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# 1

## Become a more *human* human

*Why you need to stop competing with, and start differentiating from, artificial intelligence*

*'I for one welcome our new computer overlords.'*

*Jeopardy TV quiz show champion Ken Jennings after losing to IBM's AI, Watson<sup>1</sup>*

H ello.

This is not your laptop, PC or smartphone communicating with you. It's not Amazon's Alexa, Apple's Siri, Microsoft's Cortana, Google Assistant, or any other form of artificial intelligence. I'm Greg. A human being. We need to talk, you and me. About the challenge we both face in a world of AI. We, the smartest apes around, are being challenged for the first time. AI is questioning our dominance as Planet Earth's cognitive heavyweight champion. Fair warning, when I reveal just how much, it may alarm you. It may even make you afraid for your future, and that of your loved ones.

Some trepidation is understandable. The Dutch chess grandmaster Jan Hein Donner was once asked how he'd prepare for a match

against AI. He replied: ‘I would bring a hammer’.<sup>2</sup> Donner’s quip encapsulates the unease many feel about the challenge of computers. We’ll not focus here on the huge social and political impact AI will doubtless have – for good and for ill. That’s already filling the pages of countless books and news sites. This alternative narrative is an antidote to the prevailing climate of fear around AI. It’s a practical, hopeful handbook for anyone who’s keen to add value alongside our new silicon brothers and sisters. It will help you to find the space AI cannot fill, because it’s shaped like a human.

There’s no reason to panic. However, I do urge you to better understand AI and your relationship to it. It is, without doubt, the most important technology of our time. It’s in the process of transforming everything we do. Sorry to be blunt, but if you’re not thinking about AI, you’re not thinking at all. I’m here to help you engage. *The Human Edge* has been prompted by the impact of technology, but it’s not about microchips, databases and algorithms. It’s about you. Particularly, your response to how AI is transforming our world. I offer you a development path through this emerging landscape. In a world that’s changing at a dizzying pace, I encourage you to become an even more *human* human. This is vitally important. As we’ll see, humans do still matter. Perhaps now more than ever before.

## The 4Cs of the Human Edge

The secret to adding a uniquely human contribution in a world of machines can be found between your ears. To understand your brain’s complexity, imagine this: you hand every inhabitant of London a thousand pieces of wire and tell them to hand the other ends of each of the wires to a thousand more inhabitants. You then shoot two hundred electrical signals per second through every wire. Now multiply this imaginary megacity by a factor of ten thousand. That’s a model of your brain. It is the most complicated entity in the whole universe.<sup>3</sup> Your Human Edge resides in this magically complex biological gift. Consider me a friendly guide to discover, awaken and

develop it. We'll explore how to ignite your emotional, psychological and neurological systems to unleash your human superpowers.

The building blocks of your Human Edge are the 4Cs of consciousness, curiosity, creativity and collaboration. I've chosen these very carefully based on my own experience, as well as the wealth of available research into the skills needed in this century. They are particularly powerful because of the magical way they encourage – and accelerate – each other. Here's how:

- **Consciousness** is the gateway to the other three Cs. Personal meaning motivates you to make an impact on the world. Simultaneously, being more mindful of the downsides of digital distraction allows you to intentionally devote more of your precious time and energy to being curious, creative and collaborative.
- **Curiosity** impels you to gather the raw materials of knowledge and experience, and to transform these into the catalyst for creativity: intriguing questions.
- **Creativity** combines the fruits of consciousness and curiosity. Your creative thinking brings together what's gone before: motivation, time, energy, knowledge, experience and absorbing questions. When these bump together, the ensuing sparks become value-adding new ideas.
- **Collaboration** then allows you to refine and develop these ideas through feedback, cooperation and experimentation with others.

You can see that human creativity runs like a golden thread through the 4Cs, sewing them together. Consciousness and curiosity *enable* creativity; collaboration *unleashes* it to make an impact in the world. The 4Cs will not transform you into Picasso, Mozart or Einstein. But they will rekindle your inventive spark, and make it far easier to access the power of your imagination. You'll find a renewed belief in the promise of your own ideas. This has never been more important. Creativity is no longer a luxury for the few. It's a key skill for us all.

## How to use this book

To help you get maximum benefit from the 4Cs, I've divided this book into two parts. Part One is 'The Human Challenge'. This features one of the most astounding stories in our human history: just why – and how – a technological tool we created is now our intellectual challenger. This startling narrative contains both disturbing threats and intriguing opportunities for you. You'll see just how powerful AI has become, and why it's set to grow even stronger. I'll argue that the best way to answer the question 'What's left for humans in a world of AI?', is to consciously become a more *human* human – to differentiate from, rather than compete with, AI. In the third chapter of Part One, we'll explore an urgent and critical twenty-first-century challenge: when creativity has been so ignored and shamefully downgraded by our own school systems and workplaces, how do we go about rekindling our human potential?

Part Two, 'The Human Edge', is divided into four sections that deep-dive into each of the 4Cs. Supporting these, you'll find eight highly practical capabilities I call 'Dance Steps' (see Figure 1.1 below). Each 'C' has two Dance Steps that reinforce it. Each of these Dance Steps has its own dedicated chapter devoted to implementing this step in your day-to-day life. I've coined the term 'Dance Step' because, unlike computer codes, the human code of consciousness, curiosity, creativity and collaboration is not black and white. The creation of any article, book, product, app, start-up, project, process, novel or song has its own serpentine, and occasionally downright peculiar, journey. Understanding the meandering links between the Dance Steps empowers you to avoid throwing in the towel when your latest endeavour takes one step forward, two steps backwards and, occasionally, a slightly clumsy jump to the right.

The Dance Steps are shown as a circle. But even that's not quite right. The process does work in this order very well. However, the steps can be learned individually and then strung together in

**Figure 1.1** The 4Cs of the Human Edge**CURIOSITY**

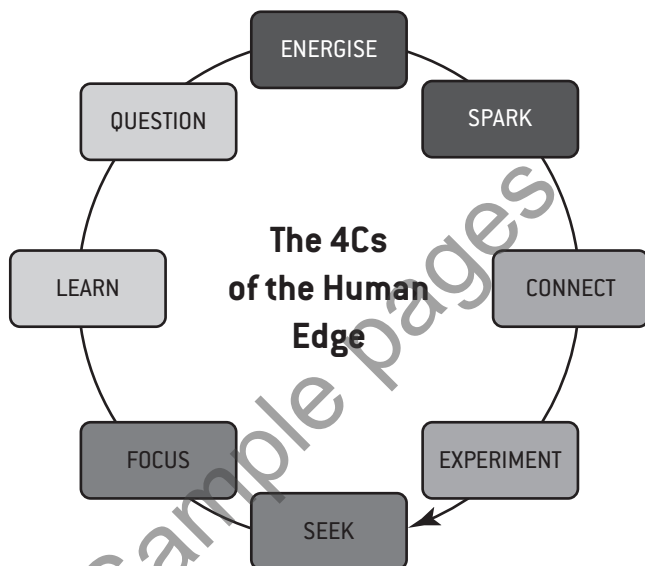
**LEARN:** Why you need to catalyse your curiosity to learn faster than the world is changing

**QUESTION:** How to question everything to weaponise curiosity

**CREATIVITY**

**ENERGISE:** How to acquire the creative habit to make inspiration more likely

**SPARK:** How to borrow the secrets of creative superstars to have more ideas

**CONSCIOUSNESS**

**SEEK:** How finding motivational meaning unleashes the 4Cs

**FOCUS:** How to direct your creative energy in a distracted world

**COLLABORATION**

**CONNECT:** How to build a powerful network of human collaborators

**EXPERIMENT:** Why you need to constantly experiment to test your ideas to destruction – or greatness

different sequences to suit your mood and your needs. You can practise a Dance Step on its own until it feels natural, and then add the others as you need them. They are truly interdependent, fluid and shuffle-able. Like real-life dance moves, they can work alone, or flow backwards, forwards or sideways. You can jump from QUESTION to SPARK, from CONNECT back to FOCUS, or

from ENERGISE forward to EXPERIMENT if required. I'd advise you to read the book in order, as there's an initial flow through the steps that's worth appreciating. However, afterwards, you can come back to the book in any sequence when you need a little inspiration.



As you dig down another level, below the Dance Steps, you'll find action-based 'Human experiments' in every chapter. There are over 50 of these scattered throughout the book. These are a collection of techniques, actions, habits and mini-diagnostics. To make them easier to spot, they're all highlighted with the human icon shown here. A selection of the 'Human experiments' are further emphasised in a 'Start now' box at the end of some of the chapters. These particular experiments are a good excuse to put the book down for a moment and do, rather than just read and think. I'd advise you take ownership of the Dance Steps and associated 'Human experiments', and mould them into your own personalised approach. Gallup polls consistently show 7 out of 10 employees feel disengaged and uninspired by work. At the very least, *The Human Edge* offers a key to unlocking your inspiring consciousness, curiosity, creativity and collaboration at work.

You might be asking if this book can help if you're not in the workplace? The answer is yes. It's for *anyone* curious about how to be more successful in an AI-enabled world in every part of your life. You might be a teenager pondering your career, a parent looking for a way to support your child, a new entrant into the job market, an entrepreneur, an overworked manager searching for a way forward, or a grizzled organisational veteran. If you're outside the job market altogether, you might still be keen to engage with how the world is changing to better support a charitable cause, local club or sports team. The tips and techniques to develop your 4Cs can help in all of these scenarios.

I began by advising you not to panic. But do use this book to take stock and to act. Those that seek to learn and to adapt will flourish in the coming years. Those who stick their head in the sand are in for a very bumpy ride. The 4Cs of consciousness, curiosity,



creativity and collaboration offer you a head start. They allow you to stop racing machines and, instead, to do the things they can't. Not a cog in a machine, but a resourceful human in a world of AI.

Let's get started.

## AI is in our lives

Whoever you are, you'll soon begin to bump into AI pretty much every hour of your life. Often you won't even realise that's what it is. An app will raise you from your slumbers in the most optimal part of your sleep cycle. At breakfast, AI will arrange your day's agenda, check the least-traffic-clogged route to work and suggest the headlines and social media gossip personally tailored for your interests. For the most important email of your morning, a psychological evaluation algorithm will analyse the receiver's publicly available statements, including blog posts, emails, comments and tweets, to make your words more influential and powerful.

During your coffee break you'll order your groceries from an online service that will respond via AI, and pick and pack your staples with a swarm of AI-enabled robots in an automated warehouse. Your semi-autonomous smart car, and home, will allow these to be remotely delivered to your vehicle's back seat, or to your front door, whatever suits you best. If you order a pair of jeans online, AI will use your virtual mannequin to ensure the fit is just perfect when they arrive. At lunch you'll read business and sports reports written by AI without knowing the difference.<sup>4</sup> Of course, you'll be relaxing in a restaurant or open space recommended by AI.

If you apply for a new job you'll be vetted by a machine.<sup>5</sup> It will test you with online games from the field of cognitive neuroscience to assess your decision-making prowess and personality type. Only after the AI has analysed a video submission will you be passed from computer to human for an interview. If you invest in a pension, around 60 per cent of the trades that support your fund will be executed by AI.<sup>6</sup> If you apply for a loan to top up your wages, the bank

will ask for another video interview that will be analysed by algorithms for 50 or so tiny facial expressions that will indicate if you're lying about your ability to repay the loan.<sup>7</sup> If you get sick, AI will be there to diagnose your X-rays. You'll be more than happy with this arrangement, as computers have already proved themselves to be the best cancer diagnosticians on the planet. If you're admitted to hospital, AI will be managing the beds and other resources, as well as supporting the telecoms and energy companies keeping the lights and Wi-Fi on in your ward. Pharmaceutical companies will offer you highly effective, personalised drugs fabricated by AI. If you don't get well you may be operated on by a robot surgeon, supported by chatbot doctors.<sup>8</sup> If you choose to march in the streets to protest this new reality, the government will be able to identify your face in the crowd using, you guessed it, AI.<sup>9</sup>

None of the above is science fiction. All of the things mentioned are available right now, or will be very soon. And we're only at the start of this journey. At the heart of this revolution are the US tech giants Facebook, Amazon, Netflix and Google. Their business models are predicated on using AI to manipulate your data. If you add to the mix Apple (whose smartphones place these business models in your hand), these companies are currently worth more than the rest of the FTSE 100 put together.<sup>10</sup> Microsoft and IBM are pushing hard to keep up. These US tech companies have revenues far greater than many countries' GDP. So much so, that Denmark recently appointed an official ambassador to these behemoths of Silicon Valley.<sup>11</sup> The equivalent digital giants in China are Baidu, Alibaba and Tencent.<sup>12</sup> They have grown far beyond their core business to do just about everything, from digital payments to social networks, cloud computing to e-commerce. They're deploying AI with equal aggression.<sup>13</sup> The competition between these tech giants fuels the global AI arms race.

Kevin Kelly, the founder of *Wired* magazine, said the business plans of the next 10,000 start-ups are easy to predict: 'Take X and add AI.'<sup>14</sup> I saw this for myself in Silicon Valley, where I visited a

number of venture capital firms. Nearly all of the start-up presentations featured AI. These are the pioneers. AI is now right at the bottom of the first steep section of the classic product S-curve. Think where SMART phones were back in 2006; that's where AI is now.<sup>15</sup>

If tech businesses wear AI on their sleeves, other businesses will now start wearing it as their undergarments. Those high-tech start-ups are being hoovered up by global corporates desperate to buy the ideas and brains behind them.<sup>16</sup> It's just the beginning. Around 85 per cent of companies think AI will offer a competitive advantage. Yet only 5 per cent are employing it extensively right now.<sup>17</sup> They will jump in with both feet when braver pioneers have proved the business case. AI will reshape customer service, marketing, sales, supply chain management, HR, finance and risk management.<sup>18</sup> The World Economic Forum forecasts AI and connected technologies (augmented reality, virtual reality and robotics) will '... bring change at a speed, scale and force unlike anything we've experienced before. The business models of each and every industry will be transformed.'<sup>19</sup>

I'd like to make it clear. Although this book is about ensuring you have a role in this changing world, I'm not anti-technology. Managed well, AI will transform our world for the better. It will add value in almost all walks of life. Do we have sufficient nurses and doctors to care for an ageing population? Do we have more teachers, police officers and prison guards than we need? Is the task of upkeeping our IT, banking, booking a flight, finding a watchable movie or buying insurance so perfect we never want to improve it? We all know the answer is a resounding 'No!'. AI will upgrade these areas and more. It will allow us to do more, for less.

Let's not forget, millions of people graft in awful or uninspiring conditions. Many don't enjoy their job and suffer in workplaces that are dull, dirty or dangerous. AI can do tasks we humans don't want to do. It can also do jobs we can't. The UK's National Centre for Nuclear Robotics is developing AI-enabled robots and drones who will venture into hazardous legacy nuclear waste sites to efficiently

and safely sort out what's still contaminated.<sup>20</sup> The bots can clear a random, cluttered heap of objects with no prior knowledge of what they are. Would you fancy that job?

## An old foe with a new face

In September 1945, the powerful elevator operators' union staged a strike in New York that paralysed the city. According to the Associated Press, 'Thousands struggled up stairways that seemed endless, including the Empire State Building, the tallest structure in the world.' The technology for automatic elevators had existed since 1900, but people were too uncomfortable to ride in one without an operator. But, the strike turned public opinion and signalled the end of widespread elevator operators. This is how progress happens: slowly, slowly, then all at once. Now we push our own elevator buttons.<sup>21</sup>

Human unemployment caused by new technology was not new, even then.<sup>22</sup> Over a hundred years earlier, a group of textile workers in Nottingham smashed the steam looms threatening their livelihood and physically attacked the industrialists responsible. People labelled them 'Luddites'. We now use this as a pejorative term for anyone wishing to attempt the impossible: to turn back the technological clock. This is unfair. The Luddites, with some justification, feared redundancy, the loss of their identity – and the future for their children. They weren't anti-technology, just pro-jobs. The Luddites were wrestling with what was later branded the first Industrial Revolution. Steam engines pumped water from deep mines, enabled the hated steam loom and sped trains down tracks and boats across water. Steam is what economists call a 'general purpose technology' (GPT). GPTs don't simply change one area, they reshape the entire world. More recent GPTs include electricity and IT. AI is a GPT because it has almost limitless applications. Put another way, AI is the steam power of our time.<sup>23</sup> The Industrial Revolution replaced our arms and legs at work. AI, in what's been called the Fourth Industrial Revolution, is now replacing our brains.

As I've described earlier, AI has the power to help us. Not surprisingly, this silver lining is accompanied by some dark clouds. AI will mean the end for humans doing some jobs. In fact, if it's possible to write an algorithm that describes 100 per cent of the judgement calls and processes within a job, it's guaranteed to be automated. The MIT economists Erik Brynjolfsson and Andrew McAfee, in their book *Race Against the Machine*, warn that as the gap between machines and humans shrinks, employers are increasingly likely to hire 'new machines' instead of 'new people'.<sup>24</sup> Predictable and repetitive 'grunt work' in offices and factories – personal assistants and retail cashiers, for example – will be consigned to history first.<sup>25</sup>

Researchers have tried to forecast just how many jobs will go in the next 15 years. Teams from the likes of Oxford University, the World Economic Forum and several global management consultancies have made predictions between 14 per cent and 47 per cent.<sup>26</sup> Think about that for a second. Even at the lower end of this spectrum, we'll see a seismic change in how and where humans are needed. One research team even went as far as offering a probability on which jobs will be made obsolete. Telemarketers, data-entry workers, librarians, account clerks, tax submission preparers and freight agents all received a depressing 99 per cent chance of oblivion.<sup>27</sup> At the other end of the scale, therapists, middle managers and supervisors, social workers and occupational therapists were given a 0.35 per cent chance of being computerised based on current technology.

It might transpire, as with previous industrial revolutions, that new jobs will be created that never previously existed. I've heard talk of 'data hygienists', 'AI personality trainers' and 'ethicists', for example. Nobody yet knows if there will be a net growth or reduction in human unemployment. Whatever happens, we'll all have to rise to the challenge of transition, just as workers did in previous revolutions.

That change will be difficult for some. Nineteenth-century Luddites may have wanted to protect their jobs from steam-powered looms. But, you still needed a human to operate one. AI will not work under us, it will stand alongside. The other big difference is speed. The first

Industrial Revolution unfolded over a century. The progress with AI is visible in years, and occasionally months. The most vulnerable – taxi drivers, office administrators, shop clerks, shelf stackers and till operators – may see their jobs made redundant or changed beyond recognition quite soon. It's a lot harder to fight irrelevance than to battle exploitation. Acquiring the necessary new skills may prove tricky. It's one thing to inform a 45-year-old taxi driver his job has disappeared, and that he can look forward to amazing opportunities. Another challenge entirely for him to retrain as an 'AI/human interaction modeller'. Unlike the elevator operators of the early 1900s, for some there will not be decades to develop a new career option.<sup>28</sup> People are sensing this uncertainty. A large survey of American employees found 72 per cent of people are worried about AI. However, there seems to be some confusion about the potential for personal impact. People say they understand some jobs are at high risk – legal clerks, fast-food workers, insurance claim processors, for example. But only 3 in 10 people report it's likely that their own jobs will be delivered by a robot or computer in their lifetime. Like death, I guess, it's easier to imagine AI happening to someone else, rather than yourself.

## Cheese slicing

A big change is, in this industrial revolution, the machines have come for white-collar workers. Jobs that rely on cognitive skills are now fair game for automation. Wholly repetitive and routine occupations will be rapidly automated first. This is why monotonous roles in tel-sales and customer support are already being delivered by chatbots. Jobs that follow a predictable routine will also be dominated by AI: truck and taxi drivers, security guards and even haematologists who diagnose disorders of the blood and bone marrow. So far, we've been talking about entire job categories being automated. However, this will not be the reality for most people. If you've got the foresight and resources to be reading this book, it's likely your role will not be automated any time soon. Instead, you'll see the repetitious and routine tasks within your job being cheese-sliced away by AI. This is already happening to accountants, lawyers, radiologists, sports and

business reporters and research analysts, among others. If you're wondering about how to choose a trade that will remain relatively safe for the foreseeable future, ask the following question: 'How complex, unpredictable, emotion driven and potentially creative can this role be?'. Jobs in general management, mergers and acquisitions and economic analysis are highly complex, for example. Careers such as columnists, cartoonists, lobbyists, research scientists, architects, engineers and artists are both complex and rely on creative thinking. Kai-Fu Lee, a Taiwanese artificial intelligence expert, said: 'Really, the creative jobs are the ones that are protected, because AI can optimise, but not create.' I would add, nearly all jobs have the potential for creativity within them. Having more time in your day (which AI can offer) allows it to be unlocked.'

### **Why your boss wants you to be curious and creative**

The cheese slicing of even complex and creative professions is not a threat in my view, but a huge development opportunity. From nurses to project managers, academics to surveyors, mechanics to therapists, this is chance to discover the curious-creative angle in your existing job. The context of the digital economy means developing the 4Cs for yourself is vital. They are increasingly required in the modern workplace. We're living through an era in which well-worn strategies in business, politics and everyday life have stopped working.<sup>29</sup> Technology is transforming the way we live, communicate, make money, share our thoughts and emotions, appreciate films and TV, shop, travel and even find, build or terminate our closest relationships. Contrast the growth of electrified and autonomous vehicles with the decline of Detroit's petrol-powered auto industry, the explosion in online shopping with increasingly empty high streets, the challenge to traditional banking from crypto-currencies and blockchain, or the transformation of music and video consumption, to name just a few.<sup>30</sup>

All this volatile, uncertain change means our world is far more difficult to forecast. As a result, the heavyweight champion of business capabilities – logical, analytical thinking – is being challenged.

Bosses realise we can't just plan and plod towards the future, we must reimagine it. To do this, everyone in organisations needs to be creatively switched on. When asked to rank the most important workplace aptitudes of this century, top CEOs reported that 'creativity' is rapidly rising up the hierarchy of valuable human skills. They rated it the third most important in 2019, up from tenth in 2015. For the first time, creative thinking is on the same playing field as people management, complex problem solving and critical thinking.<sup>31</sup>

In their book *The Future of the Professions: How Technology Will Transform the Work of Human Experts*, Richard and Daniel Susskind argue that even respected professions such as accountancy, law, medicine, architecture and chartered surveying are ripe for automation because they are: '... unaffordable, under-exploiting technology, disempowering, ethically challengeable, underperforming and inscrutable'.<sup>32</sup> Strong stuff. No wonder the Susskinds predict that 'increasingly capable machines, operating on their own or with non-specialist users, will take on many of the tasks that have been the historic preserve of the professions'.<sup>33</sup> Once wily lawyers are being cheese-sliced, no one is safe. Historically, the so-called 'Magic Circle' of global law firms made money by throwing large numbers of bodies at large stacks of legal paperwork. Now, many of the top firms rely on AI to do pre-trial due diligence.<sup>34</sup> As mentioned, this might not lead to net unemployment (however much fewer lawyers might sound attractive). Some firms expect to employ fewer graduates. Others argue cheaper services could encourage clients to consult their lawyers even more. Only time will tell.

We are also seeing the opening skirmishes as AI encroaches on the medical world. Babylon, the company behind the NHS 'GP at Hand' app, says its chatbot took the exam which was used to qualify trainee GPs. The first time Babylon sat the exam, it achieved a score of 81 per cent (the pass mark is 75 per cent). The Royal College of General Practitioners angrily retorted: 'An app might be able to pass an automated clinical knowledge test – but the answer to a clinical scenario isn't always cut and dried.' True, the world is