Bostonography: Exploring the City through Texts, Maps, and Networks
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Bostonography

Exploring the City through Texts, Maps, and Networks

Bostonography is a new course designed to bridge study in Computer Science with studies in Social Sciences or the Humanities. It allows students to apply the computational methods they learn in Fundamentals of Computer Science toward major cultural, historical and societal questions related to the city of Boston.

Bostonography includes lectures, discussions, and labs in which students examine a variety of real (i.e., not canned) datasets that describe the geographic, historical, literary, political, civic, and institutional landscapes of the city. Students will combine analytical tools such as geospatial mapping, data visualization, and network science to better understand Boston's history and its present. We also examine a range of cultural artifacts to better understand the city of Boston, its history and its contemporary situation. These include texts, such as novels, short stories, and memoirs describing the city and the experiences of its citizens at different moments in history. These assignments are paired with hands-on class activities and visits to landmarks and other important sites, helping students see the city through multiple perspectives and enabling a comprehensive view of complex cultural and social phenomena. Students demonstrate their knowledge of these cultural practices and creations through discussion and weekly writing, as well as a major project in which they explore a particular cultural-spatial facet of the city.

The schedule is subject to change; please keep up to date with the embedded version in the webpage.

Thanks to the Bostonography team for permission to use their fantastic name for the course.

Course Goals

As you do the readings and assignments for this class, you will get the most out of them if you strive to make your work align with the following goals.

1. **Improve your ability to read data as a primary source.** In your humanities and social science courses, you've probably learned how to read a variety of artifacts: poems, speeches, articles, natural experiments, and so forth. Contrariwise, in your computer science courses you've probably *used* lots of pre-selected and controlled data in order to learn how to program for particular results. In this class, we will do some of both those things, but we're going to be particularly focused on improving your ability to integrate your readings of the "real world" and your work with data and programming. We want to help you "read" data as a complex product of human intentions and actions.

2. **Designing computational approaches to social questions.** Computation is a powerful tool that can be applied to all sorts of questions. In the humanities and social sciences, the greatest challenges are frequently not in figuring out how best to execute a computational approach but in finding what a useful computational approach might be. How do you find or create data that is useful for your questions? What tools are particularly useful at describing the messy world of historical artifacts and social relations? What

sort of work is a computational model good for in the end, anyway? You'll learn to do this in your own projects and through exposure to a variety of scholars and professionals who do it in their day-to-day work.

3. **Integrating programming into developed systems.** As you continue in a CS major or minor, you'll increase the range of problems you can solve by programming things yourself. But you'll always need to integrate the tools that you build yourself with tools and systems designed by others. In this class, we will help you develop good practices for such integration that will serve you well in the future.

4. **Understanding a place from a variety of disciplinary and cultural perspectives**. We sometimes talk in this course about the "Humanities and Social Sciences" as one thing. As anyone with an office in Renaissance Park will tell you, they're not! By learning about the city of Boston from a variety of perspectives, you'll develop a flexibility in problem solving that can be very valuable.

5. **Creating a rich understanding of the city and region of Boston**. Finally, we want you to deepen and broaden your understanding of the place you've chosen to go to call home during a significant period of your lives. Boston today is interesting, but the city has layers of historical, cultural, and political interest that make it all the more vibrant for an observant citizen.

Required Texts

Our printed textbooks are available at the Northeastern University bookstore or (if you have time) can be ordered online. If you purchase them elsewhere, please buy the editions indicated here, as it will be important that we're all on the same page, both literally and metaphorically. **Please note**: Some of these texts are available as ebooks, and I certainly don't mind you reading them on your Kindle, Nook, or other device. However, you should buy the digital edition of the editions assigned here, which will include matching page numbers:

- Robert Allison, *A Short History of Boston*
- Edward R. Tufte, *Envisioning Information*
- Alex Haley, *The Autobiography of Malcom X*
- J. Anthony Lukas, *Common Ground: A Turbulent Decade in the Lives of Three American Families*

Communication

One of the best way to get in touch with us is to visit during office hours. If you're unsure about our readings, struggling with an assignment, or just want to talk, please visit. During the Fall 2016 semester, Professor Cordell will be in his office (Nightingale Hall 415) Mondays from 10-11am, Thursdays 3-4pm, and by appointment; while Professor Schmidt will be in his office (Nightingale 413) Mondays 3-5pm. We are also happy to make appointments at other times—just email Professor Cordell or Professor Schmidt **with at least three possible meeting times**. We can schedule in person or virtual meetings.

The next best way to get in touch with us is by sending an email to email Professor Cordell or Professor Schmidt. When you write to us: consider your tone and your audience. An email to your professor shouldn't read the same as your emails to friends. For help, see this guide to emailing your professors. We guarantee that we will respond to emails within 48 hours. Often we will respond more quickly, but you should not send us an urgent email, for example, the night before an assignment is due.

Participation

This course relies on active, engaged participation in class activities and discussions. There will be few lectures and we will not be building toward an exam. Instead, we will work together to build our facilities for thinking critically about the city and analyzing its data. You should come to every class having read all of the required reading (or watched the required videos, &c. &c.) and prepared to discuss them with your colleagues. We will assess your reading and course engagement through in-class writing exercises (some collected for a grade and others not), reading quizzes, in-class group work, and related assignments.

Maintaining an active class conversation also requires that the class be present, both physically and mentally. To that end: you may miss two classes without penalty over the course of the semester. *Please note:* We make absolutely no distinction between excused and unexcused absences, so use your allotted absences wisely. You may not miss two classes early in the semester and then petition for additional excused absences afterward. When you must miss class, **it is your responsibility to find out what you missed and to make up any pertinent assignments**. You may not make up quizzes or in-class work. If you take one of your excused absences, we simply will not grade any in-class work you missed. If you miss an applied computing activity due to an excused absence you should attempt to make up the work. Once beyond your allotted absences you will receive a zero for any in-class work or computing activities missed.

Note: "Attendance" does not simply mean that your body can be found in proximity to those of your classmates. You must also be mentally present, which means you must:

Be awake and attentive to the conversation of the day; Prepare assigned texts before class begins; Bring your assigned texts to class. If we're reading online articles, you should either bring a device on which to read them or print them and bring that hard copy; *Bring your assigned texts to class!* and, finally, **bring your assigned texts to class!!!!!! We mean it. Seriously.** If you come to class without the day's reading on hand, we reserve the right to count you absent.

If you fail to meet these requirements, we will consider you mentally absent, though you may be physically present, and that day will be accounted as an absence.

"Information Overload" Days

We do understand that the semester can get hectic. The reading and workload for this class is often challenging, and you must balance it with the work in your other classes. Most likely you will have days when you simply cannot—for whatever reason—complete the assigned reading. To that end, you may take *one "information overload" (IO) day* during the semester. On that days you will not be expected to contribute to class discussion and you will receive a pass on any in-class work (the work will be ungraded and not factored into your final grade). In order to take an IO day, you must follow these rules:

You must attend class, listen attentively to any lectures or class discussions, and take part in any activities or group work not dependent on the day's reading. **Your IO day cannot be used as an additional excused absence**. You must inform us before the beginning of class that you are taking your IO day. You *may not wait* until we call on you or you see the day's in-class assignment. **We will deny any IO requests made during class**. To that end: take special care to be on time if you plan to request an IO day, as you won't be allowed to request one if you arrive late. You may not extend an IO day into another class session, even if the reading or activities of one day continue on the next. You may not take an IO day to avoid completing on an in-class applied computing activity or another major assignment. IO days will excuse you from reading quizzes or reflections, but nothing of more serious import.

IO days are intended to help you manage the inevitable stresses of your unique semester. Use them wisely.

Attendance and Participation Bonus

At the end of the semester, for any allowed absences or IO days you *do not* use, we will drop your lowest in-class work grade. So if you attended all sessions prepared and did not require an IO day, we would drop your three lowest in-class work grades from our final calculations. We will also drop one low grade to acknowledge exceptional engagement and participation through the semester.

Digital Etiquette

Phones

This should go without saying, but let's say it anyway: you should turn off your cellphone and/or other devices (iPods, etc) before you enter the classroom. If your phone rings once during class this semester, we'll all laugh and I'll ask you to turn it off. If your phone rings again during class this semester, we will ask you to leave and will count you as absent. Though it may seem unthinkable, your friends and family may actually survive three hours each week without direct updates as to your whereabouts and doings. They probably won't call the police to report you missing. They will no doubt pine for your witty banter, but that longing will only make your 1:26pm updates all the sweeter each Monday and Thursday this semester.

FYI: you're not as sneaky texting under the table as you think you are.

Laptops

This class will rely on access to laptops in nearly every session. However, in-class laptops also present temptations that many students find irresistible. You may not use a laptop during class to follow a game, text (see the phones policy above), check your friends' Tumblrs, post on Reddit, or commit (non course related) code to Github. Such activities not only distract you—meaning you will be less able to participate meaningfully in the class' conversation—they also distract anyone around or behind you. If you choose to virtually exit the class, we will ask you to physically leave as well and this will count as an absence. If you often seem distracted by what's on your screen, I reserve the right to ask you to put your laptop away, perhaps for the duration of the semester. Periodically we will ask you all to put "lids down." This means I want everyone—myself included—to put away screens in order to focus our attention on another aspect of class.

Technical Snafus

This course relies heavily on access to computers, specific software, and the Internet. **At some point during the semester you WILL have a problem with technology**: your laptop will crash, a file will become corrupted, a server will go down, a piece of software will not act as you expect it to, or something else will occur. These are facts of twenty-first-century life, not emergencies. To succeed in college and in your career you should develop work habits that take such snafus into account. Start assignments early and save often. Always keep a backup copy of your work saved somewhere secure (preferably off site). None of these unfortunate events should be considered emergencies: inkless printers, computer virus infections, lost flash drives, lost passwords, corrupted files, incompatible file formats. It is *entirely your responsibility* to take the proper steps to ensure your work will not be lost irretrievably; if one device or service isn't working, find another that does. **We will not grant you an extension based on problems you may be having with technological devices or the internet services you happen to use**. When problems arise in the software we are all using for the course, we will work through them together and learn thereby.

TRACE

Students are expected to complete a TRACE (Teacher Rating and Course Evaluation) toward the end of the semester. We will set aside some time during a class period for students to complete their TRACEs.

Academic Integrity

In this class you will abide by Northeastern University's Academic Integrity Policy at all times:

> A commitment to the principles of academic integrity is essential to the mission of Northeatern University. The promotion of independent and original scholarship ensures that students derive the most from their educational experience and their pursuit of knowledge. Academic dishonesty violates the most fundamental values of an intellectual community and undermines the achievements of the entire University.

If you have any questions about what constitutes academic integrity in this class—particularly as the concept applies to digital course projects—please talk to me. We will also discuss the ethics of digital scholarship in class.

Writing Center

The Northeastern University Writing Center is located in 412 Holmes Hall and in Snell Library (for current hours see http://www.northeastern.edu/english/writing-center/ or call 617-373-4549) and offers free and friendly help for any level writer, including help with reading complex texts, conceptualizing a writing project, refining your writing process (i.e., planning, researching, organization, drafting, revising, and editing), and using sources effectively. You can receive feedback face-to-face during regular hours or via email/online response. I strongly recommend that you make appointments to go over drafts of your work—including your digital work—before turning it in. Questions about the Writing Center can be directed to Belinda Walzer, Writing Center Director.

Grading

In-class work: 25%

- Attendance
- In-class work/reading responses
- Showing up with software installed

Applied Computing Assignments: 35%

These are weighted relative to each other. Weights are listed on assignments, but will be roughly the following:

- Mental Mapping - 2 unit
- Shoreline tracing in GIS - 1 unit
- 3d-printed shoremap - 1 unit
- Investigating Archival data - 3 units

- Not reading a Bostonian biography - 2 units
- Election PCA/predictions - 1 units
- Spurious data correlation - 1 units
- Twitter: Markov Bots - 1 unit

Final Project Ideas Posts (2, one by October 5): 5%

This might be something like the following:

- A description of an interesting data source and some work that could be done with it;
- A extension of your archival data project with a digitization proposal to a realistic scope.
- A set of questions about an issue and an initial attempt to catalog some of the already-existing data about it.
- An extensive refinement of someone else's post or question–research into available data, reflections on how a new method we've just learned might be applied to someone else's questions for earlier, etc.

Blue Sky Proposal/Final Project Contract: 10%

Final Project: 25%

Week 1: Introductions

Thursday Sept 8: Initial Meeting

Activity: Orientation to class

Worksheet: access to computing stuff.

Readings (aloud in class):

- John Winthrop, from "A Model of Christian Charity" (*http://winthropsociety.com/doc_charity.php*)

Give Assignment: Mental Maps of students' neighborhoods

Unit 1: Maps, Texts, Networks

Week 2: Maps

Monday Sept 12: Short History of Boston

Activity: Investigate historical maps at the Leventhal Map Center

Readings Due:

- Robert Allison, *A Short History of Boston*, chapters 1-3
- Nedra Reynolds, "Maps of the Everyday: Habitual Pathways and Contested Places"

→ **Before next class:** install QGIS (*http://www.qgis.org/en/site/*) and the Open Layers plugin.See instructions for both at *http://programminghistorian.org/lessons/qgis-layers*

- Download files for Thursday's in-class workshop

Wednesday, September 14

Assignment Due: Mental Maps

Thursday Sept 15: GIS

Activity: Georectification in GIS

Readings:

- Denis Wood, "A Map is an Image Proclaiming Its Objective Neutrality"
- Mark Monmonier, "Lying with Maps"

Useful Resources:

- Jim Clifford, Josh MacFadyen, and Daniel Macfarlane, "Georeferencing in QGIS 2.0" (*http://programminghistorian.org/lessons/geo-qgis*) and "Creating New Vector Layers in QGIS 2.0" (*http://programminghistorian.org/lessons/vector-layers-qgis*)

Give assignment: Shoreline and Streetcar Tracing in GIS

Week 3: Texts

Monday Sept 19: Data is Data

Activity: Read census data schema 1800-2000 and individual census records for NU area

Readings:

- *SHB*, chapter 4
- danah boyd and Kate Crawford, "Critical Questions for Big Data" (*http://www.tandfonline.com/doi/abs/10.1080/1369118X.2012.6*
- Number Crunching without Programming: The Evolution of Spreadsheet Usability. Martin Campbell-Kelly
- A Spreadsheet way of knowledge: Stephen Levy, Harper's Magazine, 1984

Thursday Sept 22: NU Histories

CHANGE OF LOCATION: Northeastern Archives, Snell 90SL

- Short History of Boston, chapters 1-4, adjusted due date.

Activity: Northeastern Archives and Special Collection

Give Assignment: Investigating an Archival Data Source

→ Before next class: install Gephi (*https://gephi.org/*)

Week 4: Networks

Monday Sept 26: The Hub of the Universe

Activity: The structure of networks and network data

Readings:

- Oliver Wendell Holmes, from "The Autocrat of the Breakfast-Table" *http://www.theatlantic.com/magazine/archive/1858/04/the-autocrat-of-the-breakfast-table/304375/*); read only to the line "All are but parts of one stupendous HULL!"
- Browse the Boston-themed issue of *Life* magazine from October 19, 1911. In particular, read "Hail Boston!" (pg. 653), "Boston Expurgata" (pg. 657), "Boston" (pg. 665), "The Cerebral City" (pg. 666), and the comics on pgs. 668-669 (*https://books.google.com/books?id=pr5GAQAAIAAJ&pg=PA645#v=onepage&q&f=false*)
- Scott Weingart, "Demystifying Networks, Part I & II" (*http://journalofdigitalhumanities.org/1-1/demystifying-networks-by-scott-weingart/*)

5pm Assignment Due: Shoreline and Streetcar Tracing in GIS

Thursday Sept 29: Six Degrees of Paul Revere

Activity: Visualizing the Sons of Liberty network using Gephi

Readings:

- Vannevar Bush, "As We May Think" (*http://www.theatlantic.com/magazine/archive/1945/07/as-we-may-think/303881/*) — Kieran Healy, "Using Metadata to Find Paul Revere" (`https://kieranhealy.org/blog/archives/2013/06/09/using-metadata-to-find-paul-revere/`)

Unit 2: Visualization

Week 5: Viz

Monday October 3: History of Visualization

Activity: Sorting history of visualizations

Readings:

- Edward Tufte, *Envisioning Information*
- Selections from Bostonography the blog (*http://bostonography.com/*), posted online.
- Mushon Zer-Aviv, "If Everything is a Network, Nothing is a Network", `http://visualisingadvocacy.org/blog/if-everything-network-nothing-network`

Thursday October 6: Designing for 3D Printing

Activity: Design workshop

**Note:

Readings:

- Review Tufte and browse, reading a few items in detail, *http://bostonography.com/*.
- **OPTIONAL**: Johanna Drucker, "Humanities Approaches to Graphical Display" (*http://www.digitalhumanities.org/dhq/vol/5/1/oo*
- **OPTIONAL**: Jim Miller, "Is Bad Writing Necessary?"

Friday, October 7: Assignment Due, Final Project Idea Post #1

Unit 3: Education

Monday, October 10: Assignment Due, Investigating an Archival Data Source

Week 6: Boston Data

Monday October 10: No class, Columbus Day

Thursday October 13: Data Field Trip to the *Boston Globe*

Readings: data journalism exemplars.

Spotlight "Shadow Campus" report on student housing in Boston; Pulitzer prize finalist

- Read part 2 and part 3. Pay attention to what sort of data they use and how they present it; look for Northeastern's place there and in the interactive database.
- Also browse the main web page for the full spotlight series. on the shadow campus.

Also for context, look at two other pieces of data journalism.

- Spies in the skies, Buzzfeed news
- Arresting Words, Boston Globe

Week 7: Not Reading A to X

Monday October 17: Computational Reading

→ For Monday: install Rstudio (*https://www.rstudio.com/*). Installation instructions online under "Handouts."

In-class discussion: data journalism debriefing.

Readings:

- Michel et al, "Quantitative analysis of culture using millions of digitized books"
- James F. English and Ted Underwood, "Shifting Scales Between Literature and Social Science"

Thursday October 20: Text by the numbers

Note: You *do not* need to read Henry Adams and Malcolm X before class. You *must* have installed Rstudio on the computer you bring to class following the instructions here

Activity: Text analysis of opening chapters of of Henry Adams and Malcolm X.

Lecture/Activity: The statistics of text

Week 8: Education

Monday October 24: Class cancelled.

Thursday October 27: Distant and close Boston bios

Readings:

- Henry Adams, "Quincy" and "Boston" from *The Education of Henry Adams* (*http://xroads.virginia.edu/~hyper/HADAMS/ha_hon*
- Malcolm X, "Homeboy," "Laura," "Caught," and "Satan" from *The Autobiography of Malcolm X*

Give Assignment: Not Reading a Bostonian Biography

Week 9: Busing in Boston

Monday October 31:

Activity: Plotting data in R — the grammar of graphics

Readings:

- J. Anthony Lukas, *Common Ground*, chapters 14-18
- Watch "James Brown and Mayor Kevin White Address the Crowd at the Boston Garden" (*http://openvault.wgbh.org/catalog/V_D1*
- Watch, "Evening Compass" 09/09/1975, beginning of clip to 6:41(*http://bostonlocaltv.org/catalog/V_TBHJ42XIAXAZOY2*) and student interviews in "English High School" (*http://bostonlocaltv.org/catalog/V_NMEQDOV4oEIR1F6*)

Thursday November 3

Readings:

- Watch John Oliver on School Desegregaton today.
- J. Anthony Lukas, *Common Ground*, chapters 19-24
- Watch, "Boston School Desegregation Review" (*http://bostonlocaltv.org/catalog/V_ECWKOMHK3Z1X86O*)

In class:

- Америка 70-х: Бостонские контрасты (Now in class)

Give Assignment: Blue Sky Proposal/Final Project

Unit 4: Politics

Week 10: Election Week

Monday November 6

Assignment Due, Final Project Idea Post #2

Activity: Merging data and exploring residential segregation.

Readings: - The Big Sort: Chapters 1, 2

Activity: Principal Components Analysis and election results (RStudio). Lecture: Principal Components and political polarization.

Thursday November 10

Readings: - The Big Sort, 10

TBD: Election results.

Friday November 11: Assignment Due, Not Reading

Unit 5: Social Engagement and the City

Week 11: Civics and the Web

Monday November 14: Final Project Workshop

Assignment: bring your two ideas from your two ideas assignments. Be ready to make a brief pitch to the class.

- Workshop ideas into project proposals
- Identify potential collaborations
- Outline a plan of work
- Looking toward Blue Sky Proposal/Final Project Contract

Thursday November 17: Data Field Trip

Activity: TBD/Field Trip to City Hall

Friday, November 18: Assignment Due, Blue Sky Proposal/Final Project Contract

Week 12: Social Media Activism

Monday November 21: #blacklivesmatter and #ferguson

Activity: Guest Lecture by Prof. Brooke Foucault Welles from 12:30-1:25

Readings:

- Moya Bailey, "Redefining Representation: Black Trans and Queer Women's Digital Media Production" — Sarah J. Jackson & Brooke Foucault Welles, "#Ferguson is everywhere: initiators in emerging counter-public networks"

Thursday November 24: No Class, Thanksgiving

Week 13: Social Media Text Analysis/Twitter bots?

Monday November 28: 3 Laws of Twitter Robotics

- Rob Dubbin, "The Rise of Twitter Bots" (*http://www.newyorker.com/tech/elements/the-rise-of-twitter-bots*)
- Mark Sample, "A Protest Bot is a Bot So Specific You Can't Mistake It for Bullshit" (*https://medium.com/**???**#.8bjcxnp7x*)
- *http://arstechnica.com/the-multiverse/2016/06/an-ai-wrote-this-movie-and-its-strangely-moving/*
- *https://vimeo.com/9790850* in class
- Bots as abusers

Thursday December 1: The Social Media Marathon

Debate: How much news is fit to print?

Activity: Parsing Twitter data–how is it assembled? How do you get from native to structured like we want?

Thursday December 1: Bots due before class as described in assignment

Readings:

- Kate Starbird et al, "Rumors, False Flags, and Digital Vigilantes: Misinformation on Twitter after the 2013 Boston Marathon Bombing" (*https://www.ideals.illinois.edu/bitstream/handle/2142/47257/308_ready.pdf?sequence=2&isAllowed*
- Yu-Ru Lin and Drew Margolin, "The ripple of fear, sympathy and solidarity during the Boston bombings" (*http://epjdatascience.springeropen.com/articles/10.1140/epjds/s13688-014-0031-z*)

Week 14: Wrapping Up

Monday December 5: Final Project Work-in-Progress Presentations

** No final exam **

** Final Projects due Dec 12, 2016 at 10:00am **

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Professors Nick Beauchamp and Dan O'Brien collaborated in the design of this class.

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