Lecture #9: GIS, Spatial Analysis and Internet Mapping

Loose Ends from Thursday Exercises

MS-Access® Queries
- Computing percents and aggregating by group
- Aggregating across columns vs. down rows
- 2-stage queries: querying the results of a query
- Saving queries vs. saving the resulting table
- Building (and debugging) complex expressions

ArcView® Table Joining, Linking, Editing, and Mapping
- 'Attributes of xxxx' tables can be mapped
- Have 'thin' attributes-of-xxxx tables and join them to data tables
- Copying themes among Views brings across all the joins/links
- Adding (from disk) another copy of a theme (without links)
- Removing joins/links only for one View
- Combining Views within a layout

Desktop Mapping vs. GIS

Glimpse of Additional Geoprocessing Issues
- Coordinate systems and projections *(compare two projections of US)*
- Editing geometry: digitizing, sliver control, generalizing
- Data capture: remote sensing, GPS, and aerial photos
- Enterprise vs. standalone GIS, Web GIS, participatory GIS, etc.
- Data sharing *(National Spatial Data Infrastructure)*

Spatial Analysis Tools
- Overlay, buffering, nearest-neighbor, etc.
- Denisity analysis and 3-D analysis
- Network analysis

Demo of Vector Maps on Raster Images:

The MIT OrthoTools extension for ArcView®
- Browse Boston metro orthos on MIT ortho sites
- Add ArcView extension and slip under Cambridge landuse map (as in the Lab G Exercise)
- Discuss nature of orthophotos and interoperability and NSDI issues regrading web-based geoprocesing services
- Show use of semi-transparent layers
- Explain and briefly illustrate heads-up digitizing on top of the orthos

Registration and coordinate system issues
- add states.tab map of U.S. states to map window
- open second map window with just states.tab and bostown.tab
- compare projections; which way is north?

Data models for geography
- review vector (boundary representation) model
- raster models and digital orthophotos (ortho.mit.edu)
- DEM/terrain models, 3D, GPS, multimedia, animation, ...

Street Centerline Files and Address Matching (Time permitting)

TIGER street centerline files vs. Parcels - where streets are voids between blocks
Find 77 Mass Avenue
Find 250 Brattle St.and look at high-res image of neighborhood

Overview of lunchtime project presentations and afternoon panel