Human Centered Data Science

DATA 512 — Os Keyes

Critical Data Studies | Week 7| November 8, 2018

Overview of the day

- Reading Reflections
- Fairness, Accountability and Transparency in-class activity
- Social/Technical construction of Technology/Society
- Structures of power
- Levers of power
- Power and Data Science
- Guest lecture: Rochelle LaPlante
- Grappling with Power

Fairness, Accountability and Transparency

Fairness, Accountability and Transparency

- An algorithm is ethical if it is:
  - Not biased
  - Accountable to its users
  - Transparent

Mulching the Elderly

Mulching the Elderly

- Use computer vision to identify the elderly
- Crunch big data to identify those of reduced social connectivity
- Kidnap via drone
- Reduce them into substitute food products
  - Grandmash ™
  - Fauxghee ™

In-Class Activity

You will be randomly assigned one of:

1. Fairness
2. Accountability
3. Transparency

1. Discuss possible ways to improve the algorithm with the element of FAT you are assigned
2. Report back after 20 minutes

Deliverables (post in the “Week 7 in-class activity” Canvas thread):

1. A document providing your proposed solutions

My Solutions

- Fairness:
  - Algorithmic audits! Make sure it is no more likely to mulch a grandma than grandpa
- Accountability:
  - Relatives of the mulchee can complain
  - A replacement elderly person will be provided
- Transparency:
  - The mulchee should receive a printout of the reasons they were selected for mulching

What was the point of this?

What was the point of this?

- FAT:
  - Assumes the problem is the implementation
  - Does not investigate context of use
  - Ignores structures around the algorithm
  - Assumes a thing should be done at *all*
- Critical Data Studies:
  - Explores context and structure
  - Cares about how technology influences society (& inverse)
  - Example: Mager’s paper

Technology and Shaping

- Social Construction of Technology:
  - Technology's design is shaped by social norms and standards (see Mager)
- Technological determinism
  - Social norms and standards are shaped by technology
- These days the answer is "yes"

The Manhattan Project

- Social Construction of Technology:
  - War
  - Nation-States
  - Large-Scale Systems
- Technological determinism
  - Geopolitical power changes
  - Massive cultural influence

Power

- Power is inevitable and natural
- Forms of power include:
  - Violence
  - Physical pressure
  - Cultural norms
- Power can cause injustices when it is concentrated
- Concentrations of power are often self-reinforcing
- Technology depends on (and causes) changes in concentration

Concentrations of Power

The State

- States are designed to concentrate power
- Technology has often enabled this: tracking, organising, bureaucracy, “statistics”
- Modern Example: Facial Recognition
  - Social -> Technical: FERET
  - Technical -> Social: Reckognition

The Market

- Capitalism in practice involves power
  - Monopolies, monopsonies, lock-in
- ...and also in theory
  - Requires inequalities
  - Requires expansion
  - Treats humans as units of production
- Modern Example: Facebook
  - Social -> Technical: large-scale, migratory societies
  - Technical -> Social: privacy norms, commercialisation of data

..& Others

- Religion
- Unions
- Any organisation with social or pragmatic pressure behind it
- Modern Example: Shabbes buses!
  - Social -> Technical: humanistic society
  - Technical -> Social: restructure of communities/norms

Technical Levers of Power

Infrastructures

- Ubiquitous/wide-scale & essential systems
- Traditionally:
  - Electricity
  - Water
  - Medicine
- Now:
  - The internet?
  - Google?
  - GPS?

Standards

- Normalised, material ways of doing things
  - Classification systems (ICD, DSM..)
  - RfCs?

Platforms

- Standardised frameworks to be built upon
  - Programmatic APIs/software

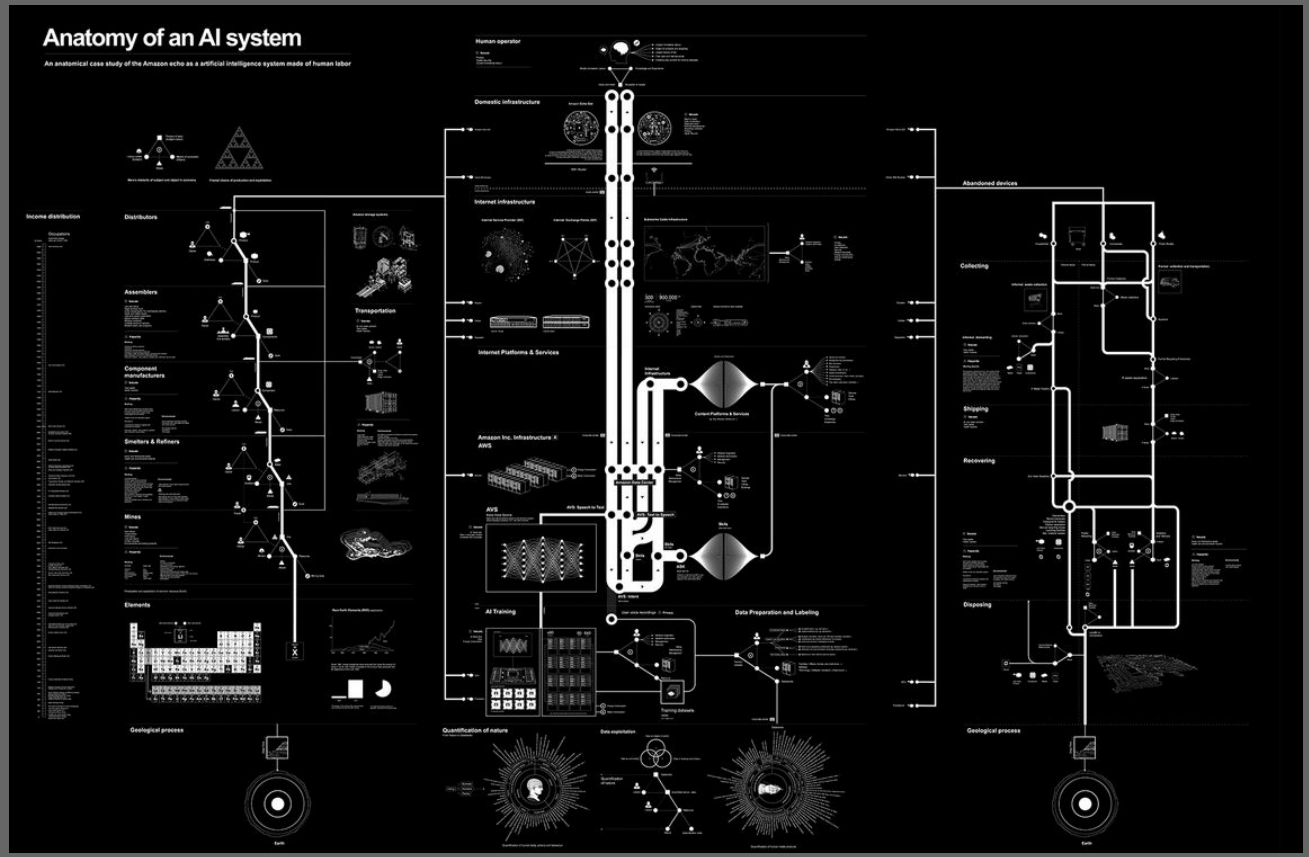
Overlaps

- Standards, platforms and infrastructures are not always distinguishable
- Consider the internet
  - Infrastructure
  - Contains standards
  - Serves as a platform
- These concentrate power by:
  - Constraining/opening possibilities
  - *Reserving the power* to determine what is constrained (or open)

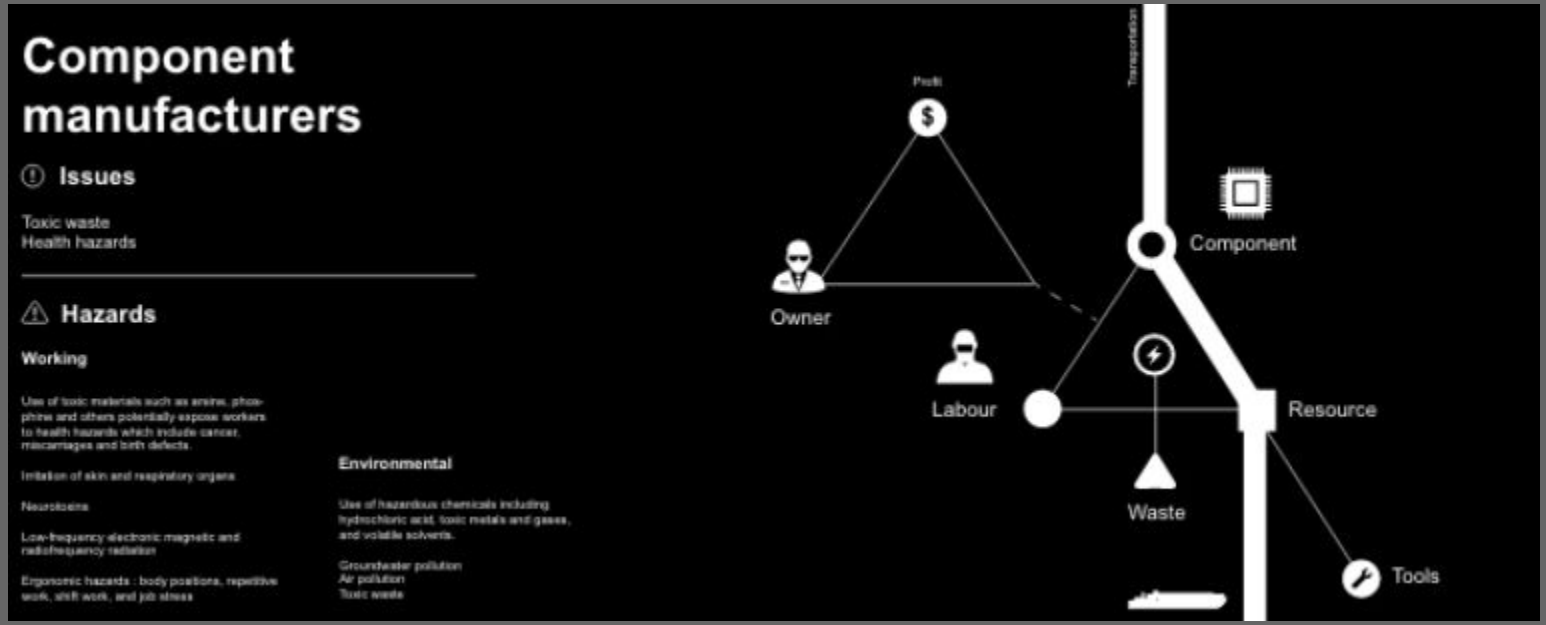
Dogs Look like their Owners

- Standards, platforms and infrastructures influence those that come after them
  - Can you have a truly distributed/autonomous system on the internet?
  - How does hardware design influence software design?
- Standards, platforms and infrastructures shape their users + cultures
  - Privacy norms
  - What is a “disorder”
- Standards, platforms and infrastructures are hard to disentangle

Power in Data Science



Power in Data Science



Power in Data Science

- Big Data assumes standards, infrastructures, norms
  - Assumes the human as a unit of *production*
  - Concentrates power
  - Legitimises existing systems
- Big Data incentivises certain ways of knowing, being, interacting with the world
  - New markets
  - New social norms
  - New levers of control

Guest Speaker

What does all of this mean?

- Our work is inherently political
- It has an impact on the world just by being
- It is our responsibility to confront, recognise and find balance with that