ISF 100J: The Social Life of Computing

Spring 2021

University of California, Berkeley

TuTh: 9.30 – 11.00 am

Please use this "Syllabus" as your go-to document for this class. Everything that is relevant will be linked through this syllabus.

Venue: The class will be organized asynchronously (more details below). Briefly, lectures will be released on Monday. You do not have to attend class. The class time will instead be used as "office hours" so feel free to drop in if you have questions, doubts, want to know more, or just say hi (just come, I'd love to meet you!). Join the Zoom meeting during class times at this link: https://berkeley.zoom.us/j/96644465309?pwd=OS8xOWlDNGNzWGlYOGhCMElzVVBXZz09 (https://berkeley.zoom.us/j/96644465309?pwd=OS8xOWlDNGNzWGlYOGhCMElzVVBXZz09). You will need a Berkeley Zoom account. If you don't have Zoom or are having difficulties with it, call +12133388477 or +16692192599 and use the following details: Meeting ID: 966 4446 5309. Passcode: 492096

Lecturer: Shreeharsh Kelkar

Interdisciplinary Studies Field Major

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Office: 269 Evans Hall

Office Hours: Tu: 11.30-1.30 pm, Th: 11.30-1.30 pm (or email me if none of these work for you). **I'd prefer to keep these office hours for students in my other classes.** For office hours, click on **https://berkeley.zoom.us/j/4940316666 (https://berkeley.zoom.us/j/4940316666)**. You will need a Zoom account. Office hours are first-come first-served. When you join, you will be put in a waiting room. I will talk to you in the order you join. If you don't have Zoom or are having difficulties with it, call +12133388477 or +16692192599 and use the following Meeting ID: 494 031 6666.

All participants and hosts are now required to sign into a Zoom account prior to joining meetings hosted by UC Berkeley. See "How to sign into your UC Berkeley Zoom account" (https://berkeley.service-now.com/kb?id=kb_article_view&sysparm_article=KB0013718) for how to sign in. Participants who are not eligible for a UC Berkeley-provided Zoom account can use a Zoom account provided by their institution, can create a free, consumer Zoom account (at https://zoom.us/freesignup/), or can dial in via the phone.

Readers:

Sara Ann Knutson	Aaron Young
Email: **sara_knutson@berkeley.edu (mailto:sara_knutson@berkeley.edu)**	Email: **aarongregory@berkeley.edu (mailto:aarongregory@berkeley.edu)**

Office Hours: Fridays, 8:30 - 10:30 am PST. [⤢](https://berkeley.zoom.us/j/95748522856) [(https://berkeley.zoom.us/j/95748522856)](https://berkeley.zoom.us/j/95748522856) **Venue: https://berkeley.zoom.us/j/95748522856** ⤢ **[(https://berkeley.zoom.us/j/95748522856)](https://berkeley.zoom.us/j/95748522856)** Meeting ID: 957 4852 2856	Office Hours: Wednesdays: 10-11:30am PST Venue: **https://berkeley.zoom.us/j/96363634474?pwd=M09vWGsrWm9zQ285RlZwbDNXZ0pTZz09** ⤢ **[(https://berkeley.zoom.us/j/96363634474?pwd=M09vWGsrWm9zQ285RlZwbDNXZ0pTZz09)](https://berkeley.zoom.us/j/96363634474?pwd=M09vWGsrWm9zQ285RlZwbDNXZ0pTZz09)**

Course Description and Learning Objectives:

This course introduces students to the technical, social, business, and political entanglements of computing from its late 19th century origins to the 21st century software industry. Topics covered include the intersections of computing with: calculation, capitalism, intelligence, gender, cybernetics, government, communication, participation, expression, mediation, workplaces, the internet, virtual communities, social media, and others. In this class, we will look at computing as a "social" phenomenon: to see it not just as a technology that transforms but to see it as a technology that has evolved, and is being put to use, in very particular ways, by particular groups of people. We will pay attention to technical details of computing but ground these technical details in social organization (a term whose meaning should become clearer and clearer as the class progresses). We will study the social organization of computing around different kinds of hardware, software, ideologies, and ideas. We will concentrate on the United States, but students are encouraged to take up more international topics.

Grade Determination:

There are no exams in this class. 50% of the class grade comes from participating in the class (which means doing the readings and listening to the lectures and crafting interesting responses). The other 50% of your class grade comes from writing three analytical papers (each one between 1000-3000 words). The grade breakdown is as follows:

Participation (50 pts):

Participation-based assignments are formative assessments. You will get the points if you participate and make a good-faith effort.

Syllabus Quiz: 3 pts
Introduction: 2 pts
Weekly Responses: 30 pts

> Summaries: 6*3=18 pts
> Responses: 6*2=12 pts

I will post two half-hour lectures every Monday starting from week 2. By the following Sunday night, you have to EITHER: (1) post a summary of the week's lectures + readings (I will provide templates), OR (2) post a response to a summary posted by another class-mate. Over the semester (i.e. over 14 opportunities), you have to post at least 6 summaries and 6 responses.

While I would encourage you to respond to your class-mates' post in general, especially if you see something interesting, note that you will only get credit for a summary or a response but never both. The goal is for you to engage with the course material over as much of the length of the course as possible.

Outline + Peer Review of Paper 1: 5 pts

Outline + Peer Review of Paper 2: 5 pts

[Outline + Peer Review of Paper 3](): 5 pts

Papers (50 pts):

The papers are summative assessments, i.e. they will be graded based on their quality. Please use the papers as an opportunity to practice and improve your writing skills.

[Paper 1 (Analytical Paper)](): 15 pts

[Paper 2 (Magazine Article)](): 15 pts

[Paper 3 (Policy Brief)](): 20 pts

All assignments (including weekly summaries and responses, paper outlines, peer reviews, and papers will always be due Sunday at 11:59 pm).

Total: 100 pts

Extra Credit (3 pts): If 95% of the class does the course evaluations, everyone in class will get an extra 3 points.

The grading scheme for the class is as follows:

In order to pass the class using the P/NP option, you have to get at least a C-, i.e. at least 45 points.

For how to see what your current grade in the class is, see this page: [How to find out your class score]()

Range and Grade
90<=A<=100
85<=A-<90
80<=B+<85
70<=B<80
65<=B-<70
60<=C+<65
50<=C<60
45<=C-<50
40<=D<45
0<=F<45

Lateness Policy

As far as possible, no extensions will be granted for participation assignments. Remember that some amount of redundancy is built into these assignments. For instance, if you miss writing your weekly response, don't worry. You can miss up to two of them and still get full points for the responses if you do the rest. But if you have an emergency, or have other difficulties, come talk to me and we will figure it out.

If you need an extension for the three papers, then you need to email me at least 5 days before the deadline. (So if your paper is due on Sunday, I need to know by the night of the previous Wednesday.) No reasons required--just tell me how many more days you need. Extensions will not be granted after that unless you're going through an emergency. (Remember, an emergency means a situation which disrupts your whole life rather than just your schedule for this class. A job interview or a common cold does not count as an emergency.) If you have particular constraints, please come talk to me and we can work something out.

Here's what to do if you want an extension on the papers: at least five days before the deadline, email me and cc the readers, tell us you need an extension (no reason required) and tell us how many days you need (no more than a week). That's it. I'll respond and tell you the extension is granted. Make sure you cc the readers to keep them in the loop.
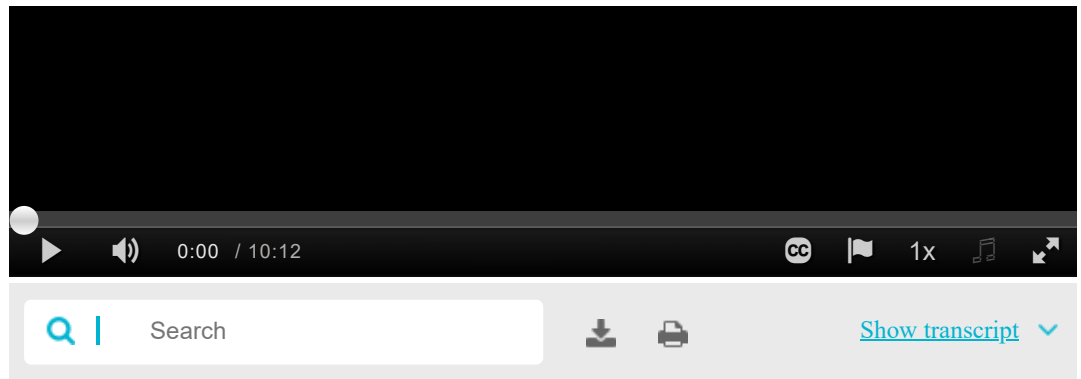
Class Plan

This is how it will go. There is a set of readings for each day. The main readings are most important and those marked "Of further interest" are optional. All readings have been chosen so that they are both fun to read (although that depends on your definition of fun) and are conceptually interesting. Every Monday, I will also post lectures for that week (usually two lectures of about half an hour each).

You can choose to do the readings first or listen to the lectures first (or any way that works for you, really). The lectures will not just be summaries of the readings; they will provide important contextual information that will help ground the readings. By the following Sunday, please post either your summary or respond to another student's summary. If you don't understand anything, just drop in to office hours with questions.
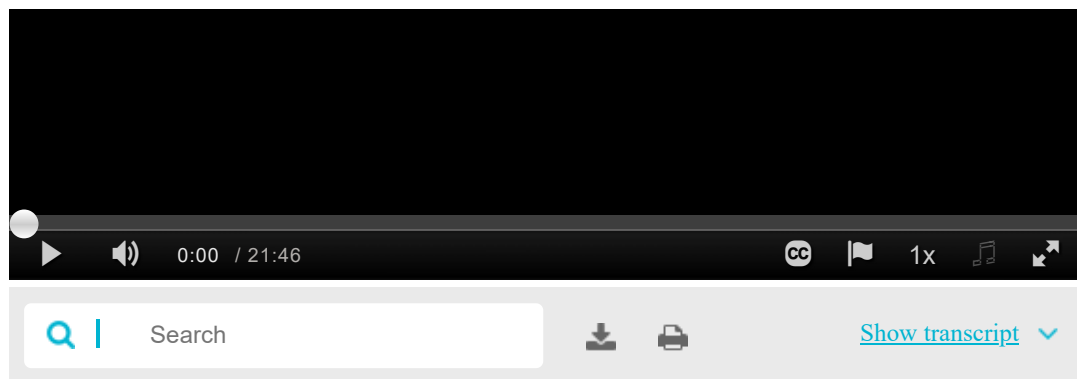
The class material is organized by keywords/concepts. Some of the important keywords/concepts are: work, labor, expertise, information, capitalism, and gender. This does not mean that the readings or the lecture are exclusively about that concept; rather, you are encouraged to ask: how is this reading/lecture about about [gender, expertise, work, algorithm, etc.]?

W	Date	Concept or Keyword	Readings, Assignment and Class Lecture
1	Jan 19	Introductions + Syllabus	Please introduce yourself to the class using this forum post: **Meet and Greet! Introduce yourself...** Please take the **Syllabus Quiz.** Both due by Sunday night.
	Jan 21	What is the social life of	An introduction to the themes of this class. No readings.

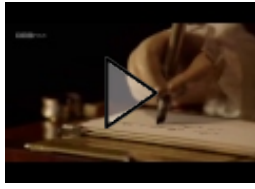|		computing?		
			0:00 / 10:12 CC ⚑ 1x ♫ ⤢ Q ┃ Search ⬇ 🖨 Show transcript ∨	
2	Jan 26	Calculation	0:00 / 21:46 CC ⚑ 1x ♫ ⤢ Q ┃ Search ⬇ 🖨 Show transcript ∨ *Grier, David Alan. "Human computers: the first pioneers of the information age." *Endeavour* 25.1 (2001): 28-32. [**pdf**] Gray, Mary and Siddharth Suri. 2017. The Humans Working Behind the AI Curtain. *Harvard Business Review*. [**pdf**] The Boy Writer. YouTube. **https://www.youtube.com/watch?v=laJX0txJc6M** ⤴ **(https://www.youtube.com/watch?v=laJX0txJc6M)**	

[(https://www.youtube.com/watch?v=laJX0txJc6M)](https://www.youtube.com/watch?v=laJX0txJc6M)

Reading notes: Read Grier first, then listen to the lecture, and then read the piece by Gray and Suri. The lecture describes what human computing work looked like in the 18th century, when it was considered high-status, intelligent work. It also describes an event that served as a turning point for the status of human computing: the monumental logarithmic tables of Gaspard de Prony. What sort of similarities and differences between the human computers (described by Grier and in the lecture) and the "humans working behind the AI curtain," as they are described in the piece by Gray and Suri?

Of further interest:

*Daston, Lorraine. 1994. "Enlightenment Calculations." *Critical Inquiry* 21(1): 182–202. [**pdf**]

Thompson, Clive. 2019. The Gendered History of Human Computers. *Smithsonian Magazine*. **https://www.smithsonianmag.com/science-nature/history-human-computers-180972202/** ⬈ **(https://www.smithsonianmag.com/science-nature/history-human-computers-180972202/)**

Jan 28	Intelligence and the Factory System	
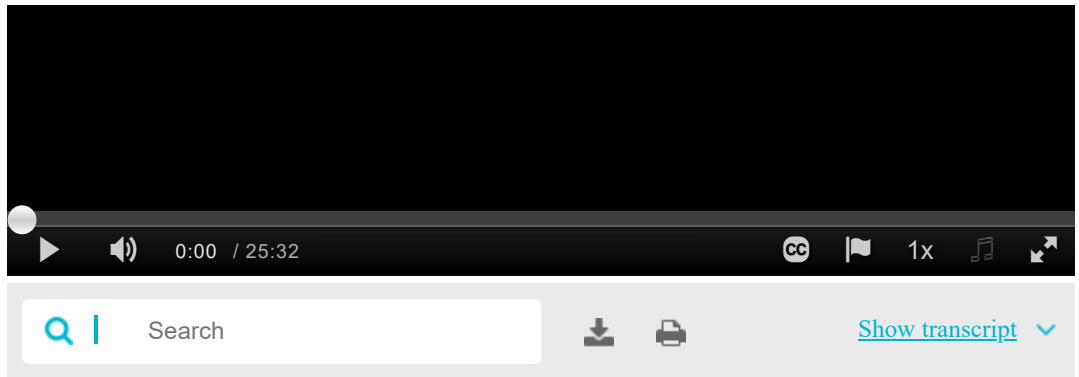
*Schafer, Simon. 1994. Babbage's Intelligence: Calculating Machines and the Factory System. *Critical Inquiry* 21(1). [**pdf**]

Metz, Cade. 2019. AI Is Learning from Humans. Many Humans. *The New York Times*. **https://nyti.ms/2Z2iaI4** ⬈ **(https://nyti.ms/2Z2iaI4)** [**pdf**]

Reading notes: Listen to the lecture first which describes the life of Charles Babbage and the transformation of intelligence from something that is mechanical to something that is managerial. Then read Schaffer (Schaffer is tough to read but he makes very interesting points) and Metz. Can you see any similarities and differences between human computing as factory work and the work of all the image labelers (and many others) who produce the data that trains algorithms?

Of further interest:

Murali, Anand. 2019. How India's data labellers are powering the global AI race. *FactorDaily*. **https://factordaily.com/indian-data-labellers-powering-the-global-ai-race/** ⬈ **(https://factordaily.com/indian-data-labellers-powering-the-global-ai-race/)**

Lee, Dave. 2018. Why Big Tech pays poor Kenyans to teach self-driving cars. *BBC News*. **https://www.bbc.com/news/technology-46055595** ⬈ **(https://www.bbc.com/news/technology-46055595)**

Please answer the forum post here: Week 2

3	Feb 2	Gender I	
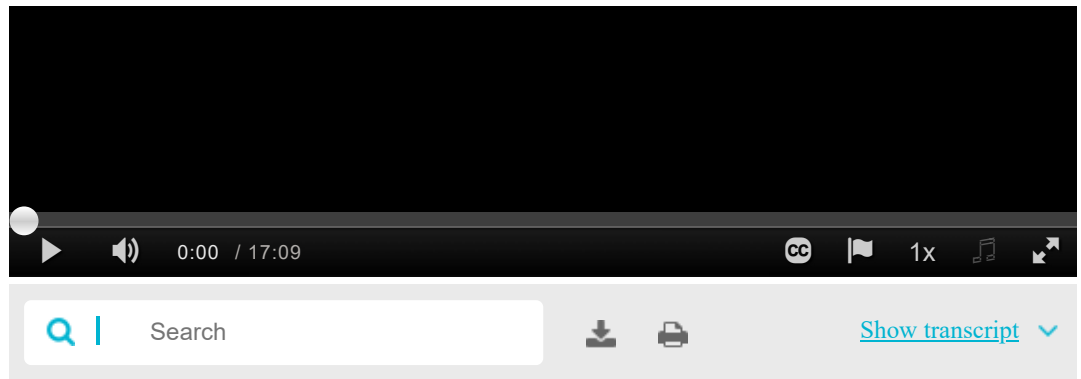
*Wise, M. Norton. "The Gender of Automata in Victorian Britain." *Genesis Redux: Essays in the History and Philosophy of Artificial Life*. Univ. of Chicago Press, 2007. 163-195. [**pdf**]

Stern, Joanna. 2017. Alexa, Siri, Cortana: Why All Your Bots Are Female. *The Wall Street Journal.* **https://www.wsj.com/video/series/joanna-stern-personal-technology/alexa-siri-cortana-why-all-your-bots-are-female/9E6E58C8-7B09-4DE0-A0A0-A39E822D941B** ⬈ **(https://www.wsj.com/video/series/joanna-stern-personal-technology/alexa-siri-cortana-why-all-your-bots-are-female/9E6E58C8-7B09-4DE0-A0A0-A39E822D941B)** [2-minute video]

Romano, Aja. 2017. Google has fired the engineer whose anti-diversity memo reflects a divided tech culture. *Vox*.
https://www.vox.com/identities/2017/8/8/16106728/google-fired-engineer-anti-diversity-memo. ↗ **(https://www.vox.com/identities/2017/8/8/16106728/google-fired-engineer-anti-diversity-memo.%5D)**

Reading notes and questions: Listen to the lecture first, then read Wise and Stern. Some things to write about in your summaries:

- What kinds of similarities and differences do you see in the fact that the automata of the 19th century were mostly women or people of color and that our digital assistants, by default, talk in women's voices?
- What do you think of the transformation from the one-sex to the two-sex model of gender?
- In the Wise reading, he points to two different discourses that shaped the two-sex model of gender in Victorian England: from political economy and evolutionary biology. Which of them do you think is more powerful? What are their intellectual descendants today, if you consider the digital assistants or the Google Memo?
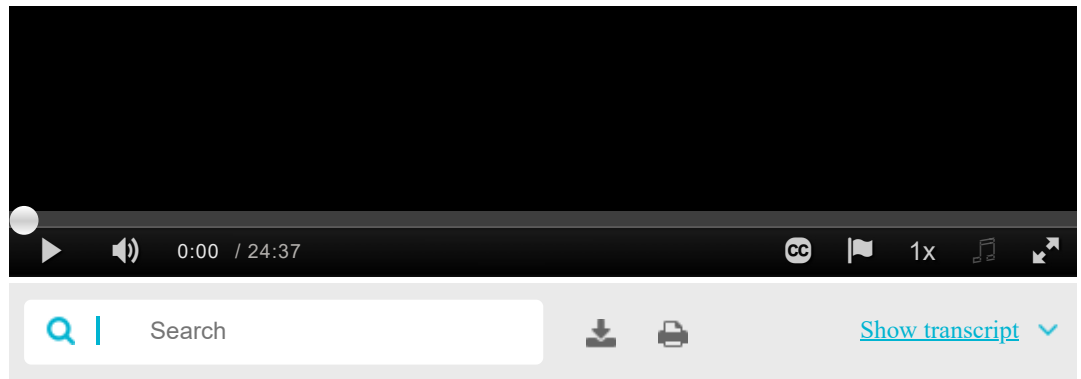
Of further interest:

LaFrance, Adrienne. 2016. Why do so many digital assistants have feminine names? *The Atlantic*. **https://www.theatlantic.com/technology/archive/2016/03/why-do-so-many-digital-assistants-have-feminine-names/475884/** ↗ **(https://www.theatlantic.com/technology/archive/2016/03/why-do-so-many-digital-assistants-have-feminine-names/475884/)**

Flahive, Gerry. 2018. The Story of a Voice: HAL in 2001 wasn't always so eerily calm. *The New York Times*. **https://www.nytimes.com/2018/03/30/movies/hal-2001-a-space-odyssey-voice-douglas-rain.html** ↗ **(https://www.nytimes.com/2018/03/30/movies/hal-2001-a-space-odyssey-voice-douglas-rain.html)**

Damore, James. 2017. The Google Memo: "Google's Ideological Echo Chamber." **https://assets.documentcloud.org/documents/3914586/Googles-Ideological-Echo-Chamber.pdf.** ↗ **(https://assets.documentcloud.org/documents/3914586/Googles-Ideological-Echo-Chamber.pdf)**

	Feb 4	The Calculating State	

*Hacking, Ian. "Biopower and the Avalanche of Printed Numbers." In *Biopower: Foucault and Beyond* (2015). [**pdf**]

Stephens-Davidowitz, Seth. 2015. Searching for Sex. *The New York Times.* **https://www.nytimes.com/2015/01/25/opinion/sunday/seth-stephens-davidowitz-searching-for-sex.html** ↗ **(https://www.nytimes.com/2015/01/25/opinion/sunday/seth-stephens-davidowitz-searching-for-sex.html)** . [**pdf**]

Reading notes and questions: Listen to the lecture first, then read Hacking, and then Stephens-Davidowitz. Here are some things to think about and write about in your summaries:

- Hacking says that in its origins, statistics was considered a moral science. Would you say that Stephens-Davidowitz's NYT piece, based on search engine data, is also moral in tone? What's different and what's similar?
- What do you think of the idea of "managing" people by collecting data about them? What do you think made it attractive to governments in the 19th century?
- Clearly, the kind of data that we rely on today is different from the data used in the 19th century. But there are also some similarities. What struck you?

Of further interest:

Clayton, Aubrey. 2020. How Eugenics Shaped Statistics. *Nautilus*. **https://nautil.us/issue/92/frontiers/how-eugenics-shaped-statistics** ↗ **(https://nautil.us/issue/92/frontiers/how-eugenics-shaped-statistics)**

Bouk, Dan. 2019. The Hand Count. *Census Stories.* **https://censusstories.us/2019/09/05/hand-count.html** ↗ **(https://censusstories.us/2019/09/05/hand-count.html)**

*Scott, James. 1998. "Introduction." In *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. Yale University Press. pp1-3. [**pdf**]

*Leonelli, Sabina. 2019. Data--From Objects to Assets. *Nature*. **https://www.nature.com/articles/d41586-019-03062-w** ↗ (https://www.nature.com/articles/d41586-019-03062-w)

Madrigal, Alexis. 2014. How Netflix reverse-engineered Hollywood. *The Atlantic.* **https://www.theatlantic.com/technology/archive/2014/01/how-netflix-reverse-engineered-hollywood/282679/** ↗ (https://www.theatlantic.com/technology/archive/2014/01/how-netflix-reverse-engineered-hollywood/282679/)

Please answer the forum post here: Week 3 (Summary/Response)

| 4 | Feb 9 | Management or the Managerial Corporation |

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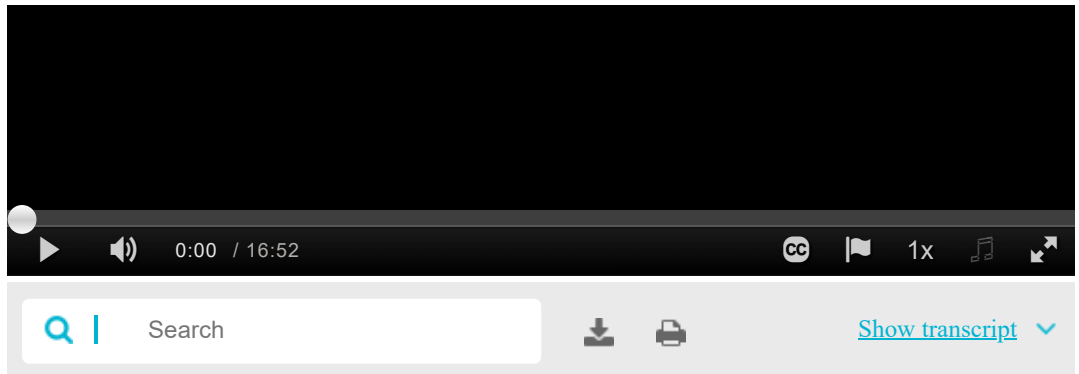
*Yates, Joanne. 2000. Business Use of Information and Technology during the Industrial Age. From *A Nation Transformed by Information* (Eds: Alfred Chandler and James Cortada). [**pdf**]

Rosenblat, Alex. 2019. When Employees Become "End Users." Slate. **https://slate.com/technology/2019/03/uber-gig-workers-customers.html** ↗ (https://slate.com/technology/2019/03/uber-gig-workers-customers.html)

Reading notes and questions: Listen to the lecture first, then read Yates and Rosenblat. Here are some things to think about and write about in your summaries:

- What are the characteristics of systematic management? What is the difference between governing citizens versus managing workers? Is there a difference? What's the difference between the calculating state and the managerial corporation?

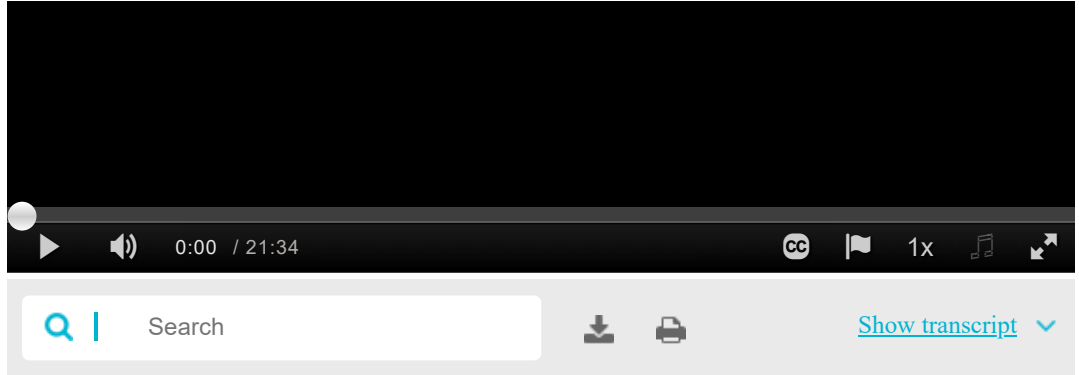|			
			• What does it take to make organizational processes independent of particular individuals, as the systematizers wanted to do? What roles were the machines supposed to play in this process? • What do you think of the process through which Uber manages its drivers, as described by Rosenblat? In what ways is it similar or different from systematic management?
Feb 11	The Birth of Software		 *Campbell-Kelly, Martin, William Aspray, Nathan Ensmenger, and Jeffrey Yost. Inventing the Computer. In *Computer: A History of the Information Machine*. Westview Press. pp65-86. [**pdf**] **Reading notes and questions:** You can either listen to the lecture or do the reading first; they have considerable overlap. Here are some things to think about and write about in your summaries: • How does the dispute between Mauchly-Eckert and Von Neumann compare with the dispute between Babbage and Clement about ownership of the Difference Engine? What are the similarities and differences? Can you compare this to a contemporary argument about taking credit for an idea? E.g. see **here** (https://www.youtube.com/watch?v=Y3JtmZugzl4) . • What is the idea of the stored-program? Does it sound that revolutionary anymore? Why was it revolutionary then? • How did organizational circumstances--that it was built in a university lab with federal money--shape the structure of the ENIAC, you think? **Of further interest:** Kelkar, Shreeharsh. 2015. How influential was Alan Turing? The tangled invention of computing and its historiography. *Platypus*. **http://blog.castac.org/2015/03/how-**
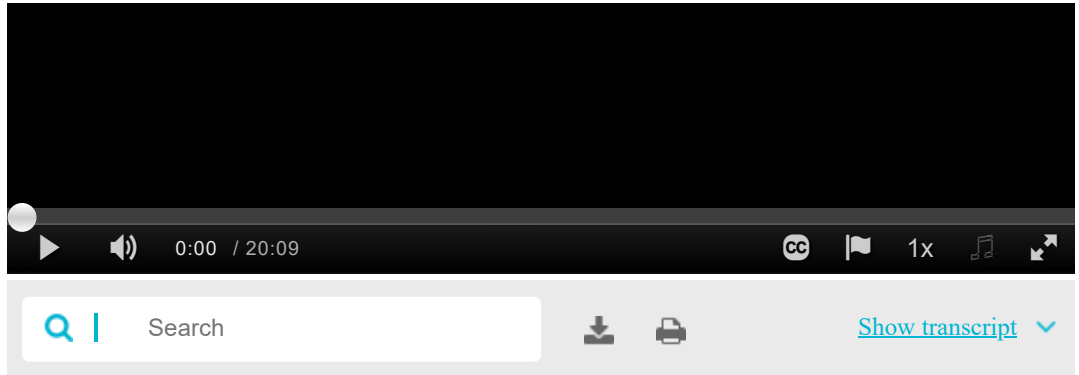
influential-was-turing/ ⤢ (http://blog.castac.org/2015/03/how-influential-was-turing/)

Please post your responses to this week's material here: **Week 4 (Summary/Response).**

Your outline for Paper 1 is due this Sunday: **Paper 1 Outline.** The peer review is due a week after.

5	Feb 16	The Evolution of Software	

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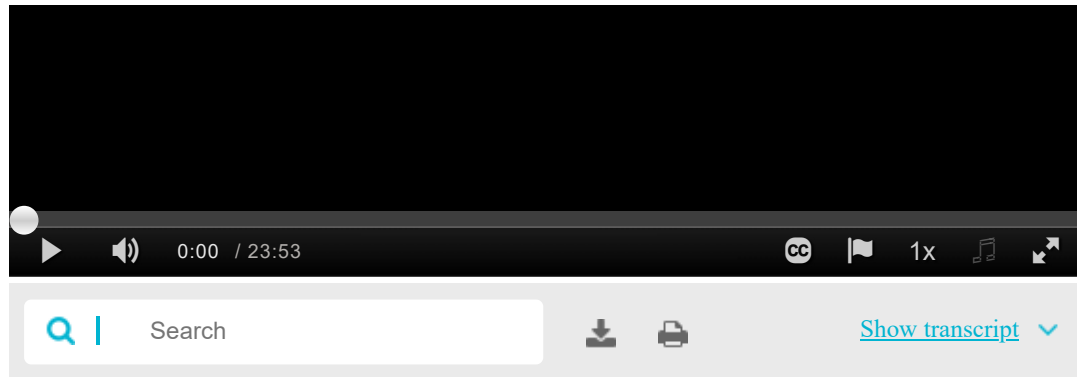
Haigh, Thomas. 2014. Software. *The Oxford Encyclopedia of the History of American Science, Medicine, and Technology* (Ed: Hugh Slotten). [**pdf**]

Andreessen, Marc. 2011. Why Software is Eating the World. *The Wall Street Journal.* **https://www.wsj.com/articles/SB10001424053111903480904576512250915629460** ⤢ **(https://www.wsj.com/articles/SB10001424053111903480904576512250915629460)** .
[**pdf**] [Berkeley students can access Wall Street Journal articles if they use their Berkeley email to create an account. I highly encourage you to register and use your Berkeley account so that the libraries can make a case that the subscription benefits Berkeley students.]

Reading notes and questions: Listen to the lecture and read Haigh first, and then Andreessen. Here are some things to think about and write about in your summaries:

- What is hardware? What is software? What are the three types of software?
- How did we get from a world where software was built laboriously on the customer side to one where we can simply download programs and install them with one click? What kinds of decisions had to be taken? How many of these decisions were conscious and how many were historical accidents?
- Of the four events discussed in the lecture: the stored-program concept, IBM's 1962 decision to build the System/360, its 1967 decision to unbundle, and its 1980

			decision to build its PC using licensed components--which do you think is the most important in creating a world of standardized application software? • Is software really going to eat the world? What exactly is the definition of software in Marc Andreessen's op-ed in the WSJ? If Walmart, Pixar, and Amazon are all "software companies," then what exactly does it mean to be a software company?
Feb 18	Programming		 *Light, Jennifer. "When Computers Were Women." *Technology and Culture* 40, no. 3 (1999): 455-483. [**pdf**]. *Campbell-Kelly, Martin, William Aspray, Nathan Ensmenger, and Jeffrey Yost. Systems Men and Management Information Systems. In *Computer: A History of the Information Machine*. Westview Press. pp133-135. [**pdf**] McAfee, Andrew, and Erik Brynjolfsson. "Big Data: The Management Revolution." *Harvard Business Review* 90, no. 10 (2012): 60-68. [**pdf**] **Reading notes and questions:** Listen to the lecture, then read Light, then Campbell-Kelly. Skim the Harvard Business Review piece if you get a chance (I mention it in the lecture but for some reason I said "MIT Sloan Management Review" rather than "Harvard Business Review," my apologies.) • What is programming? Why was it done mostly at the client-side in the early days of digital computers? How did early programming differ in the worlds of scientific calculation and electronic data processing? • What do you think of early programmers' efforts to increase the prestige of their occupation? • How does the story told in this lecture (of programming) relate to the story in the previous lecture (the standardization of the software and the establishment of the application software industry)?

- Is "data science" the new programming as data scientists seek to increase their status within the corporation and universities are adding data science credentials (e.g. Berkeley)? What kinds of similarities and differences do you see between the two?

Of further interest:

Take a quick look at the original article in the New York Times announcing the ENIAC: **https://www.computerhistory.org/revolution/birth-of-the-computer/4/78/323** ⌐ **(https://www.computerhistory.org/revolution/birth-of-the-computer/4/78/323)** .

Hicks, Marie. 2017. A Feature, Not a Bug. *Technology's Stories*. **http://www.technologystories.org/a-feature-not-a-bug/** ⌐ **(http://www.technologystories.org/a-feature-not-a-bug/)**

Thompson, Clive. 2019. The Secret History of Women in Coding. *The New York Times Magazine*. **https://www.nytimes.com/2019/02/13/magazine/women-coding-computer-programming.html** ⌐ **(https://www.nytimes.com/2019/02/13/magazine/women-coding-computer-programming.html)** . [**pdf**]

Piper, Karen. 2018. My mom, the missile computress. *Nautilus*. **http://nautil.us/issue/63/horizons/my-mom-the-missile-computress** ⌐ **(http://nautil.us/issue/63/horizons/my-mom-the-missile-computress)**

Please post your responses to this week's material here: **Week 5 (Summary/Response)** .

6	Feb 23	Inventing Information	
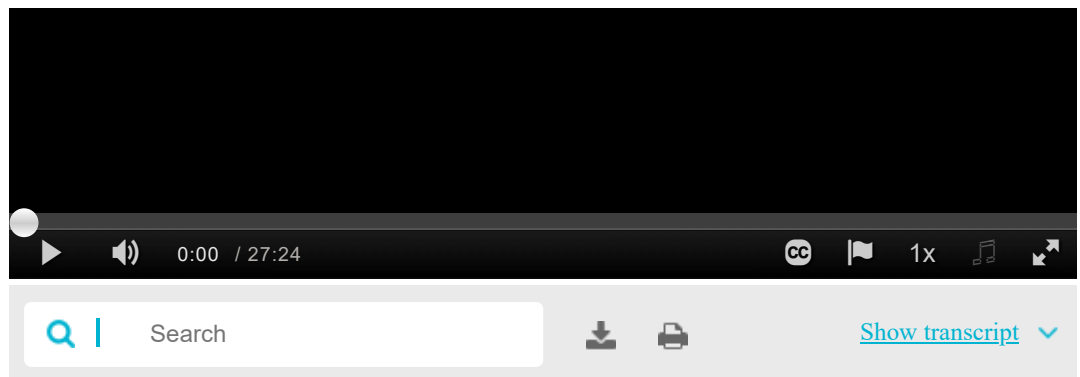
*Geoghegan, Bernard. 2016. Information. In *Digital Keywords: A Vocabulary of Information Society and Culture*. [**pdf**]

Reading notes and questions: Listen to the lecture, then read Geoghegan.

- What do you think of the history of cybernetics? Would we still be talking about information and feedback without WW2?
- Is it really advantageous to think of *everything* as an information processing system? What are the advantages and drawbacks of thinking with information and feedback? Do you recall any interesting encounters with the term "information"?
- What do you think of the term "data" that is increasingly being used today, e.g. in **this piece by the philosopher Yuval Harari** ↗
  (https://www.ft.com/content/50bb4830-6a4c-11e6-ae5b-a7cc5dd5a28c?siteedition=intl)
  whose book *Sapiens* is perhaps today's equivalent of Norbert Wiener's *Cybernetics*?
- Take a look at some of the actual articles from the 1940s on "information"--see below for two published by Norbert Wiener and Warren Weaver in Scientific American. What do you think of their use of the term "information"?

Of further interest:

*Peters, John Durham. 1988. Information: Notes Towards a Critical History. *Journal of Communication Inquiry.* [**pdf**]

Wiener, Norbert. "Cybernetics." *Scientific American* 179.5 (1948): 14-19. [**pdf**]

Weaver, Warren. 1949. The Mathematics of Communication. *Scientific American* 181.5: 11-15. [**pdf**]

Feb 25	The Birth of Computer Science and Artificial Intelligence	
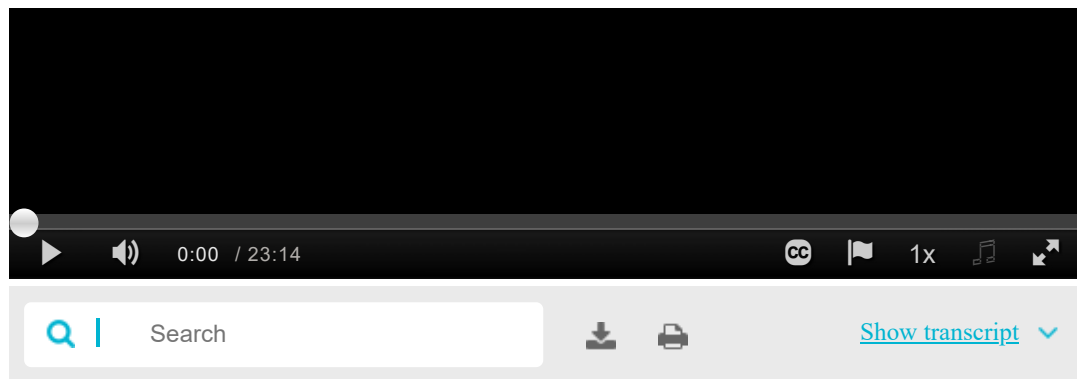
*Heyck, Hunter. 2008. Defining the Computer: Herbert Simon and the Bureaucratic Mind—Parts 1 and 2 (extracts). *IEEE Annals of the History of Computing* 30 (2). [**pdf**]

Reading notes and questions: Listen to the lecture, then read Heyck.

- How did WW2 and its aftermath structure the intellectual fields of computer science and AI?

- How did the early pioneers of the computer start to think of it as a general-purpose information or symbol processor? How did they start to use the computer as a metaphor for thinking about humans, organizations, and societies?
- Could it have been different? What would the world look like without computer science or AI?
- When we say that Alan Turing was the father of computer science, what does that actually mean?
- What does it mean that for the AI researchers, the program was the seat of intelligence, not the machine? What does it mean that for AI researchers, intelligence meant proving theorems and playing chess but not, say, cooking or running?
- What do you think about the conflict between the electrical engineers and the computer scientists? Does it seem like a recurring theme (Von Neumann versus Eckert/Mauchly, maybe even Babbage versus Clement)? Why does it seem to keep happening?

Of further interest:

Kelkar, Shreeharsh. 2015. How influential was Alan Turing? The tangled invention of computing and its historiography. *Platypus*. **http://blog.castac.org/2015/03/how-influential-was-turing/** ↗ **(http://blog.castac.org/2015/03/how-influential-was-turing/)**

Haigh, Thomas. "Actually, Turing did not invent the Computer." *Communications of the ACM* 57.1 (2014): 36-41. [**pdf**]

Please post your responses to this week's material here: **Week 6 (Summary/Response)**

7	Mar 2	Funding the Computer	

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Edwards, Paul. 1997. Why Build Computers?: The Military Role in Computer Research. From *The Closed World: Computers and the Politics of Discourse in Cold War America*. [**pdf**]
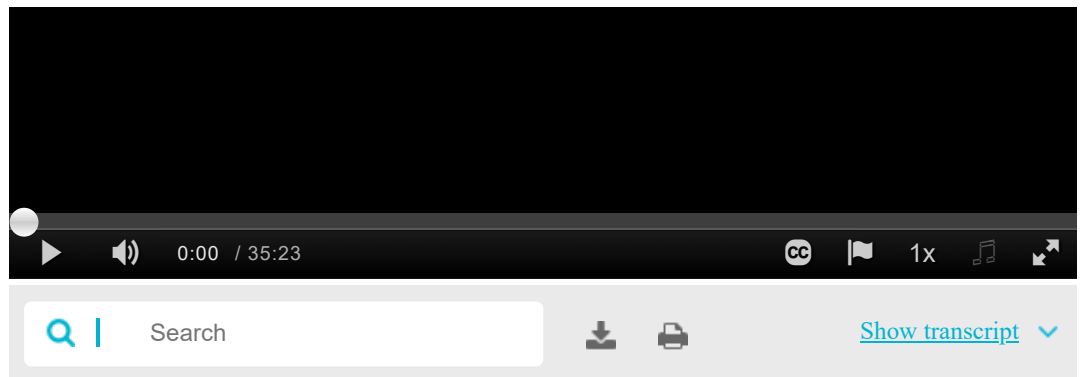
Reading notes and questions: Listen to the lecture, then read Edwards.

- How did WW2 change the funding structure of American research? What were its consequences?
- How did the cold war shape computer research? What was the role of the computer in cold war weapons systems, according to the military strategists? How was that reflected in the design of the SAGE project and why?
- The cold war is over now but what kinds of concerns do you think drive computer research? Do you think it's still military concerns or are there other concerns that have come to the fore? (Take a look at the New York Times piece in the optional readings.)

Of further interest:

Metz, Cade. 2019. Curbs on A.I. Exports? Silicon Valley Fears Losing Its Edge. *The New York Times*. **https://www.nytimes.com/2019/01/01/technology/artificial-intelligence-export-restrictions.html** ↗ **(https://www.nytimes.com/2019/01/01/technology/artificial-intelligence-export-restrictions.html)**

| Mar 4 | Interacting with the Computer | |

▶ ◀) 0:00 / 35:23   CC ⚐ 1x ♫ ⤢

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*Dourish, Paul. 2004. A Historical Model of Interaction. From *Where the Action Is: The Foundations of Embodied Computing*. [**pdf**]

Stephenson, Neal. 1999. Morlocks and Eloi at the Keyboard. From *In the Beginning was the Command Line*. [**pdf**]

McGranaghan, Mark. 2018. Slow Software. *Ink and Switch*.
https://www.inkandswitch.com/slow-software.html ↗
(https://www.inkandswitch.com/slow-software.html)

Reading notes and questions: Listen to the lecture, skim Dourish, read Stephenson and then skim McGranaghan.

- Who is the computer user? What kinds of computer users do you see emerging, shaped by the new technologies? How did the cold war shape the computer user? Was it all for the good? Why or why not?
- The pioneers of the GUI thought that the GUI would augment human beings (though they differed on how and which human beings). Stephenson argues that the GUI's ubiquity is a barrier to human learning. Do you agree with him?
- This is the second time in your readings that the Morlocks and the Eloi have appeared. What makes them particularly applicable to these questions of computing?
- What gender politics do you see in the construction of the user? Both Licklider and Engelbart saw the computer as a secretary to intellectual workers. While Alan Kay and PARC turned the user into a secretary (and the computer was, I guess, a secretary to a secretary?).
- The GUI was supposed to make the computer easy to use, but is that the case? McGranaghan describes why the internet is so slow and how there are thousands of pieces of code running beneath the hood of any webpage that slow it down. Does that mean the GUI was good before and it's not now? What does it feel to to you to use the GUI today?

Of further interest:

*Bardini, Thierry, and August T. Horvath. "The Social Construction of the Personal Computer User." *Journal of Communication* 45.3 (1995): 40-66. [**pdf**]

Primary historical sources

1963 Timesharing: A Solution to Computer Bottlenecks.
https://www.youtube.com/watch?v=Q07PhW5sCEk ↗
(https://www.youtube.com/watch?v=Q07PhW5sCEk)

(https://www.youtube.com/watch?v=Q07PhW5sCEk)
. See the video of MIT's timesharing system from 1963.

Licklider, JCR. "Man-computer symbiosis." IRE transactions on human factors in electronics 1 (1960): 4-11. [**pdf**]

Engelbart, Douglas C. 1962. "Augmenting human intellect: a conceptual framework."
[**pdf**]

Extract from "The Mother of All Demos."
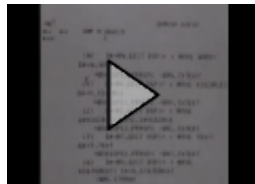**https://www.youtube.com/watch?v=B6rKUf9DWRI** ↗
(https://www.youtube.com/watch?v=B6rKUf9DWRI)

(https://www.youtube.com/watch?v=B6rKUf9DWRI)
. You can watch the full demo here:
https://www.youtube.com/watch?v=yJDv-zdhzMY ↗
(https://www.youtube.com/watch?v=yJDv-zdhzMY)

(https://www.youtube.com/watch?v=yJDv-zdhzMY)

Kay, Alan, and Adele Goldberg. "Personal dynamic media." Computer 10.3 (1977): 31-41. [**pdf**]

Please post your responses to this week's material here: **Week 7 (Summary/Response)**

8	Mar 9	Networking the Computer	
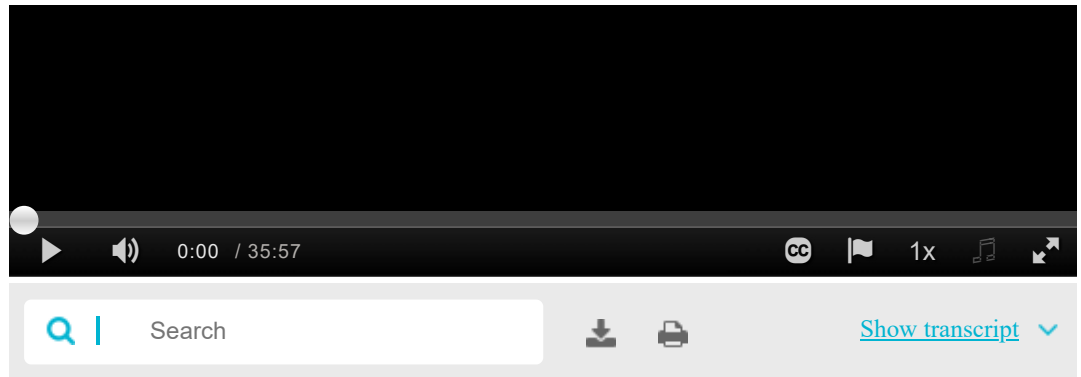
*Naughton, John. 2016. The Evolution of the Internet: From Military Experiment to General Purpose Technology. *Journal of Cyber Policy* 1:1. 5-28. [**pdf**]

Project Cybersyn [podcast]. *99% Invisible*.
https://99percentinvisible.org/episode/project-cybersyn/ ↗

(https://99percentinvisible.org/episode/project-cybersyn/)

Shuler, Rus. 2002. How does the internet work?
https://web.stanford.edu/class/msande91si/www-spr04/readings/week1/InternetWhitepaper.htm 🗗
(https://web.stanford.edu/class/msande91si/www-spr04/readings/week1/InternetWhitepaper.htm)

Reading notes and questions: Listen to the lecture, then read Naughton. You can either read or listen to the Project Cybersyn. Here are a few things to think about:

- How did ARPA's generous resources shape the internet as we know it?
- Was TCP/IP the more "open" standard than OSI? What does openness even mean?
- The lecture concludes by saying that the three characteristics of the internet we inherited because of cold war patronage were that it was decentralized, open, and open-ended. How many of these do you think hold today, even in your own experience? Does it matter at all though that today's internet is accessed by hundreds of millions of more people than it ever was during the 1970s to 1990s?
- What do you make of Project Cybersyn? Was Project Cybersyn a network at all? What was it? How was it different from ARPANET?
- What do you think of the idea of the "networked user"? Do you think people can really become free by becoming members of online communities? How much of this was due to the fact that the early users of the internet were all highly elite cold war researchers who operated in non-commercial contexts?

Of further interest:

*Abbate, Janet. 1999. "The Most Neglected Element": Users Transform the ARPANET.   In *Inventing the Internet*. MIT Press. 83-113. [**pdf**]

*Russell, Andrew. 2013. OSI: The Internet that Wasn't. *IEEE Spectrum Magazine*.
http://spectrum.ieee.org/computing/networks/osi-the-internet-that-wasnt 🗗
(http://spectrum.ieee.org/computing/networks/osi-the-internet-that-wasnt)

Jackson, Zoë. 2019. Communication Revolution. *Perspectives on History*.
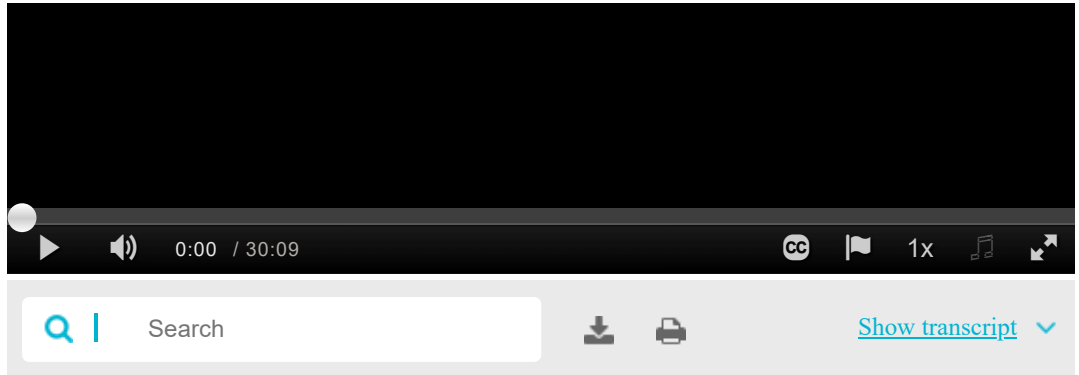**https://www.historians.org/publications-and-directories/perspectives-on-history/may-2019/communication-revolution-arpanet-and-the-development-of-the-internet-50-years-later** 🗗 **(https://www.historians.org/publications-and-directories/perspectives-on-history/may-2019/communication-revolution-arpanet-and-the-development-of-the-internet-50-years-later)**

Peters, Benjamin. 2016. The Soviet Internyet. *Aeon*. **https://aeon.co/essays/how-the-soviets-invented-the-internet-and-why-it-didn-t-work** 🗗
(https://aeon.co/essays/how-the-soviets-invented-the-internet-and-why-it-didn-t-work)

Medina, Eden. Creating the Liberty Machine. 2011. From *Cybernetic Revolutionaries: Technology and Politics in Allende's Chile*. [**pdf**]

			Zuckerman, Ethan and Andrew McLaughlin. 2003. Introduction to Internet Architecture and Institutions. **https://cyber.harvard.edu/digitaldemocracy/internetarchitecture.html** ⬀ **(https://cyber.harvard.edu/digitaldemocracy/internetarchitecture.html)**
Mar 11	Sharing Source Code		

Toomey, Warren. 2011. The Strange Birth and the Long Life of UNIX. *IEEE Spectrum*. **https://spectrum.ieee.org/tech-history/cyberspace/the-strange-birth-and-long-life-of-unix** ⬀ **(https://spectrum.ieee.org/tech-history/cyberspace/the-strange-birth-and-long-life-of-unix)**

Finley, Klint. 2019. The Wired Guide to Open Source Software. *Wired*. **https://www.wired.com/story/wired-guide-open-source-software/** ⬀ **(https://www.wired.com/story/wired-guide-open-source-software/)**

Lucas, Rob. 2018. Interview with Richard Stallman. *New Left Review*. **https://newleftreview.org/issues/ii113/articles/richard-stallman-talking-to-the-mailman** ⬀ **(https://newleftreview.org/issues/ii113/articles/richard-stallman-talking-to-the-mailman)**

Reading notes and questions: Listen to the lecture, then read Toomey. Skim Finley and Lucas though you might really enjoy the interview with Stallman (even if it's rather long) since you get an idea of his blunt style and personality. Here are a few things to think about:

- Why were the people building Unix able to share their source code? What do you think are the characteristics of the "user community" around Unix? Are there any similar user communities you know today?
- What do you think of the distinction between "free software" and "open-source software"? Does it matter what it's called?

- Why should software users have a set of freedoms when car users or toaster users don't? Is software really that special? What makes it special? Is it possible that it was not software that was special but the conditions of the cold war?
- Stallman says many things in the interview that might raise eyebrows. Here is a couple that stood out to me:

  - *Worse than funding from the military?* Much worse, because the businesses would try to restrict the use of what you did.

  - Open source is an amoral, depoliticized substitute for the free-software movement. It was explicitly started with that intent.

Of further interest:

Oberhaus, Daniel. 2019. The Internet Was Built on the Free Labor of Open Source Developers. Is That Sustainable? *Motherboard*. https://www.vice.com/en_us/article/43zak3/the-internet-was-built-on-the-free-labor-of-open-source-developers-is-that-sustainable https://www.vice.com/en_us/article/43zak3/the-internet-was-built-on-the-free-labor-of-open-source-developers-is-that-sustainable

Coleman, Gabriela. 2013. Two Ethical Moments in Debian. From Coding Freedom: The Ethics and Aesthetics of Hacking. pp 123-160. Available here: https://gabriellacoleman.org/Coleman-Coding-Freedom.pdf [(https://gabriellacoleman.org/Coleman-Coding-Freedom.pdf)](https://gabriellacoleman.org/Coleman-Coding-Freedom.pdf) .

Please post your responses to this week's material here: **Week 8 (Summary/Response)**

Outline of Paper 2 due on Sunday.

9	Mar 16	Computers and Freedom	

| | | | |

Lecture Script: **Week9_Day1--Computers and Freedom.pdf**

*Turner, Fred. 2005. Where the counterculture met the new economy: The WELL and the origins of virtual community. *Technology and Culture* 46 (3), 485-512. [**pdf**]

Ferenstein, Greg. 2015. The unusual politics of Silicon Valley, explained. *Vox*. **https://www.vox.com/2015/9/29/9411117/silicon-valley-politics-charts** ⤴ **(https://www.vox.com/2015/9/29/9411117/silicon-valley-politics-charts)**

Karpf, Dave. 2018. 25 Years of Wired Predictions: Why the Future Never Arrives. *Wired Magazine*. **https://www.wired.com/story/wired25-david-karpf-issues-tech-predictions/** ⤴ **(https://www.wired.com/story/wired25-david-karpf-issues-tech-predictions/)** . [**pdf**]

Reading notes and questions: Listen to the lecture, read Turner and Ferenstein. Skim Karpf especially the bright *Wired* covers.

- Do you see the relationship between the Turner and Ferenstein pieces? What events shaped the computer's transformation from a symbol of servitude to a symbol of freedom?
- Ferenstein describes the politics of Silicon Valley people--i.e. cyberutopianism-- pretty well. But he doesn't come up with a name for it, half-heartedly calling it "communitarianism"--do you think that's right? I think that's wrong and it's not communitarianism at all (at least not what communitarianism means in political theory). But what do you think? Can you think of a better name than cyberutopianism?
- How much role do you think hype has played (see all the Wired magazine covers in the Karpf article) in propping up cyberutopianism?
- Is there a gender politics to the way the computer user was coded as a cool hacker (or the perhaps less cool) computer bum? See the Ensmenger reading below.
- Do you think the backlash against Facebook that we're seeing today is a turn against cyberutopianism, or is it just a turn against Facebook? Are we all cyberutopians now?

Of further interest:

*Ensmenger, Nathan. ""Beards, Sandals, and Other Signs of Rugged Individualism": Masculine Culture within the Computing Professions." *Osiris* 30.1 (2015): 38-65. [**pdf**]

*Kelty, Chris. 2014. "The Fog of Freedom." In *Media Technologies: Essays on Communication, Materiality, and Society*, edited by Tarleton Gillespie, Pablo J. Boczkowski, and Kirsten A. Foot, 195–220. Cambridge, Massachusetts: The MIT Press. [**pdf**]

Robertson, Adi. 2018. OLPC's $100 laptop was going to change the world—then it all went wrong. The Verge.   **https://www.theverge.com/2018/4/16/17233946/olpcs-100-laptop-education-where-is-it-now** ⤴ **(https://www.theverge.com/2018/4/16/17233946/olpcs-100-laptop-education-where-is-it-now)**

			Primary sources:
			Footage of Mario Savio on Sproul Hall during the famous "Operation of the Machine speech." **https://www.youtube.com/watch?v=lsO_SIA7E8k** ↗ **(https://www.youtube.com/watch?v=lsO_SIA7E8k)** **(https://www.youtube.com/watch?v=lsO_SIA7E8k)** . You can find the full speech in audio here: **https://www.youtube.com/watch?v=fYSY2ohHFnQ** ↗ **(https://www.youtube.com/watch?v=fYSY2ohHFnQ)** **(https://www.youtube.com/watch?v=fYSY2ohHFnQ)** Brand, Stewart. 1972. Spacewar: Fanatic Life and Symbolic Death among the Computer Bums. *Rolling Stone*. [**pdf**] Apple's 1984 ad. **https://www.youtube.com/watch?v=VtvjbmoDx-I** ↗ **(https://www.youtube.com/watch?v=VtvjbmoDx-I)** **(https://www.youtube.com/watch?v=VtvjbmoDx-I)**
	Mar 18	Computers and Commerce	

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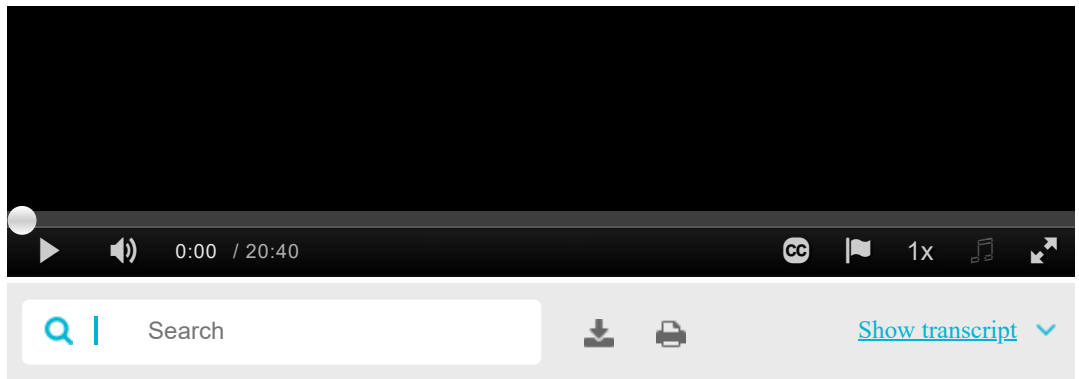
Lecture Script: **Week9_Day2--Computers and Commerce.pdf**

Sandvig, Christian. 2014. Corrupt Personalization. *Social Media Collective Blog*. **https://socialmediacollective.org/2014/06/26/corrupt-personalization/** ↗ **(https://socialmediacollective.org/2014/06/26/corrupt-personalization/)**

*Zittrain, Jonathan. 2009. Minds for Sale. *YouTube*. **https://www.youtube.com/watch?v=Dw3h-rae3uo** ↗ **(https://www.youtube.com/watch?v=Dw3h-rae3uo)**

(https://www.youtube.com/watch?v=Dw3h-rae3uo)
[Watch until the Q&A begins around 52:25 though you're free to watch the Q&A as well.]

Chafkin, Max. 2016. Confessions of an Instagram Influencer. *Bloomberg Businessweek*. **https://www.bloomberg.com/news/features/2016-11-30/confessions-of-an-instagram-influencer** ↗ **(https://www.bloomberg.com/news/features/2016-11-30/confessions-of-an-instagram-influencer)** [**pdf**]

Klabnik, Steve. 2019. The culture war at the heart of open source. **https://words.steveklabnik.com/the-culture-war-at-the-heart-of-open-source** ↗ **(https://words.steveklabnik.com/the-culture-war-at-the-heart-of-open-source)**

Reading notes and questions: Listen to the lecture, watch Zittrain, then read Sandvig and Chafkin. Skim Klabnik (but read it if you're interested in open-source). These readings all give you a picture of the computer user today, sandwiched somewhere

between the exalted rhetoric of cyberutopianism and the concrete realities of mundane commerce.

- Do you agree there is a mismatch between cyberutopian rhetoric and commercial reality for all the three "revolutions" of computing: the personal computer, open-source, and social networks? Does the mismatch matter? Why or why not?
- What do you think of all the new forms of work/play that have come together around crowdsourcing and artificial artificial intelligence (in Zittrain)?
- Do you agree with Sandvig that Facebook's personalization is "corrupt"? Why or why not? Does it matter?
- What happens to countercultural authenticity when you're an Instagram influencer (Chafkin)?

Of further interest:

*Pfaffenberger, B., 1988. The social meaning of the personal computer: Or, why the personal computer revolution was no revolution. *Anthropological Quarterly*, pp.39-47. [**pdf**]

Primary Sources

Zuckerberg, Mark. 2017. Building Global Community. *Facebook*. **https://www.facebook.com/notes/mark-zuckerberg/building-global-community/10103508221158471/** ⬈ **(https://www.facebook.com/notes/mark-zuckerberg/building-global-community/10103508221158471/)**

Please post your responses to this week's material here: **Week 9 (Summary/Response)**

Peer Review of **Paper 2 outline** due on Sunday.

10	Mar 23	Spring Break - No Class	
	Mar 25	Spring Break - No Class	
11	Mar 30	Computers and Intelligence	
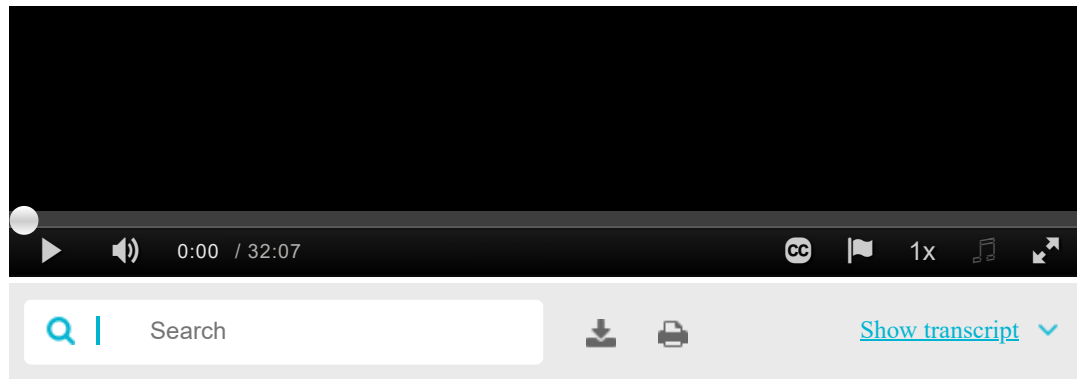
Lecture Script: **Week11_Day1--Computers and Intelligence.pdf**

*Garvey, Colin. 2018. Broken Promises and Empty Threats: The Evolution of AI in the USA, 1956-1996. *Technology's Stories*. **http://www.technologystories.org/ai-evolution/** ↗ **(http://www.technologystories.org/ai-evolution/)**

*Hsu, Hansen. 2020. AI and Play, Part 1: How Games have driven two schools of AI research. *CHM Blog*. **https://computerhistory.org/blog/ai-and-play-part-1-how-games-have-driven-two-schools-of-ai-research/** ↗ **(https://computerhistory.org/blog/ai-and-play-part-1-how-games-have-driven-two-schools-of-ai-research/)**

*Dick, Stephanie. 2019. Artificial Intelligence. *Harvard Data Science Review*. **https://hdsr.mitpress.mit.edu/pub/0aytgrau** ↗ **(https://hdsr.mitpress.mit.edu/pub/0aytgrau)**

Reading notes and questions: Listen to the lecture, then read Garvey, Hansen, and Dick. Try to understand the three different paradigms of AI: symbolic AI, expert systems and machine learning.

- What are the main similarities and differences between the three AI paradigms of symbolic AI, expert systems and machine learning? Which of the three do you find most interesting and why?
- What do you think of the role that games like checkers, chess, Go and Jeopardy have played in setting AI research agendas as well as AI hype?
- What do you think of the debates over the meaning of "intelligence" and whether AI programs are truly intelligent or not? Are these debates at all productive? Why do we have them? Should we be having them? What do you make of Hubert Dreyfus' criticism of AI? [See a small extract below from "Alchemy and Artificial Intelligence."]

			- What do you make of Garvey's take on how AI people systematically used promises and threats to secure the future of their field? - Does it matter that today's machine learning researchers are less interested in human cognition than earlier AI researchers were? **Of further interest:** Kelkar, Shreeharsh. 2014. What's the Matter with Artificial Intelligence? *Platypus Blog*. **http://blog.castac.org/2014/02/whats-the-matter-with-artificial-intelligence/** ↗ **(http://blog.castac.org/2014/02/whats-the-matter-with-artificial-intelligence/)** *Adam, Alison. 1998. AI in Context. In *Artificial Knowing: Gender and the Thinking Machine*. pp34-46. [**pdf**] Hsu, Hansen. 2020. AI and Play, Part 2: Go and Deep Learning. *CHM Blog*. **https://computerhistory.org/blog/ai-and-play-part-2-go-and-deep-learning/** ↗ **(https://computerhistory.org/blog/ai-and-play-part-2-go-and-deep-learning/)** Lee, Timothy. 2018. How computers got shockingly good at recognizing images. *Ars Technica*. **https://arstechnica.com/science/2018/12/how-computers-got-shockingly-good-at-recognizing-images/** ↗ **(https://arstechnica.com/science/2018/12/how-computers-got-shockingly-good-at-recognizing-images/)** Primary Sources: Turing, Alan M. "Computing machinery and intelligence." *Mind* 59.236 (1950): 433-460. [**pdf**] [Only 433-439 is required reading though you're free to read more if you like.] Dreyfus, Hubert. 1965. Alchemy and Artificial Intelligence. *RAND Corporation Report*. [**Extracts (pdf)**] Jordan, Michael. 2018. Artificial Intelligence — The Revolution Hasn't Happened Yet. *Medium*. **https://medium.com/@mijordan3/artificial-intelligence-the-revolution-hasnt-happened-yet-5e1d5812e1e7** ↗ **(https://medium.com/@mijordan3/artificial-intelligence-the-revolution-hasnt-happened-yet-5e1d5812e1e7)**
	Apr 1	Computers and Expertise	

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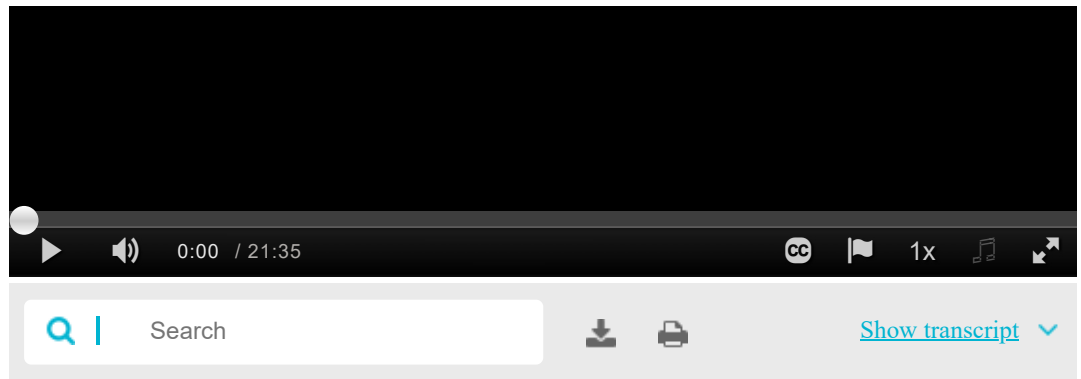
Lecture Script: **Week11_Day2--Computers and Expertise.pdf**

*Forsythe, Diana E. "The Construction of Work in Artificial Intelligence." *Science, Technology, & Human Values* 18.4 (1993): 460-479. [**pdf**]

Mukherjee, Siddhartha. 2017. A.I. versus M.D. *The New Yorker*.
 https://www.newyorker.com/magazine/2017/04/03/ai-versus-md?currentPage=all
⤤ **(https://www.newyorker.com/magazine/2017/04/03/ai-versus-md?currentPage=all)** [**pdf**]

Reading notes and questions: Listen to the lecture, then read Forsythe, than Mukherjee.

- What do you think of the different theories of expertise outlined in the lecture and readings? The idea that experts are experts because they have rules in their minds about how to do their tasks, the idea that experts do what they do not because they follow explicit rules but because they acquire a bodily comportment through training, and finally, the idea that experts do what they do because they work in institutions where those tasks are supported. Which ones do you find most convincing and why?
- What do you think of Forsythe's argument about why expert systems failed?
- Is there a gender dimension to the argument that Forsythe is making? (Hint: Real work is often men's work while pseudowork is often women's work. Yes? No?)
- If we were to have machine learning-driven image recognition programs, what kind of institutional set-up do you think is required to make them work for everyday people?
- Do you think the Casey-Swetlitz piece is unfair to IBM? How would you compare it with Mukherjee?

Of further interest:

Ross, Casey and Ike Swetlitz. 2017. IBM pitched its Watson supercomputer as a revolution in cancer care. It's nowhere close. *Stat News*. **https://www.statnews.com/2017/09/05/watson-ibm-cancer/** [↗] **(https://www.statnews.com/2017/09/05/watson-ibm-cancer/)**

Please post your responses to this week's material here: **Week 11 (Summary/Response)**

Paper 2 due on Sunday.

12	Apr 6	The Rise of Platforms	

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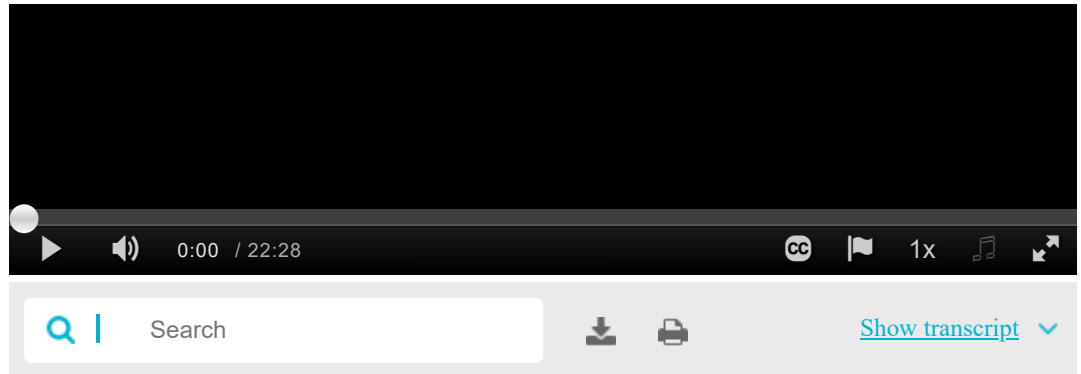
Lecture Script: **Week12_Day1--The Rise of Platforms.pdf**

Christian, Brian. 2012. The A/B Test: Inside the Technology That's Changing the Rules of Business. *Wired*. **https://www.wired.com/2012/04/ff-abtesting/** [↗] **(https://www.wired.com/2012/04/ff-abtesting/)** . [**pdf**]

Gillespie, Tarleton. 2010. The Politics of Platforms. *New Media and Society*. [**pdf**]

Reading notes and questions: Listen to the lecture, then read Christian, then Gillespie.

- What do you think of A/B testing and how it collapses the distinction between software production and consumption?
- What does Gillespie mean by politics of platforms? Why is Gillespie unhappy with how web companies have rebranded themselves as platforms? Does it matter?
- What do you think of how the Facebook "like" button has now traveled around the web, thereby decentralizing Facebook while also recentralizing Facebook data?

Of further interest:

			Li, Shengwu. 2019. The Art of Eyeball Harvesting: Shengwu Li on Online Advertising. *Logic Magazine*. **https://logicmag.io/play/shengwu-li-on-online-advertising/** ↗ **(https://logicmag.io/play/shengwu-li-on-online-advertising/)** Vox. How ads follow you around the internet. *YouTube*. **https://www.youtube.com/watch?v=HFyaW50GFOs** ↗ **(https://www.youtube.com/watch?v=HFyaW50GFOs)** **(https://www.youtube.com/watch?v=HFyaW50GFOs)**
	Apr 8	The Question of Algorithms	 Lecture Script: **Week12_Day2--The Question of Algorithms.pdf** Lum, Kristian and Rumman Chowdhury. 2021. What is an algorithm? It depends whom you ask. *Technology Review*. **https://www.technologyreview.com/2021/02/26/1020007/what-is-an-algorithm/** ↗ **(https://www.technologyreview.com/2021/02/26/1020007/what-is-an-algorithm/)** . [**pdf**] *Corbett-Davies, Sam, Emma Pierson, Avi Feller and Sharad Goel. 2016. A computer program used for bail and sentencing decisions was labeled biased against blacks. It's actually not that clear. *The Monkey Cage Blog*. **https://www.washingtonpost.com/news/monkey-cage/wp/2016/10/17/can-an-algorithm-be-racist-our-analysis-is-more-cautious-than-propublicas/?utm_term=.0be6846e7eaa** ↗ **(https://www.washingtonpost.com/news/monkey-cage/wp/2016/10/17/can-an-algorithm-be-racist-our-analysis-is-more-cautious-than-propublicas/?utm_term=.0be6846e7eaa)** [**pdf**]
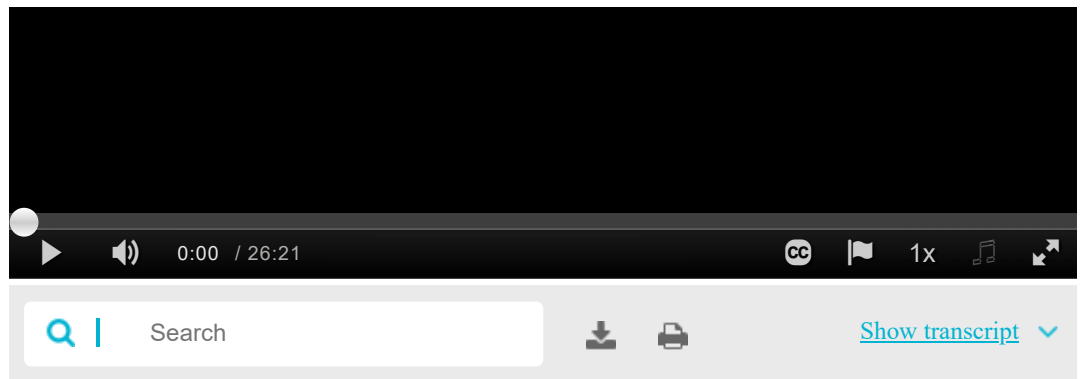
Sullivan Danny. 2017. A deep look at Google's biggest-ever search quality crisis. *Search Engine Land*. http://searchengineland.com/google-search-quality-crisis-272174 (http://searchengineland.com/google-search-quality-crisis-272174)

Martinez, Antonio Garcia. 2019. Are Facebook Ads Discriminatory? It's Complicated. *Wired*. https://www.wired.com/story/are-facebook-ads-discriminatory-its-complicated/ (https://www.wired.com/story/are-facebook-ads-discriminatory-its-complicated/) . [**pdf**]

Knight, Will. 2017. The Dark Secret at the Heart of AI. *Technology Review*. https://www.technologyreview.com/s/604087/the-dark-secret-at-the-heart-of-ai/ (https://www.technologyreview.com/s/604087/the-dark-secret-at-the-heart-of-ai/) [**pdf**]

Reading notes and questions: Listen to the lecture, then do the readings in the order. At the very least, make sure you look at Corbett-Davies and Sullivan.

- Corbett-Davies et al. describe the problems with the COMPAS algorithm while Sullivan describes the problems with Google Search. In what sense are COMPAS and Google Search "algorithms"? What are some of the similarities and differences between them beyond the fact that they are implemented in software?
- How similar is the problem of Facebook's discriminatory ads similar to the COMPAS problem?
- What's the solution to Google's "search quality crisis"? Does Google's search quality crisis seem more like a problem of algorithms or a problem of context collapse?
- Knight talks about the problems of opacity with deep learning models but how relevant is that really to some of the questions of fairness and justice?

Of further interest:

*Kiviat, Barbara. 2019. Credit Scoring in the United States. *European Newsletter for Economic Sociology 21 (1).* [**pdf**] [Read only pages 33-36]

Hao, Karen and Jonathan Stray. 2019. Can you make AI fairer than a judge? Play our courtroom algorithm game. *MIT Technology Review*. https://www.technologyreview.com/s/613508/ai-fairer-than-judge-criminal-risk-assessment-algorithm/ (https://www.technologyreview.com/s/613508/ai-fairer-than-judge-criminal-risk-assessment-algorithm/)

*Christin, Angele. 2017. The Mistrials of Algorithmic Sentencing. *Logic* Issue 3. https://logicmag.io/justice/the-mistrials-of-algorithmic-sentencing/ (https://logicmag.io/justice/the-mistrials-of-algorithmic-sentencing/)

*Hardt, Morris. 2014. How big data is unfair. Medium.com. https://medium.com/@mrtz/how-big-data-is-unfair-9aa544d739de (https://medium.com/@mrtz/how-big-data-is-unfair-9aa544d739de)

Suresh, Harini. 2019. The Problem with "Biased Data." *Medium*. https://medium.com/@harinisuresh/the-problem-with-biased-data-5700005e514c (https://medium.com/@harinisuresh/the-problem-with-biased-data-5700005e514c)

Please post your responses to this week's material here: **Week 12 (Summary/Response)**

13	Apr 13	Computers and Work: Crowd Workers and Gig Workers	

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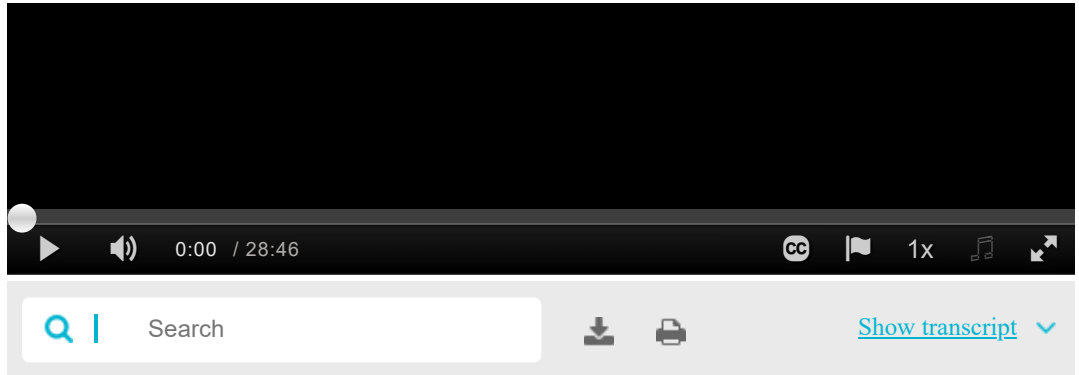
Lecture Script: **Week13_Day1--Computers and Work Part I Gigworkers and Clickworkers.pdf**

*Zittrain, Jonathan. 2009. Minds for Sale. *YouTube*.
https://www.youtube.com/watch?v=Dw3h-rae3uo ⬈
(https://www.youtube.com/watch?v=Dw3h-rae3uo)

(https://www.youtube.com/watch?v=Dw3h-rae3uo)
[Watch until the Q&A begins around 52:25 though you're free to watch the Q&A as well.]

Irani, Lilly. 2015. Justice for Data Janitors. *Public Books*.
https://www.publicbooks.org/justice-for-data-janitors/ ⬈
(https://www.publicbooks.org/justice-for-data-janitors/)

Scheiber, Noam. 2017. How Uber Uses Psychological Tricks to Push Its Drivers' Buttons. *The New York Times*.
 https://www.nytimes.com/interactive/2017/04/02/technology/uber-drivers-psychological-tricks.html ⬈
(https://www.nytimes.com/interactive/2017/04/02/technology/uber-drivers-psychological-tricks.html) [**pdf**]

Reading notes and questions: Listen to the lecture, then do the readings in the order. Zittrain gives a very good overview of the kinds of industrialized crowd work that is out

there and what it is used for.

- What do you make of the trade-offs of industrialized crowd work and gig work? On the one hand, there does seem to be at least something in these jobs that workers want; on the other hand, there is a tremendous asymmetry between workers and employers. What's the solution here? Take a look at Gray and Suri's work below if you're interested.
- Scheiber seems to suggest that there is something really bad in how Uber nudges its drivers -- but is that really the biggest problem here? How effective are these nudges, really? Isn't the bigger problem the asymmetry between Uber and its drivers?
- What do you think of the debate over Prop 22? Why do you think Prop 22 failed in California? Yes, Uber and Lyft spends millions on the campaign but campaigns can spend millions and still not get people to vote for them. What happened, do you think?
- Zittrain talks about some of the other problematic aspects of industrialized crowd work: how it might be used by authoritarian regimes to identify protesters, etc. What do you make of those?
- What do you make of content moderation? You can read Newton's piece below. Given the so many different standards that determine appropriate content, what is to be done?

Of further interest:

*Gray, Mary and Siddharth Suri. 2019. Introduction. From *Ghost Work: How To Stop Silicon Valley from Building a New Global Underclass*. [**pdf**]

Call Center Call Out. 2020. *Planet Money Podcast*. **https://www.npr.org/2020/09/29/918195277/call-center-call-out** (https://www.npr.org/2020/09/29/918195277/call-center-call-out)

Weird (Amazon) Flex, But Okay. 2020. *Planet Money Podcast*. **https://www.npr.org/2020/01/28/800620890/weird-amazon-flex-but-okay** (https://www.npr.org/2020/01/28/800620890/weird-amazon-flex-but-okay)

Newton, Casey. 2019. The Trauma Floor: The Secret Lives of Facebook Moderators in America. *The Verge*. **https://www.theverge.com/2019/2/25/18229714/cognizant-facebook-content-moderator-interviews-trauma-working-conditions-arizona** (https://www.theverge.com/2019/2/25/18229714/cognizant-facebook-content-moderator-interviews-trauma-working-conditions-arizona)

Rosenblat, Alex. 2018. The Network Uber Drivers Built. *Fast Company*. **https://www.fastcompany.com/40501439/the-network-uber-drivers-built** (https://www.fastcompany.com/40501439/the-network-uber-drivers-built)

Ellis, Justin. 2010. It's people! Meet Soylent, the crowdsourced copy editor. *NiemanLab*. **https://www.niemanlab.org/2010/11/its-people-meet-soylent-the-crowdsourced-copy-editor/** (https://www.niemanlab.org/2010/11/its-people-meet-soylent-the-crowdsourced-copy-editor/)

	Apr 15	Computers and Work: Institutions	

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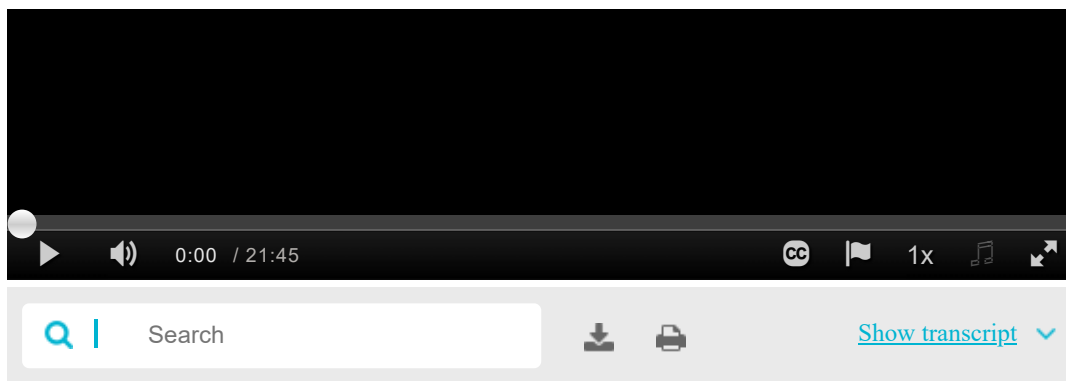
Lecture Script: **Week13_Day2--Computers and Work Part II Institutions.pdf**

Kelkar, Shreeharsh. 2021. Review of Angele Christin's Metrics at Work: Journalism and the Contested Meaning of Algorithms. *British Journal of Sociology*. [**pdf**]

Brayne, Sarah. 2017. Big Data Surveillance: The Case of Policing. *American Sociological Review* 82 (5). [**pdf**]

Maiers, Claire. 2017. Predictive data and experiential knowledge in the neonatal intensive care unit. *Work in Progress Blog*.
https://workinprogress.oowsection.org/2017/07/06/predictive-data-and-experiential-knowledge-in-the-neonatal-intensive-care-unit/ ⤢
(https://workinprogress.oowsection.org/2017/07/06/predictive-data-and-experiential-knowledge-in-the-neonatal-intensive-care-unit/)

Evans, Will. 2019. Behind the Smiles. *Reveal.* **https://revealnews.org/article/behind-the-smiles/** ⤢ **(https://revealnews.org/article/behind-the-smiles/)**

Reading notes and questions: Listen to the lecture, then do the readings in the order.

- What do you make of the fact that high-status workers can make algorithms work for them but low-status workers can't? What's a solution?
- Are you worried at all that high-status workers enjoy so much autonomy? Should we be restricting it? Is autonomy a good thing, period?
- Between the groups discussed--journalists, judges, police, clinicians--who do you find most interesting and why?
- How do you relate the topics of this class to our earlier discussion (Week 11, Lecture 2) on computers, expertise, and expert systems? Is there an expertise angle here?

- As you know, the unionization vote for an Amazon warehouse failed this week. Here's an **interesting piece on why** ⬈ **(https://www.thenation.com/article/activism/bessemer-alabama-amazon-union/)** . Does that suggest any line of reflections for you?

Of further interest:

Zuboff, Shoshanna. 1988.   The Abstraction of Industrial Work. In *In the Age of the Smart Machine: The Future of Work and Power*. Basic Books. pp58-96. [**pdf**]

*Kiviat, Barbara. 2017. An inside view of credit checks in hiring. *Work in Progress Blog*. **https://workinprogress.oowsection.org/2017/10/14/an-inside-view-of-credit-checks-in-hiring/** ⬈ **(https://workinprogress.oowsection.org/2017/10/14/an-inside-view-of-credit-checks-in-hiring/)**

Waldman, Peter, Lizette Chapman, and Jordan Robertson. 2018. Palantir Knows Everything About You. *Bloomberg Businessweek*. **https://www.bloomberg.com/features/2018-palantir-peter-thiel/** ⬈ **(https://www.bloomberg.com/features/2018-palantir-peter-thiel/)** [**pdf**]

Please post your responses to this week's material here: **Week 13 (Summary/Response)**

14	Apr 20	Computers and Participation Or Reconsidering Cyberutopianism	

Lecture Script: **Week14_Day1--Participation.pdf**

Please note that as Berkeley students you have free access to articles in the *New York Times* and *Wall Street Journal*. Just sign up for an account with your berkeley.edu email.

Confessore, Nicholas, Gabriel Dance, Richard Harris and Mark Hansen. 2018. The Follower Factory. *The New York Times Magazine*.

https://www.nytimes.com/interactive/2018/01/27/technology/social-media-bots.html ↗ [(https://www.nytimes.com/interactive/2018/01/27/technology/social-media-bots.html)](https://www.nytimes.com/interactive/2018/01/27/technology/social-media-bots.html)

*Geiger, Stuart. 2016. Community sustainability in Wikipedia: A Review of Research and Initiatives. *YouTube*.
https://www.youtube.com/watch?v=q4_IQXUoeOU ↗ [(https://www.youtube.com/watch?v=q4_IQXUoeOU)](https://www.youtube.com/watch?v=q4_IQXUoeOU)

[(https://www.youtube.com/watch?v=q4_IQXUoeOU)](https://www.youtube.com/watch?v=q4_IQXUoeOU)

Chen, Adrian. 2015. The Agency. *The New York Times Magazine*.
https://www.nytimes.com/2015/06/07/magazine/the-agency.html ↗ [(https://www.nytimes.com/2015/06/07/magazine/the-agency.html)](https://www.nytimes.com/2015/06/07/magazine/the-agency.html) [**pdf**].

Warzel, Charlie. 2016. "A Honeypot For Assholes": Inside Twitter's 10-Year Failure To Stop Harassment. *Buzzfeed News*.
https://www.buzzfeednews.com/article/charliewarzel/a-honeypot-for-assholes-inside-twitters-10-year-failure-to-s ↗ [(https://www.buzzfeednews.com/article/charliewarzel/a-honeypot-for-assholes-inside-twitters-10-year-failure-to-s)](https://www.buzzfeednews.com/article/charliewarzel/a-honeypot-for-assholes-inside-twitters-10-year-failure-to-s)

Reading notes and questions: Listen to the lecture, then do the readings in the order. At the very least, look at Confessore and Geiger to see the different types of internet participation.

- How do you reconcile all the different ways in which people participate on the internet? Does it matter whether people behave organically or strategically, whether they behave as organized publics or formal social enterprises? For instance, would it matter to how you define "hate speech" (see the Warzel piece) if you knew that it came from coordinated rather than organic harassment?
- What do you make of Devumi and the Internet Research Agency? Are follower factories like Devumi or IRA the biggest problem with Twitter/social media? Or are they just symptoms of an underlying problem?
- How worried should we be that Wikipedia is running out of editors?

Of further interest:

Kelty Christopher. 2012. From Participation to Power. In the *Participatory Cultures Handbook*. Routledge. [**pdf**]

Eisen, Michael. 2011. Amazon's $23,698,655.93 book about flies.
https://www.michaeleisen.org/blog/?p=358 ↗ [(https://www.michaeleisen.org/blog/?p=358)](https://www.michaeleisen.org/blog/?p=358)

Alexander, Julia. 2019. The Golden Age of YouTube Is Over. *The Verge*. https://www.theverge.com/2019/4/5/18287318/youtube-logan-paul-pewdiepie-demonetization-adpocalypse-premium-influencers-creators

Dzieza, Josh. 2018. Prime and Punishment: Dirty Dealing in the $175 billion Amazon Marketplace. *The Verge*. https://www.theverge.com/2018/12/19/18140799/amazon-marketplace-scams-seller-court-appeal-reinstatement

Starbird, Kate. 2019. Beyond "Bots and Trolls" - Understanding Disinformation as Collaborative Work. *YouTube*. https://www.youtube.com/watch?v=SvEItxWb6Ek

[(https://www.youtube.com/watch?v=SvEItxWb6Ek)](https://www.youtube.com/watch?v=SvEItxWb6Ek)

Riley, Michael, Lauren Etter and Bibhudatta Pradhan. 2018. A Global Guide to State-Sponsored Trolling. *Bloomberg Businessweek*. https://www.bloomberg.com/features/2018-government-sponsored-cyber-militia-cookbook/

Polakow-Suransky, Sasha. 2018. For Whom the Cell Trolls. *Foreign Policy*. https://foreignpolicy.com/2018/02/28/for-whom-the-cell-trolls/

	Apr 22	Context Collapse	
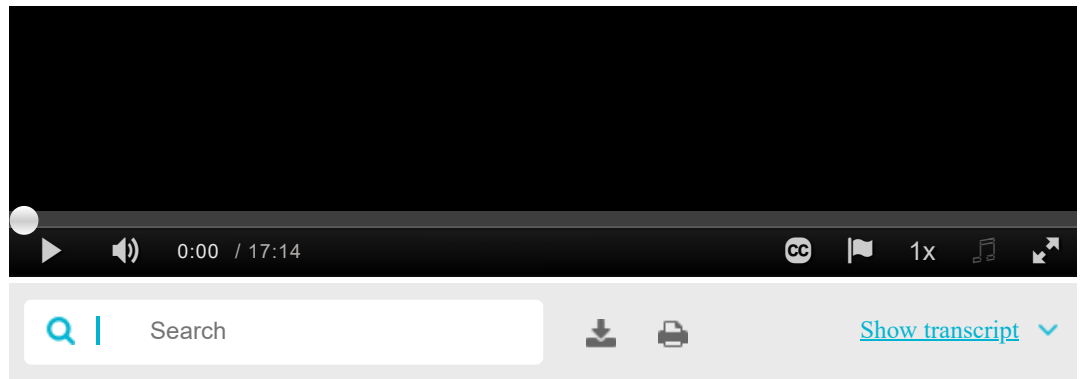
Lecture Script: **Week14_Day2--Context Collapse.pdf**

Feinberg, Ashley. 2017. This is almost certainly James Comey's Twitter account. *Gizmodo*. **https://gizmodo.com/this-is-almost-certainly-james-comey-s-twitter-account-1793843641** ⟲ **(https://gizmodo.com/this-is-almost-certainly-james-comey-s-twitter-account-1793843641)**

Gillespie, Tarleton. 2019. We need to fix online advertising. All of it. *Slate*. **https://slate.com/technology/2019/11/twitter-political-ad-ban-online-advertising.html** ⟲ **(https://slate.com/technology/2019/11/twitter-political-ad-ban-online-advertising.html)**

Gillespie, Tarleton. 2013. Tumblr, NSFW porn blogging, and the challenge of checkpoints. *Culture Digitally*. **http://culturedigitally.org/2013/07/tumblr-nsfw-porn-blogging-and-the-challenge-of-checkpoints/** ⟲ **(http://culturedigitally.org/2013/07/tumblr-nsfw-porn-blogging-and-the-challenge-of-checkpoints/)**

Masnick, Mike. 2019. Protocols, Not Platforms: A Technological Approach to Free Speech. Free Speech Futures, Knight Institute. **https://knightcolumbia.org/content/protocols-not-platforms-a-technological-approach-to-free-speech** ⟲ **(https://knightcolumbia.org/content/protocols-not-platforms-a-technological-approach-to-free-speech)**

Reading notes and questions: Listen to the lecture, then do the readings in the order. All of them are about context collapse, in some form. The Masnick reading is an ambitious proposal for regulating platforms through standards (although a little different than the one proposed in the lecture).

- What do you think of Feinberg's effort to find James Comey's Twitter account? Look at the variety of steps she has to take to do it. Is her detective work enabled by context collapse? Who exactly is responsible for this context collapse?
- Gillespie is talking specifically about the problem of labeling advertisements in the first article. What do you think of his solution?
- How would you compare Gillespie's solution to Masnick's?
- In the second Gillespie piece, he describes some of the problems Tumblr faced in its efforts to label its NSFW (i.e. pornographic) content. How would you have solved this problem if you were working for Tumblr?
- Are there examples of context collapse in your own life?
- If you're curious about how search-engine optimization works, read the piece by Dan Roth below.

Of further interest:

Zimmer, Michael. 2005. Privacy as Contextual Integrity (Parts 1 and 2). **http://www.michaelzimmer.org/2005/04/12/privacy-as-contextual-integrity-part-1-problem-of-privacy-in-public/** (http://www.michaelzimmer.org/2005/04/12/privacy-as-contextual-integrity-part-1-problem-of-privacy-in-public/) and **http://www.michaelzimmer.org/2005/04/13/privacy-as-contextual-integrity-part-2-norms-of-information-flow/** (http://www.michaelzimmer.org/2005/04/13/privacy-as-contextual-integrity-part-2-norms-of-information-flow/)

Roth, Dan. 2009. The Answer Factory: Demand Media and the Fast, Disposable, and Profitable as Hell Media Model. *Wired Magazine*. **https://www.wired.com/2009/10/ff-demandmedia/** (https://www.wired.com/2009/10/ff-demandmedia/) [pdf]

Feinberg, Ashley. 2015. The creepiest things you can do on Facebook. *Gizmodo*. **https://gizmodo.com/the-creepiest-things-you-can-do-on-facebook-1683434172** (https://gizmodo.com/the-creepiest-things-you-can-do-on-facebook-1683434172)

Madrigal, Alexis. 2019. The Platform Excuse is Dying. *The Atlantic*. **https://www.theatlantic.com/technology/archive/2019/06/facebook-and-youtubes-platform-excuse-dying/591466/** (https://www.theatlantic.com/technology/archive/2019/06/facebook-and-youtubes-platform-excuse-dying/591466/)

Please post your responses to this week's material here: **Week 14 (Summary/Response)**

Outline of Paper 3 due on Sunday.

15	Apr 27	Reconsidering Autonomy	
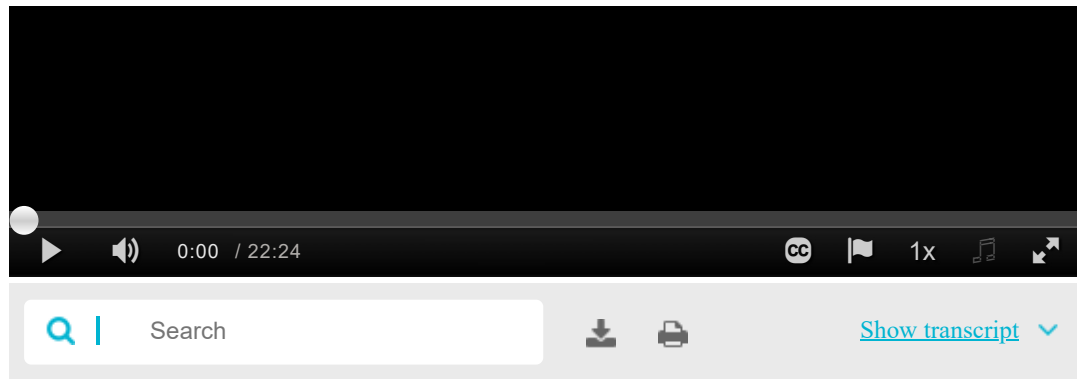
Lecture Script: **Week15_Day1--Autonomy.pdf**

Mindell, David. 2015. Beyond Utopian Autonomy. From *Our Robots, Ourselves: Robotics and the Myths of Autonomy.* [**pdf**]

Griggs, Troy and Daisuke Wakabayashi. 2018. How a Self-Driving Uber Killed a Pedestrian in Arizona. *The New York Times*. **https://www.nytimes.com/interactive/2018/03/20/us/self-driving-uber-pedestrian-killed.html** ⬈ **(https://www.nytimes.com/interactive/2018/03/20/us/self-driving-uber-pedestrian-killed.html)** [**pdf**]

Chang, Alvin. 2019. The real reason Boeing's new plane crashed twice. *Vox*. **https://www.vox.com/videos/2019/4/15/18306644/boeing-737-max-crash-video** ⬈ **(https://www.vox.com/videos/2019/4/15/18306644/boeing-737-max-crash-video)**

Karpf, Dave. 2019. On Digital Disinformation and Democratic Myths. **https://mediawell.ssrc.org/expert-reflections/on-digital-disinformation-and-democratic-myths/** ⬈ **(https://mediawell.ssrc.org/expert-reflections/on-digital-disinformation-and-democratic-myths/)**

Reading notes and questions: Listen to the lecture, then read Mindell. Chang describes quickly the Boeing controversy and Karpf is a great introduction to the problems with the narrative that political advertising "hacks" our minds.

- What's the problem with utopian autonomy? Do you agree with the argument presented in the lecture and in Mindell? Why or why not? Feel free to disagree. If you go back to Week 11, Lecture 2 on "Computers and Expertise" what similarities do you see between the argument made by Mindell and the argument made by Diana Forsythe about expert systems?

- What do you make of the Boeing case? Take a look at the reading by Langewiesche who makes the case that the reason the crashes happened were because Lion Air and Ethiopian Airlines did not adopt robust practices of pilot training and safety. What do you make of his argument?
- What do you think of Karpf's argument that the problem with digital propaganda is less that it "manipulates" anyone but that it has a bad effect on political elites?

Of further interest:

Leonard, John 2015. Mapping, Localization, & Self-Driving Vehicles. *Brains, Minds and Machines Summer Course*. **https://ocw.mit.edu/resources/res-9-003-brains-minds-and-machines-summer-course-summer-2015/unit-8.-robotics/lecture-8.2-john-leonard-mapping-localization-self-driving-vehicles/** ↗ **(https://ocw.mit.edu/resources/res-9-003-brains-minds-and-machines-summer-course-summer-2015/unit-8.-robotics/lecture-8.2-john-leonard-mapping-localization-self-driving-vehicles/)** [Watch from the beginning to 20:00, the section titled "Technical Challenges for Self-driving Cars"]

Pasztor, Andy. 2021. The Airline Safety Revolution. *The Wall Street Journal.* **https://www.wsj.com/articles/the-airline-safety-revolution-11618585543** ↗ **(https://www.wsj.com/articles/the-airline-safety-revolution-11618585543)** . [All Berkeley students have a free subscription to the Journal if they use their berkeley.edu email address to register.]

Langewiesche, William. 2019. What Really Brought Down the Boeing 737 Max? *The New York Times Magazine*. **https://www.nytimes.com/2019/09/18/magazine/boeing-737-max-crashes.html** ↗ **(https://www.nytimes.com/2019/09/18/magazine/boeing-737-max-crashes.html)** [**pdf**]

Kelkar, Shreeharsh. 2020. Are Surveillance Capitalists Behaviorists? No. Does It Matter? Maybe. *Medium*. **https://medium.com/swlh/are-surveillance-capitalists-behaviorists-does-it-matter-no-and-maybe-a7327265eead** ↗ **(https://medium.com/swlh/are-surveillance-capitalists-behaviorists-does-it-matter-no-and-maybe-a7327265eead)**

Apr 29	The Social Life of Computing	

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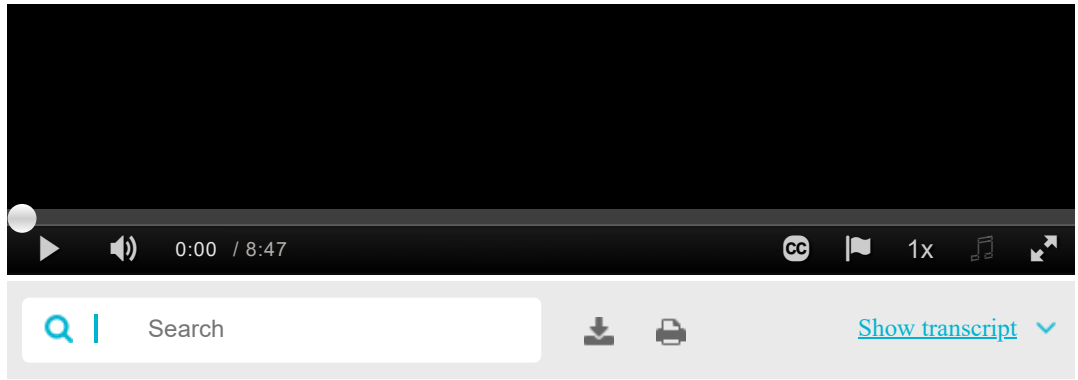
Lecture Script: **Week15_Day2--The Social Life of Computing.pdf**

No readings. Taking stock of what we've learnt in the class.

Peer Review of Outline of Paper 3 due on Sunday.

16	May 5	No Class/RRR Week	
	May 7	No Class/RRR Week	**Paper 3** due May 9 by midnight.

Honor Code

The student community at UC Berkeley has adopted the following Honor Code: "As a member of the UC Berkeley community, I act with honesty, integrity, and respect for others." The expectation is that you will adhere to this code both inside the classroom and outside. Reviewing lecture and reading materials and studying for exams can be enjoyable and enriching things to do with fellow students. This is recommended. However, unless otherwise instructed, homework assignments are to be completed independently and materials submitted as homework should be the result of one's own independent work.

The University code of ethics is very severe on academic misconduct, i. e. plagiarism and cheating. All written work submitted for a course, except for acknowledged quotations, must be expressed in the student's own words. It must also be constructed upon a plan of the student's own devising. Work copied without acknowledgement from a book, from another student's paper, from the internet, or from any other source is plagiarized. Plagiarism can range from wholesale copying of passages from another's work to using the views, opinions, and insights of another without

acknowledgement, to paraphrasing another person's original phrases without acknowledgement. All sources must therefore be documented and all usage of other material must be clearly cited in your papers. Plagiarism and cheating will have dramatic consequences for you, from failing the assignment to failing the entire course. All cases will also be referred to the Student Judicial Affairs, which can impose a variety of sanctions that can extend all the way to University expulsion. Please feel free to **ask your instructor** about how to integrate secondary materials into your own writing. For a full copy of the University code, see: **http://sa.berkeley.edu/code-of-conduct** ⤴ **(http://sa.berkeley.edu/code-of-conduct)** . For guidelines on plagiarism, see: **http://sa.berkeley.edu/cite-responsibly** ⤴ **(http://sa.berkeley.edu/cite-responsibly)** .

Course Summary:

Date	Details	Due
Sun Jan 24, 2021	📝 **Meet and Greet! Introduce yourself...** **(https://bcourses.berkeley.edu/courses/1501762/assignments/8208260)**	due by 11:59pm
	📝 **Syllabus Quiz** **(https://bcourses.berkeley.edu/courses/1501762/assignments/8208246)**	due by 11:59pm
Sun Jan 31, 2021	📝 **Week 2 (Summary/Response)** **(https://bcourses.berkeley.edu/courses/1501762/assignments/8238269)**	due by 11:59pm
Sun Feb 7, 2021	📝 **Week 3 (Summary/Response)** **(https://bcourses.berkeley.edu/courses/1501762/assignments/8241789)**	due by 11:59pm
Sun Feb 14, 2021	📝 **Week 4 (Summary/Response)** **(https://bcourses.berkeley.edu/courses/1501762/assignments/8244764)**	due by 11:59pm
	📝 **Paper 1 Outline** **(https://bcourses.berkeley.edu/courses/1501762/assignments/8208298)**	due by 11:59pm
Sun Feb 21, 2021	📝 **Week 5 (Summary/Response)** **(https://bcourses.berkeley.edu/courses/1501762/assignments/8247203)**	due by 11:59pm
Sun Feb 28, 2021	📝 **Paper 1 (Conceptual Analysis)** **(https://bcourses.berkeley.edu/courses/1501762/assignments/8208297)**	due by 11:59pm
	📝 **Week 6 (Summary/Response)** **(https://bcourses.berkeley.edu/courses/1501762/assignments/8249868)**	due by 11:59pm
Sun Mar 7, 2021	📝 **Week 7 (Summary/Response)** **(https://bcourses.berkeley.edu/courses/1501762/assignments/8251972)**	due by 11:59pm
Sun Mar 14, 2021	📝 **Week 8 (Summary/Response)** **(https://bcourses.berkeley.edu/courses/1501762/assignments/8254226)**	due by 11:59pm

Date	Details	Due
	📝 **Paper 2 Outline** (https://bcourses.berkeley.edu/courses/1501762/assignments/8208299)	due by 11:59pm
Sun Mar 21, 2021	📝 **Week 9 (Summary/Response)** (https://bcourses.berkeley.edu/courses/1501762/assignments/8257648)	due by 11:59pm
Sun Apr 4, 2021	📝 **Week 11 (Summary/Response)** (https://bcourses.berkeley.edu/courses/1501762/assignments/8260607)	due by 11:59pm
	📝 **Paper 2 (Profile of a Computer User)** (https://bcourses.berkeley.edu/courses/1501762/assignments/8208300)	due by 11:59pm
Mon Apr 12, 2021	📝 **Week 12 (Summary/Response)** (https://bcourses.berkeley.edu/courses/1501762/assignments/8262542)	due by 11:59pm
Sun Apr 18, 2021	📝 **Week 13 (Summary/Response)** (https://bcourses.berkeley.edu/courses/1501762/assignments/8264495)	due by 11:59pm
Sun Apr 25, 2021	📝 **Week 14 (Summary/Response)** (https://bcourses.berkeley.edu/courses/1501762/assignments/8266655)	due by 11:59pm
	📝 **Paper 3 Outline** (https://bcourses.berkeley.edu/courses/1501762/assignments/8208301)	due by 11:59pm
Sun May 2, 2021	📝 **Week 15 (Summary/Response)** (https://bcourses.berkeley.edu/courses/1501762/assignments/8268593)	due by 11:59pm
Sun May 9, 2021	📝 **Class Reflections** (https://bcourses.berkeley.edu/courses/1501762/assignments/8268596)	due by 11:59pm
	📝 **Paper 3 (Policy Brief)** (https://bcourses.berkeley.edu/courses/1501762/assignments/8208302)	due by 11:59pm
	📝 **Participation-Raw** (https://bcourses.berkeley.edu/courses/1501762/assignments/8274842)	