

Fall 2023: ANTH 136

Cultures of Computing

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Overview

Computers are suspended in webs of stories. You are probably familiar with some of them: The immateriality of information has made it possible for industries to grow around bits instead of atoms; Cyberspace has overcome the limits of physical distance; Hackers, working out of modest garages, have heroically reshaped the world and become new titans of industry; Enormous data sets have made it possible to produce objective facts about human behavior without relying on explanatory theory.

We often hear about how technologies "impact" culture. In this course, we will examine how computing is affected by culture, and, in the process, we will come to question the idea that culture and technology are necessarily separate from each other.

To do this, we will explore alternative stories about computing—stories that highlight people, places, objects, and processes that the usual stories neglect. We will learn to read and write these stories, practicing more expansive ways of paying attention to the cultural life of computers and situating computing in broader contexts. Whether you plan to work in computing or with computers, these skills will help you make sense of the techno-social world, consider the global context in which technologies function, and work toward more equitable arrangements of people and computers.

The course is organized into four units: Unit 1 is a historical overview, which brings us from Victorian-era discourses about counting and calculation up to the emergence of the World Wide Web in the 1990s. Unit 2 focuses on the material infrastructures of computing—the physical locations and stuff computers rely on to work, despite the idea that computers are essentially immaterial information machines. Unit 3 turns to the ways that people work (and sometimes play) with computers, whether as "tech workers" or "users." Unit 4 picks up on more recent concerns about AI, big data, and algorithms, surveying work about the limitations and harms of data-centric computing practices.

Learning Objectives

This course has been designed to help you learn how to do a few things:

1. Be able to read and understand theoretical writing from anthropology, STS, and related fields.
2. Be familiar with an array of concepts and typical arguments from the social study of computing.
3. Be able to apply those concepts to material from outside the course.

Assignments

Assignment	Percentage	Deadline
Reading responses	20%	each class
Quizzes	40%	10/6, 10/18, 11/3, 12/8
Trace Route	10%	10/23
Current Events	10%	once
Future Tech	20%	12/14, 12/20

Reading

Each class meeting centers on two readings (or media objects), or one longer piece. You should do these readings before the class they are assigned for, and if you are present for synchronous class time, you should have a copy available to refer to during it.

This is a survey course, intended to sample a wide range of work in the social study of computing. As a result, there is a lot of reading from many disciplines, including history, anthropology, media studies, science & technology studies, and more. These readings can be hard. They are engaged in debates you don't yet know about, and they may take for granted certain kinds of knowledge that you don't have. Reading this kind of work is a skill, and that is why it gets its own learning outcome. The best way to achieve learning outcome 1 ("be able to read and understand theoretical writing") is to practice, so you need to read.

Through practice, you will learn how to identify when specific references in a text are crucial to understanding an author's main point and when they are incidental; you will learn how to skim effectively, spending more time on some parts of the reading than others. Don't be afraid to google for context if you encounter an unfamiliar term, and bring your questions to class or put them in reading responses so we can collectively unpack the hard stuff.

Many students who are drawn to this class do not have much experience with reading-heavy courses; that is okay! Some students worry that they are not good at reading (or complain that there is too much of it) when the problem is actually that they are not spending enough time doing the reading. The Tufts credit-hour guidelines indicate that a course of this size should have an average of six hours of work per week outside of class time (including studying, working on projects, etc.). That is much longer than you might think. If reading is taking you longer than that, come talk to me, and we can work on more detailed reading strategies. At the end of most weeks, I will give a brief rundown of what to expect from the readings for the next week—sometimes indicating sections that you can safely skim or skip—so be sure to note those down. Because our class meetings are two days apart, you may want to start reading for the second day before we've met for the first.

Readings are their own thing—if we do not talk about part of a reading during class, that does not mean that it was a waste of time, unless you did not understand it, in which case you should ask about it in class. Material from the readings may end up in quizzes, even if we do not discuss it during class.

Micro-Responses (20%)

By 10am every day we have class, you are expected to post a "micro-response" for each assigned reading (or media object) to the corresponding day's topic on Canvas. (The number of points for the Canvas discussion posts corresponds to how many responses are needed.) A micro-response is a short written response (literally three sentences is fine) to the reading. They serve a few purposes: they give you a chance to reflect on what you've read, they force you to engage with the readings (at least minimally), and they help me prepare for class discussion by showing me what people find interesting, confusing, etc. You won't be able to see your classmates' responses until after you post, but you may want to look at them afterward to see what other people are thinking. Please put your responses to all of the day's materials in a single post.

A good micro-response demonstrates that you've read and thought about the piece. It does not have to be "correct" or "smart." Three sentences is the minimum, though you can go over if you want. Here are some topics you might write about: What evidence does the author use to support their argument (and do you think it is sufficient)? Why does the author think their argument is important? What are they arguing *against*? Why do you think I assigned this piece? Was there anything about it that confused you? Why? Did you find any part of it particularly exciting?

These are graded credit/no-credit, solely for their earnest completion. If a response doesn't hit the minimum sentence count, doesn't respond to a reading, or obviously did not engage with it (posting stuff that indicates you just read the title, or which has little to do with the content), then it won't get credit. I'll let you know if this happens ASAP so you can fix it in future responses.

Because I use these responses to prepare for class, and because they are meant to encourage you to read before class, they cannot be turned in late. However, **you can skip up to four days without penalty.**

If you are doing the readings and actually thinking about them, this should be a very easily acquired percentage of your final grade. If it seems hard, you may be putting too much effort into the responses or not putting enough effort into reading.

Quizzes (40%)

"Quiz" is a friendlier term for "exam," which is really what these are. There are 4 of them, and all together they count for 40% of your final grade. If you're familiar with anthropology classes, you'll know that exams are not common—I'm using them here because they help ensure that people understand the basic concepts of the course before going on to the more creative project assignments.

Here's what they'll be like:

- Multiple choice
- Open everything (book, notes, internet, friends—seriously! I encourage you to work together, if you want. I do not recommend using something like ChatGPT because it makes surprisingly convincing cases for wrong answers; I've tested it.)
- Timed, but available within a multiple-day window for you to complete online.

Questions and answer order will be randomized through Canvas, so each quiz will be unique. While you're welcome to collaborate, I don't recommend sharing a centralized study sheet (as these often have errors on them that may affect you!).

Many of the multiple choice exams you're familiar with test on recognition: one answer is the right one, and if you've done the reading you'll recognize it, unlike the wrong answers, which are arbitrary other things. My questions are harder than this, and they will almost all have the same array of possible answers: (A) the right answer; (B) a true statement from the same reading or a related reading that does not correctly answer the question; (C) a plausible-sounding statement that is wrong; (D) "none of the above."

Trace Route (10%)

A project where you trace the material path that data takes from your computer to the Zoom servers.

Current Events (10%)

A presentation to the class, one time during the semester, connecting the day's reading to something from the news or a set of media objects.

Future Tech (20%)

Informed by readings from the course, student groups will pitch a technology that doesn't yet exist but could soon, writing a report that ties it to class themes: What material qualities does it have? What jobs might it require or change? What risks does it pose, and to whom? During our finals block period, students will present their ideas to the rest of the class in short lightning talks.

Your future tech is up to you, and it should be, broadly speaking, dystopian. Things like drone-mounted vaccine dart guns for public spaces, facial recognition systems for paying bus fare, or generative AI art interfaces designed to be used by dogs.

Components: topic brief, outline, final presentation, and final report.

Grading

In this course, we will be using a version of what is sometimes called specifications grading. Every assignment has specifications ("specs") listing what is necessary to complete it to a satisfactory level. If you meet the specs, you get credit. If you don't meet the specs (or don't turn in the assignment), you don't. There is no partial credit. Large assignments that are not up to spec can be revised and resubmitted one time, using my comments to bring them up to spec.

This serves a few goals:

- It is more rigorous than conventional grading: You can't skate by with shoddy work, but actually have to complete the assignments to a minimum standard of quality to receive credit for them.
- It gives you clearer guidelines for what an assignment requires, rather than requiring you to guess what the grading criteria might be.
- It better models what the "real world" is like: Usually, the quality of your work is not measured on a 100-point scale, but evaluated in terms of whether it meets minimum requirements. (By the way, these kinds of grading arguments have been made since the 1800s, and predate all of us by a long time.)

Schedule

Unit 0: Hello World

1. 9/5: Introductions

2. 9/7: Close to the Machine

- Ullman, Ellen. 1997. "Space is Numeric" and "Transactions." In *Close to the Machine: Technophilia and Its Discontents*, 1–38. Picador.
- Wiener, Anna. 2016. "Uncanny Valley." *n+1*.

Unit 1: How Did We Get Here?

3. 9/12: Histories of Calculation

- Barany, Michael J. 2014. "Savage Numbers and the Evolution of Civilization in Victorian Prehistory." *The British Journal for the History of Science* 47 (2): 239–55.
- Daston, Lorraine. 2017. "Calculation and the Division of Labor, 1750–1950." 31st Annual Lecture of the German Historical Institute.

4. 9/14: Ada Lovelace

- Winter, Alison. 1998. "A Calculus of Suffering: Ada Lovelace and the Bodily Constraints on Women's Knowledge in Early Victorian England." In *Science Incarnate: Historical Embodiments of Natural Knowledge*, edited by Christopher Lawrence and Steven Shapin, 202–239. University of Chicago Press.

5. 9/19: When Computers Were Women

- Light, Jennifer. 1999. "When Computers Were Women." *Technology and Culture* 40 (3): 455–483.
- Hicks, Mar. 2018. "How to Kill Your Tech Industry." *Logic*.

6. 9/21: Minds and Machines

- Dunbar-Hester, Christina. 2010. "Listening to Cybernetics: Music, Machines, and Nervous Systems, 1950–1980." *Science, Technology & Human Values* 35 (1): 113–39.
- Dick, Stephanie. 2015. "Of Models and Machines: Implementing Bounded Rationality." *Isis* 106 (3): 623–34.

7. 9/26: Hackers

- Turkle, Sherry. 1984. "Hackers: Loving the Machine for Itself." In *The Second Self: Computers and the Human Spirit*, 183–218. MIT Press.

- Ensmenger, Nathan. 2015. "'Beards, Sandals, and Other Signs of Rugged Individualism': Masculine Culture within the Computing Professions." *Osiris* 30 (1): 38–65.

8. 9/28: Identity Online

- Nakamura, Lisa. 2000. "'Where Do You Want to Go Today?': Cybernetic Tourism, the Internet, and Transnationality." In *Race in Cyberspace*, 15–26.
- Barlow, John Perry. 1996. "A Declaration of the Independence of Cyberspace."
- humdog (Carmen Hermosillo). 1994. "Pandora's Vox: On Community in Cyberspace."

Quiz 1: 10/6

Unit 2: Computers Are Made of Stuff

9. 10/3: What's an Infrastructure?

- Star, Susan Leigh. 1999. "The Ethnography of Infrastructure." *American Behavioral Scientist* 43 (3): 377–91.
- Crawford, Kate, and Vladan Joler. 2018. Anatomy of an AI System.

10. 10/5: Networks

- Thorat, Dhanashree. 2019. "Colonial Topographies of Internet Infrastructure: The Sedimented and Linked Networks of the Telegraph and Submarine Fiber Optic Internet." *South Asian Review* 40 (3): 252–67.
- Starosielski, Nicole. 2012. "'Warning: Do Not Dig': Negotiating the Visibility of Critical Infrastructures." *Journal of Visual Culture* 11 (1): 38–57.

11. 10/10: Locations

- Nakamura, Lisa. 2014. "Indigenous Circuits: Navajo Women and the Racialization of Early Electronic Manufacture." *American Quarterly* 66 (4): 919–41.
- Johnson, Alix. 2019. "Emplacing Data Within Imperial Histories: Imagining Iceland as Data Centers' 'Natural' Home." *Culture Machine* 18.

12. 10/12: Material

- Smith, James, and Jeffrey Mantz. 2006. "Do Cellular Phones Dream of Civil War? The Mystification of Production and the Consequences of Technology Fetishism in the Eastern Congo." In *Inclusion and Exclusion in the Global Arena*, edited by Max Kirsch, 71–93. Routledge.
- Maughan, Tim. 2015. "The Dystopian Lake Filled by the World's Tech Lust." *BBC Future*.

13. 10/17: Logistics (Zoom)

- Posner, Miriam. 2021. "Breakpoints and Black Boxes: Information in Global Supply Chains." *Postmodern Culture* 31 (3).

Quiz 2: 10/18

Trace Route due 10/23

Unit 3: Computing Is Work (and Play)

14. 10/24: Work/Life

- Horst, Heather. 2012. "New Media Technologies in Everyday Life." In *Digital Anthropology*, edited by Heather Horst and Daniel Miller, 61–79. Bloomsbury.

- Harmon, Ellie. 2015. "Arranging Computing" and "ICTs and Excessive Work." In *Computing as Context: Experiences of Dis/Connection Beyond the Moment of Non/Use*, PhD dissertation, UC Irvine, 73–96.

15. 10/26: Tech Workers, on the Margins

- Amrute, Sareeta. 2014. "Proprietary Freedoms in an IT Office: How Indian IT Workers Negotiate Code and Cultural Branding." *Social Anthropology* 22 (1): 101–117.
- Irani, Lilly. 2015. "The Cultural Work of Microwork." *New Media & Society* 17 (5): 720–739.

16. 10/31: Play

- Phillips, Whitney. 2015. "Dicks Everywhere: The Cultural Logics of Trolling." In *This Is Why We Can't Have Nice Things*, 115–134. MIT Press.
- Mowlabocus, Sharif. 2020. "'Let's Get This Thing Open': The Pleasures of Unboxing Videos." *European Journal of Cultural Studies* 23 (4): 564–79.

17. 11/2: Work

- Gershon, Ilana. 2014. "Selling Your Self in the United States." *PoLAR: Political and Legal Anthropology Review* 37 (2): 281–95.
- Abidin, Crystal. 2017. "#familygoals: Family Influencers, Calibrated Amateurism, and Justifying Young Digital Labor." *Social Media + Society* 3 (2).

Quiz 3: 11/3

Unit 4: AI, Big Data, and Algorithms

18. 11/9: Artificial Intelligence

- Campolo, Alexander, and Kate Crawford. 2020. "Enchanted Determinism: Power without Responsibility in Artificial Intelligence." *Engaging Science, Technology, and Society* 6: 1–19.
- Forsythe, Diana E. 1993. "The Construction of Work in Artificial Intelligence." *Science, Technology & Human Values* 18 (4): 460–79.

19. 11/14: Data

- Bouk, Dan. 2017. "The History and Political Economy of Personal Data over the Last Two Centuries in Three Acts." *Osiris* 32 (1): 85–106.
- Hanna, Alex, Emily Denton, Razvan Amironesei, Andrew Smart, and Hilary Nicole. 2020. "Lines of Sight." *Logic* 12.
- Baker, Dylan. 2022. "Datasets Have Worldviews."

20. 11/16: Future Tech Group Meeting (no class)

21. 11/21: Algorithms (Zoom)

- Seaver, Nick. 2017. "Algorithms as Culture: Some Tactics for the Ethnography of Algorithmic Systems." *Big Data & Society* 4 (2).
- Bishop, Sophie. 2019. "Managing Visibility on YouTube through Algorithmic Gossip." *New Media & Society* 21 (11–12).

22. 11/28: Representation (Zoom)

- Hicks, Mar. 2019. "Hacking the Cis-Tem." *IEEE Annals of the History of Computing* 41 (1): 20–33.
- Nair, Vijayanka. 2021. "Becoming Data: Biometric IDs and the Individual in 'Digital India'." *Journal of the Royal Anthropological Institute* 27 (S1): 26–42.

23. **11/30: Future Tech Group Meeting** (no class)

24. **12/5: The Limits of Fairness** (Zoom)

- Hoffmann, Anna Lauren. 2019. "Where Fairness Fails: Data, Algorithms, and the Limits of Antidiscrimination Discourse." *Information, Communication & Society* 22 (7): 900–915.
- Keyes, Os, Jevan Hutson, and Meredith Durbin. 2019. "A Mulching Proposal: Analysing and Improving an Algorithmic System for Turning the Elderly into High-Nutrient Slurry." *CHI '19 Extended Abstracts*, 1–11. ACM.

Quiz 4: 12/8

Presentations: 12/14

Final reports due: 12/20

Policies

Code of Conduct

- Treat each other with respect and patience, in all of the media through which we're communicating this semester.
- When we conduct class via Zoom, do not save or otherwise capture your fellow students in class discussions. It is important that our synchronous discussions be as transient as possible: I want people to have the freedom to make mistakes or to change their mind. If I find out that you are circulating such recordings beyond the course, I may ask you to drop.
- Participate to the best of your ability. This course only works if you are all actively engaged and doing your own work. I will do my best to keep us going, but I am not driving us alone.

Academic Integrity

Our expressions are not our own. Humans communicate with words and concepts—and within cultures and arguments—that are not of our own making. Writing, like other forms of communication, is a matter of combining existing materials in communicative ways. Different groups of people have different norms that govern these combinations: modernist poets and collagists, mashup artists and programmers, blues musicians and attorneys, documentarians and physicists all abide by different sets of rules about what counts as "originality," what kinds of copying are acceptable, and how one should relate to the materials from which one draws.

In this course, you will continue to learn the norms of citation and attribution shared by the community of scholars in the social sciences. Failure to abide by these norms is considered plagiarism, as laid out in the Tufts Academic Integrity Policy. I am required to report suspected violations of this policy to the Dean of Student Affairs, and consequences can be severe.

However, plagiarism policies tend to focus on the less productive side of the issue, urging students to be "original" and telling them what not to do (buying papers, copying text from the internet and passing it off as one's own, etc.). While you should follow these rules, I encourage you to take a more expansive view of what academic integrity means.

Academic integrity is not a matter of producing purely original thought, but of recognizing and acknowledging the resources on which you draw. In light of this, I do not use "plagiarism detection" services like Turnitin. Rather than expending your energy worrying about originality, I suggest that you think instead about what kind of citational network you are locating yourself in. What thinkers are you thinking with?

Accessibility

Your success in this class is important to me. If there are *any* circumstances that may affect your performance, please let me know as soon as possible so that we can work together to adapt assignments to meet both your needs and the requirements of the course. These may be health-related, family-related, or other concerns. The sooner I know about any issues, the earlier we can discuss possible adjustments or alternative arrangements as needed for assignments or classes. Any such discussion will remain confidential.

If you need accommodation as a result of a documented disability, you should register with the StAAR Center at the beginning of the semester. Other support services are available to all students; your advising dean can also help you find the assistance you require. Please note that you do not have to register with the StAAR Center or have a documented disability to ask for help or accommodations from me.

This course is intended to meet in person; if conditions change, I may need to move some meetings online. Unless it's a last-minute emergency, there should be plenty of warning ahead of time.

Availability

I try to be available via email, and you should expect a reply within 24--48 hours. If you don't get a reply within two weekdays, please follow up. As a rule, I do not answer messages over the weekend or after 5pm the day before an assignment is due.

I hold regularly scheduled office hours to make sure I have time to talk with the students who want to talk to me and to spread you out through the hour. Some students are unclear about the purpose of office hours: this is *your* time, and you should feel free to sign up to talk with me about anything regarding the course, anthropology, or general advice. You don't need to have a specific problem to sign up, and I enjoy talking with you outside the classroom context, so feel free to make use of them as often as you like.

Late Policy

I try to be as flexible as I can around deadlines, while still making sure that the basic structure of the course works and that we don't end up with untenable amounts of work for you or me piling up at the end of the term. Because each kind of assignment in this course has a particular structure and purpose, the kind of flexibility available will vary.

My general principles are these: Most deadlines are adjustable. If a type of assignment can't be adjusted for some reason, then I try to make it possible to skip some of them without penalty. I don't deduct points for late work, but in some cases I won't accept it (so

you shouldn't waste time on it!). No matter what, if you find yourself in a situation that requires flexibility, you should let me know, and we can work out something that works for you. (I am usually very accommodating, but extra flexibility is something to be negotiated for unforeseeable issues—not common inconveniences like having a lot of work in other classes.)

The Syllabus Is a Living Document

This syllabus is a starting point for the course. It is subject to change as the term unfolds, in response to your feedback and my assessment of how things are going.