

November 8, 2018

11.s945: A City is Not a Computer^{*}

Histories and Theories of the Computational City

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Thursday, 2-4pm, 9-450

Description

Our lives in cities are governed by algorithms, threaded by apps, stored in clouds, and sensed, surveilled, and monitored by a densifying mesh of networked, autonomous observers. Our daily lives give off a thick mist of digital exhaust that can be captured, profiled, capitalized upon, and precisely located. Optimistically, advances in urban science, the rise of big data, the drive to build smarter cities, and the widespread embrace of the open data movement are coalescing into new opportunities for planners to make data actionable through analysis and visualization. However, these same phenomena should also trouble us; they lay the groundwork for widening digital divides, automated inequality, and the erosion of public accountability. “A city is not a computer,” as Shannon Mattern reminds us, even as our cities are becoming more pervasively computational.

This history and theory seminar has two goals: first, we will place contemporary urban technology within a much longer history of technoscientific urban governance. Second, we will develop a theoretical vocabulary for thinking about our

^{*}Seminar title is a quotation of Shannon Mattern’s ‘A City is Not a Computer’ (2017).

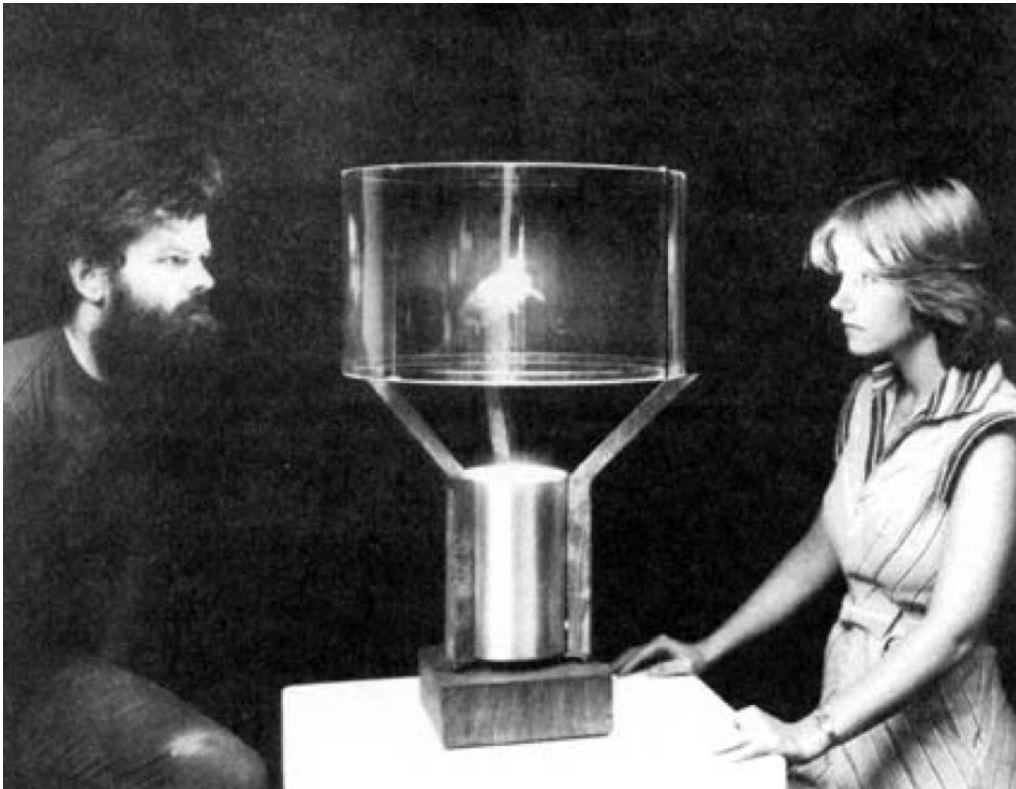


Figure 1: Geoff Dutton's American Graph Fleeting (1979), an animated map hologram produced at the Harvard Laboratory for Computer Graphics and Spatial Analysis. See it in action in a video posted to YouTube by Keith Clarke, <https://www.youtube.com/watch?v=t1160bBcmbA>.

pervasively mediated, monitored, and sensed cities, drawing on extensive readings in urban planning, science and technology studies (STS), human geography, and media studies.

We will strive to avoid the twinned perils of technophobia and technophilia; we will not be articulating a purely critical or stridently affirmative position. Instead, we will be cultivating a responsible stance that is simultaneously optimistic about the affordances and critically attuned to the problematics of algorithmic life, big data, new spatial media, smart cities, and environmental monitoring. Our efforts will be channeled into the production of a volume of essays that we will publish digitally at the end of the semester.

What Will We be Learning?

We will be developing a language to debate the social ramifications and history of urban computation. This course will create space for thought around these important questions, requiring students to formulate a theory of reflexive practice and responsible action. Furthermore, students will develop greater appreciation for the history and responsibility that accompanies MIT's mission to develop and deploy innovative technological solutions to the challenging problems facing our cities and our world.

How Will We be Learning?

The course is a history and theory seminar, meaning that our time together will be spent discussing texts and that the medium of our outputs will be the written word. This requires that students, at the very least, complete the assigned readings and prepare to discuss them.

In addition to this baseline, we will be developing, over the course of the semester, an *edited volume* of our own argumentative non-fiction around the seminar themes for which Eric will pen an introduction. This will be formatted for print and for the web. Students will be involved in the design, editing, marketing, and layout of this publication. The notion here is that writing is not just the taxing exercise undertaken to please the professor/pedant in the final week of a course—it can and should be a portfolio piece! It's rare in a class that we get to take the time to revisit our written work, and to do so with our peers.

Am I Required to Buy the Texts?

No! All readings will be uploaded to the course Stellar site by one week prior to the seminar for which they are assigned. Just remember this favor when you ask yourself how much of the reading to complete...

Assessment and Assignments

Assessment

Assignment	Weight
Discussion Leadership	10%
Reading Responses	10%

Assignment	Weight
Contribution to Collection	30%
Final Essay Proposal	10%
Final Essay Draft	10%
Final Essay	30%

Discussion Leadership

Due: Weekly on Thursday at 8:00am before seminar.

Students will pair up in the first week of class and agree to lead discussion for a number of weeks (to be determined by class enrollment). This should not be an arduous task! For each week, [discussion leaders] will simply be required to jointly develop at least five questions to guide discussion. These should be submitted by 11:59PM on Wednesday before the seminar.

Reading Responses

Due: Weekly on Thursday at 8:00am before seminar.

Each week, [all students] should prepare a written response of 200-250 words in which you engage with the week's readings. This should be submitted by midnight the night before our seminar meetings. This may seem a bit pedantic, but the idea is that you've prepared your thoughts and can therefore speak from a position, however tentative, when the time comes. This can be fun! Seriously - let your theory-headed freak flag fly. Or y'know... write a dry policy brief. Either way, take some time to explore tensions, to examine connections and contradictions, and to let your brain play. Be able to discuss: what key concepts are needed to understand the text(s)?, what are the arguments of the text(s)?, what evidence is provided to support these arguments?, and what is the significance of the text(s)?

For discussion leaders: note that these responses can be very helpful when developing questions for discussion leadership. Consider completing them individually before convening to discuss questions!

Event Responses

Due: Weekly on Thursday at 8:00am before seminar.

In a given week, [all students] can choose to compose and submit a summary and/or critical review of a topical and appropriate lecture, panel, or exhibition you've attended. This is in lieu of your reading response for a given week. Your response should extend to 200-250 words and include *at least one photograph*. Everyone must do this at least once. You can submit event responses in lieu of your reading response up to two times.

If you hear of a pertinent event, let your classmates (and me!) know. It's difficult to keep an eye on all the stuff happening in Boston/Camberville, so let's help to keep each other informed!

Final Essay Proposal

Due: 8:00am Thursday, October 25.

Midway through the semester, you will propose a topic for a final essay; this will take the form of a two-page prospectus that includes a statement of intent—what do you intend to research, articulate, and argue?—a source list, and a work plan including dates by which you plan to have completed portions of the research and writing.

Final Essay Draft

Due: 8:00am Monday, November 26.

You will have a *complete* draft of your final essay by the Monday morning following Thanksgiving break. Note that this is a full month after the proposal and well before finals chaos sets in - what a perfect time to research and write! This must be submitted early because we will spend the two-and-a-half weeks following this submission doing rounds of revisions with [content editors], at which point [layout editors] must format and produce the document.

Final Essay

Final text due: 8:00am Tuesday, December 4

Final document due: 11:59am Wednesday, December 12.

This is a larger writing project that engages with the course material - 2500-3500 words. You could write 1) a traditional seminar research paper, 2) an extended position paper, or 4) a policy brief. Feel free to use the weekly reading/exercise responses as an opportunity to test out ideas for this project. Note that this is not due at the very end of the semester, but two weeks before! This is to grant sufficient time to editing, laying out, and formatting the publication. No late writing projects will be accepted, so plan early!

Attendance

For a very long time, I was against taking attendance. But here's the thing... this is a discussion section, and the quality of discussion can really be wounded by late-semester apathy. So: feel free to take two unexcused absences. Beyond that, each unexcused absence will result in a stepwise reduction in your final grade (e.g., A becomes A-). Please note, though, that an absence does not imply that I must provide you with a walkthrough of the happenings of the day!

Office Hours

My office hours are *Thursday, 10-12:30*. I find it very helpful if you book a session in advance through the DUSP office hours portal¹, though this is not absolutely mandatory. No time slot can possibly please everyone. As such, If this time does not work for you, we can make arrangements to meet at another time. However, please be conscientious - I set this time aside each week for office hours and I really do try to manage my time.

Email

I reserve the right to take up to 24 hours to respond to your emails during the week. I do not respond to emails on Saturday and do so on Sunday only at my discretion. The labor movement fought long and hard to secure your weekend! It is truly remarkable that we live in a world in which an email can travel to space and

¹<https://dusp.mit.edu/oh>

divebomb from the exosphere to our pockets in a matter of seconds; this does not imply that our response must be equally instantaneous.

A Note on Graduate School and Mental Health

Academic environments are taxing places. For reasons structural, institutional, financial, and interpersonal, they do not always lend themselves to what most reasonable people would think of as human flourishing. I went to graduate school. In fact, I went to graduate school twice. Without dwelling on the issue, I will say that I am intimately familiar with the toll graduate education can exact from our mental health and wellbeing.

I have two points here: 1) MIT offers a range of counseling and mental health resources² for students. I would really encourage you to be proactive about taking advantage of them; and 2) do not hesitate to let me know if you're struggling. It is not my intention to mine for the details of your private lives! It is only to let you know that I am sensitive to the distinctive difficulties of the environment we inhabit and that help is available.

Schedule

```
w00 = (date.datetime(2018, 09, 06), 'print('Hello world!'))
```

Texts

- Mattern, Shannon. 2017. "A City Is Not a Computer." *Places Journal*. <https://doi.org/10.22269/170207>.

Events

- Wednesday, September 5, 6:30-8pm. Panel: Eve Blau, Laura Kurgan, Lev Manovich, Robert Gerard Pietrusko, and Jeffrey Schnapp. "Urban Intermedia: City, Archive, Narrative." Harvard GSD, Gund Hall.

Deadlines

- No reading_response or discussion_questions due this week.

²<https://medical.mit.edu/services/mental-health-counseling>

w01 = (date.datetime(2018, 09, 13), 'Algorithmic Life 1: Governance')

Texts

- Amoore, Louise. 2011. "Data Derivatives: On the Emergence of a Security Risk Calculus for Our Times." *Theory, Culture & Society* 28 (6): 24–43. <https://doi.org/10.1177/0263276411417430>.
- Campolo, Alex, Madelyn Sanfilippo, Meredith Whittaker, and Kate Crawford. 2017. "Rights and Liberties." In *AI Now 2017 Report*. AI Now Institute. https://ainowinstitute.org/AI_Now_2017_Report.pdf, 21-29.
- Crawford, Kate, and Ryan Calo. 2016. "There Is a Blind Spot in AI Research." *Nature* 538 (7625): 311–13. <https://doi.org/10.1038/538311a>.
- O’Neil, Cathy. 2017. "Bomb Parts: What is a Model?" In *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. New York: Broadway Books, 15-31.
- Pasquale, Frank. 2015. "Introduction: The Need to Know." In *The Black Box Society: The Secret Algorithms That Control Money and Information*. Cambridge, MA: Harvard University Press, 1-18.

Events

- Wednesday, September 12 4-6:30pm. "Social Media and Democracy." Panelists are Siva Vaidhyanathan (UVA), Daniel Weitzner (MIT), David Edelman (MIT), and Joan Donovan (Data & Society). Moderated by Jennifer Light. Sponsored by the MIT Computational Cultures Initiative. 10-250.

Additional Resources

- Smith, Andrew. 2018. "Franken-Algorithms: The Deadly Consequences of Unpredictable Code." *The Guardian*, August 30. <https://www.theguardian.com/technology/2018/aug/algorithms-frankenalgos-program-danger>.
- Graham, Stephen. 2005. "Software-Sorted Geographies." *Progress in Human Geography* 29 (5): 562–80.

Deadlines

- w01_reading_response and w01_discussion_questions due on Thursday, September 13 at 8:00am.


```
w02 = (date.datetime(2018, 09, 20), 'Making Up People')
```

Texts

- Barnes, Trevor J. 1998. “A History of Regression: Actors, Networks, Machines, and Numbers.” *Environment and Planning A* 30 (2): 203–23. <https://doi.org/10.1068/a300203>.
- Foucault, Michel. 2007. “11 January 1978” In *Security, Territory, Population: Lectures at the Collège de France, 1977-1978*. Edited by Michel Senellart. Translated by Graham Burchell. New York: Picador, 1-23.
- Hacking, Ian. 2004. “Making Up People.” In *Historical Ontology*. Cambridge: Harvard University Press, 99-114.

Additional Resources

- Bowker, Geoffrey C., and Susan Leigh Star. 2000. “Introduction: To Classify is Human.” In *Sorting Things out: Classification and Its Consequences*. Cambridge: The MIT Press, 1-32.

Deadlines

- w02_reading_response and w02_discussion_questions due on Thursday, September 20 at 8:00am.

```
w03 = (date.datetime(2018, 09, 27), 'Algorithmic Life 2: Algorithmic Bias')
```

Texts

- Browne, Simone. 2015. “B^oanding Blackness Biometric Technology and the Surveillance of Blackness” In *Dark Matters: On the Surveillance of Blackness*. Durham: Duke University Press, 89-130.
- Buolamwini, Joy. 2017. “How I’m fighting bias in algorithms.” TED. March 29. https://www.youtube.com/watch?v=UG_X_7g63rY.
- Buolamwini, Joy, and Timnit Gebru. 2018. “Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification.” In *Conference on Fairness, Accountability and Transparency*, 77–91. <http://proceedings.mlr.press/v81/buolamwini18a.html>.
- Kaufman, Emily. 2016. “Policing Mobilities through Bio-Spatial Profiling in New York City.” *Political Geography* 55: 72–81. <https://doi.org/10.1016/j.polgeo.2016.07.006>.

Additional Resources

- Bowker, Geoffrey C., and Susan Leigh Star. 2000. “The Case of Race Classification and Reclassification Under Apartheid.” In *Sorting Things out: Classification and Its Consequences*. Cambridge: The MIT Press.
- Browne, Simone. 2017. “Surveillance and race online.” February 9. <https://www.youtube.com/watch?v=lBwz-Jag1ZE>.
- Campolo, Alex, Madelyn Sanfilippo, Meredith Whittaker, and Kate Crawford. “Bias and Inclusion.” In *AI Now 2017 Report*, 13-20. https://ainowinstitute.org/AI_Now_2017_Report.pdf.
- Edwards, Paul and Gabrielle Hecht. 2010. “History and the Technopolitics of Identity: The Case of Apartheid South Africa.” *Journal of Southern African Studies* 36 (3): 619-639. <https://doi.org/10.1080/03057070.2010.507568>.

Deadlines

- w03_reading_response and w03_discussion_questions due on Thursday, September 27 at 8:00am._

w04 = (date.datetime(2018, 10, 04), 'Smarts 1: Smart Cities')

Texts

- Shelton, Taylor, Matthew Zook, and Alan Wiig. 2015. “The ‘Actually Existing Smart City.’” *Cambridge Journal of Regions, Economy and Society* 8 (1): 13–25. <https://doi.org/10.1093/cjres/rsu026>.
- Townsend, Anthony M. 2013. “Reinventing City Hall” From *Smart Cities: Big Data, Civic Hackers, and the Quest for a New Utopia*. New York, NY: Norton, 194-225.
- Wiig, Alan. 2016. “The Empty Rhetoric of the Smart City: From Digital Inclusion to Economic Promotion in Philadelphia.” *Urban Geography* 37 (4): 535–53. <https://doi.org/10.1080/02723638.2015.1065686>.

Deadlines

- w04_reading_response and w04_discussion_questions due on Thursday, October 4 at 8:00am.

Events

- Friday, October 5, 5-7pm. Carl Steinitz (UCL/Harvard GSD). “Collaborative Negotiation as a Geodesign Method.” Part of the “Pasts, Presents and Futures of Geo-Spatial Computing” lecture series. Long Lounge. Sponsored by Design and Computation.

Additional Resources

- Goodspeed, Robert. 2015. “Smart Cities: Moving beyond Urban Cybernetics to Tackle Wicked Problems.” *Cambridge Journal of Regions, Economy and Society* 8 (1): 79–92. <https://doi.org/10.1093/cjres/rsu013>.
- Halpern, Orit, Jesse LeCavalier, Nerea Calvillo, and Wolfgang Pietsch. 2013. “Test-Bed Urbanism.” *Public Culture* 25 (2): 273-306. <https://doi.org/10.1215/08992363-2020602>.
- Leszczynski, Agnieszka. 2016. “Speculative Futures: Cities, Data, and Governance beyond Smart Urbanism.” *Environment and Planning A* 48 (9): 1691–1708. <https://doi.org/10.1177/0308518X16651445>.

w05 = (date.datetime(2018, 10, 11), 'Dataaesthetics')

Texts

- Amooore, Louise. 2013. “On Aesthetics. Security’s Objects and the Form of Data.” From *The Politics of Possibility: Risk and Security beyond Probability*. Durham: Duke University Press, 129-154.
- Halpern, Orit. 2014. “Visualizing: Design, Communicative Objectivity, and the Interface_.” From *Beautiful Data: A History of Vision and Reason since 1945*. Durham: Duke University Press, 79-144.
- Mattern, Shannon. 2013. “Methodolatry and the Art of Measure.” *Places Journal*. <https://doi.org/10.22269/131105>.

Deadlines

- w05_reading_response and w05_discussion_questions due on Thursday, October 11 at 8:00am.

w06 = (date.datetime(2018, 10, 18), 'Smarts 2: Urban Intelligence')

- Light, Jennifer S. 2003. “Part I: Command, Community, and Control.” From *From Warfare to Welfare: Defense Intellectuals and Urban Problems in Cold War America*. Baltimore: Johns Hopkins University Press, 35-94.

Deadlines

- w06_reading_response and w06_discussion_questions due on Thursday, October 18 at 8:00am.

Additional Resources

- Barnes, Trevor J. 2008. “Geography’s Underworld: The Military–Industrial Complex, Mathematical Modelling and the Quantitative Revolution.” *Geoforum* 39 (1): 3–16. <https://doi.org/10.1016/j.geoforum.2007.09.006>.
- Mattern, Shannon. 2017. “Introducion: Ether/Ore.” From *Code + Clay... Data + Dirt: Five Thousand Years of Urban Media*. Minneapolis: University of Minnesota Press, vii-xl.

w07 = (date.datetime(2018, 10, 25), 'The Becoming-Environmental of Computation')

Texts

- Anker, Peder. 2010. “Taking Ground Control of Spaceship Earth.” From *From Bauhaus to Ecohouse: A History of Ecological Design*. Baton Rouge: Louisiana State University Press, 96-112.
- Carlsson, Moa Karolina. 2017. “Environmental Design, Systems Thinking, and Human Agency: McHarg’s Ecological Method and Steinitz and Rogers’s Interdisciplinary Education Experiment.” *Landscape Journal* 36 (2): 37–52. <https://doi.org/10.3368/lj.36.2.37>.
- Gabrys, Jennifer. 2014. “Programming Environments: Environmentality and Citizen Sensing in the Smart City.” *Environment and Planning D: Society and Space* 32 (1): 30–48. <https://doi.org/10.1068/d16812>.
- Phithakkitnukoon, Santi, Malima I. Wolf, Dietmar Offenhuber, David Lee, Assaf Biderman, and Carlo Ratti. 2013. “Tracking Trash.” *IEEE Pervasive Computing* 12 (2): 38–48. <https://doi.org/10.1109/MPRV.2013.37>.

Events

- Friday, October 26, 5-7pm. Nicholas de Monchaux (UC Berkeley). “Drawing Out the Map, Drawing Out the Territory.” Part of the “Pasts, Presents and Futures of Geo-Spatial Computing” lecture series. Long Lounge. Sponsored by Design and Computation.

Deadlines

- `final_essay_proposal` due on Wednesday, October 24 at 11:59pm.
- `w07_reading_response` and `w07_discussion_questions` due on Thursday, October 25 at 8:00am.

`w08 = (date.datetime(2018, 11, 01), 'MIT and Urban Computation')`

Texts

- “MIT Faculty Approves New Urban Science Major.” 2018. *MIT News*. June 25, 2018. <https://news.mit.edu/2018/mit-faculty-approves-new-urban-science-major-0605>.
- Marshall, Aarian. 2018. “Cities Are Watching You—Urban Sciences Graduates Watch Back.” *Wired*, June 25, 2018. <https://www.wired.com/story/mit-urban-sciences-program/>.
- McMahon, Catherine F. 2013. “Predictive Machines: Data, Computer Maps, and Simulation.” In *A Second Modernism: MIT, Architecture, and the “Techno-Social” Moment*, edited by Arindam Dutta, 436–73. Cambridge: The MIT Press.
- Scott, Felicity D. 2013. “DISCOURSE, SEEK, INTERACT: Urban Systems at MIT.” In *A Second Modernism: MIT, Architecture, and the “Techno-Social” Moment*, edited by Arindam Dutta, 342–93. Cambridge, MA: MIT Press.

Deadlines

- `w08_reading_response` and `w08_discussion_questions` due on Thursday, November 1 at 8:00am.

Events

- Thursday, November 1 Time TBD. “Technology and Elections Colloquium.” Speakers TBD. Location TBD. Sponsored by the MIT Computational Cul-

tures Initiative.

Additional Resources

- Leslie, Stuart W. *The Cold War and American Science: The Military-Industrial-Academic Complex at MIT and Stanford*. New York, NY: Columbia University Press.
- Negroponte, Nicholas. 1970. *The Architecture Machine: Toward a More Human Environment*. Cambridge, MA: The MIT Press.

w09 = (date.datetime(2018, 11, 08), 'Anxiety, Cartesian and Otherwise')

Texts

- “Generalized Anxiety Disorders.” *Diagnostic And Statistical Manual of Mental Disorders: DSM-5*. Washington, DC: American Psychiatric Association, 2013.
- Bernstein, Richard J. 1983. *Beyond Objectivism and Relativism: Science, Hermeneutics, and Praxis*. Philadelphia: University of Pennsylvania Press, p. 1-20, 48-49.
- Daston, Lorraine J., and Peter Galison. 2007. Selections from “Representation to Presentation.” In *Objectivity*. New York: Zone Books, selections 372-382.
- Latour, Bruno. 2004. “Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern.” *Critical Inquiry* 30 (2): 225–48. <https://doi.org/10.1086/421123>.

Deadlines

- w09_reading_response and w09_discussion_questions due on Thursday, November 8 at 8:00am.

Additional Resources

- Crawford, Kate. 2014. “The Anxieties of Big Data.” *The New Inquiry*, May 30, 2014. <http://thenewinquiry.com/essays/the-anxieties-of-big-data/>.
- Gregory, Derek. 1994. *Geographical Imaginations*. Malden: Wiley-Blackwell, p. 70-77.

- Leszczynski, Agnieszka. 2015. “Spatial Big Data and Anxieties of Control.” *Environment and Planning D: Society and Space* 33 (6): 965–84. <https://doi.org/10.1177/0263775815595814>.

```
w10 = (date.datetime(2018, 11, 15), 'Technopositionality')
```

Texts

- Haraway, Donna J. 1988. “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective.” *Feminist Studies* 14 (3): 575–99. <https://doi.org/10.2307/3178066>.
- Harding, Sandra. 1992. “After the Neutrality Ideal: Science, Politics, and ‘Strong Objectivity.’” *Social Research* 59 (3): 567–87.
- Nadine Schuurman and Geraldine Pratt. 2002. “Care of the Subject: Feminism and Critiques of GIS.” *Gender, Place and Culture* 9 (3): 291–299, <https://doi.org/10.1080/0966369022000003905>.
- Wilson, Matthew W. 2017. “Criticality: The Urgency of Drawing and Tracing.” In *New Lines: Critical GIS and the Trouble of the Map*. Minneapolis: University of Minnesota Press, 25-46.
 - For a summary of the GIS wars to which Matt is responding, see Nadine Schuurman. 2000 “Trouble in the Heartland: GIS and Its Critics in the 1990s.” *Progress in Human Geography* 24 (4): 569–590. <https://doi.org/10.1191/030913200100189111>.

Additional Resources

- *Donna Haraway: Story Telling for Earthly Survival*. Directed by Fabrizio Teranova. Brooklyn, NY: Icarus Films, 2017. <http://icarusfilms.com/if-donna>.
 - MIT has purchased a license to view this film! On an MIT network (or through a VPN) go to: <http://icarusfilms.com/if-donna> and click “watch now.”
- Wilson, Matthew W. 2017. “A Single Point Does Not Make a Line.” In *New Lines: Critical GIS and the Trouble of the Map*. Minneapolis: University of Minnesota Press, 135-141.
 - I’ve included this bonus chapter mostly for the *beautiful* sermon that ends the chapter, beginning “Sun sets. Sun rises” on page 137.

- A really marvelous polemic on the urgency of intervention can be found here: Chris Alton, Zulaikha Ayub, Alex Chen, Leif Estrada, Justin Kollar, Patrick Leonard, Martin Pavlinic, Andreas Viglakis, and Matthew W. Wilson. 2014. “Intervention: Thinking/Making Geographic Representation.” *The Antipode Foundation Blog*. 2014. <http://antipodefoundation.org/2014/07/09/thinking-making-geographic-representation/>.

Deadlines

- w10_reading_response and w10_discussion_questions due on Thursday, November 15 at 8:00am.

w11 = (date.datetime(2018, 11, 22), 'Thanksgiving')

Deadlines

w12 = (date.datetime(2018, 11, 29), 'Production Workshop')

Deadlines

- final_essay_draft due on Monday, November 26 at 8:00am.
- final_essay_editorial due on Thursday, November 27 at 8:00am.

w13 = (date.datetime(2018, 12, 06), 'Production Workshop')

Events

- Friday, December 7, 5-7pm. Jennifer Light (MIT STS). “Playing at City Building.” Part of the “Pasts, Presents and Futures of Geo-Spatial Computing” lecture series. Co-sponsored by DUSP and the Design and Computation Group. Long Lounge.

Deadlines

- final_essay_edits due to [editor] on Tuesday, December 4 by 8:00am.
- templates due from [designers] on Friday, December 7 at 8:00am.


```
w14 = (date.datetime(2018, 12, 13), 'No Class')
```

Deadlines

- `final_volume` due on Wednesday, December 12 at 11:59pm.