Ethics and Future

GEOG380 FA2018

Obligations (duty) to

- Society
- Employers
- Colleagues and the profession
- General public at large

Major ethical issues for the GIS practitioners/mappers

- Accuracy of context
- Data format
- Representation of information
- Problems in combining multiple data sets

How does a GIS practitioner prevent mis-use of GIS?

▸ Verification of data quality…

  ▸ by original producers

  ▸ by discipline experts

▸ Setting and maintaining data-quality standards

  ▸ May differ between institutions or individuals

  ▸ Ex) "EPA Guidance for Geospatial Data Quality Assurance Project Plans" (http://www.epa.gov/quality/qs-docs/g5g-final.pdf)

  ▸ "GIS Data Quality Evaluator for ESRI ArcMap"
    (http://www.datalogic-systems.com/pages/DataQE_ProductOverview.pdf)

▸ Informing changes/updates in the data

Quality Assurance Check
o Data Source Name Check
o Layer Type Check
o Projection Check
o Data Structure Check
o Future Date Check
o Required Value Check
o Unique Value Check
o List of Values (LOV) Check
o Valid Range Check
o Associated Table Structure Check
o Associated Table Orphan Record Check
o Metadata Check
o User Defined Queries
o Advanced LOV Check
o Spatial Location Check

▸

(image source: ESRI, dataQE)

Ethics is everything

- What motivates people
- Why they make individual decisions?
- Impact on others
- Pay attention and learn
- Be ethical in your work!
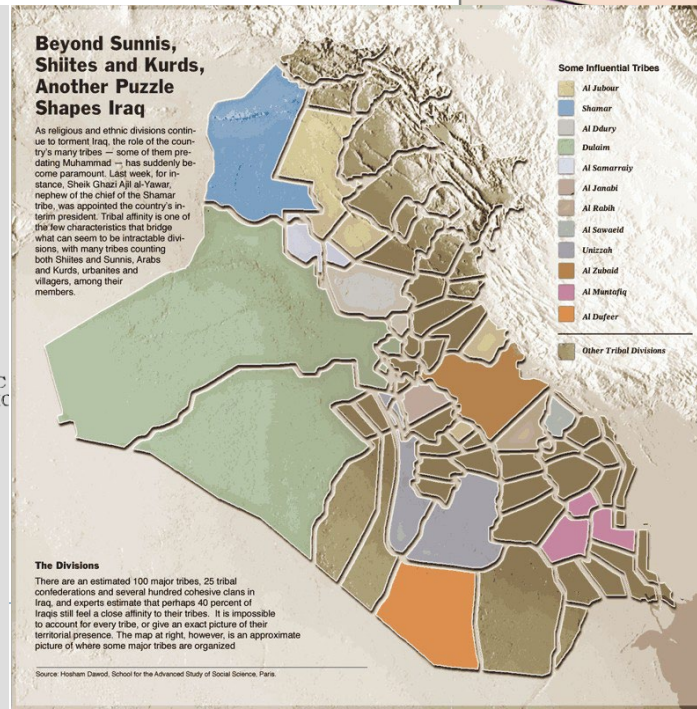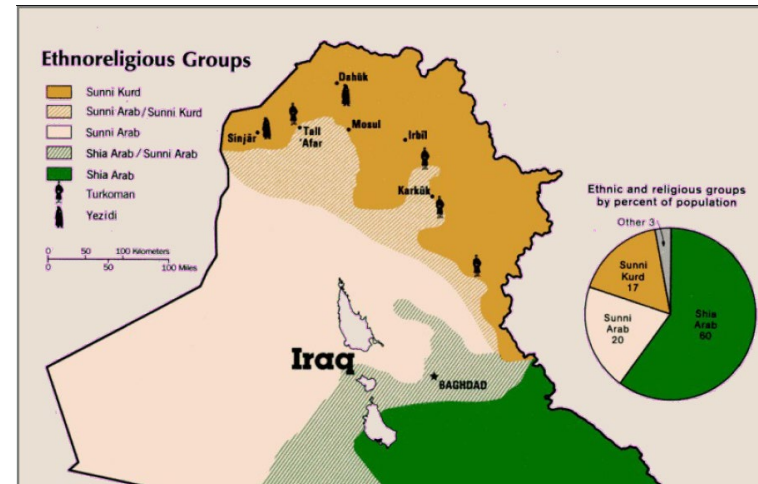- Be an ethical leader

Social and ethical issues

- Personal integrity
  - Google Glass in a coffee shop
    - http://www.nytimes.com/2013/03/13/technol[...]breach.html?pagewanted=all&_r=0
  - Should I be able to look up whether the neighbor I am fe[...] with might have a gun permit?
    - http://www.nytimes.com/2013/01/14/business[...]
  - Social Network Services

I KNOW WHAT YOU DID LAST SUMMER…

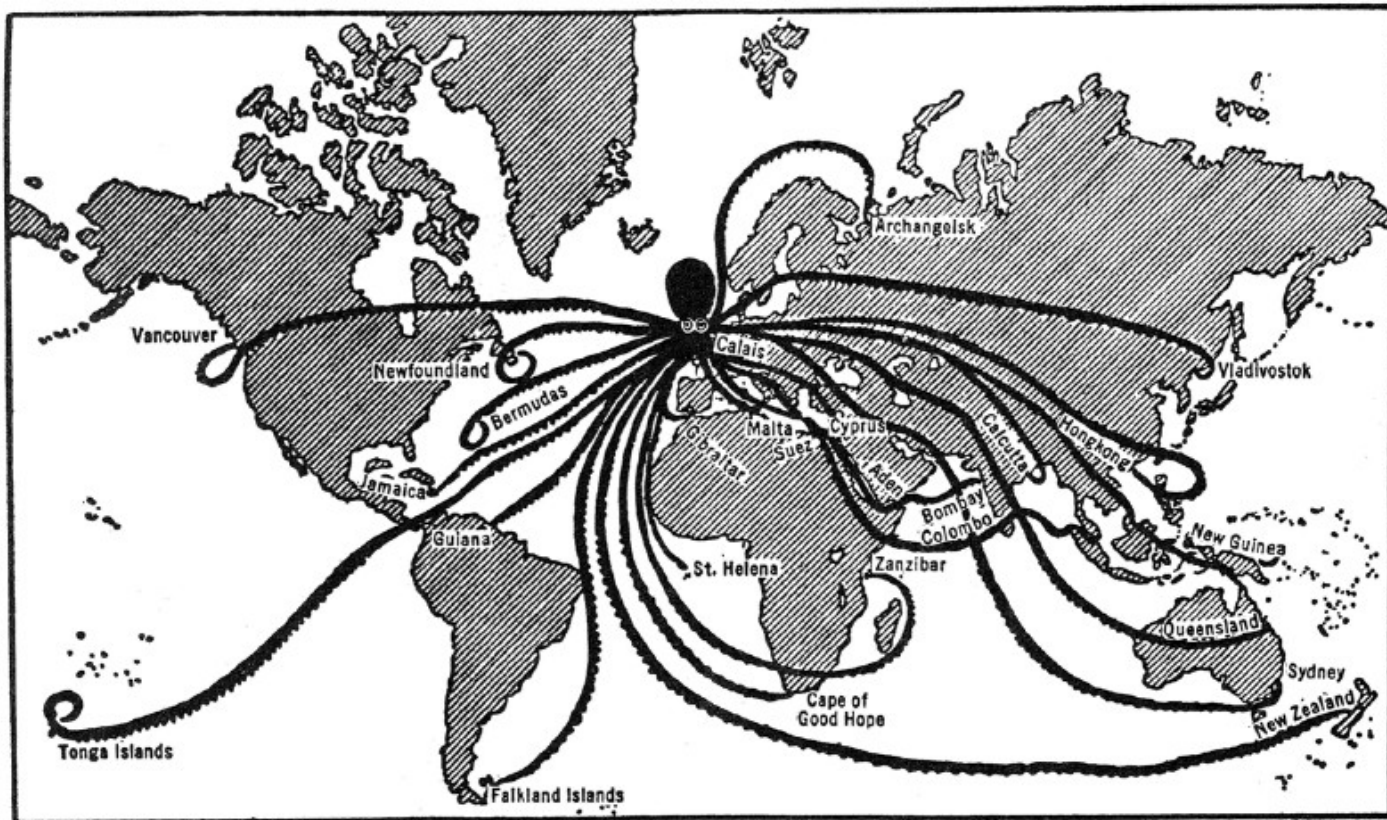(Sources: http://www.appliedautonomy.com/isee/centerfoldmap02.pdf; http://maps.google.com/)

Social and ethical issues (cont.)

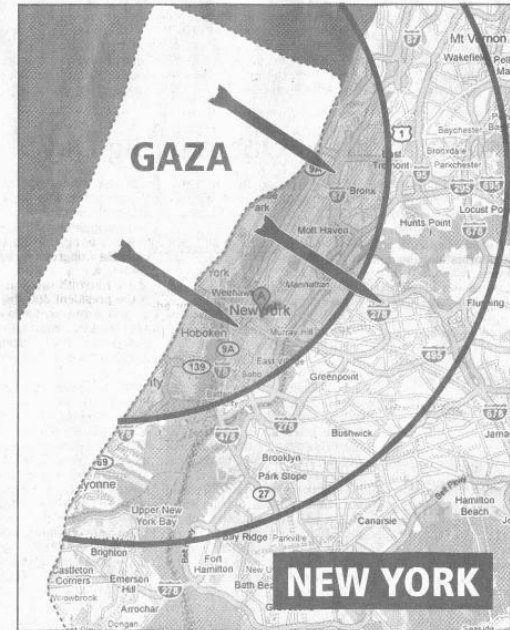▸ Whose purpose does the map serve?

Maps as propaganda - yesterday

▸ "A suggestive map of the British Empire" (Haushofer, ca 1934)

… and today

▸ What is right or wrong about this map?

WHAT IF HAMAS WAS IN YOUR NEIGHBORHOOD?

GAZA

NEW YORK

Israel withdrew from Gaza in 2005. But instead of cultivating its new land, the terrorist organization Hamas launched thousands of rockets against southern Israel, forcing Israelis to run for bomb shelters on a daily basis.

Now Hamas is upgrading its artillery so it can reach Israel's heartland and threaten millions.

Imagine if Hamas terrorists were targeting you and your family. No country would allow such danger on its border, and neither will Israel.

THAT'S WHY ISRAEL IS FIGHTING BACK.

Group Activity:
Scenario 1 – a geodemographic application

▸ A national supermarket chain hires a GIS analysis firm to analyze the market base around several retail stores. The types of information desired by the supermarket executives include mostly social demographic characters, such as age, income, and ethnic background. The executives' final goal in hiring the GIS firm is to obtain a map showing the extent of the market base for each store and the mean age, income, and ethnic background of customers traveling to each store. The executives will use this information to make decisions about what types of items should and should not be stocked at each store. The GIS firm chooses to gather this data by compiling a list of license plate numbers of the customers' cars parked outside each store, then cross referencing the addresses obtained from the license plates with current block level U.S. census data.

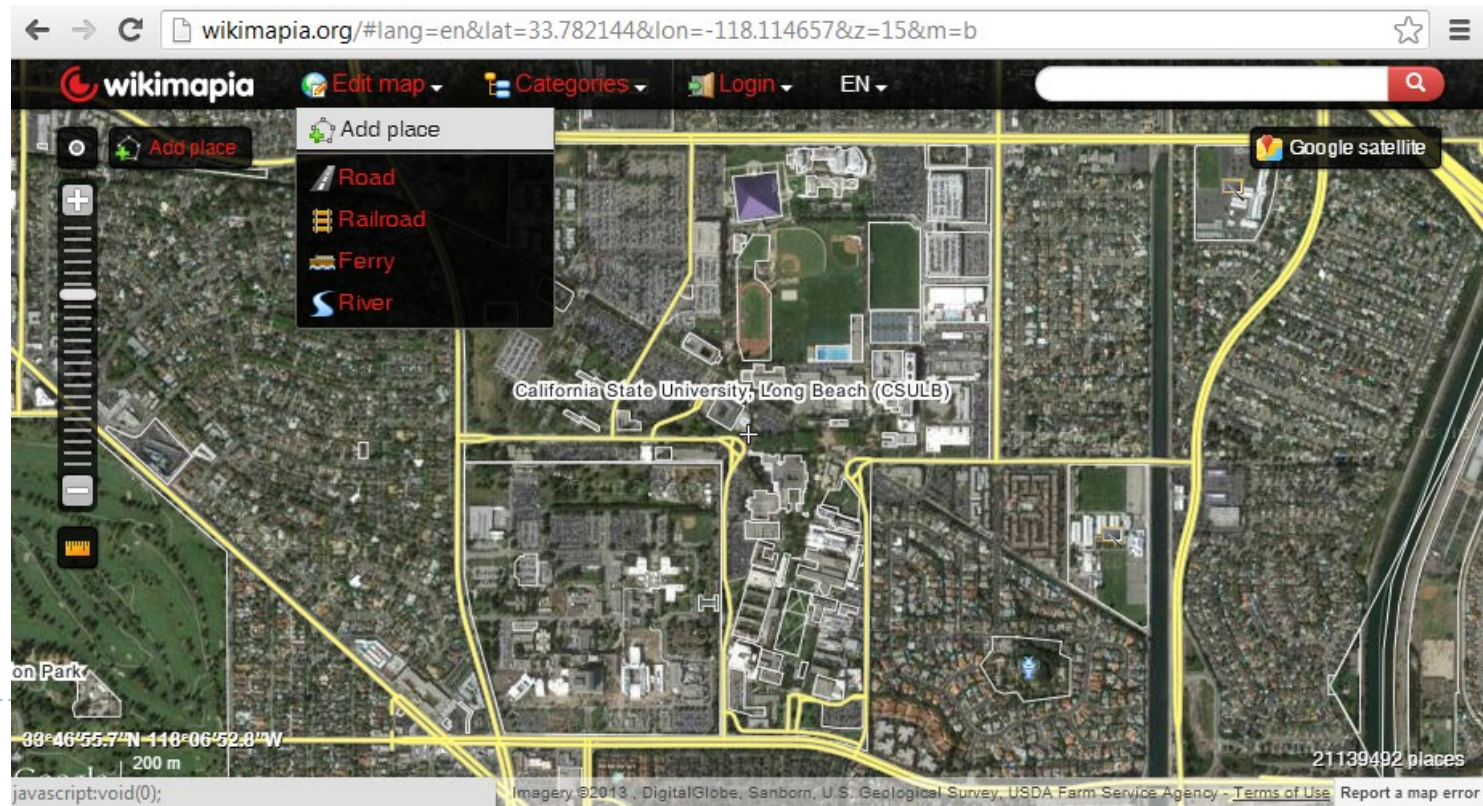▸ Is the conduct of the GIS firm ethical or unethical? Comments?

Group Activity:
Scenario 2 – a governmental policy application

▸ A 5-county area of the United States is in desperate needs of a new landfill. The governmental agency hires an outside GIS-firm to find an optimal location for the new landfill. Among other critical factors such as substrate, depth of water table, and distance from major population centers, the GIS firm has been asked to consider mean household income of the locations in question. The governmental agency has stated that income is a necessary factor of the analysis because areas with mean household incomes >$50,000 will have strong political networks that would stop construction of a landfill in their community. The agency sees the need for a new landfill as so critical that it does not want to become mired in community opposition to the landfill's final location. The GIS firm carries out the analysis as directed by the governmental agency.
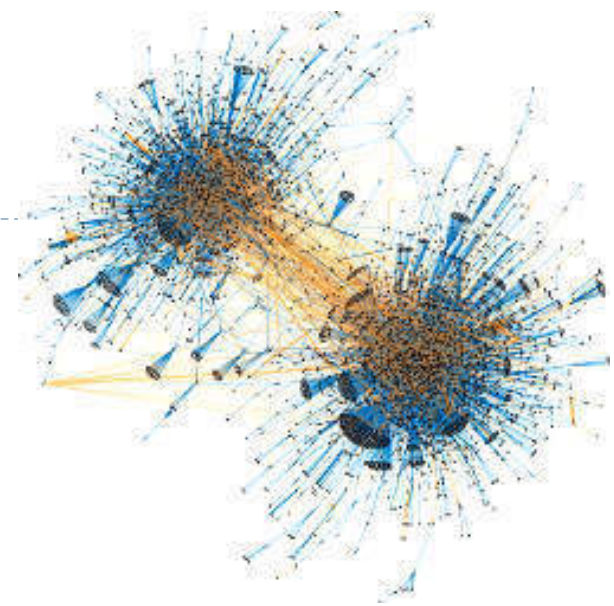
▸ What do you think?

Maps and countermaps

▸ GIS and democracy?

▸ Participatory GIS

  ▸ eGovernment

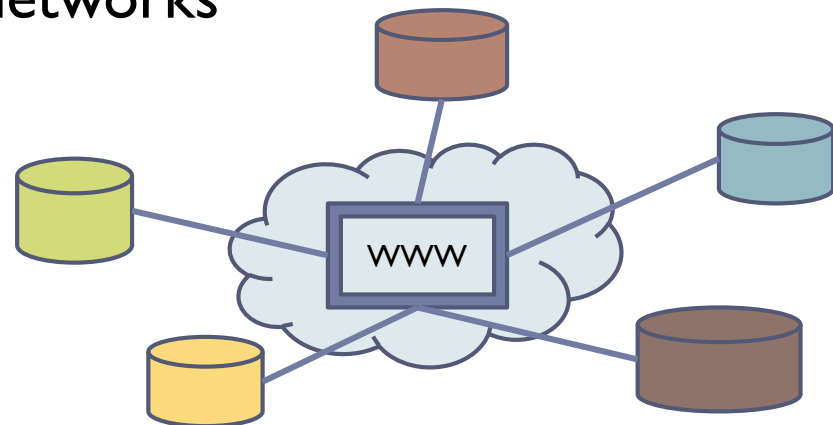 ▸ Multiple truths → fuzziness

▸ (image source: Wikimapia.org)

Status of GIS today

▸ Maps are used in more diverse areas

▸ GIS used for documentation

  ▸ How it was used to be & how it is today

  ▸ "World Top Stories Timeline"
    (http://www.mapreport.com)

▸ GIS used for analyses & simulations

  ▸ How would it look like in the future?

▸ Various types of visualization

  ▸ Modeling & simulation-based research and development

  ▸ Visualizing complex systems, both virtual as well as physical

  ▸ Real-time display

▸ (image sources: http://www.sjrwmd.com/hydroconditionsreport/wells.html)

GIS is evolving

‣ GIS is evolving into a technology

‣ Planning, engineering, and operations can share the common knowledge

‣ Integrates what we know into the flow of existing works

‣ Implies very large spatial-databases (Ex. Terabytes of data)

‣ Future of computers and IT

  ‣ Interconnection through open networks

  ‣ Lower costs, faster networking

‣ Need to use good judgments & professional skills

‣

National Spatial Data Infrastructure (NSDI)

- Need agreements upon documented, standardized data models and databases that provide metadata
  - SDTS (Spatial Data Transfer Standard)
    http://mcmcweb.er.usgs.gov/sdts/

- Coordinated information system through organizations
  - Metadata standard coordinator - FGDC (The Federal Geographic Data Committee, http://www.fgdc.gov/)
  - International standardization coordinators –
    ISO (International Organization for Standardization, http://www.iso.org/) & CEN (European Committee for Standardization, https://www.cen.eu)
  - Cooperation between systems suppliers –
    Open GIS Consortium (http://www.opengeospatial.org)

Reminders

- **Further Readings**
  - URISA – A GIS Code of Ethics
    - http://www.urisa.org/clientuploads/directory/Documents/CodeofEthics.pdf

- **Project Work**
  - Create a digital map using ArcGIS and provided dataset
  - Introduction today
  - Draft map presentation & peer review on Dec. 11
  - Final map submission on Dec. 12

- **Final Exam**
  - Tuesday, Dec. 18 7:15pm-9:15pm
  - Study guide will be on the BeachBoard on Dec. 11