

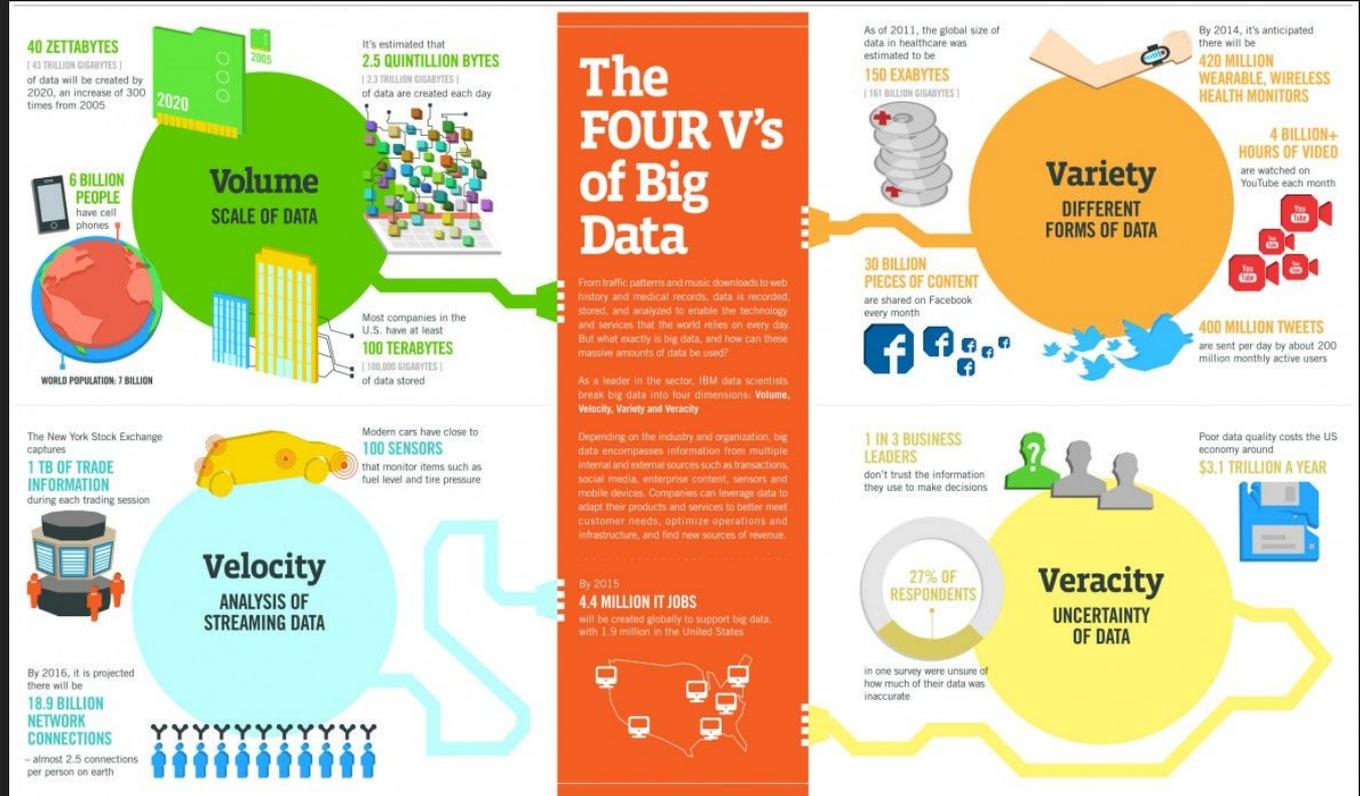
# Towards Participatory Democracy in the Big Data Age

Raazesh Sainudiin, Dept. of Mathematics, Uppsala Univ.  
Jan 7, 2020

for TokyoTech students in Technology Innovation Policy Analysis

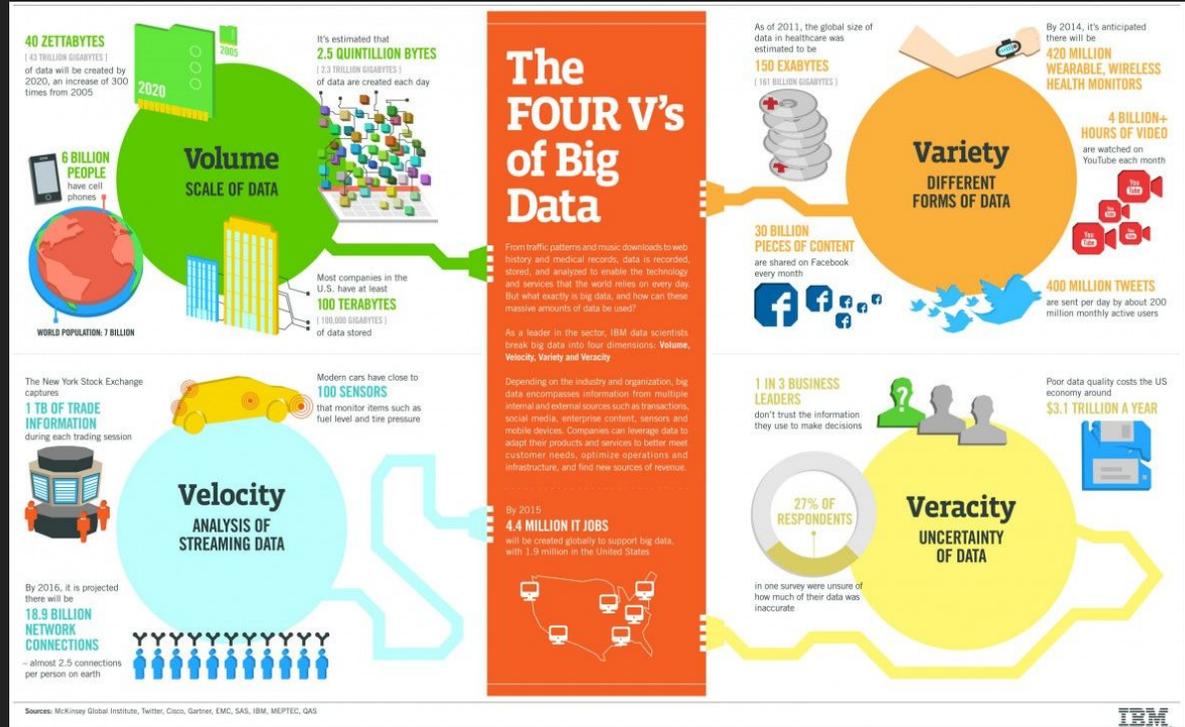
# What is the Big Data Age?

- Volume
- Velocity
- Variety
- Veracity

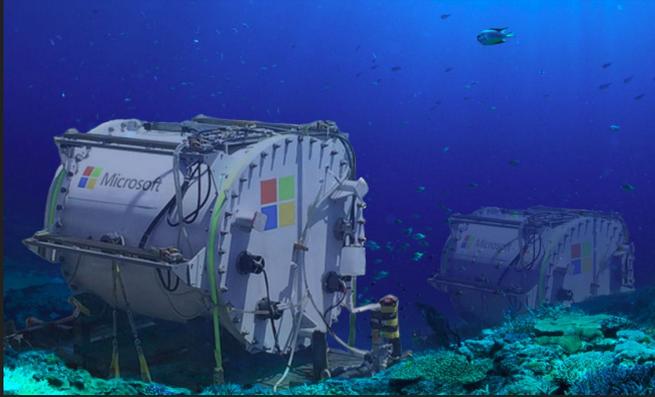


# What/Who is producing Big Data?

- people's online activity
- Machines and sensors
- more generally "things"



# Where do we Store & Compute the Big Data?



- *in huge computer farms*
- “Cloud” Storage and Computing



# Why is Data called the “New Oil”?

- improve processes by exploiting patterns in the data - *prediction?*
- How are patterns in data used for prediction?

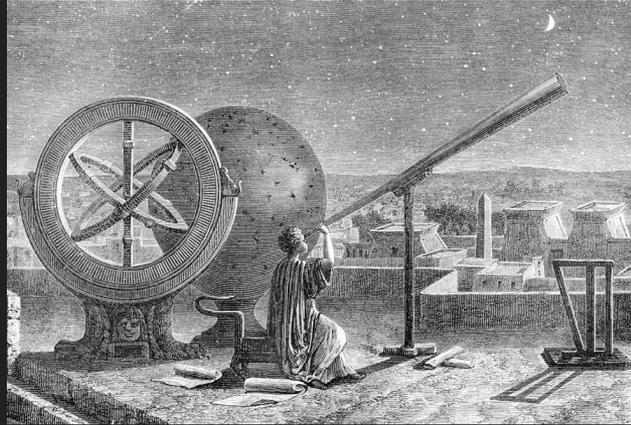
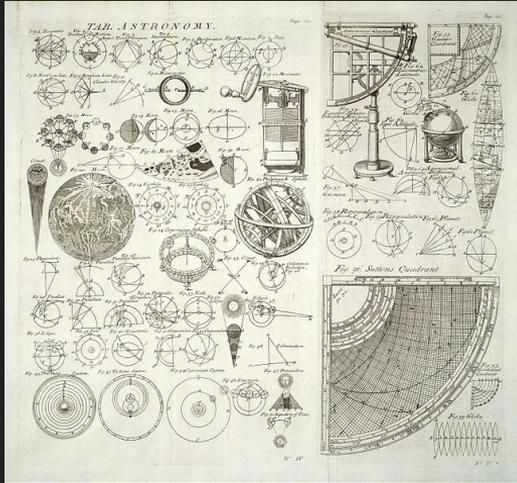


Is making prediction from observation new?

# Is making prediction from observation new?

No!

Astronomy is ancient.



How do you make prediction from observation?

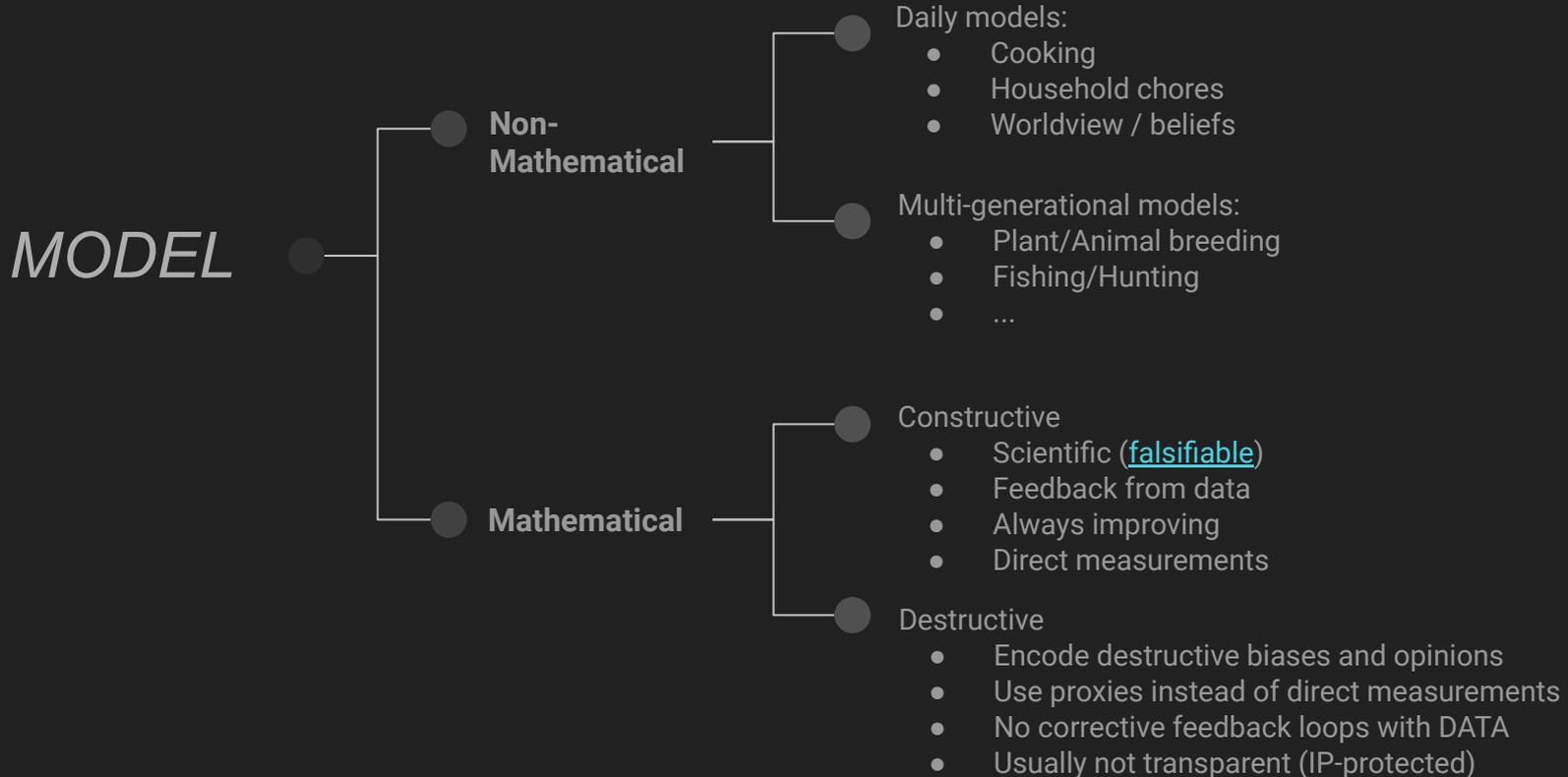
# How do you make prediction from observation?

The way you can go from observation to prediction is via a MODEL

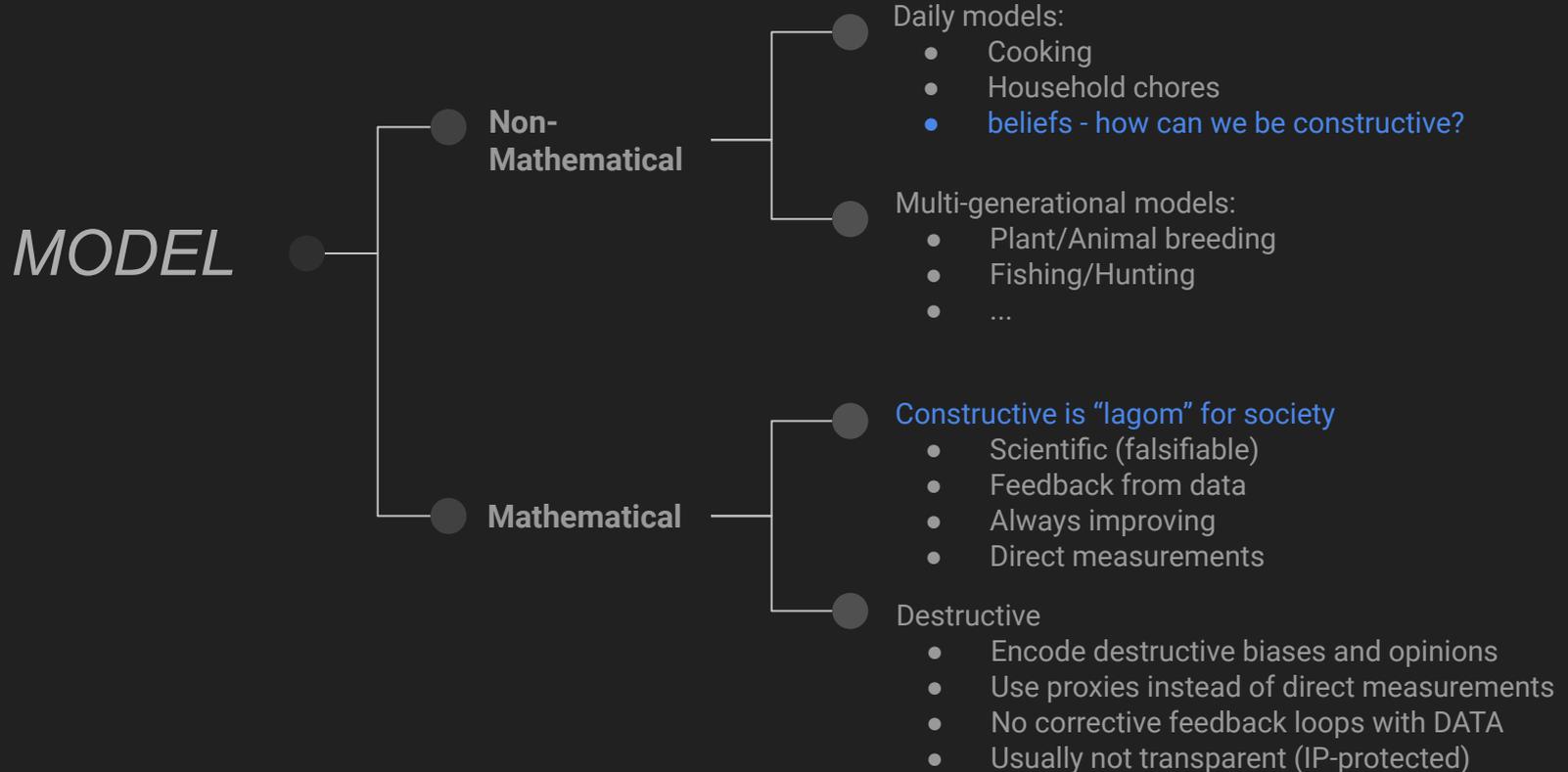


- Use *DATA* (past experience) as a feedback to improve your predictive model
- Model can be:
  - Non-mathematical (what we do with our brains all the time)
  - Mathematical (usually implemented as computer algorithm in the cloud)

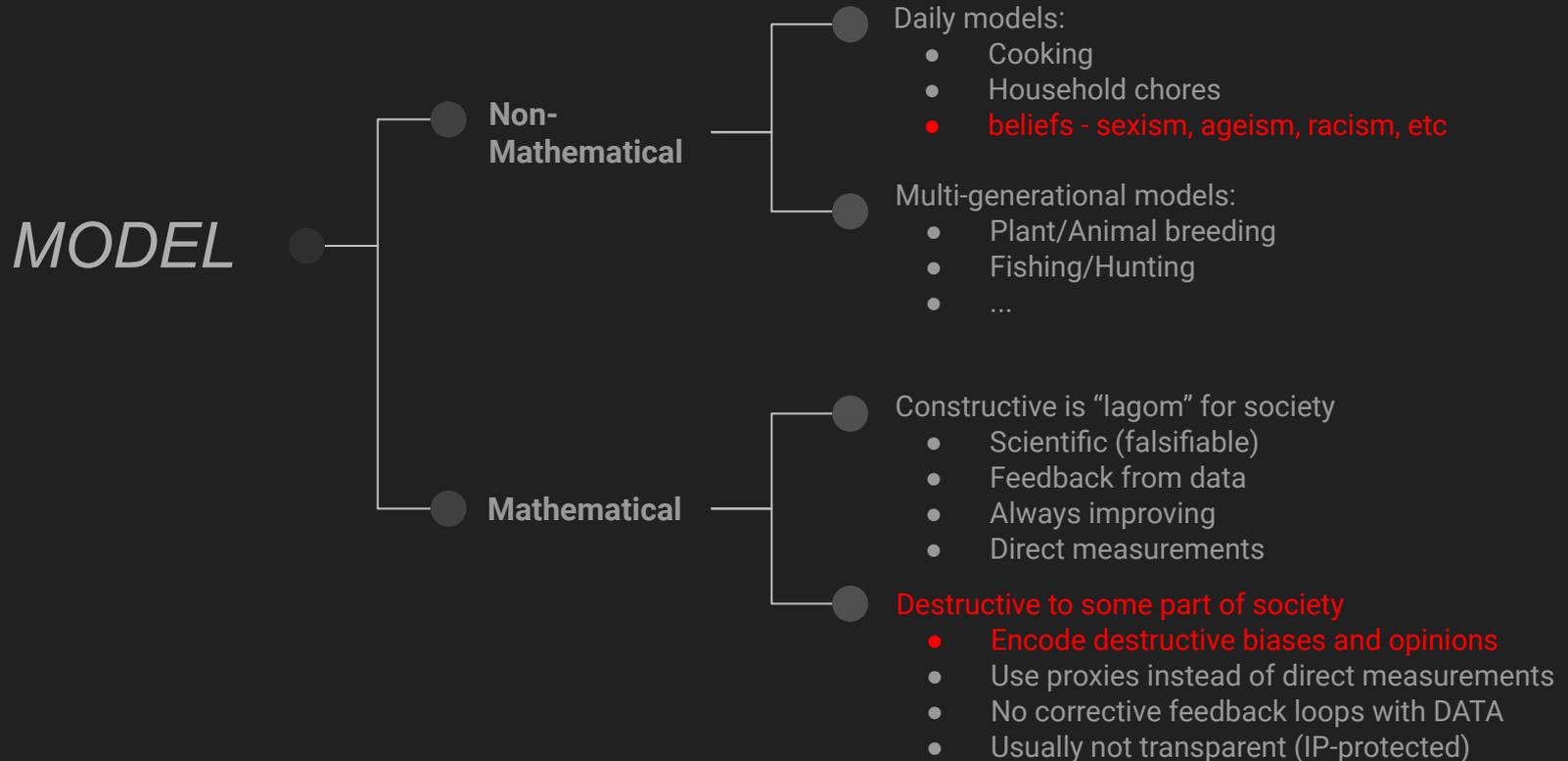
# How do you make prediction from observation?



“Models are biases & opinions encoded using mathematics in a computer program”, Cathy O’Neil



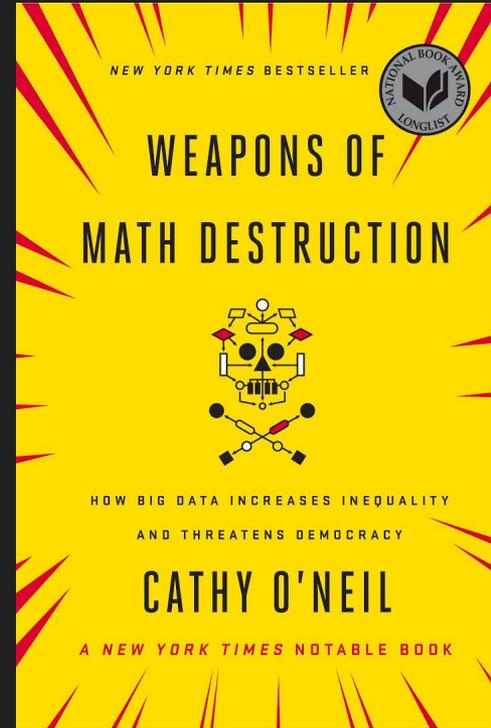
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# Models are used to automate life-changing decisions

- Algorithmic Trading in Finance
- Universities rat race for World Rankings
- Online Advertisement
- Getting a Job
- Performance in a Job
- Predictive policing & criminal justice (US)
- Getting credit
- Getting insurance
- Individually *micro-targeted citizen in social media*
- *Let's listen Cathy speak for 10 minutes now:*

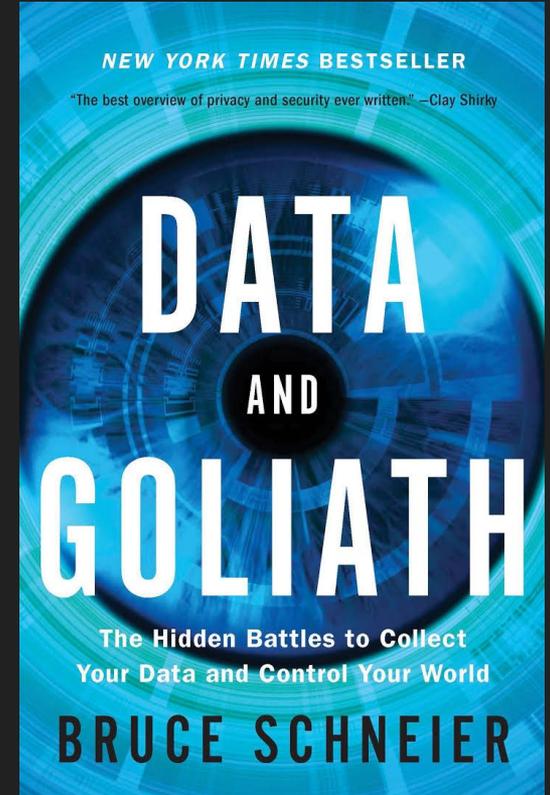
○ [https://www.ted.com/talks/cathy\\_o\\_neil\\_the\\_era\\_of\\_blind\\_faith\\_in\\_big\\_data\\_must\\_end#t-786714](https://www.ted.com/talks/cathy_o_neil_the_era_of_blind_faith_in_big_data_must_end#t-786714)



# Bruce Schneier's Fundamental Issue of the Information Age

<https://youtu.be/GhWJTWUvc7E?start=1580&end=1760>

“And it is not a matter of all surveillance is bad. I think this is a complex issue. This is an issue of designing systems to extract group value from our data while protecting people individually. And I actually think this is a fundamental issue in the information age. Our data has enormous value to us collectively, and our data has enormous value to us each individually. How do we reconcile this?”



# Surveillance Capitalism

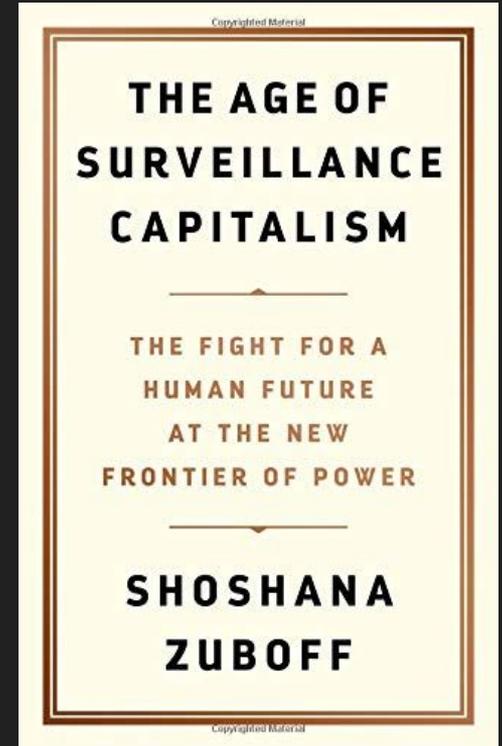
Here are some interviews with Shoshana Zuboff:

In her new book, “The Age of Surveillance Capitalism,” Zuboff offers a disturbing picture of how Silicon Valley and other corporations are mining users’ information to predict and shape their behavior.”

<https://news.harvard.edu/gazette/story/2019/03/harvard-professor-says-surveillance-capitalism-is-undermining-democracy/>

Watch: <https://youtu.be/hIXhnWUmMvw>

Listen: <https://podcasts.apple.com/se/podcast/ep-106-shoshana-zuboff/id1040481893?i=1000454914133&l=en>



# What can we do about it?

“Be the friction” says Shoshana Zuboff

<https://www.faz.net/aktuell/feuilleton/the-surveillance-paradigm-be-the-friction-our-response-to-the-new-lords-of-the-ring-12241996.html>