Maps and cartography

- Intellectual History of Geography

Overview

- Maps as models
- Intellectual history of geography

Cartographic tradition – properties of the globe grid

- All meridians are of equal length; each is one-half the length of the equator.
- All meridians converge at the poles and are true north-south lines.
- All lines of latitude (parallels) are parallel to the equator and to each other.
- Parallels decrease in length as one nears the poles.
- Meridians and parallels intersect at right angles.
- The scale on the surface of the globe is the same in every direction.

Cartographic tradition – projections and mapmaking

Problem: Project a sphere onto a flat surface.

- Distortions
  - area
  - angle
  - shape
  - distance
  - direction

Cartographic tradition – GIS

- Geographic Information Systems & GIScience
  - “GISs are simultaneously the telescope, the microscope, the computer, and the Xerox machine of regional analysis and synthesis of spatial data.” — Ron Abler
  - GIScience involves research emerging from “… the generic issues that surround the use of GIS technology, impede its successful implementation, or emerge from an understanding of its potential capabilities.” — Michael Goodchild

Maps in human geography

- Maps and place attributes
  - cultural and physical attributes
  - structured place attributes/spatial distribution
  - regionalization
  - interaction among places (accessibility, connectivity)

- Maps and environmental issues
  - pollution monitoring, remote sensing, global positioning system

- Movement maps (human mobility)
Maps in human geography (cont.)

• Maps in the mind
  – culturally influenced and subjective
  – mental maps
  – environmental perception/cognition

Intellectual traditions in geography – Early History

Early History

• Mathematics
  – Thales, Herodotus, Ptolemy, Varennes
• Exploration
  – Muslim, Scandinavian, Chinese, Medieval Christians
  – Magellan, Columbus, James Cooke, Darwin.
  – The Longitude Act of 1714
• Cartography
  – Gerard Mercator
  – “if a geographer is not fascinated by maps to the extent of always needing to be surrounded by them, then that is a clue that he or she has chosen the wrong profession.”
  – C. Sauer.

Intellectual traditions in geography – Early Modern History

Early Modern History

Regional Geography

– 1930s American Regionalism
  – Hartshorne (1939) The Nature of Geography
  – “…a science that interprets the realities of areal differentiation of the world as they are found, not only in terms of the differences in certain things from place to place, but also in terms of the total combination of phenomena in each place, different from those at every other place.”
  – “…integration of relevant characteristics to provide a total description of place-region-which is identifiable by its peculiar combination of those characteristics.”
  – temporal-section of history; spatial-sections of geography

Modern History

• Systematics & Scientific Method
  – Schaefer (1953) Exceptionalism in Geography: A Methodological Examination
  – Positive Science (Logical Positivism)
  – General laws / quantitative methods / policy analysis
  – ‘bumbling amateurism and antiquarianism’
  – Science of spatial arrangements / spatial social science
  – Center for Spatially Integrated Social Sciences

Intellectual traditions in geography – Modern History

Modern History

• Iowa School
• Wisconsin School
• Washington School
  – Garrison
• Social Physics
  – J. Stewart (astronomer at Princeton)
• Regional Science
  – Walter Isard (1956)

Intellectual traditions in geography – Modern History

Modern History

Structuralism

Post-modernism

Pluralism

Environmental System Science

• Ocean Modeling
• Hydrologic Modeling
• Atmospheric Modeling
• Vegetation/Soil Modeling

Human Environment Relations

• Behavioral Geography
• Regional/Urban Modeling
• Natural Resources Management

Geographic Skills

• Spatial Analysis

Modeling Skills

• Remote Sensing
• Computer Cartography
• Geographic Information Systems
• Statistical Modeling
• Computer Modeling
• Mathematical Modeling
Maps in human geography (cont.)

- Depicting regions on maps
  - criteria and attributes
  - formal regions
  - functional regions
  - perceptual regions
  - hierarchical regions