



FOREWORD BY  
TIM CHALLIES

# MADE IN OUR IMAGE

God, artificial intelligence  
and you

STEPHEN  
DRISCOLL

Emergent large-language model AI will be one of the most disruptive technological developments in the history of humanity. In *Made in Our Image*, Stephen Driscoll does not take a simplistic proof-texting or moralistic approach, but shows how the deep structures of biblical thought and the unfolding of redemption history equip us for this disruption. Driscoll is masterful in bringing together theology, science, history, economics, sociology, politics and ethics. At the same time, *Made in Our Image* is very approachable for the non-academic. An exceptional and important book.

**Mikey Lynch**

Editorial Director, The Gospel Coalition Australia

Campus Director, University Fellowship of Christians, University of Tasmania

Author, *The Vine Movement* and *The Good Life in the Last Days*

Sometimes the right book comes along at the right time. Stephen Driscoll's *Made in Our Image* is just such a book. Filled with awareness of the topic, the book engages richly with timeless biblical truth to chart a way forward in responding to a complex issue in a way that will honour Jesus and love others. If you're looking for a biblically informed and technologically aware response to an issue that is shaping our world right now, this book should be at the very top of your list.

**Paul Grimmond**

Dean of Students, Moore Theological College, Sydney

Author, *When the Noise Won't Stop* and *Right Side Up*

If you want a short, engaging, insightful and theologically discerning book on the technological revolution that will be more influential than the internet, it is in your hands. Enjoy!

**Richard Chin**

National Director, Australian Fellowship of Evangelical Students

Author, *Captivated by Christ* and *How to Read the Bible Better*

The rise of AI technology has enormous implications for all of us—not only for how we live and work, but also for how we understand what it means to be human. Christians need to be equipped to grasp the issues and to navigate the waters ahead. In this book, Stephen Driscoll provides us with a highly valuable resource for doing just that. He describes the nature of the technology in an accessible but highly informative way, insightfully outlines the challenges the technology raises for us, and then applies a deeply biblical framework—creation, sin, the cross of Jesus Christ, and new creation—to help us address these challenges. The book is biblical and practical, full of insights into many ways the gospel of the Lord Jesus shows us how to live in light of this increasingly pervasive technology.

**Lionel Windsor**

New Testament Lecturer, Moore Theological College, Sydney  
Author, *Truth Be Told* and *Gospel Speech Online*

Stephen Driscoll is no empty-headed Pollyanna, mindlessly praising technology in all its forms. But neither is he a panicked Chicken Little, shrieking at us to go churn our own butter. Instead, this book is nuanced and careful. But don't think that makes it boring. *Made in Our Image* is interesting. But more than that, it's important, and it will make you think. It's a book about theology as much as it is about technology.

**Craig Hamilton**

Senior Minister, Pitt Town Church, Sydney  
Author, *Made Man* and *Wisdom in Leadership*



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 **matthiasmedia**  
SYDNEY • YOUNGSTOWN

*Made in Our Image*

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This book is dedicated to my lovely wife, Lauren.

Thanks for being all the things I'm not, so that together  
we can care for this lovely family that we have.



## ABOUT THE AUTHOR

I'm writing this book because I think artificial intelligence is an issue that will matter. I don't believe this technology will come in, sound exciting, and then be gone five years later. There might be ups and downs, recessions and booms, but my expectation is that this is a transformative and lasting technological revolution.<sup>1</sup> Something more like the wheel than the typewriter.

I'm not an artificial intelligence. I am (or believe that I am) a human. The most important thing about me is my relationship with Jesus, the Lord of the world. The second-most important thing about me is my family. I'm married to the wonderful Lauren, and we have two little kids, Katherine and Luke. As I write this, Katherine is six months old and has just started laughing. Luke is almost four and very cheeky. We love them both very much and pray that they would live with Jesus as their king in a rapidly changing world.

I work at the Australian National University in Canberra, Australia, serving one of the Christian groups there (FOCUS AFES).

My interest in artificial intelligence goes back to around 2008, when I started reading the warnings of people like Stephen Hawking and Bill Joy, and the optimism of people like Ray Kurzweil. At some point I saw *Terminator 2*.

1 Two significant periods of downturn for AI were the late 1960s and late 1980s. In each case, expectations ran ahead of reality and interest in AI collapsed. See SJ Russell, *Human Compatible: Artificial intelligence and the problem of control*, Penguin Books, 2019, p 5.





Before we dive into the topic, I'm aware that each reader will be approaching this book from his or her own angle. You will have your own worldview, and you will be at your own stage of life or faith. You might be a committed, churchgoing Christian. You might be a believer who is thinking through your faith. You could be a doubter or a disbeliever. Maybe someone gave you this book and you felt awkward refusing it. It might have fallen out of a cargo plane into your backyard and here you are reading it. Whatever brings you here, I'm conscious that different bits of this book will speak more directly to different people. Yet, hopefully, whoever you are, you'll find something aimed at you. My hope and prayer is just that this book is useful—useful to you, whoever you are. I'm so thankful that you're reading it.



# FOREWORD

**S**uddenly AI is everywhere. Suddenly everyone is talking about it, and everyone is proclaiming it to be the future. Every app seems to have added some AI capability and every piece of software has integrated some component of it. It seems to have come out of nowhere and is now everywhere.

But even though AI is suddenly everywhere, it's difficult to know what to make of it. The early results are often underwhelming, but it is not hard to see how the technology may mature into something that becomes central to our lives. It is not hard to see that we may be entering into a world in which we take AI for granted as much we do our computers, our phones, and our apps.

That being the case, it would be wise for us to pause right now to ask: What is AI? What are its capabilities? What benefits will it bring and what drawbacks will come alongside those benefits? And when we compare those benefits and drawbacks, will we really assess AI to be worth it?

As Christians, we have other questions to ask: What is our responsibility before the Lord as we consider a technology that may have immense power for good, for bad, or for both? How may it help or hinder our spiritual lives and our ability to carry out the Great Commission? How might it impact the local church? How might it fail to reflect God's mind, God's plans, and God's desires? Most of us failed to ask such questions at the dawn of the internet, social media, and the mobile phone. This time we owe it to the Lord, to one another, and to ourselves to ponder them.

We will find, as Stephen Driscoll so capably shows in *Made in Our Image*, that the Bible can instruct and guide us in this ultra-modern world just as in every other. Stephen serves as a steady and trusted guide who will help us look beyond AI's early boasts to see how it may impact us for good and for ill, how it may be used to help us fulfill the mission God has given us, and how it may impede us. Stephen urges us to be cautious, courageous, and discerning. He calls us to approach technology—as with every other area of life—in a distinctly Christian way.

If you're in the world of business or involved in church leadership, this book will get you situated with this rising technology. If you're a parent or you work with young people, it will help you think well about AI before it comes to dominate their lives. Whether you're on the cutting edge of every new technology or you consider yourself a complete luddite, *Made in Our Image* will guide you into an innovation that may prove to be one of the most important of our times. No matter who you are, this book will inform you and challenge you.

*Tim Challies*

# WAITING FOR THE FUTURE

## The (latest) technological revolution

“Owing to the hard work and ingenuity of the scientists, every day a new instrument and a new technology are invented.”<sup>1</sup>

—Theodoric, Bishop of Bitonto, 1267

“The single most important caretaker of children in the United States today is not a child’s mother or a baby-sitter or even a day-care center but the television set in each child’s home.”<sup>2</sup>

—Steven Mintz and Susan Kellogg, 1989

### When the world’s about to change

There’s an old story that I like, regardless of whether it’s true.

On the 18th of June 1815, on a Sunday, Napoleon’s French army fought against a British coalition in a place near Waterloo, in Belgium. This was a battle that mattered. In sporting terms, it was a knockout match, one of the most significant battles in European history. In the end, the future of the continent was decided by the

1 Quoted in CM Cipolla, *Before the Industrial Revolution: European society and economy, 1000–1700*, 3rd edn, Norton, 1993, p 145.

2 S Mintz and S Kellogg, *Domestic Revolutions: A social history of American family life*, Free Press, 1989, p 221.

slightest margin. The British commander, the Duke of Wellington, called it “the nearest run thing you ever saw in your life”.<sup>3</sup>

Watching nearby were the couriers. It was their job to observe the result of the battle and carry that news to the rulers of Europe as rapidly as possible.

The fastest set of couriers didn’t belong to any emperor or king; they belonged to a family of investors called the Rothschilds, perhaps the richest private family in Europe. So, a network of couriers, of horses and carriages and boats, carried the news of Waterloo across Belgium, across the English Channel, perhaps down Dover Road, and on to London. This chain extended all the way to Nathan Rothschild, who knew the result two days before King George III.

When Rothschild knew the result, when he knew that Britain had triumphed, he was able to act: he went to the Stock Exchange and started buying. Rothschild knew the future, while everyone else was stuck in the present.

Picture the rest of England in those nerve-wracking days as the couriers advanced. The fate of the nation had been decided. The English knew that their lives had, in a sense, already been transformed. They were either free of Napoleon, or perhaps soon to face invasion. England didn’t know the result of the battle, but they knew that their world was about to change. Win, lose or draw, the future would be different from the past.

The event really unfolds in three stages. There’s the time before the battle, and the time afterwards once England has learned its fate—but there’s also the time in the middle, the time of expectation, as the horses race north. Something important has happened, but you have to wait for the future to arrive.

Why am I sharing this bit of history? It’s because right now, we are in a time of expectation, a time of waiting.

A remarkable thing has happened: intelligence, of a sort, has been created out of silicon. Stop and think about that for a moment.

3 ‘Waterloo’, *Cambridge Digital Library*, University of Cambridge ([cudl.lib.cam.ac.uk/collections/waterloo/1](http://cudl.lib.cam.ac.uk/collections/waterloo/1)).

We've taught computers to recognize cats, voices, faces, tones, sarcasm and grammar, and then to build an understanding of history, science and literature. We've taught computers to emulate our speech, our art and our music, and we've done it so well that AI-generated art is winning competitions intended for humans. Isn't that just mind-blowing?

Yes, it's still erratic. Sometimes, artificial intelligence can be comically stupid. But sometimes I'm comically stupid. I'm not getting any more intelligent, but artificial intelligence is improving at a terrifying pace.

Something very significant has happened. If you doubt that, wait a little while and check again. What is state-of-the-art now is probably just a hint of what is to come in two, three or five years. For now, we are in the period before the transformation—this period before our lives look different. But the future is going to be different from the past.

Some people seem to be ahead of the times, to have caught the news early. Like Rothschild, they are buying or selling. Others are confused, not knowing whether this is a win, a loss, or a draw.

One thing we know: the impact of artificial intelligence will be enormous.

What will work look like after AI? How will it change the way we date? The way we drive? What will it do to our understanding of human nature and human intelligence? Will we be able to trust what we see online? Does AI pose an existential risk to us? Will it usher in a better world? Can AI help with problems like poverty, environmental issues, or political polarization? Will artists be overpowered or empowered by the creativity of the computer? Will I be made redundant? Is AI going to write the sequel to this book? Will Siri finally be able to recognize my voice instructions?

The future is going to be different from the past, but we're still waiting for the couriers. We can guess the answers to some of these questions. But many, or most, of our guesses will be wrong.

## Technological revolutions

Now, because the future is unclear and the present is changing, this book is going to do more than just share tips for using AI in the mid 2020s. The main aim is to go broader and deeper, and to think about artificial intelligence in the context of issues like identity, people-pleasing, morality, and individualism, among many others.

If a book had been released in the early years of the internet, readers might have wanted very practical tips on how to do a Yahoo! search. But as time passed, the internet changed; the practical tips become obsolete, and what was really needed was a deeper and more important framework of life, culture and technology. A good book about the internet would have zoomed out, perhaps even laying aside the question of what Myspace username you should choose.

Most of the broader perspective this book offers will come from the Bible, as we look at what Scripture teaches and how it informs our thinking about AI. But I also want to keep grounding our thoughts in a historical discussion of technological change. Technology has changed the world many times before, and we need to learn from those past revolutions.

The invention of barbed wire, for instance, made the enclosure of property easier. This, in turn, made the concept of property clearer. The open cattle ranges of the American West became carefully delineated territory—the patches you can see from the air. Instead of endlessly building and rebuilding fences, farmers had more time. Food prices came down. The environment was changed, and animal migrations were changed. The land became a succession of borders and checkpoints.

But this wasn't the only set of changes that followed. Barbed wire also changed war. The stagnation of the First World War was partly due to the increased ability of defensive troops to hold ground.

Very little of this could have been predicted in 1873, when Joseph Glidden twisted a wire around a bunch of barbs so he could stop his cattle from running off. The gap between his ingenuity and

the Somme was too vast for even the most forward-thinking futurologist. I doubt anyone, writing about the impact of barbed wire in the 1870s, would have mentioned the rise of Hitler. Yet, in the course of history, one thing led to another.

This is the nature of technology. We invent things that change our world, and yet the exact impact is usually not what you would have predicted. There's the invention, and then a time of expectation. The futurologist guesses, but history is never quite what we expect. In the time of expectation, we know that the world has changed, but we're waiting for the couriers.

That said, some principles for dealing with such revolutions seem to have worked better than others.

One group of Amish people in Pennsylvania had a simple principle that they applied to new technology. When asked how they know which technologies will be beneficial, one said:

We can almost always tell if a change will bring good or bad tidings. Certain things we definitely do not want, like the television and the radio. They would destroy our visiting practices. We would stay at home with the television or the radio rather than meet with other people. The visiting practices are important because of the closeness of the people. How can we care for the neighbour if we do not visit them or know what is going on in their lives?<sup>4</sup>

Do you see the difference between this Amish approach and the futurologist? The futurologist tries to predict the specifics of the future. The Amish, by contrast, apply a simple rule, a guiding principle, having established that the principle matters. This group seems to have a strong worldview, a sense of what matters, and thus of what might threaten what matters. Because of that worldview, they

4 TK Tan, 'Silence, Sacrifice and Shoo-Fly Pies: An inquiry into the social capital and organizational strategies of the Amish community in Lancaster County, Pennsylvania' [PhD dissertation], Harvard University, 1998; quoted in RD Putnam, *Bowling Alone: The collapse and revival of American community*, revised edn, Simon & Schuster, 2020, p 235.



can understand technology without needing to be experts. They know what's important to them, and so the issues around technology can come into focus quite naturally.

Some might scoff at the backwardness of the Amish. Many ride in horse-drawn buggies, use old mechanical windmills rather than electricity, discourage the use of the telephone, and believe that photography encourages vanity.<sup>5</sup> But because of their strong worldview, they seem to have grasped the implications of the radio and the television more quickly, and perhaps more accurately, than most.<sup>6</sup>

Perhaps we would do well to learn a thing or two about community from the Amish. In Western countries in the second half of the 20th century, people's tendency to engage in their communities collapsed. Between 1985 and 1994 in America, active involvement in community organizations fell by 45 per cent. As political scientist Robert Putnam wrote, "By this measure, at least, nearly half of America's civic infrastructure was obliterated in barely a decade".<sup>7</sup>

Almost no force contributed as much to that collapse as the television. As Putnam noted:

Nothing—not low education, not full-time work, not long commutes in urban agglomerations, not poverty or financial distress—is more broadly associated with civic disengagement and social disconnection than is dependence on television for entertainment.<sup>8</sup>

When Putnam spoke about "civic disengagement", he was referring to the collapse of things like membership in local clubs, volunteering at schools, interest in politics, hospitality, and attendance at church. He was describing one of the most significant changes in American social history.

5 I'm pretty sure they're right about that last one!

6 Whether other Amish groups have a strong and consistent worldview is not for me to say.

7 Putnam, *Bowling Alone*, p 61.

8 Putnam, *Bowling Alone*, p 231.

We live in a world that the television helped create. The local markets are quiet, the churches aren't as full, the street is empty of children, the lemonade stalls have been packed away. Television created this new world, but the inventor just thought he was making a conduit for signals in the visual spectrum. I've never known a world before the television, and few of us knew the world before the radio. And if we don't have a worldview, or a set of principles, we won't even be able to understand the past, let alone the future.

But another transformation soon followed the TV.

The rise of the personal computer is an ongoing three- or four-stage transformation of our culture. The desktop led to the laptop, which led to the smartphone. The internet led to social media. Even television is becoming a signal passed through the internet and on to not just our televisions, but our portable devices. People don't need to watch television together; a family can sit in their own rooms watching their own shows.

How will this change society? How has it already changed society?

Teen socialization has fallen at an alarming rate. One American study found that just 28 per cent of 12th-grade students “got together with their friends almost every day” in 2017. In the late 1970s, that figure was 52 per cent.<sup>9</sup> As teen socialization has fallen, teen anxiety and depression have risen. The percentage of high-school students feeling “persistently sad or hopeless” rose from 26.1 per cent in 2004 to 44.2 per cent in 2021.<sup>10</sup>

Most social changes have multiple causes. But causes aren't all equal; some matter more than others. Right at the centre of this collapse of youth socialization and youth mental health is technology.

Social media is, in at least one way, like alcohol: for many, it has a minimal effect on their personal quality of life or mental health.

9 JM Twenge, BH Spitzberg and WK Campbell, ‘Less In-Person Social Interaction with Peers among U.S. Adolescents in the 21st Century and Links to Loneliness’, *Journal of Social and Personal Relationships*, 2019, 36(6):1892–1913.

10 D Thompson, ‘Why American Teens Are So Sad: Four forces are propelling the rising rates of depression among young people’, *The Atlantic*, 11 April 2022 ([theatlantic.com/newsletters/archive/2022/04/american-teens-sadness-depression-anxiety/629524](https://theatlantic.com/newsletters/archive/2022/04/american-teens-sadness-depression-anxiety/629524)).

Lots of people use it only occasionally and in moderation, drawing some connection and entertainment from it, and then moving on. For others, though, it is enormously damaging.

Alcohol does its own kind of damage to society. But for those tempted by envy or jealousy, by inferiority, quarrelsomeness or overbearing pride, social media is highly dangerous. The damage seems to be highest among the young, and it seems to hit those who are already struggling the most. The mental-health impact of social media on girls seems to be much worse than on boys.<sup>11</sup>

Social media is a malleable technology. It doesn't offer one objective experience. Each person creates the experience they incentivize. You can incentivize a safe space or a raucous place of disagreement. You can have a timeline full of news about trains, or marriage announcements, or theological discussion, or material wealth, or impossible beauty standards. The system at large is a test of response control. The problem is that giving us what we want is a dangerous thing to do.

While social media is a very positive place for a lot of people, others inadvertently shape an ecosystem that magnifies and reinforces their sin. Inattentive or unintentional social media use will make you more of what you already are, for good or ill.

The cardinal virtue of social media is self-control. The trick of social media is that people don't think they need self-control, and expect the system to provide it. The dangerous thing about social media is that it's a mirror when we think it's a window to the outside world.

But that mirror is, right now, contributing to a decline in mental health and socialization that will have consequences that last at least as long as I do.

Sociologist Jean Twenge argues that we should mark off people born after 1994 as a new generation, and has given them the label 'iGen'.<sup>12</sup> This generation grew up with Twitter (created in 2006),

11 G Lukianoff and J Haidt, *The Coddling of the American Mind: How good intentions and bad ideas are setting up a generation for failure*, Penguin, 2018, p 154.

12 JM Twenge, *iGen: Why today's super-connected kids are growing up less rebellious, more tolerant, less happy—and completely unprepared for adulthood—and what that means for the rest of us*, Atria Books, 2017.

the iPhone (2007), Tumblr (2007), Instagram (2010) and Snapchat (2011). In 2006, Facebook removed its “college students only” requirement and opened its platform to everyone over the age of 13. As Haidt and Lukianoff summarize, “It’s best, then, to think about the entire period from 2007 to roughly 2012 as a brief span in which the social life of the average American teen changed substantially”.<sup>13</sup>

Beyond the individual consequences of social media, it has made a major contribution to the near-century-long trend of the death of the community and the replacement of common gatherings. How will social media ultimately impact church attendance? The answer is unlikely to be good.

Either way, the future will be quite different from the past that people like me lived. Faced with this prospect, we need principles that help us make sense of the new world we are entering.

When the radio burst onto the scene, the Amish group I mentioned applied their simple principle—*does it encourage us to care for our neighbour?*—and rejected it. As a modern person who grew up in a big city (Sydney) with a PlayStation 3, an iPod, and a beautiful 1986 Mitsubishi Sigma with a red speed line down the side, I’ve always thought the Amish approach was rather silly. But in a few decades, we might look to that Amish decision with rather more admiration. The implications of the radio are still playing out. Does that justify their approach? We’d need principles of our own to even begin to answer that.

But before we’ve even had time to get our heads around the implications of social media, the internet, television, the radio, or even really barbed wire, here comes the next revolution. Something’s happened: we’ve taught silicon to think, and the implications of that will soon be upon us. The horses are snaking north, the couriers are on their way, and the smart people think they know whether to buy or sell. Our world is bursting to change.

The speed of this revolution might be different from anything we’ve experienced. Technology normally spreads by generational

13 Lukianoff and Haidt, *The Coddling of the American Mind*, p 147.

attrition. That's a nice way of saying that older people often don't try out the new thing; they choose to live without the smartphone or the GPS or the hovercraft. The elderly will stick with the tried-and-true, and their grandchildren will complain about the Wi-Fi.

But now, in the 21st century, the pace of change is faster than generational attrition. The internet and the computer spread faster than electricity, the telephone, or the refrigerator. Yet social media spread faster than even the internet. Netflix took three-and-a-half years to reach a million users. Instagram took 75 days. ChatGPT, a conversational artificial intelligence, took five days. In early 2024, as I write this, ChatGPT has 100 million different users in an average week and has spread to that scale purely by word of mouth.<sup>14</sup> Most technological revolutions spread at walking pace. This one is spreading at the speed of light.

## What is artificial intelligence?

So how about we at least start with a definition? Artificial intelligence is suddenly all around us—we talk to it, drive by it, and unlock our phones with it. But what is it?

'Artificial' just means that it wasn't produced naturally. The harder word is 'intelligence'. The *Concise Oxford English Dictionary* defines intelligence as "the ability to acquire and apply knowledge and skills". If you then seek a definition of 'knowledge' in the same dictionary, you are told that it is "information and skills acquired through experience or education". That led me to seek a definition of 'information', which the dictionary says is "facts or knowledge provided or learned".

In summary, *intelligence* is about acquiring and applying *knowledge* and *skills*. *Knowledge* is *information* and *skills*, and *information* is *facts* or *knowledge*. Do you feel like we are being led in a circle? When my son has a question I can't answer, I encourage him to ask his

14 S Altman, 'OpenAi DevDay, Opening Keynote' [video], *OpenAI*, 7 November 2023 ([youtube.com/watch?v=U9mJuUkhUzk](https://youtube.com/watch?v=U9mJuUkhUzk)).

mother. If she can't answer, she'll encourage him to come and ask me. Eventually, our hope is that our question dodging will wear him down and he'll get on with his next activity. I now realize that the *Concise Oxford English Dictionary* employs the same strategy.

Why is the dictionary dodging and weaving? I think it's because there's a vagueness to *intelligence*. It's a slippery concept, a rabbit you chase round and round the garden. The best grip of the rabbit's tail—the least slippery definition—is there in the conjunction of *acquiring* and *applying* knowledge. Perhaps we can break it down like this:

- A person, animal or computer that is good at *acquiring* knowledge can suck in complex information rapidly and accurately. A database can do this well, but it isn't intelligent.
- A person, animal or computer is good at *applying* knowledge when it can bring knowledge to bear to solve a problem. A calculator can do this well, applying a process of addition or subtraction, but it also isn't intelligent.
- An *intelligent* being both *acquires* and *applies* knowledge. It can learn about the world, and then bring what it has learned to bear in solving problems. The more complex and varied the knowledge and problems, the higher the intelligence.

An artificial intelligence, then, would be something that is produced not through natural means, that can acquire complex, varied knowledge, and then apply that knowledge to solving complex, varied problems.<sup>15</sup>

Here's a quick snapshot of various AI technologies at the time of writing. This might look hopelessly dated by the time you're reading, but that in itself would be telling:

*Chatbots (or large-language models)*: The most widely used chatbot as of early 2024 is ChatGPT. There are dozens of alternatives with different flavours. Character.AI is focused on conversations and relationships. You can either create your own character, or talk to a

15 For those versed in philosophy of mind, I'm not including any notion of *personhood* or *consciousness* in my definition of *intelligence*. I'll address consciousness more directly at the end of chapter three.

psychologist or an artificial boyfriend or girlfriend. Other conversational chatbots include Replika, Mitsuku, Kajiwoto, Kuki, Simsimi and George.

*Image, video, or audio generators:* The big three image generators are Midjourney, DALL•E and Stable Diffusion. Music generators are a step behind image, but hundreds will surely come to market in the next few years. The main ones now are Aiva and Boomy.

*Teaching and learning:* Artificial intelligence is being incorporated into teaching and learning systems in various ways. Students will be able to find AI tutors through companies like Khan Academy.

Beyond these three categories, artificial intelligence is already everywhere. AI is suggesting shows on streaming services, running the voice recognition on your phone, controlling the characters in your video game, running your social-media feed, and currently being incorporated into programs like Microsoft Word, Excel, Outlook, Gmail, and many others.

That's a snapshot of the present, but where might things be headed?

Picture this: you sit at your laptop explaining your brand-new theorem in experimental quantum string theory. The laptop understands your brand-new theory, and you know this because it correctly answers 30 precise follow-up questions you ask it. You then ask the computer to apply your new theory to our understanding of black holes. It correctly does so on its first attempt.

A machine like this would be, in my view, extremely intelligent.

As I write this book, the state of the art in AI is far short of this. On the other hand, I think we have seen, in miniature, artificial intelligence that can acquire and apply remarkably complex and varied knowledge.

I remember three moments that convinced me of the intelligence of modern AI.

First, I asked a neural network to guess where I grew up and gave it three vague clues:<sup>16</sup> I told it that I was born in the southern hemisphere, that I grew up near an airport, and that I grew up near a busy

<sup>16</sup> For more on what a neural network is, read on!

port. It correctly guessed that I grew up near Port Botany in Sydney.

Second, after spending an afternoon interacting with an AI, I asked it to guess my Myers-Briggs personality type, and it guessed correctly (a one-in-16 guess, for the uninitiated).

Third, I explained my view on a very intricate subject, using a set of analogies and definitions that I haven't seen used before. I haven't come across my view in print. The artificial intelligence not only grasped my point, but also gave me very helpful pushback to sharpen my thinking on the issue.

Was I dealing with artificial intelligence? The next chapter will help us to dwell on this key question. But in short, my view is that, yes, modern neural networks are rightly called artificial intelligence.

### **Should we be tech optimists or tech pessimists?**

Before we continue, some readers might be keen to know whether I am a tech optimist or a tech pessimist. Does my view of technology lean in a hopeful direction, or a gloomy direction?

Christian tech optimists have a fundamentally positive view of technology. They will emphasize God's sovereignty over all things, including technology. They will emphasize that God made humanity to create, to be creative, and to fill and govern and tend to his world. Christian tech pessimists have a negative view. They will emphasize sin and the fall, noting that in this world in its rebellion against God, tech is often used for evil. They will talk about God giving his creatures freedom as 'second causes' to make horrific technological mistakes.

My view is that both camps are obviously right and obviously wrong. They are obviously right in what they say, and obviously wrong in what they gloss over or ignore. Neither of these extremes give you a full picture, and I'm a bit concerned about each.

To illustrate the point, let's think about a technology near and dear to all our hearts: load distribution. Have you heard of it?

The ancients thought hard about load distribution. A pyramid is a precise distribution of weight, otherwise it wouldn't be a pyramid. Roman arches, domes and vaults carefully allocate the load.



The Pantheon, built in Rome and dedicated in the second century, is still there today, bearing the load of its enormous roof.

You even see load distribution in the Bible. Noah built his ark to carry the load of the walls, the passengers, and the animals. At Babel, people built a tower reaching towards the heavens. At Golgotha, people built a cross that would hold the Lord Jesus up above the ground until he breathed his last. Here are three situations in which load distribution was a crucial technology.

Here's my question: are you an optimist or a pessimist about the technology (or family of technologies) that govern load distribution? Are you going to be in the "load distribution is good" camp, or the "load distribution is sin" camp? Which team are you on?

It should be near impossible to answer.

Noah built his ark for good, but Babel and the cross were aimed at evil. God brought good out of Babel, and out of the cross, but that doesn't make me a crucifixion optimist. There's no cheap optimism at the cross. The cross shows the absolute horror of human inventiveness after the fall. Christians cannot buy into the naïve positivity of Silicon Valley, because we have seen the cross. The cross shows us *how* the sovereignty of God is exercised: it is exercised even as God hands people over to do the most atrocious evil (see Acts 2:23).

Let me ask another question: what's your theology of *movement*? Is movement good or bad? Are you a movement optimist or a movement pessimist? God is sovereign over all movement, and we were moving even before the fall. So, is movement good? Have I convinced you? Or is movement a fundamentally worldly concept, a pagan idol? Should Christians be heroically avoiding the movement that our world loves, distinctively choosing not to translate potential energy into spatial displacement. Which side are you on?

Again, it should be almost impossible to answer.

Movement is used for good, and movement is used for evil. Before the fall, it was clearly good. After the fall, movement is too diverse and too conflicted to invoke optimism or pessimism. I could be moving so I can help an elderly lady to cross a road. I could be moving to push her down.

*Technology* is every bit as diverse as *movement*—and every bit as impossible to cleanly categorize.

I'm an optimist about certain technologies. I'm a fan of fridges. I like chairs. I quite like smartphones and computers, but it's clear that both can cause immense harm to particular people in particular contexts at particular ages. I wear glasses, and I'm a huge fan of being able to see. Without glasses, I would have spent my life walking into doors. Having said that, I'm not negative on doors. I am surrounded by technologies numbered in the millions, and they help me and serve me and make my life better.

They are—and don't glide over this point—a gift from God. Do you thank God for them? God made our world jammed full of potential. Nothing that we ever invent is beyond his imagination. It was there, in potential form, at the creation. We are gradually unlocking things that God created as possibilities. The amount of possibility still out there is just inconceivable. The idea that you can take a handful of uranium isotope and use it to power a city is just mind-boggling, and we should thank God for his many graces.

### **Three gardens, not alike in dignity**

To further explore this point, I'd like to introduce my garden. More than that, I'd like to introduce my neighbours' gardens. As an aside, if you, my neighbours, are reading this book, please be assured that your garden is the good one in what follows.

My garden, and my neighbours' gardens, are totally different from one another.

One neighbour has a lax approach to gardening. His grass reaches up to knee height, and his plants are dead. It's going backwards fast.

By contrast, my garden is mowed, regularly, by my father-in-law (I don't have time for that). My wife and even my son prune the roses, and my mother is planting a line of bushes out the front. Occasionally I get the hose and spray water around with the most confident look I can muster.

Next to me is an even finer garden. Sometimes I peer enviously

at it. The only way to see it is to stand on my bed and look down over the fence. I haven't been caught staring yet, but I assume that someday I will awkwardly be exposed for my garden envy. The owner has levelled it and built a lovely deck. The plants are all just right. It's fantastic.

What was the garden of Eden more like? Was it more like the finished garden, the garden in progress, or the abandoned garden? Out of the three, I think it was most like my garden. Look at this description:

When no bush of the field was yet in the land and no small plant of the field had yet sprung up—for the LORD God had not caused it to rain on the land, and there was no man to work the ground ... (Gen 2:5)

No bushes or plants had sprung up partly because there was no human to work the ground. It was unfinished without human labour. Adam and Eve were put there to be part of the filling out and beautifying of the world—the ancient equivalent of my father-in-law. They were made to work and be creative. And when you work or be creative, you're doing something that's deep in your bones. You're being who you are, doing what you were made to do.

Isaiah 28 pushes this idea even further. It suggests that, in some sense, God gives us some of our deep technological knowledge:

Dill is not threshed with a threshing sledge,  
nor is a cart wheel rolled over cumin,  
but dill is beaten out with a stick,  
and cumin with a rod.

Does one crush grain for bread?

No, he does not thresh it forever;  
when he drives his cart wheel over it  
with his horses, he does not crush it.

This also comes from the LORD of hosts;  
he is wonderful in counsel  
and excellent in wisdom. (Isa 28:27–29)

God made us to be technological beings, and to shape the world using tools. He even gave us the knowledge that we need to do so. The many tools that we have in the 21st century are—and don't glide over this point—a gift from God.

### **The two sides of inventiveness**

On the other hand, take a deep breath. Unfortunately, any Christian evaluation of technology *must* discuss things like crack cocaine, internet pornography, landmines, sarin gas, ransomware, the hundred different innovations that made the trans-Atlantic slave trade possible, and all the other horrors. Any decent history of slavery is a history of technology. Any decent history of the Holocaust is a history of technology. Any decent history of abortion is a history of technology.

But that side of the story is also incomplete. Any history of the spread of the gospel is a history of technology, praise God. The gospel came to me—here in Australia, “the end of the earth” to most people (see Acts 1:8)—after a long voyage. It travelled along Roman roads made with gromas and wheelbarrows and Roman concrete. It went back and forth across the Mediterranean in boats moved by sails, with rigging and anchors. It was written down with ink and quills, stored in scrolls and parchments and codices. Eventually, a man in Mainz (in modern-day Germany) invented a method of mass-producing movable type, allowing for the mass production of text. The printing press was a significant driver of the Protestant Reformation, and modern printers have helped the gospel to spread to an ever-growing list of countries and languages.

Inventiveness has a dark shadow. It can be used for good, and it often is. After the fall, it is also often used for evil. I don't have the clarity of a singular viewpoint. I have tension. My view of technology is that it is, like movement, something good but fallen. It's the enabler of the cross and the carrier of the gospel. The best and worst of humanity.

The result of this is that I'm against *instinctive reactions*. If someone is instinctively positive or negative about a new technology,

that worries me. We should treat each technology on its own merits, rather than forming a general view.

In technology, as in movement, it's better to take it one step at a time.

## Preparing for change

If you're a Christian reading this book, before we go any further I want to say: don't be afraid. Don't be scared. The older you are, the more frightening this all is. As Douglas Adams wrote:

I've come up with a set of rules that describe our reactions to technologies:

1. Anything that is in the world when you're born is normal and ordinary and is just a natural part of the way the world works.
2. Anything that's invented between when you're fifteen and thirty-five is new and exciting and revolutionary and you can probably get a career in it.
3. Anything invented after you're thirty-five is against the natural order of things.<sup>17</sup>

The older you are, the harder change is. There's something scary about the world changing all around you, just at the age when you want it to stay the same.

Because this is a book about technology, this is also a book about *change*. Technology and change are like lightning and thunder: if you see one, expect the other. If you see significant changes in technology, expect significant changes in society to follow.

Ultimately, our world will not stay the same. Ultimately, God is going to change things far more than technology ever has. You might want the world to stay the same, but God won't let it. He isn't planning to do a bit of weekly cleaning on the world or a renovation on the old creation. God is planning a knock-down rebuild on our

<sup>17</sup> D Adams, *The Salmon of Doubt: Hitchhiking the galaxy one last time*, Macmillan, 2002.

world, or at least an acorn-to-tree sort of transformation.

Not only that, but *you* won't stay the same either. God's people are already in a process of change. As Paul writes, "And those whom he predestined he also called, and those whom he called he also justified, and those whom he justified he also glorified" (Rom 8:30).

We know how things end. They end in God's people glorified before him after the creation is set free from its corruption. We aren't called to hold the line and keep the world as it was. We are called to *hope*. We are called to godly living as we wait and groan for the thing we can't see, and can't imagine, because our imagination isn't good enough.

Change is inevitable. Don't be afraid; be hopeful.

But beyond that, I think we need to do two things to be ready for this next wave of technology-driven change.

First, we need to think about artificial intelligence. That might already be a challenge. It's a confusing topic. Technology usually comes with a new vocabulary, with a science lesson, and with all sorts of counterintuitive details. Who has the time to understand?

Challenging it may be, but we should make time to grasp the key ideas.

Sticking our heads in the sand won't keep us safe, but it will make us sandy. If you ignore the great waves of technological change, you'll probably just be caught up and carried around. If a great wind blows, you don't hold your ground by ignoring it; you hold your ground by leaning against it. As Romans 12 says, "do not be conformed to this world, but be transformed by the renewal of your mind, that by testing you may discern what is the will of God" (Rom 12:2).

It's easy to be *conformed* to the world, but being *transformed* requires a bit of work, a bit of effort, a bit of testing and discernment. You need to switch on your brain. So, we need to think about the issue. We need to learn a bit about artificial intelligence.

But we have a second task—one that's even more important than the first: we need to think about the issue *Christianly*.

It's one thing to just think about something, but it's another thing to bring to bear the wisdom and weight of the biblical narrative so

that we can make sense of change. We need to think about artificial intelligence *as Christians*. We will need to find our principles, to figure out how the Bible might speak into our topic.

This means that, a bit like the Amish with the radio, we need a clear sense of what matters to us, and of our place in God's world, so that we can make sense of the future. We won't be able to predict the future in exact detail, so we need to know what matters most.

Figuring out what the Bible says about artificial intelligence may sound almost impossibly difficult. The Bible, to my knowledge, never mentions *deep learning*, *backpropagation*, or *neural nets*. There's plenty in there about *nets*, but that's usually in the context of fish.

But it isn't just that the Bible fails to mention artificial intelligence; it doesn't even come close to the topic. It isn't even in the same continent as our topic. So, what do we do? What would you do? How would you seek wisdom from the Bible for this, so modern a topic?

### **Finding our starting point**

We should begin by reassuring ourselves of a few key truths. God has given us "all things that pertain to life and godliness, through the knowledge of him who called us to his own glory and excellence" (2 Pet 1:3). A Christian has *all things that pertain to life and godliness*. That's quite a description. *Godliness* is a very large category, and *life* seems to cover quite a bit.

In particular, Christians know that "all Scripture is breathed out by God and profitable for teaching, for reproof, for correction, and for training in righteousness, that the man of God may be complete, equipped for every good work" (2 Tim 3:16–17). The Scriptures claim to offer enough to make a person *complete* and *equipped for every good work*. Again, *every good work* is quite an all-embracing category.

Christians often underestimate how much their Bibles speak into the issues of the modern world. Part of the problem is that we simply don't know our Bibles well enough. But perhaps more than that, we don't practise connecting our Bibles with our worlds. We

don't get in the habit of reading the newspaper (another practice the television killed off) with biblical glasses.

Perhaps, then, when we can't find a singular verse that tells us, in black-and-white terms, what to do, we are tempted to switch too quickly to secular wisdom. The problem here is that as time passes, more and more of *life* and *godliness* and *every good work* is about stuff the Bible never mentions. The danger is that Christianity becomes more disconnected from life and becomes exclusively a story about the past, not a story containing wisdom and guidance for the present.

Do you ever slip into that way of thinking? It leaves room for two bad options.

The first bad option is for us to become functional nonbelievers in the major matters of life, thinking about our world in the same way that others do. We won't be *salt* and *light* (see Matt 5:13–16); we'll just be more of the same, but with different coffee mugs. When the next generation sees the disconnection between our faith and our lives, they'll be tempted to ditch the faith.

The second bad option is for us to become mystics. We won't seek guidance from the Bible, unless it's vague, short, and probably out of context. We will wait for individual guidance from God in the way of dreams, visions, hints, nudges, feelings of certitude. We will demote *the word* of God and seek *new words* from God. We won't make large decisions based on God's sufficient principles stated in Scripture.

Then the next generation will see that our faith isn't based on the objectivity of God's word. They'll question whether we are speaking to ourselves, and whether we're just following our feelings. Ultimately, they won't be drawn to the objective reality of the death and resurrection of Jesus. They won't pray to understand the Bible more. They'll pray for visions in the night.

Ultimately, this is a question of authority. What authority will reign over your life and inform your opinions and decisions, big and small?

Will you be, first and foremost, a person of the intellect, a person who follows reason wherever it leads?



Will you be, first and foremost, a person of tradition, who follows what the church, or your parents, once did or said?

Will you be, first and foremost, a person of experience, who follows what you've seen?

Will you be, first and foremost, a person of intuition, who follows what feels right?

Or will you be, first and foremost, a Bible person, who sits under the authority of Scripture?

If there's a clash—for example, if reason and Scripture seem to conflict, or if experience tells you something the Bible says isn't so—how will you resolve that tension?

I want to encourage you to see the issues of the world through biblical glasses. I don't want that to exclude reason or tradition or experience. But I do want the Bible to govern all those alternative sources of authority, to rule over them, to get the first and final word.

But you'll only give Scripture the first and final word if you understand the Bible at a deeper level than just nice verses out of context. The Bible offers more than coffee-mug-calibre zingers. It offers more than wonderful paragraphs or stirring letters (although it contains both those things). The Bible offers a framework, a set of principles. It offers a narrative to understand ourselves, our world, our past, our future, the dangers of life, the virtues and vices of life. Above all else, the Bible offers an insight into the character and plan of the God who made both our world and us in it. It gives an account that has order and logic—a true story of God's work to save his world and glorify his Son.

And if we understand the story of the Bible, we'll understand that, though the Bible doesn't talk *about* artificial intelligence, it sure does talk *into* the issue of artificial intelligence. In fact, it talks *into* the topic in a hundred different ways.



This book, then, is going to think about artificial intelligence through a simple framework:

- Creation
- Sin
- The cross of Jesus
- The new creation

These events happen in order, with each one summarizing a key moment in the unfolding account of God's work in the world, and each one speaking *into* the issue of artificial intelligence. Each event gives us principles that help a Christian to think wisely about any issue, including AI, as we live in this time of expectation.

So, before the couriers reach us and our world changes again, let's think about how the Bible speaks into the issue of artificial intelligence.

But to do that properly, we need to start by making sure we understand artificial intelligence.