



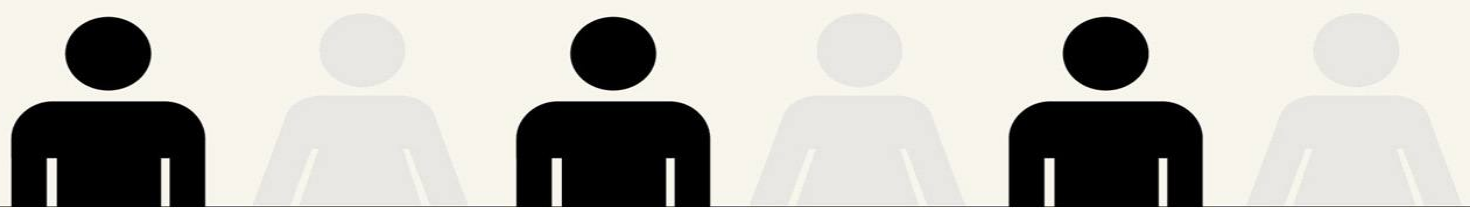
# INVISIBLE WOMEN



DATA BIAS IN A WORLD  
DESIGNED FOR MEN



CAROLINE CRIADO PEREZ





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**CAROLINE CRIADO PEREZ**





BY THE SAME AUTHOR

*Do it Like a Woman*



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*Data Bias in a World  
Designed for Men*

Caroline Criado Perez

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*For the women who persist: keep on being bloody difficult*

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Representation of the world, like the world itself, is the work of men; they describe it from their own point of view, which they confuse with the absolute truth.

Simone de Beauvoir

# Preface

Most of recorded human history is one big data gap. Starting with the theory of Man the Hunter, the chroniclers of the past have left little space for women's role in the evolution of humanity, whether cultural or biological. Instead, the lives of men have been taken to represent those of humans overall. When it comes to the lives of the other half of humanity, there is often nothing but silence.

And these silences are everywhere. Our entire culture is riddled with them. Films, news, literature, science, city planning, economics. The stories we tell ourselves about our past, present and future. They are all marked – disfigured – by a female-shaped 'absent presence'. This is the gender data gap.

The gender data gap isn't just about silence. These silences, these gaps, have consequences. They impact on women's lives every day. The impact can be relatively minor. Shivering in offices set to a male temperature norm, for example, or struggling to reach a top shelf set at a male height norm. Irritating, certainly. Unjust, undoubtedly.

But not life-threatening. Not like crashing in a car whose safety measures don't account for women's measurements. Not like having your heart attack go undiagnosed because your symptoms are deemed 'atypical'. For these women, the consequences of living in a world built around male data can be deadly.

One of the most important things to say about the gender data gap is that it is not generally malicious, or even deliberate. Quite the opposite. It is simply the product of a way of thinking that has been around for millennia and is therefore a kind of *not* thinking. A double not thinking, even: men go without saying, and women don't get said at all. Because when we say human, on the whole, we mean man.

This is not a new observation. Simone de Beauvoir made it most famously when in 1949 she wrote, 'humanity is male and man defines woman not in herself, but as relative to him; she is not regarded as an autonomous being. [. . .] He is the Subject, he is the Absolute – she is the Other.'<sup>1</sup> What is new is the context in which women continue to be 'the Other'. And that context is a world increasingly reliant on and in thrall to data. Big Data. Which in turn is panned for Big Truths by Big Algorithms, using Big Computers. But when your big data is corrupted by big silences, the truths you get are half-truths, at best. And often, for women, they aren't true at all. As computer scientists themselves say: 'Garbage in, garbage out.'

This new context makes the need to close the gender data gap ever more urgent. Artificial intelligence that helps doctors with diagnoses, that scans through CVs, even that conducts interviews with potential job applicants, is already common. But AIs have been trained on data sets that are riddled with data gaps – and because algorithms are often protected as proprietary software, we can't even examine whether these gaps have been taken into account. On the available evidence, however, it certainly doesn't look as if they have.

Numbers, technology, algorithms, all of these are crucial to the story of *Invisible Women*. But they only tell half the story. Data is just another word for information, and information has many sources. Statistics are a kind of information, yes, but so is human experience. And so I will argue that when we are designing a world that is meant to work for everyone we need women

in the room. If the people taking decisions that affect all of us are all white, able-bodied men (nine times out of ten from America), that too constitutes a data gap – in the same way that not collecting information on female bodies in medical research is a data gap. And as I will show, failing to include the perspective of women is a huge driver of an unintended male bias that attempts (often in good faith) to pass itself off as ‘gender neutral’. This is what de Beauvoir meant when she said that men confuse their own point of view with the absolute truth.

The female-specific concerns that men fail to factor in cover a wide variety of areas, but as you read you will notice that three themes crop up again and again: the female body, women’s unpaid care burden, and male violence against women. These are issues of such significance that they touch on nearly every part of our lives, affecting our experiences of everything from public transport to politics, via the workplace and the doctor’s surgery. But men forget them, because men do not have female bodies. They, as we will see, do only a fraction of the unpaid work done by women. And while they do have to contend with male violence, it manifests in a different way to the violence faced by women. And so these differences go ignored, and we proceed as if the male body and its attendant life experience are gender neutral. This is a form of discrimination against women.

Throughout this book I will refer to both sex and gender. By ‘sex’, I mean the biological characteristics that determine whether an individual is male or female. XX and XY. By ‘gender’, I mean the social meanings we impose upon those biological facts – the way women are treated because they are *perceived* to be female. One is man-made, but both are real. And both have significant consequences for women as they navigate this world constructed on male data.

But although I talk about both sex and gender throughout, I use *gender* data gap as an overarching term because sex is not the reason women are

excluded from data. Gender is. In naming the phenomenon that is causing so much damage to so many women's lives, I want to be clear about the root cause and, contrary to many claims you will read in these pages, the female body is not the problem. The problem is the social meaning that we ascribe to that body, and a socially determined failure to account for it.

*Invisible Women* is a story about absence – and that sometimes makes it hard to write about. If there is a data gap for women overall (both because we don't collect the data in the first place and because when we do we usually don't separate it by sex), when it comes to women of colour, disabled women, working-class women, the data is practically non-existent. Not simply because it isn't collected, but because it is not separated out from the male data – what is called 'sex-disaggregated data'. In statistics on representation from academic jobs to film roles, data is given for 'women' and 'ethnic minorities', with data for female ethnic minorities lost within each larger group. Where they exist, I have given them – but they barely ever do.

The point of this book is not psychoanalysis. I do not have direct access to the innermost thoughts of those who perpetuate the gender data gap, which means that this book cannot provide ultimate proof for why the gender data gap exists. I can only present you with the data, and ask you as a reader to look at the evidence. But nor am I interested in whether or not the person who produced a male-biased tool was a secret sexist. Private motivations are, to a certain extent, irrelevant. What matters is the pattern. What matters is whether, given the weight of the data I will present, it is reasonable to conclude that the gender data gap is all just one big coincidence.

I will argue that it is not. I will argue that the gender data gap is both a cause and a consequence of the type of unthinking that conceives of humanity as almost exclusively male. I will show how often and how widely this bias crops up, and how it distorts the supposedly objective data that



increasingly rules our lives. I will show that even in this super-rational world increasingly run by super-impartial supercomputers, women are still very much de Beauvoir's *Second Sex* – and that the dangers of being relegated to, at best, a sub-type of men, are as real as they have ever been.

# Introduction: The Default Male

Seeing men as the human default is fundamental to the structure of human society. It's an old habit and it runs deep – as deep as theories of human evolution itself. In the fourth century BC Aristotle was already baldly articulating male default as unarguable fact: 'The first departure from type is indeed that the offspring should become female instead of male', he wrote in his biological treatise *On the Generation of Animals*. (He did allow that this aberration was, however, 'a natural necessity'.)

Over two thousand years later, in 1966, the University of Chicago held a symposium on primitive hunter-gatherer societies. It was called 'Man the Hunter'. Over seventy-five social anthropologists from around the world gathered to debate the centrality of hunting to human evolution and development. The consensus was that it is pretty central.<sup>1</sup> 'The biology, psychology, and customs that separate us from the apes – all these we owe to the hunters of time past', claimed one of the papers published in the resulting book. Which is all very well, only, as feminists pointed out, this theory poses something of a problem for female evolution. Because, as the book made clear, hunting was a male activity. So if 'our intellect, interests, emotions, and basic social life – all are evolutionary products of the success of hunting adaptation', what does that mean for women's humanity? If human evolution is driven by men, are women even human?

In her now classic 1975 essay, 'Woman the Gatherer', anthropologist Sally Slocum challenged the primacy of 'Man the Hunter'.<sup>2</sup> Anthropologists, she argued, 'search for examples of the behaviour of males and assume that this

is sufficient for explanation’. And so she asked a simple question to fill the silence: ‘what were the females doing while the males were out hunting?’ Answer: gathering, weaning, caring for children during ‘longer periods of infant dependency’, all of which would similarly have required cooperation. In the context of this knowledge, the ‘conclusion that the basic human adaptation was the desire of males to hunt and kill,’ objects Slocum, ‘gives too much importance to aggression, which is after all only one factor of human life.’

Slocum made her critique over forty years ago now, but the male bias in evolutionary theory persists. ‘Humans evolved to have an instinct for deadly violence, researchers find’, read a 2016 headline in the *Independent*.<sup>3</sup> The article reported on an academic paper called ‘The phylogenetic roots of human lethal violence’, which claimed to reveal that humans have evolved to be six times more deadly to their own species than the average mammal.<sup>4</sup>

This is no doubt true of our species overall – but the reality of human-on-human lethal violence is that it is overwhelmingly a male occupation: a thirty-year analysis of murder in Sweden found that nine out of ten murders are committed by men.<sup>5</sup> This holds with statistics from other countries, including Australia,<sup>6</sup> the UK<sup>7</sup> and the US.<sup>8</sup> A 2013 UN homicide survey found that 96%<sup>9</sup> of homicide perpetrators worldwide are male. So is it humans who are murderous, or men? And if women aren’t on the whole murdering, what are we to think of female ‘phylogenetics’?

The male-unless-otherwise-indicated approach to research seems to have infected all sorts of ethnographic fields. Cave paintings, for example, are often of game animals and so researchers have assumed they were done by men – the hunters. But new analysis of handprints that appear alongside such paintings in cave sites in France and Spain has suggested that the majority were actually done by women.<sup>10</sup>

Even human bones are not exempt from male-unless-otherwise-indicated thinking. We might think of human skeletons as being objectively either male or female and therefore exempt from male-default thinking. We would be wrong. For over a hundred years, a tenth-century Viking skeleton known as the ‘Birka warrior’ had – despite possessing an apparently female pelvis – been assumed to be male because it was buried alongside a full set of weapons and two sacrificed horses.<sup>11</sup> These grave contents indicated that the occupant had been a warrior<sup>12</sup> – and warrior meant male (archaeologists put the numerous references to female fighters in Viking lore down to ‘mythical embellishments’<sup>13</sup>). But although weapons apparently trump the pelvis when it comes to sex, they don’t trump DNA and in 2017 testing confirmed that these bones did indeed belong to a woman.

The argument didn’t, however, end there. It just shifted.<sup>14</sup> The bones might have been mixed up; there might be other reasons a female body was buried with these items. Naysaying scholars might have a point on both counts (although based on the layout of the grave contents the original authors dismiss these criticisms). But the resistance is nevertheless revealing, particularly since male skeletons in similar circumstances ‘are not questioned in the same way’.<sup>15</sup> Indeed, when archaeologists dig up grave sites, they nearly always find more males, which, as noted anthropologist Phillip Walker drily noted in a 1995 book chapter on sexing skulls, is ‘not consistent with what we know about the sex ratios of extant human populations’.<sup>16</sup> And given Viking women could own property, could inherit and could become powerful merchants, is it so impossible that they could have fought too?<sup>17</sup>

After all, these are far from the only female warrior bones that have been discovered. ‘Battle-scarred skeletons of multiple women have been found across the Eurasian steppes from Bulgaria to Mongolia’ wrote Natalie Haynes in the *Guardian*.<sup>18</sup> For people such as the ancient Scythians, who fought on horseback with bows and arrows, there was no innate male