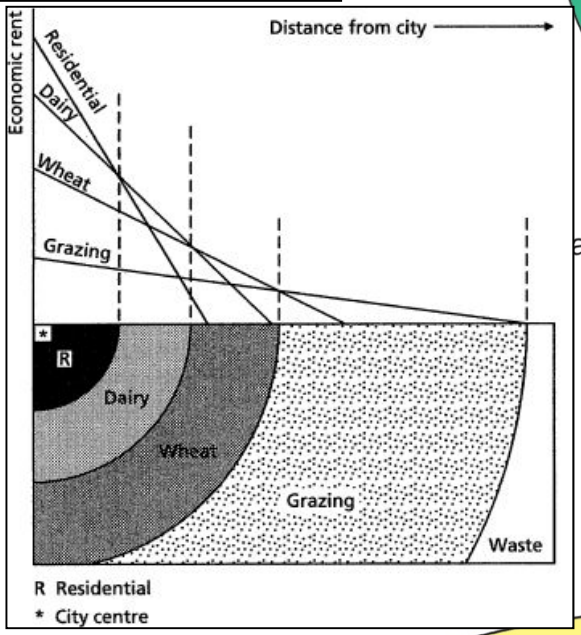
6a. Spatial patterns of land use and land value .

1. Dairying and market gardening
2. Specialty farming
3. Cash grain and livestock
4. Mixed farming
5. Extensive grain farming or stock raising

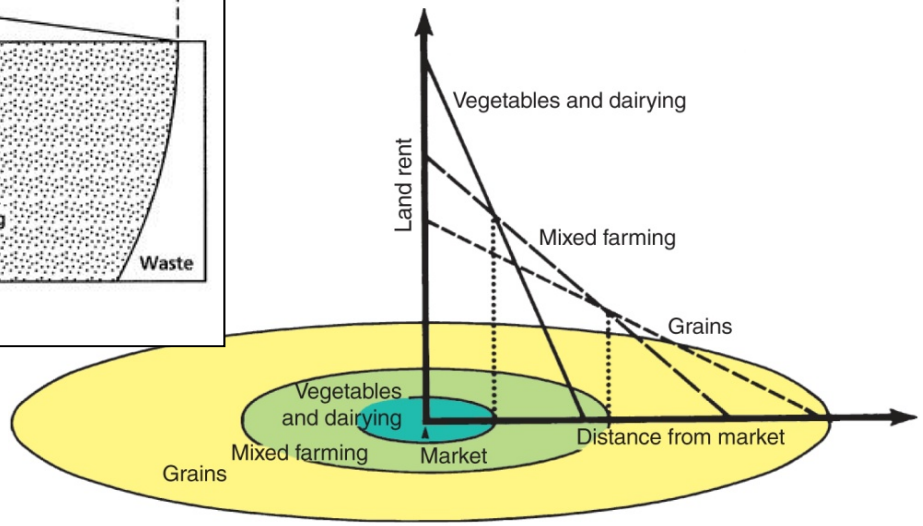
Specialized land use



The greater the distance from market, the less expensive is the cost/rent of land.



(a)

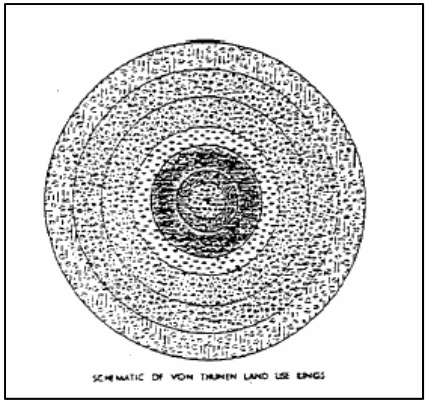


(b)

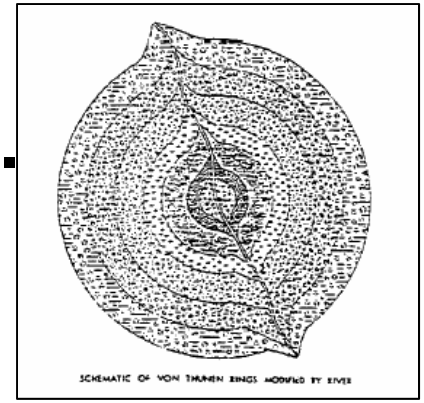
TIME-DISTANCE VARIABLES

6b. Spatial patterns of land use, land value with transportation.

Road and rail connections increase the distance without increasing time spent traveling.

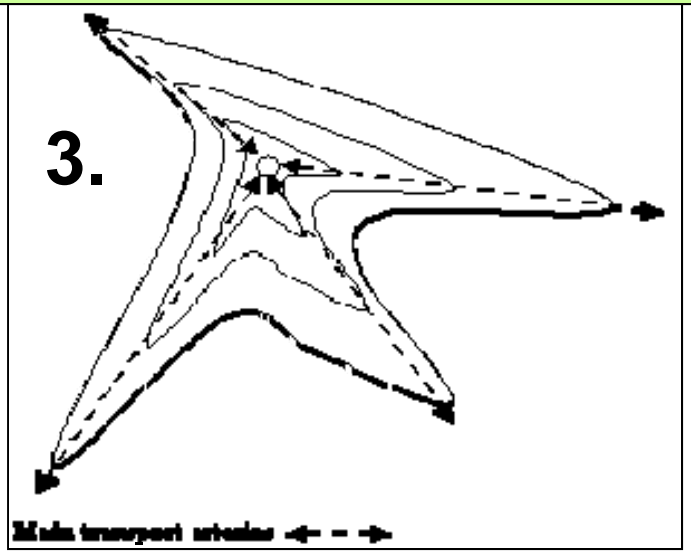


1.

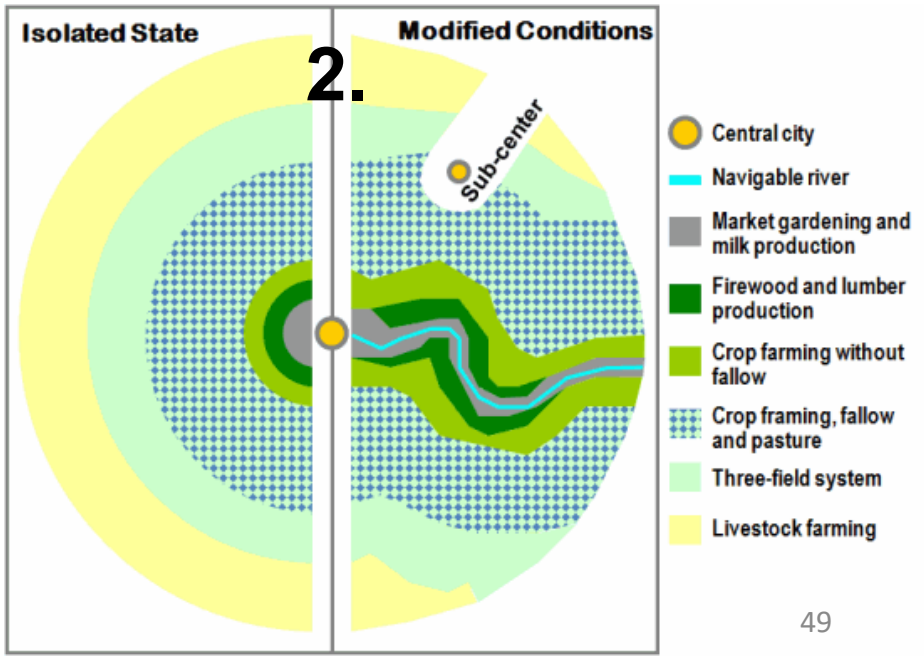


Look what happens when one or more means of transportation in added to the mix!

3.



2.



TIME-DISTANCE VARIABLES

6c. Spatial patterns of transportation routes:

Routing - Which way to go?

Shortest route vs. **Fastest** route.

BUT also need to consider **cost**.

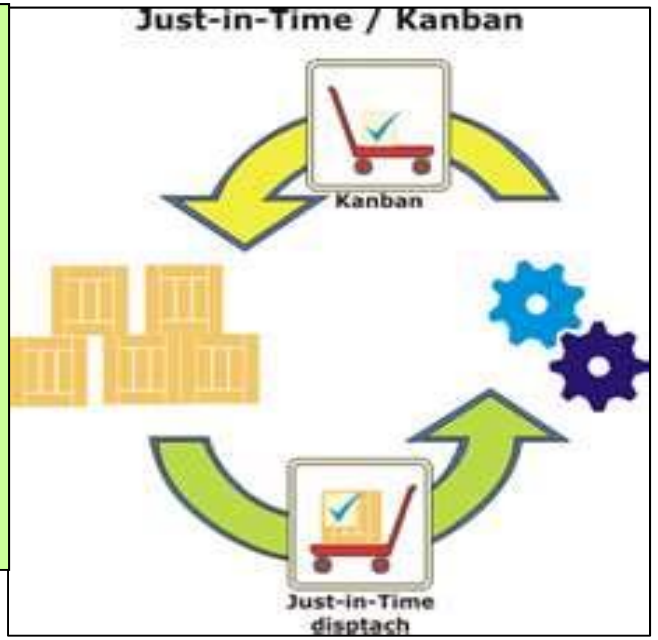
Three Variables: Speed vs. **distance** vs. **cost.**

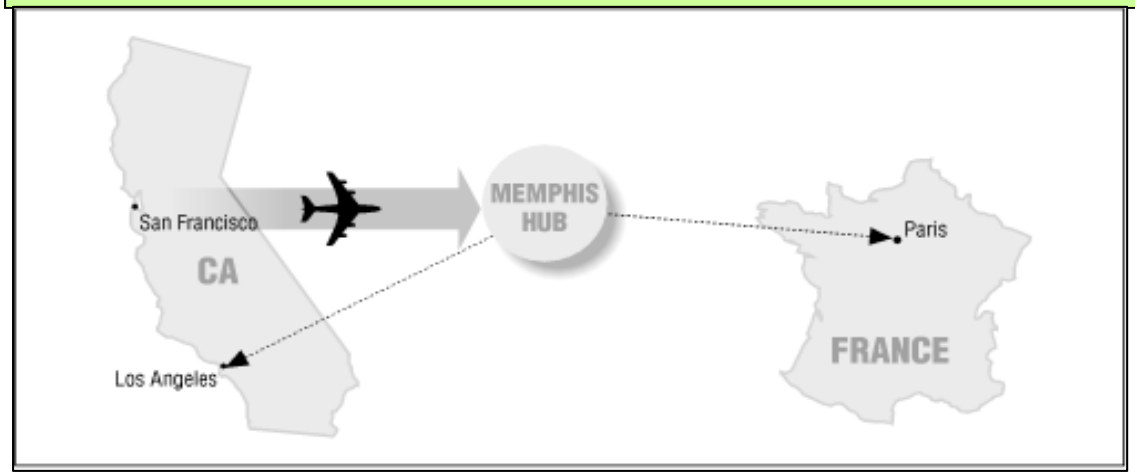
1. **Type of conveyance:** road, rail, water, air
2. **Direction of movement:** one way streets; going with or against traffic
3. **Topography:** curved roads, slope, uphill/downhill

TIME-DISTANCE VARIABLES

7. Spatial interaction to make deliveries in a timely manner: Just-in-Time delivery systems.

Response to on-site storage demands, when space is costly and cash flow is tight.





Just-in-Time Delivery Systems

- To guarantee delivery, just-in-time delivery systems:
  - Require the strategic placement of facilities in relation to a transportation network and the points of need.
  - Rely on very dependable transportation systems to assure same-day, next-day and multi-day service.
  - Also applies to military deployment, disaster relief and other emergency response scenarios.

TIME-DISTANCE VARIABLES

Pros and Cons of on-site storage.

On-site storage

1. Allows for bulk buying.
2. Reduces transportation costs by receiving larger loads.
3. Provides assurance materials are on hand when needed.

Just in time delivery systems

1. Saves money on space rental/ purchase.
2. Reduces activity's footprint.
3. Allows for material's arrival timed to need.
4. Reduces possible damage, vandalism, theft of stored items.

N E X T

GEOGRAPHY of URBANIZATION:

People, cities and patterns within cities.