

ARTIFICIAL INTELLIGENCE
AND THE CHRISTIAN FAITH



The Robot Will See You Now

FOREWORD BY JUSTIN WELBY

EDITED BY
JOHN WYATT & STEPHEN N. WILLIAMS

John Wyatt is Emeritus Professor of Neonatal Paediatrics, Ethics and Perinatology, University College London, and Faraday Associate at the Faraday Institute for Science and Religion, Cambridge. He has a special interest in the interface between medical ethics, technology and Christianity, and co-led a research project on the social, ethical and theological implications of advances in artificial intelligence and robotics based at the Faraday Institute. He is the author of *Dying Well, Right to Die: Euthanasia, assisted suicide and end-of-life care* and *Matters of Life and Death: Human dilemmas in the light of the Christian faith* (all published by IVP in 2018, 2015 and 2009 respectively).

Stephen N. Williams is Honorary Professor of Theology at Queen's University, Belfast, and was a participant in the research project based at the Faraday Institute, Cambridge. His books include *The Election of Grace: A riddle without a resolution?* (Eerdmans, 2015), *The Shadow of the Antichrist: Nietzsche's critique of Christianity* (Baker Academic Press, 2006) and *Revelation and Reconciliation: A window on modernity* (Cambridge University Press, 1995).

THE ROBOT WILL SEE YOU NOW

Artificial intelligence and the Christian faith

Edited by
John Wyatt and Stephen N. Williams



First published in Great Britain in 2021

Society for Promoting Christian Knowledge
36 Causton Street
London SW1P 4ST
www.spck.org.uk

Copyright © John Wyatt and Stephen N. Williams 2021

The contributors have asserted their right under the Copyright, Designs and Patents Act 1988 to be identified as Authors of this work.

All rights reserved. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

SPCK does not necessarily endorse the individual views contained in its publications.

The authors and publisher have made every effort to ensure that the external website addresses included in this book are correct and up to date at the time of going to press.

The authors and publisher are not responsible for the content, quality or continuing accessibility of the sites.

Unless otherwise indicated, Scripture quotations are from the ESV Bible (The Holy Bible, English Standard Version), copyright © 2001 by Crossway, a publishing ministry of Good News Publishers. Used by permission. All rights reserved.

Extracts marked *AV* are from the Authorized Version of the Bible (The King James Bible), the rights in which are vested in the Crown, and are reproduced by permission of the Crown's Patentee, Cambridge University Press.

Scripture quotations marked *NIV84* are taken from the HOLY BIBLE, NEW INTERNATIONAL VERSION. Copyright © 1973, 1978, 1984 by International Bible Society. Used by permission of Hodder & Stoughton Publishers, a member of the Hachette UK Group. All rights reserved. 'NIV' is a registered trademark of International Bible Society. UK trademark number 1448790.

The Scripture quotation taken from the New King James Version is copyright © 1982 by Thomas Nelson, Inc. Used by permission. All rights reserved.

Scripture quotations marked *NRSV* are taken from the New Revised Standard Version of the Bible, Anglicized Edition, copyright © 1989, 1995 by the Division of Christian Education of the National Council of the Churches of Christ in the USA. Used by permission. All rights reserved.

British Library Cataloguing-in-Publication Data

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

ISBN 978-0-281-08435-7

eBook ISBN 978-0-281-08436-4

Typeset by Fakenham Prepress Solutions

eBook by Fakenham Prepress Solutions

Produced on paper from sustainable sources

Contents

List of contributors	viii
Foreword by the Archbishop of Canterbury	ix
Editorial introduction <i>John Wyatt and Stephen N. Williams</i>	xi
Introduction: a computer technology perspective <i>Peter Robinson</i>	1

Part 1

WHAT IS GOING ON? CULTURAL AND HISTORICAL ANALYSIS

1 Science fiction, AI and our descent into insignificance <i>Christina Bieber Lake</i>	13
2 Out of the machine: cinema and science fiction <i>Crystal L. Downing</i>	28
3 Behind artificial intelligence <i>Stephen N. Williams</i>	43
4 Being human in a world of intelligent machines <i>John Wyatt</i>	57
5 AI and robots: some Asian approaches <i>Vinoth Ramachandra</i>	73

Contents

Part 2

THEOLOGICAL FRAMEWORKS AND RESPONSES

- | | | |
|---|-----------------------------------------------------------------------------------------------|-----|
| 6 | What is it to be a person?
<i>Stephen N. Williams</i> | 93 |
| 7 | Robots, AI and human uniqueness: learning what
not to fear
<i>Robert Song</i> | 107 |
| 8 | Surrogate, partner or tool: how autonomous should
technology be?
<i>Noreen Herzfeld</i> | 121 |
| 9 | The future of humanity
<i>Victoria Lorrimar</i> | 135 |

Part 3

ETHICAL AND SOCIAL ISSUES

- | | | |
|----|-----------------------------------------------------------------------------------------|-----|
| 10 | Sextech: simulated relationships with machines
<i>Andrew Graystone</i> | 151 |
| 11 | Are the robots coming for our jobs?
<i>Nigel Cameron</i> | 166 |
| 12 | The impact of AI and robotics on health and social care
<i>John Wyatt</i> | 181 |
| 13 | Art, music and AI: the uses of AI in artistic creation
<i>Andrzej Turkanik</i> | 198 |
| 14 | The question of surveillance capitalism
<i>Nathan Mladin and Stephen N. Williams</i> | 214 |

Contents

Conclusion	228
<i>John Wyatt and Stephen N. Williams</i>	
Further reading	234
Index of authors	239
Index of subjects	241

Contributors

Nigel Cameron is President Emeritus, Center for Policy on Emerging Technologies, Washington, DC.

Crystal L. Downing is Marion E. Wade Professor in Christian Thought at Wheaton College, Illinois, USA.

Andrew Graystone is an independent author, broadcaster and journalist, and Fellow of St John's College, Durham University.

Noreen Herzfeld is Professor of Theology and Computer Science at the College of St Benedict/St John's University, Minnesota, USA.

Christina Bieber Lake is Clyde S. Kilby Professor of English at Wheaton College, Illinois, USA.

Victoria Lorrimar is Lecturer in Systematic Theology at Trinity College, Queensland, Australia.

Nathan Mladin is Senior Researcher at Theos think tank in London.

Vinoth Ramachandra is International Secretary for Dialogue and Social Engagement, International Fellowship of Evangelical Students, and is based in Sri Lanka.

Peter Robinson is Professor of Computer Technology at the University of Cambridge Computer Laboratory.

Robert Song is Professor of Theological Ethics at Durham University.

Andrzej Turkanik is Executive Director of the Quo Vadis Institute, Salzburg, Austria.

11

Are the robots coming for our jobs?

NIGEL CAMERON

We are being afflicted with a new disease of which some readers may not yet have heard the name, but of which they will hear a great deal in the years to come – namely, technological unemployment. This means unemployment due to our discovery of means of economising the use of labour outrunning the pace at which we can find new uses for labour.¹

It seems almost quaint to read John Maynard Keynes's worries about robots taking our jobs way back in 1930! But in his famous essay on technology and the future, he was, as ever, looking ahead.

The most influential economist of the twentieth century, Keynes laid out with startling clarity the employment implications of technology getting ahead of the labour market. Twenty years later, in the USA, the mathematician Norbert Wiener, known as the father of cybernetics (he made up the word), said much the same thing. As he looked forward, he also looked back and drew a precise parallel with the 'slave economy' – writing, of course, at a time when Americans born into slavery were still alive. In a slave economy, the slaveholder always wins; slaves are just cheaper. It's a parallel that reminds us of the origin of the word 'robot' – first coined by the Czech writer Karel Čapek in his 1920 play *R.U.R.*:

¹ John Maynard Keynes, 'Economic possibilities for our grandchildren' (1930), in *Essays in Persuasion* (New York, NY: Harcourt Brace, 1932), 358–73.

Are the robots coming for our jobs?

Rossum's Universal Robots and derived from the Czech word for a serf or a slave.

'Let us remember', Wiener wrote,

that the automatic machine, whatever we think of any feelings it may have or may not have, is the precise economic equivalent of slave labor. Any labor which competes with slave labor must accept the economic conditions of slave labor. It is perfectly clear that this will produce an unemployment situation, in comparison with which the present recession and even the depression of the thirties will seem a pleasant joke.²

Or, as the US computer scientist and entrepreneur Marshall Brain has said, we need to prepare for the coming of a 'second intelligent species'.³ That's a provocative way of putting it, and we need to be provoked!

Here's how I open my book, *The Robots Are Coming: Us, them and God*:

The world will soon be teeming with new creatures. It will be the most dramatic change in the history of the human race. It promises to be wonderful, and to be terrible, but above all to be confusing. Because these life-forms will be made by us.

They won't be people. They won't be animals. But also they won't be 'things' in the sense in which we have understood 'things' in the past. We don't yet know much about Them and how They will develop. But we can be sure of some facts: They are developing very fast. They are smart – and will keep on getting smarter. They will take on more and more of the tasks

2 Norbert Wiener, *The Human Use of Human Beings: Cybernetics and society* (Boston, Mass.: Houghton Mifflin, 1950; repr. 1989), 189.

3 Marshall Brain, *The Second Intelligent Species: How humans will become as irrelevant as cockroaches* (Cary, NC: BYG Publishing, 2015).

that used to be our responsibility. They will work for us, and alongside us. And They will become more like Us all the time.⁴

We believe that God gave us ‘dominion’ over the rest of his creation – to use our minds and our hands for him. Our God-given intelligence has used the raw materials of which this earth is full to invent everything from the wheel and the plough to cars and aeroplanes – and now highly intelligent machines that threaten to take away our jobs, by doing them more efficiently than we can. The significance of these foundational Christian beliefs is explored elsewhere in the present volume and I am assuming the centrality of work as a calling from God. My focus here is on the likely context in which the Church, and individual believers, will have to interpret the Christian world view as labour markets shift and the role of technology (and therefore capital) vis-à-vis human labour becomes increasingly, and perhaps devastatingly, significant.

Of course, the conventional wisdom is that it’s nonsense to worry about the future of employment. Here it is, summed up by Internet inventor (and Google guru) Vint Cerf: ‘Historically, technology has created more jobs than it destroys and there is no reason to think otherwise in this case.’⁵

But what if that assumption proves false? It’s not just people on the political left, who tend to be more sceptical of new technologies, who are asking hard questions about the employment impact of robotization. Here is the US conservative intellectual Charles Murray, writing in the *Wall Street Journal*:

We are approaching a labor market in which entire trades and professions will be mere shadows of what they once were.

4 Nigel Cameron, *The Robots Are Coming: Us, them and God* (London: CARE Trust, 2017), vii.

5 Quoted by Walter Frick, ‘Experts have no idea if robots will steal your job’, *Harvard Business Review* (8 August 2014), <<https://hbr.org/2014/08/experts-have-no-idea-if-robots-will-steal-your-job>>, accessed 8 March 2021.

Are the robots coming for our jobs?

I'm familiar with the retort: People have been worried about technology destroying jobs since the Luddites, and they have always been wrong. But the case for 'this time is different' has a lot going for it.

When cars and trucks started to displace horse-drawn vehicles, it didn't take much imagination to see that jobs for drivers would replace jobs lost for teamsters, and that car mechanics would be in demand even as jobs for stable boys vanished. It takes a better imagination than mine to come up with new blue-collar occupations that will replace more than a fraction of the jobs (now numbering 4 million) that taxi drivers and truck drivers will lose when driverless vehicles take over . . .

The list goes on, and it also includes millions of white-collar jobs formerly thought to be safe.⁶

Murray draws attention to the fact that when horse-drawn vehicles were replaced by trucks there was still a need for drivers, although the news for horses was not so good; they went to the knackers' yard. And as I point out in my book, *Will Robots Take Your Job? A plea for consensus*,⁷ the threat isn't confined to the jobs of humans and horses. For the 1988 French film *The Bear*, more than fifty trained bears were auditioned. But in the Oscar-winning blockbuster of 2015, *The Revenant*, that was not necessary. Even though the story centres on a grim, protracted fight between the lead character (a trapper played by Leo DiCaprio) and a grizzly, not a single bear was auditioned. It may be hard to credit if you've seen the film, but the 'bear' was pure pixels.⁸

6 Charles Murray, 'A guaranteed income for every American', *Wall Street Journal* (3 June 2016), <www.wsj.com/articles/a-guaranteed-income-for-every-american-1464969586>, accessed 8 March 2021.

7 Nigel Cameron, *Will Robots Take Your Job? A plea for consensus* (Cambridge: Polity Press, 2017).

8 See Jason Guerrasio, 'How that infamous bear-attack scene in "The Revenant" was made, and other secrets of the movie revealed', *Insider* (26 December 2015), <www.businessinsider.com/the-revenant-filming-secrets-2015-12?r=US&IR=T>, accessed 14 February 2021.

In *Will Robots Take Your Job?*, I assume that the conventional wisdom could be wrong. If it's right, of course, we've no reason to worry. As Tom Standage, the deputy editor of *The Economist*, writes in his endorsement of the book: 'Nigel Cameron has a refreshingly honest answer to the question of whether robots will take all the jobs: we don't know.' My argument was twofold. First, if things do turn out all right – if what we refer to as 'full employment' survives (the slightly vague idea that most people looking for jobs can find them) – we are, nevertheless, going to face choppy times in labour markets as we get from here to there. Already, cab drivers have been disrupted the world over by Uber, and high-street shops by Amazon, and this process has just started. We need to get ready for waves of 'Industrial Revolution'-type labour market disruption in many traditional industries. Second, we have to acknowledge that there's a possibility – in the book, the phrase I use is a 'non-trivial possibility' – that these disruptive technologies will not create enough new jobs to enable 'full employment' to be maintained. How likely is this outcome? To be candid, the more I've been involved in these discussions over the past decade, the more uneasy I've become because, if things do go wrong for labour markets, the long-term impact could be devastating. I'm not sure and no one can be sure. But sane people buy fire insurance for their homes, even though the chance of my home burning down is tiny. We have to be prepared.

In the light of the devastation caused by the coronavirus pandemic, which most people (including government employees in the Department of Health and leaders in Public Health England) assumed would not happen and therefore did not need to be prepared for, we should heed the possibility that the conventional wisdom is being driven by plain wishful thinking. And while the coronavirus has had terrible consequences for both health and the economy, they are consequences in the short term. Those of us who aren't killed by the virus will soon have recovered, and so will our

Are the robots coming for our jobs?

economy. If robotization destroys full employment, the drastic implications will be with us for ever and, of course, will just get more serious – from the human employment perspective. Once ‘unemployment due to our discovery of means of economising the use of labour’, in Keynes’s elegant phrase, has started to ‘outrun’ the ‘pace at which we can find new uses for labour’, the race will prove unequal.

While the standard view continues to be that we have no reason to worry, there are various dissident voices emerging across the political spectrum – even from inside the tech community. Bill Gates, the co-founder of Microsoft and a philanthropist, has put it like this: demand for labour is going to go down and we’re not prepared because people don’t ‘have that in their mental model’.⁹ From the liberal end of the political spectrum, Lawrence Summers, the former US Secretary of the Treasury under Bill Clinton (and President of Harvard), has undergone something of a conversion experience and now believes that the latter-day ‘Luddites’ might be right. In a 2013 lecture titled ‘Economic possibilities for our children’, which echoes the famous Keynes essay we have quoted, Summers reflects on his first awareness of the question during his undergraduate days at the Massachusetts Institute of Technology (MIT):

There were two factions in those debates. There were the stupid Luddite people, who mostly were outside of economics departments, and there were the smart progressive people . . . The stupid people thought that automation was going to make all the jobs go away and there wasn’t going to be any work to do. And the smart people understood that when more was produced, there would be more income and therefore there

⁹ Brad Reed, ‘Bill Gates: yes, robots really are about to take your jobs’, *BGR* (14 March 2014), <<https://bgr.com/2014/03/14/bill-gates-interview-robots>>, accessed 8 March 2021.

would be more demand. It wasn't possible that all the jobs would go away, so automation was a blessing. I was taught that the smart people were right.¹⁰

He goes on to observe that he has had reason to change his mind and depart from the conventional wisdom:

Until a few years ago, I didn't think this was a very complicated subject; the Luddites were wrong and the believers in technology and technological progress were right. I'm not so completely certain now.¹¹

Keynes framed the question in terms of technology outrunning our finding new uses for labour. Summers frames it as machine intelligence substituting capital for labour. While machines have traditionally complemented human labour – which goes back to the Industrial Revolution and, in a more limited fashion, much further back – they could entirely replace it. Taking the self-driving car as an example, Summers writes, 'You can take some of the stock of machines and, by designing them appropriately, you can have them do exactly what labor did before.'¹² Plainly, if that becomes the pattern, the game is up; the machines will have all the jobs.

Even highly skilled jobs? That may seem unlikely, although in a provocative book, the father-and-son team of Richard and Daniel Susskind suggest that the next jobs to go could be the professions.¹³

10 Lawrence H. Summers, 'Economic possibilities for our children', *NBER Reporter*, no. 4 (2013), 1–6; see <www.nber.org/reporter/2013number4/economic-possibilities-our-children>, accessed 8 March 2021.

11 See note 10.

12 See note 10.

13 *The Future of the Professions: How technology will transform the work of human experts* (Oxford: Oxford University Press, 2015), reviewed in 'Professor Dr Robot QC: once regarded as safe havens, the professions are now in the eye of the storm', *The Economist* (17 October 2015), <economist.com/news/business/21674779-once-regarded-safe-havens-professions-are-now-eye-storm-professor-dr-robot>, accessed 13 February 2021.

Are the robots coming for our jobs?

How could the best-paid, most difficult and complex of human jobs, done by the ‘professionals’ who work as academics, doctors and lawyers, suffer the same fate as those of lorry drivers and cleaners? As *The Economist* magazine points out in an essay on the Susskinds’ book, these jobs used to be seen as ‘safe havens’ from all the technological modernization going on around them. Here is the core of their argument:

How far will this revolution go? Messrs Susskind and Susskind predict that it will go all the way to ‘a dismantling of the traditional professions’. These jobs, they argue, are a solution to the problem that ordinary people have ‘limited understanding’ of specific areas of expertise. But technology is making it easier for them to get the understanding they need when they need it.¹⁴

As we all know, you can already find plenty of legal advice (and free legal forms) online, and an endless amount of medical advice. People often annoy their doctors by taking along a sheaf of print-outs! And, as the Susskinds highlight, this process has just begun.

There are three ways of looking at the potential impact of technology on labour and employment: from history, from the perspective of emerging trends and from the human dimension.

1 History

As I argued recently in an article for the online magazine *UnHerd*, it’s not right to say, with Vint Cerf, that ‘historically, technology has created more jobs than it destroys’. The devil really is in the detail.¹⁵ Cerf’s sweeping statement echoes the responses of many

¹⁴ See note 13.

¹⁵ Nigel Cameron, ‘Why we should listen to the Luddites’, *UnHerd* (23 July 2018), <<https://unherd.com/2018/07/why-we-should-listen-to-the-luddites>>, accessed 13 February 2021.

in the technology community – and also political leaders anxious to prevent anxiety. Perhaps the most cavalier statement has come from Steven Mnuchin, a former US Secretary of the Treasury, in an interview with the US news website Axios. He claimed that the issue is ‘not even on our radar screen’; any such effects are ‘50 to 100 more years’ away!¹⁶

Meanwhile, researchers have been looking in increasing detail at the costs involved when Britain’s Industrial Revolution led to a huge jump in prosperity, including a detailed review of what effect the new machines had on the working population. For those of us reared on the standard view that the Luddites were overreacting and everything turned out for the best, they have unearthed disturbing facts. These are facts that we should bear in mind as we face fresh changes ahead.

We tend to think of automation as using machines to do routine work. But at the core of the Industrial Revolution, it was the opposite. The heart of the UK’s hugely successful textile industry was the ‘domestic system’ – skilled men and women working their looms at home. The new Industrial Revolution machines took this work into factories and made it simpler so that fewer operators, who had fewer skills and were paid less, could provide most of the labour.

One effect of this was a big increase in child labour: the machines were designed to be operated by children (who were paid little), and children made up around half the factory hands. Having lost their skilled work, the ‘domestic system’ artisans now faced competition for the new, lower-paid, machine-based jobs from less-skilled workers.

And it was this that led to the most startling effect of all: an astonishing increase in the number of unskilled labourers. The

16 Quoted in Jamie Condliffe, ‘Actually, Steve Mnuchin, robots have already affected the U.S. labor market’, *MIT Technology Review* (28 March 2017), <www.technologyreview.com/2017/03/28/152929/actually-steve-mnuchin-robots-have-already-affected-the-us-labor-market>, accessed 13 February 2021.

Are the robots coming for our jobs?

Chief Economist of the Bank of England, Andy Haldane, made a recent speech to the Trades Union Congress in which he stated that between 1700 and 1850 the proportion of unskilled workers in the British labour force actually doubled, from 20 per cent to 40 per cent.¹⁷ Of course, many of these workers did have skills, but their skills were no longer in demand. To find work, they had to compete with people such as farm labourers for unskilled jobs. It was, literally, generations before the situation turned around.

The Oxford economist Carl Benedikt Frey sums up the research:

Technological progress has created prosperity for mankind at large, yet it has always created winners and losers in the labour market. During the days of the British Industrial Revolution a sizeable share of the workforce was left worse off by almost any measure as it lost its jobs to technology . . .

During the first six decades of the Industrial Revolution, ordinary Englishmen did not see any of the benefits of mechanization: as output expanded, real wages stagnated, leading to a sharp decline in the share of national income accruing to labour.¹⁸

To be more specific, the researchers found that while output per worker increased by 46 per cent, real wages rose by just 14 per cent. Working hours actually increased by 20 per cent; hourly wages therefore actually declined in real terms.

In other words, the impact of the Industrial Revolution on the workers of England in the early nineteenth century was terrible, even though in the longer term it raised living standards for

17 Bank of England, 'Labour's share – speech by Andy Haldane' (12 November 2015), <www.bankofengland.co.uk/speech/2015/labours-share>, accessed 13 February 2021.

18 Carl Benedikt Frey, Thor Berger and Chinchih Chen, 'Political machinery: did robots swing the 2016 US presidential election?', *Oxford Review of Economic Policy*, vol. 34, no. 3 (2018), 418, 422–3.

everyone. We are reminded of Keynes's famous dictum that 'in the long run, we are all dead'.¹⁹

Strikingly, David Ricardo, the leading economist of his day, after initially enthusing about the machines changed his mind and ended up sympathizing with the Luddites! He wrote, 'I am convinced that the substitution of the machinery for human labour is often very injurious to the class of labourers.'²⁰ However, this did not mean he believed that the mechanization process should be closed down. His work on the principle of 'comparative advantage' is widely seen as the core idea behind what we now call globalization. It is not surprising, therefore, to find him saying that if the UK were not to take advantage of the new machines, other countries would.

2 Emerging trends

We can review how technology might affect jobs in the future from the perspective of emerging trends in the current situation. We know about the impact of Uber and other car-sharing companies on traditional cabbies, especially in cities such as New York, where the 'medallion' that licenses taxi drivers was, at one time, worth \$1 million; there have been reports of suicides as the value of licences has collapsed.²¹ Amazon started out as a bookseller, and rapidly killed off hundreds of small bookshops and then one of the two big US bookshop chains (Borders). Using its power as a monopsonist (a monopoly buyer) in the book trade, Amazon has had a huge impact on publishers, driving down consumer prices; it went to war with the Hachette group, which had tried to resist, and Amazon

19 See 'John Maynard Keynes', *Wikipedia*, <https://en.wikiquote.org/wiki/John_Maynard_Keynes>, accessed 13 February 2021.

20 David Ricardo, 'On machinery', *On the Principles of Political Economy and Taxation* (1817), ch. 31.

21 Brian M. Rosenthal, 'A \$750,000 taxi medallion, a driver's suicide and a brother's guilt', *New York Times* (23 December 2019), <www.nytimes.com/2019/12/23/nyregion/nyc-taxi-suicides.html>, accessed 13 February 2021.

Are the robots coming for our jobs?

won. Now, of course, the company sells pretty much anything, and its success has destroyed countless brick-and-mortar high-street retailers and threatened the big supermarket chains in many countries. These are both powerful examples of new technology-driven platforms that have disrupted traditional jobs and companies right across the economy – and in the process provide better value for consumers. They have succeeded in part by using technology and in part by creating large numbers of mostly low-paid jobs – although, as warehouses are increasingly robotized and cars become self-driving, almost all those jobs will disappear.

That takes us to a parallel trend: the emergence of new kinds of value produced with scarcely any human participation at all. This is most strikingly illustrated by the contrast between Kodak, for generations the global leader in photography, and Instagram. Kodak has essentially collapsed, but it once employed 145,000 people – plus, of course, indirectly, countless thousands in photography shops around the world. It's an astonishing fact that when Facebook bought Instagram in 2012, for a bargain of \$1 billion, the company had exactly 13 employees!

We used to take and print small numbers of photographs, and go to photography shops to get them developed. Now we take thousands of photos, store and share them digitally, and occasionally print them ourselves. There are many varieties of digital goods that bring value to a great number of consumers without the suppliers employing many people at all. The most prominent, of course, are 'social media', a blanket term for many different services from Facebook to Twitter to LinkedIn. They do employ people, but few in relation to the number of their users. Another stunning example is the communications sensation WhatsApp: when Facebook bought it in 2012 for \$19 billion, it had just 55 members of staff. That may be a world record for the amount of capital per employee in a company. Many of us have experienced the extraordinary convenience of buying everything from bleach to airline tickets through an

app – and of being able to do so while watching television or taking a bath. These are new kinds of goods and services, and government economists are having trouble accounting for them in their routine cost-of-living numbers.

3 The human dimension

Most significantly, when considering the possible or probable impact of technology on employment, there is the human dimension. Some years back, I was invited to Brazil to make a TEDx speech on robots and jobs. I talked about Kodak, Instagram and WhatsApp, and – looking ahead – sketched the potential of robotics to end the need for human employment pretty much completely. I summed up the problem by asking whether this would take us to heaven – or to hell. Many people think that they would love the opportunity not to have to work if they could take ‘early retirement’. That sounds a lot nicer than long-term unemployment.

Plainly, one huge question is that of income, and that has led to a lot of interest in ‘universal income’ – the idea that everyone should be paid by the state to allow them to get by whether or not they have a job. It’s an intriguing idea, partly as it has had advocates on the right as well as the left of the political spectrum. The issue is actually more pressing in the USA, where social benefits, such as unemployment pay and health care, are mostly lower than in continental Europe (or are completely absent). In some European countries, the ‘social wage’ already offers a kind of universal income; being in or out of low-paid work doesn’t make much financial difference. One of the goals of the UK’s controversial Universal Credit reform has been to stop people making more money from benefits than they would from being employed.

I am not a fan of universal income; I think the amount of attention it has been getting distracts us from the core problem for humans if jobs go away. In industrial societies, our entire lives are

Are the robots coming for our jobs?

shaped around jobs: education to prepare us for them and then the daily routines of doing them for income. After I gave a lecture on this theme at a university in Washington, DC, one of the students neatly summed up the problem: 'Are you telling us that as soon as we graduate from college, we shall need to retire?'

In the famous essay that was quoted at the start of this chapter, Keynes points out that while workers look forward to the end of the day, they often aren't quite sure what to do with the leisure when it comes. When we no longer have to work, what do we do? How do we feel about worklessness, whether we don't need to work or can't even if we're able? What do you do with your time if you find yourself marooned on a desert island? This may seem to be a bigger issue for the poorly educated. But plenty of professional people find their lives in tatters after losing their jobs or being forced into early retirement. As well as income, they've lost their routines, their colleagues and, with that, part of their sense of self-worth.

What do people do if they don't need to work? I'm reminded of my late mother, who in retirement busied herself working in three separate charity shops in Edinburgh, each for one or two days a week. People who make a success of stepping down from their jobs generally create something very like another job for themselves. Perhaps the most striking example is Bill Gates. After leaving Microsoft, he and his wife set up their foundation. Wealthy people who don't need to work – the kind the press dubs 'socialites' – often throw themselves into cultural activities, sitting on the boards of orchestras, museums and charities. We need to prepare for a world in which we find ourselves taking earlier and earlier retirement. The Church is the world's largest volunteer organization; it needs to prepare to handle many more volunteers.

It's plain that we need to think through the ramifications of the loss of employment from a theological perspective. In Genesis, 'work' is presented to us as both something good and normal before the Fall (Adam cares for the garden, see Genesis 2.15), and

something disordered and unpleasant after the Fall ('In the sweat of your face you shall eat bread' (Gen. 3.19), as the New King James Version of the Bible memorably puts it!). What if we don't work because we can't?

We could start by developing a 'theology of retirement' to build a bridge towards this emerging situation. We have come to think about Christian 'vocation' as getting a job for life. Indeed, until quite recently most people died before or shortly after they stopped being employed.²² If we don't need to earn pay, are we still called to work? What of leisure? For most of human history, few people had any; many of us now have a lot, and we could soon have a lot more. Do we have a theology of leisure? Does the Sabbath teaching in Exodus 20.10 – of a day with no normal labour, set aside for God – translate into modern notions of time off for family, friends and entertainment? The expansion of retirement years and the growth of 'free time', as employment laws have cut down on work time for many, require a fresh look at what God asks us to do with our time – and that's now! It will help us to think through what it could mean if the time available starts to grow.

The implications of the erosion of full-time work are explosive. What if tomorrow is your last day at work, but you're still paid? What if you're at university and then you graduate straight into retirement? This may sound far-fetched, but don't forget that economists, from Ricardo to Keynes, and technologists, from Norbert Wiener to Bill Gates, have thought and do think we're moving that way. How are Christians to think?

22 The Office of National Statistics has calculated that life expectancy at birth is almost double what it was in 1841, when, for example, a baby girl born that year could expect to live to only 42; see Office for National Statistics, 'How has life expectancy changed over time?' (9 September 2015), <www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/lifeexpectancies/articles/howhaslifeexpectancychangedovertime/2015-09-09>, accessed 13 February 2021. The ONS gives a helpful discussion of the significance and cause of this shift; higher levels of infant mortality make the difference seem more dramatic than it was, but not by much.

'I defy anyone to come away from this book without being moved and challenged.'

**JUSTIN WELBY,
ARCHBISHOP OF CANTERBURY**

The last decade has seen dramatic advances in artificial intelligence and robotics technology, raising tough questions that need to be addressed. *The Robot Will See You Now* considers how Christians can respond to these issues – and flourish – in the years ahead.

International experts explore a range of social and ethical issues, including the role of AI in areas such as medicine, employment and security, as well as its actual impact on human interactions and relationships.

Alongside are theological responses, looking at how artificial intelligence and robotics may be considered in the light of Christian doctrine. Measured and thoughtful, this enthralling book will help you understand and prepare for the opportunities and challenges ahead.

'A beautifully written, concise treatise.'

**CHRISTIANITY
MAGAZINE**

Get your copy now for
20% OFF AT SPCK



spckpublishing.co.uk

© 2021 John Wyatt & Stephen N. Williams