

## THE IMPACT OF AI ON CORPORATE LAW AND CORPORATE GOVERNANCE

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### ABSTRACT

While affirming the robustness of core corporate law principles, this chapter explores how AI has, and could, impact the content, application and processes of corporate law and corporate governance, and the interactions of corporate law actors including boards, shareholders and regulators. As AI gains agency, the legal and cultural challenges in recognising robo-directors are probed. A contextual exploration of directors' duties confronts the significant contemporary challenge concerning the need for directors to engage with AI's potential to transform companies' business models, culture and systems. When considering how and when to deploy AI applications, adoption and reliance upon AI by companies is considered against the backdrop of likely judicial application of key best interests duty and duty of care precepts to directors. The chapter also engages with corporate governance potential and controversies surrounding use of AI and robo-directors including stakeholder interests, board effectiveness, groupthink and internal biases.

### Keywords

Corporate law; corporate governance, directors' duties; artificial intelligence; distributed ledger technologies

### INTRODUCTION

The path of the fourth industrial revolution with intertwined opportunities and risks is inexorably unfolding, a digital era of enhanced AI capabilities.<sup>1</sup> Law often trails societal development before shifting organically or reactively to respect the ruthless pace of change. New technologies including AI present highly complex regulatory challenges, transformative economic and social opportunities co-exist with risks that are evolving and are under-explored. However, AI integration and socialisation is at an early stage and while the pace of innovation is rapid, real conversion traction in terms of incorporation of AI does not happen overnight.<sup>2</sup> Corporate law scholars can usefully observe, anticipate and respond with discursive insights on issues that benefit from critical thought and provide contextual discussion within wider doctrinal and theoretical frameworks and norms for corporate law and governance. To do so successfully requires both innate curiosity, lateral thinking and a willingness to assimilate much technological, ethical, policy and regulatory developments that lie far behind the traditional purview of corporate law.<sup>3</sup> It also requires a willingness to wait for clarity and solutions to emerge from policymakers and an openness to AI shaping the contours of corporate law. A measure of prescience and informed speculation goes a long way while creatively engaging with how AI can progressively influence the form and application of regulation itself. Thus we see the boundaries of

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<sup>1</sup> As is frequently noted, an agreed description of AI has eluded policymakers. For convenience, this chapter uses the term 'AI' in a broad generic sense and avoids being prescriptive around it given that its nature and applications are fluid, disparate and changing. However, the capacity for autonomous decision-making and learning is often implicit. The term 'AI' is also used here to contemplate the use of robots, machines and machine learning.

<sup>2</sup> Tim Fountaine, Brian McCarthy, Tamim Saleh, 'Getting AI to Scale' (2021) 99(3) Harv Bus Rev 116.

<sup>3</sup> Common AI themes present around ethics, reliability, untoward effects and liability. However, they are not the focus of this chapter.

our discipline being pushed. For corporate law scholars, corporate lawyers, regulators and lawmakers there is much to grapple with and many of the questions remain under-studied.

This chapter considers the current and future impact of AI and related technologies on corporate law and corporate governance norms and practices. A scenario where the existing corpus of corporate law remains fit for purpose and can be applied seamlessly presents the ideal scenario for corporate life which thrives on legal certainty. Much of the debate on the regulation of AI can be boiled down to how much autonomy can we afford to give algorithms and how do we appropriately contain risk without stifling opportunity? These questions are bigger than corporate law. At the same time corporate law does not exist in a vacuum isolated from other areas of the law. What is happening in adjacent areas of law and ethics is relevant. To a great extent the impact of AI on corporate law is indirect; in other cases, significant regulatory, compliance and enforcement opportunities present themselves. The first part of this chapter scrutinises the changing AI contextualised landscape in which corporate law operates. The latter part turns to consider the impact on soft law corporate governance practices and boardroom behaviour and norms.

## THE NEW WORLD

AI, machine learning, Big Data and Distributed Ledger Technologies ('DLT') are increasingly being leveraged to enhance business processes, creating time and cost efficiencies. While much has been made of the unstoppable rise of Big Tech, companies across all sectors increasingly embrace AI in their business processes.<sup>4</sup> For companies that are serious about leveraging operational governance benefits, impressive data analytics can be delivered that can inform and automate decision-making, turbo-charging risk-management. AI systems enable granular monitoring of employees and supply chains, anticipating potential operational and compliance risks with predictive modelling providing an early warning system.

It would be unsurprising to see a correlation between companies that are early movers on harnessing the power of algorithms and increased profitability as they gain an edge from innovation in their operations and better understanding of markets and compliance issues. Early AI integrators will also most likely have AI-maximised their corporate governance.<sup>5</sup> By contrast, companies that are technological laggards will be at a disadvantage. A knowledge deficit and lack of appropriate leadership will threaten transformative technological change. The digital and AI divide will affect smaller private companies (other than technology-driven start-ups) more than their larger and well-resourced counterparts. While some companies relish being early adopters, others who are not ready, willing and able will lag behind.<sup>6</sup> The cost burden for a corporate AI upgrade will fall as systems become widespread, scaled and off the shelf rather than bespoke. In any event, there will be heavy disparities in the rate and extent of AI adoption. For one thing, some companies' business models are not heavily data driven or do not involve repeated processes that benefit automation.

First mover advantage is a known phenomenon, but first movers must also contend with being first riskers. Where AI-related losses lie once they fall, and risk allocation will affect whether corporations are incentivised to take advantage of AI and other synergistic technological capabilities and how the interests of various interested parties are mediated between. Policy work and scholarly excavation continues around the globe on the intractable issue of devising an appropriate model of liability for AI. In the EU a proportionate approach to risk is proposed to encourage confidence in AI through the

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<sup>4</sup> Michael E Porter and James E Heppelmann, 'How Smart Connected Products are Transforming Companies' (2015) 93(10) *Harv Bus Rev* 96.

<sup>5</sup> Mark Fenwick and Wulf A Kaal and Erik P M Vermeulen, 'The 'Unmediated' and 'Tech-Driven' Corporate Governance of Today's Winning Companies' (2019) 16 *NYU JL & Bus* 75.

<sup>6</sup> Marija Cubric, 'Drivers, Barriers and Social Considerations for AI Adoption in Business and Management: A Tertiary Study' (2020) 62 *Technology in Society* 101257.

proposed Artificial Intelligence Act<sup>7</sup> while in the US an Algorithmic Accountability Act is planned.<sup>8</sup> Many issues of significance that arise lie beyond the remit of corporate law to resolve although the answers provided may impact on the interpretation and application of corporate law rights and obligations.<sup>9</sup>

## WHAT DOES AI MEAN FOR CORPORATE LAW?

### General Observations

Amid seismic technological change, it can be tempting to think we need to tear up existing rule books. However, a closer look at the ebb and flow of society and regulation is that what seems new, is often in reality no more than 'old wine in new bottles'. The long-established goals of corporate law across jurisdictions are often concerned with being largely enabling and facilitatory of trade but with some essential regulatory aspects to protect the public dealing with companies against wrongdoing. AI's efficiencies may buttress the achievement of central underlying regulatory goals. Trust in corporate actors through transparency is a key value for accountability and can be assisted by AI. As against this, non-explainability of algorithmic decision-making butts up against the value of transparency and presents an obstacle to devising accountability.

Corporate law frameworks typically receive periodic root and branch overhauls every few decades but are fairly enduring in terms of longevity of basic concepts and power divisions.<sup>10</sup> While FinTech innovation requires development of new financial services laws to cover business models not previously contemplated, corporate law may require some adjustments for AI-driven or enabled business models but the bulk of it will be able to stand largely unscathed. This is likely to be the case for corporate law systems premised largely on a flexibly worded enabling framework that is not concerned with regulating the 'why' of the business, but more concerned with facilitating business under the guise of the corporate form while setting some ground rules around 'how' companies are run.

There is little evidence to suggest that AI availability will shake up corporate law in a dynamic sense in the short term.<sup>11</sup> First, to do so would put the cart before the horse because there are larger fish to fry first in terms of establishing liability models for AI. Second, much of the content of the law does not need adjusting. Rather the odd nip and tuck for context may largely suffice until the issue of the agency of AI platforms is resolved. However, the context of application of the law is changing and we can expect many efficiency gains to be reaped. An escalation in DLT and AI-driven corporate administration and compliance practices is certain. How regulation and enforcement is carried out is also at the beginning of a journey of algorithmic alchemy. AI and RegTech/SupTech can also be expected to play a part in enabling the process of regulating to be more responsive to market gaps identified thus reducing regulatory lag.<sup>12</sup>

Corporate law actors' development of best practices can help to shape the creation of new legal principles and processes surrounding AI and corporate law and corporate governance. Decision-making at all levels including boardroom decision-making context is being shaped by AI. Furthermore,

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<sup>7</sup> European Commission Communication, *Fostering a European Approach to Artificial Intelligence* COM(2021) 205 final; European Commission, *Proposal for a Regulation laying down Harmonised Rules on Artificial Intelligence* COM(2021) 206 final. See also OECD Principles on Artificial Intelligence adopted in the OECD Council *Recommendation on Artificial Intelligence* (OECD/LEGAL/0449).

<sup>8</sup> US, Bill HR 2231, Algorithmic Accountability Act of 2019, 116th Cong, 2019-2020.

<sup>9</sup> For a good discussion in a technology context see Mark Fenwick, Wulf A Kaal and Erik PM Vermeulen, 'Regulation Tomorrow: What Happens when Technology is Faster than the Law' (2016) 6 *American University Business Law Review* 561

<sup>10</sup> Brian Cheffins, *Company Law: Theory, Structure and Operation* (Clarendon Press 1993); Deirdre Ahern, 'Codification of Company Law: Taking Stock of the Companies Act 2006' (2014) 35 *Stat L Rev* 230.

<sup>11</sup> Iris H-Y Chiu and Ernest WK Lim, 'Technology vs Ideology: How Far will Artificial Intelligence and Distributed Ledger Technology Transform Corporate Governance and Business?' (2021) 18 *Berkeley Bus LJ* 1.

<sup>12</sup> John W Bagby and Nizan G Packin, 'RegTech and Predictive Lawmaking: Closing the RegLag between Prospective Regulated Activity and Regulation' (2021) 10 *Mich Bus & Entrepreneurial L Rev* 127.

the face of risk management and compliance is changing beyond recognition. In some cases it may prove difficult for entrepreneurs using corporate forms to understand how existing legal frameworks apply to business models and processes based around technological innovation. Adaptive regulators have chosen to deal with this by establishing regulatory sandboxes. For example, the Canadian Securities Administrators' ('CSA') Regulatory Sandbox provides participants with tailored temporary relief from securities laws requirements while engaging in controlled testing.<sup>13</sup>

### Legislative Design and Corporate Law

Corporate law's future will be shaped by the availability of tagged machine-readable legislation as previous zeal for a plain language agenda is replaced by enthusiasm for machine-readable legislation and natural language processing. The process of corporate law-making is on the way to transformative change as tagging and machine-readable formats using natural language become the norm.<sup>14</sup> This will change the face of compliance and make regulatory reporting more efficient. A 'technology first' approach (including machine readable regulatory rules) can revolutionise managing corporate governance and compliance resulting in considerable cost savings and greater compliance, allowing human resources to be freed up for higher chain activities. In the run up to company law reforms leading to the Companies Act 2006, the mantra was 'think small first'. Perhaps we will begin to see 'think AI first' in law-making. The alternative is to bring use of AI and algorithms into the mix as laws are made or amended – the strategy taken by New Zealand. The UK approach allows sectoral regulators to make their own determinations concerning the need for AI-specific regulation.<sup>15</sup>

In the new legal order code can become a proxy for law.<sup>16</sup> The provision of standard model articles in legislation may in the future be replaced by direct interaction with a bot that will draft bespoke articles in a matter of seconds. Code can help to make rules easy to break down and comply with, but code works best with black and white rules such as mandatory corporate law rules. The more a corporate law system allows for private ordering in the form of opt out or opt in provisions or default rules, the more sophisticated the programming needs to be to enable AI driven compliance.

For jurisdictions that have been a slave to paper-based filing, company incorporations and other post-incorporation filings will be transformed.<sup>17</sup> Traditionally a task for a trained company secretary, AI will increasingly be used in company formation with chatbots and machine learning being potentially used to help the promoters provide the information needed for establishing a company. In the UK, Companies House is implementing a five year Digital First strategy and Natural Voice Language (voice recognition) has been incorporated into customer services. The system can identify that the customer is interested in incorporating a company and a link to the relevant service is then automatically sent to them via SMS. Company registration offices could use AI in vetting information and documents submitted for suitability and accuracy and smart contract protocols to determine when certificates of incorporation and confirmation of registration of other documents should be issued.

### Attribution of Liability for AI

Discussion of development of legal norms around the deployment of AI by State and private actors remain at an early stage. The question whether of AI could be given authority as a corporate agent or hold power of attorney with ability to bind a company should ideally be broached once private accountability and liability frameworks for AI are in place. Devising a robust workable framework for

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<sup>13</sup> See Deirdre Ahern, 'Regulators Nurturing Fintech Innovation: Global Evolution of the Regulatory Sandbox as Opportunity-Based Regulation' (2019) 15 *Indian J L & Tech* 345.

<sup>14</sup> Marcel Froehlich, 'Enabling RegTech Upfront: Unambiguous Machine-Readable Legislation' in Janos Barberis, Douglas W Arner and Ross P Buckley (eds), *The RegTech* (Wiley Online Books 2019).

<sup>15</sup> *Government Response to the House of Lords Artificial Intelligence Select Committee's Report* (Cm 9645, 2018) para 102.

<sup>16</sup> Lawrence Lessig, *Code and Other Laws of Cyberspace* (Basic Books 1999).

<sup>17</sup> The path towards automation is set by company registration offices and filings moving online. To further facilitate this there needs to be a greater move towards digitalisation including digital IDS and reduction of the need for human signatures. The Covid-19 pandemic underscored the importance of this.

attribution of liability for harm caused by AI systems is a major regulatory challenge of our time. Resolving this will not be the domain of corporate law. Rather, corporate law's response will adapt to the resolution of this keystone challenge. Nonetheless some brief observations are made here from the perch of corporate law.

Normally where employees are at fault, vicarious liability applies to the company through application of the respondeat superior principle. As AI changes the allocation of work actions will be redistributed from the job description of employees to algorithms involving machine learning. This in turn will mean that the usual systems of attributing corporate liability through vicarious liability and other mechanisms will increasingly be bypassed as human actors fade into the background. That raises an issue as to when the behaviour of AI or algorithmic applications should be attributed to the company.<sup>18</sup> One vaunted possibility is of recognising a legal status or personality of AI. This has some analogy with the separate legal personality as attached to corporations with the exception that corporations usually have human agents pulling their strings.<sup>19</sup>

For companies using AI in the boardroom difficult issues of causation may arise given the complexities involved in pinpointing responsibility. Diamantis worries that 'corporations will become increasingly immune to liability as their operations require less and less human intervention.'<sup>20</sup> Attributing liability for unintended algorithmic harm involves a number of actors including human programmers who may be employed by companies as well as the independent actions of an algorithm in full autonomous machine learning mode. Without a direct means of liability, the general duties of directors need consideration.<sup>21</sup>

#### Post-incorporation Corporate Administration and Compliance

AI technologies using language processing can significantly reduce costs associated with regulatory compliance<sup>22</sup> and automation and DLT could take the place of corporate officers in internal register administration and routine reporting and filing responsibilities.<sup>23</sup> A powerful combination of DLT technologies and AI will prove its worth in labour-saving through assisting with internal corporate administration such as allotment of shares and maintaining registers such as the register of members. AI can help with the mechanics of holding board and shareholder meetings.<sup>24</sup> Blockchain based proxy voting enabled by smart contract should have a positive impact on shareholder engagement by creating a secure and transparent mechanism for proxy voting.

For boards, management and internal and external audit functions, the data sifting and analytics of AI are hugely beneficial. As AI becomes embedded, companies will employ more software engineers and data scientists and less compliance personnel. AI-driven compliance and risk management systems will decrease reliance on legal advice. For companies dipping their toe into AI waters, compliance and reporting processes incorporating AI capability and machine-readable formats present low hanging fruit. The ability of machine learning algorithms to improve over time based on their experience of processing data has incredible potential for enhanced risk management that is adaptive to changing patterns in risk environments. AI's predictive abilities enable a responsive approach to corporate risk-

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<sup>18</sup> Mihailis E Diamantis, 'The Extended Corporate Mind: When Corporations Use AI to Break the Law' (2020) 98 N C L Rev 893.

<sup>19</sup> For a good historical account see Susan Watson, 'Viewing Artificial Persons in the AI Age through the Lens of History' in Andrew Godwin, Pey Woan Lee and Rosemary Teele Langford (eds), *Technology and Corporate Law: How Innovation Shapes Corporate Activity* (Edward Elgar 2021).

<sup>20</sup> Diamantis (n 18) 899.

<sup>21</sup> The monitoring and oversight duties of directors as part of their duty of care are of particular relevance.

<sup>22</sup> John O McGinnis and Russell G Pearce, 'The Great Disruption: How Machine Intelligence Will Transform the Role of Lawyers in the Delivery of Legal Services' (2013) 82 Fordham L Lev 3041.

<sup>23</sup> Since 2017 Delaware recognises that a corporation can have records administered 'on its behalf' thus facilitating the use of DLT for both the creation and administration of such records: Delaware General Corporation Law, §224 (as amended). See also the advent of digital, ledger-based securities in countries such as Switzerland and Luxembourg.

<sup>24</sup> Anne Lafarre and Christoph Van der Elst, 'LegalTech and Blockchain for Corporate Governance and Shareholders' in Vanessa Mak and others (eds) *Research Handbook in Data Science and the Law* (Edward Elgar 2018).



management and compliance as AI tools monitor in real time and provide an early warning system for detecting and pre-empting corporate law breaches. AI could flag that a proposed act would amount to unlawful financial assistance or that a proposed dividend may be unlawful. AI monitoring can detect patterns suggestive of insider trading and market manipulation and even make a predictive analysis of which traders may be likely to 'go rogue'.<sup>25</sup>

### Reporting

Corporate reporting processes via public portals using automation, natural language processing and machine learning will further an open data agenda. Crucially, this can further a corporate purpose stakeholder agenda beyond shareholder primacy. For example, the proposed EU Corporate Sustainability Reporting Directive ('CSRD')<sup>26</sup> will introduce digital tagging of reported sustainability information<sup>27</sup> which will provide scope for sophisticated AI-driven data analytics by proxy advisors, ESG ratings agencies and other stakeholders. Increasingly big data will influence the form of reporting inputs and there will be increased availability of centralised repositories of data that is machine readable and subject to AI and machine learning interfaces.<sup>28</sup> A public portal for all corporate disclosures could be supported by both DLT and AI.<sup>29</sup> Further change to reporting is conceivable. Annual reporting of both financial and non-financial information is beginning to be regarded as anachronistic and the future may lie with on demand tailored reporting rather than cyclical point in time reporting.

### Regulatory Powers and Enforcement

Company registration offices and corporate law regulators need to optimise what is on offer to enhance their own functioning while taking due account of the associated risks. The Australian Securities and Investments Commission is committed to making data-enhanced regulatory decisions using AI techniques, such as machine learning as well as text and voice analytic solutions using natural language processing. Indeed, algorithmic analysis of datasets will likely drive the design of future personnel training. To ramp up data capabilities and become data-led, regulators need to act strategically to increase data literacy and to recruit data science experts to cover data management, data analysts and engineers. As in other regulatory domains, the expected impact of RegTech and SupTech is exponential. AI and other technologies will support corporate regulators in their regulatory, monitoring and investigative remit. AI can assist corporate regulators to sift through masses of filed information in detecting problematic acts and omissions. As Cohen perceptively remarks, '[u]nder conditions of infloglut, the problem is not scarcity but rather the need for new ways of cutting through the clutter.'<sup>30</sup> Predictive AI may be used to spot patterns and detect potential corporate wrongdoing by creating an early warning system through learning from pattern recognition and sifting big data.

Although machines can interpret and apply the law, apply checks and balances and sophisticated predictive warning systems,<sup>31</sup> In judging whether or not there has been a breach of a statutory obligation, fiduciary duty, or if a right exists, a court is often required to exercise sophisticated discretion and weigh competing factors in the balance. This negates easy automation of dispute

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<sup>25</sup> Laura Noonan, "Bank uses AI to Catch Rogue Traders before the Act" *Financial Times* (London, 25 March 2019).

<sup>26</sup> Proposal for a Directive as regards Corporate Sustainability Reporting COM/2021/189 final.

<sup>27</sup> *ibid* art 19d. See further European Reporting Lab, *Final Report: Proposals for a Relevant and Dynamic EU Sustainability Reporting Standard-Setting* (2021).

<sup>28</sup> The European Single Electronic Format project for annual financial reporting is based upon tagging data and provision of a human and machine readable xHTML format.

<sup>29</sup> This is the approach taken by the European Union in its work towards a European single access point for public corporate information including financial and non-financial reporting.

<sup>30</sup> Julie E Cohen, 'The Regulatory State in the Information Age' (2016) 17 *Theoretical Inq L* 369, 384.

<sup>31</sup> David Restrepo-Amariles and Gregory Lewkowicz, 'Unpacking Smart Law: How Mathematics and Algorithms are Reshaping the Legal Code in the Financial Sector' (2020) 25(3) *Lex Electronica* 171.

resolution. Algorithms lend themselves better to black and white. This means that for now the future of judges seems assured.

It is possible to envisage lesser procedural strict liability breaches of the corporate law code being dealt with by an AI adjudicator. For example, in place of the Registrar of Companies an AI system could record a failure to file accounts or reports and issue a civil penalty. The algorithm could be calibrated to take into account any factors to be taken into account in deciding whether to issue a penalty and its amount such as how late a filing is, the nature of the company and its past record.<sup>32</sup> In some cases considerable discretion is exercised and the exercise of it is quite sophisticated but it could be broken down into guidelines for AI. The disqualification undertaking system that applies in the UK and is administered by the Insolvency Service could be suitable.<sup>33</sup> The role of the Insolvency Service could potentially be administered or supported by An AI algorithm including deciding the appropriate period for a disqualification undertaking.<sup>34</sup> Relevant factors to be weighed in the balance including mitigating circumstances to reach a penalty, for example, the period of disqualification to be imposed would need to be programmed in.

Remodelling public and private enforcement of corporate law to place AI in the driving seat is fraught with obstacles. Concerns with due process, fairness and accountability abound in relation to automated decision-making. Some brakes are placed on fully automated decision-making by EU General Data Protection Regulation<sup>35</sup> which generally prohibits a person being the subject of a decision made solely in reliance on automated data processing, including profiling, without consent. Operational concerns also arise. Algorithmic bias could have real consequences. COMPAS, an algorithmic tool trialled in the United States for prediction of future criminality showed an unwarranted bias in falsely flagging black people twice as often as white people for predicted violent crime.<sup>36</sup>

### Recognising Robo-Directors?

AI has the capacity for autonomous thinking and deep learning and companies are already depending heavily on AI tools for their unsurpassed data assimilation, data crunching and market predictions as a tool to inform better decision-making by boards and management. The use of an upgraded Einstein product offered by Salesforce in its own boardroom has garnered a lot of attention; CEO Mark Benioff has credited Einstein with transforming him as a CEO. As AI becomes smarter and more versatile, the million-dollar question for the corporate law sphere is: how ready, willing and able is the world to legally recognise robo-directors? The Turing test of whether a machine can think is passed when a machine's behaviour in conversing and responding to questions can be convincing to a human it is interacting with so that they would believe they are interacting with another human.<sup>37</sup> Chatbots operating as customer service advisors and robo-advisors providing investment advice and automated portfolio management easily meet this test.

In 2014 a Hong Kong venture capital firm, Deep Knowledge Ventures, claimed to have appointed VITAL ('Validating Investment Tool for Advancing Life Sciences') to its board and credited it with helping it to avoid being hoodwinked by hype when making investment decisions. The board of Deep Knowledge

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<sup>32</sup> Companies Act 2006, s 453.

<sup>33</sup> Disqualification undertakings serve in place of making an application for a disqualification order in court.

<sup>34</sup> Company Directors Disqualification Act 1986, s 1A provides for periods of 2 to 15 years.

<sup>35</sup> Council Regulation (EU) 2016/679 of 27 April 2016 OJ L 119/1 The General Data Protection Regulation ('GDPR'), art 22.

<sup>36</sup> Jeff Larson and others, 'How we Analyzed the COMPAS Recidivism Algorithm' *ProPublica* 23 May 2016 <<https://www.propublica.org/article/how-we-analyzed-the-compas-recidivism-algorithm>> accessed 12 July 2021; Anne L Washington, 'How to Argue with an Algorithm: Lessons from the COMPAS-ProPublica Debate' (2018) 17 *Colo Tech LJ* 131; Sascha van Schendel, 'The Challenges of Risk Profiling Used by Law Enforcement: Examining the Cases of COMPAS and SyRI' in Leonie Reins (ed), *Regulating New Technologies in Uncertain Times* (TMC Asser Press 2019).

<sup>37</sup> Alan M Turing, 'Computing Machinery and Intelligence' in Robert Epstein, Gary Roberts and Grace Beber (eds), *Parsing the Turing Test* (Springer 2009).

Ventures does not make a decision to invest without a positive corroborating recommendation from VITAL. It generated a wash of publicity. However, although incredibly beneficial, VITAL is a tool and not in fact a de jure director despite PR billing as such. Rather, VITAL has observer status in the boardroom and does not have voting rights.<sup>38</sup> A hypothesis that an AI director is a credible next generation step for corporate law depends on how legal responsibility for AI is structured and whether a robo-director can be subject to and comply with duties and obligations and also have meaningful penalties imposed for non-compliance. Regulatory competitiveness driving corporate mobility will emerge for states that are credible first movers in recognising AI legal actors in the corporate sphere and this may influence the market for incorporations. There may be greater openness to accepting AI as a member of a supervisory board in countries with a two-tier board structure. Delaware's greatly pro-management corporate law system will insulate boards against AI-related liability, but to stay in pole position it may need to consider recognising robo-directors.<sup>39</sup> The challenge of formally recognising a robo-director lies in a legal framework not adapted for this and is not as simple as might first seem given the divergence between vast technological advances on the one hand and relatively immutable legal principles on the other.

The starting point is the familiar proposition in common law jurisdictions that a 'director' constitutes 'any person occupying the position of director, by whatever name called.'<sup>40</sup> AI does not meet the threshold of personhood, which is only open to humans, and, in some jurisdictions, legal persons. Only allowing natural persons to be directors<sup>41</sup> rules out non-human directors. An outlier position, seen in the United Kingdom and Hong Kong, also permits legal persons to be appointed as directors.<sup>42</sup> The stumbling block then is that AI is not generally recognised as a legal person.<sup>43</sup> Furthermore, a mechanism for attaching liability for an AI director's acts and mechanisms requires thought. As Ricci points out, allowing AI directors would be qualitatively different than a corporate director behind whom an individual is pulling the strings: 'the appointed AI machine would be the fiduciary actually making the decisions on behalf of the corporation, the *artificial director*.'<sup>44</sup>

If we assume that a robo-director is not intended to have attenuated responsibility, granting it a legal status is a necessary prelude to imposing general and fiduciary duties, rights and obligations. AI would need to be given legal status in order to be able to assume the role of a legal actor with the accompanying potential to assume legal rights and responsibilities. One route to this would be through providing a statutory mechanism for an AI system to be established as a juristic person. In Roman times the law recognised the legal capacity of non-human entities such as cities and municipal corporations were a later evolution of that. Granting legal personality to AI systems is an option. There are some difficulties with this. For one thing, it has been questioned if robots can really grasp the significance of rights and duties.<sup>45</sup> That has not always been respected in corporate law policy. Until relatively recently it was permissible to appoint minors who lacked full legal capacity as directors of

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<sup>38</sup> Nicky Burrige, 'Artificial Intelligence gets a Seat in the Boardroom' *Nikkei Asian Review* (Tokyo, 10 May 2017) <<https://asia.nikkei.com/Business/Artificial-intelligence-gets-a-seat-in-the-boardroom>> accessed 12 July 2021.

<sup>39</sup> To date Delaware has focused on unlocking the potential of DLT. Pursuant to Delaware Blockchain Initiative, Delaware's General Corporation Law was amended in 2017 to provide express statutory authority to enable Delaware corporations to use an electronic environment including a DLT environment for the creation and maintenance of corporate records including the corporation's stock ledger.

<sup>40</sup> Companies Act 2006, s 250(1).

<sup>41</sup> As seen in Australia, Canada, Delaware, Ireland, New Zealand, Singapore, South Africa.

<sup>42</sup> This can be useful in a group context to enable the parent company to sit on the board of a subsidiary. Nonetheless behind every corporate director is an individual or series of individuals and the commonly argued view is that permitting corporate directors hides the true actors pulling the strings.

<sup>43</sup> See, however, Saudi Arabia's grant of legal personhood to Sophia the Robot in 2017. See generally Simon Chesterman, 'Artificial Intelligence and the Limits of Legal Personality' (2020) 69 *International and Comparative Law Quarterly* 819.

<sup>44</sup> Sergio AG Ricci, 'Artificial Agents in Corporate Boardrooms' (2020) 105 *Cornell Law Review* 869, 885.

<sup>45</sup> Horst Eidenmüller, 'Robots Legal Personality' (Oxford Business Law Blog, 8 March 2017) <<https://www.law.ox.ac.uk/business-law-blog/blog/2017/03/robots%E2%80%99-legal-personality>> accessed 12 July 2021.



companies.<sup>46</sup> For now, AI is confined to being a tool in the armoury of the board and cannot gain more than observer status as unless a step is taken to afford legal actor status to AI it is legally impossible for AI to constitute a de jure director.<sup>47</sup> Following on from this, although this may surprise some, no matter how much AI is deferred to by human directors currently it is impossible for it to qualify as a robo de facto director or robo shadow director. This is because AI's fundamental absence of legal status leads to an inability to impose the attendant legal responsibilities and duties and liabilities that would ensue from a de facto or shadow director designation. It is difficult to imagine that AI could be subject to fiduciary obligation without being afforded legal status and capacity in its own right.<sup>48</sup> There is no one unifying theory underlying the imposition of fiduciary obligation, but the non-recognition of AI as an agent with legal standing places a major hurdle in place of advancing otherwise credible arguments based on trust, reliance and vulnerability.

Things may change in the future if an appropriate legal framework for AI were embedded. Assuming that robo-directors with legal capacity were to be legally provided for, complex policy questions would have to be broached such as whether robo-directors should be prohibited to serve without an accompanying natural director.<sup>49</sup> Thought would have to be given to specific removal provisions to allow for speedy removal of problematic robo-directors. Alternatively, instead of granting AI robots equivalence in the form of director status, they could be recognised as a sui generis type of e-agent of the board that would be granted status and given rights to attend and contribute at board meetings and to be involved in co-determination with the board.<sup>50</sup> The board acting collectively could be the principal of the AI e-agent and delimit the scope of its authority. Principles drawn from the law of agency could frame this.

## DIRECTORS' DUTIES

Directors' duties are not worded so as to narrowly prescribe what must be done to comply with them. Rather, they are broadly worded for ease of application to a wide range of contexts, companies and directors. Consequently, AI's interface may influence the context of the application of directors' duties but should not of itself motivate a shift in the overarching content. However, important questions do arise for boards to confront.

Boards have complex decisions to make in relation to deciding to use AI in strategy, operations, oversight, compliance and reporting. Given the emphasis in corporate law on collective as well as individual director responsibility, boards cannot simply delegate AI matters to a putatively AI-savvy director or committee and relieve themselves of responsibility. As Lord Woolf MR remarked in *Re Westmid Packing Services Ltd (No 3)*, 'any individual who undertakes the statutory and fiduciary obligations of being a company director should realise that these are inescapable personal responsibilities.'<sup>51</sup> The decision to use AI in an operational context represents a significant strategic decision for the board.<sup>52</sup> Innovation, market norms, cost and regulation will influence accepted practice and AI take-up by companies. Trustworthy AI, as its capabilities unfold, will be used to enhance strategy, supervision and monitoring and to power evidence-based decision-making. The less than established nature of AI presents a conundrum: there are costs and risk burdens as well as

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<sup>46</sup> Section 157 of the Companies Act 2006 rectified this by setting a minimum age of 16 for new director appointments to accord with the age of majority.

<sup>47</sup> On legal capacity see Ricci (n 44).

<sup>48</sup> An alternative path to direct legal actor status is to recognise the AI platform as emanating from a legal entity: Simone Degeling and Jessica Hudson, 'Financial Robots as Instruments of Fiduciary Loyalty' (2018) 40 *Sydney Law Review* 63.

<sup>49</sup> John Armour and Horst Eidenmüller, 'Self-Driving Corporations?' (2019) 10 *Harv Bus L Rev* 87. Here context and purpose is everything. Transactional non-trading companies such as special purpose vehicles may be appropriately managed by a solo robo-director.

<sup>50</sup> This would require clarity around the legal standing of AI actors.

<sup>51</sup> *Re Westmid Packing Services Ltd (No 3)* [1998] BCC 836 (CA) 843.

<sup>52</sup> Jeanne Boillet, 'Why AI is both a Risk and a Way to Manage Risk?' <[https://www.ey.com/en\\_gl/assurance/why-ai-is-both-a-risk-and-a-way-to-manage-risk](https://www.ey.com/en_gl/assurance/why-ai-is-both-a-risk-and-a-way-to-manage-risk)> accessed 12 July 2021.

opportunities considering when and how to use AI. A defining doctrinal issue as AI becomes part of the state-of-the-art concerns whether it could be considered a breach of the duty of care for a board not to have moved with that trend? Conversely, could it be considered reckless to be an early adopter when there are so many unknowables? As remarked in relation to the risks associated with AI deployment, '[u]nder-reliance represents inefficiency, while over-reliance represents risk.'<sup>53</sup> Adjudicating on these questions would be time and context specific.<sup>54</sup> Two duties are particularly worthy of discussion in this context – the duty of loyalty and the duty of care.

In deciding whether and how to integrate AI into a company's operations, strategy and compliance, the duty on directors to act in the company's interests is paramount. Generally, directors will be insulated against liability for good faith collective decision-making regarding the company's use or non-use of AI under the best interests duty. Overwhelming judicial deference to subjective directorial intent to act in the corporate interest<sup>55</sup> and the restricted pathway to derivative actions mean that mounting a 'technological laggard' argument in a shareholder challenge to the effect that a board's failure to deploy an AI solution has impaired the company's competitiveness would present an uphill battle. Judicial reluctance to interfere with business judgments made by directors is venerable and the division of power between the corporate organs does not allow shareholders to dictate to the board on corporate strategy.<sup>56</sup> A head in the sand approach by directors that ignores the potential utility of AI to the company would not, however, be completely immune from challenge. The subjective approach to testing compliance with the duty to promote the success of the company only protects actual good faith belief in corporate benefit where the interests of the company have been considered. If the directors of a company fail to give real consideration to corporate benefit surrounding use or non-use of AI (for example, if the directors of a subsidiary company passively follow the lead of the parent company's decision not to use AI without actively considering the interests of the subsidiary), this would trigger application of the harsher *Charterbridge*<sup>57</sup> objective test, asking whether an intelligent and honest person in their position could have reasonably believed that non-deployment of AI was in that company's interests.<sup>58</sup>

Stakeholder consideration and consultation with employees around AI adoption is important given that it may entail a radical restructuring of the workforce. Transparency around this is underpinned in the UK by section 172(1) reporting obligations. Nonetheless, as a matter of law, stakeholder interests will not prevail under section 172 of the Companies Act 2006 if the board considers AI consequent workforce restructuring compelling to advance the long-term interests of the company for the benefit of the shareholders. For boards motivated to see beyond the lens of profit, AI paired with IoT<sup>59</sup> and DLT offers real potential to enhance corporate alignment with broader social justice and sustainability instrumental goals across complex supply chains.

Future doctrinal development of the duty of care could see courts consider that being suitably informed prior to board decision-making should be shaped by the availability of recourse to AI systems to provide highly sophisticated analysis. Known, unknown and unpredictable risks and the so-called 'black box' problem whereby it is not possible to reverse engineer the algorithm will also colour what we can expect of directors in relation to their duty of care. To comply with the duty to exercise

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<sup>53</sup> Hussein A Abbass, 'Social Integration of Artificial Intelligence: Functions, Automation Allocation Logic and Human-Autonomy Trust' (2019) 11 *Cogn Comput* 159, 169. It is interesting to recall that when computers arrived, companies could not be forced to use them although with time they became mainstream.

<sup>54</sup> Insurance could provide a sensible means of redistributing AI risk; boards would be assisted in making difficult judgment calls if Directors' & Officers' insurance policies permitted inclusion of AI risk.

<sup>55</sup> Companies Act 2006 s 172(1); *Re Smith & Fawcett* [1942] Ch 304 (Ch); *Regentcrest plc (in liq) v Cohen* [2001] BCC 494 (Ch).

<sup>56</sup> *Gramophone and Typewriter Ltd v Stanley* [1908] 2 KB 89 (KB); *John Shaw & Sons (Salford) Ltd* [1935] 2 KB 113 (KB); *Howard Smith Ltd v Ampol Petroleum Ltd* [1974] AC 821 (PC). Disgruntled shareholders may be better advised to consider board refreshment or to vote with their feet.

<sup>57</sup> *Charterbridge Corporation v Lloyds Bank Ltd* [1970] Ch 62 (Ch).

<sup>58</sup> See also *Re HLC Environmental Projects Ltd*; *Hellard v Carvalho* [2013] EWHC 2876 (Ch), [2014] BCC 337 [92].

<sup>59</sup> Internet of things.

reasonable care, skill and diligence,<sup>60</sup> directors need to become AI proficient and to obtain expert advice. Governance structures that accord with best practice, ethical guidelines and legal requirements would need to be put in place for risk management of AI.<sup>61</sup> Something may go awry post-AI adoption. Non-justifiable bias in working with datasets is an important risk issue and algorithmic risk from badly programmed algorithms that deliver biased results may be more acute for companies that are early adopters.<sup>62</sup> Boards would be expected to have established procedures to counteract the potential for creating or reinforcing unfair bias in AI systems as regards algorithmic design and data inputs. Putting appropriate systems in place to address risk will go a long way in showing that the duty of care has been discharged.<sup>63</sup>

In applying the duty of care, the degree of oversight of AI will be scrutinised along with the level of AI knowledge board members possess in carrying out their functions. Under the UK hybrid duty of care, a director who comes on board (and one who is specifically recruited) as having technology/data governance-related skills will be held to a higher standard than that applied in relation to the average director.<sup>64</sup> The duty of care includes an expectation that boards will self-educate.<sup>65</sup> The sub-duty on directors to be suitably informed gains heightened relevance as AI is now mainstream across industries. The lesson of the landmark Australian case of *ASIC v Healey*,<sup>66</sup> which caused shockwaves for non-executive directors, is instructive. Non-executive directors were sued for failing to identify errors in the financial statements concerning the classification of a debt. Only one of them had an accounting qualification. In finding a breach of the duty of care, Middleton J. emphasised an objective standard of care based on ‘the knowledge each director has or should have by virtue of his or her position as director.’<sup>67</sup> The reasoning in *Healey* reflects a corporate law landscape with a singular objective standard of care where directors may be held to a higher standard. Furthermore, it could be expected that courts will take account of the less than established nature of the AI technical and regulatory landscape. Nonetheless *Healey* shows how important a role the courts will play in standard setting around the application of the duty of care, and in an AI context and as AI beds down, what is expected of directors will inevitably increase.

Being diligent and suitably informed involves learning about and keeping abreast of new and evolving technological developments that impact upon business models and governance and compliance. Just like directors are required to acquire a level of financial literacy, directors in the age of AI should undergo training to have an understanding of the opportunities relating to AI and the basic assumptions and risks. Being familiar enough to be able to guide and monitor in relation to the use of AI is fundamental. However, one argument is that the expectations on directors around AI understanding should not be pitched too high. If the standard expected of directors in relation incorporating, understanding and monitoring new technologies is too demanding, liability chill may ensue, discouraging people from taking up directorial office. At the same time, courts in imposing standards of expected conduct have been reluctant to directly accede to the ‘liability chill’ argument.<sup>68</sup>

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<sup>60</sup> Companies Act 2006, s 174.

<sup>61</sup> Appointment of a Chief Ethics Officer to keep abreast of accountability practices and norms is an option.

<sup>62</sup> Programming errors may lead to decision-making that is based on faulty assumptions including unjust discrimination.

<sup>63</sup> For example, cyber-resilience systems to guard against hackers targeting an AI system to gain access to valuable data or to disrupt operations.

<sup>64</sup> Companies Act 2006, s 174: ‘the care, skill and diligence required is that which would be exercised by a reasonably diligent person with- (a) the general knowledge, skill and experience that may reasonably be expected of a person carrying out the functions carried out by that director in relation to the company, and (b) the general knowledge, skill and experience that the director concerned actually has.’

<sup>65</sup> *Re Barings plc (No 5); Secretary of State for Trade and Industry v Baker* [1999] 1 BCLC 433 (Ch) 489.

<sup>66</sup> *ASIC v Healey* [2011] FCA 717 (FCA).

<sup>67</sup> *ibid* [15].

<sup>68</sup> *ASIC (n 66); In Re Caremark International Inc.* 698 A.2d 959 (1996 Del Ch).

A reasonable leeway will nonetheless be afforded to directors. They are not expected to be omniscient. It is judicially understood that risk-taking is inherent in the nature of being a director. That has particular resonance in relation to AI integration. Company law has long offered business judgment rope to directors in risk-taking and making difficult judgment calls – this is what distinguishes calculated risk-taking from reckless or rash risk-taking. One is negligent. The other is making a decision after weighing up the strengths, weaknesses, opportunities and threats, having regard to technological developments and limitations, market practices and likely future developments.

Post-adoption of AI, issues of reliance loom large. Effective supervision and monitoring are essential aspects of the duty of care on directors. Although directors may rely on others, and AI systems, to perform functions, directors cannot delegate away their duties and there is an inescapable personal responsibility on them. Consequently, it would not be appropriate to abdicate responsibility and wholly rely on AI as infallible. Reliance should not be blind reliance. ‘AI dazzle’ could arise where directors become passive in relation to the exercise of their judgement due to being unduly deferential to the insights of their AI counterpart. On the risk of being dazzled by AI’s analytical contribution and predictions, there is merit in recalling Popplewell J’s comment in *Madoff Securities International Ltd (in liq) v Raven*<sup>69</sup> that each director ‘owes duties to the company to inform himself of the company’s affairs and join with his fellow directors in supervising them. It is therefore a breach of duty for a director to allow himself to be dominated, bamboozled or manipulated by a dominant fellow director where such involves a total abrogation of this responsibility.’<sup>70</sup> The law may need to develop to recognise the specific nature of the AI beast; using AI may be treated as similar to function delegation to an employee with retained oversight, but further caution is needed given the risks associated with algorithms and machine learning which is difficult to second-guess and to know how it has gone astray.

## BOARD-ROOM DECISION-MAKING AND CORPORATE GOVERNANCE

Arguably it is not the place of soft law corporate governance codes to weigh in directly on the AI adoption and use debate which is covered by directors’ duties and the general law and best practice guidelines. However, corporate governance codes are revised to reflect societal expectations including around stakeholder inclusion. Workforce engagement (as enshrined in the UK Corporate Governance Code) assumes particular relevance for companies intending to use automation to radically transform business processes. In South Africa, the King IV Code contains a Principle and Recommended Practices in relation to strategy and governance of technology and information.<sup>71</sup> As corporate governance norms shift including a move away from simply reflecting a shareholder primacy perspective to reflect a more stakeholder-inclusive one, AI analysis and modelling will support this and change how the board and its committees function. AI can help with understanding and integrating the interests of stakeholders. AI can also assist with upholding corporate governance principles around board composition, scrutinising independence and terms served. Boards need to be talking about strategy in this area. The CIO/CTO is a vital player in determining a transformative strategy for levelling up technological advances in companies and implementing it. Sector ‘bilinguals’ will be crucial to bridging the AI gap - people specialised in areas such as finance or law, but also with expertise in AI techniques such as machine learning.<sup>72</sup>

### Board Composition and Board Competencies

Boards’ digital skills gap needs addressing and market expectations will drive this. Technological expertise is not specifically referred to in the UK Corporate Governance Code<sup>73</sup> but it can be treated

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<sup>69</sup> [2013] EWHC 3147 (Comm).

<sup>70</sup> *ibid* [191].

<sup>71</sup> Institute of Directors (South Africa), *King Code IV: Report on Corporate Governance in South Africa* (2016) Principle 12 and Recommended Practices 10-17.

<sup>72</sup> OECD, *Artificial Intelligence in Society* (2019) <https://doi.org/10.1787/eedfee77-en> Ch 1.

<sup>73</sup> Financial Reporting Council, *The UK Corporate Governance Code* (2018).

as part of the expected mix and diversity of skills on board.<sup>74</sup> There is a need to build digital literacy and understanding around the opportunities and risks and ethical implications in relation to using AI. Training in AI and AI ethics can empower directors with AI governance expertise. The UK Corporate Governance Code affirms that boards are expected to ‘ensure that the necessary resources are in place for the company to meet its objectives and measure performance against them.’<sup>75</sup> Having board competence to negotiate new technologies will increasingly be intrinsic to review of board performance and board refreshment. Spring cleaning of the board will allow companies to adapt and thrive in the AI era. In the same way that there is momentum to appoint a director with responsibility for sustainability issues, having a non-executive director with responsibility for AI may be attractive option at first blush. However, a word of caution is advisable given the duty of care on the board at large. The board as a whole should receive continuing board training to provide a base level of data literacy and understanding of AI and the use of algorithms.

### Boardroom Dynamics

At board level, AI can contribute to high value decision-making. AI has the potential to be a positive disruptor of boardroom dynamics and norms, enabling more informed and better operational and strategic decisions to be made by companies. Helpfully, AI is excellent at counteracting unconscious bias; involving AI in decision-making can reduce agency costs through addressing internal bias, board independence and groupthink issues.<sup>76</sup> AI can also assist with setting and achievement of strategic goals, and with boards’ monitoring and supervisory functions. Smaller board sizes may become the norm, reflecting AI’s contribution. However, human directors are unlikely to be redundant - AI remains a tool, it contributes to more balanced decision-making, but its deficits must be compensated for by less rational but inestimably vital human common sense, emotional intelligence, and instinct.<sup>77</sup>

If the legal path is cleared for sophisticated robots to be accepted as directors, legitimate questions concerning their acceptance and social integration may arise just as they have done for other actors adding to diversity to boards. Using a robot on an industrial assembly line is quite a different proposition to being a robo-director; a robot servant differs from a robot peer. A robo-director takes AI beyond being a purveyor of insightful information to a collaborative decision-maker. The smoothness or otherwise of human-robot director interaction, participation and mutual understanding is partly dependent on artificial cognition with pattern recognition enabling machine learning and reasoning. To work well human and AI agents must be able to weigh each other’s contributions in the balance. Prestige and expense as well as confidence in the contribution which the AI can make will no doubt aid integration, as may the robot’s perceived ability to engage with the other directors. The Chair would play an important role in ensuring not only that the AI robot is integrated, but also in facilitating deliberations that take wider contributions such as emotional intelligence into account in decision-making.

The challenge of AI dazzle and dominance affecting constructive challenge in the boardroom would clearly be amplified where AI is accorded actual director status. Issues including trust perceived suitability arise for integration into board culture and dynamics. A director with particular technological expertise or a CIO may assume the role of gatekeeper in relation to the AI director but, as indicated above, the board as a whole has a collective responsibility. A robo-director could be at risk of being consigned to token status if it did appear ‘fit for purpose’ or suitably agile through being well designed to meet the board’s needs across its range of functions and thus not perceived as sufficiently useful. An AI system will only be as good as its programming. If its development does not

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<sup>74</sup> *ibid* Principles J, K and L.

<sup>75</sup> Financial Reporting Council (n 73) Principle C.

<sup>76</sup> Akshaya Kamalnath, ‘The Perennial Quest for Board Independence: Artificial Intelligence to the Rescue?’ (2019) 83 *Albany Law Review* 43.

<sup>77</sup> On this see Helen Bird and Natania Locke, ‘The Corporate Board in An Age of Collaborative Intelligence and Complex Risk’ in Andrew Godwin, Pey Woan Lee and Rosemary Teele Langford (eds), *Technology and Corporate Law: How Innovation Shapes Corporate Activity* (Edward Elgar 2021) 54-55.



take a sufficiently tailored approach to deliver performance utility at board level, it may perform in a way that appears sub-par compared to its human counterparts who are adept at dealing with the full gamut of board business. Furthermore, like a human director, a robo-director may potentially learn from board interactions to be more cautious or even unduly cautious and risk averse in decision-making from observed behaviours from other directors and a pattern of decisions taken that do not correlate to the suggested course of action that the data suggests.

Groupthink is well-acknowledged as problematic in terms of its capacity to destroy constructive challenge in a boardroom context potentially leading to more risky or risk-averse decisions. AI in the boardroom will likely be an agent of inter-group dynamic change. This catalyst may have positive or negative consequences: it is fallacious to present AI as an effective panacea to all ills in board outcomes. Directors are individuals and they may navigate the presence of AI differently. While AI may blast open existing groupthink coalescing around a dominant human director, groupthink may just as likely emerge around deferring to AI or human dominance could still exert itself around ignoring its input. AI could polarise a boardroom in the sense that there could be a tendency to defer to the all-powerful AI tool or alternatively to accept a plausible dominant individual's pushback against AI's wisdom. This should provide endlessly fascinating fodder for corporate law scholars in the future.

## CONCLUSION

This chapter has explored the potential for AI to impact on corporate law and corporate governance practice as we stand at the frontier of AI becoming mainstream. AI's benefits as a positive disruptor are striking but much remains nascent and anticipated. Furthermore, other technological advances such as DLT, smart contracts and IoT are increasingly of cross-cutting significance. Looking ahead, the expected arrival of the era of quantum technologies in the next decade will radically augment what is possible.

For boards, integration of AI is all about carefully balancing opportunities with risks. Work on regulatory framing is embryonic and development of appropriate ethical guidelines and regulation will incentivise industry adoption. As far as the corporate law and corporate governance landscape is concerned, the future vista is one of efficiency and labour-saving for corporate actors and regulators. AI is changing the milieu and manner in which corporate law and corporate governance occurs but not its basic tenets concerning strategy, monitoring and oversight. Boards walk a tricky line in making use of AI, particularly in terms of the application of the duty of care. While the best interests duty gives very useful breathing space to well-intentioned directors in the realm of AI, directors may potentially independently fall foul of the duty to exercise reasonable care, skill and diligence. It is important that we remember that AI is a tool for assisting companies, not a panacea that takes directors or regulators out of the driving seat. AI may crunch data at an exponential rate but is not known for its ability to use common sense. Although there is much talk of autonomous decision-making and AI, the need for human input, sense and oversight remains clearly apparent. Certain aspects of corporate life thrive on human interaction like corporate deal-making, the art of which is distinctly human. As AI beds down we are likely to see other adaptations to the corporate law framework, most obviously initially around delivering process efficiencies. Next generation iterative developments will need to be harnessed on the back of achieving trust in AI and appropriate liability and accountability frameworks. The launch of AI as an autonomous or semi-autonomous corporate agent is predicated on this. Future possibilities will arise from widening the categories of corporate actor and models of liability to accommodate AI. Down the line it is possible to imagine mediation of disputes by an all-knowing algorithm, but there are significant due process issues to be resolved that lie outside the domain of corporate law. Above all, AI reduces agency costs. Once AI's place is solidified, corporate law scholars should take heed and acknowledge its contribution by conceptualising AI systems' role within existing theoretical frameworks such as the nexus of contracts theory and team production theory.