NONFICTION

How do algorithms amplify inequality?

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Mar. 3, 2021   Word Count: 714

WEAPONS OF MATH DESTRUCTION
How Big Data Increases Inequality and Threatens Democracy
By Cathy O'Neil

In 2013, the political consulting firm, Cambridge Analytica, created an app that asked users questions to build psychological profiles. Nearly 300,000 users answered these questions. Cambridge Analytica also gained access to these users' Facebook friends' information. In a few years, the firm had collected the data of over [80 million](#) Facebook users. In preparing for the 2016 presidential election, Donald Trump's campaign team partnered with Cambridge Analytica and invested over [$44 million](#) in Facebook ads. They knew the data could be used to target profiles that may be swayed to vote for Trump.

The New York Times and *The Guardian* revealed this information to the public in March 2018. Shortly after, the Federal Trade Commission launched an investigation into whether Facebook violated national privacy protection laws. Mark Zuccerberg, the founder of Facebook, testified before Congress in April 2018, and later faced a [$5 billion fine](#). By September 2018, [26%](#) of Facebook users had deleted their profiles.

The Facebook-Cambridge Analytica scandal raised questions about surveillance technology and data breaches. How do our smartphones and computers gather our information? Who has access to this data? What can be done with this data?

Cathy O'Neil addresses these concerns in her *New York Times* Bestselling book "Weapons of Math Destruction". She defines algorithms as opinions that are written into code. Depending on how they are used, algorithms can become "weapons of math destruction", or WMDs - equations that reinforce inequalities

throughout society. O'Neil opens her book with a dedication to "all the underdogs" and spends the next 231 pages highlighting the experiences of those who are too often overlooked: the poor and nonwhite.

She makes her writing accessible for audiences who don't have any prior knowledge of big data. Big data refers to the vast amounts of data that are processed without the public's knowledge. O'Neil uses real-life examples that have either been introduced or exacerbated by WMDs. Her depictions of the injustices that WMDs perpetuate make it easy to identify with the victims of these destructive algorithms. Whether from personal experience, stories from loved ones, or O'Neil's imagery, readers feel the devastation of WMDs. With each chapter, she builds upon previous examples and weaves them all together. Her storytelling strengthens her argument that algorithms are not objective decision makers, and can instead create new problems, or make existing problems worse.

O'Neil builds her case when discussing the shortcomings of the *U.S. News* college rankings. Colleges that want to have high rankings evaluate applicants with a specific metric. Some coaches and tutors have cracked the formula and now teach students how to have a standout application. Unfortunately, these application boot camps cost thousands of dollars. This financial barrier excludes poor and middle class families.

O'Neil transitions into the next chapter by detailing how for-profit colleges take advantage of low income people. They gather users' online data and then target poor populations with predatory advertisements that lure students in with the false promise of a gateway to financial prosperity. For-profit colleges charge unsuspecting victims thousands of dollars more than their tuition is worth. To make matters worse, a degree from these schools is equivalent to, or in some cases less favorable than a high school diploma. In the end, the targets of this manipulation - who were disadvantaged to begin with - are cheated of their money and opportunities.

Although O'Neil helps readers understand the severity of the inequalities that come from WMDs, she doesn't provide a clear call to action. Her conclusion and afterword vaguely encourage readers to strive for a world where people can work together to hold companies accountable. She explains that algorithms need to be transparent to the public, undergo regular audits and work for the good of society. However, she doesn't provide concrete steps that readers can take to make this happen. Compared to detailed examples of the harms that WMDs inflict, O'Neil is rather brief when discussing how to make algorithms work for social good.

Still, O'Neil effectively illustrates the hidden horrors of WMDs. This book is a must-read for anyone interested in understanding why math isn't always as objective as it may seem.