Lecture 13: Cartography’s Institutions and Past
History of US Academic Cartography

- Slocum’s 4 periods
- Incipient (JP Goode (Chicago), Erwin Raisz (Harvard), Guy-Harold Smith (Ohio St), RE Harrison (Life))
- Post-war (Wisconsin, Kansas, Washington)
- Growth of Secondary Programs (1960s-80s)
  - (UCLA, Michigan, South Carolina, Syracuse)
- Integrated curriculum with GIS (since 1990s)
  - UCSB, Penn State, SUNY Buffalo, South Carolina
J.P. Goode

Erwin Raisz

- Author of the first cartography textbook in English, *General Cartography* (1938)
- Known for detailed hand-drawn physiographic maps, distinct style
- While a student, offered the first cartography class in the US (Columbia University)
- In 1931 he joined the Institute of Geographical Exploration at Harvard University
- Taught cartography and was curator of the Harvard map collection for 20 years
Erwin Raisz

Bighorn Basin, Wyoming, drawn by Erwin Raisz (left) and the same area rendered as plan oblique relief from Shuttle Radar Topography Mission data (right).

Source: http://www.shadedrelief.com/physical/pages/about.html
Richard Edes Harrison

Source: Library of Congress, Map Division
Slocum’s Observations on period 4

- Integration of cartography and GIS
- Completion of the digital transition
- Less emphasis on coding, more on the user interface
- More attention to dynamics, animation, and multimedia
- Emergence of Analytical Cartography
- Close relationship between academic mentors and new programs
Major Changes

- Digital transition complete
- Proprietary software to Open Source
- Code to scripts to mash-ups
- Rise of Web Mapping
- Crowdsourcing
- Convergence of remote sensing, photogrammetry and mapping
- Accurate positioning from GNSS
- Mobility and immediacy
- Geovisual analytics and information graphics
- Virtual and augmented reality
Cartography as a changing profession
Changing job description

**Skills Employers Value**
For successful employment, you will need:
- Knowledge of a programming language
- Spatial thinking
- Good oral and written communication skills
- Organizational skills
- Good sense of design
- Analytical and critical thinking skills
- Ability to meet deadlines and work independently

Former undergraduate students now engaged in professional careers in cartography.

**Cartographer Overview**

And yet demand for cartographers is high. And it’s really no wonder. Tanya Buckingham, assistant director of the Cartography Lab at the University of Wisconsin – Madison, says the field has seen incredible change, even in the last decade: “Since 2005, we have seen the explosion of interactive maps; the democratization of cartographic tools, cloud-based tools and data storage, print on demand; as well as the ever-changing trends in screen size,” she writes in an email.

Apple, Google, ESRI, Maps.com
NGA, USGS, USDA, FEMA
Largest US employer
Cartography’s Professional Societies

- International Cartographic Association
- Cartography and Geographic Information Society
- North American Cartographic Information Society
- ASPRS The Imaging & Geospatial Information Society
- American Association of Geographers: Cartography Specialty Group
- Canadian Cartographic Association
- British Cartographic Society
- International Federation of Surveyors
- The International Society for the History of the Map
- National Geographic Society
Welcome

Welcome: The Cartography and Geographic Information Society (CaGIS) is composed of educators, researchers and practitioners involved in the design, creation, use and dissemination of geographic information. CaGIS provides an effective network that connects professionals who work in the broad field of Cartography and Geographic Information Science both nationally and internationally.

News

USNC solicits maps for ICC2017 cartographic exhibit
The US National Committee (USNC - www.cartogis.org/usnc.php) to the International Cartographic Association (ICA - www.ica.org) is soliciting maps and other cartographic items for the United States entries in the 28th International Cartographic Exhibition to be held in conjunction with the International Cartographic Conference (ICC). Please see this PDF for more details. More...

CaGIS Past President Karl Craun receives Gannett Award
Karl Craun, a Past President of CaGIS, has been selected as the first

Join CaGIS

Join the largest network of professionals who are at the leading edge of education, research and practice in Cartography and Geographic Information Science. This network provides a wealth of opportunities to advance your career. Click here to learn what you should know about CaGIS.

ICC 2017 in Washington, DC, USA

Learn more about the upcoming 28th International Cartographic Conference, July 2-7, 2017. www.icc2017.org
CAGIS Student Activity

- Fellowships
- Travel grants, conference helper
- Internships
- Career Guide
- Map design competitions
- News, events
CARTOTALK

Join cartographers from all over the world and talk about maps!
Get your questions answered, share your work, help others,
be part of the community.

JOIN THE DISCUSSION

Do you #lovemaps? Welcome home.
Key Cartographic Journals

- Cartography and Geographic Information Science
- International Journal of Geographic Information Science
- GeoJournal
- Transactions in GIS
- Cartographic Perspectives
- The Cartographic Journal
- International Journal of Cartography
- Journal of Geographical Sciences
- GPS Solutions
- Journal of Maps
- Cartographica
Figure 7. Map of shallow landslides triggered by the 2008–2010 rainfall events and other geomorphological features related to slope processes: (a) and (b) details of two representative zones. Legend: (1) shallow landslides; (2) zones of incipient shallow landslides; and (3) soil erosion (*sensu lato*).
Cartography and Geographic Information Science

Special Section
Integrating Big Social Data, Computing and Modelling for Spatial Social Science

Guest edited by
Xinyue Ye, Quying Huang and Weawen Li

(a) Travel & Transport
(b) Education Resource
(c) Recreation & Attraction
(d) Food & Restaurant
(e) Nightlife Spot
(f) Shops & Service
Sample issue

Latest articles

Article
What path and how fast? The effect of flight time and path on user spatial understanding in map tour animations

Treves et al.
Published online: 17 Feb 2017

Article
A novel approach to leveraging social media for rapid flood mapping: a case study of the 2015 South Carolina floods

Li et al.
Published online: 9 Feb 2017

Article
A geovisual analytics exploration of the OpenStreetMap crowd

Quinn et al.
Published online: 27 Jan 2017

Article
The effect of acquisition error and level of detail on the accuracy of spatial analyses

Biljecki et al.
Published online: 26 Jan 2017
Informal Institutions

- Openstreetmap
- Google Earth Community (retired 2015)
- Google Earth Hacks
- Google Maps
- Geohack
- Wikimapia
- Everyscape
- Bing Maps
- Apple Maps
- Acme maps
Mapping Services

- ACME
- CalTopo
- GPS Visualizer
- MapQuest
- MSR Maps (TerraServer-USA)
- National Weather Service
- TerraFly
- TopoQuest
- Trails.com
- US EPA
- USGS National Map Viewer
- MarineTraffic.com, VesselFinder.com, Sailwx.com etc.
- Flightradar24, planefinder, flightview, flightaware
Marine Traffic
Flights
GE Community

You've reached the retired Google Earth Community forum. As of May 1st, 2015 this forum has been retired, and will remain as a Read Only resource. You'll be able to search, browse and read existing posts, along with downloading the attached KML files for exploration in Google Earth. Thank you all for your amazing discoveries and contributions over the years!

You can join the new Google Earth Community, created and hosted by the GEC moderators at the below link:

**New Google Earth Community**

GEC Forum Links:

Earth - Moderator Selected

Earth

Off World
Google Street View
Cartography’s Role in Federal Government

- NRC: Mapping Sciences Committee
- USGS: National Mapping Program
- Federal Geographic Data Committee: GeoPlatform.gov, Data.gov
- National Geospatial Advisory Committee
- National States Geographic Information Council
The National Academy of Science

- Civil War Act of Incorporation, signed by President Lincoln on March 3, 1863, established service to the nation as its dominant purpose.
- 1916 Academy establishes the National Research Council at the request of President Wilson to recruit specialists from the larger scientific and technological communities to participate in war advising.
- President Wilson issues executive order at the close of WWI asking the Academy of perpetuate the National Research Council.
- Subsequent executive orders, by Presidents Eisenhower in 1956 and Bush in 1993, have affirmed the importance of the National Research Council and further broadened its charter.
- President Obama addressed the NAS on Apr 27, 2009 stressing value of expert scientific advice to the nation.
The National Academies today

• The National Academies perform an unparalleled public service by bringing together committees of experts in all areas of scientific and technological endeavor.

• Experts serve *pro bono* to address critical national issues and give advice to the federal government and the public.

• Four organizations comprise the Academies: the *National Academy of Sciences*, the *National Academy of Engineering*, the *Institute of Medicine* and the *National Research Council*.
In 1989, the National Research Council established the Mapping Science Committee to provide "independent advice to society and to government at all levels on scientific, technical, and policy matters related to spatial information. It promotes the informed and responsible development and use of spatial data for the benefit of society".

From: The Role of the Mapping Science Committee in assisting the mapping of the United States David J. Cowen
Mapping the Zone: Improving Flood Map Accuracy (2009)

- Examines the factors that affect the quality and accuracy of flood maps, assesses the costs and benefits of map improvement efforts, and recommends ways to improve flood mapping, communication, and management of flood-related data.

- Concludes that even the most expensive aspect of making more accurate maps—collecting high-accuracy, high resolution topographic data—yields more benefits than costs, and that FEMA should continue to invest in updating and improving its flood maps.

- Sponsors: FEMA and NOAA
Elevation Data for Floodplain Mapping (2007)

- Examines the adequacy of the base map information available to support FEMA’s floodplain map modernization program.
- Concludes that existing land surface elevation data are not adequate to determine whether a building should have flood insurance.
- Recommends that high-accuracy LiDAR data be collected nationwide and incorporated into the National Elevation Dataset that the USGS maintains for flood mapping and other applications.
- Sponsor: National Academies

- Assesses the status of land parcel data (also known as cadastral data) in the United States.
- Concludes that nationally-integrated land parcel data is necessary, feasible, and affordable, and recommends ways to establish a practical framework for sustained intergovernmental coordination and funding required to develop a nationally integrated land parcel data system.
- Sponsors: BLM, Census, DHS, ESRI, and FDGC
Successful Response Starts with a Map: Improving Geospatial Support for Disaster Management (2007)

- Assesses the use of geospatial data, tools, and infrastructure in disaster management
- Recommends significant investments be made in training of personnel, coordination among agencies, sharing of data and tools, planning and preparedness, and development of tools
- Sponsors: NASA, NGA, NOAA, and USGS

- Assesses the state of mapping sciences and identifies national needs for GIS and GIScience professionals
- Recommends increased collaboration among academic disciplines, private companies, and government agencies; the implementation of GIS/GIScience at all levels of education; and the development of a coherent, comprehensive research agenda for the mapping sciences
- Sponsors: Census, NGA, NOAA, NSF, and USGS
Priorities for GEOINT Research at the National Geospatial-Intelligence Agency (2006)

- Defines 12 hard problems in geospatial science that NGA must resolve to meet future needs
- Many of these are related to data integration and the handling of spatio-temporal data
- Also suggests promising approaches in geospatial science and related disciplines for meeting these challenges
- Sponsor: NGA
A Few Cartographic Blogs

- Radical Cartography [http://www.radicalcartography.net/](http://www.radicalcartography.net/)
- Making Maps DIY Cartography: [https://makingmaps.net/](https://makingmaps.net/)
- Something About Maps [https://somethingaboutmaps.wordpress.com/](https://somethingaboutmaps.wordpress.com/)
Summary

- Academic cartography is surprisingly new as a discipline
- Cartography as a profession has undergone major changes
- Drafting to spatial analyst
- Covered major professional organizations
- Cartographic research relies on journals, many from professional societies
- Informal mapping organizations and map services
- Cartographers can impact government
- Covered NAS Mapping Science Committee
- Many blogs and much information available