

# Trust in Corporations and Directors Duties in the age of Information Technology and Artificial Intelligence

**Amanda Carrigan**

(Doctor of Philosophy Candidate, Law Faculty, Bond University, Queensland, Australia; [amanda\\_carrigan@bigpond.com](mailto:amanda_carrigan@bigpond.com),

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## Abstract

Humans have participated in trade for millennia and today there are trillions of dollars invested in many types of business organisations. As the activities of business have become more complex we have unfortunately witnessed a staggering increase in instances of misbehaviour by corporations, through the human actors who manage these vast sums of money.

It seems not a month goes by without there being reports of questionable activities and breaches of law, particularly by financial organisations. Commonly we are seeing misbehaviour where managers are using artificial intelligence (AI) and they blame AI for this. The types of AI used in business ranges from algorithms in smart phones, communication systems, and customer service systems, to on-line sales sites and stock trading. In our current economic climate where AI miscalculates interest payments and overcharges fees it is no stretch to see why a significant proportion of the public do not trust business organisations nor AI which causes individuals loss of jobs and/or money. In the absence of deliberate criminal conduct these problems tend to go unnoticed.

There is light at the end of the tunnel however as researchers project laptops will match the power of a human brain by 2029.<sup>1</sup> Organisational management could be replaced by robot managers with the potential to do a far superior job with

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<sup>1</sup> Nadia Khomami, '2029: the year when robots will have the power to outsmart their makers' *The Guardian*, 23 February 2014 online at: <https://www.theguardian.com/technology/2014/feb/22/computers-cleverer-than-humans-15-years>, accessed 8 December 2019.

humanistic algorithms and access to all organisational information. Trust in business might thus be restored, possibly, within the coming decade.

## 1. Introduction

Technological advances have led to huge changes in how we do business. Since the industrial revolution jobs have been taken by machines which are more efficient than humans, particularly in process line type production. There has always been a level of mistrust in machines. Take for example the riots in Lancashire in 1779 against new machines employed in cotton manufacturing.<sup>2</sup> The later 'Luddite' riots in England between 1811 and 1816 which 'were partly a manifestation of fear of technological change among workers as Parliament revoked a 1551 law prohibiting the use of 'gig mills' in the wool-finishing trade'.<sup>3</sup>

Today it is accepted technology is used in production and the nature of the work of humans has changed considerably. We are seeing a divide between high income jobs requiring high levels of judgement and cognitive ability and very low level manual work with those middle income manufacturing jobs in between slowly being augmented and then taken over by computerisation.<sup>4</sup> We live in an age where the technology is advancing in the area of holding and processing information and now occupations that require subtle judgement are increasingly susceptible to computerisation. As Mims noted in 2010:

*To many such tasks, the unbiased decision making of an algorithm represents a comparative advantage over human operators. In the most challenging or critical applications, such as ICUs, algorithmic recommendations may serve as inputs to human operators; in other circumstances, algorithms will themselves be responsible*

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<sup>2</sup> Carl Benedict Frey and Michael A. Osborne, 'The Future of Employment: How Susceptible Are Jobs to Computerisation?', (2017) 114, *Technological Forecasting and Social Change*, 254-280, 255.

<sup>3</sup> Frey and Osborne, above n 2; Wool-finishing requires repeated washing of the wool to remove the chemicals used in processing it from the lanoline coated fleece to wool reams.

<sup>4</sup> David H. Autor, Frank Levy and Richard J. Murnane, 'The skill content of recent technological change: an empirical exploration', 2003, 1184-1279-1333, *Quarterly Journal of Economics*, available at: <https://economics.mit.edu/files/11574>, accessed 8 December 2019

*for appropriate decision-making. In the financial sector, such automated decision-making has played a role for quite some time. AI algorithms are able to process a greater number of financial announcements, press releases, and other information than any human trader, and then act faster upon them.*<sup>5</sup>

It is no stretch to say that all the judgements made by corporate management will have some level of AI involved. If we consider the workings of the board of directors there has already been documented cases of high level AI used in decision-making. The most famous is the Hong Kong based venture capital corporation, Deep Knowledge Ventures, appointing an algorithm named *Vital*, which stands for Validating Investment Tool for Advancing Life Sciences, to its board of directors in 2014.<sup>6</sup> *Vital* was appointed with observer status although *Vital* had the right to ‘vote on whether the firm makes an investment in a specific company or not’.<sup>7</sup> *Vital* was given a position on the board ‘because of its ability to “automate due diligence and use historical data sets to uncover trends that are not immediately obvious to humans surveying top-line data”’.<sup>8</sup> The issue here is that humans are acknowledging AI as if a peer to be acquiesced to without having the comprehensive information the algorithm commands, nor the understanding of how decisions are reached. This is at the core of the corporate governance issue we see with trust in business within society because it is not possible to control the machinations of corporate business from outside. The Board may still choose to go against the AI recommendation yet considering human nature, this is quite unlikely. Further there may then be accusations of director incompetence. This would be particularly so where there was an accusation of breaching Section 180 of the Australian Corporations Act 2001 (Cth) (CA) relating to care and diligence.<sup>9</sup> The outstanding

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<sup>5</sup> C Mims, “AI that picks stocks better than the pros’, 2010, 10 June, *MIT Technology Review*, available at: <https://www.technologyreview.com/s/419341/ai-that-picks-stocks-better-than-the-pros/>, accessed 8 December 2019; ICU stands for Intensive Care Unit.

<sup>6</sup> Florian Moslein, *Robots in the Boardroom: Artificial Intelligence and Corporate Law*, SSRN 2017, available at: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3037403](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3037403), accessed 26 December 2019.

<sup>7</sup> Moslein, above n 6, accessed 26 December 2019.

<sup>8</sup> Moslein, above n 6, accessed 26 December 2019.

<sup>9</sup> Section 180(1) Corporations Act 2001 (Cth); The common law approach is that of ‘care, skill, and diligence.

fact here is that ‘*Vital* was making more logical decisions than human directors’.<sup>10</sup> We are now seeing more corporate decision making being assisted by AI which, although these decisions are sound, does breed mistrust by corporate stakeholders as AI is relied on heavily to make decisions yet the board cannot always advise the reasons for the decision.<sup>11</sup> There are now also a few decentralised autonomous organisations (DOA’s) where no humans are employed and the investors accept any decision without queries or, it seems, without hesitation.<sup>12</sup> While this is still very novel it points to the fact the trust issues people have with business are because of the awkward interface between corporate players and information technology (IT). We are at a point in history where corporations are all doing business with technology which needs adequate oversight and governance over the hidden world of circuit boards holding information and processing it for us. It seems natural then that mistrust continues with more areas of business decisions being computerised yet where there is an inability for the reasoning behind a decision to be explained when required, such as to shareholders or in a Court of law.

## 2. Information Technology

There are four main aspects speeding technological innovation in relation to information in business and AI. The first is the fact of the exponential growth in processing power in information technology, known as Moore’s Law.<sup>13</sup> Very few of

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<sup>10</sup> Nicky Burrige, ‘Artificial intelligence gets a seat in the boardroom’, *Nikki Asian Review*, <https://asia.nikkei.com/Business/Artificial-intelligence-gets-a-seat-in-the-boardroom>, accessed 26 December 2019.

<sup>11</sup> Burrige, above n 10, accessed 26 December 2019.

<sup>12</sup> Alexandra Sims, ‘Blockchain and Decentralised Autonomous Organisations (DAOs): the evolution of companies?’, available at: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3524674](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3524674) accessed 10 September 2020: One company has made use of Blockchain technology (This were there are a growing list of records, called blocks, which are linked using cryptography. Each block contains a cryptographic hash of the previous block, a timestamp, and transaction data. By design, a blockchain is resistant to modification of the data) to become the first decentralised autonomous organisation. Run as an investment vehicle, it launched in April 2016 through a crowdfunding initiative, with people who bought ‘tokens’ given a say in how its funds should be directed.

<sup>13</sup> Richard Susskind and Daniel Susskind, *The Future Of The Professions: How Technology Will Transform The Work Of Human Experts*, Oxford University Press, 2015, 156: In 1965, three years before he co-founded the

us stop to consider the computer tasks and even our televisions ‘in terms of ones and zeros’ yet these are the building blocks of IT and the reason information is easily collected and communicated. The second area is the invention of ‘increasingly capable machines’.<sup>14</sup> Once programed by people these machines can process the information and access data from electronic sources to modify and expand on the algorithms used. In the age of ‘big data’<sup>15</sup> IT has unlimited resources to manage any set of tasks allocated. The third area driving IT is the fact of increasingly pervasive devices, which means the growing trend of incorporating computational capacity into everyday devices.<sup>16</sup> The final area is the huge leap forward in connecting humans using devices and algorithms with ‘Facebook’ and ‘twitter’ being prime examples of the power of sharing information and making material public. As IT develops it is no stretch to think board meetings will be held on a virtual platform and management of businesses will be more efficiently conducted by AI dealing with accumulated information, human knowledge and experience. We are currently seeing the beginnings of this with software which allows real time meetings using the audio visual capabilities of our personal algorithm based devices.

### 3. Artificial Intelligence in Corporations

Looking at the business of corporations, most work, if not manufacturing, is carried out by people in offices and these days at home, using computers. Considering the AI used in all businesses there are many aspects that have been well honed. For

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American company Intel, Gordon Moore predicted that, approximately every two years, we would be able to double the number of transistors we could put on a chip (an integrated circuit).

<sup>14</sup> Susskind and Susskind, above n 13, 159.

<sup>15</sup> Hal Varian, ‘Big Data: New Tricks for Econometrics’, (2014), *Journal of Economic Perspectives*, 28, 2, 3-28, 3 available at: <https://pubs.aeaweb.org/doi/pdf/10.1257/jep.28.2.3>, accessed 9 December 2019: big Data is the term applied to the great volumes of information now available electronically.

<sup>16</sup> Susskind and Susskind, above n 13, 161.

example the bookkeeping software many of us use has, over a few years, become reliable and accurate, apparently except for that used by Boral in America.<sup>17</sup>

There are three levels of AI, assisted by humans, augmented by humans and autonomous. The assisted level is where humans use devices and programs to carry out tasks. This is seen every day with the use of calculators and computers. Assisted AI, or 'narrow AI' is becoming more complex yet it basically does 'a better job of a specific range of tasks than humans can'.<sup>18</sup> Modern examples of AI systems of this nature are Apple's Siri voice activated software and Google Assist.<sup>19</sup> Most people today have some experience of these types of AI and most also use the internet which is dependent on AI to function. At this level many of us feel trust shaken where we experience the internet AI selecting content based on user preferences and showing targeted advertisements. AI can:

*... predict and manipulate behaviour traits amongst users, create and design high quality content, help determine what a person sees in Facebook feed, and what ads a person sees in the Gmail<sup>20</sup>*

Business transactions online involve AI and there have been issues as this evolves, for example bank server outages. There have also been new businesses created to assist and 'buffer' these issues such as the *PayPal* platform for internet transactions.<sup>21</sup> As all business involves use of currency in some form AI is usually

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<sup>17</sup> Simon Evans, 'Boral sinks 6pc as Mike Kane says he won't resign', *Australian financial Review*, 6 December 2019, available online at: <https://www.afr.com/companies/infrastructure/boral-ceo-mike-kane-says-he-won-t-resign-20191206-p53hg7>, accessed 7 December 2019: accounting errors which were not picked up at audit and could not be explained have led to Boral misreporting its financial position during 2018-2019 despite being warned by auditors there was an issue in 2017.

<sup>18</sup> Vegard Kolbjørnsrud, Richard Amico and Robert J Thomas, *The promise of artificial intelligence: Redefining management in the workforce of the future*, Accenture Institute for High Performance, (2016): [https://www.accenture.com/acnmedia/PDF-19/AI\\_in\\_Management\\_Report.pdf](https://www.accenture.com/acnmedia/PDF-19/AI_in_Management_Report.pdf) accessed 25 October 2019.

<sup>19</sup> Kolbjørnsrud, Amico and Thomas, above n 18, accessed 25 October 2019.

<sup>20</sup> Woodrow Barfield, 'Towards a law of artificial intelligence' in Woodrow Barfield (Ed), *Research Handbook on the law of artificial intelligence*, Edward Elgar Publishing, 2018, 1: Also known to the author as 'google's being creepy again'.

<sup>21</sup> Paypal, *How Paypal works*, online available at: <https://www.paypal.com/au/webapps/mpp/how-paypal-works>, accessed 5 January 2020.

involved in some way, such as banking details, transactions and contracts, or torts and compensation. While we have been familiar with intellectual property (IP) matters and IP generally evolving areas which are unexpected ones. Examples of the brave new world of AI in corporate law and other areas are things such as worker service tax for robots undertaking menial tasks in restaurants and attributing liability where an AI system learns how to defraud online dating customers.<sup>22</sup> This is becoming more complicated with the next level of AI, the advisory level.

The advisory AI, provides:

*... support in more complex problem solving and decision-making situations by asking and answering questions as well as building scenarios and simulations.*<sup>23</sup>

The advisory level is also known as augmented intelligence because it is a combination of artificial intelligence and human intelligence. At this level decisions are made either by humans or shared between humans and machine.

The advisory level of AI has the ability to solve problems and answer questions as seen with the IBM system *Watson*.<sup>24</sup> *Watson* beat the two best-ever human champions on the United States quiz show *Jeopardy!* in an appearance on the show in 2011.<sup>25</sup> There is an emerging field of affective computing which uses sensor equipped machines to detect, read, and to express human emotions which means the observation and initiation functions will also become possible in the future.<sup>26</sup> There is already technology for self-driving vehicles where judgement is present which combines data gathering and analysis, prediction, judgement and action.<sup>27</sup>

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<sup>22</sup> Barfield, above n 20, 5-7.

<sup>23</sup> Barfield, above n 20, 5-7.

<sup>24</sup> Kolbjornsrud, Amico and Thomas, above n 18, accessed 25 October 2019.

<sup>25</sup> Barfield, above n 20, 130.

<sup>26</sup> Martin Petrin, 'Corporate Management In The Age Of AI', *University College London, Faculty of Laws Working Paper Series*, (University College London No.3, February 2019), 24-25; available at: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3346722](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3346722), accessed 20 August 2019.

<sup>27</sup> Petrin, above n 26, accessed 20 August 2019, 26.

The third level of AI is the autonomous level. Autonomous AI can 'proactively and autonomously evaluate options - making decisions or challenging the status quo'.<sup>28</sup> The machine is separate 'actor' with full decision rights.<sup>29</sup> This autonomy is possible because of 'machine learning' (ML) is where algorithms enable computers to automatically learn and improve. Computers will obtain new knowledge and insights from processing lots of training data by applying learning algorithms and accessing 'neural networks' such as the internet.<sup>30</sup> The beginnings of this can be seen in 1997 with *Deep Blue* the system developed by IBM beat one of the greatest chess players in the world at that time, Garry Kasparov.<sup>31</sup> Moving on from IBM, in 2016 Google's Alpha-Go then defeated Lee Se-dol, considered South Korea's best player of the ancient Chinese board game Go.<sup>32</sup> Alpha-Go defeated the champion by four out of five rounds.<sup>33</sup> The Korean Grand Master won the fourth round and Alpha-Go then incorporated his moves into its program to improve its algorithm and take the final round.<sup>34</sup> Alpha-Go has two deep neural networks which work together in a similar manner to the web of neurons in the human brain.<sup>35</sup> We also see autonomous AI in robotic functions such as the trading of securities and more recently for obtaining

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<sup>28</sup> Kolbjornsrud, Amico and Thomas, above n 18, 17.

<sup>29</sup> Kolbjornsrud, Amico and Thomas, above n 18, 16.

<sup>30</sup> Susskind and Susskind, above n 13, 156.

<sup>31</sup> Susskind and Susskind, above n 13, 164: Unlike Douglas Adam's '*Deep Thought*' computer from *The Hitchhiker's Guide To The Galaxy* which could come up with the number 42 as the answer to 'life, the universe and everything'.

<sup>32</sup> Steven Borowiec, 'AlphaGo seals 4-1 victory over Go grandmaster Lee Sedol', *The Guardian*, available online: <https://www.theguardian.com/technology/2016/mar/15/googles-alphago-seals-4-1-victory-over-grandmaster-lee-sedol> , accessed 12 September 2020.

<sup>33</sup> Borowiec, above n 26, accessed 12 September 2020.

<sup>34</sup> Borowiec, above n 26, accessed 12 September 2020.

<sup>35</sup> Shen Huang, 'Understanding AlphaGo: how AI thinks and learns (Advanced)', *Towards Data Science* online available at: <https://towardsdatascience.com/understanding-alphago-how-ai-thinks-and-learns-advanced-d70780744dae> accessed 12 September 2020.

basic investment advice.<sup>36</sup> Autonomous AI involves machine learning algorithms and these are the gateway for the most human like aspect of new AI the symbiotic cognitive systems which brings us to the era of the robot in the board room and new trust issues.

It is thought Human intelligence may be exceeded by AI within the next twenty years yet the more important issue is that AI will probably then incorporate the bastions of human uniqueness such as emotional and social intelligence creativity and even personal interactions and social manipulation although it will many more years.<sup>37</sup> The development of cognitive modules mimicking human 'biological algorithms' allowing such traits as empathy will allow machines to exceed human intelligence because of the access to multiple cognitive modules.<sup>38</sup>

#### 4. Corporate Governance of Information Technology

Corporate governance currently reflects general principles of good management and the extensive law of corporations we are familiar with. The issues relating of AI are broadly within IT, security, and confidentiality. Governance of IT needs to address these as well as emerging technology which can undertake tasks such as 'robo-managing' areas such as human resources without any human intervention.<sup>39</sup> While

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<sup>36</sup> Emily Stewart, 'Young people are getting robots to manage their investments. Here's why', 18 April 2019, Australian Broadcasting Corporation online at: <https://www.abc.net.au/news/2019-04-18/would-you-trust-robo-advice/11001998>, accessed 10 December 2019.

<sup>37</sup> Susskind and Susskind, n 13, 164; The Henn Na Hotel in Tokyo is an example of this ever evolving replacement of human roles by AI. It is a robot hotel where robots are used for check in/check out, concierge duties, and room service with only food and beverage preparation and cleaning and room preparations left to the humans: <https://www.hennnahotelmaitohamamatokyobay.com/en-gb/about-us>

<sup>38</sup> Susskind and Susskind, n 13, 23: Also known as neuromorphic computing (a form of nervous system), there are issues as to speed in computation at this time however the 'brains on a chip' model uses less energy than traditional computation and will provide an integrated machine learning unit capable of advanced tasks such as image processing and in time far broader functioning than the human brain at higher speed from The Queensland Brain Institute, University of Queensland available at: <https://qbi.uq.edu.au/brain/intelligent-machines/brains-chip-neuromorphic-computing>, accessed 8 January 2020.

<sup>39</sup> The Guardian online, *Robot Managers: the future of work or a step too far?*, 6 April 2018, available at: <https://www.theguardian.com/business-to-business/2018/apr/06/robot-managers-how-a-firm-automated>, accessed 3 January 2020. Interestingly Warren Buffet's corporation Berkshire Hathaway has no human

corporate governance has only been recognised as a discipline in the last century, the underlying principles have been well known to business since trade between people began.<sup>40</sup> Ideas from leadership, ethics and social responsibility combine with theories of the firm and production to assist in improving performance.<sup>41</sup> Corporate governance thus utilises the soft law principles involving standard-making, supervision, and enforcement of voluntary codes.<sup>42</sup> These soft law aspects are both internal and external forces. A corporation may be pressed to act a particular way by shareholders through their voting or threats of litigation.<sup>43</sup> These acts may be influenced by other stakeholders and internal committees.<sup>44</sup> A corporation is influenced by outside elements such market forces. These influences may take the form of accepted processes for doing business and instruments such as memorandums of agreement. These instruments do not contain rights and duties that can be sanctioned and enforced in a legal sense.<sup>45</sup> Unlike the law there are no collected works to refer to for specific issues. So the Courts use these instruments, and guides for professional conduct to understand how the law should be interpreted to reflect community expectations. This draws soft law within the legal system as

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resources department, nor in-house counsel, yet manages over 300,000 people successfully by hiring good 'generalist' managers for the work and 'getting out of their way, CNBC online, Warren Buffett on Managing People: *Find the '400 hitters, and don't tell them what to swing*, 13 February 2019, available at: <https://www.cnbc.com/2019/02/13/warren-buffett-on-managing-find-the-point400-hitters-and-then-dont-tell-them-how-to-swing.html>, accessed 3 February 2020.

<sup>40</sup> The earliest discussion of management has been found in ancient writings dealing with the organisation and motivation of slaves and traders during the time of the Sumarian Empire: Karminder Ghuman *Management: Concepts Practice and Cases* (2010), Tate McGraw-Hill Education USA – google books, available at: [http://books.google.com.au/books?id=QfxemvtRxo4C&pg=PA129&lpg=PA129&dq=sumerian+traders+management&source=bl&ots=5XE\\_oLVmZW&sig=LwBFojZAmYCitZLwygdtAEAB6ws&hl=en&sa=X&ei=XFAiVMieCNPc8AXD5oDoBQ&ved=0CE0Q6AEwCQ#v=onepage&q=sumerian%20traders%20management&f=false](http://books.google.com.au/books?id=QfxemvtRxo4C&pg=PA129&lpg=PA129&dq=sumerian+traders+management&source=bl&ots=5XE_oLVmZW&sig=LwBFojZAmYCitZLwygdtAEAB6ws&hl=en&sa=X&ei=XFAiVMieCNPc8AXD5oDoBQ&ved=0CE0Q6AEwCQ#v=onepage&q=sumerian%20traders%20management&f=false), accessed 24 September 2014.

<sup>41</sup> Robert P Austin and Ian M Ramsay, *Ford's Principles Of Corporations Law*, (17<sup>th</sup> Ed) 2018, 44, [2.170].

<sup>42</sup> Dimity Kingsford Smith, 'Governing the Corporation: The Role of Soft Regulation', *University of New South Wales Law Journal*, 2012, 35, 378-403, 388.

<sup>43</sup> Kingsford Smith, above n 42, 382.

<sup>44</sup> Kingsford Smith, above n 42, 382.

<sup>45</sup> Chris Ingelse, 'Soft Law?', *Polish Yearbook Of International Law*, 1993, 20, 75-90, 77.

'infralegal' or sub-legal' tools<sup>46</sup> which are can be seen as soft law precedent which add to the complex area that is corporate management.

The governance of IT requires close attention to the balance of performance of AI and the law. In particular regulation of ML AI is already a challenge because it is difficult to regulate something that is unseen and often not understood. This situation breed's further distrust in corporations because most business is carried out using some level of AI and corporations dominate business globally. At the core of this problem is the actioning of internal governance and external regulation being split between humans and IT and the fact humans are the ones with limited access to information and knowledge banks yet they, typically, take priority in decision making.

Corporate governance is predominantly a private affair, although there is regulation and a level of oversight for consumer protection in most countries. Our laws generally endeavour to encourage economic growth. There is equally a very strong emphasis on consumer protection and transparency for transactions with corporations with products needing to be fit for purpose and of merchantable quality.<sup>47</sup> All legislation is relevant to AI and in particular, product liability, breach of contract, and tort and agency. There have been quite a few novel cases involving machines where the activities of a robot are breaking law or leading to private law suits. One case in America involved a corporation using animatronic puppets that danced and sang in a restaurant being found not in breach of state service tax laws 'where an establishment serves food *where there is a performance*' because a pre-programmed robot has no skill.<sup>48</sup> There has also been a case of fraud where a computer program was used to simulate human interaction by generating and sending messages to male members of an online dating service to induce them to make purchases from the corporation, they believing they were communicating with

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<sup>46</sup> Ingelse, above n 45, 277.

<sup>47</sup> Australian Government, *Competition and Consumer Act 2010* (Cth), available at: [http://www5.austlii.edu.au/au/legis/cth/consol\\_act/caca2010265/](http://www5.austlii.edu.au/au/legis/cth/consol_act/caca2010265/), accessed 5 January 2020.

<sup>48</sup> *Comptroller of the Treasury v Family Entertainment Centers*. 519 A.2d 1337, 1338 (Md. 1987)

a 'real woman'.<sup>49</sup> From these cases we see the scope of laws now relevant to AI. There is potential for trade mark and IP matters as well as labour, privacy and data protection, telecommunications, patent, copyright, finance, freedom of expression, aviation, and criminal law.

If we consider the regulation of drones aviation regulations apply to the unit and to the operator. The drones are considered the same as aeroplanes and helicopters, both of which have autopilot functions, although the drone can facilitate breaches of aviation rules as well as privacy legislation and national security legislation. If we see autonomous drones (which are being developed in the military) we will potentially witness breaches by drones probably identified as agents of the military for attributing responsibility along with manufacturer liability as we already see with self-driving vehicles which are governed by road rules.

With advances in technology the challenge is how the law should think about sophisticated AI where there is a level of consciousness. Systems are capable of writing their own algorithms and solving problems with solutions unknown to human operators and there is potential for a machine to inflict harm based on its own deliberations and decisions. Until very recently the only 'law' specific to the conduct of AI was Isaac Asimov's three laws of robotics applying to robots which appeared in his short story *Runaround* in 1942.<sup>50</sup> These, of course, are not legally binding yet they point to the very real need for a body of rules which can guide people in their use and interactions with AI and aide the Courts in situations where law is drawn upon from any area.

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<sup>49</sup> *Re Ashley Madison Customer Data Security Breach Litigation* 148 Federal Supplement 3d 1378, 1380 (JPML) 2015: this was discovered after a data breach resulted in mass dissemination of user information.

<sup>50</sup> Barfield, above n 20, 7: Isaac Asimov, 'Runaround', in John W. Campbell Jr (Ed), *Astounding Science Fiction*, Street and Smith Publishers, 1942: The Three Laws of Robots are '1. A robot may not injure a human being or, through inaction, allow a human being to come to harm. 2. A robot must obey orders given it by human beings except where such orders would conflict with the First Law. 3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Law'.

Consider IP matters where:

*thinking machines' are 'transforming the invention process in ways not easily accommodated with the present United States patent system requiring that existing and supporting legal doctrine needs to be re-examined and rules for patentability, patent scope and patent infringement adjusted, to accommodate the new paradigm of invention<sup>51</sup>*

The secondary issue here is that algorithms can now create IP which brings further issues as to ownership and legal responsibility. This is as yet uncharted territory for the law.

## 5. Trust Issues with Artificial Intelligence used in Corporations

There are a few overlapping areas of concern as to trust. These are the lack of personality or persona, the allocation of rights and duties, instances of discrimination as discussed earlier, agency, locating fiduciary duties and the rise of ML, biometrics, neuromorphic computing, and AI autonomy. The allocation of rights and duties, reflects responsibility, blame, and legal liability. The recent Royal Commission presents us with evidence that using AI in financial business creates an environment for problems. In the case of the ANZ the problem was overcharging customers.<sup>52</sup> Customers were told this occurred because of processing errors. It is clear the bank did not check the algorithmic calculations. In the Centro cases the accounting software contributed to the errors in the reports leading to certain short term loans being documented as long term loans.<sup>53</sup>

Trust issues with corporations will probably get worse with the increase in use of advisory AI because of the lack of transparency. Then the increase in autonomous

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<sup>51</sup> Barfield, above n 20, 33.

<sup>52</sup> Australian Broadcasting Corporation, ABC News online; *Banking royal commission: ANZ says 'processing errors' to blame for it overcharging customers by \$90 million*, available at: <https://www.abc.net.au/news/2018-03-21/banking-royal-commission-anz-continued-to-charge-wrong-inter/9571626>; accessed 20 November 2019.

<sup>53</sup> *ASIC v Healey* (no. 2) (2011) 196 CR 430.

AI brings further about trust because humans are given directions by AI and do not have any opportunity to question directives. Algorithms can be fed any and all information available to humans which means machines will one day be able to exercise judgement that at least matches human judgment. As Petrin notes:

*If AI masters judgement work, it will also be able to engage in the various non-administrative aspects of directors and managers, including the relational and people development tasks, that directors and managers carry out today. Although it seems alien to us ..... the hurdles in the path towards achieving AI capability in judgement work is not insurmountable.*<sup>54</sup>

*AI that effectively interacts with employees and external stakeholders, including investors, governments, suppliers, customers, and communities, will then become reality. While we may intuitively assume that machines are worse at such tasks than humans, there is support for the notion that machines will exceed human capabilities in areas requiring 'soft skills'.*<sup>55</sup>

This means the group decision making model seen in our 'print based industrial society' will be replaced with the more fully structured 'technology based internet society' using neural network techniques,<sup>56</sup> via the internet and making issues such as personal biases, agenda's, group think, and conflicts among managers and directors a thing of the past.<sup>57</sup> It also means there is the possibility senior management (and potentially the board) could realistically be replaced with outsourced autonomous algorithmic entities (AEs) which run the corporation on direct mandate from the shareholders.<sup>58</sup> It is also feasible that in the future directors could be found in breach of their duty of care and diligence if the board has not used

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<sup>54</sup> Petrin, above n 26 accessed 20 August 2019, 27.

<sup>55</sup> Petrin, above n 26 accessed 20 August 2019, 27.

<sup>56</sup> Susskind and Susskind, above n 13, 147-150.

<sup>57</sup> Benjamin Liu and John Selby 'Directors' defence of reliance on recommendations made by artificial intelligence systems; Comparing the approaches in Delaware, New Zealand and Australia', (2019), *Australian Journal of Corporate Law*, 141-159, 143., 143: There is however the security risk issue of company information being vulnerable hacking.

<sup>58</sup> Liu and Selby, above n 57, 148: Lynn M. Lopucki, 'Algorithmic Entities', (2018), 95 *Washington University Law Review*, 887

AI when making certain decisions.<sup>59</sup> It is more probable the future corporation will have one to three titular human leaders as the law requires, perhaps an MD or CEO, and a corporate secretary for legal reasons and perhaps a shareholder representative for balance. At very least in the near future it is probable senior executives will have AI advisors as we have seen with AI advisors such as 'VITAL'<sup>60</sup> and 'Einstein'<sup>61</sup> already. The ML AI entities also have a level of bias due to human programming and also the observed data, such as Amazon's gender bias identifying candidates for possible hiring, and with the underlying data the basis of the application.<sup>62</sup> This can be corrected once identified unlike much human bias. A further advantage here is the introduction of algorithms which include factors related to multiple stakeholders, our environment, and other aspects of social responsibility, even political nuances.

One other aspect of ML AI is that it would also completely change the issue of agency costs and senior management shirking problems and effectively 'fuse' corporate management function we currently see with the two arms of corporate management.<sup>63</sup> These changes are growing momentum and by all accounts AI is going to change the use of information in corporations, the role of senior management, corporate law, and corporate governance generally, very dramatically in the coming years. A recent step forward in trust is the use of declarations of

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<sup>59</sup> Section 180 Corporations Act 2001 (Cth).

<sup>60</sup> Liu and Selby, above n 57, 142: VITAL is the analysis software sitting as a member of the board of the venture capital company Deep Knowledge Ventures with 'observer status on the basis of an agreement that the board would not make positive investment decisions without corroboration by VITAL': Ellie Zolfagharidard, *Would you take orders from a Robot? An artificial intelligence becomes the world's first company director*, Daily Mail online, 19 May 2014: <https://www.dailymail.co.uk/sciencetech/article-2632920/Would-orders-ROBOT-Artificial-intelligence-world-s-company-director-Japan.html>, accessed 2 December 2019.

<sup>61</sup> Liu and Selby, above n 57, 142: Einstein is the AI machine that joins weekly staff meetings of the California based software provider Salesforce to comment on proposals under discussion. Einstein customer relationship management software is now sold to businesses worldwide: <https://www.salesforce.com/au/products/einstein/overview/>

<sup>62</sup> Bitt Faircloth, *The Risks and Management of Algorithmic Bias in Fair Lending*, 6 November 2019, Wolters Kluwers online, available at: <http://www.wolterskluwerfs.com/article/the-risks-and-management-of-algorithm-bias-in-fair-lending.aspx>, accessed 10 December 2019.

<sup>63</sup> Margaret M. Blair & Lynn A. Stout, 'A Team Production Theory of Corporate Law', (1999) 85 Va. L. Rev. 247.

conformity where AI services are offered and this may be the turning point for public trust in corporations.<sup>64</sup>

Many corporate law commentators consider the legislative reform efforts in recent years, seeking to prevent managerial malfeasance by empowering boards, in fact empowers senior management below the board.<sup>65</sup> Quite recently we have seen yet another example of senior management below board level participating in dubious activities with executives of Macquarie bank Australia, being accused of tax fraud by German officials.<sup>66</sup>

## 6. Conclusion

The future may be bright for shareholders and other stakeholders with a huge saving in remuneration to corporate managers and great benefits to the company as a whole. Yet in the next few years there will be the inevitable struggle between humans and technology and consequent problems as authority transitions in more and more aspects of business. Part of the change will need to be a level of transparency of AI activities in corporations. This has been nearly impossible with human corporate management because of basic human nature, the perceived need to retain specialist knowledge, and normal human self-interest. It can only be hoped that the functions of judgement in AI don't then advance to a situation of self-optimising decisions. If that does occur then it is hoped even this will be for the benefit of the corporation and the public who deal with the business.

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<sup>64</sup> M. Arnold, R. K. E. Bellamy, M. Hind. S Houde. S. Mehta, A Mojsilovic, R. Nair, K Natesan Ramamurthy, D Reimer, A. Olteanu, D Piorkowski, J Tsay and K. R. Varshney, *FactSheets: Increasing Trust in AI Services through Supplier's Declarations of Conformity*, online at <https://arxiv.org/pdf/1808.07261.pdf> 7 February 2019, accessed 12 January 2020.

<sup>65</sup> Nicola Faith Sharpe, 'Questioning Authority: The Critical Link between Board Power and Process', (2012) 38 J. Corp. L 2012 – 2013, 1 – 51, 14.

<sup>66</sup> Nassim Khardem, *Macquarie Bank CEO Shermara Wikamanayake suspect in German Tax scam probe*, available at: [https://www.abc.net.au/news/2020-01-24/macquarie-ceo-suspect-in-german-tax-scam-probe/11896810?section=business&fbclid=IwAR2RYhvxYBjaoCFjezjHUOXLdkDaQ7RTGDojU\\_3SpYtqsd0BGwOoJac9uJg](https://www.abc.net.au/news/2020-01-24/macquarie-ceo-suspect-in-german-tax-scam-probe/11896810?section=business&fbclid=IwAR2RYhvxYBjaoCFjezjHUOXLdkDaQ7RTGDojU_3SpYtqsd0BGwOoJac9uJg) accessed 24 January 2020.