GETTING ON BOARD WITH ROBOTS: HOW THE BUSINESS JUDGMENT RULE SHOULD APPLY TO ARTIFICIAL INTELLIGENCE DEVICES SERVING AS MEMBERS OF A CORPORATE BOARD

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I. INTRODUCTION

In 1742, the Lord Chancellor of England noted that:

> [Directors] are most properly agents to those who employ them in this trust, and who empower them to direct and superintend the affairs of the corporation. In this respect they may be guilty of acts of commission or omission, of malfeasance or nonfeasance. Now where acts are executed within their authority, . . . though attended with bad consequences, it will be very difficult to determine that these are breaches of trust. For it is by no means just in a judge, after bad consequences have arisen from such executions of their power, to say that they foresaw at the time what must necessarily happen; and therefore, were guilty of a breach of trust.[1]

This recognition that directors should not be held personally liable for honest business decisions that result in negative consequences has continued to be a bedrock of corporate law.[2] In modern times, this and other policy goals have been secured by the implementation of the business judgment rule.[3] Under the business judgment rule, board decisions are not second guessed by courts so long as they are made on an informed basis, in good faith, and in the honest belief that the actions taken are in the best interest of the company.[4] This approach has served its purpose well up to now, but one recently introduced wrinkle has yet to be addressed.

In 2014, Deep Knowledge Ventures, a Hong Kong based venture capital fund focused on life sciences, became the first company to appoint an artificial intelligence entity to its board of directors.[5] The computer algorithm, called Vital, has a vote and is treated "as a member of [the] board with observer

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[1] Charitable Corp. v. Sutton, 26 Eng. Rep. 642 (1742) (citations omitted).

[2] Bernard S. Sharfman, *The Importance of the Business Judgement Rule*, 14 N.Y.U. J. L. & BUS. 27, 33–34 (2017).

[3] *Id.* at 33–37.

[4] Aronson v. Lewis, 473 A.2d 805 (Del. 1984).

[5] *Algorithm Appointed Board Director*, BBC NEWS (May 16, 2014), https://www.bbc.com/news/technology [https://perma.cc/V42X-9FHN]; Will Pugh, *Why Not Appoint an Algorithm to Your Corporate Board*, SLATE (March 24, 2019, 8:00 AM), https://slate.com/technology/2019/03/artificial-intelligence-corporate-board-algorithm.html [https://perma.cc/MY3U-S9LU]; Ellie Zolfagharifard, *Would You Take Orders from a ROBOT? An Artificial Intelligence becomes the World's First Company Director*, DAILYMAIL (May 19, 2014, 5:50 PM), https://www.dailymail.co.uk/sciencetech/article-2632920/Would-orders-ROBOT-Artificial-intelligence-world-s-company-director-Japan.html [https://perma.cc/SWW4-VR6Z].

status."[6] Importantly, the human members of the board "agreed that [they] would not make positive investment decisions without corroboration by Vital."[7] This is not only a new frontier for corporate governance, but also creates a unique situation for the application of the traditional business judgment rule, which until now has only had to deal with human directors.

This Essay proceeds in three parts. Part II introduces the business judgment rule and its underlying policy. Part III discusses the current advancements in artificial intelligence, machine learning, algorithms, and robotics (hereinafter collectively "artificial intelligence devices") that have implications for understanding the role of the business judgment rule in the future. Part IV argues that, though the business judgment rule could be as easily applied to artificial intelligence devices as their human director counterparts, the policy needs underlying the rule are not applicable to such devices and the protections of the rule should not apply to them.

II. THE BUSINESS JUDGMENT RULE

A. Fiduciary Duties and the Board of Directors

Ultimately, the business judgment rule is the result of corporate law's attempt to deal with an agency problem. Agency problems arise when the interests of a principal depend on actions taken by their agent.[8] One of the ways the law addresses the multitude of problems raised by principal-agent relationships is the imposition of fiduciary duties on agents (called "fiduciaries"). The two primary duties of fiduciaries are the duty of loyalty and the duty of care.[9] The duty of loyalty requires agents to act for the interests of the principal rather than for their own interests.[10] More importantly for the purposes of the analysis in this paper, the duty of care requires agents making

[6] Nicky Burridge, *Artificial Intelligence Gets a Seat in the Boardroom,* NIKKEI ASIAN REV. (May 10, 2017, 10:52 PM), https://asia.nikkei.com/Business/Companies/Artificial-intelligence-gets-a-seat-in-the-boardroom [https://perma.cc/3ARE-FFGP]. Vital is an acronym for "Validating Investment Tool for Advancing Life Sciences." *See* Press Release, Deep Knowledge Ventures, Deep Knowledge Venture's Appoints Intelligent Investment Analysis Software VITAL as Board Member (May 13, 2014), http://www.prweb.com/releases/2014/05/prweb11847458.htm [https://perma.cc/LDS3-LH7L].
[7] Burridge, *supra* note 6.
[8] *See* John Armour, Henry Hansmann & Reinier Kraakman, *Agency Problems, Legal Strategies and Enforcement* 2–5 (John M. Olin Ctr. for L., Econ., & Bus., Discussion Paper No. 644, 2009), http://www.law.harvard.edu/programs/olin_center/papers/pdf/Kraakman_644.pdf [https://perma.cc/6ZA8-2UET].
[9] *Fiduciary Duty*, LEGAL INFO. INST., https://www.law.cornell.edu/wex/fiduciary_duty (accessed Oct. 30, 2019) [https://perma.cc/DW4Q-NXB3].
[10] *Id.*

decisions in their capacity as fiduciaries to act in the same manner that a reasonably prudent person would under the circumstances.[11] Failure to abide by either of these duties subjects a fiduciary to personal liability for damages to the principal.[12] After all, the principals supply the capital, and the agents, if they are not liable for losing that capital, only stand to benefit from excessive risk-taking. In the corporate setting, shareholders are principals and directors serve as their agents.[13]

B. Policy Underlying the Business Judgment Rule

Generally speaking, directors are elected by shareholders to run the business and increase its value.[14] Indeed, shareholder wealth maximization is the default legal obligation of a board of directors.[15] However, this legal obligation often presents a conundrum for the board. On the one hand, the board is required not only to *increase* but to *maximize* the value of the company for the shareholders. On the other hand, the board owes a fiduciary duty of care to shareholders to act in the same manner as a reasonably prudent person under the circumstances or be held personally liable for their decisions.[16] Often, to maximize shareholder value, the board must take certain risks such as selling the company or releasing a new product. When those risks result in large returns, the directors are often lauded but, when the results are negative, the shareholders can attempt to hold the board personally liable for damages.[17] Thus, directors face liability whether they fail to maximize shareholder value by inaction or action that proves unfruitful.

Due to this conundrum, the individuals most qualified to serve as directors, without any sort of protection from personal liability, would likely refuse to take a seat on the board.[18] Additionally, courts would find themselves

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[11] *See Duty of Care,* LEGAL INFO. INST., https://www.law.cornell.edu/wex/duty_of_care (accessed Oct. 30, 2019) [https://perma.cc/SZ9Q-RJDD].
[12] *See Fiduciary Duty*, supra note 9.
[13] *See* Dalia T. Mitchell, *Status Bound: The Twentieth Century Evolution of Directors' Liability*, 5 N.Y.U. J. L. & BUS. 63, 65 (2009). *See also* Chad Langager, *Who is Responsible for Shareholders Interests?*, INVESTOPEDIA (Mar. 8, 2018), https://www.investopedia.com/ask/answers/05/shareholderinterest.asp [https://perma.cc/D6XR-DBUT].
[14] *See* Langager, *supra* note 13.
[15] *See* Sharfman, *supra* note 2, at 31, 56–68.
[16] *See* Bernard S. Sharfman, *The Enduring Legacy of Smith v. Van Gorkom*, 33 DEL. J. CORP. L. 287, 288–89 (2008).
[17] *See* Lindsay C. Llewellyn, *Breaking Down the Business Judgment Rule*, 14 COM. & BUS. LITIG. 16 (2013) ("In bringing shareholder derivative suits, shareholders seek to impose liability on corporate directors for failing to carry out their corporate duties in accordance with this standard of care").
[18] *See* Sharfman, *supra* note 16, at 301–02.

mired in litigation for damages resulting from either the board's inaction or action. This would result in requiring judges to essentially assume the role of board members to determine *ex post* what the correct course of action would have been for what should have been a routine business decision. That situation would not only be cumbersome for the courts but would also suffer heavily from hindsight bias.[19] In light of these concerns, a shield for business decisions had to be developed in order to protect directors from personal liability for merely doing their jobs.

C. The Business Judgment Rule in United States Law

One of the most important developments in United States corporate law is the business judgment rule.[20] The business judgment rule is a standard of review that shields directors from personal liability when they take actions that negatively affect corporations, resulting in shareholder lawsuits alleging violations of the duty of care. Without the business judgment rule, courts are obliged to perform a "fairness review" ("entire fairness" in Delaware).[21] A fairness review is a court's "most onerous" standard of review.[22] Under this standard, the defendant bears the burden of proving that the transaction satisfied the requirements of "fair dealing and fair price."[23] The clearest articulation of the business judgment rule is found in *Aronson v. Lewis*, a Delaware Supreme Court case, which states that:

> [i]t is a presumption that in making a business decision the directors of a corporation acted on an informed basis, in good faith, and in the honest belief that the action taken was in the best interest of the company. Absent an abuse of discretion, that judgment will be respected by the courts. The burden is on the party challenging the decision to establish facts rebutting the presumption.[24]

The court went on to make "informed basis" a requirement by stating:

> to invoke the rule's protection directors have a duty to inform themselves, prior to making a business decision, of all material information reasonably available to them. Having become so

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[19] See Hal R. Arkes & Cindy A. Schipani, *Medical Malpractice v. The Business Judgement Rule: Differences in Hindsight Bias*, 73 OR. L. REV. 587, 588–89 (1994).
[20] *See* Sharfman, *supra* note 2, at 28–29.
[21] *See id.*
[22] *Id.* at 40.
[23] *Id.*
[24] Aronson v. Lewis, 473 A.2d 805, 812 (Del. 1984).

> informed, they must then act with requisite care in the discharge of their duties. While the Delaware cases use a variety of terms to describe the applicable standard of care, our analysis satisfies us that under the business judgment rule director liability is predicated upon concepts of gross negligence.[25]

This requirement opened the door for the most widely recognized business judgment rule case, and arguably the most significant case to come out of the Delaware Supreme Court, *Smith v. Van Gorkom*.[26]

In *Van Gorkom*, the board of directors of TransUnion Co. approved the sale of the company after a single two-hour meeting.[27] The transaction resulted in lost value and, while many believed that the court would still apply the business judgment rule, the court surprised many observers by holding that all of the directors were personally liable for the resulting monetary damages.[28] Reaffirming gross negligence as the standard by which to determine whether a business decision was "informed" as required by *Aronson*, the court held that the directors "were grossly negligent in approving the 'sale' of the Company upon two hours' consideration, without prior notice, and without the exigency of a crisis or emergency."[29] *Van Gorkom* was such a deviation from the common approach to the business judgment rule that it prompted the Delaware legislature to enact new laws to effectively let businesses opt out of its holding.[30] *Van Gorkom's* progeny, however, reveals that the Delaware Supreme Court intends to remain an outlier in regards to business judgment rule jurisprudence.[31]

While the approach may differ slightly from state to state, the idea that courts will not second guess business judgments is repeated throughout state court opinions. Indeed, what makes Delaware an outlier is that other states are more likely to afford greater deference to boards. For example, in 1968 the Illinois Appellate Court found that a shareholder had no cause of action where the board of directors of the Chicago Cubs decided against putting lights in the stadium at Wrigley field to increase attendance and revenue by scheduling

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[25] *Id.*
[26] Smith v. Van Gorkom, 488 A.2d 858 (Del. 1985).
[27] *Id.* at 869.
[28] *See* Henry N. Butler, Smith v. Van Gorkom, *Jurisdictional Competition, and the Role of Random Mutations in the Evolution of Corporate Law*, 45 WASHBURN L.J. 267, 282 (2006) ("Van Gorkom was a major and seemingly random change in the corporate law of fiduciary duties. It certainly took corporate law observers and commentators by surprise").
[29] *Van Gorkom*, 488 A.2d at 874.
[30] DEL. CODE ANN. TIT. 8, § 102(b)(7) (2019).
[31] *See, e.g.*, Emerald Partners v. Berlin, 787 A.2d 85 (Del. 2001); Cede & Co. v. Technicolor, 634 A.2d 345 (Del. 1993).

games at night—despite the fact that nearly every other Major League Baseball team had been successfully adopting the approach since 1935.[32] The court held that:

> [d]irectors are elected for their business capabilities and judgment and the courts cannot require them to forgo their judgment because of the decisions of directors of other companies. Courts may not decide these questions in the absence of a clear showing of dereliction of duty. . . and a mere failure to 'follow the crowd' is not such a dereliction.[33]

Similarly, in a case where the board of directors was found to have breached its duty to minority shareholders, the Ohio Supreme Court took the time to reaffirm the idea that "[t]he [business judgment] rule is a rebuttable presumption that directors are better equipped than the courts to make business judgments . . . A party challenging a board of directors' decision bears the burden of rebutting the presumption that the decision was a proper exercise of the business judgment of the board."[34] Some states, like California, have even gone so far as to codify the common law business judgment rule in statutory law.[35]

D. Summary

The fiduciary duties of directors can conflict with their need to maximize shareholder wealth. To mitigate this conundrum, the business judgment rule creates a rebuttable presumption of good faith in favor of the board, shielding its members from personal liability. This not only encourages directors to take board positions but also to apply the appropriate amount of risk-taking necessary to maximize shareholder wealth. Without the intervention of the business judgment rule, a much more onerous fairness standard would apply. When the business judgment rule does apply, the burden is on plaintiffs to show that directors acted in gross negligence, bad faith, or had a conflict of interest to overcome the presumption.[36] While Delaware courts are more likely to find gross negligence than other states, the idea underlying that approach still applies—directors must have some

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[32] *See* Shlensky v. Wrigley, 237 N.E.2d 776, 781 (Ill. App. Ct. 1968).
[33] *Id.*
[34] Gries Sports Enter., Inc. v. Cleveland Browns Football Co., 496 N.E.2d 959, 963 (Ohio 1986).
[35] CAL. CORP. CODE § 7231 (West 2019).
[36] *See, e.g.*, Aronson v. Lewis, 473 A.2d 805 (Del. 1984); Smith v. Van Gorkom, 488 A.2d 858 (Del. 1985).

informed basis for their decision in order to receive the protection of the business judgment rule.

III. ARTIFICIAL INTELLIGENCE DEVICES

A. Advancements in Technology

One need only look to the Industrial Revolution or the invention of the internal combustion engine to see what effect new technologies can have on industries, businesses, and markets. Indeed, many have made the claim that the current unprecedented advancements in artificial intelligence devices constitute a sort of "Fourth Industrial Revolution" or "Industry 4.0."[37] As Ryan Calo[38] aptly pointed out in 2015, "[i]t is becoming increasingly obvious that advances in robotics will come to characterize the next several decades" and that "[t]he same government and hobbyists that developed the Internet, and the handful of private companies that have come to characterize it, have begun a significant shift toward robotics and artificial intelligence."[39] This looming change has been expedited by the availability of low-cost robotics-adjacent technologies, like Microsoft's Kinect, and behemoth companies, like Google parent company Alphabet, which are spending hundreds of billions of dollars racing to take a share of the market for these technologies.[40]

In describing which attributes of these developing technologies will be most relevant to the law, Calo suggests that "[e]mbodiment, emergence, and social valence—alone, and especially in combination—turn out to be relevant to an extraordinarily wide variety of legal contexts. . . ."[41] He goes on to describe embodiment as relating to the nature of artificial intelligence devices occupying physical space in the world,[42] emergence as the ability to learn and act in a way that is unpredictable,[43] and social valence as how people perceive

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[37] *See, e.g.*, Bernard Marr, *The 4th Industrial Revolution Is Here-Are You Ready?*, FORBES (Aug. 13, 2018, 12:26 AM), https://www.forbes.com/sites/bernardmarr/2018/08/13/the-4th-industrial-revolution-is-here-are-you-ready/ [https://perma.cc/UM2H-6DDT].

[38] Ryan Calo is an associate professor at the University of Washington School of Law and co-chair of the American Bar Association Committee on Robotics and Artificial Intelligence. He is recognized nationally as a leading expert in the cross section of emerging technology in law. *See e.g.* Ctr. Internet & Society, *Ryan Calo*, CYBERLAW.STANFORD.EDU, http://cyberlaw.stanford.edu/about/people/ryan-calo (accessed Dec. 21, 2019) [https://perma.cc/3DWY-LL3W].

[39] Ryan Calo, *Robotics and the Lessons of Cyberlaw*, 103 CALIF. L. REV. 513, 526, 562 (2015).

[40] *See id.*; *see also* Cade Metz, *Good News: A.I. Is Getting Cheaper. That's Also Bad News*, N.Y. TIMES, (Feb. 21, 2018), https://www.nytimes.com/2018/02/20/technology/artificial-intelligence-risks.html [http://perma.cc/6YZU-7D77].

[41] Calo, *supra* note 39, at 532.

[42] *See id.* at 532–37.

[43] *See id.* at 538–45.

AI devices—noting that the advancements "*feel* different to us, more like living agents."[44]

While embodiment may not be as applicable to robots or artificial intelligence devices acting as members on a board as it is to workers in a factory, the emergence and social valance aspects of these technologies will likely play a role in the future application of the business judgment rule to artificial intelligence devices. Emergent behavior, originally implemented in military applications,[45] has already been observed in the financial sector and even caused a minor crash, now known as the "Flash Crash of 2010,"[46] resulting in the disappearance of one trillion dollars in less than thirty minutes.[47] It is easy to see how such a mistake emanating from an artificial intelligence director would be grounds for a shareholder derivative suit. It also shows why social valance is important. After all, in order for the shareholders to bring a suit against directors, they would have to *feel* that the directors are agents. Thus, emergence and social valence will play a key role in understanding how to apply the business judgment rule to decisions made by artificial intelligence directors.[48]

B. Artificial Intelligence Devices in Industry and Businesses Today

Elon Musk, the founder and CEO of Tesla, Inc., has famously called his mostly automated "Gigafactory" a "machine that builds the machine."[49] Tesla is one of the many companies invested in the development of fully autonomous self-driving cars—this technology is not only poised to fundamentally change how individuals will travel in personal automobiles, but could also change the operation of ride hailing services and, with the release of autonomous semitrucks, the trucking industry. With the transportation and trucking industry comprising a large sector of the U.S. economy (in terms of employment) it is not hard to see how artificial intelligence will be extremely disruptive to industry as a whole, especially if factory work continues to be automated as well.[50]

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[44] *See id.* at 532, 545–59.
[45] *See id.* at 538.
[46] *See* Tom C.W. Lin, *The New Investor*, 60 UCLA L. REV. 678, 704 (2013).
[47] *Id.*
[48] *See infra* Part IV.
[49] Sean O'Kane, *Tesla Will Live and Die by the Gigafactory*, VERGE (Nov. 30, 2018, 10:01 AM), https://www.theverge.com/transportation/2018/11/30/18118451/tesla-gigafactory-nevada-video-elon-musk-jobs-model-3 [https://perma.cc/9YLY-N5A4].
[50] *See, e.g.*, *id.*; Nick Wingfield, *As Amazon Pushes Forward With Robots, Workers Find New Roles*, N.Y. TIMES (Sept. 10, 2017), https://www.nytimes.com/2017/09/10/technology/amazon-robots-workers.html [https://perma.cc/TJT6-AVZC].

In the finance industry, artificial intelligence devices are already being used to effectively manage exchange traded funds (EFTs) and execute high frequency trades (HFTs) on an unprecedented scale .[51] Artificial intelligence supercomputers, like IBM's Watson, best known for its performance on the trivia game show "Jeopardy!," have even been able to beat the market.[52] However, the use of artificial intelligence has not always gone well on Wall Street. In 2010 and again in 2015, artificial intelligence managed EFTs caused "flash crashes" resulting in the loss of trillions of dollars for investors, though blame was pinned on human individuals.[53]

As far as the boardroom is concerned, every state in the United States currently limits the availability of board positions to "natural persons," thus excluding artificial intelligence devices.[54] However, several foreign jurisdictions, including the U.K., Cayman Islands, and Hong Kong have less stringent limitations on who or what can serve as a member of the board.[55] While Vital in Hong Kong is currently the only artificial intelligence device with a board seat, the World Economic Forum released a 2015 report where nearly half of the 800 IT executives surveyed expected additional artificial intelligence devices to be on corporate boards by 2025.[56] Were this to occur, it would be a tipping point ushering in a new era of artificially intelligent board members.

It is not hard to imagine how this could play out. A state like California, which is already well established as the technology capital of the United States, could begin to see artificial intelligence directors succeeding as directors on the boards of foreign companies and loosen its "natural persons"

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[51] *See* Paul J. Lim, *The First Ever Fund Managed by a Robot Is Here. So Far It's Beating the Market*, MONEY (Oct. 25, 2017), http://money.com/money/4993744/robot-mutual-fund-beating-stock-market/ [https://perma.cc/7CRC-SF86].

[52] *Id.*; Clive Thompson, *What is I.B.M.'s Watson?*, N.Y. TIMES (June 20, 2010), https://www.nytimes.com/2010/07/04/magazine/04Letters-t.html [https://perma.cc/N2MB-L4WU].

[53] Mark Melin, *Here's What Actually Caused the 2010 "Flash Crash"*, BUS. INSIDER (Jan. 30, 2016, 10:57 AM), https://www.businessinsider.com/what-actually-caused-2010-flash-crash-2016-1 [https://perma.cc/ZUF6-LKKQ].

[54] *See, e.g.*, DEL. CODE ANN. TIT. 8, § 141(b) (2019); Stephen M. Bainbridge, *Corporate Directors in the United Kingdom*, 59 WM. & MARY L. REV. ONLINE 65, 67 n. 3 (2017–2018).

[55] *See id.*; The Directors Registration and Licensing Law (Law 10/2014) § 2 (Cayman Is.) (defining "corporate director"); Companies Ordinance, (2014) Cap. 622, 1§ 2(1) (H.K.) (defining a director as including "any person occupying the position of director (by whatever name called")); Companies Ordinance, (2014) Cap. 622, § 457 (H.K.) (requiring at least one director who is a natural person).

[56] GLOBAL AGENDA COUNCIL ON THE FUTURE OF SOFTWARE & SOCIETY, WORLD ECONOMIC FORUM, DEEP SHIFT TECHNOLOGY TIPPING POINTS AND SOCIETAL IMPACT 4 (2015), http://www3.weforum.org/docs/WEF_GAC15_Technological_Tipping_Points_report_2015.pdf [https://perma.cc/3DCF-PWQQ].

requirement to adapt. Then a state like Delaware, in an attempt to retain its title as winner of the "race to the bottom" for corporate friendly laws, would have to amend its current laws in order to avoid losing out on the registration fees obtained from businesses determined to reap the benefits of artificial intelligence serving as board members (i.e. lower costs and higher efficiency). Delaware has already taken steps toward attracting tech companies by adopting rules addressing blockchain technologies.[57] In doing so, Delaware has demonstrated its willingness to adapt its laws to new and innovative technologies in the business sector.

C. How Artificial Intelligence Devices Make Business Judgments

In order to understand how the business judgment rule will apply to artificial intelligence devices, it is necessary to understand how they make business judgments. Unfortunately, doing so runs into one of the biggest problems facing wide scale adoption of artificial intelligence: it is difficult for an artificial intelligence device to explain why it reaches the conclusions that it does. Generally speaking, large amounts of data are fed to the artificial intelligence system.[58] This data is sorted both quantitatively and qualitatively using machine learning processes like natural language processing.[59] The data is evaluated for matter such as sentiment, semantic roles, and concepts.[60] Then, after running through an algorithm, the artificial intelligence machine supplies a judgment. This lack of transparency is commonly referred to as the "black box of AI."[61] To address this issue, companies like IBM are pouring great amounts of resources into creating programs and processes that allow artificial

[57] Press Release, Delaware Office of the Governor, Governor Markell Launches Delaware Blockchain Initiative (May 2, 2016), https://www.prnewswire.com/news-releases/governor-markell-launches-delaware-blockchain-initiative-300260672.html [https://perma.cc/C5DM-HT5D]; *see* Wonnie Song, *Bullish on Blockchain: Examining Delaware's Approach to Distributed Ledger Technology in Corporate Governance Law and Beyond*, 8 HARV. BUS. L. REV. ONLINE 9, 17–18 (2017–2018).

[58] *See generally Recommend with Confidence*, IBM, https://www.ibm.com/watson/advantages/recommend [https://perma.cc/2LDF-VL6A].

[59] *See generally Watson Discovery*, IBM, https://www.ibm.com/watson/services/discovery/ (accessed Oct. 30, 2019) [https://perma.cc/K7XJ-QNA7].

[60] *See id.*; Frank Zhao, *Natural Language Processing – Part I: Primer*, S&P GLOBAL MARKET INTELLIGENCE, (Sept. 2017), https://www.spglobal.com/marketintelligence/en/documents/sp-global-market-intelligence-nlp-primer-september-2018.pdf [https://perma.cc/C7YX-4893].

[61] Tasmin Lockwood, *Artificial Intelligence Can Now Explain Its Own Decision Making*, MEDIUM (Sept. 23, 2018), https://medium.com/datadriveninvestor/artificial-intelligence-can-now-explain-its-own-decision-making [https://perma.cc/2YRD-BM9D].

intelligence devices to explain how they reach decisions in ways that humans can understand.[62]

The lack of an artificial intelligence device's ability to explain how it comes to conclusions is a major hindrance to humanity's ability to trust such devices. As it currently stands, business judgments by artificial intelligence devices will likely be called into question quite frequently by human shareholders. This is commonly cited as one of the primary reasons artificial intelligence is not ready to take on the role of a director.[63] But on closer inspection, this is not much different than how humans make decisions. In a study done by the University of Boston and the University of California Berkeley, researchers attempted to understand the black box of artificial intelligence and to make it understandable for humans.[64] In explaining why it is difficult to cross this understanding barrier, Kate Saenko, one of the lead researchers on the project, noted "[i]t's the same reason that we don't understand how people think," that is "[y]ou could ask me why I wore this shirt today and I could come up with some rationalization, but who knows how my thinking really works? I don't know what my brain process was really like."[65] Perhaps it is not quite as important to understand exactly how artificial intelligence devices make decisions: as with humans, we can just look to the information that was relied upon and the circumstances under which the decision was made.

D. Summary

The fourth industrial revolution is upon us. Advancements in machine learning, natural language processing, and artificial intelligence have all but ensured that artificial intelligence devices will eventually serve on future

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[62] *See, e.g.*, Ben Dickson, *IBM, Harvard Develop Tool to Tackle Black Box Problem in AI Translation*, VENTUREBEAT (Nov. 1, 2019 at 2:15 PM), https://venturebeat.com/2018/11/01/ibm-harvard-develop-tool-to-tackle-black-box-problem-in-ai-translation [https://perma.cc/6UJV-R3P9].

[63] *See, e.g.*, Pugh, *supra* note 5; *Will AI Board Members Run the Companies of the Future?*, BRINK (June 14, 2018), https://www.brinknews.com/will-ai-board-members-run-the-companies-of-the-future/ [https://perma.cc/RN6B-XUMZ]. *See also*, Yavar Bathaee, *The Artificial Intelligence Black Box and the Failure of Intent and Causation*, 31 HARV. J. L. & TECH. 889 (2018); Will Knight, *The Dark Secret at the Heart of AI*, MIT TECH. REV. (Apr. 11, 2017), https://www.technologyreview.com/s/604087/the-dark-secret-at-the-heart-of-ai/ [https://perma.cc/D4TH-VU2W].

[64] Ronghang Hu et al., *Explainable Neural Computation via Stack Neural Module Networks*, (arXiv:1807.08556, July 23, 2018), https://arxivorg.proxy.library.cornell.edu/pdf/1807.08556.pdf [https://perma.cc/L4JT-HZTD].

[65] Art Janhke, *To Make Sense of A.I. Decisions, 'Peek Under the Hood'*, FUTURITY (Oct. 8, 2018), https://www.futurity.org/artificial-intelligence-decision-making [https://perma.cc/9VJU-USFW].

boards of directors. The emergent nature of this technology will surely lead artificial intelligence directors to make decisions that no one can predict, which will be likely to have both positive and negative consequences. The inability of artificial intelligence devices to explain their rationale at all, let alone in a way that humans will understand, plays negatively to the social valence relationship with shareholders. However, this is not unlike the current role that directors play. Even if human directors give satisfactory explanations for why they reach their decisions, there is no way to truly understand their thought processes. In some ways, this is exactly the shortcoming that the business judgment rule is meant to mitigate.

IV. THE FUTURE OF THE BUSINESS JUDGMENT RULE

A. Legal Application of the Business Judgment Rule to Artificial Intelligence

Application of the business judgment rule to artificial intelligence devices serving as directors is relatively straightforward. First, there must be a questioned business decision. For example, take an AI device called AID (for Artificially Intelligent Director) which serves on the board of XYZ Corp. After being fed data provided by accountants, lawyers, and investment bankers, AID decides that XYZ Corp. should merge with another company, ABC Inc. Unfortunately, the new venture does not pan out and the shares lose value. As a result of this, a shareholder brings a derivative suit against AID. The court will first take stock of AID's other interests, that is: does AID have a financial interest in ABC Inc? If not, then the court will look to see if proper procedure was followed. Here, the information relied upon was obtained solely from sources which a director is permitted to rely upon and will fall squarely within the confines of the business judgment rule.[66] The only hurdle left is to determine whether AID exercised the care that a reasonably prudent person would under the circumstances.

In the past, as demonstrated in *Van Gorkom*, whether reasonable care can be applied is at least in part a matter of how much time was spent deliberating over the information provided.[67] Given how AID works, courts may go one of two ways on this point. They could either recognize that

[66] *See* Michele Healy Ubelaker, *Director Liability under the Business Judgement Rule: Fact or Fiction*, 35 SMU L. REV. 775, 788 (1981) (explaining that the ABA's model business code provision contains "a right to rely on information, opinions, reports, and statements from board committees, officers and other corporate employees, attorneys, accountants, and other experts whom the director reasonably believes to be reliable.").

[67] *See* Smith v. Van Gorkom, 488 A.2d 858, 874 (Del. 1985) (finding the directors were grossly negligent in approving the 'sale' of the Company upon two hours' consideration, without prior notice, and without the exigency of a crisis or emergency.").

artificial intelligence devices require less time to analyze vast amounts of data compared to their human counterparts and find reasonable care is exercised, or they could find that the minimal time required for the devices to make the decisions does not evidence reasonable prudence. In either case, a court's finding will set precedent regarding the amount of time an artificial intelligence director must spend making a decision to be protected by the business judgment rule for every future application. Assuming reasonable prudence is found, the business judgment rule will apply and the court will dismiss the case on summary judgment.

Changing the facts slightly also leads to straightforward results. In another scenario, imagine that AID received the information about the potential merger from accountants, lawyers, investment bankers, and an unreliable reporter for a local tabloid who has access to AID and owns stock in ABC Inc. As long as AID is able to articulate where its information comes from and is unable to filter out the unscrupulous reporter's information, then courts will clearly apply the entire fairness review standard—just as courts would if a human made the same error of judgment.[68] It may in fact be easier to make this case against AID than a human director who can ostensibly lie about the information relied upon, which is interesting given that shareholders are less likely to trust artificial intelligence devices than their human counterparts.[69]

Just like human directors, artificial intelligence devices utilizing emergent technology will make somewhat unpredictable decisions based on the information provided. As with any failed decision made by humans, judgments made by artificial intelligence devices that have negative consequences will likely come under the scrutiny of courts via suits from dissatisfied shareholders. Thus, courts will likely apply the business judgment rule in much the same way as they currently do. That is, as long as the information the artificially intelligent device relies upon comes from reliable sources, there is no finding of bad faith. Then, if the decision is made with the care of a reasonably prudent person under the circumstances, the business judgment rule will apply and shield the artificial intelligent device from liability for the resulting damages. If one of those elements is not met, then the court will apply an entire fairness standard of review.

B. Policy Considerations

The fact that the black letter law of the business judgment rule could apply to an artificial intelligence device is not the end of the story. Indeed, the

[68] *See* Sharfman, *supra* note 2, at 39–42.
[69] *See supra* Section III.C.

business judgment rule should not apply to artificial intelligence devices because it is not necessary to accomplish the policy objectives underlying the rule. The primary policy goals behind the business judgment rule revolve around inducing individuals to serve as directors and encouraging the necessary amount of risk-taking.[70]

Artificially intelligent devices, however, do not need incentives to serve on boards. Not only are they unpaid for their work, the company will likely purchase or create the device directly for the purpose of serving on the board. The device does not have an active decision to make—it is either bought to serve on the board or it is not. Thus, an artificially intelligent device does not need an assurance that it will not be held liable for poor judgments to agree to serve on the board—it will serve on the board at the will of the purchaser. Additionally, the artificially intelligent device, having no assets of its own, will have no reason to fear liability. In the event that an artificially intelligent device makes a poor decision, the company can have someone who understands the algorithm (perhaps even its creator) try to determine why the machine made that decision and adjust the algorithm to prevent such decisions from being made in the future. The artificial intelligence device, incapable of having emotions, cannot fear the repercussions of poor judgments, thus the business judgment rule is unnecessary to encourage the appropriate amount of risk-taking necessary to maximize shareholder wealth.

There is, however, one policy reason that still applies to artificial intelligence devices under these circumstances—judicial efficiency. Regardless of who or what is serving as a member of the board, judges will still not want to be in the position to second-guess business decisions.[71] Additionally, the number of suits brought against artificial intelligence devices could clog up court dockets just as easily as traditional suits against human directors. At the same time, if artificial intelligence directors work as they are meant to, the number of decisions that will need to be second-guessed should be far lower than human errors of judgment. Additionally, because the process of determining what information a machine relied upon is clearer-cut than it is with human directors, judges will have an easier time discerning what information is relevant. Ultimately, suits against artificial intelligence directors will likely be far less common than those against human directors for one simple reason: the artificial intelligence director is judgment-proof. If the director has no assets, then there is nothing to be gained from holding them personally liable for their poor judgments. Unless there is some sort of guarantor for the device, such as the developer, then cases will be seldom brought. Even in the event that its developer is liable, the correct approach

[70] *See supra* Section II.B.
[71] *See id.*

may not be a business decision review at all but something more akin to product defect in which case the business judgment rule is irrelevant.[72]

V. CONCLUSION

The business judgment rule plays a crucial role in the smooth operation of modern businesses. Under the rule, courts will not second guess decisions made by directors if they are made in good faith, with the honest belief that the decisions are for the good of the company and are made with the care of a reasonably prudent person under the circumstances. As technology advances and artificial intelligence devices with unpredictable emergent behavior begin to serve as directors, this rule will warrant a review of its own. While the application of the business judgment rule to artificial intelligence directors is straightforward, the policy underlying the need for the rule is obsolete with regards to artificial intelligence devices. Artificial intelligence devices do not suffer from the same fears as their human director counterparts. They have no assets nor the ability to turn down a position on the board and thus do not need the same assurance that they will not be held personally liable for the decisions that they make. While the social valance surrounding artificial intelligence is currently one of distrust, the fact that they are judgment-proof will still ensure that courts are not bogged down in suits against them. Just as human directors may become obsolete due to the rise of machines in the future, so too will the business judgment rule become obsolete for artificial intelligence devices serving on boards.

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[72] However, it is still unclear how product liability will function in regard to artificial intelligence devices. *See* Greg Swanson, *Non-Autonomous Artificial Intelligence Programs and Products Liability: How New AI Products Challenge Existing Liability Models and Pose New Financial Burdens*, 42 SEATTLE U. L. REV. 1201 (2019).