

# Code Dependent

Living in the Shadow of AI

MADHUMITA MURGIA

PICADOR



First published 2024 by Picador  
an imprint of Pan Macmillan  
The Smithson, 6 Briset Street, London EC1M 5NR  
*EU representative:* Macmillan Publishers Ireland Limited,  
Macmillan Publishers Ireland Limited, 1st Floor,  
The Liffey Trust Centre, 117–126 Sheriff Street Upper,  
Dublin 1 D01 YC43  
Associated companies throughout the world  
[www.panmacmillan.com](http://www.panmacmillan.com)

ISBN 978-1-5290-9730-6 HB  
ISBN 978-1-5290-9731-3 TPB

Copyright © Madhumita Murgia 2024

The right of Madhumita Murgia to be identified as the  
author of this work has been asserted by her in accordance  
with the Copyright, Designs and Patents Act 1988.

All rights reserved. No part of this publication may be reproduced,  
stored in a retrieval system, or transmitted, in any form, or by any means  
(electronic, mechanical, photocopying, recording or otherwise)  
without the prior written permission of the publisher.

Pan Macmillan does not have any control over, or any responsibility for,  
any author or third-party websites referred to in or on this book.

1 3 5 7 9 8 6 4 2

A CIP catalogue record for this book is available from the British Library.

Typeset by Palimpsest Book Production Ltd, Falkirk, Stirlingshire  
Printed and bound by CPI Group (UK) Ltd, Croydon, CR0 4YY



This book is sold subject to the condition that it shall not, by way of  
trade or otherwise, be lent, hired out, or otherwise circulated without  
the publisher's prior consent in any form of binding or cover other than  
that in which it is published and without a similar condition including  
this condition being imposed on the subsequent purchaser.

Visit [www.picador.com](http://www.picador.com) to read more about all our books  
and to buy them. You will also find features, author interviews and  
news of any author events, and you can sign up for e-newsletters  
so that you're always first to hear about our new releases.

# Introduction

Just over a decade ago, as I was starting out in journalism, I became curious about a harmless-sounding digital object known as a ‘cookie’.

I thought I knew what it was. A piece of code on my device that worked as a tagging mechanism for internet companies to identify me and learn more about my online behaviour. These cookies kept popping up every time I visited any website on my phone or computer, asking for my permission to start a digital trail of crumbs. So I decided to find out where they led.

Reporting that story for *Wired* magazine<sup>1</sup> took me down a dizzying series of rabbit holes that I am yet to emerge from fully. It revealed the murky world of ‘data brokers’ – shadowy companies that collect data about our online lives and turn them into saleable profiles of who we are today, and who we will one day become. And eventually, it took me beyond the brokers, deep into the business models of the world’s most valuable companies, grouped loosely together as Big Tech, who made their money in the same way: by converting our lives into swarming clouds of data for sale.

But before I followed that trail, I wasn’t convinced I wanted to spend several months writing about a bunch of statistics. I needed to make the story feel tangible to me. What did all that data actually look like? So I tracked down the profile of someone I was intimately familiar with. Myself.

To do this, I found a small adtech start-up called Eyeota, which walked me step-by-step through how I could pull the information being collected about me from my own web browser and then decoded it for me.

The afternoon that Eyeota sent me the full report of an ‘anonymized’ version of me, I was on a train to Brighton. It included a report that ran to more than a dozen pages compiled by Experian, a credit-rating agency that doubled as a data broker.

Experian had categorized me as a ‘Bright Young Thing’, one of sixty-four profiles that it had available at the time – a category of young professionals living in urban flats.

The profile described a twenty-six-year-old British Asian woman working in media and living in a north-west neighbourhood in London. It detailed her TV-watching habits (on-demand rather than cable), food preferences (Thai and Mexican), her evening and weekend plans. It even broke down her spending in detail – on restaurants and travel, rather than on furniture or cars.

The data Eyeota sent listed the number of holidays this woman had taken in the past year and indicated an imminent flight purchase. It suggested that she didn’t have any children or a mortgage, and that she usually buys her groceries at Sainsbury’s, but only because it’s on her way home. It predicted she had a cleaner who let herself in while she was at work.

Beyond her day-to-day activities, a little section at the end outlined her ‘liberal opinions’ – including her level of ambition, political leanings and personality traits (optimistic, ambitious, not easily swayed by others’ views).

I remember the feeling of shock and I spent an hour mulling over this set of characteristics that came pretty close to defining me as a person. Of course, that data cloud wasn’t a true representation of reality – it had missed out much of the nuance that made me, me – but through a pattern picked out of my online data, the

## INTRODUCTION

cookies had created an approximation, a shadow of me that was somehow recognizable.

The story, which was published in *Wired* in 2014, revealed a multi-billion-pound industry of companies that collect, package, and sell detailed profiles like the one I had found, based on our online and offline behaviours. The discovery revealed to me a lucrative business model that profited off all our digital behaviours.

I started to unpick the structure of this flourishing data economy. Every time I interacted with an online product – say Google Maps, Uber, Instagram, or contactless credit cards – with a single click, my behaviour was logged by these little cookies. Combined with public information such as my council tax or voter records, along with my online shopping habits and real-time location information, these benign datasets could reveal a lot about me, from my gender and age, down to nuances about my personality and my future decision-making.

My life – and yours – is being converted into such a data package that is then sold on. Ultimately, we are the products.

This glimpse, ten years ago, into the nascent world of data scraping sowed in me a seed of fascination about all the data we were generating by simply living in the modern world – and what was being done with it.

I've spent the rest of my career chronicling the fortunes, both financial and otherwise, of the companies built on top of these data dumps: corporate giants like Google, Meta and Amazon, who have refined the gushing data reserves pouring into their platforms, generated by billions of people around the world. To make their money, these companies had learned to mine the data, and use it to sell personalized and targeted recommendations, content, and products.

The heir to the big data business is a single technology that I first learned about in 2014: artificial intelligence. The term has

morphed and mutated over recent years, but essentially AI is a complex statistical software applied to finding patterns in large sets of real-world data.

The technology's dramatic progress over the last few years has been contingent on three things: the explosion of available data on human behaviour and creativity, the increasingly powerful chips needed to crunch this data, and the consolidated power of a few large technology companies that could dedicate the considerable resources required to supercharge its development.

Tech giants like Google and Meta have applied machine learning to target advertising as narrowly as possible and grow their worth up to \$1tn. This lucrative business model that monetizes personal data is what American social psychologist and philosopher Shoshana Zuboff has called 'surveillance capitalism'.

As the artist James Bridle wrote in an essay last year, 'These companies made their money by inserting themselves into every aspect of everyday life, including the most personal and creative areas of our lives: our secret passions, our private conversations, our likenesses and our dreams.'<sup>2</sup>

\*

Nowadays, we live daily alongside automated systems built on data, their inner workings dictating our personal bonds, power dynamics at work, and our relationship with the state. We lean on algorithmic technology just as we once did on each other, and our ways of life – globally – are shifting to accommodate them.

When you open Google Maps to plot a route for your holiday run, call out to Alexa, book an Uber or a self-driving Waymo, you are dealing with a form of AI. The content on your social feeds and the ads you are served for golfing holidays or children's clothing are targeted at you using AI. When you try to get a loan from a bank, you are screened by AI. What price you pay for your home,

## INTRODUCTION

or your car insurance, are decided by AI. When you are interviewing for a job, your face and responses may be analysed by AI. Maybe you even used AI to *write* your job application. And if you ever end up in the criminal justice system, your fate – bail or jail – could be determined by AI.

The outputs of AI software today can help human experts make consequential decisions in areas such as medical diagnoses, public welfare, mortgage and loan requests, hiring and firing, among others. Cutting-edge AI software is even used by researchers, such as chemists, biologists, geneticists and others, to speed up the scientific discovery process.<sup>3</sup>

Over the past year, we have seen the rise of a new subset of AI technology: generative AI, or software that can write, create images, audio or video in a way that is largely indistinguishable from human output. Generative AI is built on the bedrock of human creativity, trained on digitized books, newspapers, blogs, photographs, artworks, music, YouTube videos, Reddit posts, Flickr images and the entire swell of the English-speaking internet. It ingests this knowledge and is able to generate its own bastardized versions of creative products, delighting us with this humanlike ability to remix and regurgitate.

For many of us today, this is embodied in ChatGPT, a website that can respond with detailed answers to conversational queries – our first *direct* interaction with an AI system, made more magical by the fact that it can ‘talk’ back to us using our own method of communication: written language.

This has marked a profound shift in our relationship with machines. As the new generation of AI can articulate using words and visuals and is trained on our own academic and creative outputs, it can easily manipulate our moods and our emotions, and persuade us what to think and how to behave, in a more powerful way than ever before.

I had already seen AI insidiously enter our lives over the past

decade, and when I set out to write this book, I wanted to find real-world encounters with AI that clearly showed the consequences of our dependence on automated systems. Now, the rise of generative AI systems has made this need obvious and urgent. Over the past year, we have begun to see, already, the early human impact of technologies like ChatGPT: on our work, on children's education and on creativity. But AI is simultaneously affecting other, significant areas of our society: healthcare, policing, public welfare and military warfare, creating rippling consequences and lasting social change. It is altering the very experience of being human. That's what this book is about.

\*

My job at *Wired* magazine served to turn me into an inveterate techno-optimist. When writing daily about DNA editing, flying cars, 3D-printed Moon bases and brain-machine interfaces, it is impossible *not* to be amazed by the ingenuity of humanity and our high-tech creations. I was also captivated by the innovators themselves: mad-cap inventors, brash entrepreneurs and irrational dreamers.

So, when I began researching this book, I expected to uncover stories of how artificial intelligence had solved gnarly problems, taken on insurmountable challenges and dramatically improved people's lives. This was the promise of *all* new technologies, something I learned to believe in many years ago.

Each of these stories could be yours. AI systems will impact your health, your work, your finances, your kids, your parents, your public services and your human rights, if they haven't already.

I wanted to ask the small, human questions. What does it feel like to 'talk' to a black-box system? Do you get a choice between human or machine? How do you appeal a life-altering decision made by an app? What would you need to know to be able to trust it? How would you know when *not* to trust it?



## INTRODUCTION

To find answers, I went on a journey around the world, observing how ubiquitous automated systems are shaping the ways of life for different communities. Each of the lives you will encounter charts the unintended consequences of AI on an individual's self-worth, on families, communities, and our wider cultures. Through their experiences, I hope to answer the question I started out with: how is artificial intelligence changing what it means to be human?

\*

Despite my innate optimism about technology, the mosaic of stories I had found told a different, darker tale.

I had made a deliberate choice to focus on people living outside of Silicon Valley, far from the nexus of technological power, yet subject to the consequences of this new group of technologies. But as I uncovered them one by one, it became impossible to avoid the elephant in the room: that the power is concentrated in the hands of a few companies, who hold all the cards.<sup>4</sup>

Exploring this imbalance led me to sociologists Nick Couldry and Ulises Mejias via their book *The Costs of Connection* and their big idea: data colonialism. The land grab they refer to is human lives converted into continuous streams of data. And through this never-ending stream, they see historical continuities with colonialism, where the inequalities of the past keep growing and, ultimately, the datafication of society is nothing but a new form of plunder and oppression.

Couldry points at gig work – app workers for places like Uber, Deliveroo or DoorDash – whose livelihoods and lives are governed by algorithms that determine job allocation, wages and firing, among other things. ‘It’s a tyranny,’ he told me. ‘There are moral questions here about what limits we must have to make lives liveable. This is where solidarity between people around the world is important.’

There are common struggles between workers in Brazil, in India, in China, in the US – it might not seem urgent in San Francisco right now, but it soon will be.’

For me, this framing was a revelation. Slowly, the connections between the individuals in this book began to crystallize, like a Polaroid photo appearing in bright contrast from a swirl of hazy shapes. It dawned on me that the framework linking the algorithmic encounters I had gathered, spanning seemingly disconnected people, times and places, was actually predictable, and had been conceptualized by a small but growing community of academics around the world. Some names proposing the early roots of these ideas I recognized – Timnit Gebru, Joy Buolamwini, Kate Crawford, Cathy O’Neill, Meredith Whittaker, Virginia Eubanks<sup>5</sup> and Safiya Umoja Noble.<sup>6</sup> They were all, I noted, women, and their areas of expertise were in studying the disproportionate harms of AI experienced by marginalized communities.

As I read their work and followed the trail of academic papers they cited, I discovered a wider pool of authors that were lesser known to the mainstream. These researchers were mostly women of colour from outside the English-speaking West, ranging from Mexico’s Paola Ricaurte,<sup>7</sup> to Ethiopian researcher Abeba Birhane, India’s Urvashi Aneja, and Latin American researchers Milagros Miceli and Paz Pena. These women had witnessed first-hand what discrimination and social inequity in their communities looked like, and many were inhabitants of the very places highlighted in this book.

Time and again, their work drew the same conclusions that Couldry and Mejias’s data colonialism theory had. Scalable systems like machine learning are built to benefit large groups, but tend to work well at the expense of some. The ‘some’ are usually individuals and communities that are already othered, floating in society’s blurry edges, fighting to be seen and heard. In the lives of the people in

## INTRODUCTION

this book alone, I could see how AI systems had harmful effects on women, black and brown people, migrants and refugees, religious minorities, the poor and the disabled, to name a few.

Human beings, and the endless lines of code we live by, are co-dependent. Our blindness to how AI systems work means we can't properly comprehend when they go wrong or inflict harm – particularly on vulnerable people. And conversely, without knowledge of our nature, ethical preferences, history and humanity, AI systems cannot truly help us all.

\*

The power of machine-learning models is that they make statistical connections that are often invisible to humans. Their decisions and methods are not determined by the people who build them, which is why they are described as black boxes. This makes them supposedly far more objective than their human counterparts, but their reasoning can be opaque and non-intuitive – even to their creators.

For instance, researchers developing Covid-19 diagnostic algorithms used a corpus of pneumonia chest X-rays as a control group, which happened to belong to children aged one to five. This resulted in their models erroneously learning to distinguish children from adults, rather than Covid from pneumonia patients.<sup>8</sup> These systems are mysterious entities with unknowable cognitive patterns.

Aside from being technically opaque, people whose lives are impacted by automated systems are rarely aware of it. The way in which algorithms have been introduced into society has caused an erosion of our individual feelings of autonomy, but also a diminishing of the power and agency of those we trust as experts – transfiguring our society.

If individuals are aware of an algorithm making decisions that affect them, they are usually locked out of the system's workings,

by institutions and companies. We're all stuck in an endless loop of 'computer says no'.

Losing our sense of autonomy and control means it is harder to take responsibility for our own actions. It becomes harder to legally assign blame or judgement to individuals or corporations, who can place responsibility on AI software. After all, a machine can't yet be put on trial.

In the 1980s, Stanford psychologist Albert Bandura described agency – that feeling of control over our actions and their consequences – as intrinsic to human nature and, ultimately, to our evolution as a species. Humans, he said, were *contributors* to their life circumstances and society, not just a product of them.<sup>9</sup>

Bandura outlined how people exercised their influence in three distinct ways: as individuals, through proxies and as a collective. Proxy agents are generally people with expertise or resources – like doctors, law enforcement officers or elected representatives – that we choose to speak for us, and collectives pool their knowledge and power to shape a better future for everyone.

Philosophers believe that ultimately a person's freedom is threaded inextricably with the quality of their agency – their ability to perceive their actions and desires as their own, and to feel able to create change. In small and large ways, AI systems are impinging on this, creating a feeling of individual disempowerment – even a sense of loss of our free will.

This is our predicament as a society: the ways in which AI, and other statistical algorithms, are governed over the coming years will profoundly impact us all. Yet we lack the tools to interrogate that change. We don't fully comprehend their impacts. We cannot decide what morals we want to encode in these systems. We disagree on the controls we may want to impose on AI software. We are collectively relinquishing our moral authority to machines.

But while people are feeling robbed of their individual ability to

## INTRODUCTION

direct their own actions and attention, AI systems have led, unexpectedly, to a strengthening of *collective* agency. Ironically, the intrinsic qualities of automated systems – their opaqueness, inflexibility, constantly changing and unregulated nature – are galvanising people to band together and fight back, to reclaim their humanity.

By reflecting on the march of AI, we can start to address the imbalances in power, and move toward redress. My hope is that the experiences of the people in this book will rouse us from our fears, to take back our agency and self-respect. My chosen subjects, on the surface, had nothing in common: a doctor in rural India, a food delivery worker in Pittsburgh, an African American engineer, an Iraqi refugee in Sofia, a British poet, an Argentinian bureaucrat, a single mother in Amsterdam, a Chinese activist in exile and a priest in Rome. But as I tugged on those individual threads, they formed a coherent design. And you are in the centre of it.