

**Syllabus for**  
**Graduate**  
**Course on**  
*Matters of*  
*Infrastructure*

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## Course Description:

This course focuses on core issues and concerns that have shaped the study of infrastructures, particularly information infrastructures, and the role of governments around the world in building, maintaining, and regulating them. It will critically engage with how infrastructure is analyzed as a techno-social human achievement and a problem of governance. Specifically, we will unpack the use of data in organizing and governing infrastructures, and study different analytic approaches to investigate the sociocultural, political, and techno-legal dimensions of the lives of data subjects in a seminar style classroom setting. The first half of the course deals with exploring intellectual developments in the study of information infrastructures and the second half addresses different analytic features of infrastructures that mutually shape our experience of living with them. By the end of this course, students are expected to not only be able to identify problems that require infrastructural solutions, but also explore tensions that emerge when these solutions encounter the sprawling conditions of the world.

## Learning Outcomes:

Upon completion of this course, you will be able to:

- **Understand** and **contextualize** some of the major concepts, themes, and sensibilities that have shaped the study of information infrastructures;
- **Challenge** and **unpack** entrenched assumptions about big data analytics and role of data in our everyday lives;
- **Critically reflect upon** and **contribute to** the challenges of building and maintaining infrastructures;
- **Write** and **present** concise and effective analyses and reports of original research.

As an overview of infrastructure studies, this course is inevitably partial – both in the sense of being incomplete and in the sense of prioritizing some dimensions of infrastructure studies over others. My goal is to give you a good enough sense of the field to recognize these partialities and make them productive for your own work.

## Assignments:

**Weekly reading responses:** You will be expected to produce 2-3 pages of reading notes that engage key arguments, insights, and findings of the weekly readings. While some will use these to produce concise summaries, others will explore specific thoughts, questions, or concerns. Whatever you do, the main goal is to use the notes to engage the readings in a more sustained and incisive way. You are encouraged to review the notes of other students before the seminar.

**Seminar leadership:** Twice during the semester, you (working in groups of 2-3) will be responsible for introducing and leading the discussion of the weekly reading sets. Groups will have two primary responsibilities:

1. Produce a 2-3 page thought piece that pulls out what you as a group find most interesting, useful, or provocative about the readings. The piece shouldn't be a mere summary; rather, there should be some organizing principle(s) or question(s) that can ground, guide, and provoke our group discussions.
2. Introduce the readings and propose questions for discussion, drawing on the thought piece. Introductory comments will be strictly limited to 15 minutes.

Discussion leads are NOT required to produce individual reading notes in addition to the thought piece.

**Book report and presentation:** Each student will be asked once during the semester to prepare a book report and presentation, covering a book-length text related to the weekly readings and/or broader themes of the course. These books are to be selected from the list of relevant texts following each weekly reading set. The book report should be 1,500-2,000 words in length (that's around 6-8 pages double-spaced), and should do each of the following:

- succinctly summarize or convey the author's main arguments, and how they go about making them;

- engage critically with those arguments (including pointing to particular strengths and contributions, along with potential limits or weaknesses, of the author’s main points); and
- point to particular contributions or connections between the book and other readings and themes of the course.

In addition, you will be asked to prepare a 15-minute conference-quality presentation that addresses the same three points. By way of calibration, we’d encourage you to allot 10 minutes to presenting key arguments and findings (recall that your classmates won’t generally have read the book), and 5 minutes to discussing limits, problems, and implications for infrastructure studies scholarship. There will be 5 additional minutes for questions and discussion during the class.

**Term paper:** A final essay will be required by the end of the semester; this paper, of at least 5000 words and on an infrastructural problem of your choice in consultation with the instructor, will consider and attempt to synthesize some of the issues and concerns encountered in the course. This essay should first provide an overview of approaches to resolve the problem and then, map the uneven distributional consequences of choosing an approach. One month before the end of the semester, I would like to see a formal essay proposal, including a 1-2 paragraph description of the infrastructural problem; an outline of the anticipated structure of the paper; and a list of 5-10 published sources you plan to cite or draw on in making your argument.

### **Class Schedule:**

#### ***Week 1: Organizational Meeting***

An introduction to the class. We’ll review course mechanics and get a sense of the themes and concerns of the course. In class, we will take a contemporary example of an information infrastructure and discuss how to methodologically approach and unpack its distributional consequences.

#### *Further readings:*

- Peters, Benjamin, ed. 2016. *Digital Keywords: A Vocabulary of Information Society and Culture*. Princeton and Oxford: Princeton University Press. [Chapters: *Algorithm* by Tarleton Gillespie, *Digital* by Benjamin Peters, *Hacker* by Gabriella Coleman, and *Participation* by Christopher Kelty]
- Dumit, Joseph. 2012. “How I Read.” *Joseph Dumit: STS / Anthropology / UC Davis*. <http://dumit.net/how-i-read/>.

#### ***Week 2: Tracing Infrastructure Studies***

##### **Readings**

- Althusser, Louis. 1971. “Ideology and Ideological State Apparatuses (Notes towards an Investigation).” In *Lenin and Philosophy and Other Essays*, translated by Ben Brewster, 121–176. New York: Monthly Review Press.
- Bijker, Wiebe E, Thomas P Hughes, and Trevor J Pinch, eds. 1987. *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. Cambridge: MIT Press. [Chapters: *The Evolution of Large-Technical Systems* by Thomas P Hughes, *Society in the Making: The Study of Technology as a Tool for Sociological Analysis* by Michel Callon and *The Social Construction of Bakelite: Toward a Theory of Invention* by Wiebe Bijker]
- Jackson, Steven J., Paul N. Edwards, Geoffrey C. Bowker, and Cory P. Knobel. 2007. “Understanding Infrastructure: History, Heuristics, and Cyberinfrastructure Policy.” *First Monday* 12 (6). <http://journals.uic.edu/ojs/index.php/fm/article/view/1904/1786>.
- Bowker, Geoffrey C, Karen Baker, Florence Millerand, and David Ribes. 2010. “Towards Information Infrastructure Studies: Ways of Knowing in a Networked Environment.” In *International Handbook of Internet Research*, edited by Jeremy Hunsinger, Matthew Allen, and Lisbeth Klasrup, 97–117. Dordrecht: Springer.

#### *Books for Review:*

- Hughes, Thomas P. 1983. *Networks of Power: Electrification in Western Society, 1880-1930*. Baltimore/London: The Johns Hopkins University Press.

- Staudenmaier, John M. 1985. *Technology's Storytellers. Reweaving the Human Fabric*. Cambridge, MA: The Society for the History of Technology and the MIT Press.
- Beniger, James R. 1986. *The Control Revolution. Technological and Economic Origins of the Information Society*. Cambridge, MA: Harvard University Press.
- Latour, Bruno. 1996. *Aramis, or the Love of Technology*. Cambridge, MA: Harvard University Press.

#### Further Readings:

- Joerges, Bernward. 1988. "Large Technical Systems: Concepts and Issues." In *The Development of Large Technical Systems*, edited by Renate Mayntz and Thomas P Hughes, 9–36. Frankfurt am Main: Campus Verlag.
- Bowker, Geoffrey. 1994. "Information Mythology: The World of/as Information." In *Information Acumen: The Understanding and Use of Knowledge in Modern Business*, edited by Lisa Bud-Frierman, 231–47. London: Routledge.
- Hayles, Katherine. 1999. *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago, Illinois: University of Chicago Press.
- Van der Vleuten, Erik. 2004. "Infrastructures and Societal Change. A View from the Large Technical Systems Field." *Technology Analysis & Strategic Management* 16 (3): 395–414.
- Kline, Ronald R. 2006. "Cybernetics, Management Science, and Technology Policy: The Emergence of 'Information Technology' as a Keyword, 1948-1985." *Technology and Culture* 47 (3): 513–35.
- Edwards, Paul N, Steven J Jackson, Geoffrey C Bowker, and Cory P Knobel. 2007. "Understanding Infrastructure: Dynamics, Tensions and Design." Michigan: School of Information University of Michigan. <http://deepblue.lib.umich.edu/bitstream/2027.42/49353/3/UnderstandingInfrastructure2007.pdf>.
- Bell, David. 2007. *Cyberculture Theorists: Manuel Castells and Donna Haraway*. London and New York: Routledge.
- Bijker, Wiebe E. 2010. "How Is Technology Made? — That Is the Question!" *Cambridge Journal of Economics* 34: 63–76.
- Behrent, Michael C. 2013. "Foucault and Technology." *History and Technology* 29 (1): 54–104.
- Furlong, Kathryn. 2014. "STS beyond the 'Modern Infrastructure Ideal': Extending Theory by Engaging with Infrastructure Challenges in the South." *Technology in Society* 38: 139–47.

### Week 3: Cities and the Governance of Difference

#### Readings

- Graham, Stephen, and Simon Marvin. 2001. *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition*. London: Routledge. [Chapters: 1: Introduction, 5: The City as Sociotechnical Process and 8: Conclusion]
- Simone, AbdouMaliq. 2004. "People as Infrastructure: Intersecting Fragments in Johannesburg." *Public Culture* 16 (3): 407–29.
- McFarlane, Colin, and Jonathan Rutherford. 2008. "Political Infrastructures: Governing and Experiencing the Fabric of the City." *International Journal of Urban and Regional Research* 32 (2): 363–74.
- Valverde, Mariana. 2011. "Seeing Like a City: The Dialectic of Modern and Premodern Ways of Seeing in Urban Governance." *Law & Society Review* 45 (2): 277–312.

#### Books for Review:

- Caldeira, Teresa P. R. 2000. *City of Walls: Crime, Segregation, and Citizenship in São Paulo*. Berkeley and Los Angeles: University of California Press.
- de Certeau, Michel. 2002. *The Practice of Everyday Life*. Berkeley and Los Angeles: University of California Press.
- Coutard, Olivier, Richard Hanley, and Rae Zimmerman, eds. 2005. *Sustaining Urban Networks: The Social Diffusion of Large Technical Systems*. London and New York: Routledge.

- Anand, Nikhil. 2017. *Hydraulic City: Water and the Infrastructures of Citizenship in Mumbai*. Durham: Duke University Press.

*Further Readings:*

- Mumford, L. 1961. *The City in History: Its Origins, Its Transformations, and Its Prospects*. New York: Harcourt.
- Varnelis, Kazys. 2008. *The Infrastructural City: Networked Ecologies in Los Angeles*. New York: Actar.
- Graham, Stephen, and Colin McFarlane. 2014. *Infrastructural Lives: Urban Infrastructure in Context*. Abingdon, UK: Routledge.
- Elyachar, Julia. 2010. "Phatic Labor, Infrastructure, and the Question of Empowerment in Cairo." *American Ethnologist* 37 (3): 452–64.
- Chalfin, Brenda. 2014. "Public Things, Excremental Politics, and the Infrastructure of Bare Life in Ghana's City of Tema." *American Ethnologist* 41 (1): 92–109.
- Ranganathan, Malini. 2016. "Thinking with Flint: Racial Liberalism and the Roots of an American Water Tragedy." *Capitalism Nature Socialism* 27 (3): 17–33.
- Jensen, Casper Bruun. 2017. "Pipe Dreams: Sewage Infrastructure and Activity Trails in Phnom Penh." *Ethnos* 82 (4): 627–47.

**Week 4: Towards an ethnography of Infrastructure**

**Readings**

- Star, Susan Leigh, and Karen Ruhleder. 1996. "Steps Toward an Ecology of Infrastructure: Design and Access for Large Information Spaces." *Information Systems Research* 7 (1): 111–34.
- Star, Susan Leigh. 1999. "The Ethnography of Infrastructure." *American Behavioral Scientist* 43 (3): 377–91.
- Larkin, Brian. 2013. "The Politics and Poetics of Infrastructure." *Annual Review of Anthropology* 42 (1): 327–43.
- Monteiro, Eric, Neil Pollock, Ole Hanseth, and Robin Williams. 2013. "From Artefacts to Infrastructures." *Computer Supported Cooperative Work (CSCW)* 22 (4–6). Springer: 575–607.
- Elish, M C, and danah boyd. 2018. "Situating Methods in the Magic of Big Data and AI." *Communication Monographs* 85 (1): 57–80.

*Books for Review:*

- Johnson, Steven A. 1997. *Interface Culture: How New Technology Transforms the Way We Create and Communicate*. New York: Basic Books.
- Bowker, Geoffrey. 2005. *Memory Practices in the Sciences*. Cambridge, MA: MIT Press.
- Dourish, Paul, and Genevieve Bell. 2011. *Divining a Digital Future: Mess and Mythology in Ubiquitous Computing*. Cambridge: MIT Press.
- Burrell, Jenna. 2012. *Invisible Users: Youth in the Internet Cafés of Urban Ghana*. Cambridge, MA: MIT Press.

*Further Readings:*

- Star, Susan Leigh, and Geoffrey C Bowker. 2002. "How to Infrastructure." In *Handbook of New Media: Social Shaping and Consequences of ICTs*, edited by Leah A Lievrouw and Sonia Livingstone, 151–62. London: Sage Publications.
- Lee, Charlotte P, Paul Dourish, and Gloria Mark. 2006. "The Human Infrastructure of Cyberinfrastructure." In *Proceedings of the 2006 20th Anniversary Conference on Computer Supported Cooperative Work*, 483–92. CSCW '06. New York, NY, USA: ACM.
- Sandvig, Christian. 2013. "The Internet as Infrastructure." In *The Oxford Handbook of Internet Studies*, edited by William H. Dutton, 86–108. Oxford: Oxford University Press.
- Ribes, David, and Jessica Beth Polk. 2015. "Organizing for Ontological Change: The Kernel of an AIDS Research Infrastructure." *Social Studies of Science* 45 (2): 214–41.

## **Week 5: The Role of the Ethnographer**

### **Readings**

- Fujimura, Joan H. 1991. "On Methods, Ontologies, and Representation in the Sociology of Science: Where Do We Stand?" In *Social Organization and Social Process: Essays in Honor of Anselm Strauss*, edited by David Maines, 207–48. Hawthorne, NY: Aldine de Gruyter.
- Haraway, Donna. 1991. "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century." In *Simians, Cyborgs and Women: The Reinvention of Nature*, 149–81. New York: Routledge.
- Star, Susan Leigh. 1991. "Power, Technology, and the Phenomenology of Conventions: On Being Allergic to Onions." In *A Sociology of Monsters: Essays on Power, Technology, and Domination*, edited by John Law, 26–56. London: Routledge.
- de la Bellacasa, Maria Puig. 2011. "Matters of Care in Technoscience: Assembling Neglected Things." *Social Studies of Science* 41 (1): 85–106.
- Suchman, Lucy. 2012. "Configuration." In *Inventive Methods: The Happening of the Social*, edited by Celia Lury and Nina Wakeford, 48–60. New York: Routledge.

### *Books for Review:*

- Calvino, Italo. 1974. *Invisible Cities*. Translated by William Weaver. New York: Harcourt Brace.
- Clifford, James, and George E Marcus, eds. 1986. *Writing Culture: The Poetics and Politics of Ethnography*. Berkeley: University of California Press.
- Crary, Jonathan. 1992. *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century*. Cambridge and London: MIT Press.
- Suchman, Lucy. 2007. *Human-Machine Reconfigurations: Plans and Situated Actions*. 2nd ed. Cambridge: Cambridge University Press.

### *Further Readings:*

- Augé, Marc. 2002. *In the Metro*. Translated by Tom Conley. Minneapolis: University of Minnesota Press.
- Lynch, Michael. 2012. "Revisiting the Cultural Dope." *Human Studies* 35 (2): 223–33.

## **Week 6: Classification and Standards**

### **Readings**

- Agre, Philip E. 1994. "From High Tech to Human Tech: Empowerment, Measurement, and Social Studies of Computing." *Computer Supported Cooperative Work (CSCW)* 3 (2): 167–95.
- Espeland, Wendy Nelson. 1997. "Authority by the Numbers: Porter on Quantification, Discretion, and the Legitimation of Expertise." *Law & Social Inquiry* 22 (4) 1107–33.
- Bowker, Geoffrey, and Susan Leigh Star. 1999. *Sorting Things Out: Classification and Its Consequences*. Edited by Wiebe E. Bijker, W B Carlson, and T Pinch. Cambridge, MA: MIT Press. [Chapter: The Case of Race Classification and Reclassification under Apartheid]
- Mol, Annemarie. 2002. "Cutting Surgeons, Walking Patients: Some Complexities Involved in Comparing." In *Complexities: Social Studies of Knowledge Practices*, edited by John Law and Annemarie Mol, 218–257. Durham: Duke University Press.
- Martin, Aryn, and Michael Lynch. 2009. "Counting Things and People: The Practices and Politics of Counting." *Social Problems* 56 (2): 243–66.

### *Books for review:*

- Porter, Theodore. 1995. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton: Princeton University Press.
- Bowker, Geoffrey, and Susan Leigh Star. 1999. *Sorting Things Out: Classification and Its Consequences*. Edited by Wiebe E. Bijker, W B Carlson, and T Pinch. Cambridge, MA: MIT Press.

- Busch, Lawrence. 2011. *Standards: Recipes for Reality*. Cambridge, MA: MIT Press.
- Klose, Alexander. 2015. *The Container Principle: How a Box Changes the Way We Think*. Edited by Geoffrey C Bowker and Paul N Edwards. Translated by Charles Marcum II. Cambridge, MA: MIT Press.

*Further Readings:*

- David, P. 1985. "Clio and the Economics of QWERTY." *The American Economic Review* 75 (2): 332–37.
- Kahin, Brian, and Janet Abbate, eds. 1995. *Standards Policy for Information Infrastructure*. Cambridge, MA: MIT Press.
- Espeland, Wendy Nelson, and Mitchell L Stevens. 1998. "Commensuration as a Social Process." *Annual Review of Sociology* 24 (1): 313–43.
- Star, Susan Leigh, and Geoffrey C Bowker. 2007. "Enacting Silence: Residual Categories as a Challenge for Ethics, Information Systems, and Communication." *Ethics and Information Technology* 9 (4): 273–80.
- Lampland, Martha, and Susan Leigh Star. 2009. *Standards and Their Stories: How Quantifying, Classifying, and Formalizing Practices Shape Everyday Life*. Ithaca: Cornell University Press.
- Egyedi, Tineke, and Jaroslav Spirco. 2011. "Standards in Transitions: Catalyzing Infrastructure Change." *Futures* 43 (9): 947–60.
- Sterne, Jonathan. 2012. *MP3: The Meaning of a Format*. Durham: Duke University Press.

**Week 7: The Mutual Shaping of Data Records and Data Subjects**

**Readings**

- Durkheim, Emile. 1950. "What is a Social Fact?" In *The Rules of Sociological Method*, edited by George E.G. Catlin, translated by Sarah A. Solovay and John H. Mueller, 8th ed., 1–13. New York: The Free Press.
- Hacking, Ian. 2006. "Making Up People." *London Review of Books* 28 (16): 23–26.
- Ruppert, Evelyn S. 2008. "'I Is; Therefore I Am': The Census as Practice of Double Identification." *Sociological Research Online* 13 (4). <http://www.socresonline.org.uk/13/4/6.html>.
- Law, John. 2009. "Seeing Like a Survey." *Cultural Sociology* 3 (2): 239–56.
- Busch, Lawrence. 2014. "Big Data, Big Questions | A Dozen Ways to Get Lost in Translation: Inherent Challenges in Large Scale Data Sets." *International Journal of Communication* 8:1727–1744.

*Books for Review:*

- Igo, Sarah Elizabeth. 2007. *The Averaged American: Surveys, Citizens, and the Making of a Mass Public*. Cambridge, Massachusetts: Harvard University Press.
- Eubanks, Virginia. 2017. *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor*. New York: St. Martin's Press.
- Gitelman, Lisa, ed. 2013. *"Raw Data" Is an Oxymoron*. Cambridge, MA: MIT Press.
- Biruk, Crystal. 2018. *Cooking Data: Culture and Politics in an African Research World*. Durham: Duke University Press.

*Further Readings:*

- Rose, Nikolas. 1988. "Calculable Minds and Manageable Individuals." *History of the Human Sciences* 1 (2): 179–200.
- Hacking, Ian. 1990. *The Taming of Chance*. Cambridge: Cambridge University Press.
- Miller, Peter. 1992. "Accounting and Objectivity: The Invention of Calculating Selves and Calculable Spaces." *Annals of Scholarship* 9 (1/2): 61–86.
- Desrosières, Alain. 2001. "How Real Are Statistics? Four Possible Attitudes." *Social Research* 68 (2). The New School: 339–55.
- Rusnock, Andrea Alice. 2002. *Vital Accounts: Quantifying Health and Population in Eighteenth-Century England and France*. Cambridge: Cambridge University Press.



- Wendy Nelson Espeland, and Michael Sauder. 2007. "Rankings and Reactivity: How Public Measures Recreate Social Worlds." *American Journal of Sociology* 113 (1): 1–40.
- Robbins, Joel. 2013. "Beyond the Suffering Subject: Toward an Anthropology of the Good." *Journal of the Royal Anthropological Institute* 19 (3): 447–62.

## **Week 8: Algorithms and Platforms**

### **Readings**

- Blanchette, Jean-François. 2012. "Computing As If Infrastructure Mattered." *Commun. ACM* 55 (10). New York, NY, USA: ACM: 32–34.
- Baldwin, Carliss Y, and C. Jason Woodard. 2009. "The Architecture of Platforms: A Unified View." In *Platforms, Markets and Innovation*, edited by Annabelle Gawer, 19–44. Cheltenham: Elgar. [https://ink.library.smu.edu.sg/sis\\_research/2452/](https://ink.library.smu.edu.sg/sis_research/2452/).
- Gillespie, Tarleton L. 2010. "The Politics of 'Platforms.'" *New Media & Society* 12 (3): 347–64.
- Crawford, Kate. 2015. "Can an Algorithm Be Agonistic? Ten Scenes from Life in Calculated Publics." *Science, Technology, & Human Values* 41 (1): 77–92.
- Ziewitz, Malte. 2016. "Governing Algorithms: Myth, Mess, and Methods." *Science, Technology & Human Values* 41 (1): 3–16.
- Plantin, Jean-Christophe, Carl Lagoze, Paul N Edwards, and Christian Sandvig. 2016. "Infrastructure Studies Meet Platform Studies in the Age of Google and Facebook." *New Media & Society* 20 (1): 293–310.

### **Books for Review:**

- Fuller, Matthew, ed. 2008. *Software Studies: A Lexicon*. Cambridge, MA: MIT Press.
- Kitchin, Rob. 2014. *The Data Revolution: Big Data, Open Data, Data Infrastructures and Their Consequences*. London: Sage Publications.
- Gillespie, Tarleton, Pablo Boczkowski, and Kirsten Foot, eds. 2014. *Media Technologies: Essays on Communication, Materiality and Society*. Cambridge, MA: MIT Press.
- Collins, Harry M. 2018. *Artificial Intelligence: Against Humanity's Surrender to Computers*. Cambridge: Polity Press.

### **Further Readings:**

- Benkler, Yochai. 2006. *The Wealth of Networks: How Social Production Transforms Markets and Freedom*. New Haven: Yale University Press.
- Gawer, Annabelle, ed. 2009. *Platforms, Markets and Innovation*. Cheltenham: Elgar.
- Helmreich, Stefan. 1998. "Recombination, Rationality, Reductionism and Romantic Reactions: Culture, Computers, and the Genetic Algorithm." *Social Studies of Science* 28 (1): 39–71.
- Ensmenger, Nathan. 2011. "Is Chess the Drosophila of Artificial Intelligence? A Social History of an Algorithm." *Social Studies of Science* 42 (1): 5–30.
- Anderson, Chris W. 2011. "Deliberative, Agonistic, and Algorithmic Audiences: Journalism's Vision of its Public in an Age of Audience Transparency." *International Journal of Communication* 5 (March): 529–547.
- Ananny, Mike. 2015. "Toward an Ethics of Algorithms: Convening, Observation, Probability, and Timeliness." *Science, Technology, & Human Values* 41 (1): 93–117.
- Passi, Samir, and Steven Jackson. 2017. "Data Vision: Learning to See Through Algorithmic Abstraction." In *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*, 2436–47. CSCW '17. New York, NY, USA: ACM.
- Bogost, Ian, and Nick Montfort. 2009. "Platform Studies: Frequently Questioned Answers." In *Proceedings of the Digital Arts and Culture Conference*. Irvine, CA: Digital Arts and Culture, UC Irvine. <https://escholarship.org/uc/item/01r0k9br>.



- Langlois, Ganaele, and Greg Elmer. 2013. "The Research Politics of Social Media Platforms." *Culture Machine* 14: 1–17. <https://www.culturemachine.net/index.php/cm/article/viewArticle/505>.
- Geiger, R Stuart. 2014. "Bots, Bespoke, Code and the Materiality of Software Platforms." *Information, Communication & Society* 17 (3): 342–56.
- Special Issue of *Science, Technology & Human Values* on 'Governing Algorithms', Volume 41, Issue 1, 2016.

### **Week 9: (In)visibilities of Infrastructure**

#### **Readings**

- Daniels, Arlene Kaplan. 1987. "Invisible Work." *Social Problems* 34 (5): 403–15.
- Star, Susan Leigh, and Anselm Strauss. 1999. "Layers of Silence, Arenas of Voice: The Ecology of Visible and Invisible Work." *Computer Supported Cooperative Work (CSCW)* 8 (1–2): 9–30.
- Irani, Lilly C, and M Six Silberman. 2013. "Turkopticon: Interrupting Worker Invisibility in Amazon Mechanical Turk." In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 611–20. CHI '13. New York, NY, USA: ACM.
- Barker, Joshua. 2005. "Engineers and Political Dreams: Indonesia in the Satellite Age." *Current Anthropology* 46 (5): 703–27.
- Parks, Lisa. 2009. "Around the Antenna Tree: The Politics of Infrastructural Visibility." *Flow: A Critical Forum on Media and Culture* March. <https://www.flowjournal.org/2009/03/around-the-antenna-tree-the-politics-of-infrastructural-visibilitylisa-parks-uc-santa-barbara/>.
- Starosielski, Nicole. 2012. "Warning: Do Not Dig': Negotiating the Visibility of Critical Infrastructures." *Journal of Visual Culture* 11 (1): 38–57.

#### *Books for Review:*

- Berger, John. 1973. *Ways of Seeing*. London: British Broadcasting Corporation and Penguin Books.
- Pattison, Stephen. 2007. *Seeing Things: Deepening Relationships with Visual Artefacts*. London: SCM Press.
- Winther, Tanja. 2008. *The Impact of Electricity: Development, Desires and Dilemmas*. New York: Berghahn Books.
- Starosielski, Nicole. 2015. *The Undersea Network (Sign, Storage, Transmission)*. Durham, NC: Duke University Press.

#### *Further Readings:*

- Star, Susan Leigh. 1991. "The Sociology of the Invisible: The Primacy of Work in the Writings of Anselm Strauss." In *Social Organization and Social Process: Essays in Honor of Anselm Strauss*, edited by David R Maines, 265–83. Hawthorne: Aldine de Gruyter.
- Daniel, E Valentine. 2008. "The Coolie." *Cultural Anthropology* 23 (2): 254–78.
- Sneath, David. 2009. "Reading the Signs by Lenin's Light: Development, Divination and Metonymic Fields in Mongolia." *Ethnos* 74 (1): 72–90.
- Carse, Ashley. 2012. "Nature as Infrastructure: Making and Managing the Panama Canal Watershed." *Social Studies of Science* 42 (4): 539–63.
- Special Issue of *Computer Supported Cooperative Work (CSCW)* on 'Invisible Work', Volume 8, Issue 1-2, 1999.

### **Week 10: Infrastructural Temporalities**

#### **Readings**

- Edwards, Paul N. 2003. "Infrastructure and Modernity: Force, Time, and Social Organization in the History of Sociotechnical Systems." In *Modernity and Technology*, edited by Thomas J Misa, Philip Brey, and Andrew Feenberg, 185–225. Cambridge, MA: MIT Press.

- Guyer, Jane I. 2008. "Prophecy and the near Future: Thoughts on Macroeconomic, Evangelical, and Punctuated Time." *American Ethnologist* 34 (3): 409–21.
- Ribes, David, and Thomas A. Finholt. 2009. "The Long Now of Technology Infrastructure: Articulating Tensions in Development." *Journal of the Association for Information Systems* 10 (5): 375–98.
- Jackson, Steven J, David Ribes, Ayse Buyuktur, and Geoffrey C Bowker. 2011. "Collaborative Rhythm: Temporal Dissonance and Alignment in Collaborative Scientific Work." In *Proceedings of the ACM 2011 Conference on Computer Supported Cooperative Work*, 245–54. CSCW '11. New York, NY, USA: ACM.
- Bear, Laura. 2014. "Doubt, Conflict, Mediation: The Anthropology of Modern Time." *Journal of the Royal Anthropological Institute* 20 (S1): 3–30.

*Books for review:*

- Fabian, Johannes. 1983. *Time and the Other: How Anthropology Makes Its Object*. New York: Columbia University Press.
- Limbert, Mandana. 2010. *In the Time of Oil: Piety, Memory, and Social Life in an Omani Town*. Stanford, CA: Stanford University Press.
- Barak, On. 2013. *On Time: Technology and Temporality in Modern Egypt*. Berkeley: University of California Press.
- Wajcman, Judy. 2014. *Pressed for Time: The Acceleration of Life in Digital Capitalism*. Chicago and London: Chicago University Press.

*Further Readings:*

- Hetherington, Kregg. 2014. "Waiting for the Surveyor: Development Promises and the Temporality of Infrastructure." *The Journal of Latin American and Caribbean Anthropology* 19 (2): 195–211.
- Steinhardt, Stephanie B, and Steven J Jackson. 2014. "Reconciling Rhythms: Plans and Temporal Alignment in Collaborative Scientific Work." In *Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work & Social Computing*, 134–45. CSCW '14. New York, NY, USA: ACM.
- Special Issue of *Journal of the Royal Anthropological Institute* on 'Doubt, Conflict, Mediation: The Anthropology of Modern Time', Volume 20, Issue S1, 2014.
- Cohn, Marisa Leavitt. 2016. "Convivial Decay: Entangled Lifetimes in a Geriatric Infrastructure." In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing*, 1511–23. CSCW '16. New York, NY, USA: ACM.

**Week 11: Infrastructural Spaces and Geographies**

**Readings**

- Massey, Doreen. 1993. "Power-Geometry and a Progressive Sense of Place." In *Mapping the Futures: Local Cultures, Global Futures*, edited by John Bird, Barry Curtis, Tim Putnam, George Robertson, and Lisa Tickner, 59–69. London and New York: Routledge.
- Graham, Stephen D N. 2005. "Software-Sorted Geographies." *Progress in Human Geography* 29 (5): 562–80.
- Dourish, Paul, and Genevieve Bell. 2007. "The Infrastructure of Experience and the Experience of Infrastructure: Meaning and Structure in Everyday Encounters with Space." *Environment and Planning B: Planning and Design* 34 (3): 414–30.
- Sassen, Saskia. 2009. "Bordering Capabilities versus Borders: Implications for National Borders." *Michigan Journal of International Law* 30 (3): 567–97.
- Dalakoglou, Dimitris, and Penny Harvey. 2012. "Roads and Anthropology: Ethnographic Perspectives on Space, Time and (Im)Mobility." *Mobilities* 7 (4): 459–65.

*Books for review:*

- Castells, Manuel. 1996. *The Rise of the Network Society*. 2nd ed. Oxford: Wiley-Blackwell.

- Larkin, Brian. 2008. *Signal and Noise: Media, Infrastructure, and Urban Culture in Nigeria*. Durham, NC: Duke University Press.
- Augé, Marc. 2009. *Non-Places: An Introduction to Supermodernity*. Translated by John Howe. 2nd edition. London: Verso.
- Kitchin, Rob, and Martin Dodge. 2014. *Code/Space: Software and Everyday Life*. Cambridge, MA: MIT Press.

*Further Readings:*

- Lefebvre, Henri. 1991. *The Production of Space*. Translated by Donald Nicholson-Smith. Oxford: Blackwell.
- Harvey, Penny, and Hannah Knox. 2015. *Roads: An Anthropology of Infrastructure and Expertise*. Ithaca, NY: Cornell University Press.
- Summerton, Jane. 1999. "Power Plays: The Politics of Interlinking Systems." In *The Governance of Large Technical Systems*, edited by Olivier Coutard, 93–113. London and New York: Routledge.
- Visvanathan, Shiv. 2001. "Knowledge and Information in the Network Society." *Seminar* 503. <http://www.india-seminar.com/2001/503/503%20shiv%20visvanathan.htm>.
- Special Issue of *Mobilities* on 'Roads & Anthropology', Volume 7, Issue 4, 2012.

**Week 12: Scaling Infrastructures**

**Readings**

- Callon, Michel, and Bruno Latour. 1981. "Unscrewing the Big Leviathan: How Actors Macro-Structure Reality and How Sociologists Help Them to Do So." In *Advances in Social Theory and Methodology: Toward an Integration of Micro- and Macro-Sociologies*, edited by Karin D Knorr-Cetina and Aaron Cicourel, 277–303. Boston: Routledge & Kegan Paul.
- Knorr Cetina, Karin, and Urs Bruegger. 2002. "Global Microstructures: The Virtual Societies of Financial Markets." *American Journal of Sociology* 107 (4): 905–50.
- Hannerz, Ulf. 2003. "Being There... and There... and There!: Reflections on Multi-Site Ethnography." *Ethnography* 4 (2): 201–16.
- Ribes, David. 2014. "Ethnography of Scaling, or, How to a Fit a National Research Infrastructure in the Room." In *Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work & Social Computing*, 158–70. CSCW '14. New York, NY, USA: ACM.
- Appel, Hannah. 2017. "Toward an Ethnography of the National Economy." *Cultural Anthropology* 32 (2): 294–322.

*Books for review:*

- Gupta, Akhil, and James Ferguson, eds. 1997. *Anthropological Locations: Boundaries and Grounds of a Field Science*. Berkeley: University of California Press.
- Latour, Bruno, and Emilie Hermant. 1998. *Paris: Invisible City*. Edited by Valérie Pihet. Translated by Liz Carey-Libbrecht. Paris: La Découverte-Les Empêcheurs de penser en rond. [http://www.bruno-latour.fr/sites/default/files/downloads/viii\\_paris-city-gb.pdf](http://www.bruno-latour.fr/sites/default/files/downloads/viii_paris-city-gb.pdf).
- Hannerz, Ulf. 2004. *Foreign News: Exploring the World of Foreign Correspondents*. Chicago: University of Chicago Press.
- Ong, Aihwa, and Stephen J. Collier, eds. 2005. *Global Assemblages: Technology, Politics and Ethics as Anthropological Problems*. Oxford: Blackwell Publishing.

*Further Readings:*

- Hinds, Pamela J, and Sara Kiesler, eds. 2002. *Distributed Work*. Cambridge, MA: MIT Press.
- Hilbert, Richard A. 1990. "Ethnomethodology and the Micro-Macro Order." *American Sociological Review* 55 (6): 794–808.
- Yaneva, Albena. 2005. "Scaling Up and Down: Extraction Trials in Architectural Design." *Social Studies of Science* 35 (6): 867–94.

- Beaulieu, Anne. 2010. "Research Note: From Co-Location to Co-Presence: Shifts in the Use of Ethnography for the Study of Knowledge." *Social Studies of Science* 40 (3): 453–70.
- Geiger, R Stuart, and David Ribes. 2011. "Trace Ethnography: Following Coordination through Documentary Practices." In *2011 44th Hawaii International Conference on System Sciences*, 1–10.
- Vertesi, Janet. 2014. "Seamful Spaces: Heterogeneous Infrastructures in Interaction." *Science, Technology & Human Values* 39 (2): 264–84.
- Jensen, Casper Bruun. 2017. "Mekong Scales: Domains, Test Sites, and the Uncommons." *Anthropologica* 59 (2): 204–15.

### **Week 13: Public Infrastructures**

#### **Readings**

- Winner, Langdon. 1980. "Do Artifacts Have Politics?" *Daedalus* 109 (1): 121–36.
- Holcombe, Randall G. 1997. "A Theory of the Theory of Public Goods." *Review of Austrian Economics* 10 (1): 1–22. <https://mises.org/library/theory-theory-public-goods>.
- von Schnitzler, Antina. 2013. "Traveling Technologies: Infrastructure, Ethical Regimes, and the Materiality of Politics in South Africa." *Cultural Anthropology* 28 (4): 670–93.
- Jackson, Steven J, Tarleton Gillespie, and Sandy Payette. 2014. "The Policy Knot: Re-Integrating Policy, Practice and Design in CSCW Studies of Social Computing." In *Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work & Social Computing*, 588–602. CSCW '14. New York, NY, USA: ACM.
- Bear, Laura, and Nayanika Mathur. 2015. "Introduction: Remaking the Public Good." *The Cambridge Journal of Anthropology* 33 (1): 18–34.
- Collier, Stephen J., James Christopher Mizes, and Antina Von Schnitzler. 2016. "Preface: Public Infrastructures / Infrastructural Publics." *Limn* 7. <https://limn.it/articles/preface-public-infrastructures-infrastructural-publics/>.

#### *Books for review:*

- Olson, Mancur. 1971. *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge, MA: Harvard University Press.
- Scott, James C. 1998. *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven: Yale University Press.
- Mrázek, Rudolf. 2002. *Engineers of Happy Land: Technology and Nationalism in a Colony*. Princeton: Princeton University Press.
- Gupta, Akhil. 2012. *Red Tape: Bureaucracy, Structural Violence, and Poverty in India*. Durham: Duke University Press.
- Immerwahr, Daniel. 2015. *Thinking Small: The United States and the Lure of Community Development*. Cambridge, MA: Harvard University Press.

#### *Further Readings:*

- Barry, Andrew. 2001. *Political Machines: Governing a Technological Society*. New York: Athlone Press.
- Chatterjee, Partha. 2004. *The Politics of the Governed: Reflections on Popular Politics in Most of the World*. New York: Columbia University Press.
- Anders, Gerhard. 2010. *In the Shadow of Good Governance: An Ethnography of Civil Service Reform in Africa*. Leiden: Brill Academic Publishers.
- Hull, Matthew S. 2012. *Government of Paper: The Materiality of Bureaucracy in Urban Pakistan*. Berkeley: University of California Press.
- du Gay, Paul. 2008. "Max Weber and the Moral Economy of Office." *Journal of Cultural Economy* 1 (2): 129–44.
- Silver, Lauren J. 2010. "Spaces of Encounter: Public Bureaucracy and the Making of Client Identities." *Ethos* 38 (3): 275–96.

- Anand, Nikhil. 2011. "PRESSURE: The PoliTechnics of Water Supply in Mumbai." *Cultural Anthropology* 26 (4): 542–64.
- Weston, Kath. 2012. "Political Ecologies of the Precarious." *Anthropological Quarterly* 85 (2): 429–55.
- Mains, Daniel. 2012. "Blackouts and Progress: Privatization, Infrastructure, and a Developmentalist State in Jimma, Ethiopia." *Cultural Anthropology* 27 (1): 3–27.
- Issue of *Limn* on 'Public Infrastructures / Infrastructural Publics', Issue 7, July 2016.
- Special Section of *The Cambridge Journal of Anthropology* on 'Remaking the Public Good: A New Anthropology of Bureaucracy', Volume 33, Issue 1, 2015.

#### **Week 14: Rethinking Repair in a Broken World**

##### **Readings**

- Graham, Stephen, and Nigel Thrift. 2007. "Out of Order: Understanding Repair and Maintenance." *Theory, Culture & Society* 24 (3): 1–25.
- Jackson, Steven J. 2014. "Rethinking Repair." In *Media Technologies: Essays on Communication, Materiality and Society*, edited by Pablo Boczkowski, Kirsten Foot, and Tarleton Gillespie, 221–40. Cambridge: MIT Press. [http://sjackson.infosci.cornell.edu/Jackson\\_RethinkingRepair\(1oct12\).pdf](http://sjackson.infosci.cornell.edu/Jackson_RethinkingRepair(1oct12).pdf).
- Chu, Julie Y. 2014. "When Infrastructures Attack: The Workings of Disrepair in China." *American Ethnologist* 41 (2): 351–67.
- Rosner, Daniela K, and Morgan Ames. 2014. "Designing for Repair?: Infrastructures and Materialities of Breakdown." In *Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work & Social Computing*, 319–31. CSCW '14. New York, NY, USA: ACM.
- Howe, Cymene, Jessica Lockrem, Hannah Appel, Edward Hackett, Dominic Boyer, Randal Hall, Matthew Schneider-Mayerson, et al. 2015. "Paradoxical Infrastructures: Ruins, Retrofit, and Risk." *Science, Technology & Human Values* 41 (3): 547–65.

##### *Books for review:*

- Orr, Julian E. 1996. *Talking about Machines: An Ethnography of a Modern Job*. Ithaca: Cornell University Press.
- McCullough, Malcolm. 1998. *Abstracting Craft: The Practiced Digital Hand*. Cambridge, MA: MIT Press.
- Kelty, Christopher M. 2008. *Two Bits: The Cultural Significance of Free Software*. Durham, NC: Duke University Press.
- Levine, Faythe, and Cortney Heimerl. 2008. *Handmade Nation: The Rise of DIY, Art, Craft, and Design*. Princeton, NJ: Princeton Architectural Press.

##### *Further Readings:*

- van Maanen, John. 1990. "Escape from Modernity: On the Ethnography of Repair and the Repair of Ethnography." Edited by Douglas Harper. *Human Studies* 13 (3): 275–84.
- Gelber, Steven M. 1997. "Do-It-Yourself: Constructing, Repairing and Maintaining Domestic Masculinity." *American Quarterly* 49 (1). Johns Hopkins University Press: 66–112.
- Philip, Kavita, Lilly Irani, and Paul Dourish. 2012. "Postcolonial Computing: A Tactical Survey." *Science, Technology & Human Values* 37 (1): 3–29.
- Starbird, Kate, and Leysia Palen. 2013. "Working and Sustaining the Virtual 'Disaster Desk.'" In *Proceedings of the 2013 Conference on Computer Supported Cooperative Work*, 491–502. CSCW '13. New York, NY, USA: ACM.
- Houston, Lara, and Steven J Jackson. 2016. "Caring for the 'Next Billion' Mobile Handsets: Opening Proprietary Closures Through the Work of Repair." In *Proceedings of the Eighth International Conference on Information and Communication Technologies and Development*, 10:1--10:11. ICTD '16. New York, NY, USA: ACM.

***Week 15: Wrap Up: The Promise of Infrastructure***

In this session, we will revisit the course themes, explore them using draft versions of final essays written by students, and end by discussing the future(s) embedded in building and maintaining infrastructures.

**Readings:**

- Appel, Hannah, Nikhil Anand, and Akhil Gupta. 2018. "Introduction: Temporality, Politics, and the Promise of Infrastructure." In *The Promise of Infrastructure*, edited by Nikhil Anand, Akhil Gupta, and Hannah Appel, 1–38. Durham, NC: Duke University Press.

**Submission of final essay is due at the end of the semester.**