



# Projection

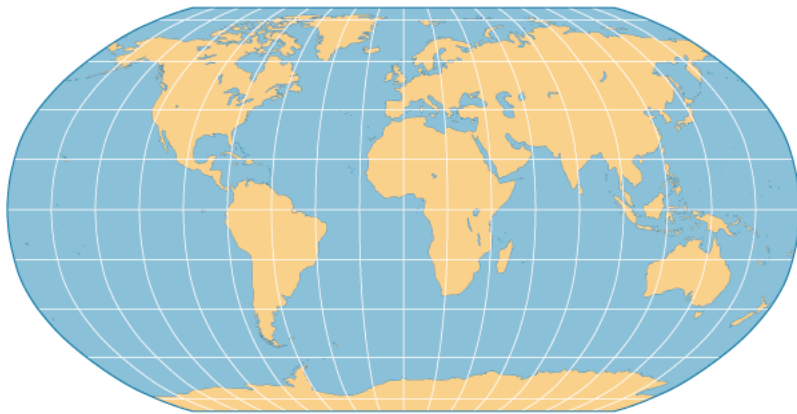
- The method of transferring location on Earth's surface to a flat map is called projection.
- Earth's spherical shape poses a challenge for cartographers because drawing Earth on a flat surface unavoidably produces distortion.



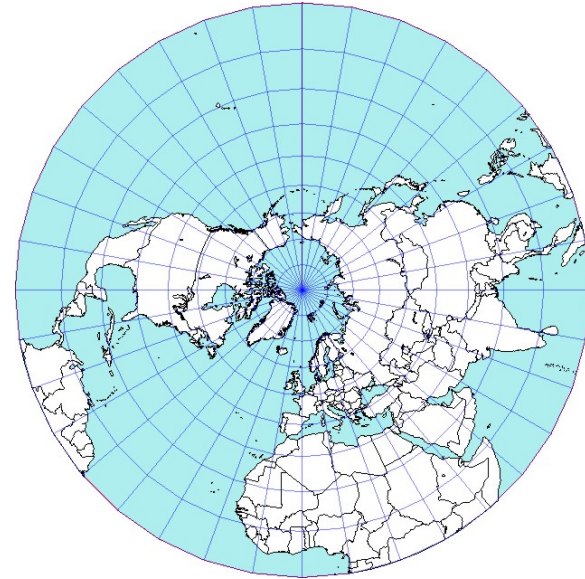
# Distortion

- Four types of distortion
  - Shape
  - Distance
  - Relative size
  - Direction between points

# Examples of Map Projections



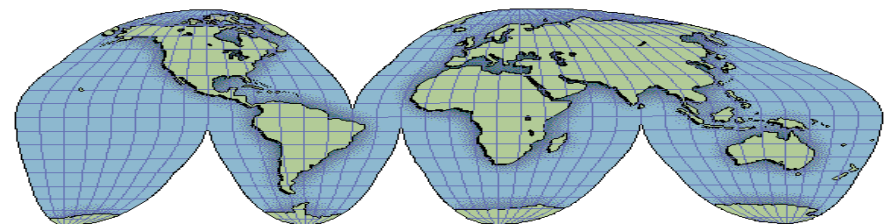
Robinson Projection



Azimuthal Projection



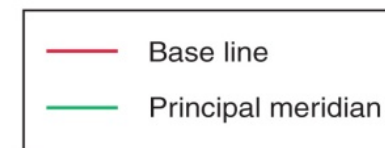
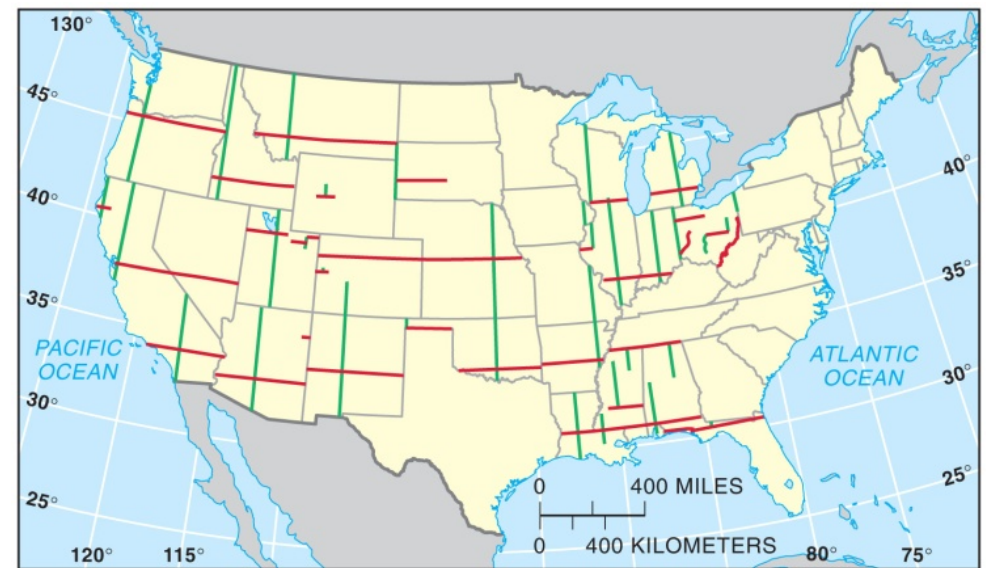
**Mercator Projection**



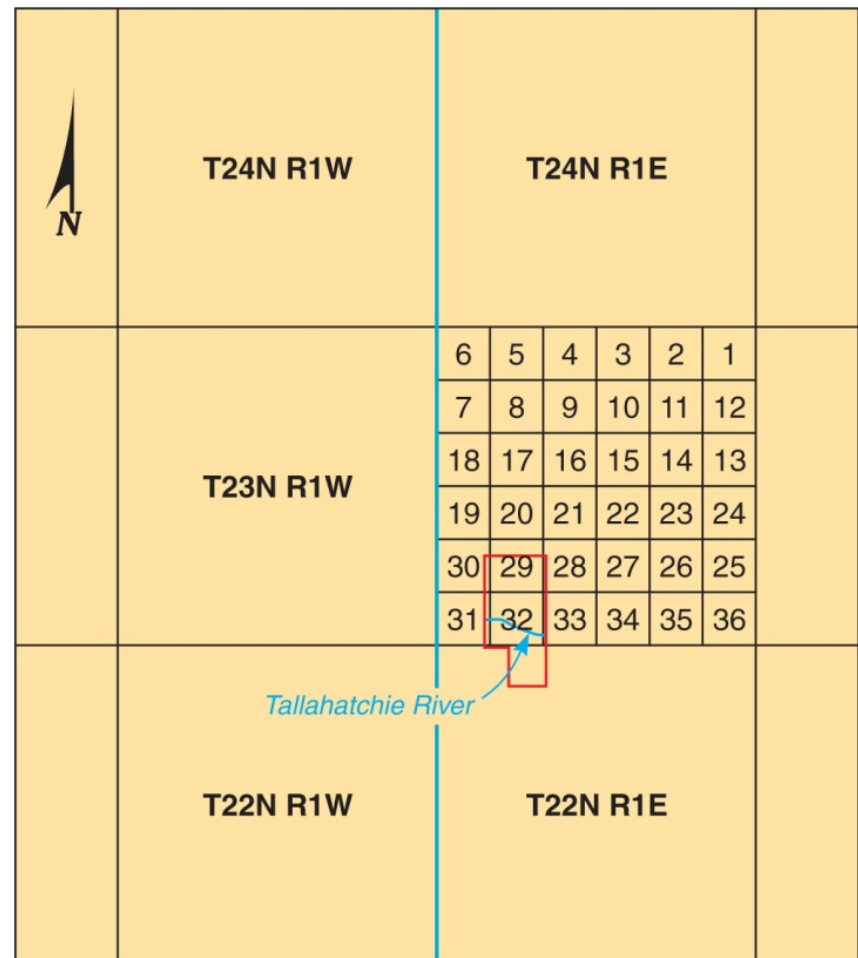
Goode's Interrupted Projection

# US Land Ordinance of 1785

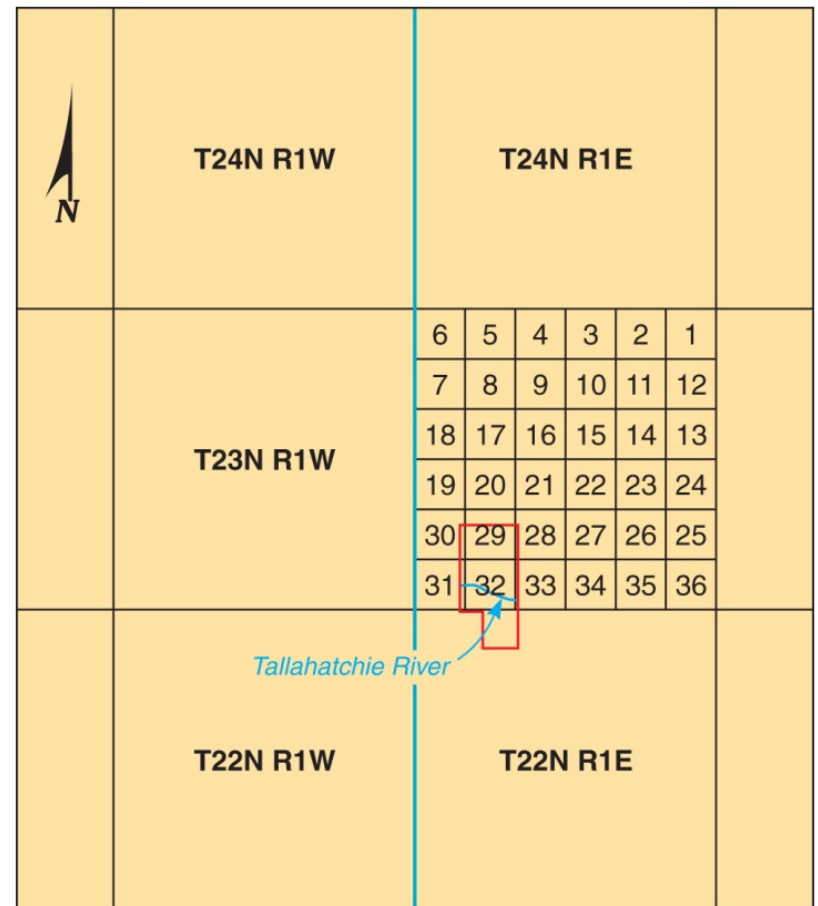
- The Land Ordinance of 1785 divided much of the country into a system of townships and ranges to facilitate the sale of land to settlers in the West.
- A township was 36 square miles .
- Some of the north-south lines separating townships were called principal meridians and some east-west lines were designated base lines.



- Each township had a number corresponding to its distance north or south of a particular base line.
- A second number, the range, corresponded to its distance east or west of a principal meridian.



- Each section was divided into four quarter-sections, which were  $\frac{1}{2}$  mile by  $\frac{1}{2}$  mile, or 160 acres. That was the amount of land many western pioneers bought as a homestead.

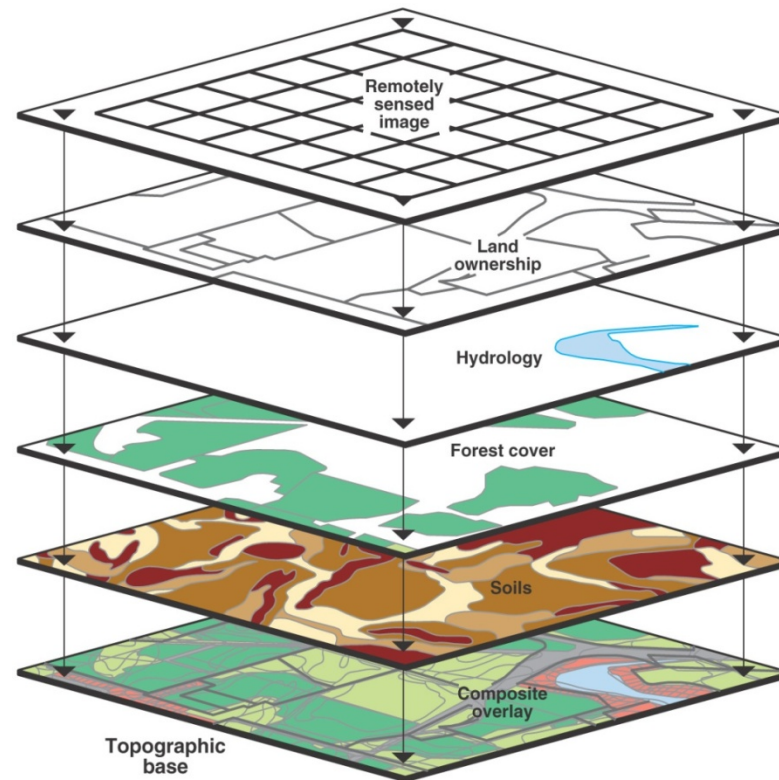


# Contemporary Tools

## GIS

- A geographic information system (GIS) is a high-performance computer system that processes geographic data.
- Each type of information (topography, political boundaries, population density, manufacturing, etc.) is stored as an information layer.
- GIS is most powerful when it is used to combine several layers, to show relations.

# Layers of a GIS



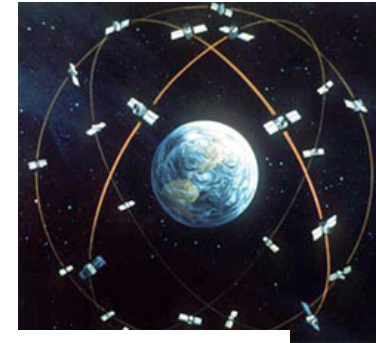
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Fig. 1-5: A geographic information system (GIS) stores information about a location in several layers. Each layer represents a different category of information.

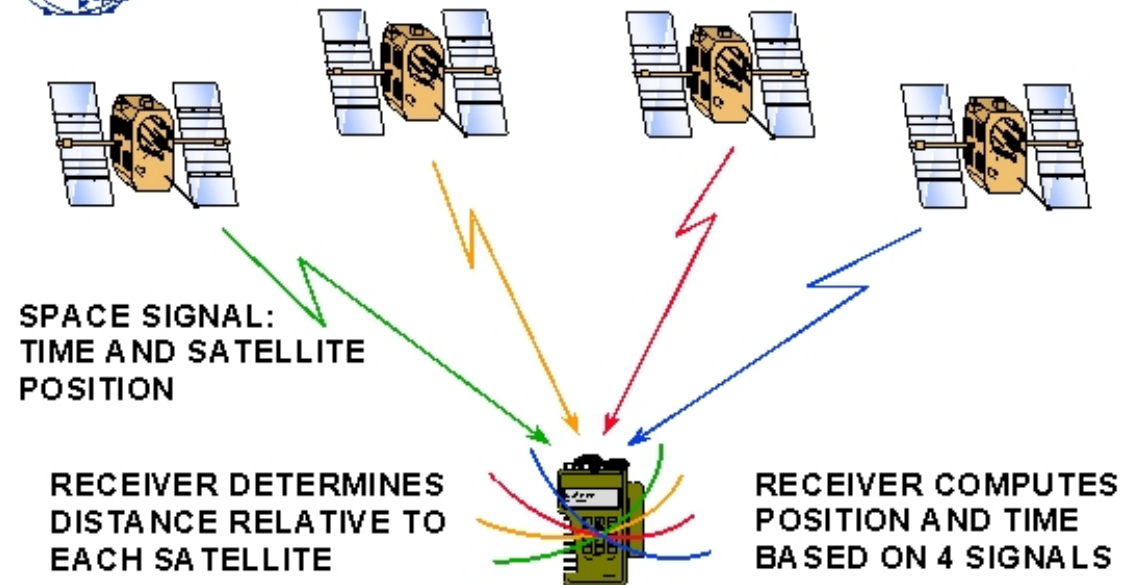




# GPS



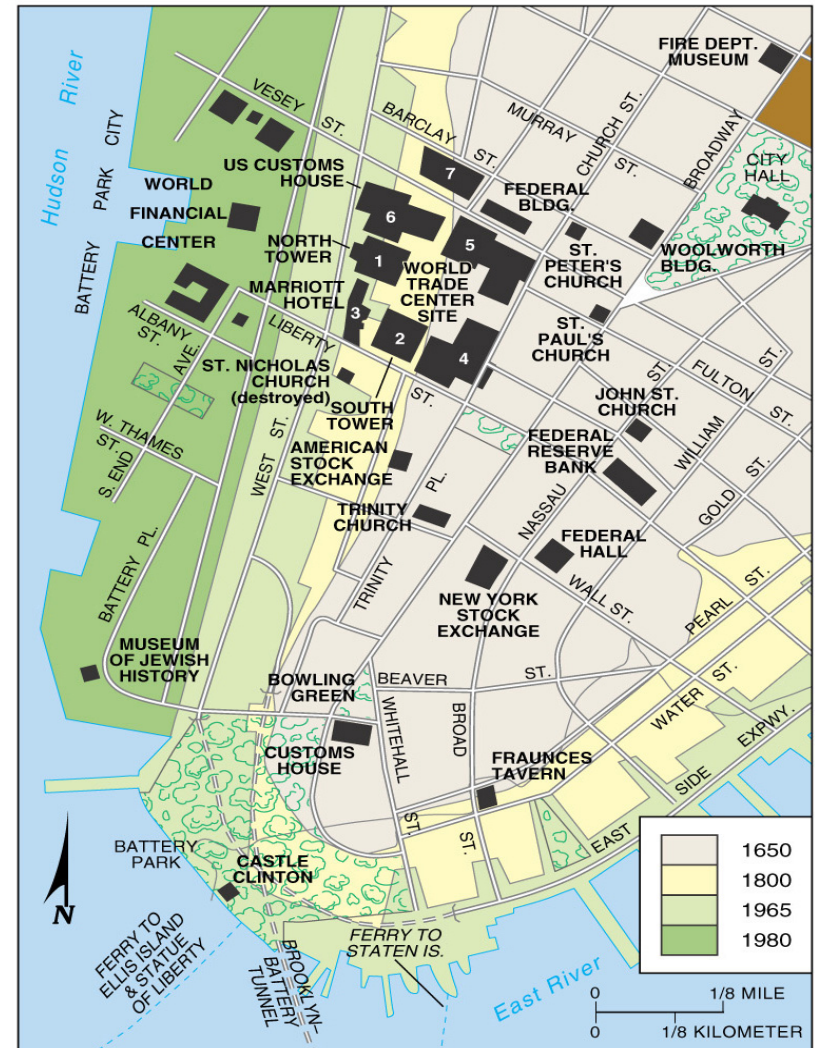
## HOW DOES GPS WORK?



**DISTANCE = TIME OF RECEIPT LESS TIME OF TRANSMISSION**

# Site vs. Situation

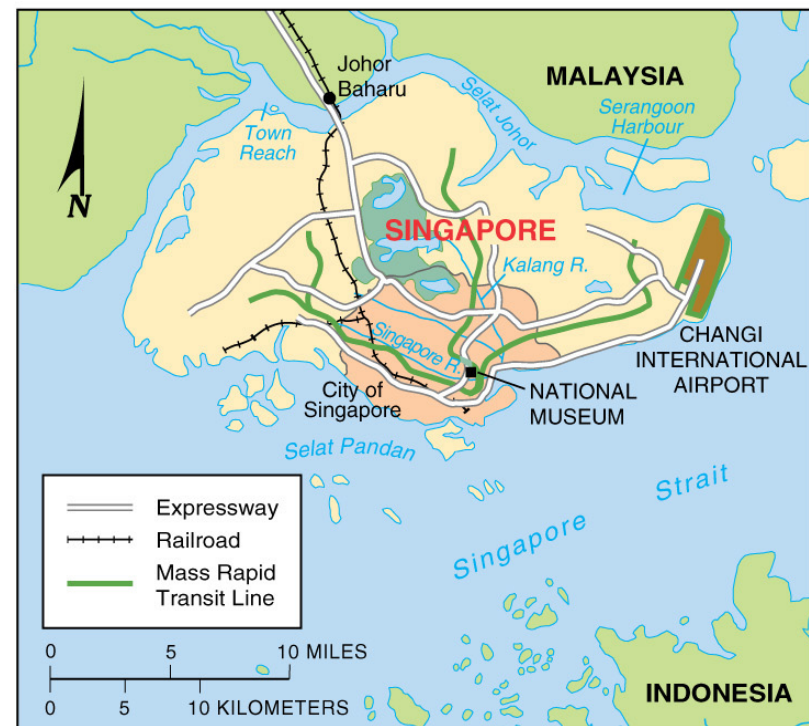
## Site: *Lower Manhattan Island*



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Fig. 1-6: Site of lower Manhattan Island, New York City. There have been many changes to the area over the last 200 years.

# Singapore Situation



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Fig. 1-7: Singapore is situated at a key location for international trade.

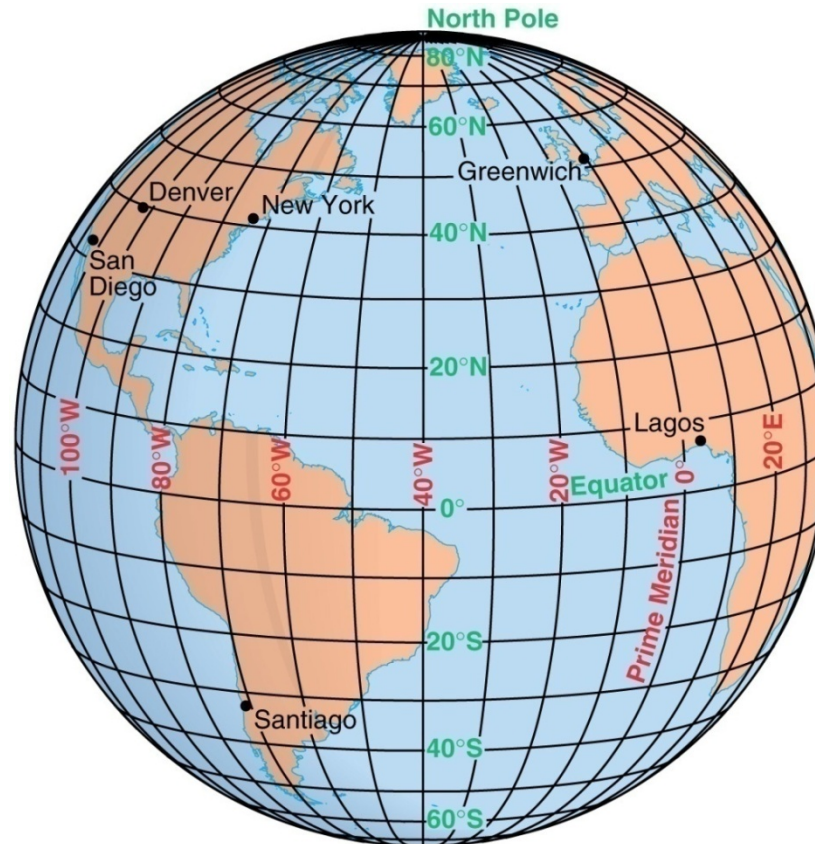
# Djibouti



# Pakistan



# World Geographic Grid



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Fig. 1-8: The world geographic grid consists of meridians of longitude and parallels of latitude. The prime meridian ( $0^{\circ}$ ) passes through Greenwich, England.

# World Time Zones

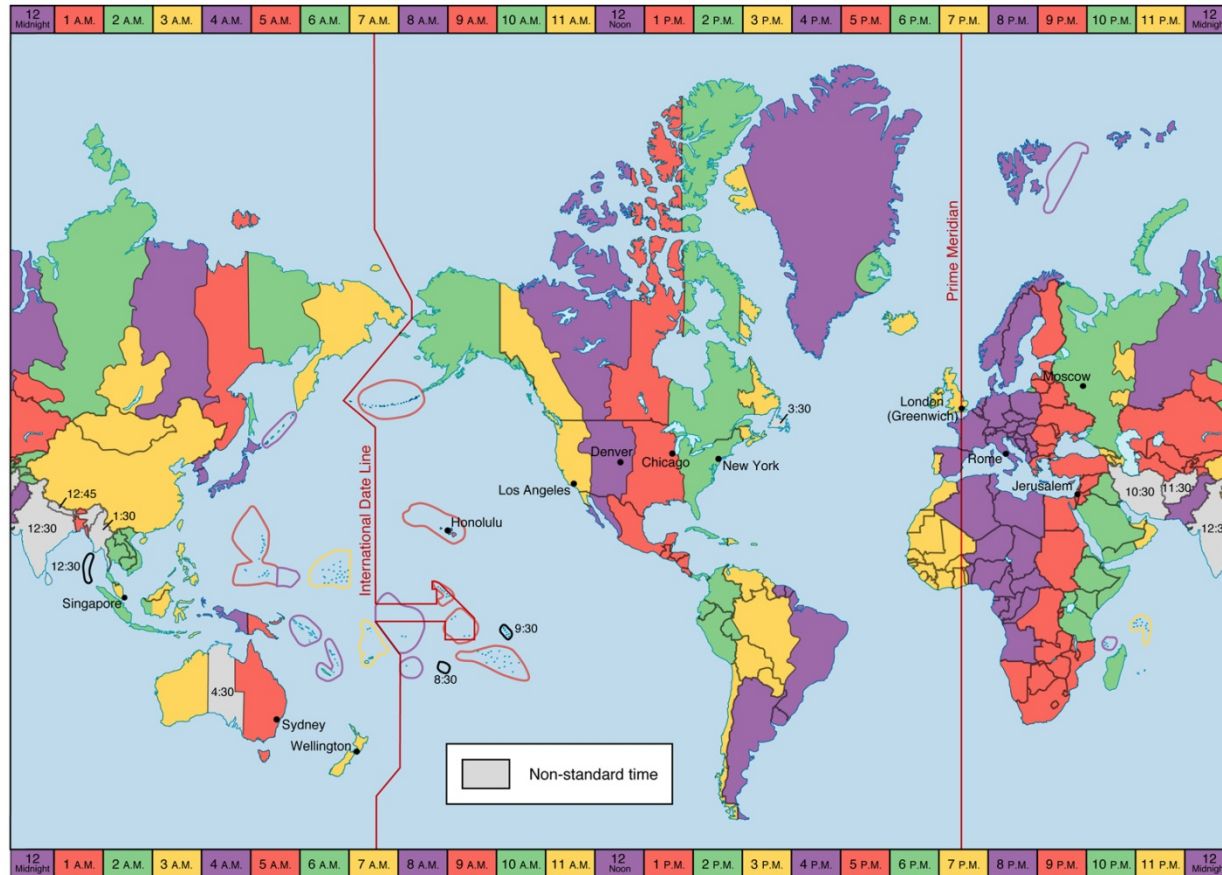
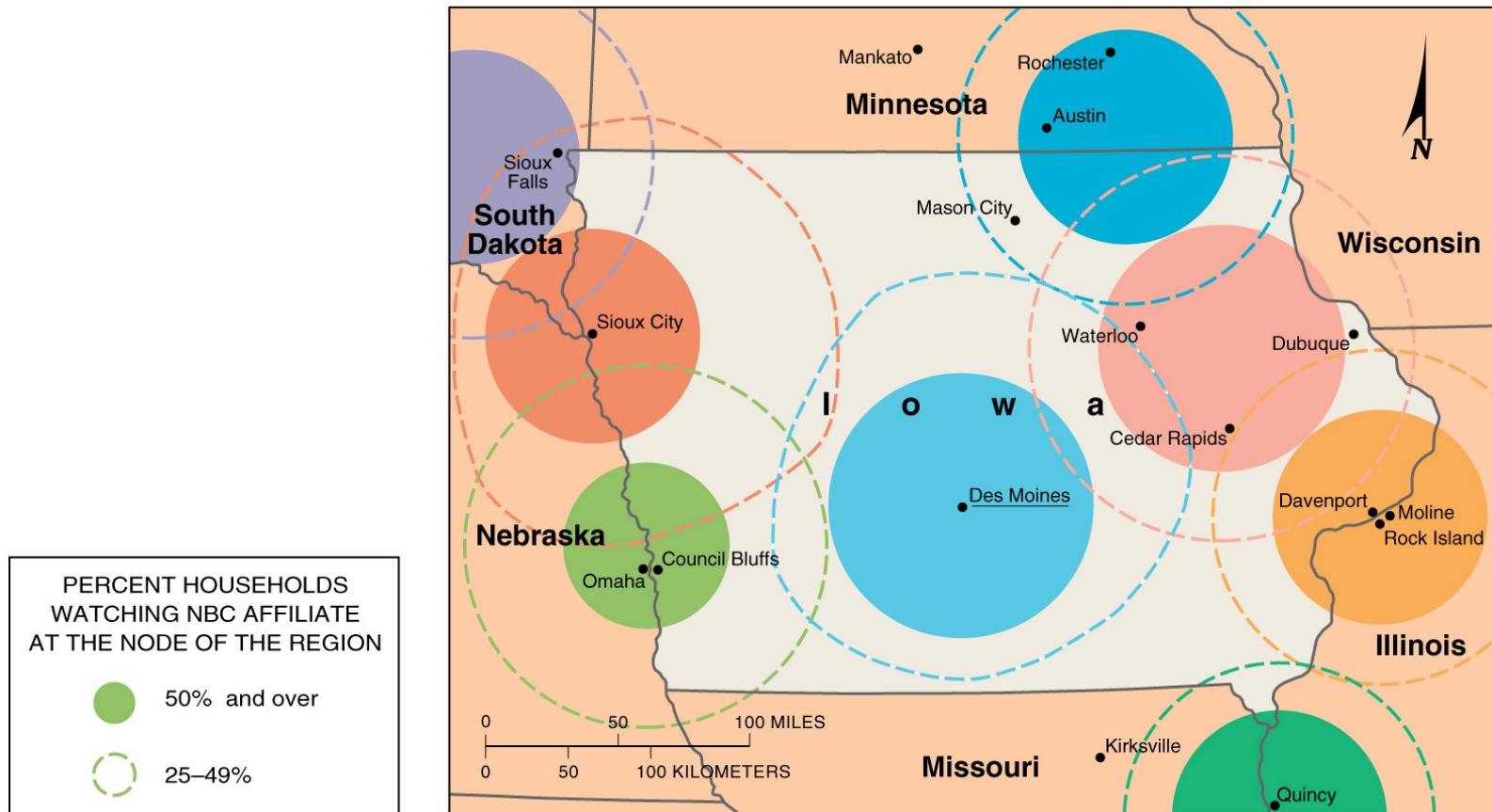


Fig. 1-9: The world's 24 standard time zones are often depicted using the Mercator projection.

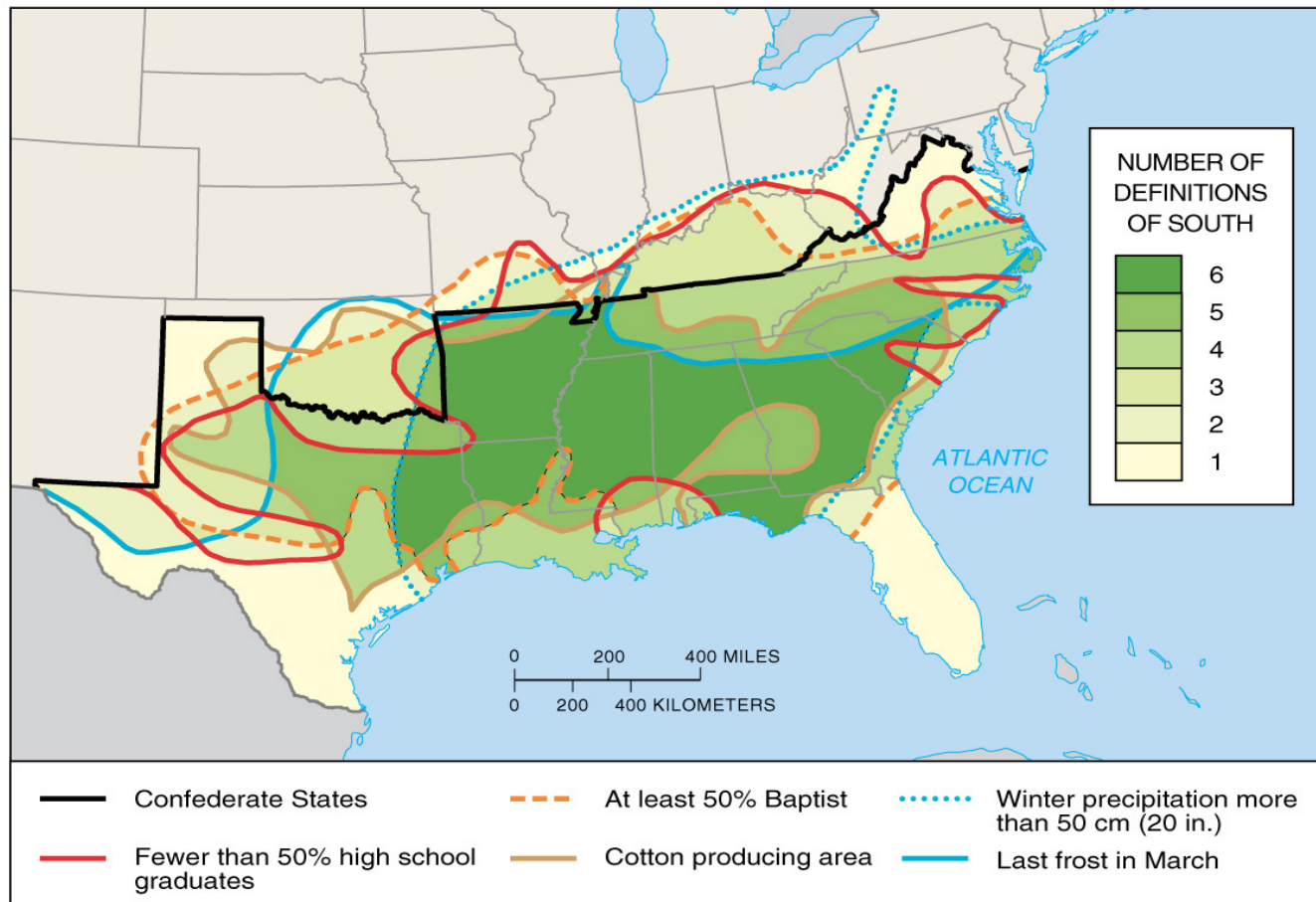
# Formal and Functional Regions



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Fig. 1-11: The state of Iowa is an example of a formal region; the areas of influence of various television stations are examples of functional regions.

# Vernacular Regions



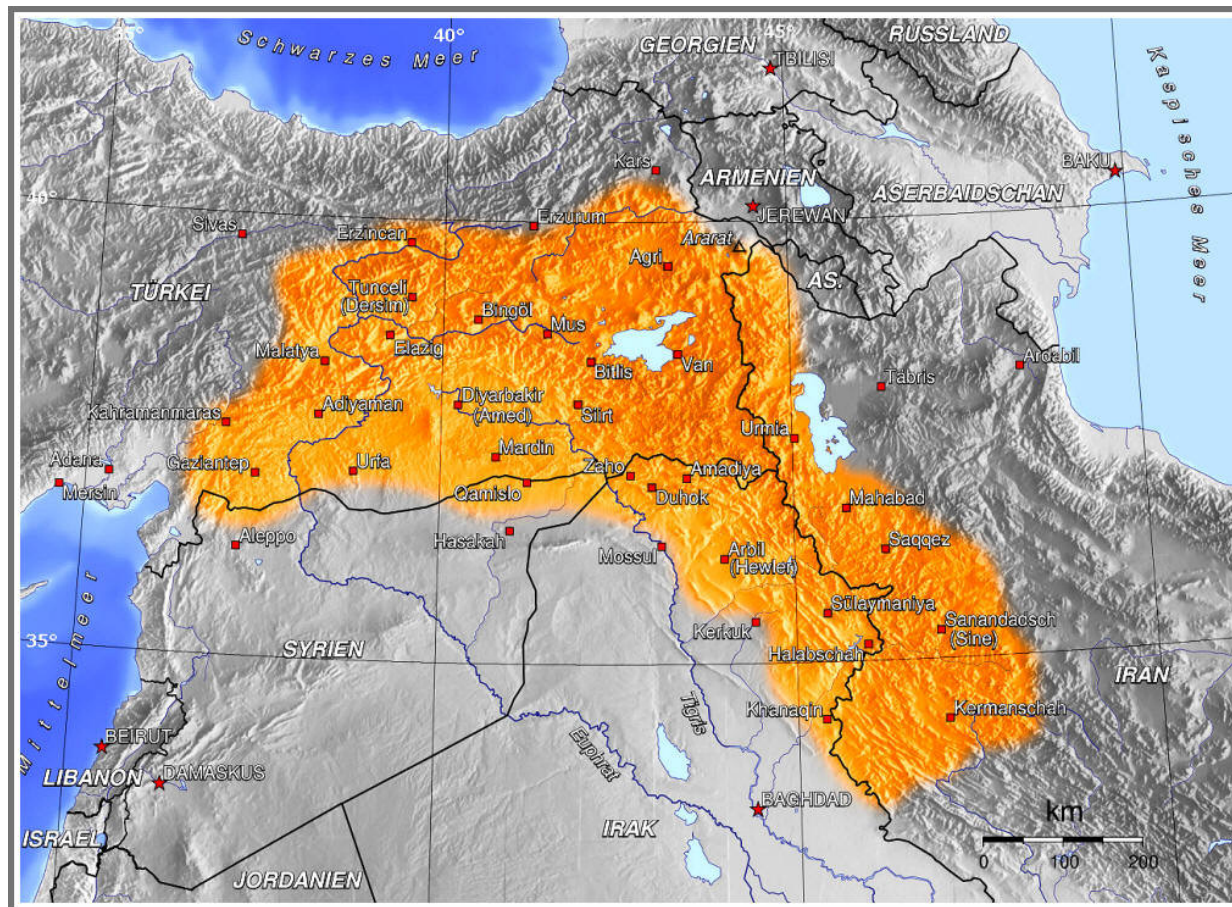
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Fig. 1-12: A number of factors are often used to define the South as a vernacular region, each of which identifies somewhat different boundaries.



# Vernacular Region

## Kurdistan



# What is Culture?

- Your book defines culture as a body of customary beliefs, material trades, and social forms that together constitute the distinct tradition of a group of people.
- The Latin root of culture is cultus, which means to care for. Example Agriculture (term for growing things)



# Cultural Ecology

- Geographers also consider environmental factors as well as cultural factors, when looking at regions.
- This is cultural ecology.
  - Basically, this is the geographic study of human-environmental relations.
- In the 19<sup>th</sup> Century – some geographers said that human actions were caused by environmental conditions. (environmental determinism)
- This is rejected by modern geographers that say some environmental conditions limit human actions. (possibilism)
- Of course now we are realizing that humans can actually adjust their environment. (For good or bad)

# Environmental Modification in the Netherlands



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Fig. 1-15: Polders and dikes have been used for extensive environmental modification in the Netherlands.



# Environmental Modification in Florida



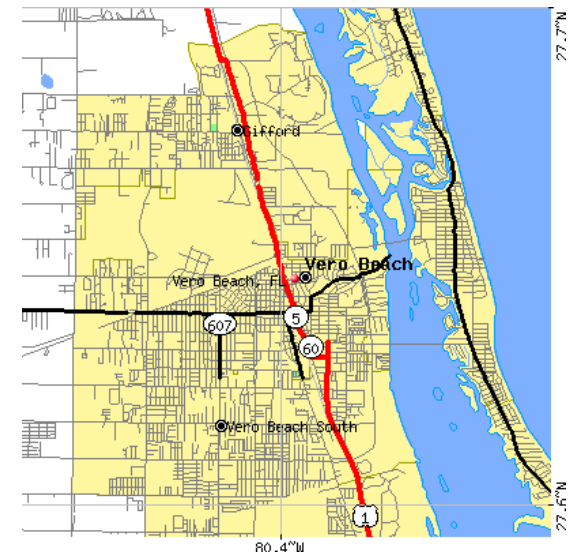
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Fig. 1-16: Straightening the Kissimmee River has had many unintended side effects.



View of Miami Beach

The barrier Island - Orchid Island.



# Space-Time Compression (1492-1962)



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Fig. 1-20: The times required to cross the Atlantic, or orbit the Earth, illustrate how transport improvements have shrunk the world.

# Spatial Interaction

- Interdependence exists among places based upon the degree of spatial interaction.
  - Spatial interaction is established through the movement of people, ideas, and objects between regions.
  - For example, Travel has changed considerably over the last 500 years.
- In the past, most forms of interaction among cultural groups required the physical movement of settlers, explores, and plunders from one place to another.
  - Today travel by car or plane is much faster and communication is instantaneous.
  - When places are connected to each other through a network, geographers say there is a spatial interaction between them.

# Diffusion

- Diffusion is the process by which a characteristic spreads across space from one place to another over time.
  - The place of origin of the characteristic is called the hearth.
    - For example – US, Canadian, and many Latin cultures can be traced back to the European Hearth.
- There are two basic types of diffusion:
  - Relocation diffusion
  - Expansion diffusion
- Expansion Diffusion includes...
  - Hierarchical diffusion
  - Contagious diffusion
  - Stimulus diffusion