

Presentation from the Panel: Animating Dead Economics  
September 5, 2004

From the 2004 Labor Day Conference of the Schiller Institute, "The Crash You Were Hoping For Is Here!"

### **The Build-Up of U.S. Economic Geography**

by Marcia Merry Baker

{The following are summary notes, accompanying the graphics, used by Baker in her presentation}.

To look at the process of the build-up of the economic geography of the United States over the past century, we begin with the year 1926, designated by Mr. LaRouche as a good starting-point, as it was the peak of rail density in the U.S.

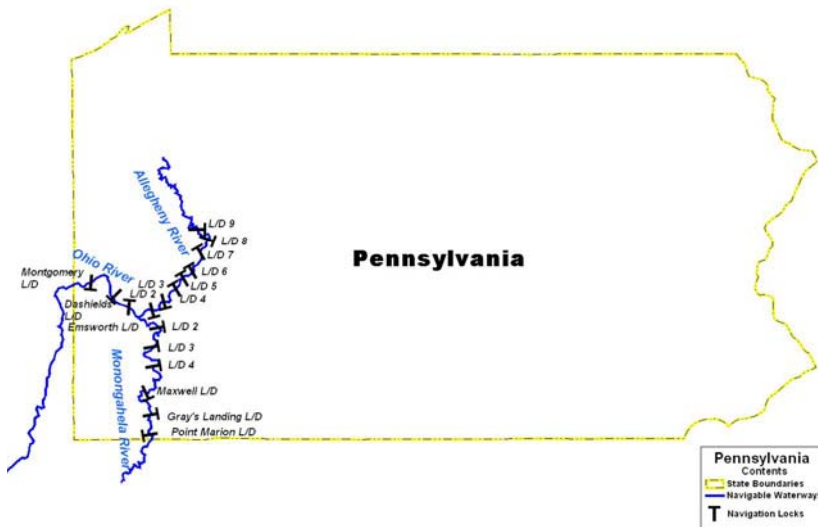
[MAP UNAVAILABLE]

MAP: 1930s RAIL. Many regions stand-out on this 1930s rail map--the high-density in the northeastern states and the Great Lakes/Upper Midwestern states; the low density overall in the West. But the many developing regional webs and centers are very evident.

[MAP UNAVAILABLE]

MAP: 1880 RAIL. Barely two generations earlier, the first Atlantic-to-Pacific link-ups were made. The exact year was 1883. Significant branching out points are in the making—especially around Pacific harbors in California, and Puget Sound; and along river passage points--for example, St. Paul/Minneapolis, on the upper Mississippi; Kansas City, on the Missouri River; Louisville, on the Ohio. And there were important innovations that tied regions closely together, for example, the first refrigerated railcar in 1868.

Also keep in mind that, already by 1910, some of the new lines in the East were inter-urban electrified rail routes. For example, Baltimore to Washington, D.C.; Baltimore to Annapolis. There was the 76-mile Hagerstown-Frederick Maryland system. Grandest of all--the New York Subway, which opened in the 1910s.



MAP: WESTERN PENNA/OHIO RIVER LOCKS AND DAMS. Staying on the matter of surface transport networks, there were the waterways, and their interconnections with rail. Here is shown the upper Ohio River, and the tributaries that form it (the Allegheny, and the Monongahela, and in turn, their tributaries, the Youghiogheny and others).

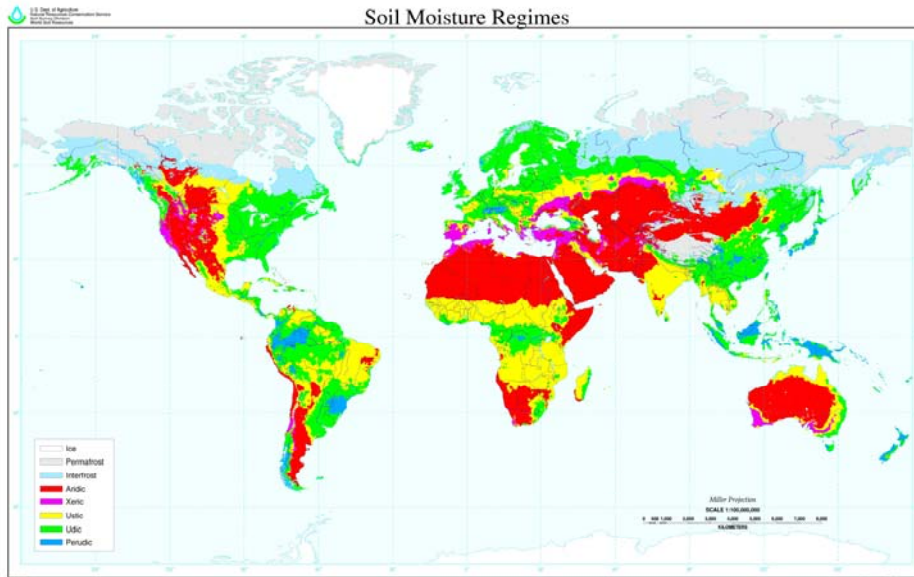
Already by the 1920s, extensive improvements existed. The Ohio was the second biggest cargo-carrier in the nation after the Mississippi (and remains so to this day). The year 1929 was the completion date for a series of 46 locks and dams on Ohio system, some of which you see here. They were done by the Army Corps of Engineers, which had been commissioned in the 1800s, to do just such domestic improvements, in the military logistics tradition of West Point.

Besides navigability, flood control was a major goal, especially in the Ohio Basin and also the Tennessee Basin. Appalachian spring run-off can be sudden and heavy.

In 1927 on the lower Mississippi, an epic flood swept away whole towns. The Army Corps was mandated to work on major water control systems--levees, diversion channels, embankments, etc.

So as of the 1920s, there were transportation (and flood control) developments of note in many locations--{not system-wide} for the most part. For example, two locks and dams had been built on the upper Mississippi between 1913 and 1917. In 1925, the Wilson Dam was completed on the Tennessee, at Muscle Shoals, in Alabama, and so on.

In sum, the combined networks of rail--both steam locomotive, and electrified inter-urban--and waterways amounted to a tremendous web of corridors for development. The gaps stand out; but the process is clear. There were plans and hopes for hemispheric development corridors into Mexico, Central America, and South America; and to the Canadian Northern Territories.



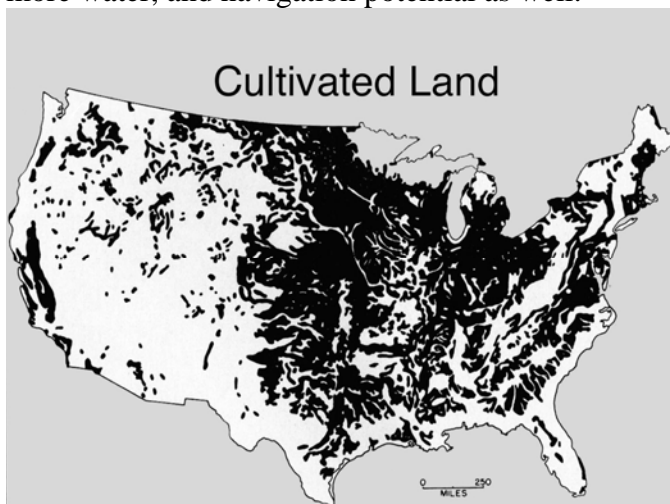
MAP:

WORLD MAP OF CONTINENTS, SOIL MOISTURE. Now to the underlying resource base of land and water. This map shows continents, whose regions are delineated by relative soil moisture--a basic land-use characteristic, bearing on agriculture especially.

What stands out in North America, is the presence of one of the world's largest deserts--known historically as, the Great American Desert. The dividing line for this arid land region, is whether it gets at least 20 inches of rainfall a year. This isoline runs north-south down through the High Plains, showing the red zones to the west.

So the eastern and central states have plentiful water, high soil moisture ratios, and many river networks (and rail).

The West--scarce water; the only major rivers arising out of the high Rocky Mountain chain, are the Colorado, flowing to the southwest, and the much smaller, Rio Grande (Rio Bravo in Mexico), to the southeast. Neither are navigable channels. Farther north, the Columbia--westward, and the Missouri eastward, have comparatively much more water, and navigation potential as well.



**CULTIVATED AREA.** This map shows the pattern of cultivated land, one of the major features of land use, along with forest, permanent pasture, etc.

The cropland area corresponds to what we just saw about the western dry-lands regions. There is a void in the west; extensive croplands are in the central regions, the eastern Piedmont, the Gulf coast, where drainage permits, etc.

As of the 1920s and later mid-20th century, a total area ranging from 350 millions acres to over 450 millions of acres of land were in use for cropping in the U.S. This land use pattern was already established as of the 1920s, and though it goes up and down, has not changed drastically to the present. This is equivalent to over 500,000 sq. miles, or more than twice the entire area of France; or half of Argentina.

What was the question in the '20s, and all along, is 'how productive' can the land be made to be. Water is fundamental, with one's first thought being, irrigation. As of 1900, some 3.7 million acres in the western lands had been irrigated. The vision and work for what later became the great Imperial Valley project, was underway as of the 1860s, to divert some of the lower Colorado River flow, to create a situation for growing 2 to 3 crops a year in the favorable climate.

But provisions for drainage were far more extensive nationally, and vital to agriculture output.



**DRAINAGE MAP, 1930.** By drainage-- you can mean ditches, canals, or even underground pipes. Miles and miles of clay pipes, about 1 ft long and 4 in. across, commonly called, tiles, were laid underground by 3 or 4 feet, every 60 ft, in large areas.

The map shows where things stand as of the end of the 1920s. By then nearly 50 million acres had been drained, including large parts of the swampy upper Mississippi Basin, and lower Ohio, and southward.

Just a generation earlier, much of southern Illinois, Indiana, and parts of Ohio, were still marshlands, with cat-tails, frogs and mosquitoes. But 9 mil acres were drained as of 1900.

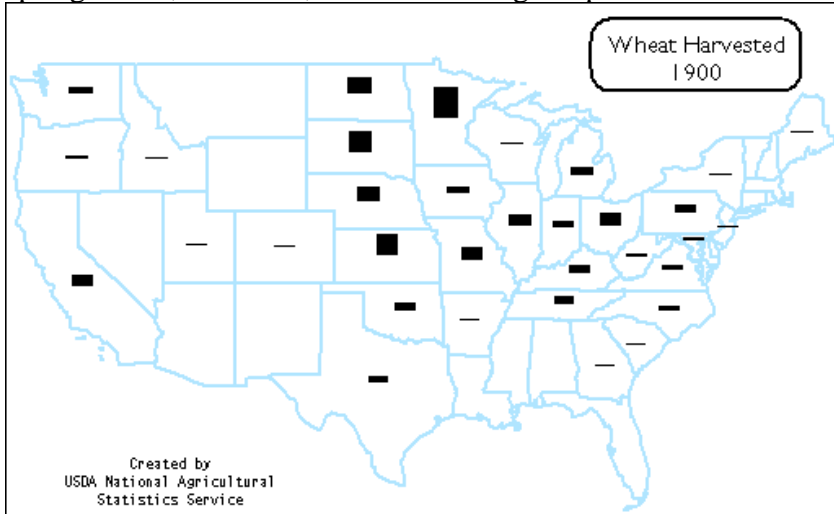
The 1902 Land Reclamation Act pushed forward this whole process, calling for land improvements through irrigation and drainage.

In 1920, a "Census of Drainage" was begun, to map progress. Irrigation area also continued to expand, amounting to 19.5 million acres by 1930.

- Patterns of Agriculture -

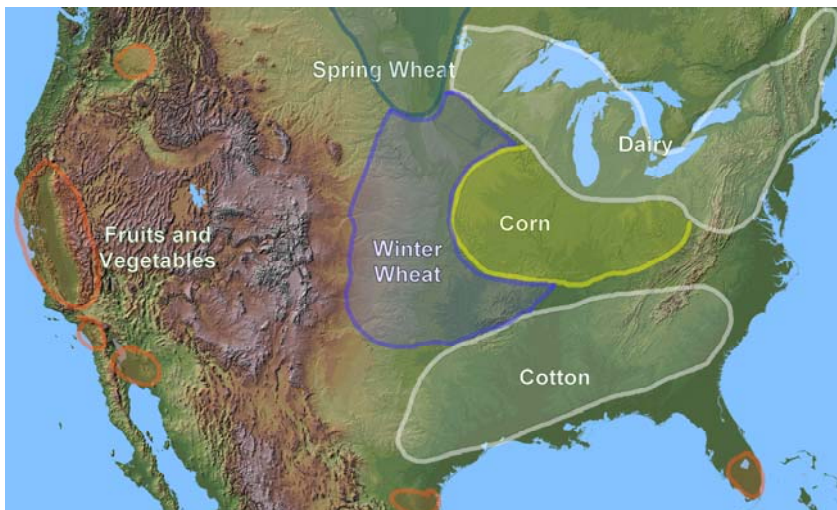
Consider what this all meant for patterns of agriculture--given the combined presence of fertile lands, water and transportation. We take one staple crop--wheat. The Agriculture Department has done 100-year animations of 10 year changes in relative output by state.

Keep in mind one thing about wheat. There's "winter wheat"--planted in the fall, and harvested in the early summer, where the climate is warm enough; or planted in the spring and harvested later in the northern latitudes. Winter wheat is the bread wheat; and spring wheat, or durum, is essential for good pasta.



WHEAT

ANIMATION. Look now at the centers of wheat production emerging, 1910 to 2000.... Kansas for winter wheat. And North Dakota for spring wheat. By far.



MAP OF FARM

SPECIALTY REGIONS. Delineation of various specialty regions that came to emerge over the decades. Look at just one--dairying and hay. Closely settled, very interrelated with cities. Milk went to cities by train.

POWER. In agriculture, as of the 1920s, wind power was still common. And horsepower. [If you visualize an oats output map, by state, you will see it grown all over the country as of 1920s through the 1930s, and then fade out to next to nothing by Y2000]. The critical question, apart from the shift to the internal combustion engine, was electricity.

MAP 1918 HIGH VOLTAGE ELECTRIC LINES. [IMAGE NOT AVAILABLE]  
This is just an indicative factor--high power transmission lines. You see few, and also, a pattern of need in the West, in California and the Northwest, to transmit power from relatively remote place to place. There is next to no electricity in the farm-belt; electricity is concentrated in urban areas.

MAP 1933 HIGH VOLTAGE LINES. [IMAGE NOT AVAILABLE]  
You see the growth during the 1920s, but the rural areas were conspicuously left out. In most rural states, only maybe 2 percent of farms were electrified. Those were the ones happening to be near towns, for example, in Ohio, near Cleveland. Remember, that the Morgan and related financial cartel interests which owned electric companies, bitterly refused to supply outlying areas, and fought any government regulation that would mandate this kind of public service.

But focus on the patterns of high density electricity areas. Overlay this in your mind, with rail, waterways, and other factors, including human skills and urban culture-- here you will see the industrial concentrations. Growth of industry occurs in tandem with agriculture and infrastructure-building generally.

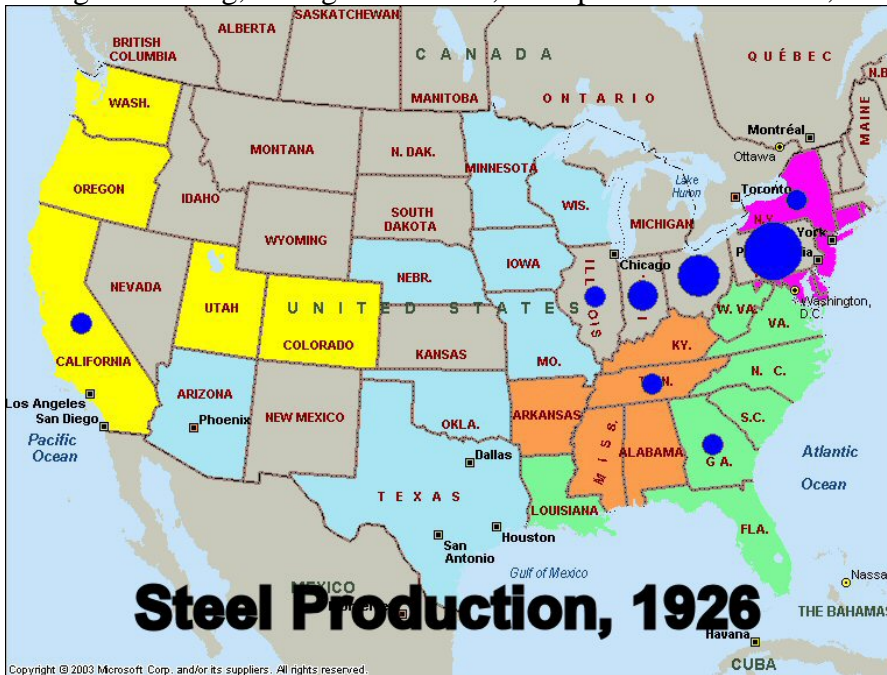
- Manufacturing Concentrations -



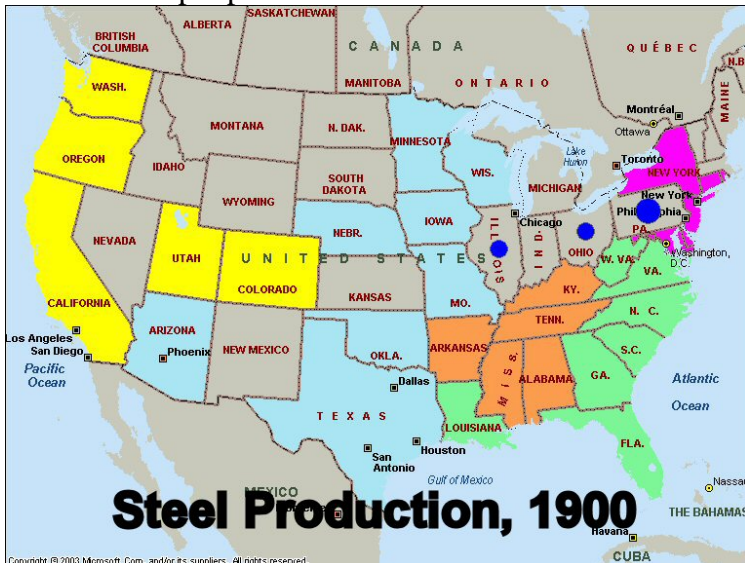
MANUFACTURING AREA BOUNDARY MAP. Core region as of 1920s. Highest ratios of power--electricity, waterpower and steam; water itself, skilled know-how, in the nation, and compared to most parts of the world. Also relevant are the presence of needed minerals and other inputs, or access to such supplies by transportation. We are not mapping that here today, but it is an important part of the picture.

The region shown here is not, of course, continuously industrialized, but the boundaries indicate the area in which the largest manufacturing centers and belts are

concentrated, from light-processing, to heavy metals and machine-building. For example, the Birmingham, Alabama, steel complex; the textile centers at the fall lines along the eastern seaboard; and the mighty heavy manufacturing centers, such as Pittsburgh, through Wheeling, through Cleveland, and upwards into Detroit, etc.



MAP CENTERS OF STEEL 1926. steel rail, farm machinery, and other needs for growth. This map shows relative size of annual raw steel output. As of 1914, this one triangle region--from Pittsburgh to Cleveland and Wheeling, WVA supplied 2/3rds of all U.S. steel output produced.



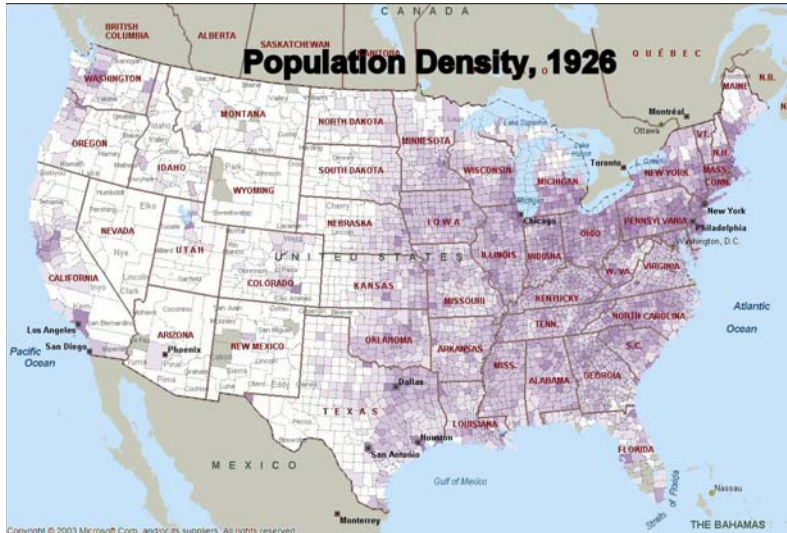
MAP STEEL 1900. The earlier phase of the same "Triangle" is evident. This pattern arose from strategic advantages--access to coking coal, iron ore, etc.

Also the "Pittsburgh Plus" system contributed to the persistence of the pattern. A customer ordering steel from any other region in the country, for example, if you were in

Davenport, Iowa, and ordered steel from Chicago, had to pay freight rates f.o.b. from Pittsburgh. This "Pittsburgh Plus" system was discontinued in 1924.

- Population, 1920s -

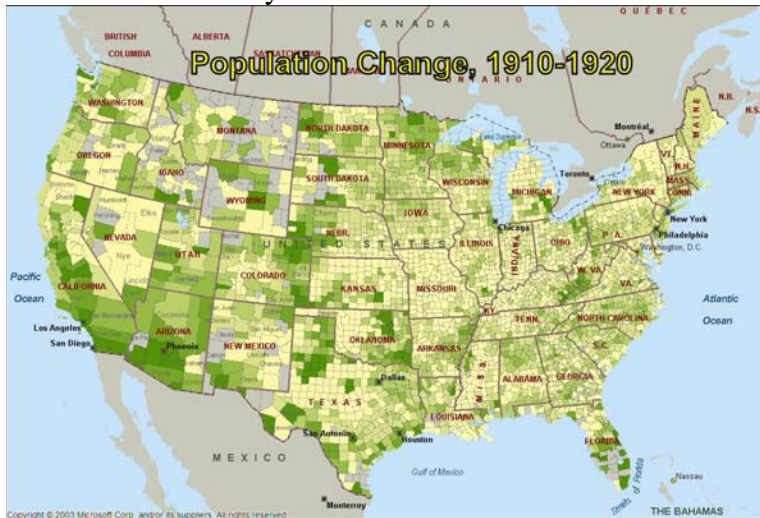
To SUM UP--



### POPULATION

DENSITY 1926. As of this year, the U.S. population was in the range of 117 millions, and the pattern of where people lived is shown in this density map, by county. The Pacific West has settlement density, but otherwise, the eastern states are most populated, with the dry and mountainous Western states very little settled.

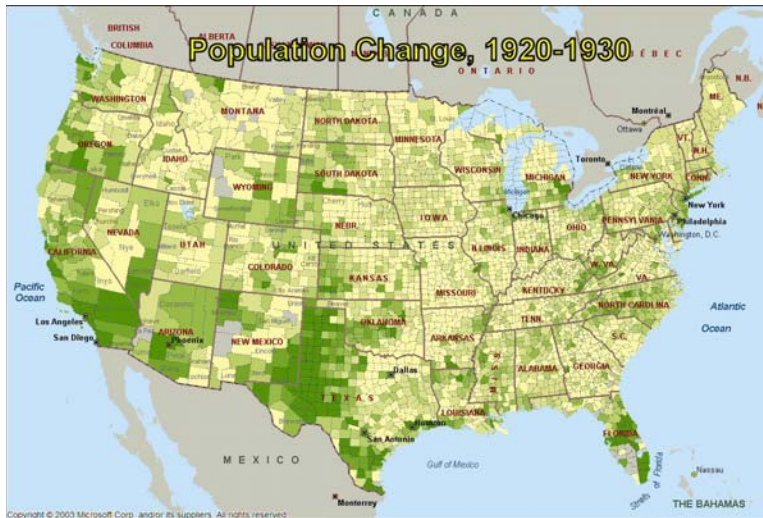
Some of the dynamics--



POPULATION CHANGE, 1910-1920. This map shows the counties where population was increasing or decreasing (and relative shading for the rate of change), over the decade. Again, the Pacific West and certain centers in the West are growing, but also evident, are population increases in both the Great Plains counties, and in the industrialized belts, where immigrants were streaming in. For example, many



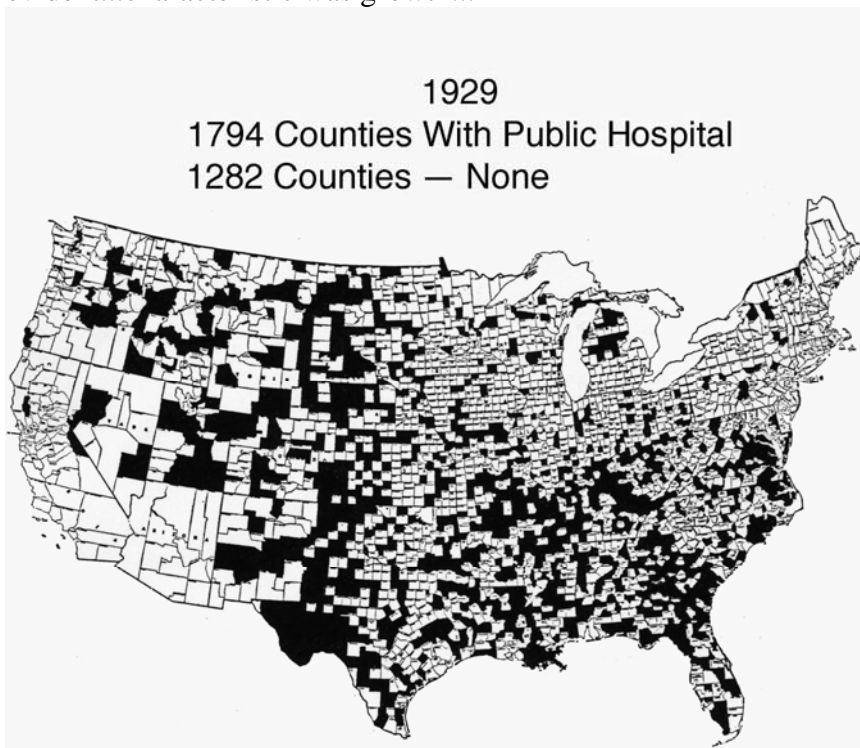
Scandinavians were coming to the Dakotas and Minnesota; and mass waves came to the steel belt from Poland, Serbia, and other parts of Europe, etc.



POPULATION CHANGE, 1920-1930...

Farm counties were growing on the Plains; cities were increasing; the Pacific coast region was growing. Immigration continued.

We keep in mind that there were deep problems. President McKinley had been assassinated in 1900, and a string of evildoers came into office, like Teddy Roosevelt, and the KKK-loving Woodrow Wilson. But the advance in infrastructure is evident...characteristic was growth...



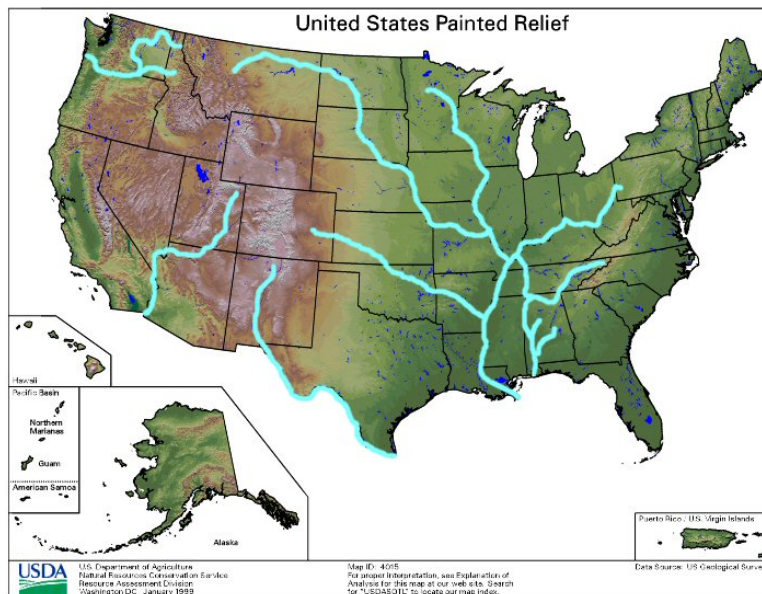
1929 HOSPITALS, BY COUNTY. We've been looking at hard infrastructure. Map of 1929 public hospitals. The black-toned counties: no community hospital at all— amounting to 1235 out of 3,076 counties. Others did--which you see in large parts of the industrialized region. Much work to be done. (This map is the ninth such survey published by the American Hospital Association.)

But moving on, recall that this decade we have talked about, was not called, the "Roaring Twenties..." for nothing. Speculation of all kinds was growing to the break point, hitting agriculture counties hard all through the '20s, then erupting in a 1929 crash and Depression process.

- FDR YEARS -

We now look at-- THE FDR RESPONSE...

Unprecedented, deliberate development of infrastructure.



MAP RIVERS. Begin again with the terrain and rivers—

Much work had already been done on the central core of the nation--flood control on the lower Mississippi; the Ohio system was in use already, etc. Huge drainage of the river lowlands...See how this all formed a wide central corridor...

But what happened now, was an unprecedented effort to carry out these improvements in a coordinated way, and from the principle of man-created "natural" resources. (As in line with the conceptualization of Vladimir Vernadsky).

In 1936, Flood Control Act, mandated the Corps to act nationally.



FOUR CORNERS MAP. Rivers projects. FDR campaigned on this idea in 1932, of developing the major rivers in the four quadrants of the nation. Multi-purpose: water supply and power, in the case of the Colorado, not navigation. Water supply and navigation, and power in the case of the Columbia and Snake River Basins. St. Lawrence--fabulous navigation, and power; the TVA--everything, PLUS literally the creation of terrain--farmland; and homebase to nuclear power.

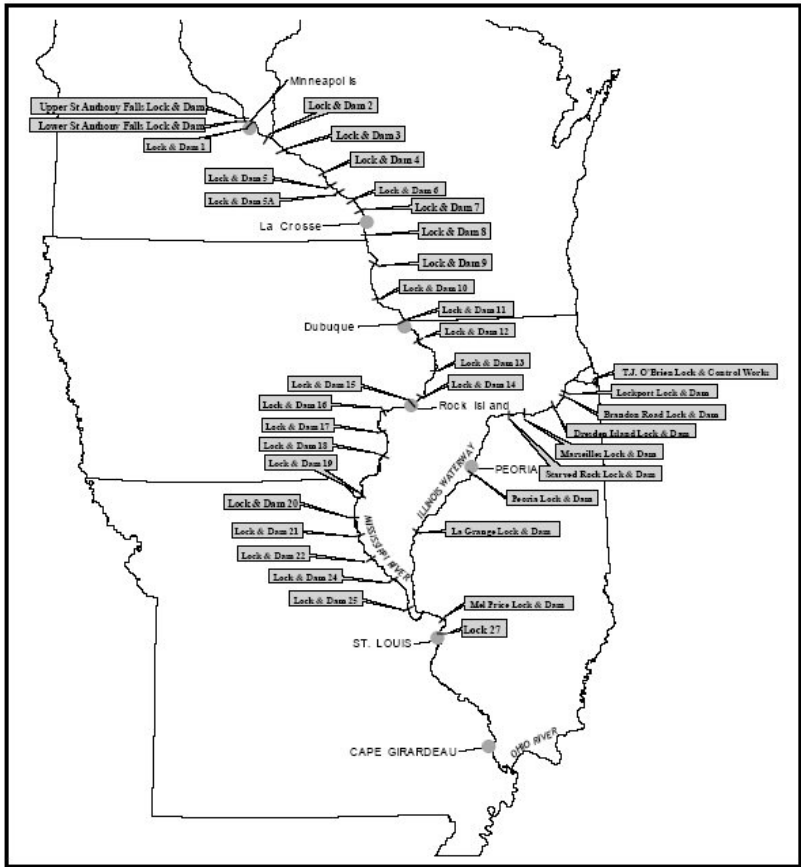
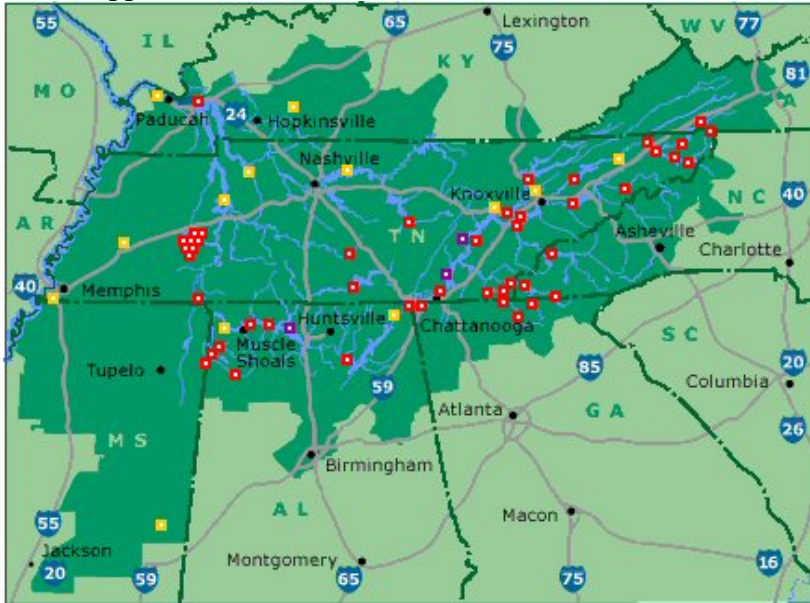


Figure 1-1. Upper Mississippi River-Illinois Waterway Navigation System.

MISSISSIPPI MAP

UPPER

This system of 36 locks and dams got underway in the 1930s..1933 to 1939 7 locks and dams on the Illinois River. 1930 to 1950 29 locks and dams on the Upper Mississippi

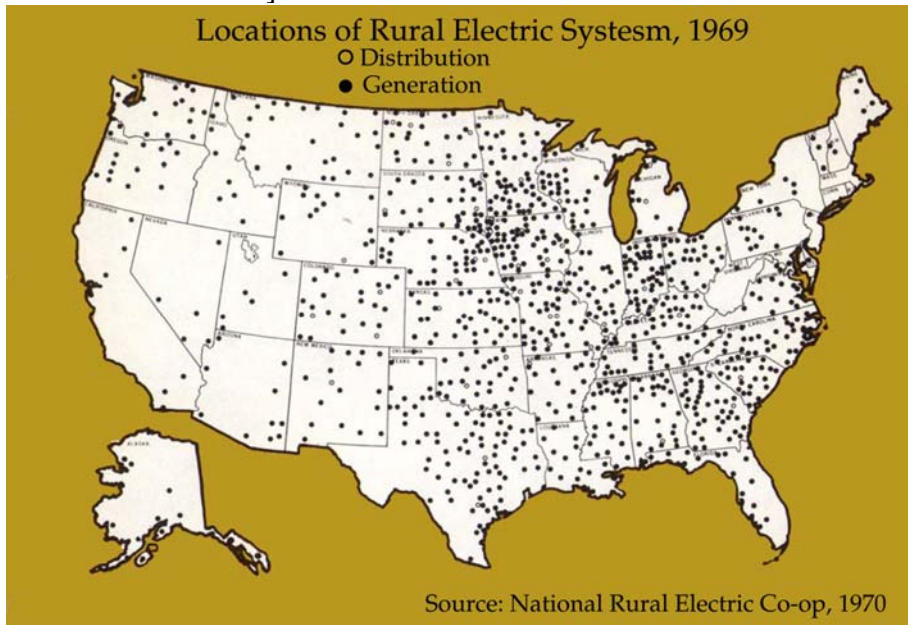


TVA MAP--Here you see the counties of the Tennessee Valley Authority, a transformation of the multi-state area. Power. Begun in 1933. By 1944 were built 20 hydro-dams. The Fontana Dam built only in 18 months (there was an innovation to speed up curing the concrete). 1933 to 1943 per acre yields of crops tripled in the TVA region. Contour farming, and terracing, and other improvements literally created new farmlands. Fertilizer applications and other inputs were brought into use. (During World War I, the Tennessee Valley saw the construction of two nitrate plants).



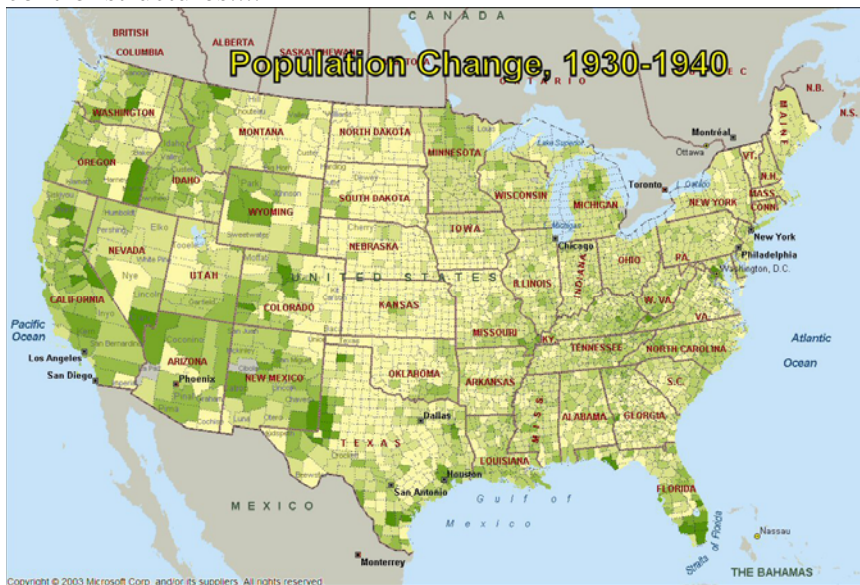
COLUMBIA RIVER. Irrigation inland. Vast new power. Grand Coulee and Bonneville and other dams. Irrigated wheat in the eastern parts of the state produced very high yields. Fabulous power. One marker of this upgrade process was the new aluminum industry. Highly electricity-dependent. Eventually 35% of the entire U.S. aluminum output came to be centered in the Bonneville area, because of the electricity from hydro-power. In the TVA region Alcoa built 4 dams--Aluminum Corp of America.

[Not shown here, but the Colorado River Basin was fully harnessed. The Hoover Dam had been started in 1931, but the Basin system-wide development was carried forward under FDR.]



MAP RURAL ELECTRIFICATION. In 1935, the REA began, and over a little more than one generation, from 1936 to 1969, the percent of farms with electricity went from 2% to 98% in nearly every county in the nation.

Also Works Project Administration teams built hospital facilities, schools, flood control structures....



POPULATION MAP 1930-1940. Patterns. Many dynamics are evident, in this map of where counties were growing, or losing, population. There was Dustbowl migration--exodus from counties struck by Roaring Twenties and then drought. People left Oklahoma for California. Cities too were stricken by unemployment and

impoverishment after the speculative binge of the Roaring Twenties. Only the West, New York and some locations continued to see population growth.

But the FDR policy impact not only countered all this kind of dislocation, it created literally new resources--new water, new lands, new river channels, for vast population growth potential in the near future....

World War II Mobilization. The results of the FDR policies are to be seen in the vast output increases during the War. Industrial output doubled from 1939-1944. Unprecedented output of materiel. Aluminum industry tripled; steel likewise; farm output too. Some markers: In 1938, 34,000 machine tools were produced; in 1942, there were 307,000. Workers in manufacturing plants, grew from 10 million to 16 mil, even while troops were in military service.

Then, 1945, following FDR's death, came open and intense opposition to the very principle of national-interest economic development. One example, occurring over the summer of 1945. A bill was drafted called the, "Industrialization of the South", by a grouping including Sen. Lister Hill (D), one of the fathers of the TVA, and Henry Wallace, in 1945 Secretary of Commerce (previously FDR's Vice President, and 2-term Agriculture Secretary). They pressured Sen. Bailey to introduce it before the summer recess. The bill was blocked, and never even made it to be submitted in Congress.

So what you could call the continuation of the New Deal, and the mapped out improvement projects, was contested and partial. We take a short look at the situation, as of mid-century.

Staying with Sen. Lister Hill, there was the 1946 Hospital Survey and Construction Act, co-sponsored with Sen. Harold Burton (R) of Ohio. Only a 9-page Act, which saw to the provision of a public hospital in every county, at set ratios of beds per thousand persons.

Continuation of water improvements--

Upper Mississippi; Upper Missouri; and plans to upgrade the 50 year old Ohio system, which by the 1950s, was showing some age-fatigue in its structures, and also had locks that were too small for the larger barge tows coming into use.

## LAND AND WATER.

After the war was the time to get back to basics--in terms of the challenge of the continent--the Great American Desert. Over the course of the War, and from returning soldiers, people streamed into California. There was the aircraft industry, agriculture and food processing, and many more activities.

## NAWAPA MAP

Here is the North American Water and power Alliance concept. As of the California hydrologists were looking long ahead. Even with full harnessing of Colorado River, there was not enough water for expected growth and to share with Mexico. Under

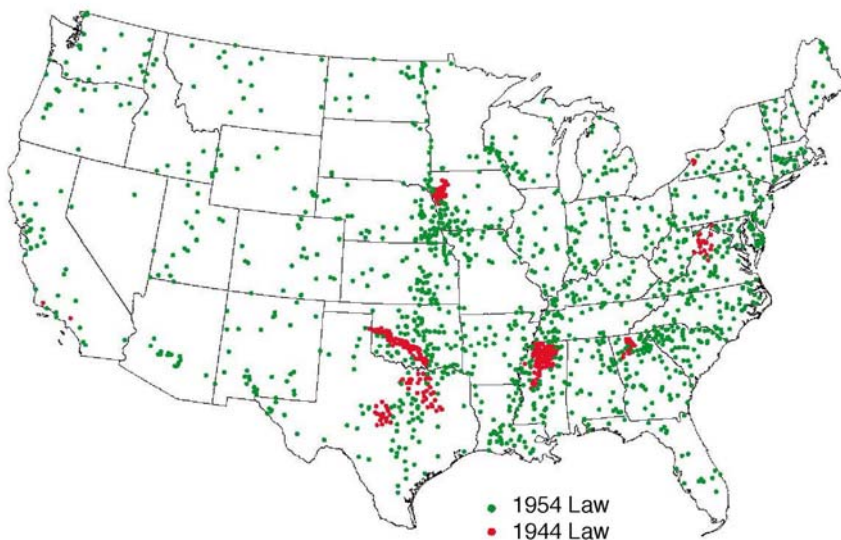
FDR, a 1944 treaty was arranged to share the Colorado and the Rio Grande (Rio Bravo) with Mexico. But it was obvious that there was a need to create new resources.

Looking at the continent as a whole, where there were vast potentials from gains from river impoundment were to the north. With inter-basin transfers, more water could be provided. It was anticipated that there would be well over 300 million people in the USA as of year 2000; and a need for over 550 billion gallons of water a day. Whereas, only some 515 billion was the "natural" resource base of what hydrologists call, "reliable available" water. Energy is key.

Atoms for Peace was furthered under Pres. Eisenhower. Not only internationally--with Detroit Edison engineers visiting Iran and Egypt, to discuss vast new electricity for Southwest Asia and Africa; but domestically there were great plans. In 1956 in Shippingport, Pennsylvania, the first commercial, utility-owned nuclear power plant was opened (by Allegheny Power or Duquesne Power). The prospect of nuclear power opened up the national map for vast population expansion in second half of the century.

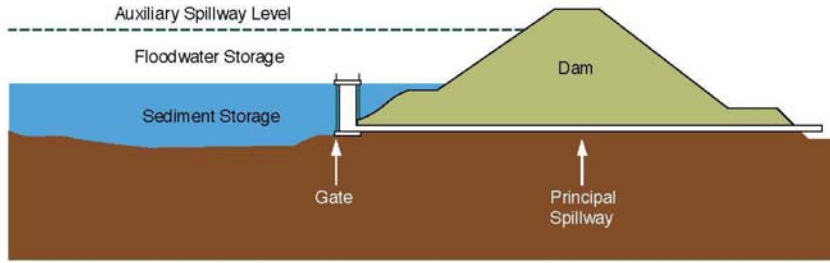
In tandem, with this, is the technology for nuclear-powered desalination. A Federal Office of Saline Water was created in the Interior Department, to conduct R&D in the Southwest to desalt seawater and brackish inland waters.

### 10,000 Small Upstream Dams



MAP--10,000 SMALL DAMS. Meantime, the entire national land inventory was being changed. Two laws, 1944 and 1954, for reclamation, furthered 10,000 smaller scale dams and related improvements in the upper, smaller watersheds. This was done under the aegis of the U.S. Agriculture Department, in partnership with local entities of all kinds. Vast improvements in flood control, drainage. Terracing. Creating natural resource base.

## Flood Control Dam



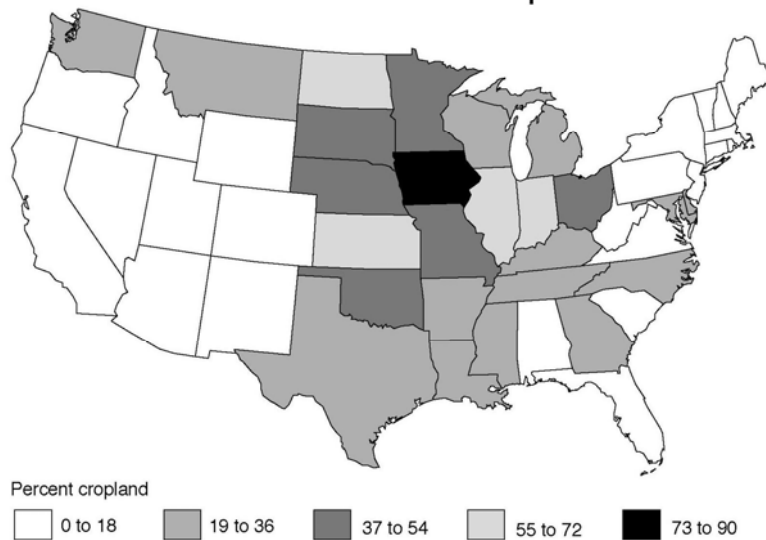
SMALL DAM

SCHEME. Collects silt, etc.



1980 DRAINAGE MAP. Drained area. As a result, by 1980, some 110 million acres--just under one-third of the cultivated area, was drained. (45 million acres irrigated--mostly in the West). California came to lead the nation in miles of drains and irrigation systems; rice areas in Arkansas and along the Mississippi...

## Percent of Area in Cropland





IOWA MAP. But for total area under cultivation, the state of Iowa is a phenomenon. Between 75 and 90 percent of its total area is cropland. Some translate its Indian name to mean, "Land between the rivers." The state is bounded on the West by the Missouri, and the Mississippi on the east. In some northwestern counties, 30% have underground pipes, called tiles.

Overall, the yields from the existing land-area saw fabulous improvements post-war. Fertilizers (TVA); seeds. Wheat went from 13 bushels per acre 1920 to 30, to 42 today.

Agricultural population patterns. Overall, there were 26 persons living on farms per every 100 U.S. households in 1960. [Today--3]. On-farm people were not just "sowing and reaping," but were tending to improvements in land and water base, etc.

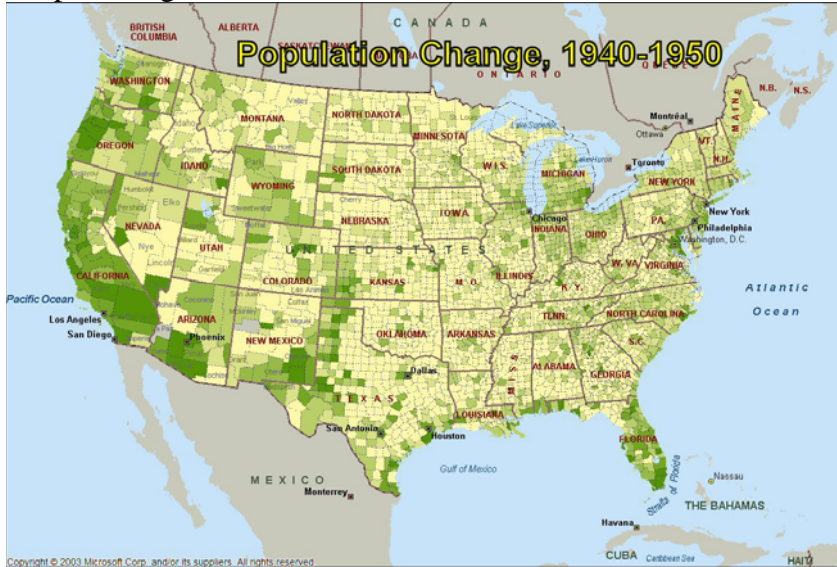
### TRANSPORTATION



TENN-TOM MAP. TVA was connected to the Gulf of Mexico through Mississippi and Alabama, out through Mobile. Opened 1985

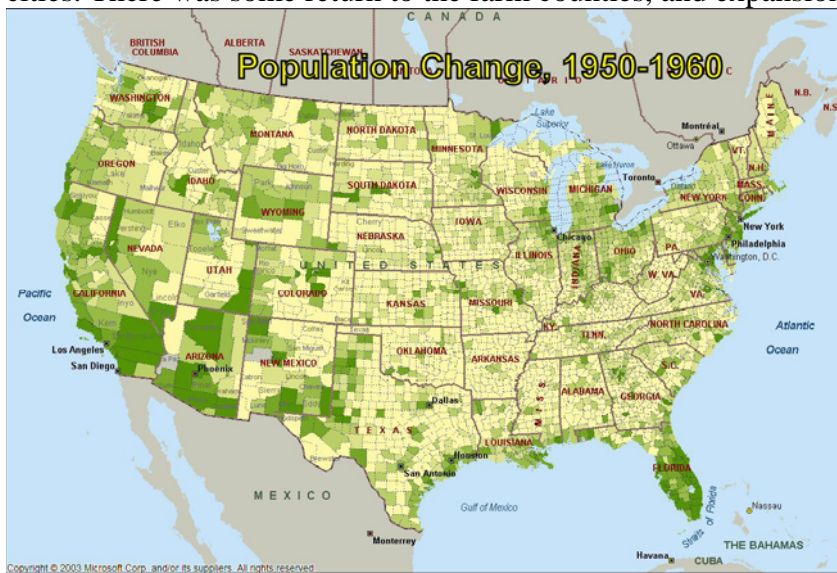
Ohio River waterway upgraded down to 20 main dams; some with 1200 foot modern lock chambers, as at Louisville, Kentucky. Not 600 feet.

RAIL--shrinking grid; we don't show that here. But During World War II, Army Corps of Engineers laid out the entire route for an Alaska to USA rail line.



### POPULATION PATTERNS

1940 to 1950. After the war, many returning soldiers went to Western or other cities. There was some return to the farm counties, and expansion.



1950 to 1960. These patterns continued. More development in both the farm and industrial counties.



KENNEDY PHOTO 1961

Pres. Kennedy, elected in 1960, spoke of the next decade.

May 25, 1961 Joint Session of Congress. "I believe this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the Moon and returning him safely to Earth." (July 20, 1969, Neil Armstrong set foot on the Moon).

Aug. 17, 1962 New Missouri River Dam in South Dakota. Oahe.

**"And this dam and others like it are as essential to our national strength and security as any military alliance or missile complex..."**

**President John F. Kennedy  
Aug. 17, 1962  
Dedication of Oahe Dam on  
the Missouri River**

QUOTE SHOWN. And this dam and others like it are as essential to our national strength and security as any military alliance or missile complex..."

Aug. 20, 1962, 25th anniversary of the Bonneville Power Authority on the Columbia Basin. "When you help build a region, you help build your nation."

May, 1963. Celebration of TVA 30th birthday.

Sept. 1963. Washington state, for groundbreaking for the Hanford nuclear plant. Kennedy used the expression, "Nuclear plowshare," for the economic development to come.

On Nov. 22, 1963, Pres. Kennedy was assassinated.

- end -