CENTER FOR TEXTUAL STUDIES AND
DIGITAL HUMANITIES

DIGH 400 - Introduction to Digital Humanities Research

Fall Semester 2013

Week 13

Today's Class

- XSLT demos
- Digital Dead Sea Scrolls
- Group Project Work
- GIS Intro

XSLT Demos

Digital Dead Sea Scrolls

Group Project Work

http://www.digital-humanities.com

You will need a laptop tomorrow!

GIS in Digital Humanities - What is GIS?

- Geographic Information System...
- system to obtain, store, manipulate, analyse, display...data
- allows us to view, understand, question, interpret, visualise data
- reveals relationships, patterns, trends...

GIS in Digital Humanities - Using GIS

A few ideas - part 1

- map positions, places, events...
- add contextual value to a project
- locate quantities and usage relative to geographical locations
- map densities and their distribution in geographical contexts
    - uses a uniform areal unit, which is arbitrarily assigned
    - often used to show political affiliation, household numbers...
    - often relative to census tracts, counties...
    - can raise issues of manipulation of data
    - problem known as 'The Modifiable Areal Unit Problem'

GIS in Digital Humanities - Using GIS

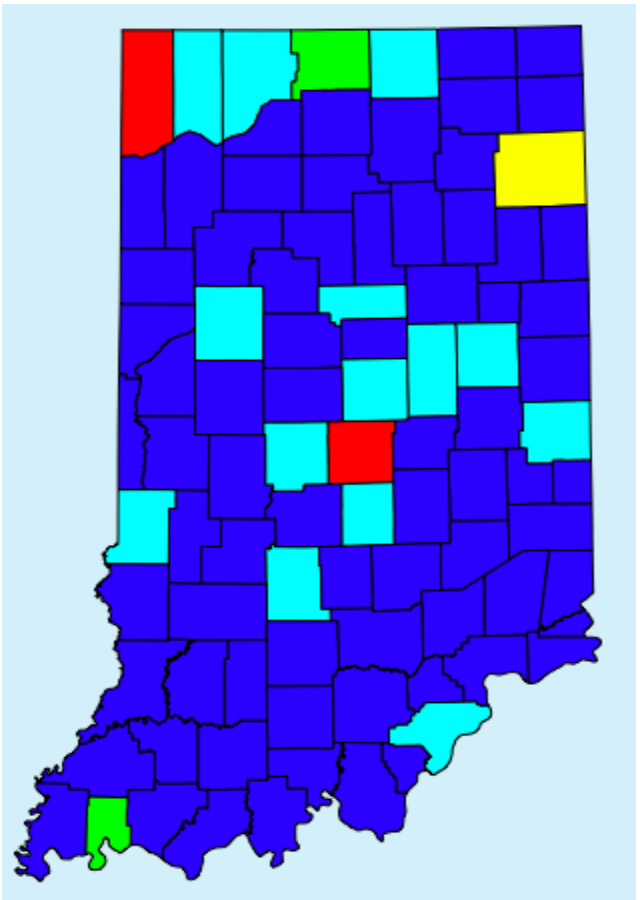
'The Modifiable Areal Unit Problem' - Openshaw, S. 1984

- referenced by Openshaw in 1984
- classic example is 'Gerrymandering'
- units of analysis are not based on geographic principles
    - instead based on political and social biases
- findings can change relative to change in arbitrarily defined units
- two important features: zone and scale
- zonal problem

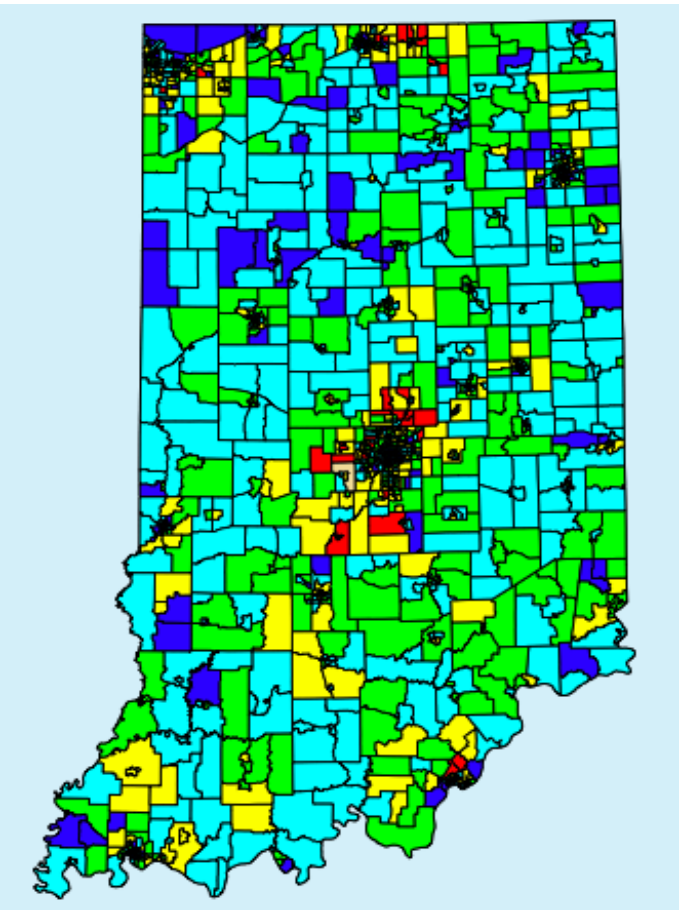
GIS in Digital Humanities - Using GIS

'The Modifiable Areal Unit Problem' - Openshaw, S. 1984

Counties



Census Tracts



GIS in Digital Humanities - Using GIS

A few ideas - part 2

- assess usage within a specific area
- find information and data near to a given map position or location
- map change to a given area or location
- can be applied to current material, political, historical...

GIS in Digital Humanities - GIS Analysis

A framework for analysis - part 1

- carefully consider the problem we are trying to solve or analyse
- consider where the problem or data is located
- specific as possible helps with subsequent development
- what data is required to allow the analysis
- how do we obtain the data
- data could be pre-existing or require collection and sampling
- geoprocessing might also be necessary

GIS in Digital Humanities - GIS Analysis

A framework for analysis - part 2

- data needs to be organised, tagged, and appropriate metadata added
- check the data for errors, corruption or possible omissions
- ensure that the schema is appropriate for your project and its rendering scheme
- multiple datasets require checking relative to each other and the establishment of relations for analysis and presentation

GIS in Digital Humanities - GIS Analysis

A framework for analysis - part 3

- analyse datasets for presentation and display
- analyse the data for patterns, associations, overlaps...
- location used as common key between datasets
- space and time can be used to relate data within a GIS
- space can record location relative to x, y, and z
    - longitude, latitude, and elevation
- time can record date/time of occurrence relative to location
- often representative of different quantified systems of reference

GIS in Digital Humanities - GIS Analysis

Overlays for maps

- overlays will often be used to frame the display and transition of datasets
- overlays provide additional layers of data
- positioned relative to the original underlying map
- designed to add value or further context to a given location, area, region...
- overlays can be considered individually, and as a coherent series
- combine several datasets in layers represented as points. lines, polygons, images, other maps...
- vector output dataset, which may be visually similar to a series of maps of the region
- order of display for multiple datasets becomes particularly important

GIS in Digital Humanities - Yosemite National Park

Let's add some layers...

Example

GIS in Digital Humanities - Examples

- MIT GIS Project examples

- National Park Service - Yellowstone Park

- U Mass Past Project Examples (2008)

- Smithsonian Conservation GIS Projects

...

GIS in Digital Humanities - A few other tools

- ArcGIS is an integrated GIS development environment
- Quantum GIS is a user friendly open source GIS
- OpenGeoDa is a free software program that serves as an introduction to spatial data analysis
- NHGIS, National Historical Geographic Information System

Google Maps API

Getting Started

- many different API implementations including Javascript
- v3 of the API reference allows manipulation of the map and layers...
- currently 14 sections available within the API reference, and many more subsections
- we can also use the API reference to create other uses for the Maps and layers

A few examples

OpenLayers API

http://www.openlayers.org/

- alternative to Google Maps API
- pure Javascript library, which requires no server side support
- Javascript API
- intended to separate map tools from map data

Image zoom example