How to Talk to Robots

A Girls' Guide to a Future Dominated by AI

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FOREWORD

Growing up, my brother and I played Gameboy incessantly. *Yoshi's Dream World*, *Mario Kart Racers*, *Tekken*. The gaming world was full of beautiful pixelated landscapes. I loved the thrill of the win. For me, gaming was a non-gendered space. My household was one dedicated to fashion: my mother was a magazine editor, my father a textiles merchant. So I grew up sitting on the floor of fashion shows, but often more entranced by my Gameboy than the clothes on the catwalk.

In 1995, when I was ten, my parents bought me one of the very early home computers. It was proudly positioned in the kitchen, where I would spend hours absorbed in the Microsoft Paint program, creating personalised desktop backgrounds for each member of my family. I felt like a tech Picasso – computers were for art not engineering.

At school, the door to the Internet was Ask Jeeves, a British butler who fronted the search engine, and my guide to Word and Excel was Clippy, Microsoft's helpful paperclip mascot. I remember having a Tamagotchi that was neither boy nor girl. All this is to say that I was happily unaware of the notion that gender could ever play a part in technology. It was not a male or female thing: it was *my* thing.

Cut to a few years later, and during mandatory GCSE IT classes, I was bored out of my brain. We were being shown how to run a doctor's reception and were using mail merge to access patients' data and send emails. I was not inspired. Thinking about it now,

it's little wonder I was unable to see technology's true potential. I knew it could make a job as a receptionist more efficient and less repetitive, but what if my teachers had explained to me that tech could help predict which of my patients would need life-saving treatment? Maybe I would have gone on to study computer science. Instead, I followed in the footsteps of my grandpa and set about joining the advertising world. I was genuinely fascinated by the clever people behind the slogans, billboards and TV ads that captivated mine and my friends' impressionable minds. At that point I was enamoured and not yet fearful of their power.

Before university, I was working in a pub when brand new fully computerised till systems were installed. The manager decided to train the men on the tills first, which meant they became better faster and so were assigned more shifts behind the bar. The women ended up waiting tables. I didn't even stop to think about whether this division was fair – I thought computer stuff wasn't for me, and I think I just accepted that the guys should do the tills. But the consequence of this mindset meant I inadvertently accepted lower pay: waitresses earned less than bar staff, and I ended up hating a job I had come to love. What on earth had happened to me in those interim teenage years?! I still don't know at what point it became the norm that the world of computers was a male one.

By the time I arrived at university to study advertising, new developments with the Internet had set the world alight. Ask Jeeves was no longer the gatekeeper to information – now I could research anything and share it immediately. Users had also started communicating with each other directly, and I remember waiting for my university email to grant me access to The Facebook (as it was known back then), which was in its infancy as an American college social-networking platform. The nature of communication was changing, and my chosen route had begun to feel outdated. People's minds were not going to be made up by old-school

advertising. I was falling in love with the Internet, with the endless opportunities it presented and its immediacy and scale.

Over the course of those three years, I chose modules that would enable me to redefine my relationship with computers. This included how to code. But I found that my dyslexia and my lack of confidence held me back. I was, quite honestly, hopeless. My real 'aha' moment came when I was introduced to Squarespace, a tool that meant I didn't have to write code in order to create a webpage and reach people through the Internet. There were companies and products being released every day that meant people like me, who didn't get on with coding, could still benefit hugely from opportunities available on the web.

All the advertising agencies at which I interned during my degree treated digital campaigns as the second division, and often relegated women to the same position. I felt pretty downtrodden. But the start-up world seemed to have a different vibe. From afar, I'd watched Martha Lane Fox, the co-founder of lastminute.com (who you'll read about later), take equal billing with her male co-founder as they reached millions online. It seemed like a level playing field, and this excited me endlessly.

So, in 2008, on my hunt to either start a business or work for a start-up, I met Charlie Muirhead, the CEO and Founder of t5m, a new style of digital studio that co-produced awesome online video content with celebrities. I joined as an intern, learning how to add words and codes to propel each video to the top ranks of YouTube and then distribute them across the Internet. When I was promoted to managing a team of other recent graduates, we soon realised that the more laborious, mechanical aspects of our job had to become automated for full efficiency – and to avoid us going mad! I relished the opportunity to work more closely with the engineering teams to make this happen.

During this time, the production part of the business had some great successes, but our part-human part-software team were truly flying. The business pivoted, and we concentrated solely on building the technology to enable us to distribute other people's videos. Seeing those online views rack up was everything to me. I was hooked: how could we get more views and faster?

This company, Rightster, grew to 250 people across twelve countries, and I was later recognised as the co-founder of what was by then the largest online video distribution company outside of America. We live-streamed Kate and William's wedding, over 2,000 fashion shows, the BRIT Awards and many other high-profile events. But the work still felt very manual – we had to work with thousands of websites in order to get the millions of views that our clients wanted. Even with an awesome seventy-strong tech team, I believed there had to be a way to escape endlessly copy-and-pasting the code that transferred the video from the cloud to the online website.

This is when I first heard about Data Science, Machine Learning and, eventually, AI. I thought it was a miracle. Sleepless nights could be a thing of the past – the machines could take over! But of course, it wasn't that simple. Charlie sent me on a mission to investigate, and I spent an entire year, and a significant amount of the company's money and my colleagues' patience, trying to harness this new technology. The dream was to use AI to get the right video to the right person at exactly the right time. This would then make them click on a link. We needed this to be done automatically, without having to predict which sites should embed the video, or which video to serve to which user. But, frustratingly, we didn't achieve the necessary financial results fast enough, and people lost faith. Back then, there were only a few companies who knew how to build AI systems, and it was nigh on impossible as a layperson to recognise the hidden gems. I learned the hard way

that AI wasn't magic, and it would take a lot more than just a passion for it to work.

This experience shaped our next big leap. After Rightster went public and acquired similar businesses in the field it was time for us to leave. We agreed to dedicate our time to better understanding AI and learning what it meant for other companies. Lucky to be in London and surrounded by some of the best universities in the world we hosted dinners for big brains and debated the hottest topics of the day. It was clear that AI was a paradigm shift that was going to change the whole of society, not just our business. Now, this may sound dramatic but as you'll see later in the chapter on history this is not a new phenomenon or a novel revelation – AI has been around since the 1960s – but it was a concept to which the business world was only just waking up and it was the most exciting time. Our findings led us to setting up CognitionX.

CognitionX now employs over fifty people and provides a platform that connects businesses with questions about AI, or other emerging technologies, to the right expert in their own organisation, or thousands of experts in the wider community, who can provide them with answers and so help them navigate the complex AI landscape. For example, we've written reports for the Mayor of London's Office, where we analysed the AI ecosystem in order to help develop policy to encourage more companies to set up in the city. It's an honour to get to work with such incredible brains, be they from big corporates such as HSBC or from local government. Each year we hold a festival in London called CogX, where over 30,000 visitors from industry, government, civil society and academia come together to discuss how to forge a brighter future.

My passion for the AI community meant I spent every waking minute untangling the key questions the community faced. I cherished every opportunity to connect people with problems and

in 2018 I was appointed by Matt Hancock and Greg Clark, two Secretaries of State in the UK Government, to assemble a team of top experts in AI to form a Council. The group is responsible for supporting the government of the day and its Office for Artificial Intelligence, currently helmed by Sana Khareghani, to ensure that future decisions about AI enable the UK to flourish and for all of society to benefit.

It's fair to say that I threw myself into the world of AI and tried to talk to every machine going. Whether in a meeting or with my friends, being interviewed on *BBC Breakfast*, I'd take every opportunity to explain why AI was the best thing to happen to humans – I was overly optimistic to say the least. But things began to shift when I realised that this technology would affect different people in different ways. I started to read widely and deeply on the topic, and I woke up to the reality that it could potentially have seriously negative effects for many women. This led me to gather women and host events looking at 'Why we needed Women in AI', in the mission to understand the scale and depth of the challenge I saw before us.

I was giving a talk a few years ago at an event hosted by the achingly cool *Riposte*, a magazine for women in creative industries. I looked around the room and realised I couldn't give my usual positive speech about AI and business. These women were at the top of their respective games, and I needed to explain why AI would matter to *them*. In fact, I welled up as it dawned on me how many women's careers could be destroyed by smart machines if they weren't aware of how AI was set to change all the rules. This book is one small step in hopefully arming those women – and you.

Getting Started

I've been fortunate enough to have a front-row seat as the world is transformed by new technology, and my aim here is to give you

one too. I want to share with you the trials that are coming our way, as well as the potential that exists within AI for positive change. The way I see it, this new wave of technology could be a tsunami that knocks you down, or it could be the wave that we ride together to a brighter future. The moment I began to truly understand this, I knew I had to share what I'd learned about its possible risks as well as its rewards – and why it is that women could be more likely to suffer the negative effects. So it's important to stop seeing tech as 'boring', 'scary' or 'for someone else'. I'm not a scientist, engineer, developer or techie. It takes me a long time to understand technological ideas because they're mostly founded in complex mathematics. It was a really liberating moment when I realised that I didn't need to understand the precise inner workings of AI machines in order to understand the ramifications of this technology. All you need is to get a good grasp on how to adapt and thrive in this new world and what you can do to support others to do the same.

At this point, I think it's important to stress to you that the world of AI is rapidly changing all the time. It's impossible for me to condense the mass of compelling and complex ideas out there. Instead, this book is for all of us who need a good enough understanding to get by; not the intimate technical details. Consider it a patchwork quilt of sorts, an introduction to AI and an invitation to further learning. At the heart of this book is a chapter of interviews with a cross section of women who have informed my thinking. So grab a biro and get ready to add your own thoughts to these pages. Scribble across and circle areas you want to look up later. I often mention articles and academic papers – you can use a search engine to find out more about what they say. If you're reading on a Kindle or listening to an audiobook, maybe you can use voice notes – or even have an AI transcribe them!

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