Recording History: Challenges of representing a complex phenomenon

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GIS

- What does it do?
  - Data collection/recording
  - Data management/manipulation
  - Visualisation/delivery

- Why do it?
  - Preservation
  - Education
  - General interest
  - Understanding the past

- Raison d’etre …
Issues

- Complexity
- Sporadic data
- GIS data models
  - Hard outlines
  - Classification
- Cost of digitising
  - Classification/cost tradeoff
Complexity …
Overview: Cambodia's Great Lake
Issues

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Data models

- Points/lines/polygons/images
- Grid data?
Typical records

- **Point**
  - monuments, sites;
  - locations of a person, group or ship

- **Polygon**
  - snapshot of the Mongol or Mughal empire
  - administrative boundaries
  - census data

- **Image**
  - historic maps
Spatial/attribute imprecision

- Inaccuracy
- Diffuse edges
- How Mongol is Mongol?
Temporal imprecision

- Dating of observations
  - Is the date accurate?
  - Is the date precise?
  - Are the observations conflated?
Interpolation

What happens in between?

ChinaMap
Shilla animation
Khmer Empire animation
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Data sources

- Classic site registers
  - accumulation by authority
- Enthusiasm-driven databases
  - e.g. mills archive, historical societies, amateur site recorders
- Academic research
  - e.g. GBHGIS
- Participatory databases/GIS
  - tapping into communities of interest
- Institutional projects
  - digitisation of collections
  - national projects
Analysis

- Spatio-temporal analysis
  - still very poorly developed

- Simulation
  - Spatial models e.g. fluid dynamics
  - Environmental eg. cost-surface
  - Interaction e.g. gravity, communications
  - Agent-based

- How do we obtain parameters for a model?
What can we model?

- The past is difficult to model
- We may, however, be able to address specific questions such as:
  - Colonization
  - Population growth
  - Land clearance
    (strong environmental or physical constraints)
Delivery

- Static
  - Printed maps
  - CD-ROM
  - Web pages

- Dynamic
  - Interactive sites
  - Web services
    - Discovery
    - Service
    - OGC
What do we deliver?

- Static maps
- Databases
- Interactive maps
- Map animations
- 3D interactive models
Cultural assets database
It’s going to be a real challenge modeling human society, social interactions and so forth.

General models such as Roland’s limits on settlement growth are one thing because they deal with the nature of interactions as a statistical phenomenon, not the actuality of individual interactions.

Where environmental factors do not overwhelm social and cultural factors, individual choice, our predictions are necessarily at a general rather than specific level. We can only predict broad patterns not individual detail.

The cutoff between generality/pattern and specific events/detail will depend on the phenomena and the relative strength of individual decisions vs group dynamics vs environmental and practical determinism.