

**MASS CALL ADDRESS 2019:
A PROFESSION OF LEARNERS**

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Supreme Court of Singapore

I. Introduction: the learners and the learned

1. The American moral and social philosopher Eric Hoffer drew a distinction between the learners and the learned. “In a time of change”, he said, “it is the learners who inherit the earth. The learned find themselves beautifully equipped to deal with a world that no longer exists.”

2. The legal profession has traditionally been described as one of the few “learned professions”. It is a privilege for us to be so described, but that privilege has to be earned; and once earned, we must constantly strive to show ourselves worthy of it. In an age of constant change, that means committing yourselves to a path of lifelong learning. I therefore invite you today to see your admission to the Bar not as the terminus, but the beginning, of your professional formation as lawyers. It is in that spirit that I call on you to reflect not only on what it means to join this learned profession, but also on why we must become a profession of learners.

II. The birth of a learned profession

3. The concept of a “learned profession” emerged with the rise of universities in the late Middle Ages.¹ In the late 12th century, the universities of Bologna and Paris were centres of enormous power and influence. Teachers of the liberal arts, theology, medicine and law were drawn to these institutions and by the last quarter of the century, Bologna and Paris were the leading capitals of learning, attracting aspiring physicians, philosophers, theologians and, of course, lawyers. Their students received prolonged formal training which culminated in the award of a prestigious academic degree, such as a doctor of laws.²

4. Having received the hallmark of these great institutions, the students formed “a class apart”³ from the rest of society and were eligible to enter one of the so-called “learned professions” such as ministry, medicine and the law. These came to be called the “learned professions” because only those who had completed their studies in these universities were recognised as scholars in their fields and could enter them.⁴

5. About a century later, growing communities of lawyers in England established what are known today as the Inns of Court. The Inns provided not only accommodation and hospitality to their members, but also instruction in the practice of law.⁵ As the control of professional training gradually passed to the Inns, they were delegated the power to admit persons to practice and so

became the gateway to the English Bar.⁶

6. All of that occurred more than six or seven hundred years ago, but the essence of how professional skills and knowledge are acquired has more or less survived. Even today, the belief persists that a university education and a course of institutional training will suffice to ground a lifetime of success in a learned profession. The underlying idea is that one should get as much formal education as one can early in life, supplement it with a brief period of institutional instruction, and then reap the rewards for the rest of one's career.

7. But recent studies have cast doubt on the strength of the correlation between *formal education* and *career preparation*. According to a 2016 national survey in the United States, only 16% of Americans held the view that a traditional four-year degree was good preparation for a well-paying job in today's economy, and only 49% of graduates believed that their college experience had been useful in helping them develop the necessary skills and knowledge for the workplace.⁷ In a similar survey conducted in Singapore, 58% of working adults under 30 agreed that formal education had given them the knowledge needed to do their jobs well.⁸

8. One senses a growing unease about the extent to which new entrants to the workforce – even those armed with a degree – are equipped to engage with the world that awaits them. It is worth exploring why the old paradigm of learning might no longer be seen to be fit for purpose.

III. A learned profession in a new age

A. *The decreasing half-life of knowledge*

9. In my view, at least part of the answer lies in the decreasing “half-life of knowledge”. This was a concept introduced by the German economist Fritz Machlup in 1962,⁹ and it refers to the amount of time that lapses before half of the knowledge in a particular area is superseded, either because it has been shown to be untrue or because it has simply become irrelevant. This decay is a result of the so-called “churn of knowledge”,¹⁰ which occurs as we augment existing learning with new discoveries, refine what we know through practice and observation, and discard that which we find to be erroneous or to be overtaken by events. It is by these processes of accretion and erosion that the edifice of human knowledge is sculpted.

10. The half-life of knowledge is falling at an exponential rate. The estimated half-life of an engineering degree in the late 1920s was about 35 years; but that figure had dropped to about 10 years in the 1960s,¹¹ and it fell even further to between two-and-a-half and seven years in 2002. This trend is not exclusive to engineering. The half-life of medical knowledge is currently estimated to be between 18 and 24 months and, by 2021, is projected to fall further to *73 days*!¹² Information technology and software engineering have estimated half-lives of about five years.¹³

11. This might sound alarming, but it is not surprising. It is the consequence of rising education levels, the devotion of greater resources to research and development, and industry's desire to profit from new technology. But I suggest that the principal cause of the acceleration of the rate of knowledge decay today is the *increasing pace of change* in the world.

12. Professor Klaus Schwab, founder and executive chairman of the World Economic Forum, has argued that we have entered a new era of technological progress. He calls this the "Fourth Industrial Revolution".¹⁴

13. This new age of progress is different in three important ways from what has come before.¹⁵ The first concerns the *speed* of change. Unlike the first three Industrial Revolutions, change in the Fourth is taking place at an exponential rather than at a linear pace. This follows from the interconnectedness of the world today, which has enhanced the speed of information flows. Second, the *breadth* and *depth* of the changes in this new age are unprecedented. Professor Schwab speaks of "waves" of breakthroughs occurring simultaneously in multiple fields, ranging from gene sequencing to nanotechnology and from renewable energy to quantum computing. The effects of the fusion of new and existing technologies span the physical, digital and biological domains.¹⁶ The third difference lies in the scale of what Professor Schwab calls "system impact". This concerns the *effects* of the changes that are underway, which have been nothing less than

the transformation of entire economies, societies and lifestyles.¹⁷

14. WeChat has been described as “the world’s most powerful app”,¹⁸ and it provides a good illustration of all these points. WeChat was created in relative anonymity in January 2011 and it was dismissed by analysts at the time as a mediocre knockoff of American social media platforms. Today, it has over 1 billion active users and has achieved saturation in all Tier 1 Chinese cities.¹⁹ By combining and harmonising the technologies of online payment, GPS, and instant voice and text messaging, WeChat has created an integrated ecosystem of indispensable services; in short, it is a single “super app” that combines the functions of Facebook, WhatsApp, Amazon, Uber and Apple Pay.²⁰ It is no exaggeration to say that WeChat has transformed the very fabric of urban life in China. By enabling all manner of transactions and interactions to be carried out on a mobile phone, WeChat has unleashed a “consumption revolution”²¹ in which the online and offline worlds rub shoulders.

15. What does this mean for how we think and learn about the world today? What kind of knowledge do we need in order to engage with the new economy? How should we approach professional education and training in the Fourth Industrial Revolution? These are urgent questions to which we must find answers as we are swept inexorably into this new age. I suggest that we must recognise and accept three new realities about learning in the

future of work.

B. Learning in the age of the Fourth Industrial Revolution

16. First, we must recognise the diminishing value of fixed knowledge stocks.²² We may have devoted years to our university educations and institutional training, but that alone will not keep us afloat amidst the churn of knowledge, which in part stems from the explosion in knowledge growth over the course of the past half-century. In 1982, Buckminster Fuller plotted his famous “knowledge doubling curve” which showed that while knowledge doubled approximately every century before the 18th century, its rate of growth took off exponentially after that. By the end of World War II, knowledge was doubling every 25 years.²³ In 2006, IBM predicted that by 2010, the world’s information base would double in size *every 11 hours*.²⁴ Whether or not this extraordinary projection has come to pass, it is plain that the value of our fixed knowledge stocks is depreciating.

17. This is as obvious in the law as it is in any other area. In the past five years alone, we have seen the creation of a new international commercial court, a new suite of rules to govern family justice, and extensive legislative reforms in the criminal law. We will soon witness sweeping reforms to the civil justice regime and the establishment of a new appellate court. Internationally, we have added our voice to the growing dialogue on transnational commercial law and contributed to the framework for the mediation of cross-border

disputes and the enforcement of mediated agreements. The jurisprudence of our courts has run the gamut from investor-state arbitration to international child abduction, and from the elected presidency to issues of surrogacy. Our laws, our processes and the very architecture of our legal system will continue to evolve, and no practitioner can claim competence without an appreciation of these changes.

18. The second new reality, which follows from the first, is this: given the diminishing value of fixed knowledge *stocks*, it is crucial that we seek exposure to knowledge *flows*,²⁵ through which we can tap into the pulse of what is current. We must not be ignorant of new ideas and innovations that have the potential to transform our operating environment and challenge even our most basic assumptions.

19. The legal industry is not insulated from any of this. I have spoken on many other occasions of how technology has had, and will continue to have, a radical impact on the law.²⁶ For today, let me just give you a few examples.

20. It was announced earlier this year that the Federal Court of Australia has, in conjunction with IBM, created a machine learning tool that is designed to help parties divide assets and liabilities following divorce. The programme takes into account such factors as age, income, earning capacity, children and the length of the relationship. If the parties agree on the division proposed by the programme, they may apply to formalise the agreement through a consent

order.²⁷ The implications for the practice of family law are obvious. Instead of seeking legal advice about the division that the court will likely order and then taking their chances in court, it is likely that many parties will simply use the programme to ascertain the expected outcome of litigation and then negotiate an agreement, bypassing not only lawyers but even, in a sense, the court.

21. In order to clear a growing backlog of cases, the Estonian Ministry of Justice has recently commissioned the design of a system – powered by artificial intelligence – that will be capable of adjudicating small claims without human intervention. Parties will upload documents and information which the so-called “robot judge” will then process in order to reach a decision that can be appealed to a human judge.²⁸ Is this a glimpse of what the future might hold for us?

22. In March this year, Justice Simon Thorley, sitting in the Singapore International Commercial Court, released one of the first judgments in the world to apply the law of contract to a dispute over virtual currencies.²⁹ His judgment transversed a number of novel issues, such as whether virtual currencies have the characteristics of property and how the law of unilateral mistake might be applied to a contract executed on algorithmic trading platforms. It is evident that new technologies have affected not only the *practice* of law but also its *content*. And this too is a sign of things to come.

23. The third reality is the overriding importance of reskilling. As existing

industries are transformed or destroyed, entire bodies of skills and knowledge will become obsolete. This will inevitably involve shifts in the labour market, including the displacements of parts of the workforce. A report on the future of jobs by the World Economic Forum estimates that between 2018 and 2022, 75 million jobs may be lost in the new division of labour between humans and machines while 133 million new roles that are better adapted to that division will be created.³⁰ It is heartening that the Fourth Industrial Revolution is expected to bring about a net gain in jobs, but it would be wrong to understate the challenges involved in the transition that will confront both employers and employees.

24. Reskilling has become a national imperative. As Senior Minister Tharman Shanmugaratnam emphasised in April this year, the importance of helping Singaporeans master skills throughout their working lives is our “most important economic and social strategy in the long term”.³¹ He stressed that continuous reskilling helps improve social mobility by equipping workers to seek better jobs throughout the course of their working lives. The Senior Minister referred to this as the creation of a “meritocracy of skills”. He observed that there is currently no real leader in the international race to develop effective national policies for lifelong learning and suggested that Singapore can and should strive to be at the forefront of this endeavour. I respectfully agree.

25. The future of the legal profession, like that of our nation, hangs on the ability and willingness of its members to reskill and relearn. Technology is already beginning to displace lawyers from areas of practice, especially those involving the more routine areas which are more susceptible to automation. For example, OCBC recently launched a free online service that can generate a will in under 10 minutes.³² Such developments can be expected to have a significant impact on demand for wills and probate work, which has long been a mainstay for smaller practices. Apart from this, some aspects of due diligence and contract review, which has long formed the bulk of the work performed by junior lawyers, can now be conducted more quickly and accurately by natural language processing and machine learning tools.³³

26. There is no better time than *now*, at the inception of your careers in the law, to accept and adapt to this new reality. It is in that spirit that I urge you to recognise that the skills of the past will not be sufficient for the future. You must therefore develop an understanding of how new trends will transform the law, and aspire to develop a practice that is enhanced, rather than undermined, by technology. Not all of you can or will become proficient coders, but becoming software engineers is not the goal. What you should strive to acquire is an effective and nuanced understanding of the *interface* between technology and the law, so that you might envision for yourself, your firm and the profession how technology can enhance the practice and processes of the law.

IV. Learners of the future

27. I have outlined what I believe the future of *learning* will resemble in the age of the Fourth Industrial Revolution. Let me now turn to the qualities of what I suggest the *learners* of the future – such as yourselves – must possess. I make four points.

A. *Becoming an agile learner*

28. First, you must be good *at* learning. It has been said that learning is itself a skill, and one that grows more valuable the faster the pace of knowledge change.³⁴ In an age where the half-life of knowledge is shorter than it has ever been, there is perhaps no skill that is worth more.

29. Google’s hiring policy is focused on what one former senior executive has called “learning animals”. These are people who combine a passion for knowledge with an aptitude for learning. They are endlessly curious about the world but remain discerning about what and how they will learn. In Google’s experience, these are individuals who thrive in the dynamic conditions of the modern economy.³⁵

30. Such learners are also known as “*agile learners*”, who are nimbly able to give up skills, perspectives and ideas that are no longer relevant, and to embrace new ones that are.³⁶ The agile learner extracts lessons from experience and extrapolates from those lessons when she encounters new

conditions. She identifies patterns, but is willing to abandon existing practices when they become incompatible with the circumstances. Processing speed, flexible thinking and the willingness to learn and unlearn are the essential qualities of an agile learner.³⁷ As the Fourth Industrial Revolution continues to unfold in new and unpredictable ways, we must strive to acquire those qualities, because becoming an agile learner is perhaps our most viable strategy in an age of uncertainty.

B. Broadening your learning

31. Second, expand your learning to fields beyond the law. Abandon the assumption that all you need to know to become a good lawyer is simply the law. If that has ever been true, it certainly no longer is. Burning Glass Technologies, an analytics software company that studies the labour market, has found that the greatest demand is for new combinations of skills, or what it calls “hybrid jobs”. Fluency with technology is especially in demand and – as you might expect – especially profitable. In the US, 49% of job postings with the highest quartile of pay require coding skills.³⁸ In the UK, jobs requiring digital skills pay 29% more than those that do not.³⁹

32. In the context of the legal profession, Professor Richard Susskind has identified ten new roles for lawyers in the future, apart from their traditional function as trusted legal advisors. One of these, he calls the “legal hybrid”. These are not lawyers with passing familiarity in business, finance or

management consultancy. They are instead lawyer experts who are “formidably schooled and inarguably expert” in these related disciplines, which enable them to add considerable value to the legal services they already offer.⁴⁰ The lesson for you is this: if you have the interest and aptitude for it, you should consider developing deep expertise in relevant secondary disciplines. Courses such as the Singapore Management University’s Graduate Certificate in LegalTech provide opportunities for you to acquire skills and knowledge that could complement your practice. These will enhance your value as an adviser and provide you with a significant advantage.

33. But I would go further to suggest that you expand your interests beyond the areas which are conventionally associated with the law. The recently retired Justice of the UK Supreme Court, Jonathan Sumption, is an outspoken advocate of this point. As he notes, the majority of legal arguments are really arguments about the correct analysis of evidence and the facts. A good grasp of the facts is therefore critical, and that is why familiarity with a field involving the analysis of facts and evidence, such as history or the classics, may be as valuable in preparing one for legal practice as the study of law itself. These subjects can help one develop the reasoning skills and facility with evidence that lawyers will require.⁴¹

34. Nothing should prevent you from developing an interest, and perhaps an expertise, in another area, even if that appears to be far from the law. I

encourage you to read widely, expand your horizons, and you might well find that your professional skills are enhanced by what you discover.

C. *Learning through sharing*

35. The third is learning together and from each other. All of you have bright minds and a wealth of insights and ideas that can benefit your peers, if you would only share them. The Nobel Prize-winning economist Robert Lucas found that concentrations of creative and talented people create unique ecosystems that are especially conducive to innovation. An ecosystem of this sort is characterised by the free exchange of knowledge and ideas, higher productivity, economies of scale and quicker implementation.⁴²

36. I earlier observed that the half-life of knowledge in medicine and healthcare is declining rapidly. To its immense credit, the medical profession has risen to the challenge and crafted an impressive solution. The website UpToDate.com is a clinical decision resource utilised by more than 1.7 million doctors and healthcare professionals in over 190 countries. It is the collective achievement of close to 7,000 leading physicians who contribute articles synthesising the most recent medical information into practical recommendations relevant to clinical practice. Today, the website is viewed by clinicians no less than 1.5 million times a day!⁴³

37. After a three-year study, researchers at Harvard University found that hospitals that used UpToDate.com generally had shorter lengths of stay by

patients, lower mortality rates and provided better healthcare. By giving clinicians access to updated information about major medical issues at the point of care, these clinical knowledge management systems have led to real improvements in clinical outcomes.⁴⁴ UptoDate.com is a compelling illustration of the potential of knowledge sharing and it is an achievement made possible only by the collaboration of members of the profession, their understanding of the power of peer learning, and their shared sense of purpose.

38. We in the legal profession should strive to come together in that same spirit, teaching and learning from one another with generosity and humility. We will find, I suggest, that knowledge divided weakens the profession, but knowledge shared strengthens and unites us in the possibility of greater achievement.

D. Acquiring soft skills

39. My final suggestion concerns a different but no less important area of learning. In 2013, while reviewing its hiring policy, Google analysed all the data it had gathered on hiring, firing and promotion in its 15 years of existence. Project Oxygen, as the study came to be called, yielded some surprising results. Amongst the eight most important qualities of Google's top employees, "hard skills" – such as scientific, engineering and mathematical ability – came in dead last. The top seven characteristics were all what we might consider "*soft skills*", such as communicating and listening well,

understanding each other's values and perspectives, and showing empathy and giving support to colleagues.⁴⁵ In 2017, Google commissioned a second study, known as Project Aristotle, to find out what makes an effective team, and this again affirmed the importance of soft skills.

40. It is perhaps comforting to think that these are precisely the skills that machines will struggle to replicate. The World Economic Forum forecasts that by 2022 there will be a surge in demand for "human" skills such as creativity, negotiation, emotional intelligence, leadership, social influence and service orientation.⁴⁶ So I urge you to develop your soft skills even as you pursue knowledge and technical excellence. The practice of law today is intensively collaborative, and it will only go further in that direction as new actors enter the legal marketplace and alter the dynamics of practice.

V. Conclusion: a profession of learners

41. Let me leave you with this thought. The futurist, Alvin Toffler, once remarked that the illiterate of the 21st century will not be those who cannot read or write, but those who cannot learn, unlearn and relearn. I began my address today by explaining how it was that centuries ago, our profession came to be called a "learned profession". But we inhabit a different age, and it will take much more than it used to to rightfully retain the privilege of that appellation. That is amongst the challenges that face our profession and it is one that I hope you will take up in earnest. So learn with passion and

conviction. Learn not only about the law, but also about the world. Learn from your peers and challenge each other's assumptions. And reflect frequently on what and how you are learning. In this age of change, we can only remain a "learned profession" by becoming a profession of learners.

42. Finally, in closing, let me thank your families and, in particular, your parents. They were your first teachers. Out of what resources they had, they strove to give you an education, instil in you a love of learning, and set you on the path to joining the profession which now embraces you as one of its own. Your parents likely taught you your first words; and such words will now become the tools of your trade and the means by which you will advocate the cause of justice. So thank them today – the debt you owe them is perhaps the one thing that will forever lie beyond the reach of words to express.

43. On behalf of the judiciary and the profession, I extend my hearty congratulations to you and warmly welcome you to the profession.

44. Court is adjourned.

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- ¹ John W Wade, “Public Responsibilities of The Learned Professions”, 21 La L Rev (1960) (“Wade”) at p 130.
- ² James A. Brundage, *The Medieval Origins of the Legal Profession: Canonists, Civilians and Courts* (The University of Chicago Press, 2008) at pp 219-222.
- ³ Wade at p 130.
- ⁴ Kenneth Hudson, *The Jargon of the Professions* (Palgrave Macmillan, 1978) at p 22.
- ⁵ Clare Rider, “The Inns of Court and Inns of Chancery and their records”: <<https://www.innertemple.org.uk/who-we-are/history/historical-articles/the-inns-of-court-and-inns-of-chancery-and-their-records/>>.
- ⁶ W W Boulton, “The Legal Profession in England: Its Organization, History and Problems”, *American Bar Association Journal* Vol 43, No 6 (June 1957) at p 508.
- ⁷ Pew Research Center, “The State of American Jobs” (6 October 2016) at pp 5 and 77: <https://www.pewsocialtrends.org/wp-content/uploads/sites/3/2016/10/ST_2016.10.06_Future-of-Work_FINAL4.pdf>.
- ⁸ Survey by Milieu Insight, cited in Ajay Nair, Rice Media, “Are Singaporean Youths Ready for Workplace Disruption? Studies say: ‘Ehh, Maybe.’” (15 June 2019).
- ⁹ Fritz Machlup, *The Production and Distribution of Knowledge in the United States* (Princeton University Press, 1962).
- ¹⁰ Samuel Arbesman, *The Half-Life of Facts: Why Everything We Know Has an Expiration Date* (Penguin, 2013).
- ¹¹ Robert N. Charette, “An Engineering Career: Only a Young Person’s Game?” (4 September 2013): <<https://spectrum.ieee.org/riskfactor/computing/it/an-engineering-career-only-a-young-persons-game>>.
- ¹² Christine Colacino, Harvard Medical School, “Medicine in a Changing World” (2 March 2017): <<https://hms.harvard.edu/news/medicine-changing-world>>.
- ¹³ Terry Costlow, *Christian Science Monitor*, “A short circuit for US engineering careers” (26 December 2002): <<https://www.csmonitor.com/2002/1226/p02s01-usec.html>>.
- ¹⁴ Klaus Schwab, *The Fourth Industrial Revolution* (Currency, 2016) (“Schwab”).
- ¹⁵ Schwab at p 3.
- ¹⁶ Schwab at p 8.
- ¹⁷ Schwab at p 3.
- ¹⁸ Dr Lee Kai-Fu, *AI Super-Powers: China, Silicon Valley and the New World Order* (Houghton Mifflin Harcourt Publishing Company, 2018) (“Lee Kai-Fu”) at p 58.
- ¹⁹ Iris Deng and Celia Chen, South China Morning Post, “How WeChat became China’s everyday mobile app” (16 August 2018): <<https://www.scmp.com/tech/article/2159831/how-wechat-became-chinas-everyday-mobile-app>>.
- ²⁰ Mohit Mittal, Digital Initiative, Harvard Business School, “WeChat – The one app that rules them all” (27 June 2019): <<https://digital.hbs.edu/innovation-disruption/wechat%E2%80%8A%E2%80%8Athe-one-app-rules/>>.
- ²¹ Lee Kai-Fu at p61.
- ²² John Hagel III, John Seely Brown, Roy Mathew, Maggie Wooll and Wendy Tsu, Deloitte Center for the Edge, “The Lifetime Learner: A journey through the future of postsecondary education” (2014) (“Deloitte Report”) at p 4.
- ²³ David Russell Schilling, *Industry Tap*, “Knowledge Doubling Every 12 Months, Soon to be Every 12 Hours” (19 April 2013): <<http://www.industrytap.com/knowledge-doubling-every-12-months-soon-to-be-every-12-hours/3950>>.
- ²⁴ IBM Global Technology Services, “The toxic terabyte: How data-dumping threatens business efficiency” (July 2006): <<http://fliphtml5.com/uteh/ckfu>>.
- ²⁵ Deloitte Report at p 4.
- ²⁶ See, for example, the James White Lecture, “Law Schools: A time of new burdens and new beginnings” (30 October 2018): <<https://www.supremecourt.gov.sg/docs/default-source/default-document-library/james-white-lecture---law-schools---a-time-of-new-burdens->

and-new-beginnings-(301018).pdf>; and the Gala Dinner Address at the 29th Inter-Pacific Association Annual Meeting and Conference, “Deep Thinking: The future of the legal profession in an age of technology” (25 April 2019): <[https://www.supremecourt.gov.sg/docs/default-source/default-document-library/deep-thinking---the-future-of-the-legal-profession-in-an-age-of-technology-\(250419---final\).pdf](https://www.supremecourt.gov.sg/docs/default-source/default-document-library/deep-thinking---the-future-of-the-legal-profession-in-an-age-of-technology-(250419---final).pdf)>.

²⁷ Mohit Sagar, *OpenGov*, “Federal Court turns to AI to predict asset split after relationship breakdown” (24 May 2019): <<https://www.opengovasia.com/federal-court-turns-to-ai-to-predict-asset-split-after-relationship-breakdown/>>.

²⁸ Eric Miller, *Wired*, “Can AI be a fair judge in court? Estonia thinks so” (25 March 2019): <<https://www.wired.com/story/can-ai-be-fair-judge-court-estonia-thinks-so/>>.

²⁹ *B2C2 Ltd v Quoine Pte Ltd* [2019] SGHC(I) 03.

³⁰ World Economic Forum, Insight Report, “The Future of Jobs Report 2018” (“Future of Jobs Report”) at p12: <http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf>.

³¹ Adrian Lim, *The Straits Times*, “Singapore can be world leader in cultivating lifelong learning, says Tharman Shanmugaratnam” (25 April 2019) (“SM Speech”): <<https://www.straitstimes.com/politics/singapore-can-be-world-leader-in-cultivating-life-long-learning-says-tharman-shanmugaratnam>>.

³² See <<https://www.ocbc.com/personal-banking/lifegoals/willgenerator/#/>>.

³³ For example, eBrevia has contract analysis and due diligence tools that extract critical information based on user specifications.

³⁴ Farnam Street, “Half Life: The Decay of Knowledge and What to Do About It”: <<https://fs.blog/2018/03/half-life/>>.

³⁵ Harvard Business Review, “How Google Manages Talent”: <<https://hbr.org/2014/09/how-google-manages-talent>>.

³⁶ Adam Mitchinson and Robert Morris, Center for Creative Leadership and Teachers College, Columbia University, “Learning About Learning Agility”: <<https://www.ccl.org/wp-content/uploads/2015/04/LearningAgility.pdf>>.

³⁷ D Scott DeRue, Susan J Ashford and Christopher G Myers, “Learning Agility: In Search of Conceptual Clarity and Theoretical Grounding”, *Industrial and Organizational Psychology*, 5 (2012), 258-259 at pp 262-263.

³⁸ *The Economist*, “Lifelong learning is becoming an economic imperative” (12 January 2017) at p 2: <<https://www.economist.com/special-report/2017/01/12/lifelong-learning-is-becoming-an-economic-imperative>>.

³⁹ Burning Glass and UK Department for Digital, Culture, Media & Sport, “No Longer Optional: Employer Demand for Digital Skills” (June 2019): <https://www.burning-glass.com/wp-content/uploads/no_longer_optional_report.pdf>.

⁴⁰ Richard Susskind, *Tomorrow’s Lawyers: An Introduction to Your Future* (Oxford University Press, 2nd Edition, 2017) at pp137 and 138.

⁴¹ Counsel Magazine, “In Conversation With Lord Sumption”: <<https://www.counselmagazine.co.uk/articles/conversation-%E2%80%A6lord-sumption>>.

⁴² Richard Florida, *The Atlantic*, “The World is Spiky” (October 2005): <<https://www.theatlantic.com/past/docs/images/issues/200510/world-is-spiky.pdf>>.

⁴³ UpToDate, “About Us”: <<https://www.uptodate.com/home/about-us>>.

⁴⁴ Thomas Isaac, Jie Zheng and Ashish Jha, “Use of UpToDate.com and Outcomes in US Hospitals”, *Journal of Hospital Medicine* Vol 7 No 2 (February 2012): <https://mdedge-files-live.s3.us-east-2.amazonaws.com/files/s3fs-public/pdfs/journals/944_ftp.pdf>.

⁴⁵ Valerie Strauss, *The Washington Post*, “The surprising thing Google learned about its employees – and what it means for today’s students” (20 December 2017): <https://www.washingtonpost.com/news/answer-sheet/wp/2017/12/20/the-surprising-thing-google-learned-about-its-employees-and-what-it-means-for-todays-students/?utm_term=.200bd7badde1>.

⁴⁶ Future of Jobs Report at p12.