NOTES

Personal Note

1. This was revised and published as a book: Richard Susskind, *Expert Systems in Law: A Jurisprudential Inquiry* (Oxford: Oxford University Press, 1986).

2. This system was published together with a book that discussed its development: Phillip Capper and Richard Susskind, *Latent Damage Law: The Expert System* (London: Butterworths, 1988).

3. See Richard Susskind and Daniel Susskind, *The Future of the Professions: How Technology Will Transform the Work of Human Experts* (Oxford: Oxford University Press, 2015; rev. edn, 2022).

4. Daniel Susskind, *A World Without Work: Technology, Automation and How We Should Respond* (London: Allen Lane, 2020), and Daniel Susskind, *Growth: A Reckoning* (London: Allen Lane, 2024).

5. Jamie Susskind, *Future Politics: Living Together in a World Transformed by Tech* (Oxford: Oxford University Press, 2018), and Jamie Susskind, *The Digital Republic: On Freedom and Democracy in the 21st Century* (London: Bloomsbury, 2022).

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1. *LIFE*, 69/21 (20 November 1970), 68.

2. Theodore Roszak, 'Smart Computers at Insecure Stage', *New Scientist*, 110 (3 April 1986), 46.

Chapter 1

1. See, for example, Peter Lee, Carey Goldberg, Isaac Kohane, and Sebastien Bubeck, *The AI Revolution in Medicine: GPT-4 and Beyond* (London: Pearson Education, 2023). See also Rhys Blakely, 'Inside the Robotarium Building

Companions for Our Old Age', *The Times* (23 February 2024), https://www.thetimes.com/uk/healthcare/article/inside-the-robotarium-building-companions-for-our-old-age-jc5fnm07p, accessed 10 September 2024.

2. See Richard Susskind, *Tomorrow's Lawyers: An Introduction to Your Future* (Oxford: Oxford University Press, 3rd edn, 2023).

3. See, for example, Salman Khan, *Brave New Worlds: How AI Will Revolutionise Education (and Why That's a Good Thing)* (London: Allen Lane, 2024).

4. See generally Richard Susskind and Daniel Susskind, *The Future of the Professions: How Technology Will Transform the Work of Human Experts* (Oxford: Oxford University Press, 2015, rev. edn, 2022).

5. See, for example, Will Knight, 'Could AI Solve the World's Biggest Problems?', *MIT Technology Review* (12 January 2016), https://www.technologyreview.com/2016/01/12/163910/could-ai-solve-the-worlds-biggest-problems/, accessed 10 September 2024.

6. Dagmar Monett and Colin W. P. Lewis, 'Getting Clarity by Defining Artificial Intelligence: A Survey' in Vincent C. Müller, ed., *Philosophy and Theory of Artificial Intelligence 2017* (Berlin: Springer, 2018), 212–14, https://www.researchgate.net/publication/327275080_Getting_Clarity_by_Defining_Artificial_Intelligence-A_Survey, accessed 10 September 2024.

7. See Paul Scharre, *Four Battlegrounds: Power in the Age of Artificial Intelligence* (London: Norton, 2023).

8. For a related and interesting discussion of robots in fiction, see Jon Bing, 'The Riddle of the Robots', *Journal of International Commercial Law and Technology*, 3/3 (2008), 197–206.

9. See Homer, *Iliad* XVIII, 418–19, https://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0134%3Abook%3D18%3Acard%3D388, accessed 23 October 2024, and Dave Roos, 'Early Imaginings of Artificial Intelligence', *History* (20 March 2023), https://www.history.com/news/artificial-intelligence-fiction, accessed 23 October 2024.

10. Alan Turing, 'Computing Machinery and Intelligence', *Mind* 59/ 236 (1950), 433–60, https://academic.oup.com/mind/article/LIX/236/433/986238, accessed 10 September 2024.

11. On the Dartmouth workshop, see Herbert Simon, *Models of My Life* (New York: Basic Books, 1991), 210.

12. See National Physical Laboratory, *Mechanisation of Thought Processes: Proceedings of a Symposium Held at the National Physical Laboratory on 24th, 25th, 26th and 27th November, 1958* (London: HMSO, 1959).

13. Bertrand Russell's response to the Logic Theorist was prescient, in a letter to Herbert Simon, dated 21 September 1957: 'I quite appreciate your reasons

for thinking that the facts [details of the system's capabilities] should be concealed from schoolboys. How can one expect them to learn to do sums when they know that machines can do them better?' See Herbert Simon, *Models of My Life* (New York: Basic Books, 1991), 209.

14. Simon, *Models of My Life*, 190.

15. John von Neumann, *The Computer and the Brain* (New Haven, CT: Yale University Press, 3rd edn, 1986). These were meant to have been delivered as part of the prestigious Silliman Memorial Lectures Series.

16. Kati Marton, *The Great Escape: Nine Jews Who Fled Hitler and Changed the World* (New York: Simon and Schuster, 2006), 198. On the life of von Neumann, see also Ananyo Bhattacharya, *The Man from the Future: The Visionary Life of John von Neumann* (London: Allen Lane, 2021) and Benjamin Labatut, *The Maniac* (London: Pushkin Press, 2023).

17. See Labatut, *The Maniac*, 55.

18. Joseph Weizenbaum, *Computer Power and Human Reason: From Judgment to Calculation* (Harmondsworth: Penguin, 1984).

19. On expert systems, see Donald Waterman, *A Guide to Expert Systems* (Menlo Park, CA: Addison-Wesley, 1986).

20. On this project, see Phillip Capper and Richard Susskind, *Latent Damage Law: The Expert System* (London: Butterworths, 1988).

21. See Garry Kasparov, *Deep Thinking: Where Machine Intelligence Ends And Human Creativity Begins* (London: John Murray, 2017).

22. See Geoffrey Hinton, Simon Sendero, and Yee-Whye The, 'A Fast Learning Algorithm for Deep Belief Nets', *Neural Computation*, 18/7 (2006), 1527–54, https://doi.org/10.1162/neco.2006.18.7.1527, accessed 10 September 2024.

23. Stephen Wolfram, *What is ChatGPT Doing…and Why Does It Work?* (Champaign, IL: Wolfram Medi, 2023), 15.

24. On Watson and *Jeopardy!*, see Stephen Baker, *Final Jeopardy: Man vs. Machine and the Quest to Know Everything?* (Boston, MA: Houghton Mifflin Harcourt, 2011).

25. For a technical account of AlphaGO, see David Silver et al., 'Mastering the Game of Go with Deep Neural Networks and Tree Search', *Nature*, 529 (2016), 484–9, https://www.nature.com/articles/nature16961, accessed 10 September 2024.

26. See David Silver et al., 'Mastering the Game of Go without Human Knowledge', *Nature*, 550 (2017), 354–9, https://www.nature.com/articles/nature24270, accessed 10 September 2024.

27. See AlphaFold Team, 'AlphaFold: A Solution to a 50-Year-Old Grand Challenge in Biology' (30 November 2020), https://deepmind.google/

discover/blog/alphafold-a-solution-to-a-50-year-old-grand-challenge-in-biology/, accessed 10 September 2024.

28. Ashish Vaswani et al., 'Attention is All You Need', *arXiv*:1706.03762 (2017), https://arxiv.org/abs/1706.03762, accessed 10 September 2024.

29. Wolfram, *What is ChatGPT Doing?*, Preface.

Chapter 2

1. This concept is central to and fully elaborated in Richard Susskind and Daniel Susskind, *The Future of the Professions: How Technology Will Transform the Work of Human Experts* (Oxford: Oxford University Press, 2015, rev. edn, 2022).

2. See Jaime Sevilla et al., 'Compute Trends across Three Eras of Machine Learning', arXiv 2202.05924v (2022), https://arxiv.org/abs/2202.05924, accessed 10 September 2024. There is also evidence here that the six-month doubling may be slowing to a ten-month doubling but there is not a decade-long view of this. See also OpenAI, 'AI and compute' (16 May 2018), https://openai.com/index/ai-and-compute/, accessed 10 September 2024.

3. M. Suleyman, *The Coming Wave* (London: Bodley Head, 2023), 130 and 251. On chip technology, more generally, see Chris Miller, *Chip War: The Fight for the World's Most Critical Technology* (London: Simon and Schuster, 2022).

4. See Ray Kurzweil, *The Singularity Is Nearer: When We Merge with AI* (London: Bodley Head, 2024), 2. For a fuller account of the law of accelerating returns, see Ray Kurzweil, *The Singularity Is Near: When Humans Transcend Biology* (London: Viking, 2005), ch. 2.

5. PwC, 'Sizing the Prize: PwC's Global Artificial Intelligence Study: Exploiting the AI Revolution: What's the Real Value for Your Business and How Can You Capitalise?' (2017), https://www.pwc.com/gx/en/issues/data-and-analytics/publications/artificial-intelligence-study.html, accessed 10 September 2024.

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7. There are potential technical problems here, however, such as 'model collapse': see, for example, Ilia Shumailov et al., 'AI Models Collapse Retrained on Recursively Generated Data', *Nature*, 631 (2024), 755–9, https://www.nature.com/articles/s41586-024-07566-y, accessed 10 September 2024.

8. Stephen Wolfram, *What is ChatGPT Doing…and Why Does It Work?* (Champaign, IL: Wolfram Medi, 2023).

9. Wolfram, *What is ChatGPT Doing?*, esp. 1, 54, 75.

10. Wolfram, *What is ChatGPT Doing?*, 2.

11. Wolfram, *What is ChatGPT Doing?*, 31.

12. Wolfram, *What is ChatGPT Doing?*, 48–9. See also Will Douglas Heaven, 'Large Language Models Can Do Jaw-Dropping Things. But Nobody Knows Exactly Why', *MIT Technology Review* (4 March 2024), https://www.technologyreview.com/2024/03/04/1089403/large-language-models-amazing-but-nobody-knows-why/, accessed 10 September 2024.

13. Wolfram, *What is ChatGPT Doing?*, 51.

14. For many years, I have called this the 'information sub-structure' of society, a concept I introduced in my book, *The Future of Law* (Oxford: Oxford University Press, 1996), 91–6. See also Richard Susskind and Daniel Susskind, *The Future of the Professions*, 145–7.

15. Walter Ong, *Orality and Literacy* (London: Routledge, 1982).

16. Michael Wooldridge, *The Road to Conscious Machines: The Story of AI* (London: Pelican, 2020), 41.

17. Nick Bostrom, *Superintelligence: Paths, Dangers, Strategies* (Oxford: Oxford University Press, 2014).

18. Bostrom, *Superintelligence*, 22 (italics removed).

19. James Lovelock, *Novacene* (London: Allen Lane, 2019), 29.

20. Kurzweil, *The Singularity is Nearer*, 1.

21. Kurzweil, *The Singularity is Nearer*, 2.

22. Kurzweil, *The Singularity is Nearer*, 73.

23. For example, Luciano Floridi, 'Ultraintelligent Machines, Singularity, and Other Sci-Fi Distractions about AI' (18 May 2016, posted 24 October 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4222347, accessed 10 September 2024.

24. Kurzweil, *The Singularity is Nearer*, 8–9.

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https://www.wsj.com/articles/chatgpt-heralds-an-intellectual-revolution-enlightenment-artificial-intelligence-homo-technicus-technology-cognition-morality-philosophy-774331c6, accessed 10 September 2024.

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3. See C. P. Snow, *The Two Cultures* (Cambridge: Cambridge University Press, 1998), 3.

4. Quoted in Celia Kiitzenger, 'The Thinking Woman's Guide to the Mind: Philosopher and Self-Styled Computational Psychologist, Margaret Boden Uses Artificial Intelligence as a Way of Understanding Aspects of the Human Mind', *New Scientist* (18 January 1992), https://www.newscientist.com/article/mg13318044-500/, accessed 10 September. See also Margaret Boden, *Artificial Intelligence and Natural Man* (Brighton: Harvester, 1977).

5. Douglas Hofstadter, *Gödel, Escher, Bach: An Eternal Golden Braid* (New York: Vintage, 1980).

6. Douglas Hofstadter, 'The Shallowness of Google Translate', *The Atlantic* (30 January 2018), https://www.theatlantic.com/technology/archive/2018/01/the-shallowness-of-google-translate/551570/, accessed 10 September 2024.

7. Tony Blair and William Hague, 'A New National Purpose: AI Promises a World-Leading Future of Britain' (13 June, 2023), ch. 2, https://institute.global/insights/politics-and-governance/new-national-purpose-ai-promises-world-leading-future-of-britain, accessed 10 September 2024. See also Tony Blair Institute for Global Change, 'Governing in the Age of AI: A Leader's Guide to Artificial-Intelligence Technical Strategy' (2 July 2024), https://institute.global/insights/politics-and-governance/governing-in-the-age-of-ai-a-leaders-guide-to-AI-technical-strategy, accessed 10 September 2024.

8. Bill Gates, 'The Age of AI Has Begun', *GatesNotes* (21 March 2023), https://www.gatesnotes.com/The-Age-of-AI-Has-Begun, accessed 10 September 2024.

Chapter 4

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2. Alastair Campbell and Rory Stewart, hosts, 'The Rest is Politics' (14 August 2024), 16.00–16.35 https://pod.link/1665265193/episode/9e64556307b316fa920cec04b94d7117, accessed 10 September 2024.

3. Alastair Campbell and Rory Stewart, hosts, 'The Rest is Politics' (14 August 2024), 21.35–21.58, https://pod.link/1665265193/episode/9e64556307b-316fa920cec04b94d7117, accessed 10 September 2024.

4. Michael Wooldridge, 'The Turing Lectures: The Future of Generative AI' (21 December 2023), 50.00 to 51.30, https://www.youtube.com/watch?v=2kSl0xkq2lM, accessed 10 September 2024. This lecture is a very clear introduction to AI.

5. Richard Susskind and Daniel Susskind, *The Future of the Professions: How Technology Will Transform the Work of Human Experts* (Oxford: Oxford University Press, 2015, rev. edn, 2022).

6. See Theodore Levitt, *Marketing Myopia* (Boston, MA: Harvard Business School Publishing Corporation, 2008), 18.

7. Richard Susskind and Daniel Susskind, *The Future of the Professions*, 45.

8. A sophisticated consideration of explanations by AI systems is found in Sandra Wachter, Brent Mittelstadt, and Chris Russell, 'Counterfactual Explanations without Opening the Black Box: Automated Decisions and the GDPR', *Harvard Journal of Law & Technology*, 31/2 (2018), 841–87.

9. Hubert Dreyfus, *What Computers Can't Do* (New York: Harper and Row, 1972) and Hubert Dreyfus, *What Computers Still Can't Do* (London: MIT Press, 1992).

10. For an excellent related discussion on what the authors claim is a unique cognitive capability, namely to 'frame', see Kenneth Cukier, Viktor Mayer-Schönberger, and Francis de Véricourt, *Framer: Human Advantage in an Age of Technology and Turmoil* (London: W. H. Allen, 2021).

Chapter 5

1. Stuart Russell, 'The Biggest Event in Human History', *BBC Reith Lectures 2021: Living with Artificial Intelligence: Lecture 1* (December 2021), 5, https://www.bbc.co.uk/programmes/m001216j, accessed 10 September 2024 (italics removed).

2. Eric Hobsbawm, *The Age of Revolution: 1789–1848* (New York: Vintage Books, 1962), 1. My thanks here to Jamie Susskind for drawing my attention to this extract in his book, *Future Politics: Living Together in a World Transformed by Tech* (Oxford: Oxford University Press, 2018), 79.

3. There is some resonance here with the title and spirit of Nigel Shadbolt and Roger Hampson, *As If Human: Ethics and Artificial Intelligence* (London: Yale University Press, 2024).

4. Andre Esteva et al., 'Dermatologist-Level Classification of Skin Cancer with Deep Neural Networks', *Nature*, 542 (2017), 115–18, https://www.nature.com/articles/nature21056, accessed 10 September 2024.

5. This is a term coined by Hubert Dreyfus and Stuart Dreyfus, *Mind over Machine: The Power of Human Intuition and Expertise in the Era of the Computer* (Oxford: Blackwell, 1986), 27–30.

6. Simon Baron-Cohen, *The Essential Difference: Male and Female Brains and the Truth about Autism* (Harmondsworth: Penguin 2004).

7. Rafael Calvo et al., eds., *The Oxford Handbook of Affective Computing* (Oxford: Oxford University Press, 2015).

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9. Donald Michie and Rory Johnston, *The Creative Computer* (Harmondsworth: Penguin, 1984), 11 and 136 respectively.

Chapter 6

1. Told in greater detail in Daniel Susskind, *A World without Work: Technology, Automation and How We Should Respond* (London: Allen Lane, 2020), 1–3.

2. See, for example, Joseph Briggs and Devesh Kodnani, 'The Potentially Large Effects of Artificial Intelligence on Economic Growth', *Global Economics Analyst* (26 March 2023), https://www.gspublishing.com/content/research/en/reports/2023/03/27/d64e052b-0f6e-45d7-967b-d7be35fabd16.html, accessed 10 September 2024, and Carl Benedikt Frey and Michael Osborne's influential paper, 'The Future of Employment: How Susceptible Are Jobs to Computerisation?' (2013), https://www.oxfordmartin.ox.ac.uk/publications/the-future-of-employment, accessed 10 September 2024.

3. Daniel Susskind, *A World without Work*, ch. 5.

4. This research is discussed by Ekaterina Hertog et al., '40% of Time Spent on Chores Could Be Eliminated within 10 Years—AI Experts' (22 February 2023), https://www.oii.ox.ac.uk/news-events/40-of-time-spent-on-chores-could-be-automated-within-10-years-ai-experts/, accessed 10 September 2024.

5. On self-driving vehicles, see Lawrence Burns, *Autonomy: The Quest to Build the Driverless Car—And How It Will Reshape Our World* (London: William Collins, 2018).

Chapter 7

1. On law and dispute resolution, see Richard Susskind, *Online Courts and the Future of Justice* (Oxford: Oxford University Press, 2015, rev. edn, 2022). On education, see Salman Khan, *Brave New Worlds: How AI Will Revolutionise Education (and Why That's a Good Thing)* (London: Allen Lane, 2024). On medicine, see Peter Lee, Carey Goldberg, Isaac Kohane, and Sebastien Bubeck, *The AI Revolution in Medicine: GPT-4 and Beyond* (London: Pearson Education, 2023), and Eric Topol, *The Patient Will See You Now* (New York: Basic Books, 2015).

2. See Wikipedia, 'List of Companies by Research and Development Spending', https://en.wikipedia.org/wiki/List_of_companies_by_research_and_development_spending, accessed 10 September 2024.

Chapter 8

1. See, for example, Michael Sainato, 'Stephen Hawking, Elon Musk, and Bill Gates Warn about Artificial Intelligence', *The Observer* (19 August 2015), https://observer.com/2015/08/stephen-hawking-elon-musk-and-bill-gates-warn-about-artificial-intelligence/, accessed 10 September 2024.

2. See Rory Cellan-Jones, 'Stephen Hawking Warns Artificial Intelligence Could End Mankind', BBC News (2 December 2014), https://www.bbc.co.uk/news/technology-30290540, accessed 10 September 2024.

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4. The idea of self-replicating machines was yet another one from John von Neumann, best expressed through his work on 'cellular automata'. See John von Neumann, *Theory of Self-Reproducing Automata* (Urbana: University of Illinois Press, 1967). Eric Drexler combined this thinking with some theorizing about molecular nanotechnology in *Engines of Creation: The Coming Era of Nanotechnology* (Knopf Doubleday, 1987), ch. 11. This led Drexler to devise the controversial 'gray goo' hypothesis, according to which self-replicating nanobots might, crudely speaking, consume our planet and others too—see Chapter 4.

5. This quotation is taken from Geoffrey Hinton, 'Will Digital Intelligence Replace Biological Intelligence?', Romanes Lecture (19 February 2024), 35.53–35.58, https://www.youtube.com/watch?v=N1TEjTeQeg0, accessed 10 September 2024.

6. See John Thornhill, 'How Fatalistic Should We Be on AI?', *Financial Times* (22 February 2024), https://www.ft.com/content/c64592ac-a62f-4e8e-b99b-08c869c83f4b, accessed 10 September 2024.

7. Jamie Susskind, *Future Politics: Living Together in a World Transformed by Tech* (Oxford: Oxford University Press, 2018), 2.

8. Jamie Susskind, *Future Politics*, 22. See also Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (London: Profile Books, 2019), Part II.

9. Jamie Susskind, *Future Politics*, 22.

10. On 'unaccountable power', see Jamie Susskind, *The Digital Republic: On Freedom and Democracy in the 21st Century* (London: Bloomsbury, 2022), Introduction.

11. John Maynard Keynes, 'Economic Possibilities for Our Grandchildren', in *Essays in Persuasion* (New York: W. W. Norton, 1963).

12. Daniel Susskind, *A World without Work: Technology, Automation and How We Should Respond* (London: Allen Lane, 2020).

13. A relatively early discussion of technology-enabled abundance is Peter Diamandis and Steven Kotler, *Abundance: The Future is Better Than You Think* (New York: Free Press, 2012). A more philosophical treatment is Nick Bostrom, *Deep Utopia: Life and Meaning in a Solved World* (Washington DC: Ideapress, 2024).

14. E. M. Forster, *The Machine Stops* (London: Penguin Classics, 2011), p. 54.

15. Henry Kissinger et al., *The Age of AI: And Our Human Future* (London: John Murray, 2021), 162.

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17. On the UK's AI Safety Institute, see https://www.aisi.gov.uk/, accessed 10 September 2024, and on the US Artificial Intelligence Safety Institute, see https://www.nist.gov/aisi, accessed 10 September 2024.

18. Richard Susskind and Daniel Susskind, *The Future of the Professions: How Technology Will Transform the Work of Human Experts* (Oxford: Oxford University Press, 2015, rev. edition, 2022).

19. See Jamie Susskind, 'There Is More to AI Regulation than Safety', *Financial Times* (20 December 2023), https://www.ft.com/content/b259b126-225b-4158-90a0-abebfd0119fc, accessed 10 September 2024.

20. See ElevenLabs, 'Listen to Your Favorite Books and Articles Voiced by Judy Garland, James Dean, Burt Reynolds and Sir Laurence Olivier' (7 July 2024), https://elevenlabs.io/blog/iconic-voices, accessed 10 September 2024.

Chapter 9

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2. Norbert Wiener, *The Human Use of Human Beings* (Boston, MA: Houghton Mifflin, 1954), 185.

3. Joseph Weizenbaum, *Computer Power and Human Reason: From Judgment to Calculation* (Harmondsworth: Penguin, 1984), 16.

4. Phillip Capper and Richard Susskind, *Latent Damage Law: The Expert System* (London: Butterworths, 1988), ch. 8.

5. See Urs Gasser and Viktor Mayer-Schönberger, *Guardrails: Guiding Human Decisions in the Age of AI* (Oxford: Princeton University Press, 2024).

6. Lawrence Lessig, *Code: Version 2.0* (New York: Basic Books, 2006) and Richard Susskind, 'I Asked ChatGPT to Write Some Laws: This Is What Happened', *The Times* (4 April 2024), https://www.thetimes.com/uk/law/article/i-asked-chatgpt-to-write-some-laws-this-is-what-happened-26rzr2hhx, accessed 10 September 2024.

7. See, for example, Wendell Wallach and Colin Allen, *Moral Machines: Teaching Robots Right from Wrong* (Oxford: Oxford University Press, 2009); Brian Christian, *The Alignment Problem: How Can Machines Learn Human Values?* (London: Atlantic Books, 2020); Eve Poole, *Robot Souls: Programming in Humanity* (Abingdon: CRC Press, 2024); Jana Schaich Borg, Walter Sinnott-Armstrong, and Vicent Conitzer, *Moral AI: And How We Get There* (London: Pelican, 2024); Nigel Shadbolt and Roger Hampson, *As If Human: Ethics and Artificial Intelligence* (London: Yale University Press, 2024).

8. Justin Bullock et al., eds., *The Oxford Handbook of AI Governance* (Oxford: Oxford University Press, 2024).

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10. Aptly named by Luciano Floridi in *The Ethics of Artificial Intelligence* (Oxford: Oxford University Press, 2023), 58.

11. See Floridi in *Ethics of Artificial Intelligence*, ch.4. See also Daniel Nelson, 'AI Ethics Principles Undergo Meta-Analysis, Human Rights Emphasized' (21 January 2020), https://hls.harvard.edu/clinic-stories/uncategorized-ocp/ai-ethics-principles-undergo-meta-analysis-human-rights-emphasized/, accessed 10 September 2024.

12. In *For the Good of the World: Why Our Planet's Crises Need Global Agreement Now* (London: Oneworld, 2023), A. C. Grayling takes a similar approach, although his focus (p. 68) is on 'superintelligent AGI.'

13. See Nigel Shadbolt and Roger Hampson, *As If Human: Ethics and Artificial Intelligence* (London: Yale University Press, 2024), 9. Italics in original.

14. Grayling, *For the Good of the World*, 72.

15. Shadbolt and Hampson, *As If Human*, ix.

16. Robin Downie, Professor of Moral Philosophy at the University of Glasgow (1969–2002) collaborated with senior doctors in writing and teaching about

medical ethics. See, for example, Robin Downie and Kenneth Calman, *Healthy Respect: Ethics in Health Care* (London: Faber and Faber, 1987).

17. Mariangela Zoe Cocchiaro et al., 'Who is an AI Ethicist? An Empirical Study of Expertise, Skills, and Profiles to Build a Competency Framework' (10 July 2024). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4891907, accessed 10 September 2024.

18. This suggestion was made by Richard Susskind and Daniel Susskind, *The Future of the Professions: How Technology Will Transform the Work of Human Experts* (Oxford: Oxford University Press, 2015, rev. edn, 2022), 283.

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20. Aristotle, *The Nicomachean Ethics*, translated by David Ross, revised by Lesley Brown (Oxford: Oxford University Press, 2000), 5.7, 25 (p. 92).

21. See John Mackie, *Ethics: Inventing Right and Wrong* (London: Penguin, 1990).

22. UNESCO, 'Consultation Paper on AI Regulation: Emerging Approaches across the World' (16 August 2024), https://unesdoc.unesco.org/ark:/48223/pf0000390979, accessed 10 September 2024.

23. UNESCO, 'Consultation Paper on AI Regulation'. See also Matt Hervey and Matthew Lavy, eds., *The Law of Artificial Intelligence* (London: Sweet and Maxwell, 2nd edn, 2024).

24. EU AI Act, art. 51 (2). For a more general critique of the EU AI Act, see Sandra Wachter, 'Limitations and Loopholes in the EU AI Act and AI Liability Directives: What This Means for the European Union, the United States, and Beyond', *Yale Journal of Law and Technology*, 26/3 (2024), 671.

25. See Council of Europe, 'Council of Europe Opens First Ever Global Treaty on AI for Signature', https://www.coe.int/en/web/portal/-/council-of-europe-opens-first-ever-global-treaty-on-ai-for-signature, accessed 10 September 2024. The Council of Europe Framework Convention on Artificial Intelligence and Human Rights, Democracy, and the Rule of Law is Treaty 225.

26. Richard Susskind, *The Future of Law: Facing the Challenges of Information Technology* (Oxford: Oxford University Press, 1996).

27. Richard Susskind, *Online Courts and the Future of Justice* (Oxford: Oxford University Press, 2019).

28. See John Perry Barlow, 'The Economy of Ideas', *Wired* 2.03 (March 1994), https://groups.csail.mit.edu/mac/classes/6.805/articles/int-prop/barlow-economy-of-ideas.html, accessed 10 September 2024. See also James Boyle, *Shamans, Software, and Spleens: Law and the Construction of the Information Society* (Cambridge, MA: Harvard University Press, 1986).

29. In *The Economist*, 'AI and Our Future with Yuval Noah Harari and Mustafa Suleyman' (14 September 2023), 4.10–4.50, Harari provocatively likens the coming of AI to an 'alien invasion': see https://www.youtube.com/watch?v=b2uEAgLeOzA, accessed 10 September 2024. See also Yuval Noah Harari, *Nexus: A Brief History of Information Networks from the Stone Age to AI* (London: Fern Press, 2024), 404.

30. For an excellent discussion of legal personality and the future of personhood more generally, see James Boyle, *The Line: AI and the Future of Personhood* (Cambridge: The MIT Press, 2024).

31. Henry Sumner Maine, *Ancient Law* (Perth, Australia: Imperium Press, 2024), Chapter IX.

32. This is the argument of Jamie Susskind, in *The Digital Republic: On Freedom and Democracy in the 21st Century* (London: Bloomsbury, 2022), where he calls for the 'market individualism' of today to be replaced by 'digital republicanism'.

33. For these and other clangers, see Richard Susskind, *The End of Lawyers? Rethinking the Nature of Legal Services* (Oxford: Oxford University Press, 2008), 59.

34. Jamie Susskind, *The Digital Republic*, 4.

35. See https://www.oii.ox.ac.uk/, accessed 10 September 2024.

Chapter 10

1. A.C. Grayling, *The Frontiers of Knowledge* (London: Penguin, 2021), 305.

2. Bryan Magee, *Ultimate Questions* (Princeton, NJ: Princeton University Press, 2016), 100–1.

3. David Hume, *A Treatise of Human Nature* (Oxford: Oxford University Press, 2nd edn, 1978), Book I, Part IV, Section VI, p.252.

4. Immanuel Kant, *Critique of Practical Reason*, trans. Lewis White Beck (New York: The Liberal Arts Press, Press, 1956), 166.

5. William Wordsworth, 'Daffodils' in *The Collected Poems of William Wordsworth* (Ware: Wordsworth Editions Limited, 1994), 219.

6. David Chalmers, *Reality+: Virtual Worlds and the Problems of Philosophy* (London: Allen Lane, 2022), 278–9.

7. Gilbert Ryle, *The Concept of Mind* (London: Penguin, 2000).

8. See, for example, Daniel Dennett, *I've Been Thinking* (London: Allen Lane, 2023), ch. 23.

9. Alan Turing, 'Computing Machinery and Intelligence', *Mind* 49/236 (1950), 433–60, https://academic.oup.com/mind/article/LIX/236/433/986238, accessed 10 September 2024.

TOP THIRTY AI BOOKS

In the Notes section, I provide citations of the books and articles that are discussed or referred to in the body of the text. Rather than repeat them all here, I instead lay out below my top thirty favourite AI books. None is technical. They focus largely on the impact of AI, which is the heart of this book too. I find these readings are, variously, informative, insightful, inspiring, impactful, and mind-boggling.

Boden, M., *Artificial Intelligence and Natural Man* (Brighton: Harvester, 1977).

Bostrom, N., *Superintelligence* (Oxford: Oxford University Press, 2014).

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Hofstadter D. and Dennett, D., eds., *The Mind's I: Fantasies and Reflections on Self and Soul* (Harmondsworth: Penguin, 1981).

Ishiguro, K., *Klara and the Sun* (London: Faber and Faber, 2021).

Kissinger, H., Schmidt, E., and Huttenlocher, D., *The Age of AI: And Our Human Future* (London: John Murray, 2021).

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Kurzweil, R., *The Singularity is Nearer: When We Merge with AI* (London: Bodley Head, 2024).

Lovelock, James, *Novacene* (London: Allen Lane, 2019).
Mayer-Schönberger, V. and Cukier, K., *Big Data* (London: John Murray, 2013)
Rees, M., *On the Future: Prospects for Humanity* (Princeton, NJ: Princeton University Press, 2018).
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Searle, J., *Minds, Brains and Science* (Cambridge, MA: Harvard University Press, 1984).
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Susskind, R. and Susskind, D., *The Future of the Professions: How Technology Willl Transform the Work of Human Experts* (Oxford: Oxford University Press, 2015, rev. edn, 2022).
Tegmark, M., *Life 3.0: Being Human in the Age of Artificial Intelligence* (London: Allen Lane, 2017).
von Neumann, J., *The Computer and the Brain* (New Haven, CT: Yale University Press, 3rd edn, 1986).
Waterman, D., *A Guide to Expert Systems* (Menlo Park, CA: Addison-Wesley, 1986).
Weizenbaum, J., *Computer Power and Human Reason: From Judgement to Calculation* (Harmondsworth: Penguin, 1984).
Wolfram, S., *What is ChatGPT Doing…and Why Does It Work?* (Champaign, IL: Wolfram Medi, 2023).
Wooldridge, M., *The Road to Conscious Machines: The Story of AI* (London: Pelican, 2020).
Zuboff, S., *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (London: Profile Books, 2019).