Kellie Dinh, Kennedy Ellison, Emily Lobel, and Sophia Trump
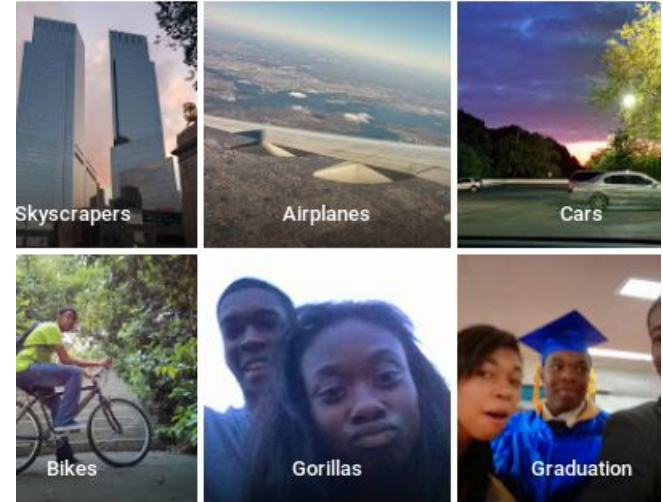
Some Consequences of Predictive Technology

Unethical use of Data

- Facebook allowing housing advertisers to target customers according to their race
- Uber "God View"
- Facebook "fake news"

Encouragement of Bias

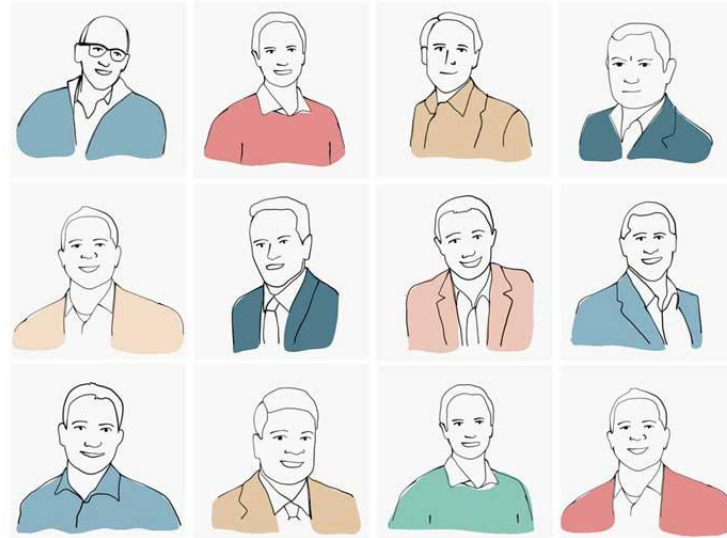- Sexist word2vec embeddings
- Racism in AI photo technology
- COMPAS

Image Source: https://www.theverge.com/2015/7/1/8880363/google-apologizes-photos-app-tags-two-black-people-gorillas

Ready to Work With Us?

DIVERSITY IN TECH REPORT
Hiring Criteria
TheCooperReview.com

4% EDUCATION

5% SKILLS

12% EXPERIENCE

79% ABILITY TO FIT IN WITH EXISTING CULTURE

Image Source: The Cooper Review. https://thecooperreview.com/diversity-in-tech-report/
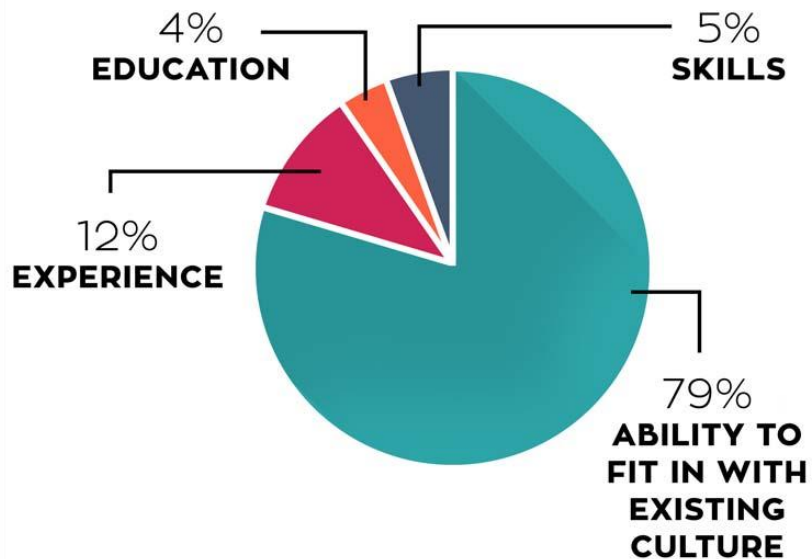
The Pipeline

What Is It?

- The people entering the tech industry searching for jobs.

Problem

- "These companies say they want diversity, then use exactly the same recruiting methods they always have." (p.25)

Now that we've talked about your experience, let's talk about your experience

Image Source:
https://thecooperreview.com/google-amazon-facebook-secrets-hiring-best-people/

Tech Culture

Problems

- Sexism, Ableism, Racism

Culture Fit vs. Hostile Environment

- The hostile environment drives out many women and POC. The industry wants "diversity numbers, but doesn't want to disrupt its culture to get or keep diverse people." (p.184)

Image Source:
https://www.hollywoodreporter.com/features/silicon-valley-confronts-a-darker-side-tech-culture-tj-millers-messy-exit-1092493

Lack of Diversity

"Edge Cases"
- Labelling of non-"average" experience as an edge case excludes people with those experiences.
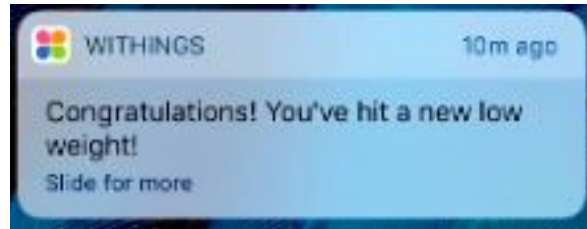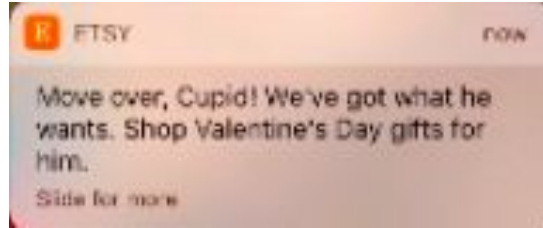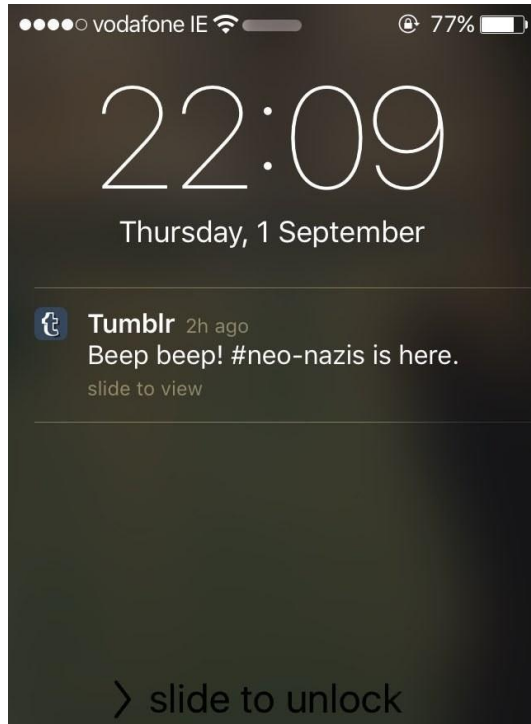
A Needed Perspective
- A founder's commitment to his vision can not only stop him from committing to the perspectives of others, but bring harm to those who don't fit within it.

Image Source:
https://www.businessinsider.com/top-tech-ceos-2018-2018-12

Failure to Consider Differing Experiences

Image Source: Technically Wrong: Sexist Apps, Biased Algorithms, and Other Threats of Toxic Tech

Culture and the Pipeline Intertwined

Problem

- Culture fit often limits hiring of women and POC in the last stage of the interview process.
    - "No pipeline in the world can make up for a steady flow out of tech companies" (p.183).
- Tech companies blame the lack of diversity on the "pipeline" and few women or people of color graduating with Computer Science Degrees
- Companies use the idea of a pipeline problem to shift blame from themselves to others.

Image Source: https://commons.wikimedia.org/wiki/File:Mario_pipe.png

Designing for the "Normal" User

Use of **Personas**

Belief in **Edge Cases**

The **Default Effect**

Inaccuracy of Data. If users are not being identified truthfully, the products that use this data become inaccurate.

Technical Decision Maker: The Transformational Leader	
	• CIO • Technical decision maker • Develops IT strategy and roadmap • Leads technology team that evaluates technology options

Causes of Failure: User Surveillance

Misleading Users into Providing Data

- Zuckering
- Data collected from third-party sources
- Simplistic interfaces make biased systems appear unbiased

Proxies Can Make Systems Less Accurate

- When companies get proxies wrong, it can lead to bias. This bias is self-perpetuating -- predictive systems "define their own reality and use it to justify their results" (p. 112)
  - **Marginalized groups are most vulnerable to surveillance**

Causes of Failure: Bias in Training Data

Historical Bias

- Systems that do not correct for historical bias perpetuate and increase this bias
  - COMPAS

33. Was your father (or father figure who principally raised you) ever arrested, that you know of?
☑ No ☐ Yes

34. Was your mother (or mother figure who principally raised you) ever arrested, that you know of?
☑ No ☐ Yes

35. Were your brothers or sisters ever arrested, that you know of?
☐ No ☑ Yes

36. Was your wife/husband/partner ever arrested, that you know of?
☑ No ☐ Yes

37. Did a parent or parent figure who raised you ever have a drug or alcohol problem?
☑ No ☐ Yes

38. Was one of your parents (or parent figure who raised you) ever sent to jail or prison?
☑ No ☐ Yes

Image Source: https://www.documentcloud.org/documents/2702103-Sample-Risk-Assessment-COMPAS-CORE.html

Causes of Failure: Meritocracy and "The Hacker Way"

Meritocracy

- Belief that the tech industry is purely based on merit
  - Devalues the soft skills that keep predictive systems ethical

"The Hacker Way"

- Move fast and break things
  - Values innovation at the expense of societal implications

Image Source: https://pctechmag.com

The "Magic" of Tech

Not everyone is a "Genius"

- Tech needs to steer away from the idea that it's a meritocracy and that programming skills are superior to humanities or social science backgrounds.

Regulating the "Tech" Industry

"Absurdly, we're expecting lawmakers, the media and average consumers to understand these wildly different offerings... as part of one single, endlessly complex, industry. That's an impossible task... Perpetuating the myth of a monolithic "tech industry" overtaxes our ability to manage the changes that technology is making to society (p. 187)

Images: https://www.underconsideration.com/brandnew/archives/new_logo_and_identity_for_uber_by_wolff_olins_and_in_house.php
https://www.underconsideration.com/brandnew/archives/new_logo_and_identity_for_uber_by_wolff_olins_and_in_house.php
https://www.youtube.com/channel/UC58M6zDLNtGk2fUfum38Axw https://en.wikipedia.org/wiki/Juul

Everyone should be able to understand the technology products they use every day.

Solutions: Accessibility and Policy

Accessibility

- Each machine learning model includes performance documentation and evaluation on various conditions (age, sex, race, gender).
- Make the industry less insular.

Policy

- A Regulatory Framework for the Internet (https://stratechery.com/2019/a-regulatory-framework-for-the-internet/)

Solutions: Data

Don't design for the "average" user.

Become more critical of training data.
- "Is our training data representative of a range of skin tones?"
- "Does our product fail more often for certain kinds of images?"

Decide what it means for a system to be "fair."

"We need to be transparent about where data comes from, which assumptions might be encoded in it, and whether it represents users equally. Otherwise, we'll only encounter more examples of products built on bias." (p. 146)

Solutions: Diversity

Disrupt the culture.

- Understand the importance of different perspectives and make the culture accepting of all people.
  - "The industry will never be as diverse as the audience it's seeking to serve...if tech won't create an environment where a wider range of people feel supported, welcomed, and able to thrive." (p.26)
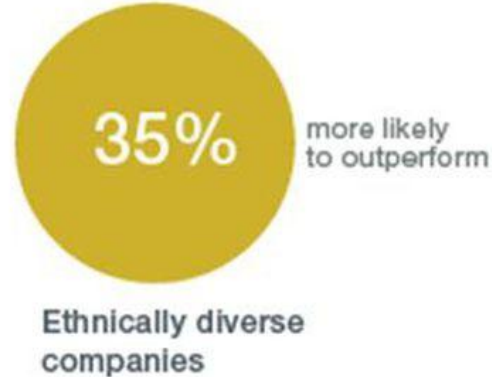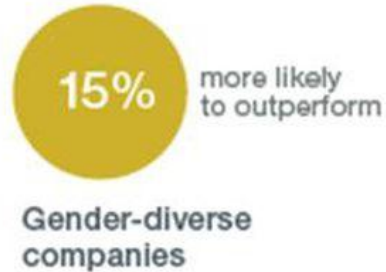
Make further efforts to diversify.

- Recruit at traditionally women's colleges and historically black colleges.
- Support young minorities in STEM!

Not Convinced?

Diversity's dividend

What's the likelihood that companies in the top quartile for diversity financially outperform those in the bottom quartile?[1]

15% more likely to outperform

Gender-diverse companies

35% more likely to outperform

Ethnically diverse companies

[1]Results show likelihood of financial performance above the national industry median. Analysis is based on composite data for all countries in the data set. Results vary by individual country.

Source: McKinsey analysis

Image Source: Forbes
https://www.forbes.com/sites/ruchikatulshyan/2015/01/30/racially-diverse-companies-outperform-industry-norms-by-30/#6ca1e4851132

Thank you!