

Singapore Legal Forum 2019  
Keynote Address by Justice Kannan Ramesh<sup>1</sup>  
24 August 2019

---

1. Distinguished guests, ladies and gentlemen, a very good afternoon. It gives me great pleasure to be here to address you this afternoon. The legal profession is in a period of flux as a result of transformative changes in the global operating environment. In the James P White Lecture delivered at the Indiana University Robert H McKinney School of Law last year, the Honourable the Chief Justice Sundaresh Menon said “three powerful overlapping forces have created a “perfect storm” that will irrevocably alter the practice of law”.<sup>2</sup> The Chief Justice’s message was that change is upon the legal profession, and the profession must adapt to survive.
  
2. It is therefore apt that I have been asked to address you on “the emerging new dynamics of the legal profession”. The topic speaks to these changes, invites us to reflect on the ramifications of the “perfect storm” the Chief Justice has described, and ruminate on the adaptations that must be made for us to retain relevance.

---

<sup>1</sup> I am grateful to my law clerk, Rachel Tan who assisted me with the research for and preparation of this address.

<sup>2</sup> See “Law Schools: a time of new burdens and new beginnings” at para 2, accessible at [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](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)

3. Professor James Moliterno, the Vincent Bradford Professor of Law at the Washington and Lee University School of Law, observed a few years back that “[t]he profession seems to repeat the same question in response to every crisis: How can we stay even more the same than we already are?”<sup>3</sup> If one examines the past, there may be more than a tinge of truth in this observation. I suggest to you that the question the profession should instead ask is: do we have the courage, the gumption, to change? The answer we find must be an emphatic ‘yes’ as change is now not just something good, but something necessary for survival. And I am positive that we will find the right path and the correct solutions.

## **The Terrain**

4. Let me begin by sketching the terrain for this conversation. At the centre of this “perfect storm” are three overlapping forces. These are globalisation, technology and the influence of the market. I will focus today on the first two as the third is in many ways a by-product of them.

---

<sup>3</sup> See “Law Schools: a time of new burdens and new beginnings” at para 55, accessible at [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](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); James Moliterno, “The Future of Legal Education Reform” (2013) 40 Pepperdine Law Review 423.

## *Globalisation*

5. Much has been said and written about globalisation. There is no need for repetition here. But a few points are worth making. First, the global economic centre of gravity is shifting towards Asia. The Financial Times estimates that, based on purchasing power parity, Asian economies will be larger than the rest of the world combined in 2020 for the first time since the 19th century.<sup>4</sup> Asia's share of global GDP will only continue to increase with its sustained high economic growth. The result will be massive cross-border trade and movement of capital in and out of Asia. With growth will come a burgeoning middle class and, in turn, a thirst for investment in infrastructure. The Asian Development Bank has predicted that between 2016 and 2030, Asia will need to invest US\$26 trillion in infrastructure.<sup>5</sup> This will mean huge investment inflows into Asia in support of complex and sophisticated projects. The Singapore Government's Infrastructure Asia initiative speaks to this. Second, Asia is projected to be a digital transformation leader, for example, in the fusion of digital and physical systems using artificial intelligence,<sup>6</sup> and in the use of

---

<sup>4</sup> See "The Asian century is set to begin", accessible at <https://www.ft.com/content/520cb6f6-2958-11e9-a5ab-ff8ef2b976c7>.

<sup>5</sup> See "Meeting Asia's Infrastructure Needs", accessible at <https://www.adb.org/sites/default/files/publication/227496/special-report-infrastructure.pdf>

<sup>6</sup> See, for example, "From follower to leader: Digital transformation and the road to 5G in southern Asia-Pacific", accessible at <https://insights.techreview.com/from-follower-to-leader/>

Fintech, often with a blockchain DNA. Third, Asia is on track to embrace technology and artificial intelligence in a big way by becoming the world's largest 5G region, accounting for more than half of the global total by 2025.<sup>7</sup>

6. What then are the ramifications? The cross-border dimension will increase the sophistication and complexity of transactions. Infrastructure projects, the growth of the digital economy, and the increasing use of artificial intelligence, Fintech and blockchain technology mean that being proficient in the law will simply not be sufficient for practitioners to serve as effective advisers. Law firms will have to re-skill and re-tool by developing core competencies in technical fields in order to understand the technology, the transactions, and the disputes. Specialised skills in project and case management may also be required. Without such understanding and skills, they will struggle to competently discharge their duties as professional advisers. On a systemic level, new techniques will have to be deployed to minimise the risk of inconsistent outcomes across jurisdictions. An example would be the implementation of court-to-court communication and cooperation protocols. The Judicial

---

<sup>7</sup> See “GSMA: Asia set to become world’s largest 5G region by 2025”, accessible at <https://www.gsma.com/asia-pacific/whats-new/gsma-asia-set-to-become-worlds-largest-5g-region-by-2025/>

Insolvency Network is an excellent example of collaborative thought leadership in this regard.

7. What it means to be proficient in the law will also acquire a new dimension. The heterogeneity of laws between jurisdictions can pose significant challenges both to businesses and legal practitioners. In a 2013 PricewaterhouseCoopers report, business leaders described inconsistent regulations and standards as the single biggest barrier to their company's growth in the Asia Pacific region, with different rules for products and services in different economies increasing the complexity of scaling operations across national borders.<sup>8</sup>
8. For the practitioner, similar challenges arise. Legal practitioners are now expected to be able to advise on matters with transnational elements and implications. This will require deeper domain knowledge of comparative law and the regulatory regimes of other jurisdictions, as well as the economic and practical realities of operating there. The Ministry of Law has already recognised this with its introduction of the new China-Ready programme. This programme seeks to expand the pool of Singapore lawyers who understand Chinese culture, the business environment and the legal system, with

---

<sup>8</sup> PricewaterhouseCoopers 2013 APEC CEO Survey, "Towards resilience and growth: Asia Pacific business in transition", accessible at <https://www.pwccustoms.com/en/recent-developments/assets/pwc-apec-survey-report-2013.pdf>

the aim of helping Singapore lawyers seize new opportunities presented by Singapore's trade relations with China.<sup>9</sup>

9. This is the environment in which the profession operates today, and will operate tomorrow. Taken together, these demands require practitioners to significantly upgrade their skill sets in order to be able to serve as effective advisers.

### *Technology*

10. I now turn to technology. The conversation on technology has seen a paradigm shift. It is no longer about technology being an *enabler* of legal services by increasing our efficiency and productivity. The conversation is now very much about technology as a *disrupter* of legal services. Why is technology a disrupter? The answer is simple. Technology is replacing, not gradually, but at an accelerated pace, the work that lawyers have traditionally carried out. In short, technology is starting to replace lawyers. This is reshaping the face of legal practice on a different scale. We now speak of technology that harnesses the power and potential of machine learning or artificial intelligence, allied with data analytics. On 19 August 2019,

---

<sup>9</sup> See "New China-ready Programme to Help Singapore Lawyers Seize New Opportunities", accessible at <https://www.mlaw.gov.sg/content/minlaw/en/news/press-releases/press-releases-New-China-Ready-Programme-to-Help-Singapore-Lawyers-Seize-New-Opportunities.html>

The Straits Times carried an article on the use of an artificial intelligence system known as “robo-journalism” by Singapore Press Holdings.<sup>10</sup> This system was developed to help business reporters interpret stock graphs into text. On a lighter note, on 15 August 2019, The Business Times reported that a temple in Japan has used artificial intelligence to develop a robot priest which teaches compassion and ways to overcome pain. Apparently, the hope there is that the AI will continue to “grow in wisdom”.<sup>11</sup> These examples demonstrate the immense potential of technology. There is really no reason to believe that the legal industry will be insulated. In fact, it is not. Let me explain.

11. Technology disrupts by enabling. It empowers clients, the public and new non-legal players to access and provide legal services from non-traditional sources. This encroaches upon the role that lawyers have traditionally played, potentially resulting in marginalisation. The ease of access to technology as well as the availability of big data on an unprecedented scale only serve to accelerate the pace of change. Some examples will illustrate the point.

---

<sup>10</sup> See “Inaugural SPH Tech Day hosts industry players and experts, showcases innovations”, accessible at: <https://www.straitstimes.com/tech/industry-players-and-experts-speak-at-inaugural-sph-tech-day>.

<sup>11</sup> See “Playing god: Japan temple puts faith in robot priest”, accessible at <https://businesstimes.com.sg/technology/playing-god-japan-temple-puts-faith-in-robot-priest>

12. JP Morgan announced in a 2016 report that it introduced COiN, a contract intelligence platform that utilises unsupervised machine learning to analyse legal documents. The system reviewed 12,000 annual commercial credit agreements and extracted 150 important data points and clauses in seconds, compared to an estimated 360,000 hours it would have required to manually review the same documents. Many law firms today charge on an hourly basis. COiN therefore potentially wiped out substantial revenue that might otherwise have been earned by a law firm. In a sobering reminder of human fallibilities, the report further noted that approximately 80% of loan servicing errors today are due to contract interpretation errors,<sup>12</sup> which might be minimised through the use of assistive technology like COiN. In other words, the message is clear: technology is faster, cheaper and more accurate, exactly what the consumer wishes to hear.

13. A second example is the use of AI-enabled technology to detect anomalies for fraud and cybersecurity,<sup>13</sup> previously a core specialist skill of many top-end law firms. Teradata, an AI firm selling fraud detection solutions to banks, is a prime example. Working with

---

<sup>12</sup> See JP Morgan Chase & Co Annual Report 2016, at page 49, accessible at <https://www.jpmorganchase.com/corporate/investor-relations/document/2016-annualreport.pdf>

<sup>13</sup> See JP Morgan Chase & Co Annual Report 2016, at page 49, accessible at <https://www.jpmorganchase.com/corporate/investor-relations/document/2016-annualreport.pdf>

Danske Bank, Teradata Consulting applied analytic techniques, including AI, to better identify instances of fraud while reducing false positives. This apparently allowed the bank to reduce false positives by 60% and increase its detection rate of actual fraud by 50%. The deep learning systems that were used reportedly compared analytic models in real time to determine which one was most effective in detecting fraud.<sup>14</sup>

14. A third example is ROSS, an AI-enabled research system that uses natural language processing to understand search queries, retrieve relevant portions of a case and rank results based on their relevance. The “Find Similar Language” function allows users to highlight passages of text and find other decisions considering similar points of law. Ross’s potential to reduce the long hours that would otherwise be spent on legal research, often by junior lawyers, is clear. Unsurprisingly, several law firms have already begun using ROSS.<sup>15</sup>
15. A fourth example is the advent of online dispute resolution forums. eBay’s Resolution Centre reportedly resolves 60 million

---

<sup>14</sup> See “Danske Bank fights fraud with deep learning and AI”, accessible at: [http://assets.teradata.com/resourceCenter/downloads/CaseStudies/CaseStudy\\_EB9821\\_Danske\\_Bank\\_Fights\\_Fraud.pdf](http://assets.teradata.com/resourceCenter/downloads/CaseStudies/CaseStudy_EB9821_Danske_Bank_Fights_Fraud.pdf)

<sup>15</sup> See ROSS Intelligence Offers a New Take on Legal Research”, accessible at <https://abovethelaw.com/2019/05/ross-intelligence-offers-a-new-take-on-legal-research/>; ROSS’s main website, accessible at <https://rossintelligence.com/features.html>

disagreements every year, 90% of which do not require human intervention.<sup>16</sup> Modria, a purpose-built online dispute resolution system, claims to have successfully handled more than a million cases in the US and around the world.<sup>17</sup> These platforms will only become more prevalent and increasingly effective, and will continue to divert low or lower value claims away from the legal profession.

16. It should therefore not come as a surprise that investment in legal technology is fast growing. In August 2017, Thomson Reuters noted that there had been a staggering 484% increase in the number of patents filed for new legal services technology globally between 2012 and 2016. Significantly, the top three countries for patent filings are some of the largest economies and, therefore, markets for legal services. These were the US, China and South Korea.<sup>18</sup> This suggests that we will see greater deployment of legal technology in the coming years as these patents are commercially exploited through the introduction of new products able to provide increasingly complex services, moving machine-enabled legal services further up the value chain.

---

<sup>16</sup> See: “Is there a Future for Online Dispute Resolution for Lawyers?”, accessible at <https://www.lawsitesblog.com/2016/04/future-online-dispute-resolution.html>

<sup>17</sup> See Modria’s website at <https://www.tylertech.com/products/modria>

<sup>18</sup> See “Thomson Reuters analysis reveals 484% increase in new legal services patents globally as law firms around the world invest in legal tech”, accessible at <https://www.thomsonreuters.com/en/press-releases/2017/august/thomson-reuters-analysis-reveals-484-percent-increase-in-new-legal-services-patents-globally.html>

17. Any discussion on technology would not be complete without mentioning the competition posed by Alternative Legal Service Providers or ALSPs. ALSPs harness technology to offer legal services in competition with law firms. A recent report by Thomson Reuters on ALSPs observed that in the two-year period between 2015 and 2017, coinciding with the rise in the use of technology, the ALSP market has grown an estimated US\$2.3 billion. The Big Four accounting firms are massive players in this space, offering an expanding range of legal services and integrating these with their other offerings to develop multi-point client relationships and solutions to their clients' business issues. This competition has been felt most keenly in M&A due diligence as well as regulatory risk and compliance services.<sup>19</sup>
18. Three statistics make the point starkly clear. First, a 2018 study by the Financial Times showed that between 1,800 lawyers (in the case of KPMG) to 3,600 lawyers (in the case of PwC) are employed by the Big Four in the provision of legal services.<sup>20</sup> Thomson Reuters further estimated that their total revenue in 2017 for such services was

---

<sup>19</sup> See "Alternative Legal Service Providers 2019", at page 4, accessible at <https://legal.thomsonreuters.com/content/dam/ewp-m/documents/legal/en/pdf/reports/alsp-report-final.pdf>

<sup>20</sup> See "Big Four circle the legal profession", accessible at <https://www.ft.com/content/9b1fdab2-cd3c-11e8-8d0b-a6539b949662>.

US\$1.2 billion.<sup>21</sup> These are staggering numbers that exceed several of the largest global law firms both in terms of headcount and revenue. Second, the 2018 Citi Hildebrandt Client Advisory reported that the Big Four spend more on technology and training than the revenue of any law firm.<sup>22</sup> Professor Richard Susskind, the author of *Tomorrow's Lawyers*, noted the Big Four's commitment to new technology and observed that their plan appears to be to emerge as market leaders in legal technology. Third, the Thomson Reuters survey also indicates, somewhat ironically, that 52% of large US law firms already use ALSPs for litigation and investigation support.<sup>23</sup>

### **What is the road ahead?**

19. So what is the road ahead? It must be readily apparent by now that technology will impact law firms and lawyers in a very significant way. Technology will lead to a significant portion of legal services becoming commoditised. Professor Susskind believes that legal services in the future legal marketplace will evolve from bespoke work to commodities, as encouraged by market forces and enabled by

---

<sup>21</sup> See "Alternative Legal Service Providers 2019", at page 3, accessible at <https://legal.thomsonreuters.com/content/dam/ewp-m/documents/legal/en/pdf/reports/alsp-report-final.pdf>

<sup>22</sup> See the 2018 Citi Hildebrandt Client Consulting Advisory, at page 6, accessible at <https://www.privatebank.citibank.com/ivc/docs/2018CitiHildebrandtClientAdvisory.pdf>

<sup>23</sup> See "Alternative Legal Service Providers 2019", at page 15, accessible at <https://legal.thomsonreuters.com/content/dam/ewp-m/documents/legal/en/pdf/reports/alsp-report-final.pdf>

technology. As described by Professor Susskind, a legal commodity is an electronic or online offering that is perceived as commonplace, a raw material that can be sourced from one of various suppliers.<sup>24</sup> This is antithetic to the current norm where legal services are provided by a trusted adviser, the lawyer. The disaggregation of legal services into discrete work products, some of which can be outsourced or standardised, will leave the bulk of legal services vulnerable to disruption.

20. The revenue implications of this are stark, as illustrated by this diagram.<sup>25</sup> The bottom tier of 10% to 15% of legal services will be extremely price sensitive with non-traditional service providers eventually replacing law firms in this space. The second tier of 60% to 70% will be the target market for the ALSPs. Law firms here will face considerable price pressure resulting in squeezed margins and dwindling market share. In short, some 70% to 85% of the revenue of law firms will come under severe stress. Law firms which react to these changes by gravitating towards high-value services that require the unique expertise of a legal practitioner will continue to be in

---

<sup>24</sup> See “The end of lawyers? Rethinking the Nature of Legal Services” by Richard Susskind (OUP, 2008) at pp 28, 31 and 32.

<sup>25</sup> See “2019 Report on the State of the Legal Market”, at page 17, published by Thomson Reuters Legal Executive Institute and the Center on Ethics and the Legal Profession at Georgetown University Law Center.

demand and command a premium in fees. These services are represented by the top band in this diagram.

21. The competition that lawyers at the lower end of the value chain face suggests that there will be a drop in demand for lawyers overall. The Boston Consulting Group and Bucerius Law School agree and make two worrying predictions. First, that the law firms of the future will require fewer lawyers. The Boston Consulting Group suggests that legal-technology solutions could perform as much as 30-50% of tasks presently carried out by junior lawyers.<sup>26</sup> Both in-sourcing by legal departments of corporations using technology and outsourcing to non-traditional service providers will exacerbate this problem. I was at a lecture this Tuesday given by Professor George Williams, Dean of the University of New South Wales School of Law. Professor Williams mentioned that KPMG HK was asked to model the law firm of the future 15 years down the road. They predicted shockingly that a present 2,000-man law firm could potentially reduce in size to 30! Whether KPMG is correct is not the point. The very fact that this possibility is even being considered is the worry.

---

<sup>26</sup> See BCG “How Legal Technology will Change the Business of law”, at page 3, accessible at [http://www.bucerius-education.de/fileadmin/content/pdf/studies\\_publications/Legal\\_Tech\\_Report\\_2016.pdf](http://www.bucerius-education.de/fileadmin/content/pdf/studies_publications/Legal_Tech_Report_2016.pdf)

22. This brings me to their second prediction. The report by the Boston Consulting Group and Bucerius Law School also suggests that the structure of law firms will change remarkably. Law firms of the future will move towards a rocket structure, signalling a major departure from the pyramid model that currently exists in many law firms. This is illustrated by this diagram,<sup>27</sup> in which lawyers are represented by green boxes, non-legal staff by orange boxes, and tech staff by blue boxes. There are two marked differences between the rocket and pyramid structures. First, the rocket structure has far fewer lawyers, with the lawyers forming the central spine in the firm. This is consistent with the first prediction that law firms will require fewer lawyers in the future. Second, the rocket structure will also comprise a cast of para-professionals offering a range of legal and non-legal services. Such staff will include technologists and legal tech professionals and specialists in technical fields such as construction, as well as project managers who will manage large scale matters such as complex M&A transactions, construction disputes and insolvencies. Law firms will therefore provide services which combine legal skills with technology and the technical skills offered by specialist paraprofessionals and technologists.

---

<sup>27</sup> See BCG “How Legal Technology will Change the Business of law”, at page 10, accessible at [http://www.bucerius-education.de/fileadmin/content/pdf/studies\\_publications/Legal\\_Tech\\_Report\\_2016.pdf](http://www.bucerius-education.de/fileadmin/content/pdf/studies_publications/Legal_Tech_Report_2016.pdf)

## **What should we be doing?**

### *The importance of cross-disciplinary training*

23. And so, we come to the real question: What should we do, how can we prepare? I have already provided some of the answers earlier, but two steps seem logical. First, law firms must embrace technology, not just to assist them to function more efficiently, but more importantly, to enable them to move up the value chain by enhancing the services they provide. Value accretion is vital.
24. Second, and related to the first, practitioners must acquire multi-disciplinary skills. This is necessarily a life-long process starting at the undergraduate level and continuing right through one's career as a practitioner. Such skills upgrading extends well beyond keeping abreast of the law, as I believe that in and of itself is insufficient to retain currency. I suggest to you that the acquisition of multi-disciplinary skills is not only essential to one's effectiveness, but also to one's survival. Harvard Law School has in fact shifted its criteria for admissions to place greater emphasis on applicants with backgrounds in STEM – science, technology, engineering and mathematics.

25. The reason why the acquisition of multi-disciplinary skills is important will be apparent if we examine more closely the rocket structure of the law firm of the future.
26. In the rocket structure, lawyers will need to work with a growing pool of allied professionals such as technologists and other specialist para-professionals. The injection of such para-professionals into the legal services structure is critical for two reasons. First, these specialists bring skill sets that are demanded by the marketplace, at least in part because of the trends I identified earlier. Second, they enable law firms to increase the depth, width and quality of the services that they provide, enabling them to move up the value chain. As the diagram illustrates, such specialists may in fact outnumber the lawyers in the firm despite the fact that the core services being provided are legal, with the principal service provider being the lawyer. The rocket structure can therefore function optimally only if the lawyer is able to effectively curate specialist skills and work processes that will improve the quality of the legal services he offers.
27. Let's take blockchain technology as an example. This is increasingly used to maintain records in the finance, insurance and derivatives industries. It is also an increasingly common feature in Fintech. In the event of a dispute, understanding blockchains will be important in

designing effective search tools for e-discovery and analysing the results of the search. As blockchain transactions are often performed pseudonymously, there may be difficulties in decoding the information and relating it to the relevant parties, posing a different sort of challenge in discovery.<sup>28</sup>

28. Another example is computer assisted review. This may be vital to keeping costs down in cases with voluminous documents. Again, it is essential that practitioners and the courts understand the implications and possible limitations of the software utilised, and ensure that the degree of accuracy achieved is sufficient. The English High Court decision in *Pyrrho Investments Ltd v MWB Property Ltd* [2016] EWHC 256 (Ch) considered the use of predictive coding or computed assisted review software in discovery. This case originally involved more than 17.6 million electronic files; this was later reduced to 3.1 million by a de-duplicating process. The predictive coding software was a form of machine learning which was used to determine the relevance of documents. An important factor in the decision to use the software was its accuracy. This required an understanding of how the software functioned.

---

<sup>28</sup> See “How Distributed Ledger Technology might influence eDiscovery”, accessible at <https://www.lawfuel.com/blog/how-distributed-ledger-technology-might-influence-ediscovery/>

29. It therefore seems clear that familiarity with technology will become essential foundational knowledge that is required in order to identify and understand the legal issues that arise. A case recently decided in the Singapore International Commercial Court involving cryptocurrencies is an apt illustration of the importance of this.
30. In *B2C2 Ltd v Quoine Pte Ltd* [2019] SGHC(I) 3, the defendant, a Singapore-registered company, operated a currency exchange platform which enabled third parties to trade virtual currencies either for other virtual currencies or for fiat currencies. The plaintiff traded as an electronic market maker providing liquidity on exchange platforms. The claim for breach of contract and trust arose out of seven trades which had been made at an exchange rate that was approximately 250 times the previous going rate. When the defendant's Chief Technology Officer became aware of the trade the next day, he cancelled them and the debit and credit transactions were reversed. A crucial factor in this case was that the contract that was made was by two computer systems acting as programmed, but otherwise without human intervention.
31. Were cryptocurrencies property that can be held on trust? This was one of the issues that was considered in that case. Justice Simon Thorley held that they were: while cryptocurrencies are not legal

tender in the sense of being a regulated currency issued by the government, they are definable, have a degree of permanence and stability, and have the fundamental characteristic of being an identifiable thing of value.

32. Another equally difficult issue was how the doctrine of unilateral mistake should apply given that there had been no human intervention at the time the disputed trades were effected. As Justice Thorley noted, applying the law to a case where algorithmic trading is involved raised novel questions such as how knowledge or intention should be assessed when the operation is carried out by machines. He held that the relevant knowledge was that of the computer programmer who designed the software at the time the relevant part of the programme was written. Emphasis was placed on the “deterministic” nature of the algorithmic programmes, which were “mere machines carrying out actions which in another age would have been carried out by a suitably trained human”.
33. Justice Thorley, however, noted that the law in relation to the ascertainment of knowledge will have to, in a future case, be determined in relation to artificial intelligence programmes, where the computer can be said to have a mind of its own. This will undoubtedly

require an understanding of machine learning in general, and specifically, the system that is involved in a given case.

34. The opacity involved in certain forms of technology also gives rise to rule of law and due process concerns. In the United States for example, some algorithms are used to optimise the efficiency of its criminal justice system. The Correctional Offender Management Profiling for Alternative Sanctions (“COMPAS”) is a risk-need assessment tool that was referred to in *State v Loomis* (2016) WI 68. It provides risk scores which are intended to predict the *general* likelihood that those with a similar history of offending will commit another crime following release from custody. This is used as a guide in determining the type of supervision inmates might need, and has also been considered in sentencing. Loomis argued that the circuit court’s consideration of a COMPAS risk assessment in sentencing violated his right of due process, in part because the proprietary nature of the tool prevented him from challenging its scientific validity. Ann Walsh Bradley J, in the majority, observed that while Loomis could not review and challenge the manner in which the algorithm calculated risk, he could review and challenge the resulting scores by arguing that other factors demonstrate their inaccuracy. To the extent that the score had been based upon the answers Loomis provided,

and on publicly available information, he could verify that the information in the report was accurate. This case illustrates one way in which the opacity of technological processes and automative technology can present difficult legal and legal policy-based questions.

35. Serious rule of law concerns may therefore arise. Systems that automate decision-making on the basis of rules they construct from patterns and correlations observed in the data provided may be opaque not only to the layperson, but even to suitably trained professionals.<sup>29</sup> It may well be that the algorithms and data used will need to be subject to greater requirements of transparency such that their logic and neutrality can be understood and challenged. Legal practitioners have a central role in shaping the way in which these systems are adopted and used. Legally-trained individuals may also be instrumental in developing systems which comply with due process, equality and transparency requirements. This can only be done with a proper understanding of the relevant technology.

36. To be clear, I am not suggesting that lawyers should be expected to have deep technical knowledge or understanding of the norms in

---

<sup>29</sup> See “The Rule of Law and Automation of Government Decision-Making” (2019) 82(3) MLR 425 at 433 and 442.

these varied areas. However, knowledge sufficient to enable the practitioner to understand the specific issues at hand and to ask the right questions is absolutely essential. This extends beyond technological fluency – as I suggested earlier, a broad base of skills and perspectives is crucial. This may even include legal project management, advanced legal analytics and decision-support solutions.<sup>30</sup>

37. Acquisition of new skills is therefore key. Continuing professional development must incorporate this as a necessary and integral part of the process. But that alone may not be sufficient. Beyond that, practitioners may have to consider participation in specifically tailored postgraduate programmes designed to build subject-matter expertise relevant to the new technology-centric economy. Programmes on coding, blockchain and artificial intelligence, and valuation and engineering are some examples. Keeping abreast of developments in the law, I would suggest, can no longer be regarded as satisfying the baseline requirement for competence. Much more is needed. The profession must adapt.

---

<sup>30</sup> See “How Legal Technology will Change the Business of law”, at page 9, accessible at [http://www.bucerius-education.de/fileadmin/content/pdf/studies\\_publications/Legal\\_Tech\\_Report\\_2016.pdf](http://www.bucerius-education.de/fileadmin/content/pdf/studies_publications/Legal_Tech_Report_2016.pdf)

## Conclusion

38. The challenges many of you will face as you enter the legal profession are vastly different from those I did when I first graduated some 29 years ago. The main characteristics of a lawyer have not changed, even if the specific requirements have shifted. Fidelity to the law and professional ethics, coupled with the values of excellence, honour and public service remain the cornerstones of the legal profession. As the Chief Justice noted, the “commercialisation” of the law will bring mounting pressure on law firms.<sup>31</sup> This will test the commitment of young lawyers to these ideals, but your adherence to them must remain steadfast and unwavering. At the same time, failing to adapt by acquiring the necessary skills to succeed is a slippery slope to failure.

39. I end by quoting the words of President Abraham Lincoln in his message to Congress on 1 December 1862. Though said a century and a half ago, they remain apposite today. “We can succeed only by concert. It is not ‘can any of us imagine better?’ but, ‘can we all do better?’ The dogmas of the quiet past are inadequate to the stormy

---

<sup>31</sup> See “Law Schools: a time of new burdens and new beginnings” at paras 30 to 33, accessible at [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](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)

present. The occasion is piled high with difficulty, and we must rise to the occasion. As our case is new, so we must think anew, act anew.”

As law students, you are the future of the legal profession. And the future is in good hands as this is also an audience of millennials. We all know the immense potential of millennials. The future is yours to shape, and the power of imagination must be with you in that journey.

As President Lincoln said, “you must think anew, act anew.”

40. It leaves me to wish you all the very best with your studies and your careers in the law, and an immensely successful forum today.