

Sociology 190
Algorithms in Society
Fall 2018

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Seminar meetings: Tuesdays 10-12 285 Cory Hall
Office hours: Tuesdays 4-6 477 Barrows Hall

Sociologists frequently study how people and things are sorted into different categories according to race, gender, income, education, political allegiance, or criminal records. They reflect social hierarchies and restructure the social order. Yet in the contemporary world, such classification often relies on powerful computer algorithms that process large amounts of behavioral, economic, or demographic data. Algorithms are routinely used to determine credit scores, calculate the recidivism risk of criminal defendants, allocate police officers to urban neighborhoods, write and curate news, personalize recommendations, set prices and driving directions, or determine matches on dating websites. Each of us is examined by countless algorithms every day, often without realizing it.

Despite their prevalence and significance, algorithms are commonly relegated to the domain of computer science and regarded as inscrutable pieces of software. Yet they are not just complex technological objects: Algorithms have social histories and tangible consequences in the world. They are products of society and engines of social change. They can be studied with the tools of sociology; and studying them sociologically can illuminate the intricate links between technology and society.

This course (1) introduces students to theories of technology, (2) applies these theories to concrete case studies of algorithms, (3) links the study of technology to familiar sociological topics like power, race, gender, and capitalism, and (4) empowers students to think critically about the organization of the social world. The course does not assume any specific knowledge of computation.

Course readings

All course readings will be provided in electronic form on bCourses or as links in this syllabus. You do not need to purchase any books.

Some readings will inevitably touch on technical aspects of computation or dip into philosophical debates about human agency — but **technical and philosophical knowledge is neither a prerequisite nor a focus** of this course. I will try to guide you through difficult passages during our seminar meetings.

If you want to dive more deeply into the themes of the course, I recommend two books as optional background reading:

Gleick, James. 2012. *The Information: A History, A Theory, A Flood*. New York: Vintage.

Finn, Ed. 2017. *What Algorithms Want: Imagination in the Age of Computing*. Cambridge: MIT Press.

Seminar meetings and attendance policy

We will meet once a week for two hours. Please be prepared to discuss, compare, and critique the course readings. I will sometimes give brief lectures to orient our discussion and clarify difficult readings, but the focus will be on a free and frank exchange of ideas. I will facilitate those discussions and ensure that we cultivate a learning environment where everyone's voice is heard.

Please inform me in advance if you cannot attend class and be prepared to provide documentation for medical absences. I will deduct participation points if you miss more than two seminars.

E-Mail and Office Hours

I can easily be reached by email. While I'll do my best to reply quickly, sometimes my work will prevent me from getting to your emails as promptly as I'd like. Fear not: A response is coming! If you have comments or concerns that you want to share with me anonymously, you can do so at sayat.me/eiermann.

You can also sign up for my weekly office hours at wejoinin.com/eiermann. Send me an email to request a separate meeting if you cannot meet during my regular office hours and I will do my best to accommodate you. You do not need a set of fully formed questions to attend office hours. If you find a reading particularly interesting, if you want guidance on an assignment, or if you are hesitant to speak in class and prefer a more individualized setting, I encourage you to see me.

Assignments and grading

Each student will submit six weekly reaction memos (2 double-spaced pages) that engage critically with the assigned readings. It is your responsibility to select six weeks and submit your memos on time. A great memo will summarize *and* analyze arguments — either by comparing different readings or by developing your own interpretation of a text. Memos are due on **Mondays at midnight**. Please submit your memos on bCourses as Word documents or PDFs.

At the end of the semester, each student will also submit a research paper (15 double-spaced pages). You will select an algorithm of your choice, explain how it operates, describe how it is used today, investigate its history, and situate it within its social environment. This will require you to do some independent empirical research, although I encourage you to rely on books and articles from

this syllabus to make theoretical claims. If you want to use outside theories, please come to office hours to discuss them.

We will use the seminar during Thanksgiving week to workshop paper topics, so I expect you to begin thinking about your final paper well before the end of the semester. Please submit your finished paper on bCourses by **midnight on December 14**.

Your final grade will be based on class participation, memos, and your final paper:

Assignment	Percent	Due Date
Participation	30%	
Six reaction memos	5% per memo	Mondays at midnight
Final paper	40%	December 14 at midnight

Disabled Students Program

If you have a documented need for special accommodations, please forward your DSP letter as soon as possible to work out the necessary arrangements.

Academic honesty

You must submit original work, cite your sources, and in no way misrepresent your work or the work of your peers. If you are unsure what constitutes cheating or plagiarism, please familiarize yourself with Berkeley's code of student conduct at sa.berkeley.edu/student-code-of-conduct. Remember that it is always better to hand in an incomplete assignment or to ask for an emergency extension than to submit dishonest or plagiarized work.

Campus Resources

Student Learning Center: Located in the Cesar Chavez Student Center, the SLC offers academic support through tutoring, study groups, and workshops. Contact them at 510-642-7332.

Counseling and Psychological Services: Mental health resources are available through University Health Services. Contact the Tang Center at 510-642-9494 or after hours at 855-817-5667.

Social Services: Located at the Tang Center, the office provides confidential services and counseling to help students with financial, academic, legal, and family problems, substance abuse, pregnancy, and sexual violence. Contact them at 510-642-6074.

Weekly calendar and readings

Part I: Sociology and technology — We discuss what it means to think sociologically about technology and familiarize ourselves with key concepts.

August 28: Introduction to the course

- *Why do we study algorithms?*
- *What can social science contribute to the study of technology?*

Gillespie, Tarleton. 2013. "The Relevance of Algorithms." Pp. 167-194 in *Media Technologies*, edited by Tarleton Gillespie, Pablo Boczkowski, and Kirsten Foot. Cambridge: MIT Press.

O'Neil, Cathy. 2016. *Weapons of Math Destruction*. New York: Random House. Pp. 15-31.

September 4: An avalanche of numbers

- *What does it mean to think of algorithms as maps or models of the social world?*
- *Algorithms tend to rely on quantitative data to rank and sort people and things. How do we explain the power of numbers?*

Borges, Jorge Luis. 1975. "On Exactitude in Science." P. 131 in *A Universal History of Infamy*. London: Penguin Books. Available at: <https://kwarc.info/teaching/TDM/Borges.pdf>

Porter, Theodore. 1996. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton: Princeton University Press. Pp. 3-48.

Fourcade, Marion. 2016. "Ordinalization: Lewis A. Coser Memorial Award for Theoretical Agenda Setting 2014." *Sociological Theory* 34 (3): 175–195.

September 11: Black boxes

- *What is a "black box", and how can we pry it open?*
- *What lessons should we take from the flu trends study?*

Pinch, Trevor, and Wiebe E Bijker. 2014. "The Social Construction of Facts and Artifacts." Pp. 11-44 in *The Social Construction of Technological Systems*. Cambridge: The MIT Press.

Pasquale, Frank. 2015. *The Black Box Society: The Secret Algorithms That Control Money and Information*. Cambridge: Harvard University Press. Pp. 1-18.

Lazer, D., R. Kennedy, G. King, and A. Vespignani. (2014) "The parable of Google flu: traps in big data analysis". *Science*, 343 (6176), 1203–1205.

Part II: Technology, society, and the social order — We situate technologies in their social environments and examine how algorithms reflect, reinforce, or reorder social hierarchies.

September 18: Do algorithms have politics?

- *What do we mean when we say that technologies are political?*
- *What are the benefits and risks of using recidivism scores in the criminal justice system?*

Winner, Langdon. 1980. "Do Artifacts Have Politics?" *Daedalus* 109 (1): 121–136.

Golumbia, David. 2009. *The Cultural Logic of Computation*. Cambridge: Harvard University Press. Pp. 181-220.

Angwin, Julia et al. "Machine Bias." *ProPublica*, May 23 2016. Available at: <https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing>.

September 25: Human and machine labor

- *What is the relation between algorithms and human labor?*
- *Does a greater reliance on computation imply a declining significance of human thought or ideology?*

Daston, Lorraine. "Calculation and the Division of Labor, 1750-1950." 31st Annual Lecture of the German Historical Institute. Washington, DC, November 9 2017.

Chun, Wendy Hui Kyong. 2008. "On 'Sourcery', or Code as Fetish." *Configurations*, 16 (3): 299-324.

Shestakofsky, Benjamin. 2017. "Working Algorithms: Software Automation and the Future of Work." *Work and Occupations* 44 (4): 376-423.

Wu, Tim. "Netflix's Secret Algorithm is a Human." *The New Yorker*, January 27 2015. Available at: <https://www.newyorker.com/business/currency/hollywoods-big-data-big-deal>.

October 2: The imposition of social order

- *What connections can we uncover between knowledge, technology, and the social order?*
- *How is economic behavior at the individual level related to social order at the aggregate level?*

Bourdieu, Pierre. 1985. "The Social Space and the Genesis of Groups." *Theory and Society* 14 (6): 723–744.

Hacking, Ian. 1985. "Making up people." Pp. 161-171 in *Reconstructing Individualism*, edited by T. L. Heller, M. Sosna and D. E. Wellbery. Stanford: Stanford University Press.

Aitken, Rob. 2017. "All Data Is Credit Data: Constituting the Unbanked." *Competition & Change* 21 (4): 274–300.

October 9: Inputs, outputs, and feedback loops

- *What are feedback loops, and why do they matter?*
- *How are racial and gender biases encoded in algorithms? Can they be eliminated?*

Lum, Kristian and William Isaac. 2016. "To predict and serve?" *Significance*, pp. 14 – 18.

Baker, Paul, and Amanda Potts. 2013. "'Why Do White People Have Thin Lips?' Google and the Perpetuation of Stereotypes via Auto-Complete Search Forms." *Critical Discourse Studies* 10(2): 187-204.

Bolukbasi, Tolga, Kai-wei Chang, James Zou, Venkatesh Saligrama, and Adam Kalai. 2016. "Man Is to Computer Programmer as Woman Is to Homemaker? Debiasing Word Embeddings." In *30th Conference on Neural Information Processing Systems*: 1–9.

Ball, Catherine A., Mathew J. Barber, Jake K. Byrnes, Josh Callaway, Kenneth G. Chahine, Ross E. Curtis, Kenneth Freestone, Julie M. Granka, Natalie M. Myres, Keith Noto, Yong Wang, and Scott R. Woodward. 2013. "Ethnicity Estimate White Paper." *AncestryDNA*.

October 16: Performativity

- *What is "performativity"?*
- *How are personal taste and financial markets affected by algorithms? Do our answers to this question challenge the "algorithms as maps" analogy from Week #2?*

MacKenzie, Donald. 2006. "Performing Theory?" Pp. 1-35 in *An Engine, Not A Camera*. Cambridge: The MIT Press.

MacKenzie, Donald. 2014. *A Sociology of Algorithms*. Working Paper.

Menand, Louis. "What it is like to like." *The New Yorker*, June 20 2016. Available at: <https://www.newyorker.com/magazine/2016/06/20/art-and-taste-in-the-internet-age>.

October 23: The co-production of knowledge and the social order

- *What do we mean when we say that knowledge and the social order are co-produced?*
- *What are the arguments for/against seeing algorithms as engines of change/as safeguards of the status quo?*

Jasanoff, Sheila. 2004. *The Co-production of science and social order*. London: Routledge. Pp. 19-45.

Marx, Gary T. 2007. "The engineering of social control: Policing and technology." *Policing: A Journal of Policy and Practice* 1 (1): 46-56.

Tufekci, Zeynep. 2014. "Engineering the Public: Big Data, Surveillance and Computational Politics." *First Monday* 19 (7). Available at: <http://firstmonday.org/ojs/index.php/fm/article/view/4901/4097>.

Part III: Algorithmic cultures — We consider what it means to live in a world where algorithms are pervasive and where data has become an important commodity.

October 30: Algorithms and the self

- *What is unique about "soft biopolitics"?*
- *How is our sense of self affected by technology?*

Foucault, Michel. 1975. *Discipline and Punish*. New York: Vintage. Pp. 135-149.

Cheney-Lippold, John. 2011. "A New Algorithmic Identity: Soft Biopolitics and the Modulation of Control." *Theory, Culture & Society* 28 (6): 164-181.

Summers, Christopher A., Robert W. Smith, Rebecca W. Reczek. 2016. "An Audience of One: Behaviorally Targeted Ads as Implied Social Labels." *Journal of Consumer Research* 43 (1): 156-178.

Pasquale, Frank. 2015. "The Algorithmic Self". *Hedgehog Review*. 17(1). Available at: http://www.iasc-culture.org/THR/THR_article_2015_Spring_Pasquale.php

November 6: Algorithms and markets

- *How do markets "see" customers and clients?*
- *Which financial logics underpin and legitimate credit ratings or dynamic pricing?*

Fourcade, Marion, and Kieran Healy. 2017. "Seeing like a Market." *Socio-Economic Review* 15 (1): 9-29. Available at: <https://kieranhealy.org/files/papers/slam-2.pdf>.

Fung, Kaiser. "When to Hold Out for a Lower Airfare." *FiveThirtyEight*, April 20 2014. Available at: <https://fivethirtyeight.com/features/when-to-hold-out-for-a-lower-airfare/>.

Carruthers, Bruce G. 2013. "From Uncertainty toward Risk: The Case of Credit Ratings." *Socio-Economic Review* 11 (3): 525–551.

November 13: Data capitalism

- What is a "fictitious commodity"?
- How does the commodification of data affect algorithm design and user experiences?

Jessop, Bob., 2007. "Knowledge as a fictitious commodity: insights and limits of a Polanyian perspective." Pp. 115-133 in *Reading Karl Polanyi for the twenty-first century*. New York: Palgrave Macmillan.

Zuckerman, Ethan. "The Internet's Original Sin." *The Atlantic*, August 14 2014. Available at: <https://www.theatlantic.com/technology/archive/2014/08/advertising-is-the-internets-original-sin/376041/>

Dewey, Caitlin. "98 personal data points that Facebook uses to target ads to you." *The Washington Post*, August 19 2016. Available at: <https://www.washingtonpost.com/news/the-intersect/wp/2016/08/19/98-personal-data-points-that-facebook-uses-to-target-ads-to-you/>

November 20: Thanksgiving week.

No new readings. We'll use this week to workshop ideas for your final papers. Please come prepared to discuss one or more potential paper topics with other students.

November 27: Data and democracy

- How is the political system affected by technology?
- Social media algorithms often optimize for user engagement. What are consequences of, and alternatives to, this logic?

Sunstein, Cass. "The Daily We." *Boston Review*, June 1 2001. Available at: <http://bostonreview.net/cass-sunstein-internet-democracy-daily-we>.

O'Neil, Cathy. 2016. *Weapons of Math Destruction*. New York: Random House. Pp. 179-197.

Kavanagh, Chris. "Why (almost) everything reported about the Cambridge Analytica Facebook 'hacking' controversy is wrong". *Medium*, March 25 2018. Available at: <https://medium.com/>

[@CKava/why-almost-everything-reported-about-the-cambridge-analytica-facebook-hacking-controversy-is-db7f8af2d042](https://twitter.com/CKava/status/971234567890)

Lewis, Paul. "Fiction is outperforming reality': how YouTube's algorithm distorts truth." *The Guardian*, February 2 2018. Available at: <https://www.theguardian.com/technology/2018/feb/02/how-youtubes-algorithm-distorts-truth>.

December 4: Privacy and consent

- *Does the pervasiveness of algorithms imply the death of privacy?*
- *How should we think about consent, control, and debiasing as responses to data commodification?*

Sweeney, Latanya. 2000. "Simple Demographics Often Identify People Uniquely." Carnegie Mellon University Data Privacy Working Paper 3.

Igo, Sarah. 2018. *The Known Citizen*. Cambridge: Harvard University Press. Pp. 339-349.

Whitley, Edgar A. 2009. "Informational privacy, consent and the "control" of personal data." *Information Security Technical Report* 14: 154–159.

Friedman, Batya, and Helen Nissenbaum. 1996. "Bias in computer systems." *ACM Transactions on Information Systems* 14 (3): 330-347.