

# Computers and Society

CSE 351 Autumn 2021

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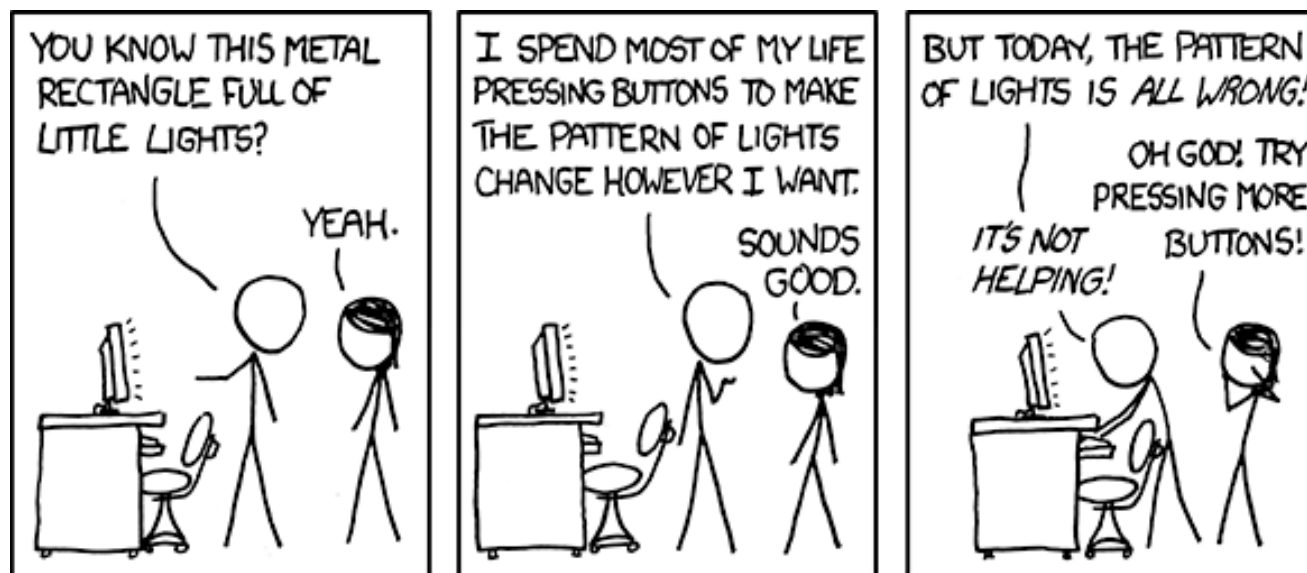
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## Alt text:

"This is how I explain computer problems to my cat. My cat usually seems happier than me."

# Relevant Course Information

- ❖ Lab 5 due Friday (12/10)
  - **Hard deadline on Sunday (12/12)**
- ❖ Course evaluations open
  - See Ed post #985 for links (separate for Lecture and Section)
- ❖ **Final Exam:** take-home Dec. 13-15
  - Review Session: Friday, 12/10, 4:30-6:30 pm on Zoom
  - Similar structure to Midterm, including Gilligan's Island Rule
  - Final review packet on website now, will see in section

# Disclaimers

- ❖ This is a big and nuanced topic
  - Could fill whole courses with this type of content
    - *e.g.*, CSE492E/480: Computer Ethics Seminar
  - Our hope is to expand your viewpoints about computers (and computing), but please think critically about the information and come to your own conclusions
  
- ❖ This lecture is a work-in-progress
  - Brand new and experimental! Kind of rushed...
  - It has a narrative that someone (me) designed, therefore it is inevitably imbued with my values and beliefs and experiences

# Pre-Quarter Survey Quotes

- ❖ Note that I will be interspersing some quotes from the pre-quarter survey, where one of your prompts was:

**What is your current impression of computers?**

This is a fake quote!

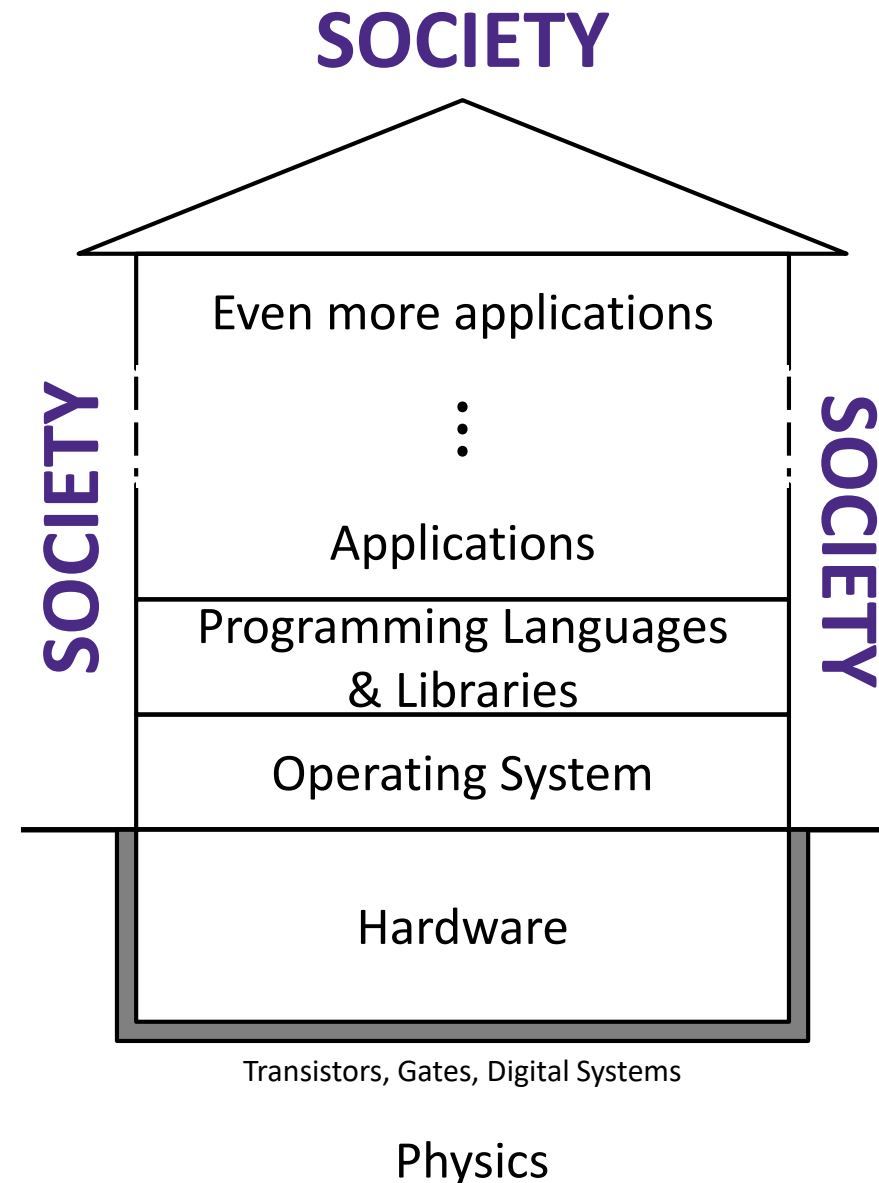
- These will be included without attribution for privacy
- The point is not to call anyone out or to pass judgment, but to validate some of the points being made today as well as recognize that society shapes our views and values

# Computers and Society

- ❖ **CS and Society – Insulation**
- ❖ How We View Computers
- ❖ Brief History of Computers
  - Augmentation and automation
  - Who are computers built for?
- ❖ The Cost of Computers
  - Costs of production
  - The technology cycle
- ❖ The Vision for Computers

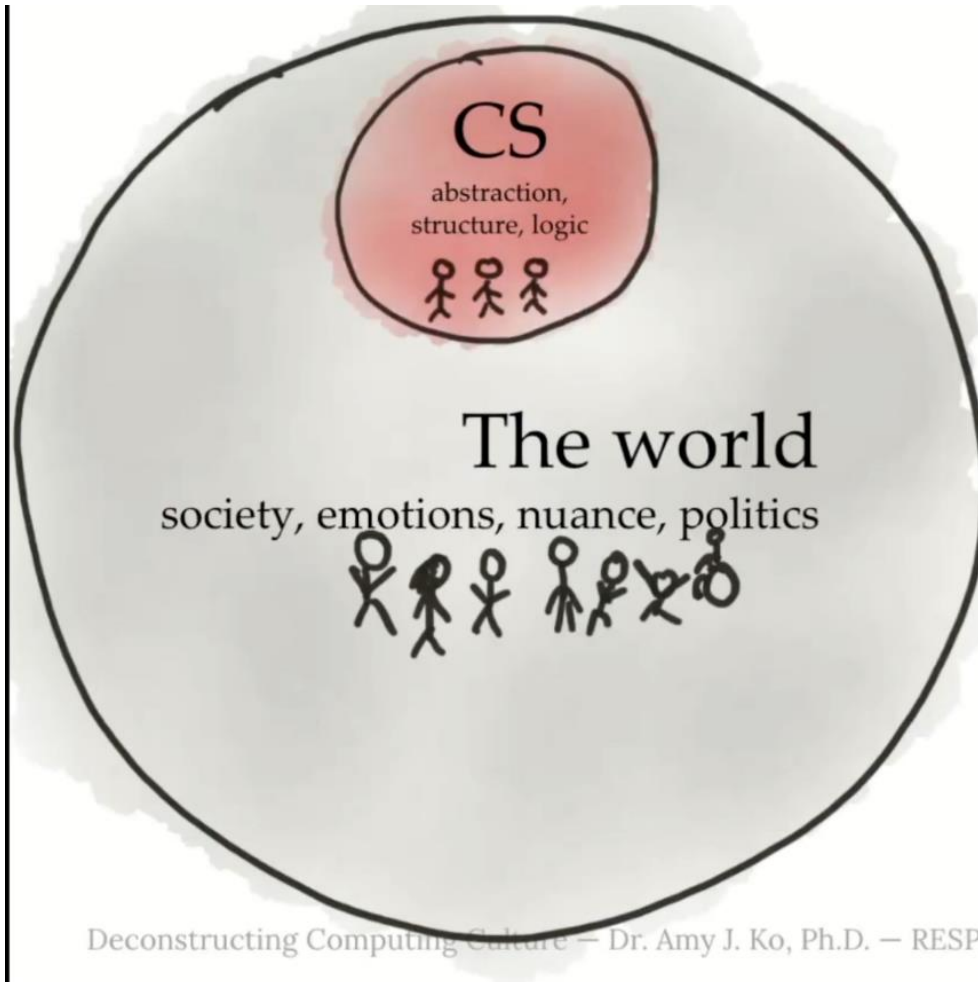
# Insulation: A Metaphor

- ❖ Insulation is a barrier between us and the “outside world”
  - It keeps us **comfortable and protected**
  - But it can be *harmful* – asbestos, fiberglass, even more modern alternatives



# Deconstructing CS Culture

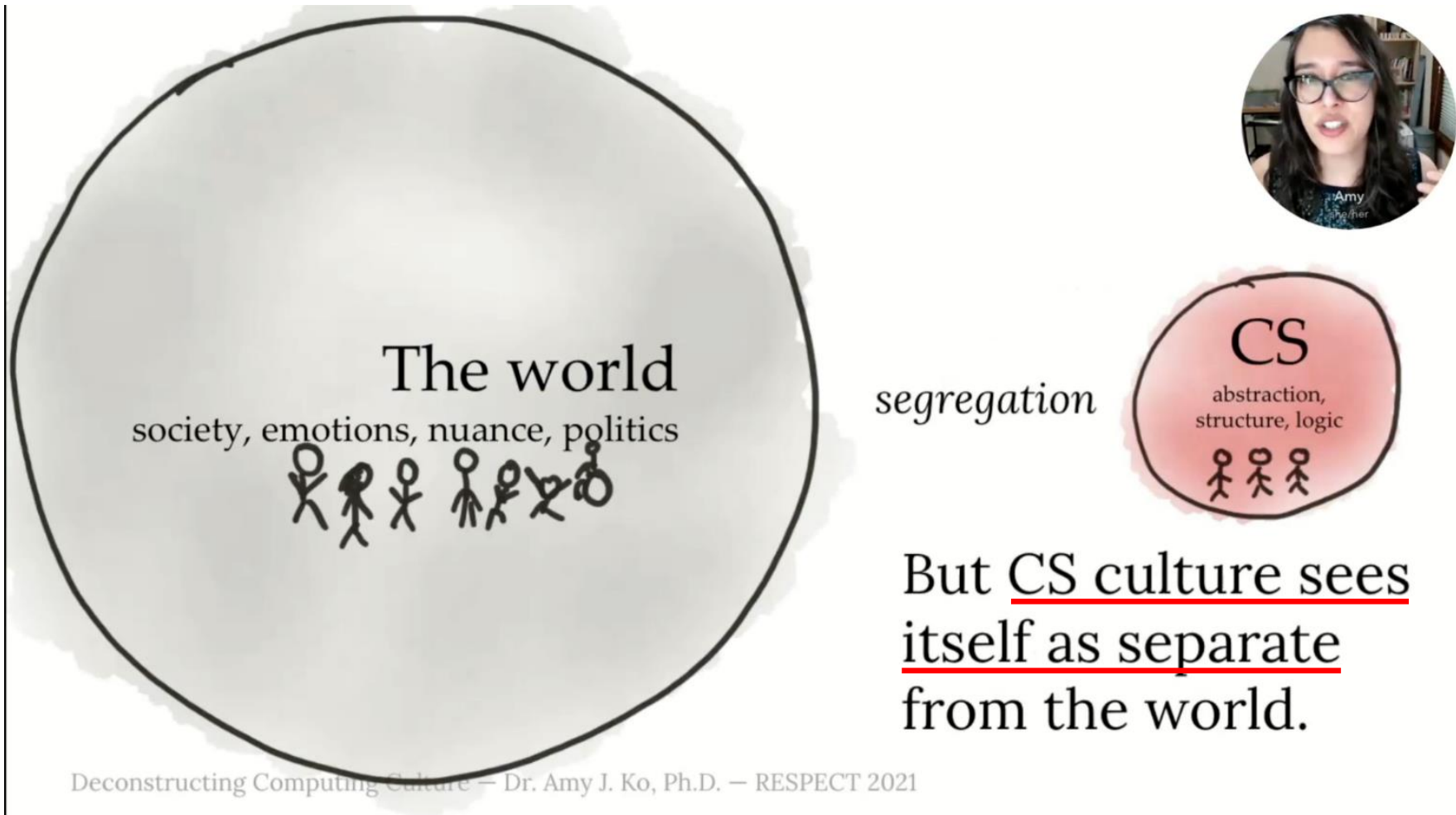
Amy Ko at RESPECT 2021: <https://www.youtube.com/watch?v=c8TQ29I8IK4>



We all know that CS is part of the world, part of that wonderful diversity and complexity.

# Deconstructing CS Culture

Amy Ko at RESPECT 2021: <https://www.youtube.com/watch?v=c8TQ29I8IK4>





# Deconstructing CS Culture

Amy Ko at RESPECT 2021: <https://www.youtube.com/watch?v=c8TQ29I8IK4>

And it's not just social segregation, but intellectual segregation.



- CS **abstracts**, removing *messy social context*
- CS **neutralizes**, removing *nuanced values and political*
- CS **normalizes**, erasing *diversity and exceptions*
- CS **automates**, removing *people and their unpredictable*

It's basically a machine that composes of millions and billions of circuits indicating 0 or 1.

These foundational CS concepts and values benefit the dominant groups in CS, reducing the burden of understand the complex social world, isolating them from its complexities.

# Deconstructing CS Culture

- ❖ Who does CS insulation keep **comfortable and protected**?
  
- ❖ Briefly, CS has been a safe space for:
  - Wealthy “young geeks”
  - People who like logic and “math”
  - Closeted non-normative people
    - *e.g.*, neurodiverse, gender nonbinary/enby
  - Autistic people
  - Women (in the past; we’ll talk about this today)

# Deconstructing CS Culture

- ❖ Who/how does CS insulation **harm**?
  
- ❖ Just a few examples:
  - Those overlooked/not represented in the design process
    - *e.g.*, [facial recognition systems](#) misidentify Blacks at much higher rate than Whites
    - *e.g.*, [Apple Health](#) didn't track menstruation
  - Those optimized out or lost to binarization
    - *e.g.*, trans and gender nonbinary people and [TSA scanners](#)
  - Unaccounted-for bias in “pure” logic/numbers
    - Machine learning training biases
    - *e.g.*, [Amazon AI recruiting tool](#) was biased against women
    - *e.g.*, [predictive policing](#) perpetuates systemic racism

# Computers and Society

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- ❖ **How We View Computers**
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  - Who are computers built for?
- ❖ The Cost of Computers
  - Costs of production
  - The technology cycle
- ❖ The Vision for Computers

# How We View Computers

- ❖ Personal views vary, but many trend towards utopian, essential, and mysterious
  - Easier to see the positives; that's how they're marketed, after all
  - Please remember that y'all are a biased sample of society

# Pre-Quarter Survey Quotes (Utopian)

- ❖ Personal views vary, but many trend towards **utopian**, essential, and mysterious

Computers are **mankind's greatest achievement**. They are intricate and logical and help assist and automate so much of human life. Understanding them and working to improve them is what I think is the **most direct way to improve the human condition**.

I love computers, **I love what they enable people to do**, and feel that more than any other technology they **have an incredible capacity to enhance the lives of all people on the planet**.

I tend to think of computers as a shining, glowing tool in the distance that you can use to **help solve many of the world's problems** because the computing world is so broad and lively.

# Pre-Quarter Survey Quotes (Essential)

- ❖ Personal views vary, but many trend towards utopian, **essential**, and mysterious

My impressions on computers are that it is **essential in the world we live in** currently and it's based on my surrounding. **Everyone is using computers** in all types of fields.

My current impression of computers is that they are becoming daily necessities because **so much of my daily life revolves around using one or technology like it.**

# Pre-Quarter Survey Quotes (Mysterious)

- ❖ Personal views vary, but many trend towards utopian, essential, and **mysterious**

"Any sufficiently advanced technology is indistinguishable from magic."

– Arthur C. Clarke

Computers are magical.

That they are both simultaneously simple and convenient to use, while being

very complicated on the inside.

I also feel like they are very mystical in that they feel like a kind of **black box** where I don't fully understand how they do what they do.



# Computers as Tools

- ❖ **“We shape our buildings and afterwards our buildings shape us.”** – Winston Churchill in a 1943 speech
- ❖ **“We shape our tools, and thereafter, our tools shape us.”** – John Culkin in a 1967 article about Marshall McLuhan

Computer is a very delicate and complex creation of human. It is also a extremely **useful tool that [augments] human's limit.**

I believe that computers are just another type of tool. Like a hammer, they can be used to build or they can be used to destroy. They can be well maintained or they can [wear] down. **That which they do is merely an extension of the person who set them in motion** and their capacity is an extension of the people that built them.

# Computers and Society

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# The First Computers

- ❖ **Computer:** a *person* who computes
  - Doing calculations by hand quickly for aeronautics, warfare, science, etc.



The women of  
Bletchley Park,  
Credit: BBC



Human Computers at NACA, Credit: NASA



Human Computers at JPL, Credit: JPL

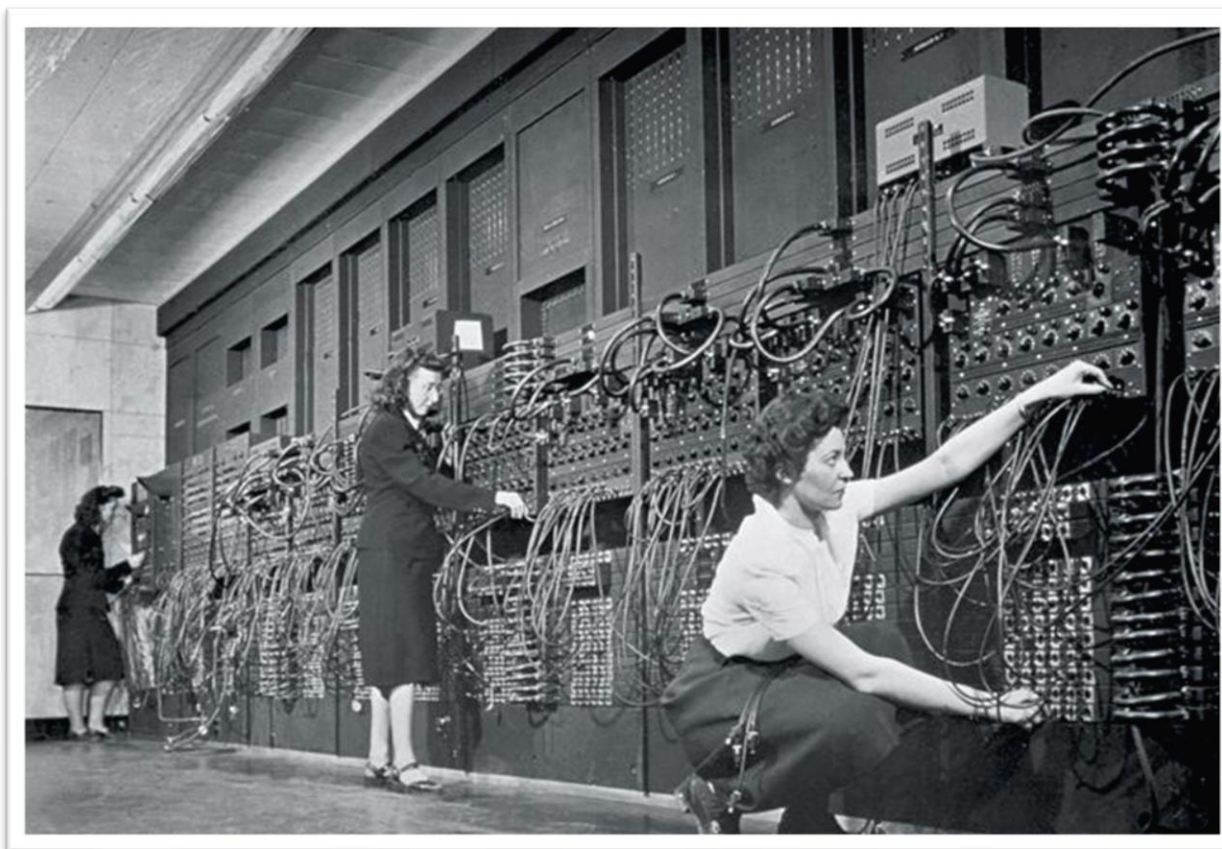
# ENIAC

- ❖ 1<sup>st</sup> programmable, electronic, general-purpose digital computer built at UPenn in 1945
  - Automated ballistics calculations for the US military



# Historical Programming (1940's)

- ❖ Manual plugboard wiring to connect arithmetic machines:



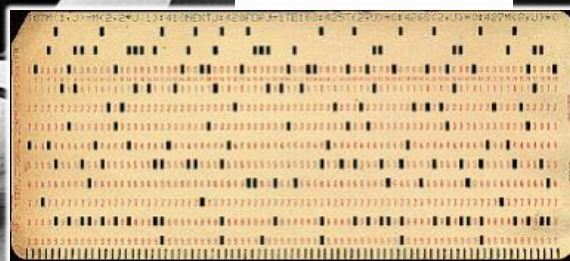
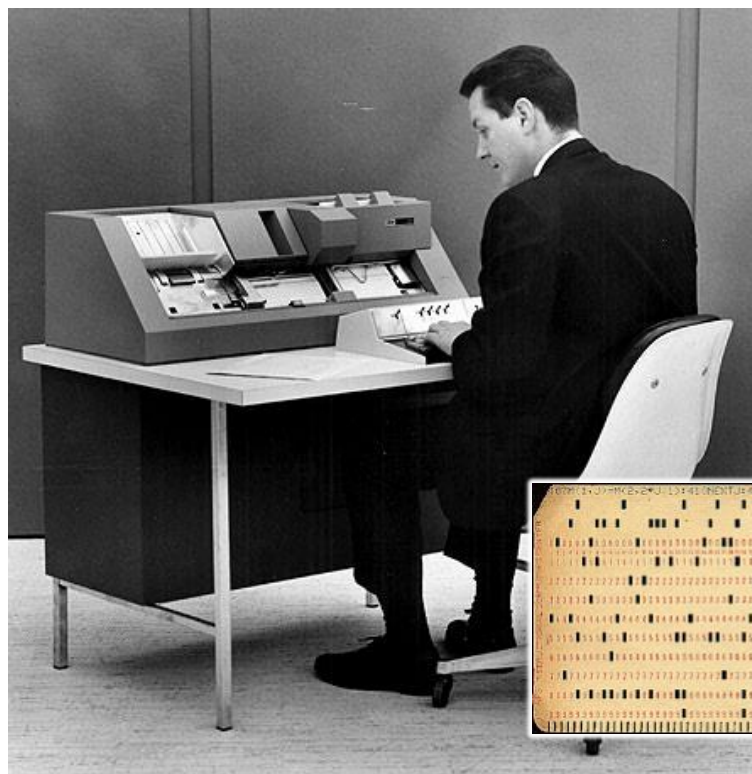
Jean Jennings (left), Marlyn Wescoff (center), and Ruth Lichterman program ENIAC at the University of Pennsylvania, circa 1946.

Photo: Corbis <http://fortune.com/2014/09/18/walter-isacson-the-women-of-eniac/>



# Historical Programming (1940's-1970's)

- ❖ Programming via punch cards
  - Idea taken from automated looms and data processing



# Historical Programming (1940's-1970's)

- ❖ Human computer operators manage program queue
  - Precursor to operating systems!



# Historical Programming (1970's)

- ❖ Magnetic tape replaced punch cards, operating systems could run more than one program
  - Programming by typing into a machine now:



<https://s-media-cache-ak0.pinimg.com/564x/91/37/23/91372375e2e6517f8af128aab655e3b4.jpg>



# Computing History and Women

- ❖ Early computers and then later computer operators were mostly white cis-women!
  - Allowed to do the “boring, repetitive” work
  - Less common, but also available to some women of color:

## HIDDEN FIGURES



Source: <https://netforward.net/what-hidden-figures%E2%80%8B-can-teach-us-about-the-importance-of-diversity-in-tech/>

# High Paying Jobs for Women

## The Computer Girls

BY LOIS MANDEL

A trainee gets \$8,000 a year  
...a girl "senior systems analyst"  
gets \$20,000—and up!  
Maybe it's time to investigate....

Ann Richardson, IBM systems engineer, designs a bridge via computer. Above (left) she checks her facts with fellow systems engineer, Marvin V. Fuchs. Right, she feeds facts into the computer. Below, Ann demonstrates on a viewing screen how her facts designed the bridge, and makes changes with a "light pen."

Twenty years ago, a girl could be a secretary, a school teacher . . . maybe a librarian, a social worker or a nurse. If she was really ambitious, she could go into the professions and compete with men . . . usually working harder and longer to earn less pay for the same job.

Now have come the big, dazzling computers—and a whole new kind of work for women: programming. Telling the miracle machines what to do and how to do it. Anything from predicting the weather to sending out billing notices from the local department store.

And if it doesn't sound like woman's work—well, it just is.

("I had this idea I'd be standing at a big machine and pressing buttons all day long," says a girl who programs for a Los Angeles bank. I couldn't have been further off the track. I figure out how the

computer can solve a problem, and then instruct the machine to do it."

"It's just like planning a dinner," explains Dr. Grace Hopper, now a staff scientist in systems programming for Univac. (She helped develop the first electronic digital computer, the Eniac, in 1946.) "You have to plan ahead and schedule everything so it's ready when you need it. Programming requires patience and the ability to handle detail. Women are 'naturals' at computer programming."

What she's talking about is *aptitude*—the one most important quality a girl needs to become a programmer. She also needs a keen, logical mind. And if that zeroes out the old Billie Burke-Gracie Allen image of femininity, it's about time, because this is the age of the Computer Girls. There are twenty thousand of them in the United (cont. on page 54)

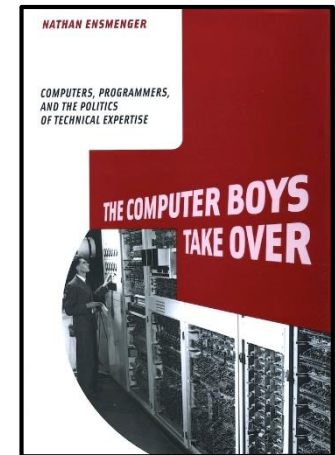


Source:

<http://thecomputerboys.com/wp-content/uploads/2011/06/cosmopolitan-april-1967-1-large.jpg>

# The Computer Boys Take Over

- ❖ Over time, programming transformed!
  - From boring, repetitive work into a creative, intellectual pursuit
  - From “low-status, largely feminized labor” to coveted by those in power
  
- ❖ Through the ages:
  - Human computers – largely female
  - ENIAC – hardware designed by men, programmed by women
  - Punch cards – programs designed by men, computers operated by women
  - Contemporary programming – boys encouraged, girls discouraged





# Historical Legacy of Computers

- ❖ Computers **augment** the abilities of humans
  - Makes the labor of boring, repetitive work more widely available
  - Highly valued, but generally *exclusively* available
- ❖ Computers **automate** the boring, repetitive work
  - Culturally, we are conditioned to believe that all of this work *should* be automated
  - Consistently eliminates the jobs of marginalized folks
    - *e.g.*, ENIAC's calculation speed could displace 2,400 human computers
- ❖ Both narratives are simultaneously true, even today!
  - Underlying goal is **efficiency of labor** (for profit)
  - Take CSE478: Autonomous Robotics for more ethics here

# Quick Discussion

- ❖ What jobs have you heard about that might be in imminent danger of automation?
- ❖ What work/jobs does CS consider “low skill” (*i.e.*, boring, repetitive) and who (*i.e.*, what demographics) stereotypically hold these jobs?

My current impression of computers is that it is revolutionizing the technology industry and **continuously increasing automation** in the world. This, in my opinion, is **both a blessing and a curse.**

# Who Are Computers Built For?

- ❖ New computers come with *de facto* requirements:
  - \$\$\$ – generally quite expensive
  - A regularly-available power supply
  - Access to the internet
  - A trained user
- ❖ Most useful to those with social power and privilege!
  - Have the means to afford new technology
  - Have access to learning opportunities and education

# Computer Marketing

- ❖ First digital computers took up whole rooms
  - Housed at prestigious/exclusive universities, accessible to math and engineering students



# Computer Marketing

- ❖ First digital computers took up whole rooms
- ❖ With advent of personal computing, marketed to those with leisure time and money

**How to talk your parents into parting with \$1300.**

There's a new Apple® Personal Computer called the IIc that's so complete and so affordable that getting your parents to buy one should be easier than learning Logo.

If that is, you know what to say. For example, don't tell your parents that the IIc has the first true 128K VLSI motherboard, dual built-in RS-232 ports and a built-in half-high disk drive. Or that it has a switchable 80/40 character display and built-in mousematics so it can use an AppleMouse.

You know that's incredible in an 8 pound\*\* computer, but all those specs

may make your parents uncomfortable. Just tell them that the Apple IIc can run more than 10,000 programs written for the Apple IIe, the most popular computer in education at all levels. And it works just the same as the Apple computers you learn on in school.

You might also mention that it's a bargain. It comes with everything you need to start computing in one box—including an RF modulator that lets you hook it up to your TV the moment you

can use when you're too busy to show them how.

All for under \$1,300\*\*

Of course, they probably won't want to hear that it runs more games than any other computer in the world except the Apple IIe.

But they might like to know that it also runs advanced business software. Including specialized programs for every profession from doctoring to farming to astronauting. Not to mention personal productivity software to manage their

personal finances and taxes. Speaking of which, they can deduct part of an Apple IIc's price from their taxes if they use it for business. Even if they always keep it at home.

Don't confuse them right now with the wide array of Apple IIc accessories and peripherals. Like Apple's 1200/300

modems. Or the IIc's low cost full-color graphics/text printer, Scribe.

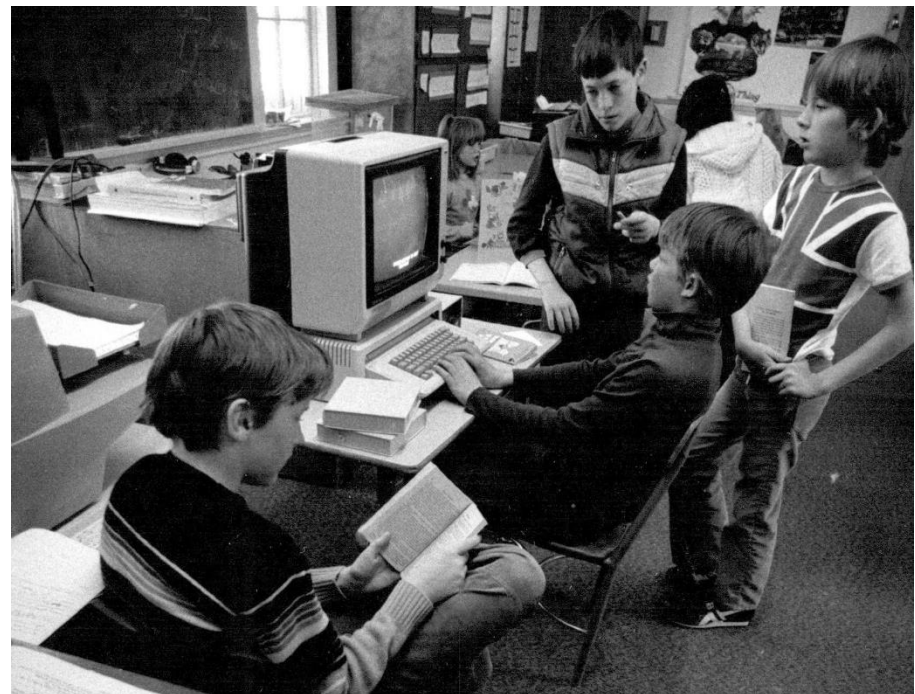
But assure them that your IIc can grow just as fast as you do. Now, if all of these carefully reasoned arguments fall on deaf parental ears, don't despair. There is still one thing more you can do. Get a paper route.

\*The IIc always weighs just 7.5 pounds. These packs, modems, printers, modems and mice can make it as heavy as you'd like. \*\*Suggested retail price. © 1984 Apple Computer, Inc. Apple and the Apple logo are trademarks of Apple Computer, Inc. For an authorized Apple dealer nearest you, call (800) 538-9696. In Canada, call (800) 268-7796 or (800) 268-7672.



# Computer Marketing

- ❖ First digital computers took up whole rooms
- ❖ With advent of personal computing, marketed to those with leisure time and money
- ❖ Eventually trickled down to general population via K-12 schools
  - Only those that could afford them or close enough to tech to be donated
  - Also needed staff who could use/teach them



# Computer Marketing

- ❖ First digital computers took up whole rooms
- ❖ With advent of personal computing, marketed to those with leisure time and money
- ❖ Eventually trickled down to general population via K-12 schools
- ❖ Smartphones now advertised as productivity tool and social status symbol



# Not Everyone Has Internet Access

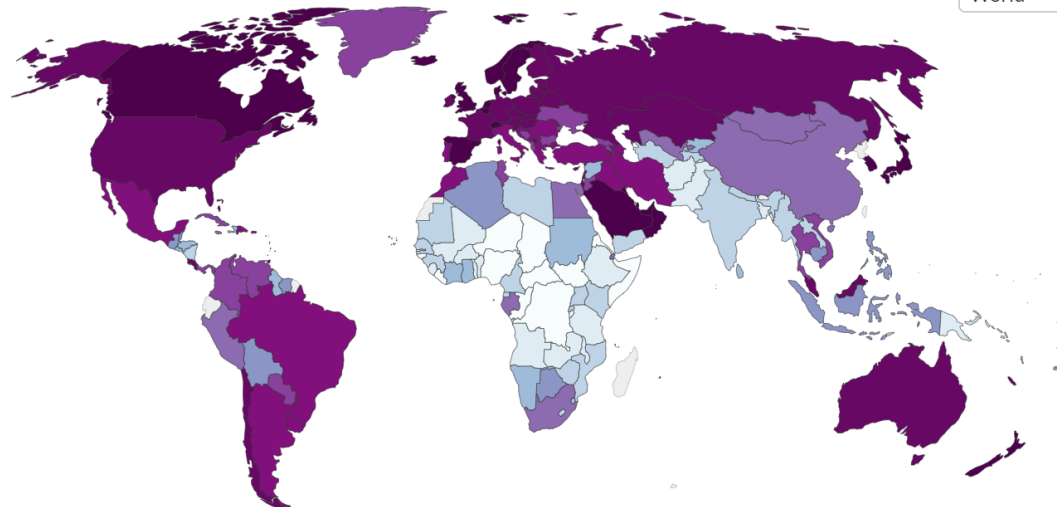
## ❖ Who designs computers & tech for them?

### Share of the population using the Internet, 2019

All individuals who have used the Internet in the last 3 months are counted as Internet users. The Internet can be used via a computer, mobile phone, personal digital assistant, gaming device, digital TV etc.

Our World  
in Data

World



Source: International Telecommunication Union (via World Bank)

OurWorldInData.org/technology-adoption/ • CC BY

▶ 1990 ————— 2019

CHART

MAP

TABLE

SOURCES

DOWNLOAD



<https://ourworldindata.org/internet>. Accessed Dec. 6, 2021.

# ICTD at UW

- ❖ Information & Communication Technology for Development (<http://ictd.cs.washington.edu>)
  - **Goal:** Improve the lives of people in developing regions through the use of technology
  - An *interdisciplinary* field: public health, education, agriculture, business
  - Designing for unfamiliar environments: low power, low connectivity, cultural context of users (*e.g.*, literacy, trust of technology)



Photos: Open Data Kit

# Quick Discussion

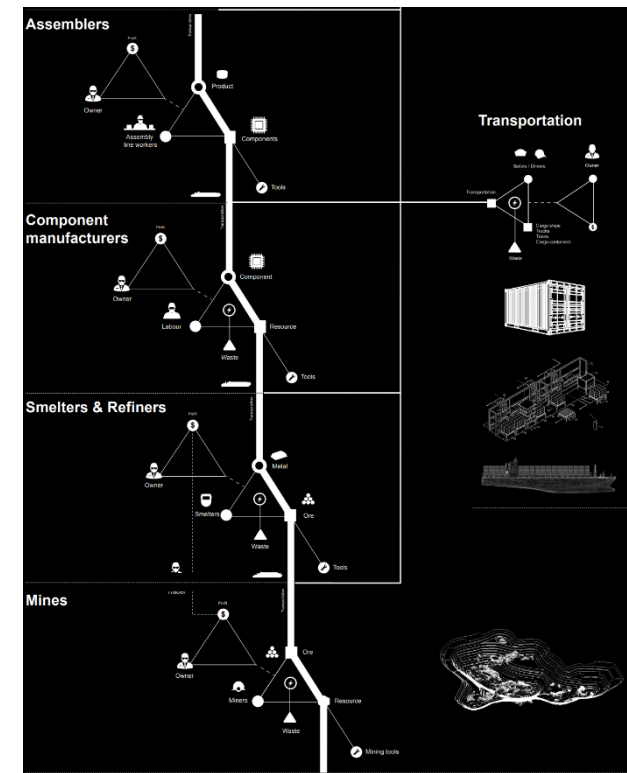
- ❖ When you consider the current “best” computing devices and innovations – what do you think the demographics of their users look like?

# Computers and Society

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- ❖ **The Cost of Computers**
  - **Costs of production**
  - **The technology cycle**
- ❖ The Vision for Computers

# Costs of Production

- ❖ Creating products is a process that involves labor, hazards, and waste:
  - “From a slow process of elemental development, these elements and materials go through an extraordinarily rapid period of excavation, smelting, mixing, and logistical transport – crossing thousands of kilometers in their transformation. Geological processes mark both the beginning and the end of this period, from the mining of ore, to the deposition of material in an electronic waste dump.” – <https://anatomyof.ai>



# Costs of Production

## ❖ Material resources:

### ■ Silicon (non-renewable)

- Silicon dioxide purified from quartz or silica sand
- In 2021, shortage of silicon metal caused 300% price spike – China cut production to reduce power consumption
- Other industries that require silicon, including auto and solar, in trouble because supply being gobbled up by chip manufacturers

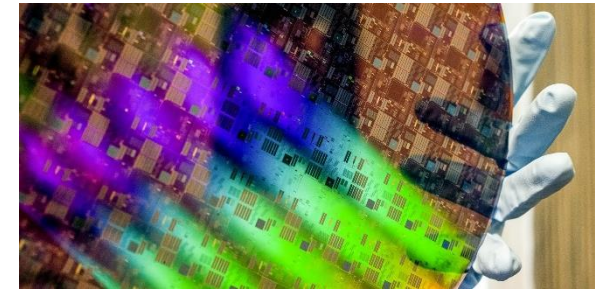
### ■ Lithium (non-renewable)

- Lithium-ion batteries have a limited lifespan
- Classified as non-hazardous waste and often end up in landfills or incinerators
- Could be recycled, but the cost of collecting, sorting, and shipping used batteries to a recycler exceeds the scrap value

### ■ Plastics



# Costs of Production



- ❖ Semiconductor chip manufacturing:
  - Needed for computers, cell phones, “smart” appliances, automobiles, airplanes, health-care equipment, etc.
  - Semiconductor factories
    - Takes 5+ years and billions of dollars to build
    - Lots of expensive machinery & chemicals to process and protect wafers (people just maintain the machines)
    - A silicon wafer takes ~3 months and ~700 steps to process
    - Use of fossil fuels and chemicals can be harmful to the health of those living in proximity to manufacturing facilities
  - Global affair
    - ~75% manufactured in Asia, must be imported
    - Supply chain: raw materials, manufacturing workers, transport

# Costs of Production

- ❖ Use and disposal:
  - Strain on electrical grid during use and wasted energy while idling contribute to greenhouse gases and pollution
    - Bitcoin mining is particularly power-intensive: The amount of electricity used to mine bitcoin “has historically been more than [electricity used by] entire countries, like Ireland”
  - Millions of tons of electronic waste are discarded into (overseas) landfills each year
    - Heavy metals can pollute the soil and contaminate groundwater

# Quick Discussion

- ❖ In reconciling a utopian view of a fully computerized future with the costs of production, what parts of our homes, workplaces, and lives could/should most likely do *without* computerization?

And because computers exist **some things become complicated for no reason**, like putting cameras in an oven which has basically no purpose other than they could do it.

# Quick Polls

- ❖ Answer polls on Ed as quickly as possible; no discussion needed
- About how frequently do you buy a new computer or smartphone?
  - **A:** Once a year or more frequently
  - **B:** Every 1-2 years
  - **C:** Every 3-5 years
  - **D:** Every 5+ years
  - **E:** I don't own or don't buy
- What is the main reason that you buy a new computer or smartphone?
  - **A:** Old one broke or lost
  - **B:** Old one is too slow
  - **C:** Old one no longer supported
  - **D:** Newer version released
  - **E:** New tech released
  - **F:** Not applicable

# The Technology Cycle

- ❖ Computers and technology eventually break down and stop working, but the industry really relies on consumers buying *before* that happens
  - The entire chip industry depends on a brand new laptop/smartphone meaning something!
    - Consumers want speedups, engineers should deliver
    - Self-fulfilling, industry taught consumers to believe “faster is better”
  - **Obsolescence**: when an object, service, or practice is no longer maintained, required, or degraded even though it may still be in good working order.
    - Newer version or new tech released = “**technical** obsolescence”
    - Old one is too slow = “**functional** obsolescence”
    - Old one no longer supported = “**planned** obsolescence”

# The Technology Cycle

- ❖ Technology and longevity:
  - Longevity is nearly impossible to design for
    - Nothing is future-proof!
    - We've seen lots of weird historical artifacts in this class
  - Tension around technological change
    - *Companies* and *developers* hate supporting the same tool over a long period of time
    - *Consumers* tend to be resistant to change and hate being “forced” to upgrade
    - Backwards-compatibility can be a decent compromise
  - “Exciting” areas see lots of change, “boring” areas neglected
    - *e.g.*, unemployment systems and ATMs still run on COBOL (1959)

# The Technology Cycle

- ❖ Who benefits? Who loses?
  - The consumers?
  - The developers?
  - The Earth?
  
- ❖ “The Consumer Technology Association notes that the average smartphone lifespan is 4.7 years. This obsolescence cycle fuels the purchase of more devices, drives up profits, and increases incentives for the use of unsustainable extraction practices.”
  - <https://anatomyof.ai>

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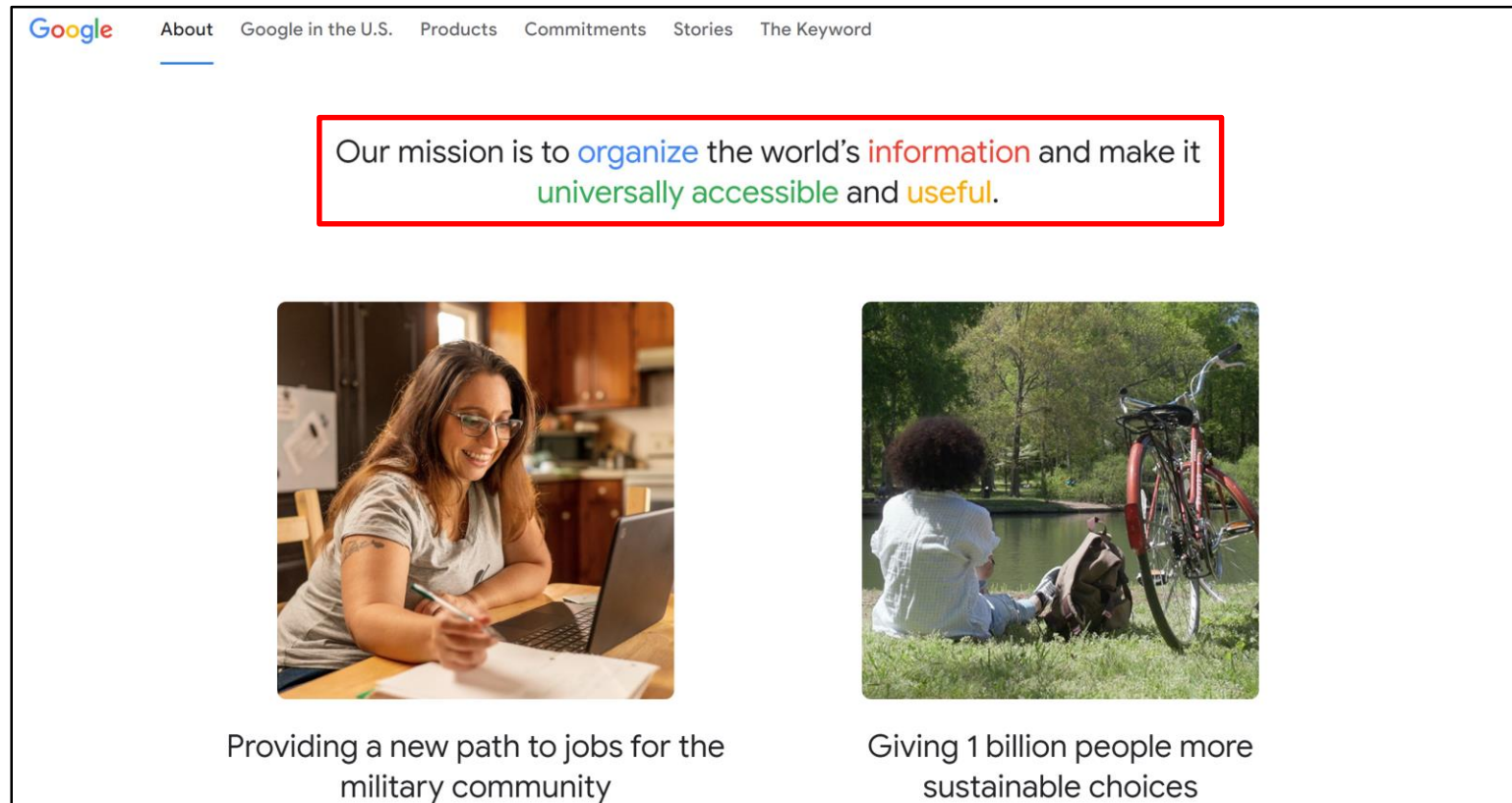
# Vision

- ❖ Vision: the act or power of anticipating that which will or may come to be
  - Typically, that which you *want* to be; a goal
  - Companies and individuals often espouse a *vision statement* or *mission statement*
- ❖ **Discuss:** What is your vision for computers (and/or computing)?

I often think about computers as mediums for communication, creativity, and community.


# Is There a Collective Vision?

## ❖ Let's ask Big Tech: **Google**




Google About Google in the U.S. Products Commitments Stories The Keyword

Our mission is to **organize** the world's **information** and make it **universally accessible** and **useful**.



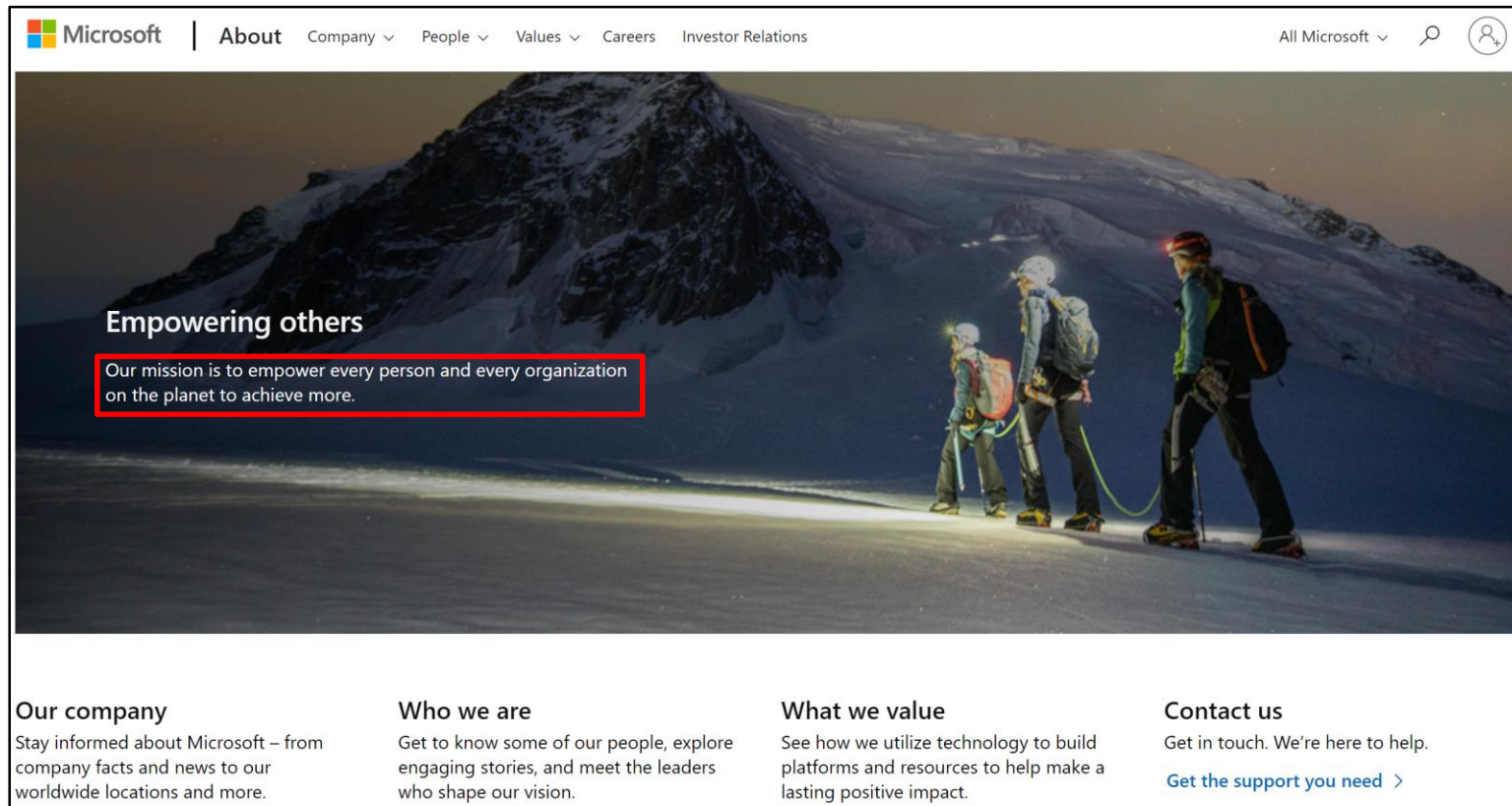
Providing a new path to jobs for the military community



Giving 1 billion people more sustainable choices

# Is There a Collective Vision?

## ❖ Let's ask Big Tech: **Microsoft**



Microsoft | About Company ▾ People ▾ Values ▾ Careers Investor Relations All Microsoft ▾ 🔍 👤

### Empowering others

Our mission is to empower every person and every organization on the planet to achieve more.

**Our company**  
Stay informed about Microsoft – from company facts and news to our worldwide locations and more.

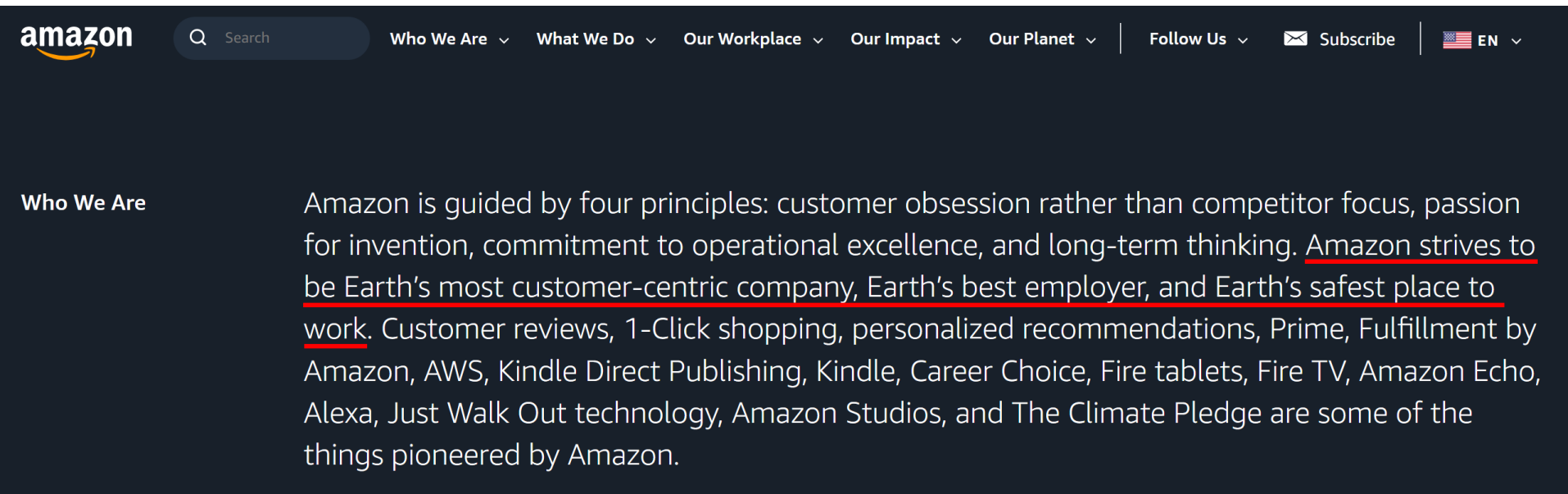
**Who we are**  
Get to know some of our people, explore engaging stories, and meet the leaders who shape our vision.

**What we value**  
See how we utilize technology to build platforms and resources to help make a lasting positive impact.

**Contact us**  
Get in touch. We're here to help.  
[Get the support you need >](#)

# Is There a Collective Vision?

## ❖ Let's ask Big Tech: Amazon



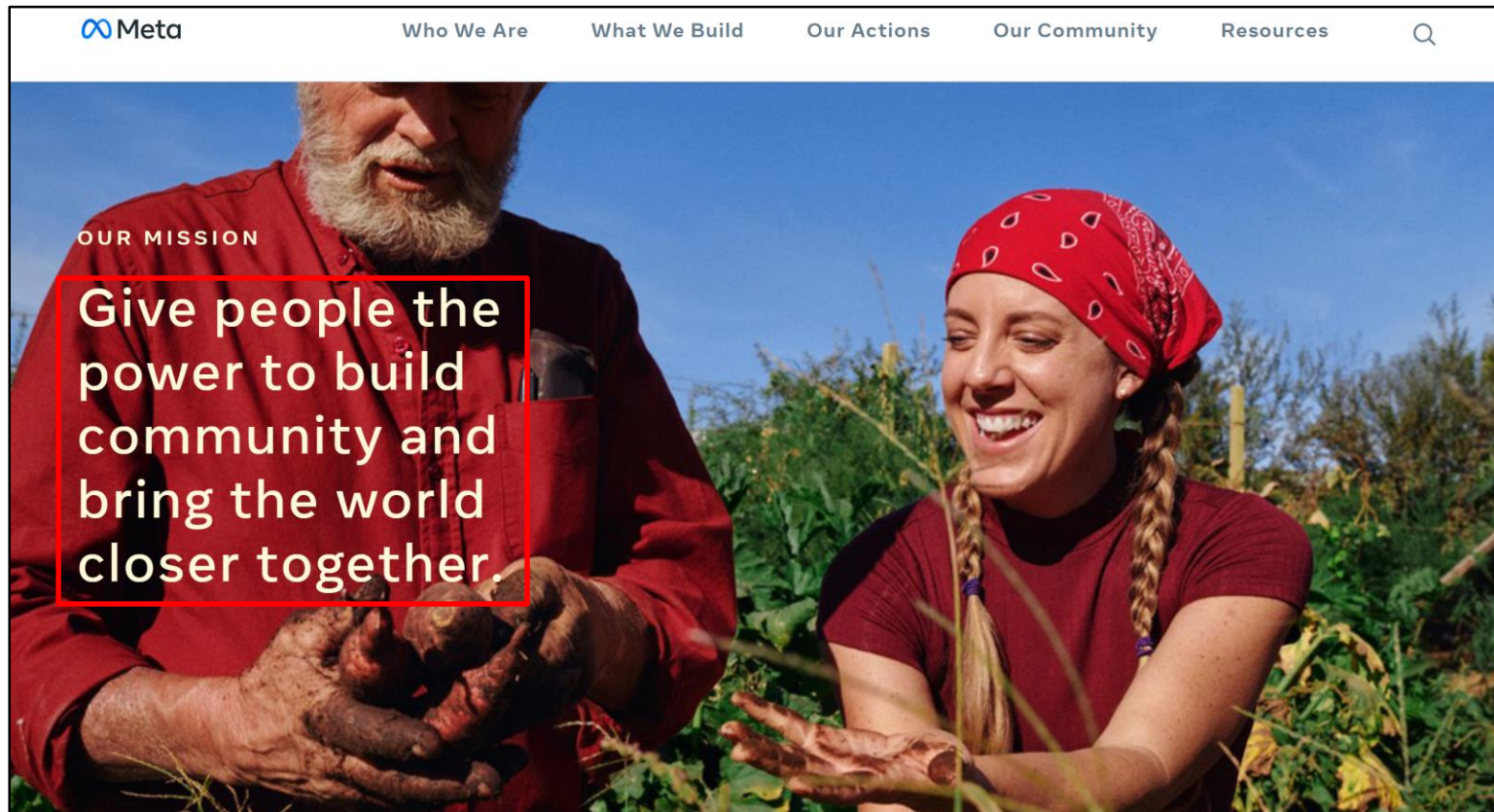
The screenshot shows the top navigation bar of the Amazon website. On the left is the Amazon logo. To its right is a search bar with a magnifying glass icon and the word "Search". Further right are several menu items: "Who We Are", "What We Do", "Our Workplace", "Our Impact", and "Our Planet", each followed by a downward arrow. To the right of these is a "Follow Us" link with a downward arrow, a "Subscribe" link with an envelope icon, and a language selector showing "EN" with a downward arrow.

**Who We Are**

Amazon is guided by four principles: customer obsession rather than competitor focus, passion for invention, commitment to operational excellence, and long-term thinking. Amazon strives to be Earth's most customer-centric company, Earth's best employer, and Earth's safest place to work. Customer reviews, 1-Click shopping, personalized recommendations, Prime, Fulfillment by Amazon, AWS, Kindle Direct Publishing, Kindle, Career Choice, Fire tablets, Fire TV, Amazon Echo, Alexa, Just Walk Out technology, Amazon Studios, and The Climate Pledge are some of the things pioneered by Amazon.

# Is There a Collective Vision?

## ❖ Let's ask Big Tech: **Meta/Facebook**





# Is There a Collective Vision?

- ❖ Let's ask Big Tech
  - Google: “world's information”, “universally accessible”
  - Microsoft: “every person and organization on the planet”
  - Amazon: “Earth's most”, “Earth's best”, “Earth's safest”
  - Meta/Facebook: “bring the world closer together”
- ❖ Vision is primarily about operating on a *global* scale (with Big Tech at the helm)
  - Hardly a computer in sight, but all of their visions certainly require everyone to have access to one!

I view computers and programming being the base that allowed for **these tech companies to expand into international super powers.**

# Is There a Collective Vision?

- ❖ Big Tech leaders generally have utopic visions
  - Solve the world's problems, *e.g.*, eliminate poverty, hunger, war, fulfill the needs of everyone
  - “In the future, technology is going to... free us up to spend more time on the things we all care about, like enjoying and interacting with each other and expressing ourselves in new ways” – *Mark Zuckerberg, 2017*



# Is There a Collective Vision?

- ❖ They have good intentions, but no one has any idea how to execute properly at a global scale!
- ❖ Reminds me of the white savior trope: “a white person who is depicted as liberating, rescuing or uplifting non-white people”
  - A pattern in which “the saved” are denied agency and are seen as passive recipients of benevolence
- ❖ Be wary of being a “tech savior”!
  - “If we are going to interfere in the lives of others, a little due diligence is a minimum requirement.” – *Teju Cole*



# Deconstructing CS Culture

Amy Ko at RESPECT 2021: <https://www.youtube.com/watch?v=c8TQ29I8IK4>



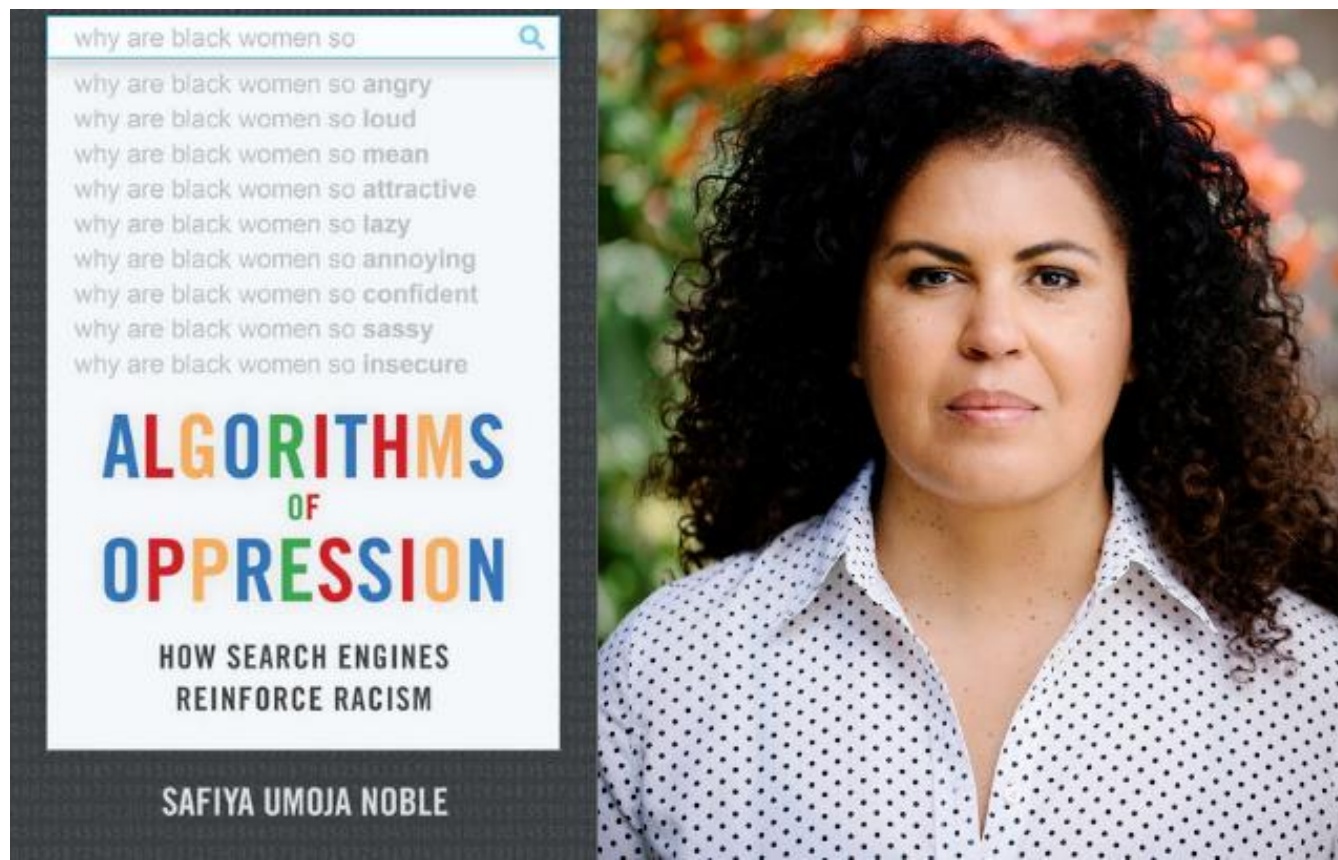
And it's not just social segregation, but intellectual segregation.

- CS **abstracts**, removing *messy social context*
- CS **neutralizes**, removing *nuanced values and politics*
- CS **normalizes**, erasing *diversity and exceptions*
- CS **automates**, removing *people and their unpredictable decisions*

These foundational CS concepts and values benefit the dominant groups in CS, reducing the burden of understand the complex social world, isolating them from its complexities.

# Is There a Collective Vision?

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    - Invented surveillance capitalism, perpetuates racism



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  - Terrible working conditions, undercuts sellers

### Amazon

## 14-hour days and no bathroom breaks: Amazon's overworked delivery drivers

Drivers report being underpaid and having to urinate in their vehicles to keep up with delivery rates



A REUTERS SPECIAL REPORT

Amazon copied products and rigged search results to promote its own brands, documents show

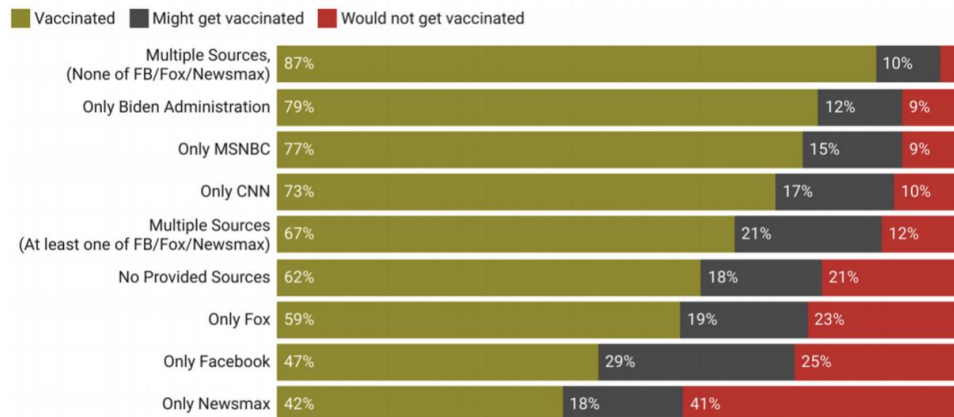
# Is There a Collective Vision?

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- Meta/Facebook: “bring the world closer together”
  - Creates filter bubbles, promotes fake news

### COVID-19 vaccinations and news consumption patterns (Copy)

[ Percent among respondents who say they got COVID-related news from each source in the past 24 hours ]



**The New York Times**

## *Whistle-Blower Says Facebook ‘Chooses Profits Over Safety’*

Frances Haugen, a Facebook product manager who left the company in May, revealed that she had provided internal documents to journalists and others.

# What's Your Vision?

- ❖ You have unprecedented power and access as technologists – be the change that you want to see!
  - What would you like to accomplish?
  - Who/what do you want to serve?
- ❖ Remember, computers shape society and society shapes computers
  - Be wary of what you build and how you design it!
  - Make sure you take the messy social context into account