Data Driven Societies || Spring 2014
Professor Eric Gaze   Professor Jack Jen Gieseking

Class Meetings: M & W 11:30-12:55 in VAC North Classroom
                       Labs W 2:30-3:55 in VAC North Classroom
Office Hours: M 2:00-4:00 in VAC 309 (and by appointment)

Interpretation of the data changes based on the visual form it takes on. – Nathan Yau

Course Description
Big data and computational methods, such as changes in social media privacy laws and advances in mapping and network analysis, are changing financial markets, political campaigning, and higher education and becoming commonplace in our lives. Our daily existence is increasingly structured by code, from the algorithms that time our traffic lights to those that filter our search criteria and record our thoughts and ideas. In this course, we explore the possibilities, limitations, and implications of using digital and computational methods and analytics to study issues that affect our everyday lives from a social scientific approach. We pay special attention to the ways we collect, trust, analyze, portray, and use data, most especially the tools and meanings involved in data visualization and modeling.

This course tackles a number of cutting-edge issues and questions that confront society today: What sorts of questions can be asked and answered using digital and computational methods to rethink our relationships to data and what can data can show us about the world? How do we construct models to help us better understand social phenomena and associated data? What *is* data, and how do we know it's reliable? How do these methods complement and sometimes challenge traditional methodologies in the social sciences? Students will leave the course with both substantive experience in digital and computational methods, Students will learn how to apply a critical lens for understanding and evaluating what computers can (and cannot) bring to the study of society.

Assignments
This class is a project-based, collaborative learning experience and experiment. For most of the semester there will be regular class readings for which you are responsible and a number of short assignments, including blog posts and comments, in-class quizzes, lab projects, and a hackathon. This will prepare you for the capstones of the course: an independent research paper and presentation, and an exam. Throughout the semester, time will be devoted to developing and implementing these projects in a series of scaffolded posts and quizzes as a process for you to set criteria for, build, and then evaluate your own project's impact. Note: all blogs posts are due by 8 p.m. the day before class. Quiz and blog post/comment topics will be clarified in advance during class.

Evaluation Criteria
Labs	20%
Quizzes	15%
Blog posts and comments	15%
Hackathon	5%
Paper & presentation	35%
Exam	10%

Website, Textbooks, Texts, and Other Sources

You are required to acquire or make use of the following textbooks from ILL. The remainder of the texts are on e-reserve or can be found online.

Course website: https://courses.bowdoin.edu/interdisciplinary-studies-2420-spring-2014/

Course ereserves: http://ereserves.bowdoin.edu/

Golbeck, Jennifer. 2013. *Analyzing the Social Web*. Waltham, MA: Morgan Kaufmann/Elsevier.

Yau, Nathan. 2011. *Visualize This: The FlowingData Guide to Design, Visualization, and Statistics*. Indianapolis, IN: Wiley.

———. 2013. *Data Points: Visualization that Means Something*. Hoboken, NJ: Wiley.

Collaboration

All write-ups, reviews, documentation and other written material must be original and may not be derived from other sources. We plan on having a relaxed collaboration policy for this course. However, you should always be clear on what part of the work you hand in is your own, what parts come from other sources, and what parts are collaborative. Generally if you are exchanging information through a written, video, or visual medium then it rises to the level of something that you should report when you hand in your assignment. Exceptions would include getting help with a simple syntax error or where to find a certain button in a program. You will not be penalized for collaboration; it is just important for us to know to get a better sense of what you and your fellow students know. Failure to cite work that you draw from other sources is a violation of Bowdoin's Academic Honor Code.

Websites and New Sources to Check Out Often

NYTimes Bits Blog http://bits.blogs.nytimes.com/

NYTimes Tech News
http://www.nytimes.com/pages/technology/

Wired http://wired.com/

Slashdot http://slashdot.org/

Simply Statistics http://simplystatistics.org/

Tech Meetups in Maine
http://technology.meetup.com/cities/us/me/

EndGadget http://www.engadget.com/

Digg http://digg.com

Mashable http://mashable.com

The Verge http://theverge.com

Ars Tecnnica http://arstechnica.com/

CNet http://www.cnet.com/

ZDNet http://www.zdnet.com/

Readwrite http://readwrite.com/

Digital Trends http://www.digitaltrends.com/

DtPlus http://www.dtplus.in/

Pando Daily http://pando.com/

Hacker News http://hackernews.org/

Machine Happy http://machinehappy.com/

The Next Web http://thenextweb.com/#!snAsG

Tapscape http://www.tapscape.com/

GigaOM http://gigaom.com/

Gizmodo http://gizmodo.com/

LifeHacker http://lifehacker.com

Class Breakdown

I. Defining Data though Data Collection, Access, Readability, and Reliability

A. Graph method and analysis

Mon 1/20   Digital and Computational Social Sciences: Introductions to Data

Wed 1/22   Social Data Sciences; or, Is everything "data" and is "everything" data?

Readings

Pentland, Alex. 2013. "The Data-Driven Society." *Scientific American* 309 (4) (October 1): 78–83. doi:10.1038/scientificamerican1013-78.

Yau, Nathan. 2013. "Understanding Data." In *Data Points: Visualization That Means Something*, 1–42. Hoboken, N.J.: Wiley.

Flip Classroom Assignments
Create a Twitter account
How to post to Wordpress & set up your profile in Wordpress
Install Python (for PC users)

Assignment: Blog post: why you chose your topic and what you expect to find.

Wed 1/22   LAB: Introduction to Data Scraping with Python & ScraperWiki
Readings
Yau, Nathan. 2011. "Handling Data." In *Visualize This: The FlowingData Guide to Design, Visualization, and Statistics*, 21–52. Indianapolis, Ind: Wiley.

Mon 1/27   How the Internet Works, from 1991 to Today
Readings
Berners-Lee, Tim, Robert Calliau, Ari Loutonen, Henrik Frystk Nielsen, and Arthur Secret. 1994. "The World Wide Web." *Communications of the ACM* 37 (8): 76–82.

Marwick, Alice Emily. 2013. Excerpts from "A Cultural History of Web 2.0." In *Status Update: Celebrity, Publicity, and Branding in the Social Media Age*, 21-35, 59–72. New Haven: Yale University Press.

Flip Classroom Assignment: Basics of Excel

Wed 1/29   How We Make Sense of Data in Visualization
Readings
Tufte, Edward R. 2011. "Visual & Statistical Thinking: Displays of Evidence for Making Decisions." In *Envisioning Information*, 27–54. Cheshire, Conn.: Graphics Press.

Yau, Nathan. 2013. "Visualization: The Medium." In *Data Points: Visualization That Means Something*, 43–90. Hoboken, N.J.: Wiley.

Assignments:
Quiz
Blog comment

Wed 1/29   LAB: Excel and statistics

Mon 2/3   Keeping it Real and Honest: Representing Data
Readings
Kurgan, Laura. 2013. "Representation and the Necessity of Interpretation." In *Close Up at a Distance: Mapping, Technology, and Politics*, 19–38.
———. 2013. "Million-Dollar Blocks: The 'Most Phenomenal' Fact of All." In *Close Up at a Distance: Mapping, Technology, and Politics*, 186–204.

Yau, Nathan. 2013. "Representing Data." In *Data Points: Visualization That Means Something*, 91–134. Hoboken, N.J.: Wiley.

Projects to review:
TBD

II. Private(s)

<u>Wed 2/5   Privacy, Now: from the NSA to Facebook, Snapchat to Anonymous</u>
Readings
Cohen, Julie E. 2012. "Introduction: Imagining the Networked Society." In *Configuring the Networked Self: Law, Code, and the Play of Everyday Practice*, 3–31. New Haven: Yale University Press.

Illinsky, Noah P.N. 2010. "On Beauty." In *Beautiful Visualization: Looking at Data through the Eyes of Experts*, edited by Julie Steele and Noah P.N. Illinsky, 1–15. Beijing, China: O'Reilly.

Assignments:
Blog post: what is data and how does representation matter in regard to your dataset.
Quiz

<u>Wed 2/5   **LAB**: Using R to create histograms, pie charts, and line graphs</u>
Readings
Yau, Nathan. 2011. "Visualizing Patterns over Time." In *Visualize This: The FlowingData Guide to Design, Visualization, and Statistics*, 91–134. Indianapolis, Ind: Wiley.

<u>Mon 2/10   Defining "Big Data" and Redefining Privacy</u>
Readings
boyd, danah, and Kate Crawford. 2012. "Critical Questions for Big Data." *Information, Communication & Society* 15 (5): 662–679. doi:10.1080/1369118X.2012.678878.

Crawford, Kate. 2013. "Think Again: Big Data." *Foreign Policy*, May 9.

Vis, Farida. 2013. "A Critical Reflection on Big Data: Considering APIs, Researchers and Tools as Data Makers." *First Monday* 18 (10) (October 7). doi:http://dx.doi.org/10.5210%2Ffm.v18i10.4878. http://journals.uic.edu/ojs/index.php/fm/article/view/4878.

<u>Wed 2/12   The Search Engine and the Search for Privacy</u>
Readings
Pariser, Eli. 2012. "Introduction." In *The Filter Bubble: How the New Personalized Web Is Changing What We Read and How We Think*, 1–20. New York, N.Y.: Penguin Books/Penguin Press.
———. 2012. "The Race for Relevance." In *The Filter Bubble: How the New Personalized Web Is Changing What We Read and How We Think*, 21–46. New York, N.Y.: Penguin Books/Penguin Press.

Stray, Jonathan. 2012. "Are We Stuck in Filter Bubbles? Here Are Five Potential Paths Out." *Nieman Journalism Lab*. July 11. http://www.niemanlab.org/2012/07/are-we-stuck-in-filter-bubbles-here-are-five-potential-paths-out/.

Assignment: Quiz

<u>Wed 2/12   **LAB**: Using R for Correlation and Causation</u>
Readings
Yau, Nathan. 2011. "Visualizing Relationships." In *Visualize This: The FlowingData Guide to Design, Visualization, and Statistics*, 179–226. Indianapolis, Ind: Wiley.

III. Public(s)
Mon 2/17   On Digital Publics of Opening…or Not
Readings
Donovan, Gregory. 2014. "Opening Proprietary Ecologies: Participatory Action Design Research with
        Young People." In *Methodological Challenges When Exploring Digital Learning Spaces in
        Education*, edited by K.B. Vasbø and G.B. Gudmundsdottir. New York: Sense.

Odewahn, Andrew. 2010. "Visualizing the US Senate Social Graph (1991-2009)." In *Beautiful
        Visualization: Looking at Data through the Eyes of Experts*, edited by Julie Steele and Noah P.N.
        Illinsky, 123–142. Beijing, China: O'Reilly.

Golbeck, Jennifer. 2013. "Introduction; Nodes, Edges, and Network Measures." In *Analyzing the Social
        Web*, 1–8, 9–24. Waltham, MA: Morgan Kaufmann/Elsevier.

Assignment: Blog comment

Projects to review:
CartoDB. 2014. "Beyonce Releases Her New Album Online." *Beyonce Releases Her New
        Album Online: Geotagged Tweets Mentioning Beyonce's Online Self-titled Album,
        December 12-13, 2013*. Accessed January 8.
        http://srogers.cartodb.com/viz/337d9194-6458-11e3-85b5-
        e5e70547d141/embed_map?title=true&description=true&search=false&shareable=f
        alse&cartodb_logo=false&layer_selector=false&legends=false&scrollwheel=true&subl
        ayer_options=.

Fraas, Mitch. 2013. "Mapping Books: The Dispersal of the Medieval Libraries of Great Britain".
        Blog. *Mapping Books*. http://mappingbooks.blogspot.com/2013/11/the-dispersal-of-
        medieval-libraries-of.html.

Wed 2/19   Redefining Publics through Data
Readings
Johnson, Jeffrey Alan. 2013. "From Open Data to Information Justice". SSRN Scholarly Paper ID
        2241092. Rochester, NY: Social Science Research Network.
        http://papers.ssrn.com/abstract=2241092.

Silver, Nate. 2012. **Selections** from *The Signal and the Noise: Why So Many Predictions Fail — but
        Some Don't*. New York: Penguin Press HC, The.

Assignment: Quiz

Wed 2/19   **LAB**: Using R for Bayesian statistics
Readings
TBD

Mon 2/24   Public (Invisible) Labor
Readings
Irani, Lilly. 2012. "Microworking the Crowd." *Limn* 2. http://limn.it/microworking-the-crowd/.

Ross, Andrew. 2013. "In Search of the Lost Paycheck." In *Digital Labor: The Internet as Playground and Factory*, edited by Trebor Scholz, 13–32. Digital Labor: Routledge.

Golbeck, Jennifer. 2013. "Network Structure and Measures." In *Analyzing the Social Web*, 25–44. Waltham, MA: Morgan Kaufmann/Elsevier.

Assignment: Blog post: reflect on your work in lab to turn your Twitter dataset

Wed 2/26   Convincing the Public / Publics Convincing Themselves
Readings
Baym, Nancy K., and danah boyd. 2012. "Socially Mediated Publicness: An Introduction." *Journal of Broadcasting & Electronic Media* 56 (3): 320–329. doi:10.1080/08838151.2012.705200.

Lee, Newton. 2013. "Consumer Privacy in the Age of Big Data." In *Facebook Nation*, 61–66. Springer New York.

Yau, Nathan. 2013. Selections from "Exploring Data Visually." In *Data Points: Visualization That Means Something*, 135–153. Hoboken, N.J.: Wiley.

Golbeck, Jennifer. 2013. "Network Visualization." In *Analyzing the Social Web*, 45–62. Waltham, MA: Morgan Kaufmann/Elsevier.

Assignment: Quiz

B. Spatial Analysis

Wed 2/26   **LAB**: Introduction to Google maps & Social Explorer

IV. The Life of Code

Mon 3/3   Code Is…
Readings
Grossman, Lev, Jay Newton-Small, Jessica Roy, and Laura Stampler. 2013. "The Deep Web." *Time* 182 (20) (November 11): 26-33.

Lessig, Lawrence. 2006. "Code Is Law." In *Code: Version 2.0*, 1–8. New York: Basic Books.
———. 2006. "Regulating Code." In *Code: Version 2.0*, 61–80. New York: Basic Books.

Yau, Nathan. 2013. Selections from "Exploring Data Visually." In *Data Points: Visualization That Means Something*, 176-200. Hoboken, N.J.: Wiley.

Assignment: Quiz

Wed 3/5   Seeing Code in Space and Place
Readings
Graham, Stephen D. N. 2005. "Software-Sorted Geographies." *Progress in Human Geography* 29 (5) (October 1): 562–580. doi:10.1191/0309132505ph568oa.

Jabbour, Eddie, and Julie Steele. 2010. "Mapping Information: Redesigning the New York City Subway Map." In *Beautiful Visualization: Looking at Data through the Eyes of Experts*, edited by Julie Steele and Noah P.N. Illinsky, 69–90. Beijing, China: O'Reilly.

Shanley, Lea, Ryan Burns, Zachary Bastian, and Edward S. Robson. 2013. "Tweeting Up a Storm: The Promise and Perils of Crisis Mapping." *Photogrammetric Engineering & Remote Sensing* (October): 866–880.

Projects to review:
Rahul. 2013. "Occupy Sandy and Emerging Forms of Social Organization." *Ashley Dawson*. Accessed December 18. http://ashleydawson.info/2013/05/11/occupy-sandy-and-emerging-forms-of-social-organization/.

Occupy Sandy Spokes Council. 2012. "Occupy Sandy Recovery." *Occupy Sandy Recovery*. http://occupysandy.net/.

Wed 3/5   LAB: Examining Your Own Data with GoogleMaps and Social Explorer

Mon 3/7-23   Spring Break: No Classes or Labs

Mon 3/31   Code Undone
Readings
Coleman, Gabriella. 2012. "Am I Anonymous?" *Limn* (2). http://limn.it/am-i-anonymous/.

Wark, McKenzie. 2013. "Considerations on a Hacker Manifesto." In *Digital Labor: The Internet as Playground and Factory*, edited by Trebor Scholz, 69–76. Digital Labor: Routledge.

Golbeck, Jennifer. 2013. "Tie Strength." In *Analyzing the Social Web*, 63–74. Waltham, MA: Morgan Kaufmann/Elsevier.

Projects to review:
Baldwin, J.R. 2012. "Top Needs of Occupy Sites | Limn." *Limn* 2. http://limn.it/top-needs-of-occupy-sites/.

Wed 4/2   Whose Code? Whose Culture?
Readings
Kitchin, Rob, and Martin Dodge. 2014. "Introducing Code/Space." In *Code/Space: Software and Everyday Life*, 3–22. Cambridge, MA: MIT Press.

Donovan, Gregory, and Cindi Katz. 2009. "Cookie Monsters: Seeing Young People's Hacking as Creative Practice." *Children, Youth and Environments* 19 (1): 197–222.

Assignments:
Quiz
Blog post: speak to your GoogleMaps and Social Explorer maps related to your datasets.

Wed 4/2   LAB: Using Excel and R with Your Data

<u>V. Sociality & Cyborgembodiment</u>
Mon 4/7   Our Bodies, Our(Social Media)selves: Cyborg Embodiment
Readings
Nakamura, Lisa. 2010. "Race and Identity in Digital Media." In *Mass Media and Society*, edited by
        James Curran, 336–347. New York: Bloomsbury.

Neff, Gina. 2013. "Why Big Data Won't Cure Us." *Big Data* 1 (3) (September): 117–123.
        doi:10.1089/big.2013.0029.

Yau, Nathan. 2013. Selections from "Visualizing with Clarity." In *Data Points: Visualization That Means
        Something*, 201–220. Hoboken, N.J.: Wiley.

Golbeck, Jennifer. 2013. "Trust." In *Analyzing the Social Web*, 75–90. Waltham, MA: Morgan
        Kaufmann/Elsevier.

        Projects to review: TBD

C. Network Analysis

<u>Wed 4/9   *Professors Gieseking and Gaze will be at conferences – read/lab on your own*</u>
Readings
Golbeck, Jennifer. 2013. "Understanding Structure through User Attributes and Behavior." In *Analyzing
        the Social Web*, 91–106. Waltham, MA: Morgan Kaufmann/Elsevier.
———. 2013. "Building Networks." In *Analyzing the Social Web*, 107–124. Waltham, MA: Morgan
        Kaufmann/Elsevier.

Yau, Nathan. 2013. Selections from "Visualizing with Clarity." In *Data Points: Visualization That Means
        Something*, 221–240. Hoboken, N.J.: Wiley.

Assignment: Blog post: write about the graphs that you created from your data in lab.

<u>Wed 4/9   **LAB**: Gephi Quick Start Tutorial on Les Mis (on your own)</u>

<u>Mon 4/14   Identity Online</u>
Readings
Gray, Mary L. 2007. "From Websites to Wal-Mart: Youth, Identity Work, and the Queering of Boundary
        Publics in Small Town, USA." *American Studies* 48 (2) (July 1): 49–59.

Nakamura, Lisa. 2011. "Syrian Lesbian Bloggers, Fake Geishas, and the Attractions of Identity
        Tourism" *Hyphen: Asian America Unabridged* (July 15).
        http://www.hyphenmagazine.com/blog/archive/2011/07/syrian-lesbian-bloggers-fake-geishas-
        and-attractions-identity-tourism.

Krebs, Valdis. 2010. "Your Choice Reveals Who You Are: Mining and Visualizing Social Patterns." In
        Beautiful Visualization: Looking at Data through the Eyes of Experts, edited by Julie Steele and
        Noah P.N. Illinsky, 103–122. Beijing, China: O'Reilly.

Golbeck, Jennifer. 2013. "Building Networks." In *Analyzing the Social Web*, 107–124. Waltham, MA:
        Morgan Kaufmann/Elsevier.

Wed 4/16   Creating Sociality, Producing New(s) Media
Readings
Miller, Greg. 2013. "Here's How Memes Went Viral — In the 1800s." *Wired Science: MapLab*.
    November 4. http://www.wired.com/wiredscience/2013/11/data-mining-viral-texts-1800s/.

Perer, Adam. 2010. "Finding Beautiful Insights in the Chaos of Social Network Visualizations." In
    Beautiful Visualization: Looking at Data through the Eyes of Experts, edited by Julie Steele and
    Noah P.N. Illinsky, 157–174. Beijing, China: O'Reilly.

Golbeck, Jennifer. 2013. "Entity Resolution and Link Prediction." In *Analyzing the Social Web*, 125–
    150. Waltham, MA: Morgan Kaufmann/Elsevier.
Golbeck, Jennifer. 2013. "Propagation in Networks." In *Analyzing the Social Web*, 151–168. Waltham,
    MA: Morgan Kaufmann/Elsevier.

Flip Classroom Assignments
Netvizz your dataset from Facebook

Assignment: Quiz

Wed 4/16   **LAB**: Visualizing and Reading Your Own Facebook Social Network

VI. Power & Format
Mon 4/21   Remix
Readings
Lessig, Lawrence. 2009a. "Cultures of Our Past." In *Remix: Making Art and Commerce Thrive in the*
    Hybrid Economy, 23–33. New York: Penguin Books.
———. 2009b. "Cultures of Our Future." In *Remix: Making Art and Commerce Thrive in the Hybrid*
    Economy, 34–35. New York: Penguin Books.
———. 2009c. "RO, Extended." In *Remix: Making Art and Commerce Thrive in the Hybrid Economy*, 36–
    50. New York: Penguin Books.
———. 2009d. "RW, Revived." In *Remix: Making Art and Commerce Thrive in the Hybrid Economy*, 51–
    83. New York: Penguin Books.

    Projects to review:
    "DOCC 2013: Dialogues on Feminism and Technology | FemTechNet." 2013. Accessed
        December 3. http://femtechnet.newschool.edu/docc2013/.

Assignment: Blog comment

Weds 4/23   Media Archaeology+
Readings
Anderson, Chris. 2012. "The Long Tail." In *The Social Media Reader*, edited by Michael Mandiberg,
    137–154. New York: New York University Press.

Sterne, Jonathan. 2006. "The MP3 as Cultural Artifact." *New Media & Society* 8 (5) (October 1): 825–
    842. doi:10.1177/1461444806067737.

Assignment: Quiz

Wed 4/23   **LAB**: Build a Network Analysis from Your Twitter Data Set

Mon 4/28   Visualization as Power & Format
Readings
Davison, Patrick. 2012. "The Language of Internet Memes." In *The Social Media Reader*, edited by
    Michael Mandiberg, 120–136. New York: New York University Press.

Hagy, Jessica. 2010. "Visualization: Indexed." In *Beautiful Visualization: Looking at Data through the*
    *Eyes of Expert*s, edited by Julie Steele and Noah P.N. Illinsky, 353–368. Beijing, China: O'Reilly.

Assignment: Blog comment

Weds 4/30   Spacetime to work on final projects
Readings
Yau, Nathan. 2013. "Designing for an Audience." In *Data Points: Visualization That Means Something*,
    241–276. Hoboken, N.J.: Wiley.

Wed 4/30   **LAB**: Spacetime to work on final projects

Mon 5/5   Final presentations

Wed 5/7   Final presentations

Wed 5/7   No lab

Mon 5/12   Papers Due

Fri 5/17   Final Exam at 9am