EXAM INFORMATION

❖ **Exam Two will be Friday, April 7.**

- Format same as Exam 1
- **Covers regions from Northlands to Appalachia including Canada's National Core.**
- Multiple choice questions including maps, plus choice of essay topics.
- **See Study Guide.**

➢ **Missed exam make-up is all essay format.**

➢ **The Extra Credit for Exam Two is due no later than the start of the exam on April 7.**

✓ **All other extra credit is by the end of the semester.**

SNOW DAY MAKE-UP HANDOUT: Take home assignment is due on April 21st. Canada's National Core material will be on Exam II.

1

Regional Landscape Studies

- ✓ NORTHLANDS
- ✓ NORTHEAST COAST
- ✓ MEGALOPOLIS
- ❖ CANADA'S NATIONAL CORE (take-home exercise)
- ➢ AMERICA'S HEARTLAND
- ❑ APPALACHIA and the OZARKS
- ❑ THE SOUTH
- ❑ PLAINS and PRAIRES
- ❑ MOUNTAINS and PLATEAUS
- ❑ DESERT SOUTHWEST
- ❑ NORTH PACIFIC COAST
- ❑ HAWAII

<<<For each region:

1. **Know its physical geography.**
2. **Identify its unique characteristics.**
3. **Be able to explain the human imprint.**
4. **Discuss its sequence occupancy and economic development.**

2

Regional Landscapes of the United States and Canada

The American Heartland: Overlapping Areas of Agriculture and Manufacturing

Combined Version

Prof. Anthony Grande

Chapters 7, 8, 13 of American Landscape Textbook

What is a Heartland?

❖ **Central area that is essential to the viability and survival of the whole.**

- Coined in 1904 as part of Mackinder's **Heartland Theory** of global domination – control of the core of Eurasia would lead to world dominance. (Can be applied elsewhere.) Influential through the 1930s.
- Countered by the **Rimland Theory** (1944) which proposed that who controls the seaward margins of the continents would control the interior and ultimately the world.

x Both waned after the 1940s with the advent of aircraft, missiles and satellites that could see and reach isolated areas.

http://www.nytimes.com/interactive/2017/01/03/upshot/where-is-americas-heartland-pick-your-map.html?emc=eta1&_r=0

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Heartland Today

❖ **The central area of a nation that is important culturally, politically and economically.**

❖ **An area containing essential resources that allows a nation to be self-reliant.**

❖ **The area that is considered mainstream and having traditional values.**

- One that epitomizes a nation and its people.
- One where the "pulse" of a nation is measured.

Is this the US heartland?

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American Heartland

When you think about this region, what images come into your mind?

Midwest
Farms
Factories
Beer
Rust Belt
Corn Belt
Pollution
Urban problems
Patriotism
County fairs
Cheese
Iowa/Ohio

Goodyear Rubber factory, Akron, OH

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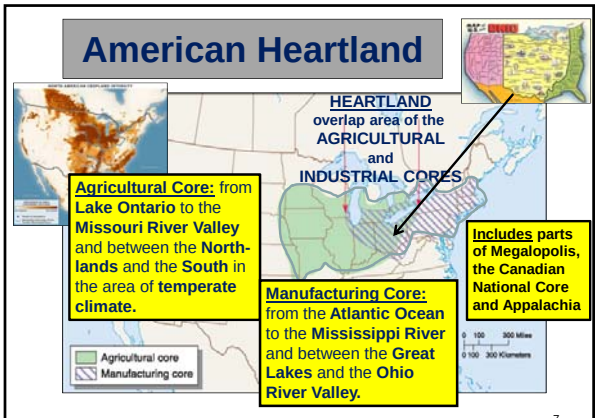
American Heartland



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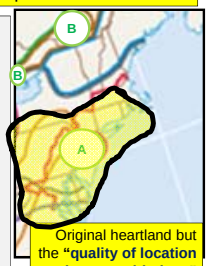
American Heartlands:
Overlapping Areas of Agriculture and Manufacturing

- **The U.S. Heartland was once in the Northeast** (A on map). New England and NYC provided the manufactured products. New York, New Jersey and Pennsylvania provided the food.
- **Canada's National Core** (B on map) **is the original and current heartland**
  - **The movement of the US heartland west and its merging with the Canadian National Core has created the North American Heartland.**
- ***Now the "heart" of the Heartland contains the most extensive tracts of mixed farmland in North America as well as its industrial core and a high population density.***



Original heartland but the **"quality of location changes with time."**

DEFINITIONS

- **Commercial Agriculture:** System of farming to produce crops/livestock for sale and profit (primary sector).
- ✓ Uses field practices, transportation methods and marketing that increase production, reduce spoilage/waste and lower the cost of the product (economies of scale; use of technology).
- As opposed to **subsistence agriculture** which provides for family and local needs.

- **Manufacturing:** Large scale transformation of raw materials (from the primary sector) into finished products that have higher value (secondary sector)
- ✓ Uses machines, tools, labor and power to create products.
- **Needs the support of service providers** (tertiary sector) and increasingly relies on information to assess its products and people's opinions of them (quaternary sector).
- As opposed to **home craft production** done to satisfy one's needs and to sell or barter for personal gain.

American Heartland: Overlapping Areas

How did the landscapes of agriculture and manufacturing get to locate in the same area?
What are some unifying location factors?
Are they mutually exclusive or do they complement each other?

1. Access to raw materials.
2. Access to water.
3. Access to fuel.
4. Access to transportation.
5. Access to markets.
6. Access to skilled labor.
7. Room for expansion.
8. Favorable climate.

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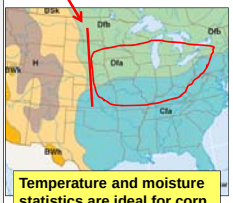
Physical Geography: Climate

1. **Transition zone** between the Humid Subtropical (Cfa) and Humid Continental (Dfa) climates with a great seasonal range of temperature.
2. **Ample precipitation:** c.30 in., most during the growing season, with little risk of drought.
3. **Long growing season**: Apr-Oct
4. **But subject to severe weather:** blizzards, heat waves, thunderstorms, ice storms and tornadoes.

Line marks the approximate location where a moisture deficiency kicks in for corn.



Temperature and moisture statistics are ideal for corn.
Too cold to the north.
Too warm to the south.
Too dry to the west.

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Physical Geography: Landforms

1. **Part of the interior lowlands**
   - Gently rolling land with **excellent soils.**
   - Good drainage.
   - Suitable for farm machinery.
2. **Most of the area was glaciated**
   - Glacial till covers the area; variety of minerals.
   - Responsible for the rolling landscape.
3. **Bluegrass Plain** (Kentucky)
   - A topographic basin underlain by limestone.
   - Limestone layers have been eroded by groundwater.
   - Area of ***KARST*** topography created as water dissolves limestone. Caves, sinkholes result. ***Bat habitat.***

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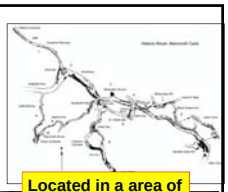
Mammoth Cave NP
Kentucky



Located in a area of karst topography.

World's longest cave system.
http://www.nps.gov/maca/index.htm

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Landscape Change:
U.S. Westward Expansion after 1783

Each former colony, now state, claimed land west of the Appalachians. This land was heavily forested

For the "good of the nation" each state ceded its western claims to the new Federal government.

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Northwest Territories

See pages 29-30 in historical atlas

Land **west** of Pennsylvania and Virginia, **north** of the Ohio R., but east of the Mississippi River. The states of Ohio, Indiana, Illinois, Michigan and Wisconsin were created.

- Settlement began **after** the US Congress enacted the **Land Ordinance of 1785** to divide and **sell the land** in an orderly manner **to pay for war debt**.
  - ✓ It created a "new" visual landscape in North America.

a) Forest reduction
b) Land division pattern

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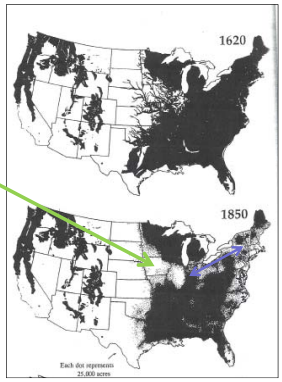
Change in Forested Land
1620-1850

Can you locate the Agricultural Core?

With westward expansion, settlers cut down trees to create farmland and use the wood for building, manufacturing, and fuel.

Can also see the Manufacturing Core.



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Land Ordinance of 1785

Township and Range Survey System

- ✓ **Congress' answer to the problematic "metes and bounds system."**
  - First applied to The Northwest Territories, extended to all new U.S. lands.
- ✓ **East-west base lines** and **north-south principal meridians** create a grid of townships and ranges.
  - **Regular, square plots.**
  - Surveyed **before** settlement.
  - Grid units can be a problem in some areas.

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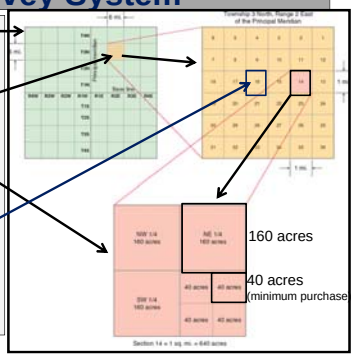
Township and Range Survey System

Each township is 6 miles square (6x6 = 36 sq. mi).

Each township is divided into 36 sections.

Each section (1 sq. mi. ea.) **consisted of 640 acres.** Land could be purchased in multiple acres (min. 40 acres).

Section 16 of each township **was set aside to support local education.**
- Money from sale or rent was used to fund public schools. Land was used to build schools that were evenly spaced.



Landscape Characteristic: Square Fields

Then

Now

Original farmstead size ranged from 40-160 acres. Buyers selected a parcel from the map, then went into the field to find the surveyor's markers.

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Settlement

- **One of North America's longest continually used farming area.**
  - There was a land rush from the east coast states into the Northwest Territories in 1785 (Ohio first).
- **European immigrants moved into the territory.**
  - Original migrants were farmers from NW Europe: Germany, Netherlands, British Isles, and Scandinavia
  - Later migrants from southern and eastern Europe settled in the manufacturing cities.
- **Rural areas became the new "Americana."**
  - Stability
  - Resistant to change
  - Isolated from change-producing forces of East

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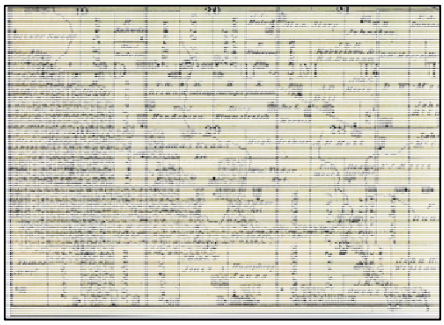
T&R-based Land Holdings
Louisa Co., Iowa, 1874



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Township and Range Landscapes

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Agricultural Development

Early 1800s settlers farmed crops and raised livestock.
New England hearth farmers favored wheat and dairy cows.
Pennsylvania hearth farmers favored corn, wheat and grain-fed animals for meat production.

Wheat
- High-value crop with reliable market.
- But its hard on soils, therefore shifted west with settlement.
- Shipping dependent on water transport.
- Flour milling at collection points (as Cincinnati, Buffalo).

Meat from domestic livestock
- Hogs and cattle.
- Growing grain to feed the livestock
- Rise of Cincinnati as **"*Porkopolis*"** (Hogs give the most return of grain-to-meat ratio of all livestock.)

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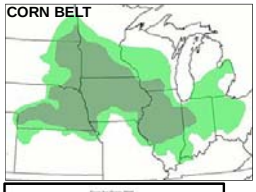
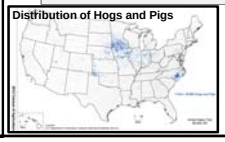
Corn Takes Over

CORN BELT



Distribution of Hogs and Pigs



- **"Corn Belt" is a sub-region where corn has been the dominant since the 1850s.**
- **Better than wheat for local soil and climate conditions.**
- **Now most of it is used as feed for livestock,** esp. hogs, chickens.
- **Grows c.40% of world's corn.**
- **Increasingly complemented by and rotated with soybeans** which are even better for the soil.
- **Increased use of corn for ethanol production.**

Hog: any mature domesticated swine
Pig: young (un-weaned) domes-ticated swine

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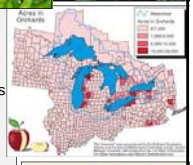
Today more than Corn and Hogs





Soybeans (started in early 1900s)
- Hardy plant with many uses that actually improves soil quality (legume)

Fruit
- Lake Michigan, Lake Erie shorelines
- Moderating effect of lakes: late springs, long autumns

Dairying
- North of Corn Belt where it is too cold for corn
- Area of German, Scandinavian immigrants
- Surplus milk: cheese, butter, dairy products

ALSO:
- Poultry and eggs
- Other grains: oats, wheat, alfalfa
- Beans, peas, lentils
- Floriculture (flowers, sod and ornamental plants)


http://nass.usda.gov/index.asp
for U.S. and state agricultural statistics.

Regional Pull Factors

Ideal Natural Setting for agriculture:
- long warm summers
- ample precipitation
- gentle rolling terrain
- fertile, well-drained soils.

Mobility Advantages

Settlers had easy access into the region by land and water

Connectivity to market: farm goods easily shipped out.

"National Road" is the first US highway: *Cumberland, MD to St. Louis, MO.*

Interconnected Waterways
(major form of transportation in1800s especially before the Civil War.)
- Rivers were navigable by boats and barges. Canals were built.
- Access to New Orleans via the Mississippi River and to NYC via the Erie Canal.
- **River boats** carried people and freight.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Canals of the Heartland
linking rivers, lakes and the ocean

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Landscape Today

1. **Rural agrarian with homesteads** (clustered buildings) far from each other.
2. Land pattern characterized by the **Township and Range** grid.
3. **Many small towns:** support a farm-based economy (collection and distribution).
4. **Immigrant heritage:** central and northern European **ethnic enclaves**.
5. **Transportation-focused patterns;** dense network (road/rail/water).
6. **Area of large, corporate farms:** small family-run farms disappearing
7. **Agricultural activities entrenched** even with urban/industrial competition

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Landscapes of the Agricultural Core

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Landscapes of the Agricultural Core

Indiana corn maze


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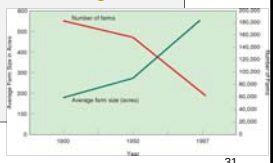
Mechanization and Farm Size

- **Midwest farms have become increasingly corporate in organization and less family-owned and operated.**
- **Farm Size:** individual farms have increased in size while the number of farms has decreased in number. *Economies of scale* favor large and medium-sized farms
- **Increasing use of expensive machinery and technology.**



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Plowing:
gets easier and faster




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Farming Techniques and Resultant Patterns

Strip cropping: Practice of **growing different crops in alternate bands** (as corn, oats, wheat and hay), especially on sloped areas.

- Protects the soil from erosion.
- Facilitates crop rotation.
- Preserves soil fertility.

Contour plowing: Plowing the land at right angles to the slope; retards soil erosion.


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Corn Harvesting




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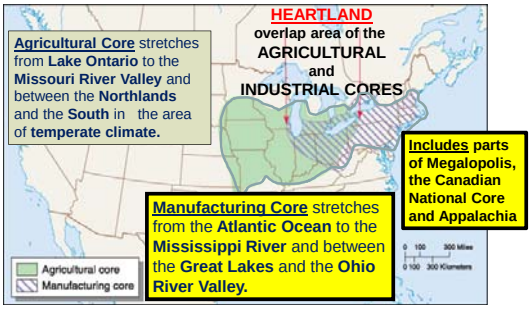
American Heartland: Industrial Core



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Urban/Industrial Landscape Develops

❖**MANUFACTURING:** The large-scale transformation of raw materials into finished goods that have higher value.

- ✓ **Cities grew at strategic locations within the agricultural core:** Sites at river junctions, portages and crossroads became collection points/ markets where farmers sold or traded their produce. **River ports grew and became the focus of activity.**
- ✓ **Cities became centers of agro-oriented industry**: Processing foodstuffs and manufacturing farm products (tools) and machinery.
- ✓ **Cities lured workers** from other parts of the U.S. and from abroad.
- ✓ **Cities grew** in size and complexity in response to industrial stimuli (functions/pull factors).

- **Buffalo**
- **Erie**
- **Pittsburgh**
- **Cleveland**
- **Columbus**
- **Cincinnati**
- **Indianapolis**
- **Detroit**
- **Chicago**
- **Milwaukee**
- **Minneapolis**
- **St. Paul**
- **Des Moines**
- **St. Louis**

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Manufacturing Core
with sub-regions

USA
Milwaukee
Chicago
Peoria
Gary
Detroit
Flint
Toledo
Cleveland
Akron
Dayton
Cincinnati
Wheeling
Pittsburgh
Erie
Philadelphia
Scranton
Buffalo
Rochester
Syracuse

USA
Utica
Schenectady
Troy
New York City
Baltimore
Patterson
Trenton
New Haven
Springfield
Boston
Worcester
Providence
Portsmouth
Portland
CANADA
Windsor
London
Hamilton
Toronto
Montreal

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Manufacturing Needs

What is needed for a successful industrial operation?
Consider both the manufacturing and support activities.

- ✓**Space**
- ✓**Raw materials**
- ✓**Energy supplies**
- ✓**Water supply**
- ✓**Transportation**
  (accessibility and networks: ports, railroads, highways, canals, airports)
- ✓**Labor supply**
  (all skill levels)
- ✓**Financial centers**
- ✓**Markets**
- ✓**Favorable political and legal variables**
  (jurisdictions, laws, zoning, regulations, tax codes)

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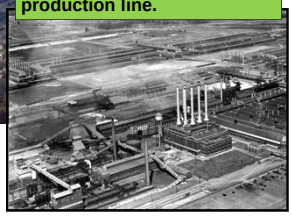
Ford Plant at Rouge River
south of Detroit

Major manufacturing plants need a lot of space and are located outside of cities. Assembly line manufacturing is a one level, horizontal production line.



As opposed to the multi-story East Coast factories located within a city.

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Definitions

- **Comparative Advantage**: Characteristics of an area that make it best suited for a task.
- **Agglomeration**: clustering for mutual benefit.
- **On-site Storage**: bulk buying; warehousing.
- **Just-in-Time Systems**: buy/accept delivery when needed (minimal storage space/inventories).
- **Location Inertia**: tendency of an industry to stay **in place** and stay **at a place**.

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Dealing with Bulk

Bulk - a large volume of material
Break bulk – to reduce the volume to manageable loads

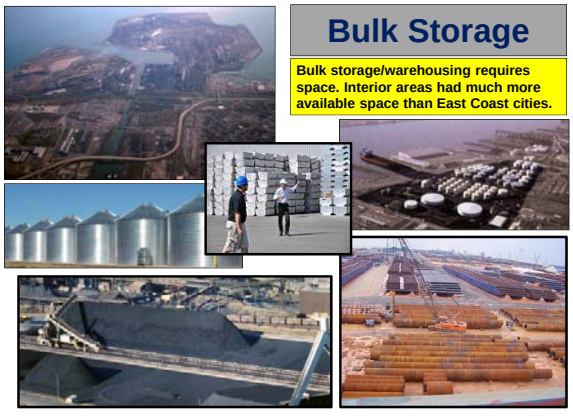
All manufacturing sites have to deal with bulk and storage issues for the raw materials and the finished products. **Both require the room to do so.**

- **Break-in-bulk Point:**

Transfer point on a transport route where the type of carrier changes, and where the volume of shipment is expanded or reduced in size.

Bulk Storage

Bulk storage/warehousing requires space. Interior areas had much more available space than East Coast cities.



Manufacturing Core

The industrial region's growth and development was directly related to the:

1. **Quantity, quality and location of accessible natural resources:** water, wood, coal, minerals
   AND
2. **Ability to move needed raw materials and the finished product by water and rail:** dense transportation network with a variety of conveyances as canal boats, river barges, lake steamers, and railroads, plus good local roads.

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Growth of Original Manufacturing Core

- ❖ The **factory system** (introduced from Europe) began to change East Coast towns in the early 1800s.
- **The original industrial core is Boston-Baltimore.**
  - Same area is the chief market for the finished products (proximity).
- ➢ Remember that the Midwest was first settled by farmers: 1830-1860

- The original core had the **labor supply, water power, good ports, RR terminals and money.**
- ❖ European **immigrants with factory experience** (skilled labor) entered the U.S. via the core's port cities.
- ➢ Southern cities remained non-industrial market towns even after the Civil War ended (few immigrants entered via Charleston, SC.

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Mfg. Core Expands to the Midwest

- ❖ **Transportation advances** were instrumental in the Midwest's growth as an industrial area.
- ✓ **Erie Canal** and **"canal fever"** (1820s-1850s). Canals were built to connect the area's rivers with the Great Lakes.
- ✓ **Railroads.** They surpassed the canals in 1840s; provided flexibility. (Steel rails invented in the 1870s.)

- ❖ **Transportation networks** link the East Coast with the Midwest.
- ❖ **Manufacturing moves inland along the tracks** as RR companies sponsor trackside development. **The original core expands**
- ➢ **KEY FACTOR:** ability to move tons of raw materials, especially **coal**, quickly and cheaply.

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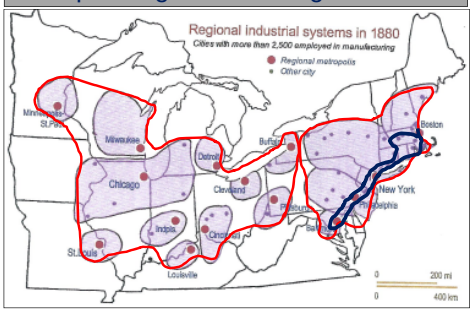
U.S. Industrial Areas
expanding from the original core



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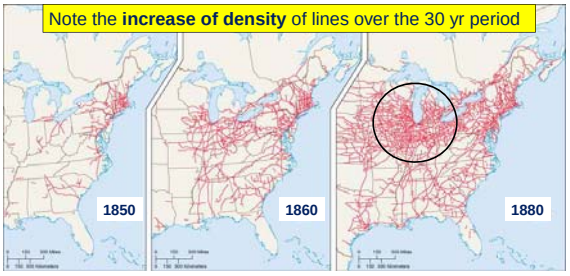
Growth of the Railroads
(1850-1880)

Note the **increase of density** of lines over the 30 yr period



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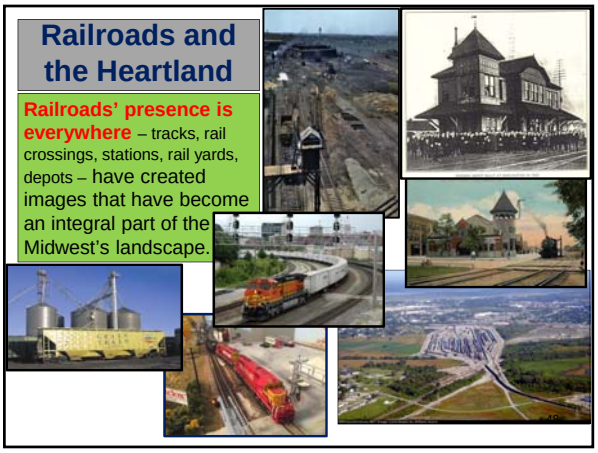
Railroads and the Heartland

Railroads' presence is everywhere – tracks, rail crossings, stations, rail yards, depots – have created images that have become an integral part of the Midwest's landscape.



Comparison of Core Sub-regions

Eastern Cities -- Interior Cities

Existed before industrialization

- ✓ **Developed because of commerce and finance**
- ✓ **Hearth:** New England
- ✓ **Power source:** water wheel
- ✓ **Specialization:** light industry
  - Small amt of raw materials used
  - High value added per unit weight
- ✓ **Importance placed on services,** esp. finance, educ., culture
- ✓ **Sites include:** Manchester, Boston, Providence, New Haven, New York, Paterson, Philadelphia, Baltimore

Grew after industrialization

- ✓ **Developed near mineral and agricultural resources**
- ✓ **Focus:** water for transport'n
- ✓ **Power source:** steam
- ✓ **Specialization:** heavy ind'try
  - Used tons of metallic minerals and **coal**
  - Processing, metal smelting, machinery, milling
- ✓ **Sites include:** Buffalo, Pittsburgh, Cleveland, Cincinnati, Detroit, Gary, Chicago, Milwaukee, St. Louis; Toronto, Hamilton

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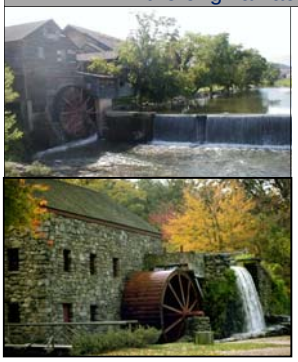
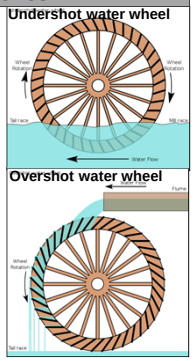
New England Watermills

the original factories





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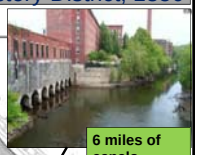
Canals of Lowell, MA

Factory District, 1850

Upstream of Pawtucket Falls, water from the Merrimack River was diverted into canals which flowed through factories. The **30 ft. drop** between intake and outflow turned the water-wheels that **transferred energy by gears to the power shaft**.



6 miles of canals operated on **two levels** powered 10 **mills** employing **10,000 workers**

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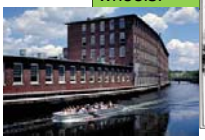
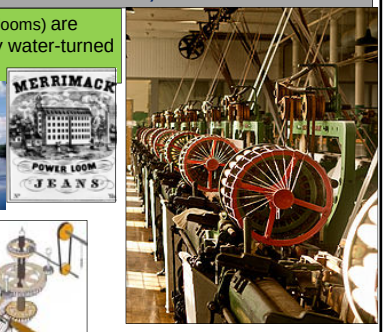
Cotton Manufacturing Museum

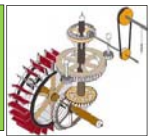
Lowell, MA

Machines (looms) are powered by water-turned wheels.



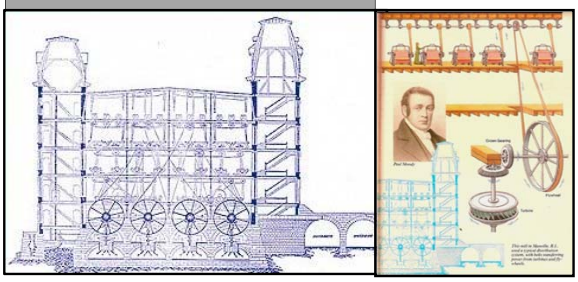


A complex, fragile mechanical system of wooden gears, pulleys, rods, shafts, and leather belts.



52

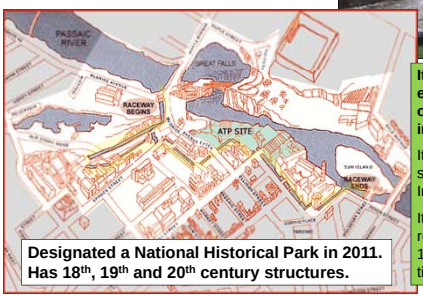
Mill at Manville, RI



53

Great Falls of the Passaic River

Paterson, NJ



Designated a National Historical Park in 2011. Has 18th, 19th and 20th century structures.

It is home to the largest and best example of early manufacturing mills in the US.

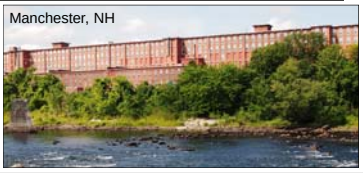
It played a key role in shaping the American Industrial Revolution.

It contains waterpower remnants from the 1700s, including a 3-tiered raceway system.

54

New England Factory Buildings


Salem, MA


Manchester, NH


Milton, MA

55

New England Factory Buildings

56

Importance of Great Lakes Ports

- **Transfer of iron ore shipped on Great Lakes to rail cars at Great Lakes ports: *break-in-bulk.***
- **Return rail cars carrying coal.**
- **Development of steel and other industries at ports.**

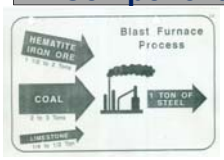
Cleveland, OH
- Largest port city on Lake Erie
- Canal linkage to Ohio River

Buffalo, NY
- Linked to NYC by Erie Canal
- Last port on "all American" route
- Extensive rail yards interacted with port facilities

SE Chicago, Il - Gary, IN
- 19th c. industrial area of Lake Michigan created by steel companies.
- Immigrants from Poland, Ukraine and other European countries came to the area

Hamilton, ON
- Largest port on L. Ontario
- Chief city of Canada's "Golden Triangle" industrial area

Proximity within the Heartland of Components for Steel-making



- **Coal** is moved by rail or water.
- **Iron ore** is moved by water.
- **Steel mills** are located along the shoreline.
- **Limestone** is trucked in (local).
- **Finished products are moved by water, rail or truck to their next destination.**

58

Rust Belt

❖ 20th century term used to describe **the area in industrial decline** stretching from central NYS/western PA and through northern Illinois.

Term was meant to evoke images of **rusting manufacturing facilities and railroad track**, esp. in relation to the manufacturing of steel, vehicles, and machinery.

59

The "Rusting" (decline) of the Manufacturing Core

- **Population shifts:** movement to new growth areas (SE and SW U.S., W. Canada)
- **Labor shortage:** young people not wanting to work in factories.
- **Competition:** from manufacturers outside the region and country.
- **Aging infrastructure:** costly to retrofit or come up to standards; limited space to expand.
- **New technologies:** hi tech, especially robotics.
- **Environmental issues:** regulations, cost factors.

60

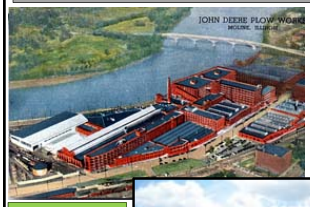
Minneapolis

Minneapolis and **St. Paul**, located at the St. Anthony Falls of the Mississippi River, became the focus of grain growers to break bulk before shipping the product east.

Mill Ruins State Park
Once had the highest concentration of water powered mills in the world.

61

John Deere Factory



Agricultural need meets industrial ability.

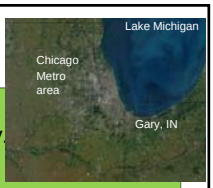
62

Commercial Food Processing

Kellogg, Battle Creek, MI
General Mills, Minneapolis, MN
Quaker Oats, St. Louis, MO

63

Chicago



Dominant city of the Heartland both for agriculture and industry.

- **Not a great site**
  - Swampy, poor-quality drinking water, non-navigable river
- **But has <u>situational</u> advantages**
  - **Transfer point for goods** and people from W and SW
  - **Focus of inland water transportation** (Illinois and Michigan Canal, 1848) connecting Lake Michigan to the Mississippi River system
  - **RR hub and break-of-bulk/transfer center: all major rail lines radiate from here.**

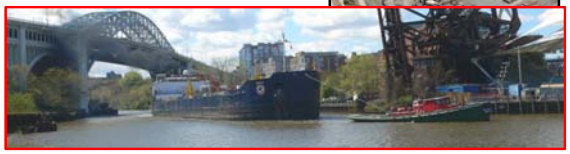
64

Cleveland, OH

65

Heavy Industry Cuyahoga River
Cleveland, OH

Water is used in processing, for waste disposal and as transportation.



66

Cuyahoga River Fire
June 22, 1969

67

Vintage Photos of Pittsburgh

68

Pittsburgh

- **Strategic river junction** (where the Monongahela and Allegheny rivers join to form the Ohio River)
- **Access to raw materials** (iron and coal) and **down-river markets**
- **Steel making center**
- **Now pollution free!**

69

Detroit

- **From the French, *de troit:* "of the narrows"**
- Located along the Detroit River, a strait that connects Lake Erie with Lake St. Clair.
- It was a place to **cross** the waterway and to **control** water traffic.
- **Site of colonial forts.**

70

Buffalo

- Probably a corruption of the French "*Beau Fleuve,*" Buffalo did not grow until the site was selected as the western terminus of the Erie Canal, out of canon fire from Canada (War of 1812).
- It became a transshipment point and break-of-bulk between lake vessels and canal boats.
- Nearby coal and hydropower allowed heavy industry to develop.

Iron and steel and grain-milling dominated the shoreline. Today wind mills are found there.

71

NEXT

APPALACHIA
and
THE OZARKS