Algorithms of Oppression: How Search Engines Reinforce Racism by Safiya Umoja Noble, NYU Press, 2018, xv+229pp., £22.99 (paperback), ISBN 9781479837243

Algorithms are everywhere, yet their presence and workings remain obscured. It is only recently that the discriminatory effects of algorithmic (machine learning, artificial intelligence) classification and decision-making are being exposed. Safiya Umoja Noble's *Algorithms of Oppression* is a ground-breaking book which declares that '...artificial intelligence will become a major human rights issue in the twenty-first century' (p.1). The author's argument - with a critical focus on the ubiquitous Google search engine - demolishes any beliefs that algorithms are benign or neutral in their operations and practices. Noble situates algorithms as integral to the socio-technical (re)production of digital and 'real-world' inequalities. She attests to how algorithms '...reinforce oppressive social relationships and enact new modes of racial profiling' (p.1). After reading this book, the quotidian call "Just Google it" will acquire an entirely different meaning.

Noble's book can be located in the emergence of a 'critical algorithm studies'. It sits alongside other significant texts such as *Weapons of Maths Destruction* (O'Neal) and *Automating Inequality* (Eubanks). What makes Noble's work stand out is an interdisciplinary approach that centres *race* in studying the effects of commercial search platforms. Across the book's six chapters, she adeptly connects the fields of critical race theory, gender and women's studies, information science, media studies and political economy. At the heart of this text is the political and methodological deployment of a cogent intersectional framework of 'black feminist technology studies' (p.171).

Algorithms of Oppressions begins with a troubling vignette about the author innocuously searching for "Black Girls" while looking after her step-daughter in 2011. We are led to believe that Google search results present us with the most meaningful and appropriate information. However, Noble is appalled to find dehumanizing pornographic references to black females and white supremacist vitriol being brazenly displayed. 'The best information, as listed by rank in the search results, was certainly not the best information for me or for the children I love. For whom, then, was this the best information, and who decides?' (p.5). Noble's seemingly matter-of-fact question instigates an interrogation of the hegemony of

corporate-controlled digital communication technologies which increasingly structure knowledge and govern how we come know the world: '...the results retrieved in a commercial search engine create their own particular material reality. Ranking is itself information that also reflects the political, social, and cultural values of the society that search engine companies operate within...' (p.148).

Since 2011, the author's original search query does not yield the same odious results. We could believe that Google has resolved this so-called 'glitch'. However, the propagation of online racist representations and tropes is far from an isolated occurrence or a thing of the past. As Noble highlights in 2016, the auto-tagging and AI facial recognition features of Google search was automatically classifying images of African Americans as 'apes' and 'animals'. And searching with the keyword "N*gger" in Google Maps displayed the location of the Whitehouse during Obama's presidency.

Google's lack of diversity in its workforce – 2% African American and 3% Latinos in 2016 – is clearly implicated in the alarming outputs of its products. Noble also stresses, the problem is more complex, beyond notions that 'bias' and 'glitches' are engineer or coding errors that can be remedied with a technical fix. While individual engineers can encode their own biases, 'racism and sexism are part of the architecture and language of technology' (p.9). Thus, the problem with Google and other social media platforms is *systemic,* entangled with the operations of digital-racial capitalism. Racism isn't a system bug - it's by *design*.

Noble's astute analysis of commercial search and information dissemination deconstructs how much of the internet has been colonised by corporate media behemoths such as Google and Facebook. The hierarchical listing of Google search results is a product of its propriety *PageRank* algorithm, which is influenced by a plethora factors including user queries, in-coming links and advertising revenue. Not only does search ranking promote and reify dominant ideologies of racism and misogyny, it effectively marginalizes alternative voices and representations from surfacing, especially those of women of colour.

The most disturbing example cited by Noble, of how Google search can skew what counts as legitimate knowledge, is the case of the massacre of nine African American worshippers in

2015 at a Church with a civil rights legacy, in South Carolina. The white nationalist murderer wrote a manifesto indicating his rage at the *apparent* crisis of 'black on white violence'. This spurious 'knowledge' was garnered after he conducted numerous Google searches on this topic. The top-most result to appear was the 'Council of Conservative Citizens' website, replete with deliberately false information about race and crime statistics. Noble highlights that the website, acting as a primary source of information for the murderer, secured high visibility by paying search ranking fees to Google. The problem of online dis-information and the main-streaming of far-right racist ideologies has exploded since the book was written. Noble's standpoint remains persuasive when she writes: 'We need a full-on reevaluation of the implications of our information resources being governed by corporate-controlled advertising companies' (p.5). She offers a compelling defence to maintain the internet as a *public* resource. And Noble's assertion 'that large technology monopolies such as Google need to be broken up and regulated' (p.3), is being increasingly echoed by commentators scrutinizing the monopolization of knowledge and power by 'big tech'.

One of the challenges of writing a book about technology is to make it accessible and relevant to (non-specialist) audiences. Noble has achieved this, as evident by the publicity and attention her book continues to receive. In this short review, it's not been possible adequately explore the book's depth of discussion, analysis and argument. It should be read by everyone interested in discovering how both extant and new modes of racism are operating in contemporary society. If you still believe that on- and off-line worlds aren't profoundly entangled, then reading *Algorithms of Oppression* is sure to shift your perspective. Noble has produced a carefully crafted text that is deeply committed to democratising technology in the pursuit of racial equality and justice.

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