Algorithms and Social Injustice

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Introduction
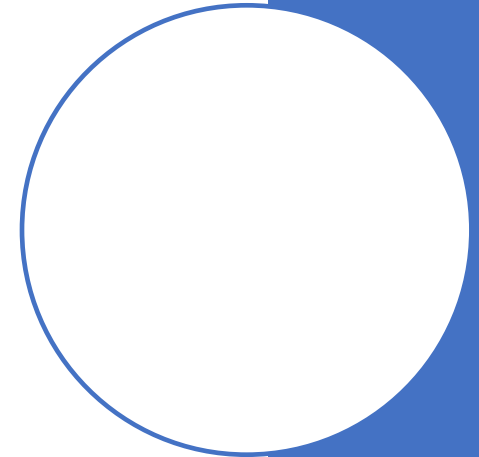
Phenomena

Causes

Strategies

1. Phenomena

Wide use of algorithms

What is an algorithm?

What is an algorithmic society ?

What are the problems of algorithms ?

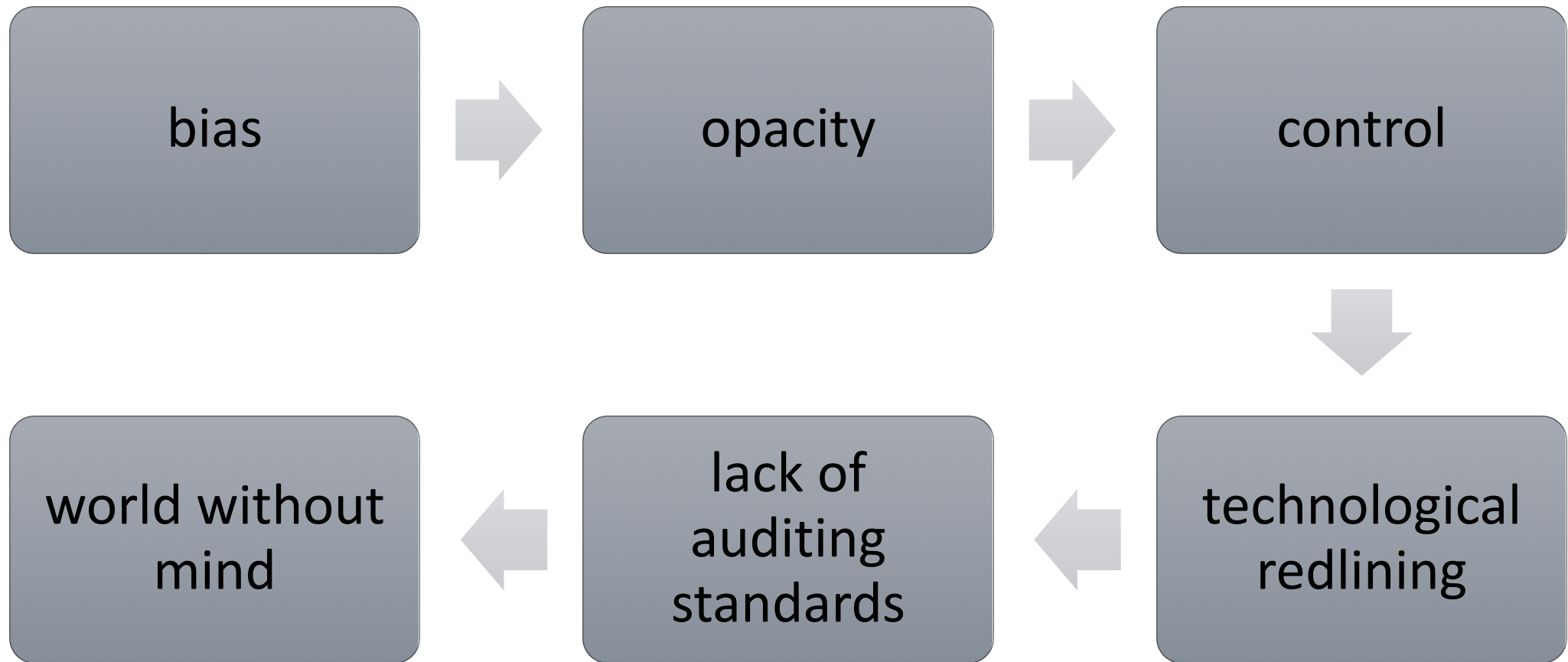Among many applications, algorithms are used to

- Sort résumés for job applications;

- Allocate social services;

- Decide who sees advertisements for open positions, housing, and products;

- Decide who should be promoted or fired;

- Estimate a person's risk of committing crimes or the length of a prison term;

- Assess and allocate insurance and benefits;

- Obtain and determine credit; and

- Rank and curate news and information in search engines.

- ……

What is an algorithm?

- An algorithm is a set of instructions for how a computer should accomplish a particular task. They are used by many organizations to make decisions and allocate resources based on large data sets.

- Algorithms are compared to recipes.

- In the words of mathematician Cathy O'Neil, an algorithm is an "opinion embedded in mathematics."
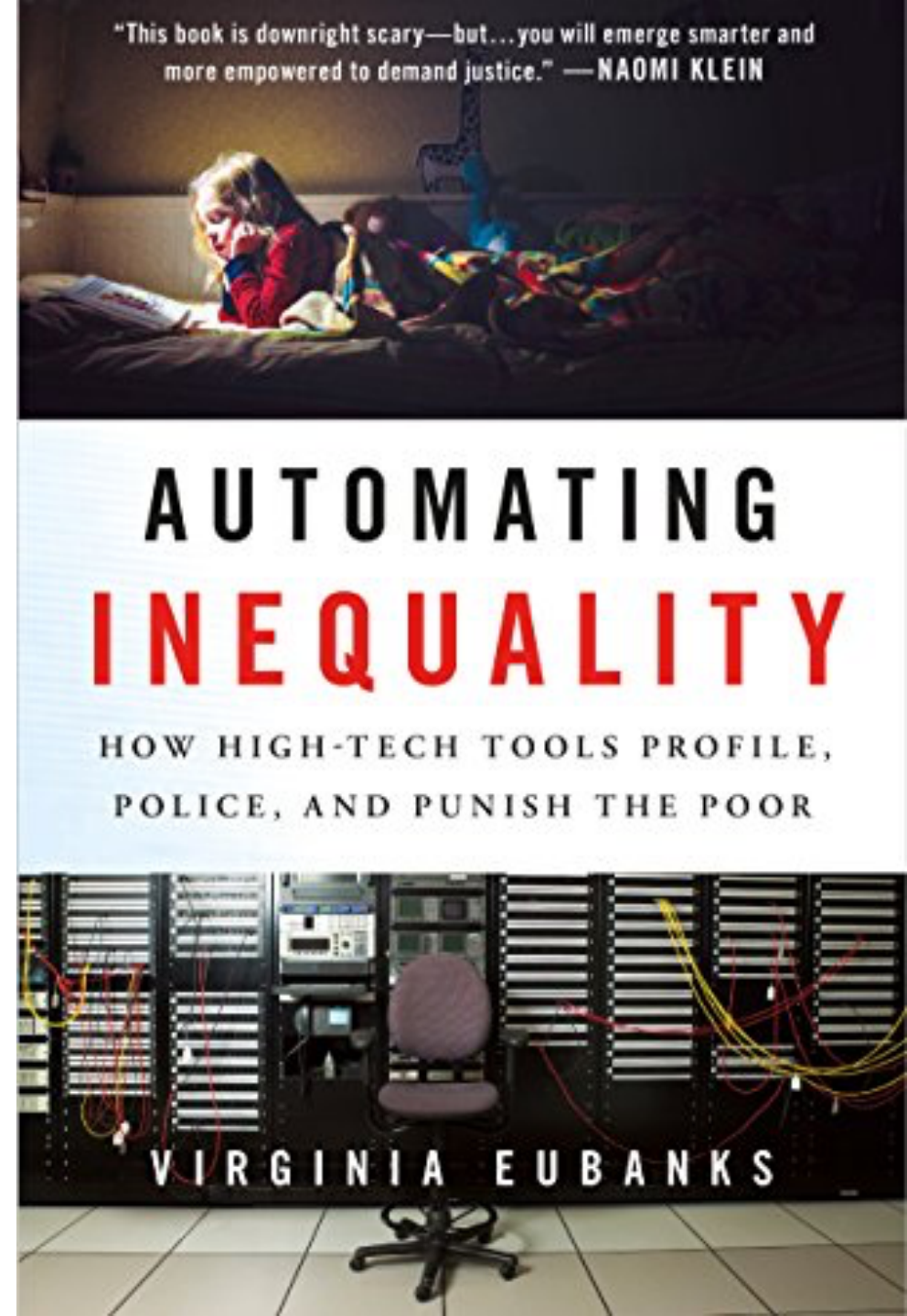
What is an algorithmic society?

- Although algorithm is difficult to define, some say that we have entered the algorithmic society, artificial intelligence, Big Data, the Internet, and the Internet of Things are just the overtures of the algorithmic society

- Jack Balkin:

https://kb.osu.edu/handle/1811/85769

bias → opacity → control

control ↓

technological redlining ← lack of auditing standards ←

lack of auditing standards → world without mind

Problems of algorithmic society

Automating Inequality

- … the use of automated decision-making in social service programs creates a "digital poorhouse" that perpetuates the kinds of negative moral judgments that have always been attached to poverty in America..

"This book is downright scary—but…you will emerge smarter and more empowered to demand justice." —NAOMI KLEIN

AUTOMATING INEQUALITY

HOW HIGH-TECH TOOLS PROFILE, POLICE, AND PUNISH THE POOR

VIRGINIA EUBANKS

Technically Wrong

 Many of the services we rely on are full of oversights, biases, and downright ethical nightmares. Chatbots that harass women. Signup forms that fail anyone who's not straight. Social media sites that send peppy messages about dead relatives. Algorithms that put more black people behind bars.
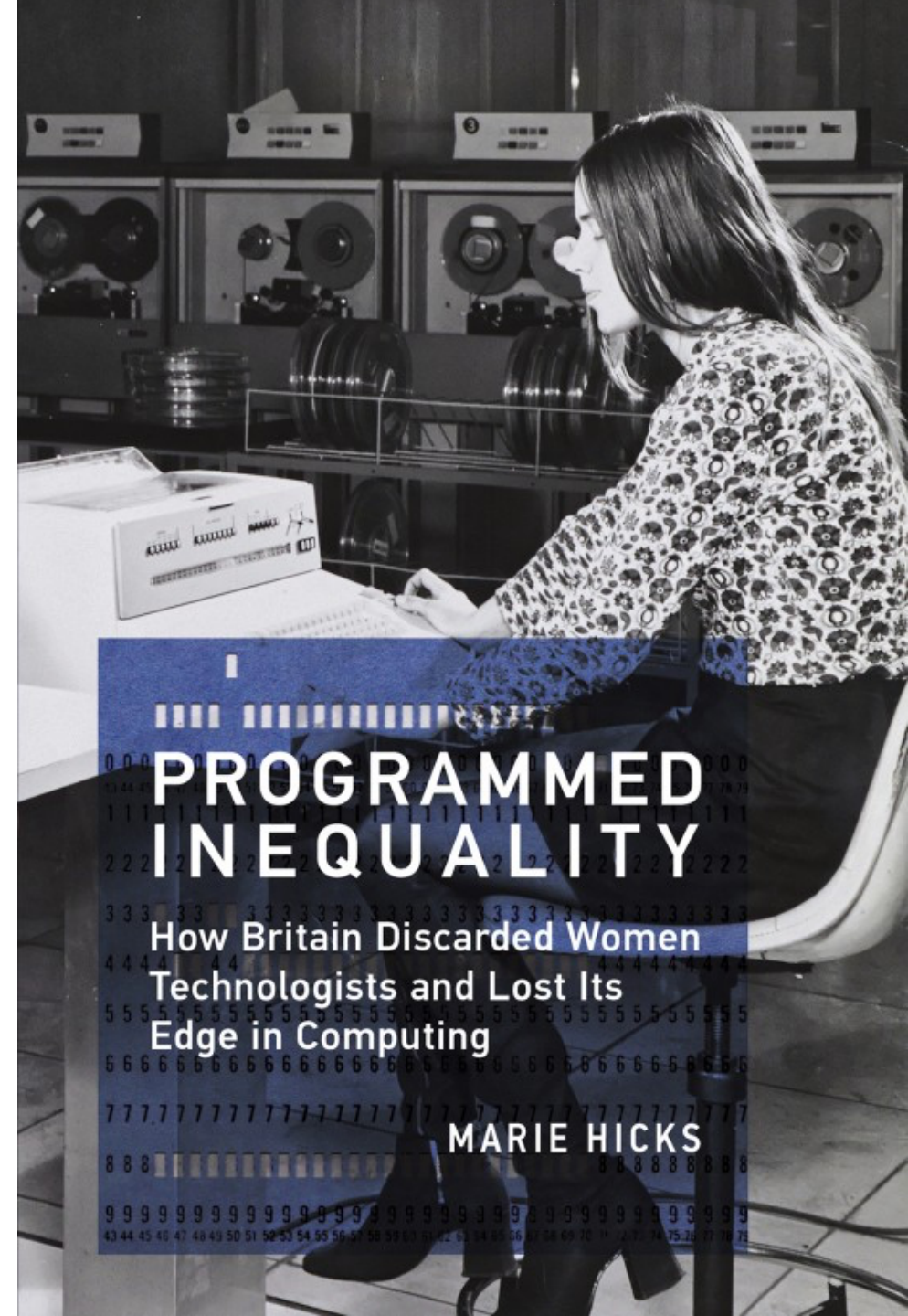
TECHNICALLY WRONG

SEXIST APPS, BIASED ALGORITHMS, AND OTHER THREATS OF TOXIC TECH

SARA WACHTER-BOETTCHER
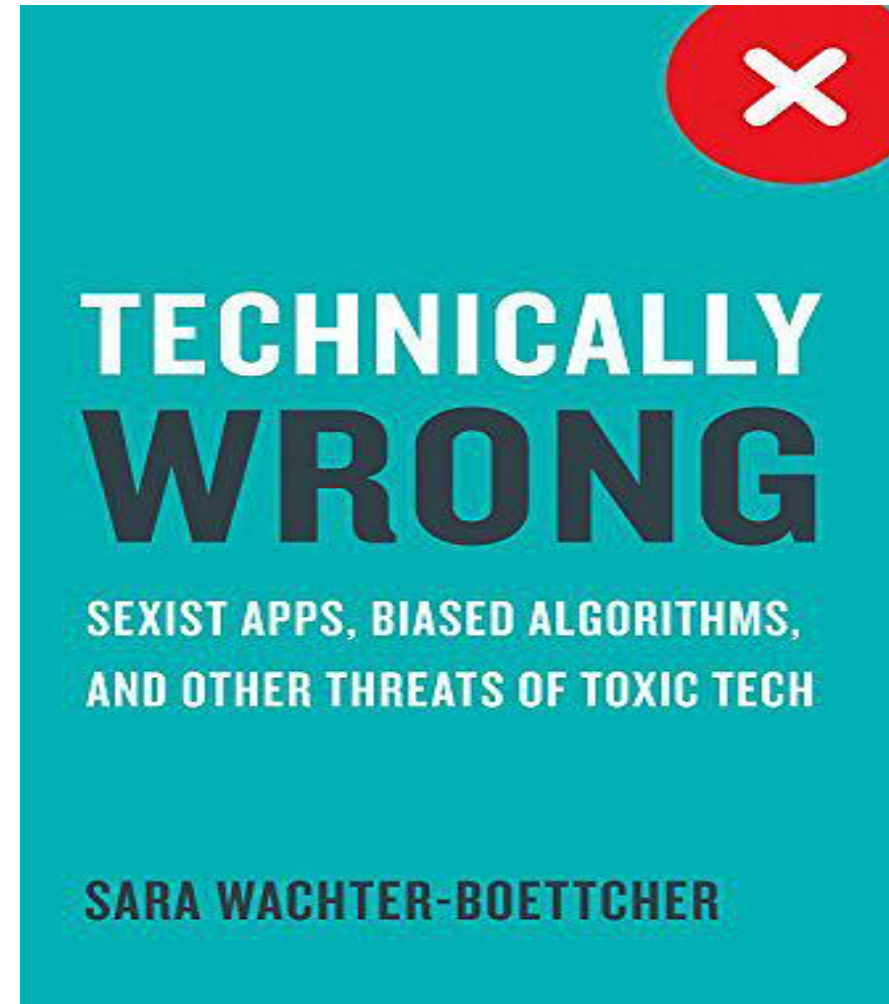
Algorithms of Oppression

• Noble argues that the combination of private interests in promoting certain sites, along with the monopoly status of a relatively small number of Internet search engines, leads to a biased set of search algorithms that privilege whiteness and discriminate against people of color, specifically women of color.
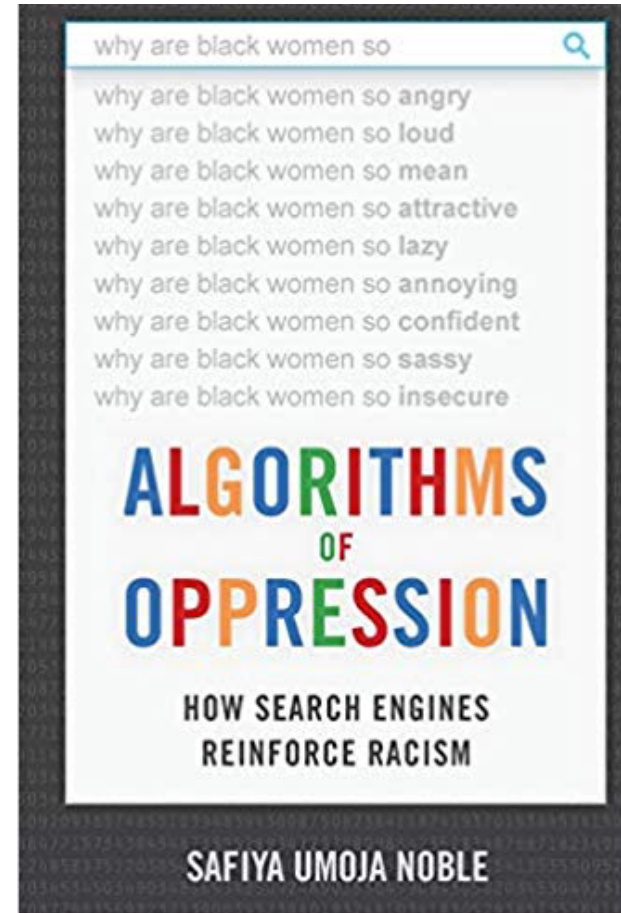
Programmed Inequality

How Britain discarded women technologists and lost its edge in computing

ProPublica

- We obtained the risk scores assigned to more than 7,000 people arrested in Broward County, Florida, in 2013 and 2014 and checked to see how many were charged with new crimes over the next two years, the same benchmark used by the creators of the algorithm.

- The score proved remarkably unreliable in forecasting violent crime: Only 20 percent of the people predicted to commit violent crimes actually went on to do so.

- https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing
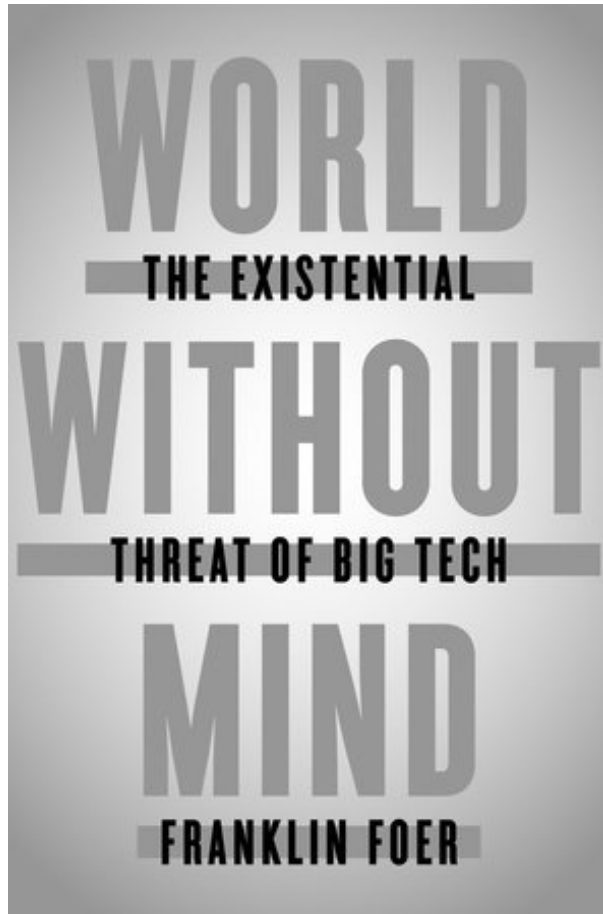
Weapons of Math Destruction

- WMDs

While Weapons of Math Destruction is full of hard truths and grim statistics, it is also accessible and even entertaining. O'Neil's writing is direct and easy to read - I devoured it in an afternoon -- Evelyn Lamb * Scientific American *
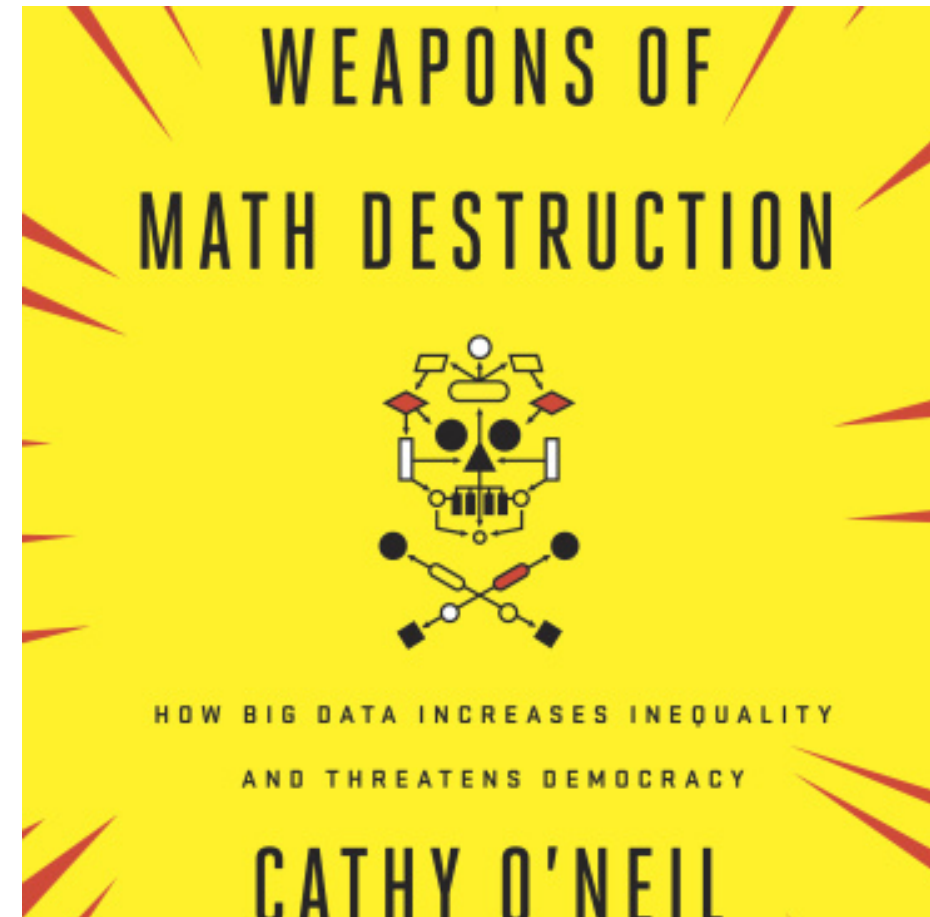
World without mind, or heart or soul

- "They (big internet companies) have produced an unstable and narrow culture of misinformation, and put us on a path to a world without private contemplation, autonomous thought, or solitary introspection—a world without mind. In order to restore our inner lives, we must avoid being coopted by these gigantic companies, and understand the ideas that underpin their success."

Understanding the nature of algorithmic inequality

- Resource: ontological inequality
- Distribution: teleological inequality
- Alienation: epistemological inequality

- Philosophical reflection
-

2. Causes
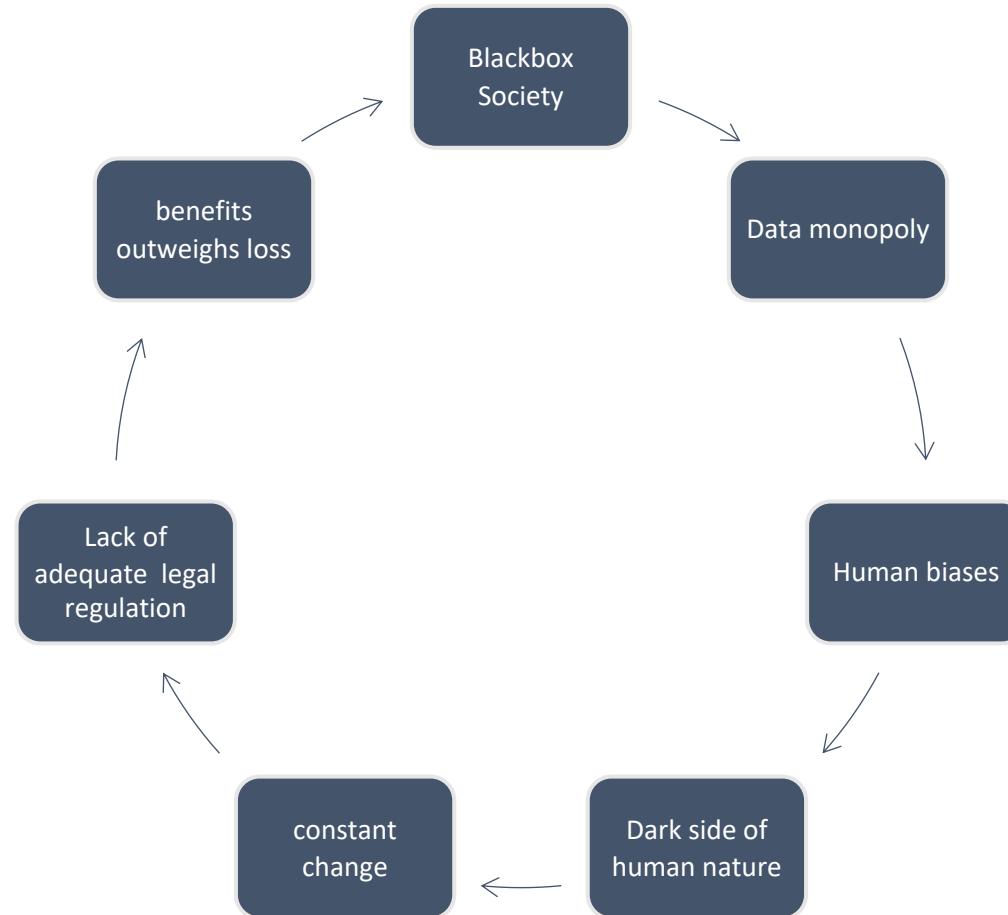
Black Box Society

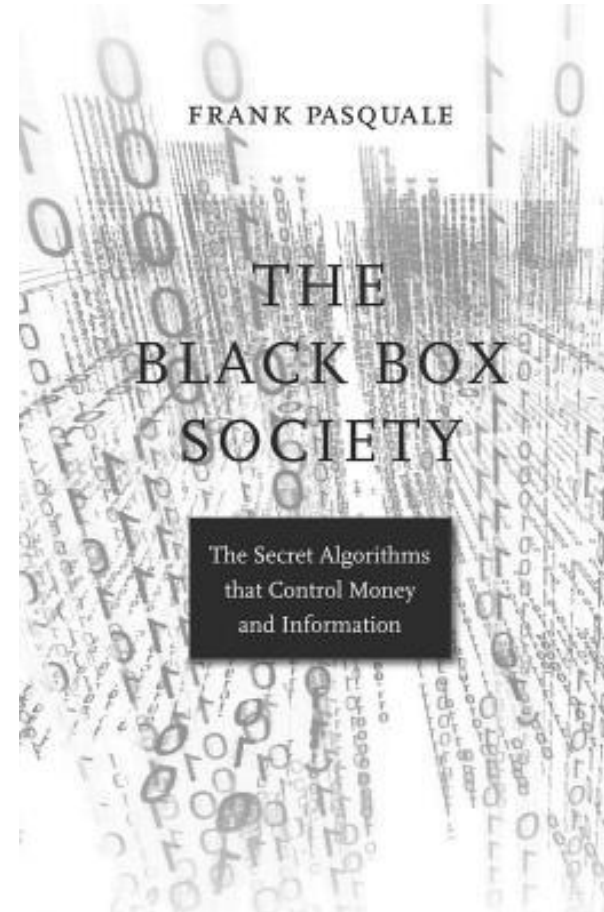- "In <u>The Black Box Society</u>, there are two meanings of "black box" - the first is the valuable and almost indestructible recording devices found on airplanes. The second is a system where you cannot identify its mechanisms - where you cannot tell how input becomes output. "

- https://www.goodreads.com/book/show/21878126-the-black-box-society

Data Monopoly

- **Economist: Data is the oil of the digital era**

- A century ago, the resource in question was oil. Now similar concerns are being raised by the giants that deal in data, the oil of the digital era. These titans—Alphabet (Google's parent company), Amazon, Apple, Facebook and Microsoft—look unstoppable. They are the five most valuable listed firms in the world. Their profits are surging: they collectively racked up over $25bn in net profit in the first quarter of 2017. Amazon captures half of all dollars spent online in America. Google and Facebook accounted for almost all the revenue growth in digital advertising in America last year.

  - https://www.economist.com/leaders/2017/05/06/the-worlds-most-valuable-resource-is-no-longer-oil-but-data

- **It's time to rein in the data barons**

  - https://www.technologyreview.com/s/611425/its-time-to-rein-in-the-data-barons/

Human Biases

- Discrimination
- Epistemological confinement

Dark side of human beings

- Gene-editing
- Use of new technology by the military

Lack of adequate legal regulation

- Paradigm shift
- Rapid technological development creates new legal relations that existing laws are not able to deal with.

Constant change

- Ephemeral existence of programs, etc.
- Temporality
- Momentarity

Benefits outweigh vices

- Privacy v Data exploitation
- Opacity v economic development
- …

3.Strategies

Algorithmic Accountability

Policy and legal supervision

Intellectuals, scholars have the duty to inform the whole population of advantages and disadvantages of the use of algorithms.

Cultivating the consciousness of the right to data

,Increasing consumer rights consciousness in the age of algorithms

Overcoming the mentality of techno utopianism

promoting data literacy and algorithmic proficiency

Algorithmic Accountability

- Algorithmic accountability is the concept that companies should be held responsible for the results of their programmed algorithms. The concept goes hand in hand with algorithmic transparency, which requires companies be open about the purpose, structure and underlying actions of the algorithms used to search for, process and deliver information.
  - https://searchenterpriseai.techtarget.com/definition/algorithmic-accountability
- US lawmakers have introduced a bill that would require large companies to audit machine learning-powered systems — like facial recognition or ad targeting algorithms — for bias.
  - https://www.theverge.com/2019/4/10/18304960/congress-algorithmic-accountability-act-wyden-clarke-booker-bill-introduced-house-senate

  - https://www.wyden.senate.gov/imo/media/doc/Algorithmic%20Accountability%20Act%20of%202019%20Bill%20Text.pdf

Promoting data literacy and algorithmic proficiency

- Gartner defines data literacy as the ability to read, write and communicate data in context, including an understanding of data sources and constructs, analytical methods and techniques applied — and the ability to describe the use case, application and resulting value.

  - https://www.cdotrends.com/story/14218/data-and-analytics-leader%E2%80%99s-guide-data-literacy

Policy and legal supervision

- Trust, but verify…
- https://jolt.law.harvard.edu/assets/articlePDFs/v31/31HarvJLTech1.pdf
- Data-driven regulation
- Code-driven regulation (algorithmic regulation)

Responsibilities of Intellectuals

- Intellectuals, scholars, especially scientists, have the duty to inform the whole community of advantages and disadvantages of the use of algorithms.

Cultivating the consciousness of the right to data

- Concept of the Right to Data
- GDPR: 8 main rights of data subjects
  - https://ec.europa.eu/commission/priorities/justice-and-fundamental-rights/data-protection/2018-reform-eu-data-protection-rules_en

  - https://advisera.com/eugdpracademy/knowledgebase/8-data-subject-rights-according-to-gdpr/

Increasing consumer rights consciousness in the age of algorithms

- Consumer rights will be most significant human rights in the algorithmic age.
- Individuals must make sure that they will not be made "an irrelevant person".

Overcoming the mentality of techno utopianism

- Techno-determinism
- Techno-utopianism
- Human reductionism or dehumanization

Conclusion

- Technology and science facilitate human flourishing.
- Both can be alienated to endanger human existence.
- Algorithmic society elevates human civilization to another level, but it may also be dehumanizing .
- It is imperative to find balance between advantages and disadvantages of such a society.
- This can be achieved through concerted efforts of scientists, professionals, government entities, enterprises, institutions, organizations and individuals.