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TOPIC
"APPOINTING ARTIFICIAL INTELLIGENCE AS A DIRECTOR OF A COMPANY: UTOPIA OR REALITY OF THE FUTURE?"

Master Thesis

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TABLE OF CONTENTS

LIST OF ABBREVIATIONS

AI – artificial intelligence

AI director – artificial intelligence appointed as a director of a company

BJR – business judgement rule

EMCA – European Model Company Act

EU – European Union

EP – European Parliament

OECD – Organisation for Economic Co-operation and Development

UK – United Kingdom

USA – United States of America

INTRODUCTION

The relevance of the Master Thesis. The science and technology are improving rapidly nowadays. Each moment people formulate questions aims and challenges resolution of which may help with a simplification of our lives, increase of effectiveness of particular processes or just constitute proof of unlimited abilities of the human brain.

The more complex inventions become, the bigger influence they cause to the social relations, transform them significantly so that legal regulation has to address new challenges to which it usually is not ready. Therefore, lawyers have to look forward, predict upcoming changes and try to solve the problem prior to its occurrence.

The future is already here. Businesses are experiencing the benefits of the utilization of artificial intelligence (hereinafter – 'AI'). They create different schemes of getting profit from it, starting from using AI as an object (like an ordinary computer for data analysis) or go further and treat it as an agent, independent consultant, employee or even official of the company. The first AI "director" (Vital) has been already appointed[1] by the Hong Kong company Deep Knowledge Ventures whose task is to consume data about life science companies and then vote on which companies are good investments – this helps to eliminate some kinds of bias and avoid "overhyped" investments.[2]

The European Commission in its White Paper on Artificial Intelligence acknowledges that "there is a need to examine whether current legislation is able to address the risks of AI and can be effectively enforced, whether adaptations of the legislation are needed, or whether new legislation is needed. […] Given how fast AI is evolving, the regulatory framework must leave room to cater for further developments. Any changes should be limited to clearly identified problems for which feasible solutions exist."[3]

Considering highly discretional nature of the private law sphere with the freedom of entrepreneurship and freedom of contract, lawyers have to create transparent and plain legal environment for any experiments businesses would like to introduce in order to both facilitate general economic growth and welfare and to protect interests of third parties and the public in general.

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[1] Actually, Vital is not a director *ex officio.* Directors of the company treat it as a "member of the board with observer status". Directors agreed that they would refrain from positive investment decisions without corroboration by Vital. - Nicky Burridge, "Artificial intelligence gets a seat in the boardroom", *Nikkey Asian Review,* May 10, 2017, https://asia.nikkei.com/Business/Artificial-intelligence-gets-a-seat-in-the-boardroom.

[2] Will Pugh, "Why Not Appoint an Algorithm to Your Corporate Board?", *Slate,* March 24, 2019, https://slate.com/technology/2019/03/artificial-intelligence-corporate-board-algorithm.html.

[3] "White Paper on Artificial Intelligence: a European approach to excellence and trust (Brussels, 19.2.2020 COM (2020) 65 final)", EC.EUROPA.eu, Accessed 29 March 2020, 10, https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020_en.pdf.

Therefore, it is highly relevant to develop legal ways of introducing AI into corporate governance so that the businesses will have an opportunity to benefit from the unbiased, never tired director able to operate the huge amount of data.

Problem of research. Analysis of the legal doctrine and legislative proposals manifests the gap in the regulation of the procedure and legal consequences of appointment of the AI as a director of a company. This gap hinders business from benefiting from the unbiased highly effective director without overburdening other directors or shareholders with an extra control over the internal operations of the AI.

The problem of this research can be formulated as follows: **how the procedure and consequences of the appointing AI as a director of a company should be legally regulated; and what auxiliary changes should be conducted in the legal doctrine and legislation?**

Scientific novelty and overview of the research on the topic. The chosen research problem, namely appointing AI as a director of a company, is poorly investigated. The major part of scholars pay attention to general legal regulation of AI, its legal status, nature, etc., also make a comparative analysis, for instance, E. Bayamlioğlu in his article "Intelligent Agents and Their Legal Status"[4], A. Atabekov and O. Yastrebov in their article "Legal Status of Artificial Intelligence Across Countries: Legislation on the Move"[5]. A few researchers observe benefits that AI can bring to businesses and other spheres of social relations, such as justice, namely, the imposition of sentence as it is analysed in the article "Beyond *State v Loomis*: artificial intelligence, government algorithmization and accountability" written by H.-W. Liu, C.-F. Lin, and Y.-J. Chen[6]. A few scholars consider appointing AI as a director of a company, but they are not willing to accept this possibility and introduce it into practice, for example F. Möslein in "Robots in the Boardroom: Artificial Intelligence and Corporate Law"[7] and A. Kamalnath in "The Perennial Quest for Board Independence: Artificial Intelligence to the Rescue"[8]. Talking about the legal liability of AI, like B. W. Jackson in his article "Artificial Intelligence and the Fog of Innovation: A Deep-Dive on Governance and the Liability of Autonomous Systems"[9], scholars also discuss its criminal aspects, for instance, in "Criminal Liability of Autonomous

[4] Emre Bayamlioğlu, "Intelligent Agents and Their Legal Status", *Ankarabar Review* 1 (2008): 46-54.
[5] Atabek Atabekov and Oleh Yastrebov, "Legal Status of Artificial Intelligence Across Countries: Legislation on the Move", *European Research Studies Journal* XXI, 4 (2018): 773-782.
[6] Han-Wei Liu, Ching-Fu Lin, Yu-Jie Chen, "Beyond *State v Loomis*: artificial intelligence, government algorithmization and accountability", *International Journal of Law and Information Technology* 27, 2 (2019): 122-141, https://doi.org/10.1093/ijlit/eaz001.
[7] Florian Möslein, "Robots in the Boardroom: Artificial Intelligence and Corporate Law" (September 15, 2017), in *Research Handbook on the Law of Artificial Intelligence*, Woodrow Barfield, Ugo Pagallo (eds), and Edward Elgar, (2017/18, Forthcoming), 1-19, https://ssrn.com/abstract=3037403.
[8] Akshaya Kamalnath, "The Perennial Quest for Board Independence: Artificial Intelligence to the Rescue", *Albany Law Review* 83, 1 (2019-2020): 43-60.
[9] Brandon W. Jackson, "Artificial Intelligence and the Fog of Innovation: A Deep-Dive on Governance and the Liability of Autonomous Systems", *Santa Clara High Technology Law Journal* 35, 4 (2019): 35-63.

Agents: From the Unthinkable to the Plausible" by P. M. Freitas, F. Andrade and P. Novais[10]. The other side of the research, namely the duties and liability of directors, is widely covered in the corporate law doctrine by A. Gurrea-Martínez[11], R. Kraakman, J. Armour, H. Hansmann[12], etc. and in comparative aspect as well by A. Cahn, D. C. Donald[13], C. Gerner-Beuerle, P. Paech, E. P. Schuster[14], K. J. Hopt[15], etc.

However, there is no systematic comprehensive research that offers the model of appointment of the AI as a director of a company. Nobody has ever tried to hypothetically simulate the situation with an AI director and to analyse its compliance with the existing legal systems.

Significance of research. This research will be useful for legislators, legal scholars and practitioners in order to see what options businesses have regarding engagement of AI to their corporate governance. Based on ideas, set up in this Master Thesis legal scholars may improve and broaden legal doctrine on this topic, create new approaches, which can be implemented in laws by legislators and in every day practice by legal practitioners.

The aim of research. This research is aimed at creation of the model implementing AI to the corporate governance which may give an impulse to the legal doctrine and practice to develop approaches that can facilitate diversification of corporate governance and increase its effectiveness which results in the improvement of profitability of a business and general economic growth.

The objectives of research. For the achievement of the aim formulated above the following objectives have to be pursued:

1. To decide whether AI should be considered as an object or a subject of the law; and to analyse existing doctrine regarding types of persons that could be suitable for AI when it is treated as a subject of the law (natural, legal or electronic person).

[10] Pedro Miguel Freitas, Francisco Andrade and Paulo Novais, "Criminal Liability of Autonomous Agents: From the Unthinkable to the Plausible", in *AI Approaches to the Complexity of Legal Systems,* Pompeu Casanovas, Ugo Pagallo, Monica Palmirani, Giovanni Sartor (eds) (New York: Springer, 2014), 144-156.
[11] Aurelio Gurrea-Martínez, "Re-Examining the Law and Economics of the Business Judgment Rule: Notes for its Implementation in Non-US jurisdictions," *Instituto Iberoamericano de Derecho y Finanzas (IIDF) Working Paper Series* 2 (2016): 1-27.
[12] Reinier Kraakman, John Armour, and Henry Hansmann, "Agency Problems and Legal Strategies", in *The anatomy of corporate law: a comparative and functional approach, Third edition*, Reinier Kraakman et al, (Oxford: Oxford University Press, 2017), 29-47.
[13] Andreas Cahn and David C. Donald, *Comparative Company Law* (Cambridge: Cambridge University Press, 2010).
[14] Carsten Gerner-Beuerle, Philipp Paech and Edmund Philipp Schuster, *Study on Directors' Duties and Liability* (London: London School of Economics, 2013).
[15] Klaus J. Hopt, "Comparative Corporate Governance: The State of the Art and International Regulation", *American Journal of Comparative Law* 59 (2011): 1-83. *ECGI - Law Working Paper* 170 (2011). https://ssrn.com/abstract=1713750.

2. To figure out the advantages and disadvantages that the engagement of the AI into corporate governance might bring to the company and the changes it might cause to the legal strategies for reducing agency costs.
3. To analyse director`s duties provided for in the law on the matter if it is possible to lay them on AI or whether there is a necessity for the formulation of new duties to be endowed on the AI director.
4. To analyse provisions regarding director`s liability, find out how AI director can be liable (if it can), look at means of reducing of director`s liability and analyse whether they can be used for resolution of the question concerning AI`s liability.
5. To determine what changes should be made (if any) to current legislation and legal practice and doctrine in order to be ready when AI will be appointed as a director of a company.

Research methodology. Methods of *data collection* and *data analysis* are used to browse through a large amount of different scientific researches and to find the relevant ones. *Comparative legal research* and a method of *interpretation of norms* are used to find relevant provisions in different legal sources aimed at regulation of the legal status of autonomous robots and algorithms, directors' duties and liability, possibility to appoint another legal personality apart from a natural person to a management board of a company, etc. Methods of *hypothesis formation* and *legal modelling* are used to create situations in which AI interacts with third parties and to develop legal strategies for how third parties can protect their interests in case AI's noncompliance with its obligations.

***Structure of research*.** The first Chapter is devoted to general law questions. In the first subchapter, the term 'artificial intelligence' is defined, its basic characteristics that make its status so unique are analysed. In the second subchapter, a number of approaches that attribute AI to an object or a subject of law are discussed, the type of legal personality that is the most suitable for AI is decided. And finally, in the third subchapter, the general overview of the approaches on who can be held liable for the malfunction of AI and for the damages caused by it is given.

The second Chapter deals with the issue of the AI's place in corporate governance. The first subchapter observes benefits and obstructions that AI may bring to the business while acting as a director of a company or simply as an 'advisor' of the board. Also, questions regarding the roles in the boardroom allocated to artificial intelligence are discussed. In the second subchapter, the role and significance of legal strategies for reducing agency costs are reviewed in the context of the AI director.

The third Chapter deals precisely with the issues connecting with the status of an AI director. Basically, the general knowledge regarding features, legal status and liability of the artificial intelligence, discussed in the first Chapter of this Master Thesis, is incorporated with the corporate law doctrine regarding appointment and dismissal of directors, their duties and liability, in a manner that the legal model of regulation of the AI director is developed. The first subchapter briefly investigates the procedure of appointment and dismissal of an AI from the director's office; takes a look at the requirements that jurisdictions may impose on directors in certain sectors of the economy. The second subchapter analyses the ability of AI to comply with existing directors' duties and the necessity of the introduction of new ones due to the nature and features of the AI director. In the third subchapter, issues of AI director's liability are discussed, in particular, the applicability of existing approaches and the need for the development of new ones. The fourth subchapter suggests a possible scheme of mandatory insurance for damages caused by AI director.

***Defended statements*:**

1. AI may be treated as both an object and a subject of law depending on the level of its autonomy. The new type of legal personality should be developed, namely, the electronic person. The legal capacity of the electronic person is limited by the level of its autonomy, implies that AI can create, change and terminate rights and obligations for its principal, however, it cannot be held liable by itself.

2. While appointing AI as a director, all existing duties, both specific and fiduciary, have to be programmed into its software (internal code). While setting of the elements of the offense, all internal elements (*mens rea*, intent, purpose, motive, etc.) are not taken into account.

3. AI director cannot be held liable both towards the third parties and the company. All relevant damages of the third parties are to be compensated for by the company, while the ones of the company is to be compensated for by the insurance company within the framework of mandatory insurance.

4. The mandatory insurance implies the company's right to obtain compensation for all losses and damages suffered because of the AI director, on the ground of the resolution of the independent investigative organ which considers means of reducing the director's liability.

CHAPTER 1. LEGAL STATUS OF ARTIFICIAL INTELLIGENCE

In this Chapter, we decide what actually artificial intelligence is, analyse its basic features which make its status so unique. Then we discuss a number of approaches that attribute AI to an object or a subject of law, decide which type of legal personality suits AI the best. And finally, we take a look at some approaches on who can be held liable for the malfunction of AI and for the damages caused by it.

1.1. Basic Features of AI

Prior to the dive into the analysis of the legal status, the liability of AI, a general understanding of what is artificial intelligence and its core characteristics should be given.

Initially, only the doctrine has contained a list of features of the AI. In particular, Pedro Miguel Freitas, Francisco Andrade and Paulo Novais define a "software agent" as "a program capable of acting in a flexible way, on behalf of its owner, user or client, in order to reach defined goals. So, it must present a set of properties or characteristics such as autonomy (capacity of taking decisions on which actions to undertake without having to be constantly inquiring the user), reactivity (capacity of properly responding to prevailing circumstances in dynamic and unpredictable environments), proactivity (capacity of acting in anticipation of future goals), communication, cooperation and sociability and adaptive behaviour. This said, it must be stated that "agents" are not limited to data interchange […] but are capable of communicating in complex conversational environments and of assuming different roles, as well as adapting to diverse situations."[16]

Emre Bayamlioğlu pays attention to the rationality of the software that is "programmed on the basis of a particular rational purpose and a logical system, which accounts for the supposition that the system acts rationally in compliance with its own purposes. The cognitive structure of the machine is a mechanism that processes preferences and priorities, resolved in the course of programming, in coordination with the given data."[17]

However, time moves on and some jurisdictions start implementing characteristics of the AI into the texts of their legislation.

In the European Union European Parliament (hereinafter – EP) in its resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics suggests taking into consideration the following characteristics of a smart robot while developing

[16] Pedro Miguel Freitas, "Criminal Liability of Autonomous Agents: From the Unthinkable to the Plausible", 145.
[17] Emre Bayamlioğlu, "Intelligent Agents and Their Legal Status", 49.

common EU definitions of cyber physical systems, autonomous systems, smart autonomous robots and their subcategories: "the acquisition of autonomy through sensors and/or by exchanging data with its environment (inter-connectivity) and the trading and analysing of those data; self-learning from experience and by interaction (optional criterion); at least a minor physical support; the adaptation of its behaviour and actions to the environment; absence of life in the biological sense"[18]. Talking about autonomy, that "can be defined as the ability to take decisions and implement them in the outside world, independently of external control or influence"[19], European Parliament cautions that "this autonomy is of a purely technological nature and its degree depends on how sophisticated a robot's interaction with its environment has been designed to be"[20].

The United States of America also looks towards the future, so that on the 21st of May 2019, Artificial Intelligence Initiative Act was introduced in the Senate of the USA. In this bill "[t]he term "artificial intelligence" includes the following: (a) any artificial system that performs tasks under varying and unpredictable circumstances without significant human oversight, or that can learn from experience and improve performance when exposed to data sets; (b) an artificial system developed in computer software, physical hardware, or other context that solves tasks requiring human-like perception, cognition, planning, learning, communication, or physical action; (c) an artificial system designed to think or act like a human, including cognitive architectures and neural networks; (d) a set of techniques, including machine learning, that is designed to approximate a cognitive task; (e) an artificial system designed to act rationally, including an intelligent software agent or embodied robot that achieves goals using perception, planning, reasoning, learning, communicating, decision making, and acting"[21].

To sum up, in this Master Thesis the following basic features are attributed to the terms 'artificial intelligence' and the like (such as 'autonomous robots', 'autonomous systems', etc.): 1) autonomy; 2) self-learning; 3) decision-making; 4) rationality. Autonomy means that AI acts without a need to be permanently supervised and controlled by a human. Self-learning means that AI uses "statistical, data-based methods to progressively improve [its] performance on a given task, without humans reprogramming the computer system to achieve enhanced performance. In practice, the learning is achieved through extensive "practice" with multiple

[18] "European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL))", EUR-lex, Accessed 7 March 2020, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52017IP0051.
[19] European Parliament resolution on Civil Law Rules on Robotics (2015/2103(INL)).
[20] Ibid.
[21] "Artificial Intelligence Initiative Act", CONGRESS.GOV, Accessed 07 March 2020, https://www.congress.gov/bill/116th-congress/senate-bill/1558/text#toc-HE298A4978C574DE189D886616C05757D.

feedback rounds through which the machine is told whether it has passed or failed a task"[22]. Decision-making implies that AI does not simply collect and analyse data, it is also able to choose the most beneficial option amongst others. Finally, rationality means that AI acts in accordance with the programmed purposes and all its previous features are subordinated to this one. Therefore, everything that AI is doing beyond human control, all experience it gains, all options it chooses are aimed at specific purposes programmed by the human.

1.2. AI as an Object or a Subject of the Law

One of the core questions needed to be discussed in this paper is the legal status of artificial intelligence. Namely, how to treat AI: as an object or a subject of law.

Oleksandr Radutnyi, while investigating the place of the artificial intelligence in the social relations protected by criminal law, pointed out that "artificial intelligence (algorithm, smart artificial technical system, etc.) traditionally should be considered as an object of social relations, namely as a certain phenomenon in connection with which such social relations exist. This approach works effectively only as far as AI does not manifest itself independently and without any human interference as a full subject (participant) of social relations – makes legally and socially significant decisions in situations where there are no legal or factual grounds for liability of a certain natural person (developer, manufacturer, user, owner, etc.)."[23] Moreover, he gives an example of superintelligence that has an ability of self-improvement, self-replication, and task resolution with the engagement of numerous copies of itself. In this situation, the current version of the program differs significantly from the initial one, made by the manufacturer. Thus, it is hard morally and legally to distinguish the limits of liability of the latter.[24]

P. M. Freitas, F. Andrade, and P. Novais also distinguish, and not exclude either, "software objects" from "software agents" (subjects) based mainly on the degree of autonomy.[25] In its turn, European Parliament acknowledges that "the development of certain autonomous and cognitive features – e.g. the ability to learn from experience and take quasi-independent decisions – has made cyber physical systems, autonomous systems, smart autonomous robots

[22] Enriques, Luca and Dirk Andreas Zetzsche, *Corporate Technologies and the Tech Nirvana Fallacy*, 13.
[23] Oleksandr Radutnyi, "Location of Artificial Intelligence in the Structure of Social Relations Protected by Criminal Law", *Fundamental Issues of Criminal Liability* (2018): 98-99. http://dspace.nlu.edu.ua/handle/123456789/15396.
[24] Oleksandr Radutnyi, "Artificial Intelligence as a Subject of Crime", *Information and Law* 4 (2017): 111, http://dspace.nlu.edu.ua/handle/123456789/14480.
[25] Pedro Miguel Freitas, "Criminal Liability of Autonomous Agents: From the Unthinkable to the Plausible", 150.

etc. more and more similar to agents that interact with their environment and are able to alter it significantly"[26].

While analysing intelligent agents and their legal status in civil relations, Emre Bayamlioğlu points out why it is necessary to consider the intelligent agent as a subject of the law. He expresses concerns that "[i]f intelligent agents are merely accepted as property, the contracts conducted by them would bear more risks than the ones created by an agent. First, the users or the operators of the intelligent agents will have to take precautions to ensure the complete and rightful performance of the system at all times. Accordingly, since the machine is not a person itself, the malfunctions in its operations shall not be considered to be one of the states of mistake regulated by the Law of Obligations."[27] Therefore, author proposes "to consider the intelligent agent to be an "agent" in terms of creating a contract by assigning a personality-like status to it [mainly, due to its autonomy]. In this way, some of the mental circumstances which the law regulates for the "person", and which are considered to be a mistake, can be tailored to the operation of the intelligent agents."[28]

Arguing the incongruity of establishing robots as liable legal persons, Nathalie Nevejans points out that "[t]raditionally, when assigning an entity legal personality, we seek to assimilate it to humankind […] as a conscious being, capable of suffering, etc."[29] Thus, she believes that AI cannot become an autonomous legal actor as it is "a mere machine, a carcass devoid of consciousness, feelings, thoughts or its own will"[30]. However, from the positions of the previous scholars we see, that the need to treat AI as a subject of law arises from the aim to simplify human actor's life, to allow AI create, modify and terminate rights and obligations for the human principal without additional obligations of control over the self-learning, decisive, rational and autonomous actor.

Taking into consideration the abovementioned, the majority of scholars and researches agree that AI is not only an object of the law, but it also possesses certain features of a subject. Moreover, they acknowledge that treating AI as an autonomous agent will benefit social relations and make them more plain and clear, and less burdensome for the human actors who are obliged to thoroughly control AIs in case of neglecting autonomy of the latter. The dichotomy, where AI can be treated both as an object and as a subject of law depending on the

[26] European Parliament resolution on Civil Law Rules on Robotics (2015/2103(INL)).
[27] Emre Bayamlioğlu, "Intelligent Agents and Their Legal Status", 49.
[28] Ibid.
[29] Nathalie Nevejans, University of Artois, Center for Research in Ethics and Procedural Law, *European Civil Law Rules in Robotics* (European Union, 2016), https://www.europarl.europa.eu/RegData/etudes/STUD/2016/571379/IPOL_STU(2016)571379_EN.pdf
[30] Ibid.

level of its autonomy while acting and on the needs of social relations, is a hallmark of the legal status of the AI.

While acting as a subject, AI has to be endowed with certain rights and obligations, namely, it should suit status of the natural or legal person or of the new type of person developed specially for AI.

For instance, Emre Bayamlioğlu sees some similarities between potential legal status of AI and legal status of the legal persons. He stated that "[i]ncorporating software should be regarded as a consequence of the need to organize commercial activities on a higher plane, as in the example of the fiction of the corporation. […] The most characteristic result of attributing a business organization, called a corporation, an independent legal personality from its shareholders is that, by this way the software could be both the plaintiff and the defendant. Corporations having an independent asset is another consequence, which is significant for the compensation of liabilities which may arise due to the abovementioned actions. Among these assets, the reference code smart software, databases they have or developed, revenue received in exchange for its services and profit from dealing can be counted. Just like in the operation of a company, it can also be possible that intelligent agents can also make back up and protect themselves within the framework of certain principles."[31]

Conversely, European Parliament raised "the question of the nature [of robots] in the light of the existing legal categories or whether a new category should be created, with its own specific features and implications"[32]. EP suggests creation of "a specific legal status for robots in the long run, so that at least the most sophisticated autonomous robots could be established as having the status of electronic persons responsible for making good any damage they may cause, and possibly applying electronic personality to cases where robots make autonomous decisions or otherwise interact with third parties independently"[33].

Shawn Bayern, Thomas Burri, Thomas D. Grant, Daniel M. Häusermann, Florian Möslein, and Richard Williams considering the time that will take development and introduction to the practice of a new electronic person, suggest "several possibilities for the creation of company structures that might provide functional and adaptive legal "housing" for […] autonomous systems"[34] in order to endow an AI with the legal personality. The possibility of the creation of such a 'shell of a legal person' depends on the jurisdiction. For example, in the USA

[31] Emre Bayamlioğlu, "Intelligent Agents and Their Legal Status", 53.
[32] European Parliament resolution on Civil Law Rules on Robotics (2015/2103(INL)).
[33] Ibid.
[34] Shawn Bayern, Thomas Burri, Thomas D. Grant, Daniel M. Häusermann, Florian Möslein, and Richard Williams, "Company Law and Autonomous Systems: A Blueprint for Lawyers, Entrepreneurs, and Regulators", *Hastings Science and Technology Law Journal* 9, 2 (2017): 136. https://repository.uchastings.edu/hastings_science_technology_law_journal/vol9/iss2/1.

the authors consider the Limited Liability Company (LLC) law to be the most suitable to achieve legal independence for an autonomous entity due to its extreme flexibility. The following steps are suggested to be taken in order to create the company in question:

> (1) an individual member creates a member-managed LLC, filing the appropriate paperwork with the state; (2) the individual (along, possibly, with the LLC, which is controlled by the sole member) enters into an operating agreement governing the conduct of the LLC; (3) the operating agreement specifies that the LLC will take actions as determined by an autonomous system, specifying terms or conditions as appropriate to achieve the autonomous system's legal goals; (4) the individual transfers ownership of any relevant physical apparatus of the autonomous system to the LLC; (5) the sole member withdraws from the LLC, leaving the LLC without any members. The result is potentially a perpetual LLC – a new legal person – that requires no ongoing intervention from any pre-existing legal person in order to maintain its status.[35]

In the United Kingdom (hereinafter – UK) law the Limited liability Partnerships (LLPs), that have separate legal personality, "afford scope for autonomous systems to interact with the legal system without direct human involvement"[36]. Notwithstanding the existing limitation on the duration of existence of a memberless LLP, if "both its members withdraw simultaneously, it continues to exist, though it is uncertain for how long. [… Therefore, LLP is still] theoretically capable of hosting an autonomous system."[37]

Shawn Bayern, Thomas Burri, Thomas D. Grant, Daniel M. Häusermann, Florian Möslein, and Richard Williams conclude that in today's globalised world a company or partnership registered in one jurisdiction may conduct business in another. Thus, for example, a US. LLC might operate in UK. Therefore, they have already created a theoretical possibility for AI to be treated as a legal person (acted under the shell of a legal person) while jurisdictions are still deciding on whether to endow AI with a status of a legal entity, electronic person, or to leave it as an object of the law.

The approach that treats AI as a legal person (corporation) or as a hidden under the cover of a separate legal entity could have a positive effect within the transitional period, while the new person is being developed and national laws are being amended in order to get prepared to the new era of engagement of AI into people's everyday lives in general and corporate

[35] Shawn Bayern, "The Implication of Business-Entity Law for the Regulation of Autonomous Systems", *European Journal of Risk Regulation* 7, 2 (2016): 297, 303, quoted in Shawn Bayern, "Company Law and Autonomous Systems: A Blueprint for Lawyers, Entrepreneurs, and Regulators": 138.
[36] Shawn Bayern, "Company Law and Autonomous Systems: A Blueprint for Lawyers, Entrepreneurs, and Regulators", 149.
[37] Ibid, 160.

governance in particular. Some jurisdictions allow a legal person to be a director of a company, for instance, the UK. The UK Companies Act 2006 provides for that "[a] company must have at least one director who is a natural person"[38]. The amendments made by the Small Business, Enterprise and Employment Act 2015 prohibiting corporate directors are not in force[39], therefore, currently, it is permitted for legal entities to hold office in a company as additional directors[40]. The fact that some jurisdictions allow a legal person to be a director of a company in conjunction with consideration of AI as a legal person creates a possibility to appoint AI as a director of a company prior to the thorough review of all legal systems and creation of new legal categories.

However, notwithstanding certain similarities in the legal status of a natural person and AI, and legal person and AI, we believe that neither of these types of person is fully suitable for AI because of the following reasons. The moment of emergence of legal capacity is different: for a natural person – from the birth, the achievement of a particular age, gaining a certain status, etc.; for a legal person – from the moment of incorporation/creation (state registration, etc.). AI obtains its legal capability only at the moment when it starts acting autonomously after it has been programmed for a particular purpose (two basic features of AI – autonomy and rationality); it is also possible to vest legal capacity to the AI only after its 'appointment' for a particular position after a certain period of 'training' and gaining its own scope of knowledge and experience (namely, as soon as two other basic features are obtained: self-learning and decision-making), thus, its legal capacity will have functional nature. Both legal and natural person have their own interests (interests of legal person depend on the jurisdiction, that may treat interests of the legal entity as interests of its participants (i.e. shareholders), directors, creditors, employees or other stakeholders), while AI does not have its personal interests – only programmed objectives. Therefore, the new specific type of legal personality should be developed – electronic person (for example).

However, there are a number of aspects that do not allow AI to get the full legal personality (at least at a current level of the technical development of AIs). First, there are no rights that may be embowed to AI. We agree with Nathalie Nevejans who argues the nonsense of assigning the right to life to robots by giving an example of a robot deployed in a hostile environment that could refuse to cross a dangerous zone where it would risk damage or destruction. Moreover, she supposes that it would lead to the destruction of the emerging robot

[38] "Companies Act 2006", LEGISLATION.GOV.UK, Accessed 03 April 2020, http://www.legislation.gov.uk/ukpga/2006/46/section/155.
[39] "Small Business, Enterprise and Employment Act 2015", LEGISLATION.GOV.UK, Accessed 03 April 2020, http://www.legislation.gov.uk/ukpga/2015/26/part/7/crossheading/corporate-directors.
[40] Shawn Bayern, "Company Law and Autonomous Systems: A Blueprint for Lawyers, Entrepreneurs, and Regulators", 149.

market.[41] Also, other rights applied to people such as the right to be paid, to be the owner of the property or hold any property rights, etc. seem to be unnecessary and useless for AIs as they do not have their personal interests and needs, plus, their autonomous decision-making process and activities are limited to the programmed objectives. In other words, AI, which is a consultant in a sports store and programmed for giving consumers information about products, helping them to find the best item according to their needs and for selling as much as it can, does not gather information, learn and consider the possibility to be paid for its job, to have its own house where it will come back from the work and spend weekends. Therefore, the thesis of E. Bayamlioğlu that "[a]ssigning intelligent agents a personal status would allow them to have private assets, eliminating some of the problems concerning the liability"[42] seems to be ill-founded and even unreal.

Second, the question regarding duties is also opened. For instance, Nathalie Nevejans believes that the idea of duties is closely linked with human morals[43] and thus cannot be applied to robots. We partly agree with the scholar, however, assume that in a case with AI, the duties obtain a slightly different meaning. They are utilised on the stage when AI is being programmed for the performance of special tasks. And these duties are specific for each kind of sphere in which the AI is engaged, starting, for instance, from 'not to harm' duty for AI doctors and ending with 'duty of disclosure' for AI directors.

Considering the abovementioned, we propose to treat AI as a *sui generis* person (electronic person) with limited legal personality, that imply the possibility of AI to act autonomously (after it has been programmed for a particular purpose, 'appointed' for a particular position and has completed a certain period of 'training') and to create, change and terminate the rights and obligations of those subjects of law on whose behalf (as an employee or agent) it is acting. The electronic person does not have any rights and duties in their 'traditional' meaning; instead, they are programmed into the AI's software and are used as reference points during the decision-making process.

1.3. AI Liability Issues

Talking about the development of a new legal person or introduction of AI into the existing one, the question regarding liability cannot be ignored. In the previous subchapters, we

[41] Nathalie Nevejans, *European Civil Law Rules in Robotics.*
[42] Emre Bayamlioğlu, "Intelligent Agents and Their Legal Status", 50.
[43] Nathalie Nevejans, *European Civil Law Rules in Robotics.*

decide that AI can be treated both as an object and as a subject of law. Therefore, the issue of liability should be analysed in both situations.

Pedro Miguel Freitas, Francisco Andrade and Paulo Novais in their article "Criminal Liability of Autonomous Agents: from the unthinkable to the plausible" explain three models of the criminal liability of artificial intelligence entities. The first one treats AI as an object and "considers that the AI does not possess any human attribute and so denies the possibility of having the AI as a perpetrator of an offense. The AI entity is an innocent agent that is a mere instrument used by the real perpetrator (the programmer or the user), who architects the offense and constitutes the real mastermind behind it."[44] The core requirement for application of this model is that the AI should be fully dependent on the human (the programmer or the user).

However, considering the rapid development of an AI technology, the European Parliament in its resolution with recommendations to the Commission on Civil Law Rules on Robotics acknowledges that "the more autonomous robots are, the less they can be considered to be simple tools in the hands of other actors, [therefore, it declares the possibility of future need for] new principles and rules to provide clarity on the legal liability of various actors concerning responsibility for the acts and omissions of robots where the cause cannot be traced back to a specific human actor"[45]. One of these new principles highlighted by the EP is "the principle of transparency, namely that it should always be possible to supply the rationale behind any decision taken with the aid of AI, […] advanced robots should be equipped with a 'black box' which records data on every transaction carried out by the machine, including the logic that contributed to its decisions."[46]

Considering the autonomy of robots and the possibility of 'tracing its logic', P. M. Freitas, F. Andrade, and P. Novais suggest the second model which also treats AI as an object but it implies negligence or indirect intent of the human. It "presupposes that the programmer or user of the AI entity, despite not programming or using it for the purpose of committing a certain crime, might be held accountable for the crime committed by the AI entity, if the offense is a natural and probable consequence of the AI's conduct […] (if there is evidence that they could and should foresee the potential commission of offenses)."[47] The third model considers AI as a subject of law and "aims at providing a theoretical framework for a functional equivalence between AI entities and humans for criminal liability purposes. […] [The scholars emphasise that] criminal liability implicates solely the fulfilment of two different requirements:

[44] Pedro Miguel Freitas, "Criminal Liability of Autonomous Agents: From the Unthinkable to the Plausible", 150.
[45] European Parliament resolution on Civil Law Rules on Robotics (2015/2103(INL)).
[46] Ibid.
[47] Pedro Miguel Freitas, "Criminal Liability of Autonomous Agents: From the Unthinkable to the Plausible", 150.

actus reus (external element) and *mens rea* (internal element) and if AI entities were able to fulfil them both then criminal accountability would follow."[48]

Atabek Atabekov and Oleh Yastrebov also agree with above-cited authors that "in case of administrative or criminal claims being filed [against AI as a subject of law], *corpus delicti* will be incomplete, due to the lack of intent (and its formal awareness)"[49].

In order to resolve the question regarding incompleteness of the *corpus delicti*, we need to resort to the fundamentals of law. Collective of scholars headed by O. Petryshyn distinguishes the following functions of the legal liability: punitive, protective and warning. The content of the punitive function is "revenge for the committed wrongdoing aimed at the restriction of rights and freedoms of the offender. […] [Protective function implies] restoration of violated rights and compensation of damages. […] [The warning function is aimed at] prevention of wrongdoings in the society and correction of the offender's behaviour."[50] Regarding the inhuman offender punitive and warning functions are not effective as AI does not have rights and freedoms to be restricted, and the correction of its behaviour can be done only through amendments into its internal code. These two functions of the legal liability are tightly connected with and based on the *mens rea* (internal element or subjective side) of the wrongdoing. *Mens rea* in the *corpus delicti* is aimed at estimating the level of 'social dangerousness' of the offender, his or her tendency towards recidivism, which influences the type and strictness of the legal liability. While holding AI legally liable for its wrongdoings, we are interested not in its 'correction' but only in the protection of interests of the third parties. Thus, the fault (intent, negligence), purposes and motives are unnecessary to be established – only the wrongdoing, real damages and losses, and the causal link between them. Therefore, the content of the term '*corpus delicti*' in the context of the electronic person shall be reviewed; in particular, the whole internal element (subjective side or *mens rea*) shall be ignored.

Talking about the civil liability of or in connection with AI, Emre Bayamlioğlu assumes two options as well. While considering AI as an object of the law, the scholar pays the core attention to the 'product liability', within which the responsibility for compensation of the damages is allocated to the user, the proprietor or the programmer. E. Bayamlioğlu states that "the state of absolute liability regarding "product liability" may still be applied as long as the software is considered to be a product rather than a service"[51]. Brandon W. Jackson, while exploring the application of liability claims involving AI systems to common law tort regimes, shares the mentioned opinion. He assumes that "[i]n instances of an identifiable defect in an AI

[48] Pedro Miguel Freitas, "Criminal Liability of Autonomous Agents: From the Unthinkable to the Plausible", 151.
[49] Atabek Atabekov, "Legal Status of Artificial Intelligence Across Countries: Legislation on the Move", 778.
[50] Oleksandr Petryshyn, *The Theory of State and Law*, 260.
[51] Emre Bayamlioğlu, "Intelligent Agents and Their Legal Status", 49-50.

system, product or manufacturer liability may vest responsibility for the harm to the developers or those involved in the production chain of an AI system. Furthermore, under the principal-agent concept, an AI system could be considered an agent of a manufacturer or other entity that, in some form or another, directs or is responsible for the harm caused. In this instance, when the law can point to some discernible level of human involvement, common law tort regimes may be suited to remedy a situation."[52]

Within the European Union legal framework Nathalie Nevejans points out that in case if the damage caused by an autonomous robot might arise from a machine defect, the Product Liability Directive could be applied subject to fulfilment of the conditions.[53] "If a robot causes any damage that can be traced back to its design or production – such as an error in a robot's algorithm causing injurious behaviour – the designer or producer should be held liable. However, in fact, the type of liability may vary depending on whether the victim bought the robot (contractual responsibility) or is a third party (extracontractual responsibility)."[54]

Therefore, as long as the causal link between the human's wrongful action (for instance, negligence which has caused the AI's malfunction) and the damages suffered (because of AI's malfunction) can be established, the 'product liability' applies.

Notwithstanding that above mentioned scholars consider "[p]roduct liability as […] the most acceptable form of assigning responsibility for harm arising from AI technologies [(it typically involves claims surrounding a manufacturing defect, design defect, information defect, or a failure to warn)]"[55], B. W. Jackson, considering AI as an autonomous subject, emphasises that the "product liability is premised on the idea that fault is discernible. AI technologies are complex, so it is likely that litigation may be muddled by a fact-finding process laced with finger pointing and compounded questions of blame."[56] E. Bayamlioğlu agrees and supplements that "the liability of the user of the intelligent agent becomes considerably bound by the technical classifications and interpretation, since the decentralized and diffused structure of the intelligent agent does not allow a real application of the theory of physical causality. […] The complex structure of intelligent agents that is formed of components combined to each other provides a wide flexibility of interpretation on causality, which cannot be seen in the physical world."[57]

Brandon W. Jackson then expresses concerns on "whether product liability is sufficient to correct harm when it cannot be reasonably inferred that a defect contributed to the injury.

[52] Brandon W. Jackson, "Artificial Intelligence and the Fog of Innovation: A Deep-Dive on Governance and the Liability of Autonomous Systems", 55-56.
[53] Nathalie Nevejans, *European Civil Law Rules in Robotics*.
[54] Ibid.
[55] Brandon W. Jackson, "Artificial Intelligence and the Fog of Innovation: A Deep-Dive on Governance and the Liability of Autonomous Systems", 58.
[56] Ibid.
[57] Emre Bayamlioğlu, "Intelligent Agents and Their Legal Status", 50.

Traditional concepts of product liability will likely fail to provide relief because a manufacturing defect cannot be identified, and the reasonableness of a jury to infer the cause of the harm will become increasingly attenuated. […] Absent direct evidence of fault, the law has traditionally looked towards the doctrine of *res ipsa loquitur*. The idea that the very nature of harm infers negligence, however, does not resolve the questions of liability for fully autonomous systems. Under *res ipsa loquitur*, a defendant can negate any inference of the necessary elements of duty of care, breach, and causation by an evidential showing that the defendant's conduct was not negligent. More importantly, this doctrine surrounds the inference that someone was a fault. If the harm in question is unexplainable, untraceable, and rare, then the elements of *res ipsa loquitur* likely cannot be satisfied."[58] Therefore, there is a situation with an act or omission that has caused damages or losses without any linkage with a human.

European Parliament also questions the possibility of the acts or omissions of robots that have caused harm to have been avoided; and it asks the Commission to determine what approach to the liability should be applied: risk management or strict liability. The first focuses "on the person who is able, under certain circumstances, to minimise risks and deal with negative impacts"[59]. Whereas the second approach "requires only proof that damage has occurred and the establishment of a causal link between the harmful functioning of the robot and the damage suffered by the injured party"[60]. Searching for another variant of correction of harm, B. W. Jackson supposes that "a strict liability regime may in some cases be sufficient to account for the fringe cases of harm caused by an AI system [… as] the benefits to society of an autonomous technology are so abundant and the risks so rare"[61]. Moreover, he expects that the strict liability regime would discourage "developers and manufacturers of autonomous AI systems […] from taking a product to market that is lacking in effective safeguards"[62]. However, Nathalie Nevejans concerns that under the strict liability regime "the double burden of proof falls to the victim of the damage"[63]. Moreover, the scholar points out that it is still not clear "who is the ultimate respondent, i.e. where responsibility truly lies"[64]. Therefore, although this approach may be useful for compensation to the victims, the question of fairness and proportionality towards developers or others involved in the production chain of an AI system still requires to be analysed and discussed among legal scholars.

[58] Brandon W. Jackson, "Artificial Intelligence and the Fog of Innovation: A Deep-Dive on Governance and the Liability of Autonomous Systems", 59.
[59] European Parliament resolution on Civil Law Rules on Robotics (2015/2103(INL)).
[60] Ibid.
[61] Brandon W. Jackson, "Artificial Intelligence and the Fog of Innovation: A Deep-Dive on Governance and the Liability of Autonomous Systems", 59-60.
[62] Ibid, 60.
[63] Nathalie Nevejans, *European Civil Law Rules in Robotics*.
[64] Ibid.

Meanwhile, European Parliament considers that the "liability should be proportional to the actual level of instructions given to the robot and of its degree of autonomy, so that the greater a robot's learning capability or autonomy, and the longer a robot's training, the greater the responsibility of its trainer should be, [however], skills resulting from 'training' given to a robot should be not confused with skills depending strictly on its self-learning abilities when seeking to identify the person to whom the robot's harmful behaviour is actually attributable. […] At least at the present stage the responsibility must lie with a human and not a robot"[65]. P. M. Freitas, F. Andrade, and P. Novais agree and are sure that if liability of AI entities were to exist, it should not replace the programmer or user's liability.[66] N. Nevejans also highlights that "[o]nly a physical person should be held liable, through various insurance mechanisms"[67]. Moreover, she suggests using the term 'vicarious liability for the robot(s)' instead of the expression 'robots' liability'; the latter "is not suitable, since it implies that the robot might itself incur civil liability for any damage caused"[68]. However, we do not agree that the human must bear responsibility for robots' actions or omissions that he or she cannot foresee and control. Instead, the human user is to bear the risk of losses or damages suffered due to the AI's autonomous decisions.

Within his research on the liability of autonomous systems, Brandon W. Jackson comes to the conclusion that the mixed approach to the liability of AI is required, which would consider peculiarities in the technical characteristics of each AI. Moreover, Brandon W. Jackson is certain that "shifts to greater autonomy in AI will continue to drive a need to, at the very least, reassess the capacity of traditional liability regimes to provide just compensation for those harmed"[69]. Emre Bayamlioğlu, in his turn, accepts the possibility to treat AI as a subject of law and suggests assigning "the intelligent agent a liability like a legal personality"[70] in such a case.

However, Nathalie Nevejans expresses concern that "setting up a specific liability regime for autonomous robots, while other robots remain subject to traditional regimes, could create problems. In the event of damage, the parties might prefer to apply one regime rather than the other. Judges will then be constrained to analyse, on a case-by-case basis, the characteristics of the robot in dispute, to check whether the robot corresponds to the definition of a smart robot in the present motion and to determine the applicable law."[71] We agree that it might cause some

[65] European Parliament resolution on Civil Law Rules on Robotics (2015/2103(INL)).
[66] Pedro Miguel Freitas, "Criminal Liability of Autonomous Agents: From the Unthinkable to the Plausible", 151.
[67] Nathalie Nevejans, *European Civil Law Rules in Robotics*.
[68] Ibid.
[69] Brandon W. Jackson, "Artificial Intelligence and the Fog of Innovation: A Deep-Dive on Governance and the Liability of Autonomous Systems", 57.
[70] Emre Bayamlioğlu, "Intelligent Agents and Their Legal Status", 49.
[71] Nathalie Nevejans, *European Civil Law Rules in Robotics*.

problems; however, they cannot legitimate injustice towards the human actors (developers, users, etc.) who were not able and did not have to control and operate the AI during its wrongdoings.

Besides, Nathalie Nevejans emphasises one of the operational objectives of assigning robots legal personality – the need to make robots liable for their actions. Therefore, she believes that an insurance scheme for autonomous robots, perhaps combined with a compensation fund, would be far more effective at compensating victims than making a robot with a legal personality a liable actor in the event of damage.[72] In its turn, European Parliament suggests an obligatory insurance scheme for robotics as "a possible solution to the complexity of allocating responsibility for damage caused by increasingly autonomous robots [that] should take into account all potential responsibilities in the chain. […] Such an insurance system could be supplemented by a fund in order to ensure that reparation can be made for damage in cases where no insurance cover exists. […] The manufacturer, the programmer, the owner or the user [should be able to] benefit from limited liability if they contribute to a compensation fund, as well as if they jointly take out insurance to guarantee compensation where damage is caused by a robot."[73]

Regardless of the fact that AI might have a legal personality (electronic person), it is unable to bear responsibility. The non-existence of assets on which the execution may be levied makes the option to held AI liable unreasonable. It is possible to pay an electronic person a salary, for example, in order to form its pool of assets. However, legally this will be treated as payments to an insurance fund, assets from which can be used only with the purpose to compensate damages to third parties or principal, as AI is not capable of disposing of its own assets because this falls out of the scope of its programmed goals. In this case conclusion of an insurance agreement or creation of special fund (as proposed by the European Parliament) will be much more convenient, beneficial and legally clear.

Therefore, it has no legal, social and economic sense to declare electronic person liable. Instead, the mandatory insurance schemes have to be developed in order to compensate for damages, occurred because of decisions, actions or omissions of AI.

In conclusion, the following basic features are attributed to the terms 'artificial intelligence': 1) autonomy; 2) self-learning; 3) decision-making; 4) rationality.

The question of whether AI should be considered as an object or a subject of the law depends on the level of AI's autonomy while adopting legally and socially significant decisions, taking acts or omissions. If AI is acting according to its own decision based on its knowledge

[72] Nathalie Nevejans, *European Civil Law Rules in Robotics*.
[73] European Parliament resolution on Civil Law Rules on Robotics (2015/2103(INL)).

and experience, then it should be able to create, change and terminate rights and obligations, namely, be treated as a subject of law.

Neither of the existing types of legal personalities is fully appropriate. AI should be treated as a *sui generis* person with limited legal personality, that imply the possibility of AI to act autonomously (after it has been programmed for a particular purpose, 'appointed' for a particular position and has completed a certain period of 'training') and to create, change and terminate the rights and obligations of those subjects of law on whose behalf (as an employee or agent) it is acting. However, personally, AI does not have rights and duties in the traditional sense thereof. This new type may be called 'electronic person'.

The human (developer, programmer, 'trainer', user, etc.) cannot be liable without legal or factual grounds for liability, e.g. for the consequences that he or she cannot foresee, control and do not have intent towards their occurrence. If the AI has caused harm or damages because of mistake in its software (initial code) or hardware, then it is treated as an object of law and the programmer or other professional responsible for its proper functioning should be held liable. The liability for losses and damages caused by AI because of its own predictions and decisions based on its knowledge and experience (i.e. while acting as a subject of the law) cannot be imposed on the AI due to its inability to cover damages by its nature. In this case, special insurance schemes are applied. While investigating the existence of an offense (accident insured), the whole internal element (subjective side or *mens rea*) of the *corpus delicti* shall be ignored.

CHAPTER 2. PLACE OF AI IN CORPORATE GOVERNANCE

In this Chapter we discuss the issue of the AI's place in corporate governance. Firstly, we observe benefits and obstructions that AI may cause to the business while acting both as a director of a company and simply as an 'advisor' of the board. Then, questions regarding the roles in the boardroom allocated to artificial intelligence are discussed and the corporate governance strategies in the context of AI director are reviewed.

2.1. Advantages and Disadvantages of the AI in the Boardroom

The key benefit that AI may cause to the company while participating in corporate management to Akshaya Kamalnath's point of view is "to mitigate agency costs […], if AI can overcome human frailties"[74]. She considers the Board's independence (along with disclosures) "to be the chief tool thus far in the arsenal of corporate law to counter agency costs"[75]. Luca Enriques and Dirk Andreas Zetzsche, investigating corporate technologies, agree with A. Kamalnath that using AI results in reduced agency costs and allows for flatter organizational structures due to the improvement of intra-firm monitoring because of the better use of internal and external data[76]. Therefore, the first advantage is the decrease in agency costs and the increase in efficiency of management. Moreover, AIs, unlike human directors, are fully devoted to the interests (goals, objectives) of the company, will not be involved in the conflict of interests, and do not need any remuneration, severance packages, days off, or daily and yearly rests, etc.

Besides, A. Kamalnath points out that "[b]oards often have to make important decisions on very short notice, and thus independent directors might not be able to digest all the required information in a short period of time"[77]. While observing the place of AI in Corporate Law, Florian Möslein agrees that using AI in the boardroom constitutes a huge advantage. He says that "where business decisions need to be taken on the basis of numerous and complex sets of data, computer algorithms are increasingly superior to humans in taking such decisions, particularly if artificial intelligence and machine learning allow those algorithms to permanently improve their respective capabilities"[78]. L. Enriques and D. A. Zetzsche supplement this idea with the type of data that AI is able to take into account. "While humans tend to use core, salient data for decisions, technology can consider not only core, but also seemingly unrelated data. Further, technology can handle data of the past as effectively as data of the present. This is particularly

[74] Akshaya Kamalnath, "The Perennial Quest for Board Independence: Artificial Intelligence to the Rescue", 45.
[75] Ibid.
[76] Luca Enriques and Dirk Andreas Zetzsche, "Corporate Technologies and the Tech Nirvana Fallacy", 14-15.
[77] Akshaya Kamalnath, "The Perennial Quest for Board Independence: Artificial Intelligence to the Rescue", 49.
[78] Florian Möslein, "Robots in the Boardroom: Artificial Intelligence and Corporate Law", 1.

important for risk management: simply put, people tend to forget. […] AI-based early detection and subsequent mitigation of non-compliance should prove particularly valuable in reducing liabilities, penalties and fines."[79] Therefore, the second advantage constitutes the AI's ability to analyse a huge amount of information (related and seemingly unrelated), weight risks, make predictions, conclusions, and adopt decisions based thereon in a short period of time.

Also, A. Kamalnath points out another advantage that AI brings to the Board. "Al can be a useful aid to counter groupthink. Even if it is merely used as a tool to analyse information and provide an opinion that the board of directors then considers, it will be able to provide its input without being influenced by groupthink. The AI would not be susceptible to human biases, unless it is programmed into the system."[80] L. Enriques and D. A. Zetzsche agree that AI is capable of neutralizing the "groupthink", in other words, two related group dynamics that seriously can hamper boards' effectiveness, by airing unconventional and (fact-based) contrarian views[81]. The scholars point out that "[t]echnology is also said to be unbiased, albeit in the limited sense that technology does not follow its own agenda and is not itself subject to humans' cognitive biases"[82]. Therefore, the third argument in favour of AI's engagement in corporate governance is that AI is an unbiased tool to counter groupthink.

On the other hand, Florian Möslein adduces counter-arguments from the economic point of view and gives his preference to humans. "[E]ven though artificial intelligence may well be superior at making predictions, humans need to make judgments. They need to work out the benefits and costs of different decisions in different situations, since this in turn requires "an understanding of what your organization cares about most, what it benefits from, and what could go wrong". While artificial intelligence may be able to learn from experience, it is still unable to exercise this sort of judgment, at least for the foreseeable future. Furthermore, creativity and innovation are widely regarded as specifically human qualities […]. Since decisions at board level are often of a strategic nature, however, it is precisely abilities such as these that play a pivotal role, at least in concurrence with predictions. [However], one can well imagine that there will be individual companies in specific branches of the economy – the finance industry, for instance – where predictions will prevail, at least with regard to single board positions within these companies."[83] L. Enriques and D. A. Zetzsche also points out that "corporate governance practices are firm-specific. Firms differ, for instance, in the extent to which they rely on their employees' creativity, suppliers' tailored inputs, intellectual property, and technology integration

[79] Luca Enriques and Dirk Andreas Zetzsche, "Corporate Technologies and the Tech Nirvana Fallacy", 13.
[80] Akshaya Kamalnath, "The Perennial Quest for Board Independence: Artificial Intelligence to the Rescue", 52.
[81] Luca Enriques and Dirk Andreas Zetzsche, "Corporate Technologies and the Tech Nirvana Fallacy", 14.
[82] Ibid.
[83] Florian Möslein, "Robots in the Boardroom: Artificial Intelligence and Corporate Law", 14.

among other factors."[84] Therefore, the type of AI's utilisation may be various and its drawbacks for one company may be a huge advantage for another. Moreover, the introduction of AI into the Boards of Directors or even its subjection to the control by a Supervisory Board may mitigate the AI's lack of creativity and other 'human attributes'.

Akshaya Kamalnath agrees that the human directors may take precedence over the AI directors. "The business judgment rule allows for directors to make business decisions and allows for a degree of error as long as the decision was made in good faith. While AI is unlikely to suffer from conflicts of interest, it will not have the business instincts and entrepreneurial flair of business-persons. Similarly, while directors have to make decisions in the interests of the corporation and shareholders, there is some fluidity in terms of how directors weigh various considerations while coming to a decision. Leaving decisions entirely to AI might result in a lack of consideration of interests of stakeholders like employees or perhaps society in general in instances of decisions having adverse environmental impact."[85]

As we can see, the counter-arguments are based mainly on one axiom: artificial intelligence is not a human; therefore, it cannot make judgements, does not have business instincts and entrepreneurial flair of business-person. However, if we dig deeper, we will see that all 'purely human' capabilities by its essence are completely rational and can be translated into the AI's internal code or be developed via AI's self-learning. For instance, business instincts and entrepreneurial flair are based on experience: the more victories or defeats businessman goes through and the more related information he or she analyses, the better 'intuition' or 'flair' he or she has. With humans, it happens on the level of subconscious and people often do not realise the origin of their sixth sense, while with AIs, all these processes take place in the 'black box' and can be observed. Moreover, the scholars have already acknowledged that AI takes precedence over the human in digesting a large amount of information in a short period of time, which allows the robot's 'intuition' to be much more precise than the human's.

Also, AI's characteristics depend mostly on the definition allocated thereto. For example, Martin Petrin defines the term 'making judgments' as a "work that requires creative, analytical, and strategic skills […] [and implies] the application of human experience and expertise to critical business decisions and practices when the information available is insufficient to suggest a successful course of action or [is not] reliable enough to suggest an obvious best course of action"[86]. Except for creativity (for now), AI can perform mentioned functions; and therefore, at some point of view, it can make judgements.

[84] Luca Enriques and Dirk Andreas Zetzsche, "Corporate Technologies and the Tech Nirvana Fallacy", 47.
[85] Akshaya Kamalnath, "The Perennial Quest for Board Independence: Artificial Intelligence to the Rescue", 55-56.
[86] Martin Petrin, "Corporate Management in the Age of AI," *Columbia Business Law Review* 3 (2019): 984.

Weighing the pros and cons, Florian Möslein, Akshaya Kamalnath, Luca Enriques and Dirk Andreas Zetzsche allocate the following roles in the boardroom to artificial intelligence.

Florian Möslein observes three forms of AI depending on the allocation of decision rights between man and machine: assisted, augmented and autonomous artificial intelligence[87]. "In the assisted artificial intelligence stage, machines execute certain specific tasks, but decision rights remain solely with human beings; in the augmented artificial intelligence stage, humans and machines share decision rights and learn from each other; and in the autonomous artificial intelligence stage, machines ultimately take over all decision rights."[88] Despite the acknowledgment of the existence of autonomous AI, Florian Möslein is reluctant to grant it a seat in the Board of Directors; instead, he prefers the possibility "to delegate decision rights to artificial intelligence".[89]

A. Kamalnath is also very sceptical by saying that "until highly effective AI platforms for boards are developed, it is likely that AI in corporate governance will also be used only as a tool or aid by boards."[90] She imagines AI's role in corporate governance as a "system, into which management enters information that is normally provided to directors. The AI system then picks up patterns, trends, and themes for directors to look at. […] [A]n AI system could come equipped with industry trends on the one hand and instances of board liability on the other hand. It should then be able to point to possible problems and exposure to liabilities in each situation."[91] A. Kamalnath considers two ways in which directors may benefit from letting AI process information. "First is to ensure that the AI highlights the most important information with respect to any given question. […] The second benefit is for directors to be able to consider and assess the recommendation of the AI along with the reasons for such a recommendation, also provided by the Al. In this way, directors would use their own judgment to make decisions, but also benefit from, what may be considered an external view."[92]

Luca Enriques and Dirk Andreas Zetzsche also "predict a limited role for CorpTech[93] in the boardroom: similar to how, up until today, operational, financial, legal, accounting, or risk experts advise boards, which then come to their own conclusions based on those experts' input,

[87] Florian Möslein, "Robots in the Boardroom: Artificial Intelligence and Corporate Law", 8.
[88] Ibid.
[89] Ibid, 18.
[90] Akshaya Kamalnath, "The Perennial Quest for Board Independence: Artificial Intelligence to the Rescue", 54.
[91] Ibid, 52-53.
[92] Ibid, 56.
[93] The scholars introduce "the term Corporate Technologies ("CorpTech") to refer to the use of distributed ledgers, smart contracts, Big Data analytics, AI and machine learning in the corporate context". – Luca Enriques and Dirk Andreas Zetzsche, "Corporate Technologies and the Tech Nirvana Fallacy", 1.

CorpTech can and will inform board members about options and opportunities but cannot replace them"[94].

As we can see, the scholars mainly consider AI as an expert advisor of the board to whom the decision rights are delegated by the directors or on whose expertise they draw while adopting decisions. However, the question arises whether such a scheme is fully beneficial for directors. To answer this question, we need to resort to the theory of corporate law.

Carsten Gerner-Beuerle, Philipp Paech and Edmund Philipp Schuster highlight that "[v]irtually all jurisdictions hold, either in the statutory law, in case law, or in the literature, that the delegation of tasks does not lead to an exculpation of the delegating director(s). […] [Some] jurisdictions distinguish between two or three elements of the duty of care in the context of delegation. First, the standard of care is applied to the act of delegation, i.e. the director is required to select the person to whom functions are delegated carefully, instruct this person adequately, and provide for training where necessary. Second, the director has to monitor the performance of the delegated tasks. […] Where problems are identified, directors are required to take the necessary steps and intervene in the performance of the delegated tasks. Third, it is not sufficient to be reactive, i.e. to act only when a problem arises. Rather, directors are under a continuing duty to familiarise themselves with all relevant aspects of the company's operations, ensure that they are apprised of new developments, and that systems are in place that facilitate the transmission of information within the business. Some legal systems provide more generally that directors are responsible for the establishment of effective risk management and control systems."[95]

Considering the delegation of decision rights to an AI, directors should take into account its nature, namely AI's sophisticated hardware and software structure. This means that in order to fulfil the duty of care, directors have to possess and perform special technical knowledge and skills for instruction, training, and monitoring of AI's activity, or intervention (if necessary) in it. Therefore, the delegation of the decision rights to AI will cause more inconveniences and restrictions. "Human directors must always maintain the ultimate management function for themselves; they also need to generally oversee both the selection and activities of robots, algorithms and artificial intelligence devices. More specifically, they will have to ensure that these systems are stable, that they do not cause fundamental management errors, and that their decisions comply with the applicable laws and regulations."[96] A. Kamalnath also emphasises that "[i]t is imperative that any system designed for the use of corporate boards

[94] Luca Enriques and Dirk Andreas Zetzsche, "Corporate Technologies and the Tech Nirvana Fallacy", 24.
[95] Carsten Gerner-Beuerle et al, *Study on Directors' Duties and Liability*, 101-102.
[96] Florian Möslein, "Robots in the Boardroom: Artificial Intelligence and Corporate Law", 18.

is similarly able to explain its reasoning. Ultimately, directors […] have fiduciary duties and are liable for breaching their duties. While this means that it is important to use the best technology available, it is also not possible to simply delegate decision-making to an AI system and absolve oneself of responsibility in […] corporate governance context."[97]

Such selection, training and supervision require special skills, knowledge and time, which will increase agency costs. Therefore, the most beneficial choice is to appoint AI as a director of a company in order to obtain advantages from it in full. Regarding not very encouraging prognoses as to the existence of creative or innovative machines in the future, the requirements to the director fully depend on the sector of the economy, type of company and preferences of shareholders. Martin Petrin agrees and points out that "[i]n several specific areas AI already outperforms human intelligence, and a combination of different systems currently in use, appropriately improved, could be enough to replace managers and directors"[98]. Therefore, a lot of companies can allow appointing AI as a director of the company in different ways: as a sole director, as a member of the board of directors, independent or managing director, member of a supervisory board, etc. And the imperfection of AI technologies does not affect the possibility to benefit from AI directors at all. The human imperfection indeed does not hinder the usage of the human potential.

After deciding the reason for which AI should be a director of a company, the following question arises: whether it is possible for AI to perform a director's function. OECD Principles of Corporate Governance state that "[t]he corporate governance framework should ensure the strategic guidance of the company, the effective monitoring of management by the board, and the board's accountability to the company and the shareholders."[99] L. Enriques and D. A. Zetzsche assume that "CorpTech will not significantly change what boards do, namely monitoring managers and mediating between them and the company's shareholders and other stakeholders, because technology will not by itself solve the core corporate agency problems"[100]. Due to the resilience to a groupthink, disinterestedness, ability to analyse a large bulk of data and unquestioning fulfilment of programmed duties, such as a duty of disclosure, AI is capable of performing strategic management, supervision over the CEO and other managers, disclosure and report of all relevant information to the shareholders, sometimes even better than a human director. Therefore, AI is able to be a director of a company.

[97] Akshaya Kamalnath, "The Perennial Quest for Board Independence: Artificial Intelligence to the Rescue", 55.
[98] Martin Petrin, "Corporate Management in the Age of AI", 995.
[99] "G20/OECD Principles of Corporate Governance", OECD.org, Accessed 9 March 2020, https://www.oecd.org/daf/ca/Corporate-Governance-Principles-ENG.pdf.
[100] Luca Enriques and Dirk Andreas Zetzsche, "Corporate Technologies and the Tech Nirvana Fallacy", 51.

While talking about amendments to be made to existing legislation regarding introduction AI into corporate governance, L. Enriques and D. A. Zetzsche assume that "[i]t would be premature, and contrary to a long-standing tradition in corporate governance reforms, to implement corporate governance-focused changes in state corporate statutes, federal securities regulation or stock exchange listing rules before best practices have emerged on the market. […] The downside of any prescriptive rule would be the risk of freezing much-needed experimentation in this area."[101] We absolutely agree with the scholars, however, in order to let the best practices originate, the legislation should provide the actors (namely, the companies) with the room for manoeuvre. In other words, as long as the electronic or legal person (for AI in the shell of a legal person) is not allowed to be appointed as a director of a company, the best practices of utilisation of AIs in corporate governance cannot be created.

2.2. Legal Strategies for Reducing Agency Costs

The corporate law according to John Armour, Henry Hansmann, and Reinier Kraakman, "performs two general functions: first, it establishes the structure of the corporate form as well as ancillary housekeeping rules necessary to support this structure; second, it attempts to control conflicts of interest among corporate constituencies, including those between corporate "insiders," such as controlling shareholders and top managers, and "outsiders," such as minority shareholders or creditors. These conflicts all have the character of what economists refer to as "agency problems" or "principal-agent" problems."[102] However, having an AI as a director of a company, who does not possess its own interests, has been programmed to adhere and promote purposes and interests of a company, and consequently does not create a conflict of interest, we should review the need and significance of the legal strategies for resolution of agency problems. Florian Möslein, considering the possibility of appointing AI as a director of a company, also expresses some concerns that the "[c]orporate law will face the fundamental question of whether the legal strategies that it has developed for human agency relationships are still suitable for robots acting as agents"[103].

The Corporate law represented by Reinier Kraakman, John Armour, and Henry Hansmann develops and categorizes legal strategies for controlling agency costs into two subsets: regulatory strategies and governance strategies. "Regulatory strategies are prescriptive: they dictate substantive terms that govern the content of the principal-agent relationship, tending

[101] Luca Enriques and Dirk Andreas Zetzsche, "Corporate Technologies and the Tech Nirvana Fallacy", 47.
[102] Reinier Kraakman et al, "Agency Problems and Legal Strategies", 29.
[103] Florian Möslein, "Robots in the Boardroom: Artificial Intelligence and Corporate Law", 16.

to constrain the agent's behavior directly. By contrast, governance strategies seek to facilitate the principals' control over their agent's behavior."[104]

The first pair of regulatory strategies is rules and standards, which **"**constrain agents by commanding them not to take courses of action that would harm the interests of their principals. [Rules require or prohibit specific behaviours, while general standards leave the precise determination of compliance to adjudicators after the fact.] The efficacy of both rules and standards depends in large measure on the vigor with which they are enforced. In principle, rules can be mechanically enforced, but require effort to be invested *ex ante* by rule-making bodies to ensure they are appropriately drafted. Standards, in contrast, require courts (or other adjudicators) to become more deeply involved in evaluating and sometimes molding corporate decisions *ex post*."[105] Dealing with AI director, the rules play the role of an instruction that is directly programmed into the AI's software, and the effort is required not only by rule-making bodies but also by programmers to ensure the rules are appropriately translated into the software programming language. As to the standards, the compliance thereof is to be estimated by the special investigative organ while opening the 'black box'. In more detail, the applicability of standards is referred to in the next Chapter.

"A second set of regulatory strategies open to the law involve regulating the terms on which principals affiliate with agents rather than – as with rules and standards – regulating the actions of agents after the principal-agent relationship is established."[106] These strategies are more targeted at shareholders, their rights to enter and exit and the specific nature of the AI director does not alter them in any way.

"The first incentive alignment strategy – the trusteeship strategy – seeks to remove conflicts of interest *ex ante* to ensure that an agent will not obtain personal gain from disserving her principal."[107] Florian Möslein believes that "the incentive strategy is doomed if robo-directors are incentivized by different things to human directors. Even if it is difficult to speculate about the potential incentives for artificial intelligence at the present stage of its technological development, these respective differences do not seem unlikely. […] Liability regimes (and the liability of directors in particular) could therefore turn out to be largely ineffective if machines do not suffer financial loss."[108] However, Reinier Kraakman, John Armour, and Henry Hansmann provide "[o]ne well-known example of the trusteeship strategy [–] the "independent director," now relied upon in many jurisdictions to monitor management.

[104] Reinier Kraakman et al, "Agency Problems and Legal Strategies", 31.
[105] Ibid, 32-33.
[106] Ibid, 33.
[107] Ibid, 35.
[108] Florian Möslein, "Robots in the Boardroom: Artificial Intelligence and Corporate Law", 16-17.

Such directors will not personally profit from actions that disproportionately benefit the firm's managers or controlling shareholders, and hence are expected to be guided more strongly by conscience and reputation in making decisions."[109] Notwithstanding the absence of conscience and understanding of a reputation`s value, the AI director might be considered as an appropriate example of an independent director.

"The second incentive strategy is the reward strategy, which […] rewards agents for successfully advancing the interests of their principals. The more common form of reward is a sharing rule that motivates loyalty by tying the agent's monetary returns directly to those of the principal. […] The reward mechanism less commonly the focus of corporate law is the pay-for-performance regime."[110] Florian Möslein points out that "a pay-for-performance regime, which pays agents for successfully advancing their principal's interests, is unlikely to serve its purpose if artificially intelligent machines neither earn money nor work towards the objective of doing so. On the other hand, such machines will be less inclined to divert corporate assets, opportunities or information for personal gain."[111] Therefore, the reward strategy loses its significance in the context of an AI director.

As well as regulatory strategies regarding affiliation terms, the other governance strategies, in particular the appointment rights (selection and removal) and decision rights (initiation and ratification of management decisions by the principal), are largely addressing shareholders, therefore, the specific nature of the AI director does not influence and does not modify them in any way. Thus, "the appointment rights […] – are [still] key strategies for controlling the enterprise; [… and] the largest and most fundamental corporate decisions (such as mergers and charter amendments) require the ratification of shareholders under existing corporation statutes"[112].

The one "half of the strategies take full effect before an agent acts, while the other half respond […] to the quality of the agent's action *ex post*. In the case of agent constraints, for example, rules specify what the agent may or may not do *ex ante*, while standards specify the general norm against which an agent's actions will be judged *ex post*. […] Turning to incentive alignment, trusteeship is an *ex ante* strategy in the sense that it neutralizes an agent's adverse interests prior to her appointment by the principal."[113] Florian Möslein supposes that "[w]hereas *ex-post* strategies (such as the control of directorial behaviour by way of directors' duties) will

[109] Reinier Kraakman et al, "Agency Problems and Legal Strategies", 35.
[110] Ibid, 36.
[111] Florian Möslein, "Robots in the Boardroom: Artificial Intelligence and Corporate Law", 16-17.
[112] Reinier Kraakman et al, "Agency Problems and Legal Strategies", 37.
[113] Ibid.

presumably lose significance, *ex-ante* strategies will conversely gain importance"[114]. Here, should be mentioned that 'lose significance' does not mean that *ex-post* strategies are fully eliminated. They are still applied through the director's duties (standards of conduct), however, with certain peculiarities which are discussed in the next chapter. "This shift from *ex-post* to *ex-ante* regulatory strategies would involve various far-reaching changes for the whole anatomy of corporate law. Firstly, its specific rules on directors' behaviour will effectively be transferred from the law into algorithmic codes. Secondly, the abstract control of these algorithms will largely replace the concrete control of situation-specific behaviour. Thirdly, entirely different enforcement mechanisms will be required, simply because the control of algorithms requires a comprehensive technical know-how that can neither be expected from shareholders, nomination committees or supervisory boards, nor from courts specializing in corporate law."[115] Therefore, the new actors (i.e. technical support) are to be engaged in the corporate governance mechanism in order to ensure the proper functioning of the AI director within the company.

Talking about penalties[116], Reinier Kraakman, John Armour, and Henry Hansmann point out that "[f]or legal strategies seeking to control manager-shareholder and shareholder-shareholder agency problems, the most obvious defendant is the agent in question. Whereas for the control of externalities, making the corporation pay the penalty encourages managers to take the expected costs of penalties into account. However, it is common practice in some jurisdictions […] for corporations to provide indemnities and insurance for managers ("D&O insurance"), which has the effect of shifting the burden from the individual to the firm."[117] Andrea Bertolini with his collective of scholars highlights that "[t]he risk management function of insurance helps transform *ex post* uncertainty into an *ex ante* cost that may be internalized by the party, and in case of the producer even distributed through price mechanisms among all possible users of the device."[118] Therefore, in a case with an AI director, who is not able to be liable, indemnities and insurance for managers, like "D&O insurance" or the new types of insurance created especially for AIs, might be the only option for companies if they are reluctant to bear the risk of the AI director's failure to perform its duties.

"In many civil law countries, another important *ex post* consequence of violating company law rules is annulment of corporate decisions. Such orders deny the legal efficacy of corporate actions reached on the basis of a process that failed to conform to applicable rules.

[114] Florian Möslein, "Robots in the Boardroom: Artificial Intelligence and Corporate Law", 17.
[115] Ibid.
[116] The scholar utilises the term 'penalties' to refer to the broad functional category encompassing all consequences of enforcement that are likely to be costly for the defendant and thereby serve to deter misconduct. – Reinier Kraakman et al, "Agency Problems and Legal Strategies", 43.
[117] Reinier Kraakman et al, "Agency Problems and Legal Strategies", 43.
[118] Andrea Bertolini et al, "On Robots and Insurance", *International Journal of Social Robotics* 8 (2016): 8, http://dx.doi.org/10.1007/s12369-016-0345-z.

This mechanism is useful for ensuring compliance with standards and process rules regarding various governance strategies used to control"[119] the manager-shareholder and shareholder-shareholder agency problems. However, the court proceedings regarding the annulment of corporate decisions should be reviewed in each of the jurisdictions allowing such type of action because of the following. Notwithstanding its electronic personality, the AI director cannot be a respondent in court due to its limited nature: AI director is not programmed to perform before the court, to prove the lawfulness of its decision and to confute arguments of the claimer. Therefore, the respondent may be a company (if claimers, for instance, shareholders or other stakeholders) or counterparty to the agreement (if the decision was to enter thereto), etc.

Besides, the jurisdictions may classify this type of action as a simplified (writ) proceeding. For example, in Ukraine, the writ proceeding is a separate simplified type of the court proceedings in civil process within which the judge following the application of a person with the right to claim issues judicial order (simultaneously the form of a judicial decision and enforcement document) based on the documents attached to the application without a court hearing and calling the parties.[120] In commercial procedure institute of the writ proceeding was introduced in 2017 when the new amendments to the Commercial Procedural Code of Ukraine came into force.[121] The writ proceeding is aimed at quick and effective protection of the indubitable rights of a person[122], simplification of debt recovery procedures, and saving of the creditors' time[123]. In the context of AI, the writ proceedings may be seen as the following. The company provides the resolution of the investigatory organ acknowledging the failure of an AI director to meet its obligations regarding the procedure of adoption of a decision in question alongside the application to annul the corporate decision and the court then issues an order to annul the latter.

Interesting thought for further reflections is expressed by Luca Enriques and Dirk Andreas Zetzsche who highlight that "corporate agency problems cannot be "coded away:" those in control of the CorpTech will (continue to) control the corporation and therefore preserve their ability to engage in self-serving behavior. […] Only if and when humans relinquish corporate

[119] Reinier Kraakman et al, "Agency Problems and Legal Strategies", 44.
[120] Yulia Navrotska, "Features of the process of proof in the writ proceedings", *Journal of National University "Lviv polytechnic"* 855, 12 (2016): 431, http://science.lpnu.ua/sites/default/files/journal-paper/2017/aug/5686/vnulpurn201685568.pdf.
[121] Yulia Stusova, Yulia Shyshka, "The writ proceedings on the practice of applying the procedural novelty by commercial courts", *The Legal Newspaper Online* October 30, 2018, https://yur-gazeta.com/publications/practice/gospodarske-pravo/nakazne-provadzhennya.html.
[122] Yulia Navrotska, "Features of the process of proof in the writ proceedings", 440.
[123] Roman Kobets, "Writ proceedings in commercial procedure: is it worth wasting time?", *The Legal Newspaper Online* May 23, 2019, https://yur-gazeta.com/dumka-eksperta/nakazne-provadzhennya-v-gospodarskomu-procesi-chi-varto-gayati-chas.html.

control to machines, may the problems at the core of corporate governance be solved."[124] As long as the latter seems to be unrealistic, the concepts of 'shadow' and *de facto* director may be used to cope with the self-serving behaviour of the AI's controller.

The legal strategies for reducing agency costs also have vented themselves in the White Paper on Artificial Intelligence. The element of control in legal strategies, when AI director is supervised by the human (shareholder, member of a supervisory board, etc.), "helps ensuring that an AI system does not undermine human autonomy. […] The European Commission provides for [a list of] non-exhaustive manifestations of the human oversight"[125] over the high-risk AI applications. The high-risk AI application "meets the following two cumulative criteria. First, [it] is employed in a sector where, given the characteristics of the activities typically undertaken, significant risks can be expected to occur […]. Second, [it …] is […] used in such a manner that significant risks are likely to arise. […] The assessment of the level of risk […] could be based on the impact on the affected parties. For instance, uses of AI applications that produce legal or similarly significant effects for the rights of an individual or a company; that pose risk of injury, death or significant material or immaterial damage. […] There may also be exceptional instances where, due to the risks at stake, the use of AI applications […] is to be considered as high-risk as such."[126] The mentioned manifestations of the human oversight are the following:

- the output of the AI system does not become effective unless it has been previously reviewed and validated by a human […];
- the output of the AI system becomes immediately effective, but human intervention is ensured afterwards […];
- monitoring of the AI system while in operation and the ability to intervene in real time and deactivate […];
- in the design phase, by imposing operational constraints on the AI system […].[127]

These manifestations can be transferred to the corporate law sphere, where the AI application sometimes may be a high-risk due to causing legal or similarly significant effects for the rights of stakeholders and the company. Thus, the first manifestation (review and validation by a human) may be expressed in the required approval of the significant transaction by the general meeting or the supervisory board. In some civil law countries, the annulment of corporate decisions may be an expression of the human intervention afterward. And the third manifestation (intervention and deactivation) is that the AI director may be dismissed at any time without cause by those who have appointed it.

[124] Luca Enriques and Dirk Andreas Zetzsche, "Corporate Technologies and the Tech Nirvana Fallacy", 51.
[125] White Paper on Artificial Intelligence (19.2.2020 COM (2020) 65 final), 21.
[126] Ibid, 17-18.
[127] Ibid, 21.

In conclusion, according to the scholars, the advantages that the engagement of the AI into corporate governance might bring to the company are the following. The first one is the decrease in agency costs and the increase in efficiency of management as AIs unlike human directors are fully devoted to the interests of one company, will not be involved in the conflict of interests and do not need any remuneration, severance packages, days off or daily and yearly rests, etc. Secondly, AIs are able to analyse a huge amount of information, make conclusions and adopt decisions based thereon in a short period of time. Thirdly, AI is a tool to counter groupthink. On the other hand, unlike humans AI is not capable of making judgements (working out benefits and costs, considering interests of different stakeholders); it is not creative and innovative and does not have business instincts and entrepreneurial flair of business person. However, we think that 'purely human qualities', like intuition, can be attributed to AIs as they are capable of processing a huge amount of information and learning from their experience.

Considering the sector of the economy in which the company is operating, type of the company, preferences of shareholders, etc., the appointing AI as a director of a company may turn out to be the most beneficial option for the business, where AI`s advantages significantly prevail its disadvantages.

And finally, appointing AI as a director triggers the review of the legal strategies for reducing agency costs as AI director does not possess its own interests, has been programmed to adhere and promote purposes and interests of a company, and consequently does not create a conflict of interest. The rules play the role of an instruction that is directly programmed into the AI, so that the programmers have to ensure that rules are appropriately translated into the software programming language. The compliance with the standards is to be estimated by the special investigative organ while opening the 'black box'. Notwithstanding the absence of conscience and understanding of a reputation`s value, the AI director might be considered as an appropriate example of an independent director as a trusteeship strategy. We agree with Florian Möslein that the reward strategy completely loses its significance in the context of an AI director. The regulatory strategy regarding affiliation terms and the governance strategies regarding the appointment and decision rights are largely addressing shareholders; therefore, the specific nature of the AI director does not influence and does not modify them in any way.

Penalties and another important *ex post* consequence of violating company law rules have to be reviewed as AI cannot be held liable. The manifestations of the human oversight can be transferred to the corporate law sphere, where the AI application sometimes may be a high-risk due to causing legal or similarly significant effects for the rights of stakeholders and the company.

CHAPTER 3. PECULIARITIES OF AN AI'S STATUS AS A DIRECTOR OF A COMPANY

In this Chapter, we investigate the procedure of appointment and dismissal of an AI from the director's office, analyse the ability of AI to comply with existing directors' duties and the necessity of the introduction of new ones due to the nature and features of the AI director. We take a look at how the traditional approach to director's duties readjusts to the new type of director. The structure of relations between AI and third parties is analysed in order to find ways of protecting the interests of the latter. Finally, the insurance scheme for the protection of the company's interests is provided.

3.1. Procedure of Appointment and Dismissal of an AI Director

After the possibility of AI to be a director of a company has been found out, the procedure of its appointment and dismissal should be observed. Provisions of the European Model Company Act (hereinafter – EMCA) are taken as an example because they manifest the best practices summarised and worked out by an independent group of scholars and reflect certain tendencies within the group of jurisdictions of European Union and United States of America. Moreover, AI director is an innovation in corporate governance which encourages jurisdictions to improve their legal systems while EMCA is aimed to be "a tool […] that is simultaneously flexible and capable of allowing [jurisdictions] to deal with new developments in the economy [and to be] a source of inspiration to all countries in the world that are looking to modernize their company law"[128]. These make EMCA perfectly suitable for this research. Also, Japanese law is taken as an example due to its "original features related to the history, evolution, and economic and social legacy of both Buddhist and Confucian philosophies"[129] which cause differences from EU and US corporate laws. As this research does not focus on a particular jurisdiction or a group of jurisdictions, we believe that 'the eastern note' is useful for the diversification and broadening of the margins of this Master Thesis.

According to the EMCA directors in the one-tier system "shall be appointed by the general meeting; [… while in the two-tier system] the supervisory board appoints the members of the management board unless the articles of association provide that the management board is appointed by the shareholder meeting. Members of the supervisory board shall be appointed by

[128] Paul Krüger Andersen et al, *European Model Company Act (EMCA), First Edition* (Nordic & European Company Law Working Paper No. 16-26, 2017), 6. https://ssrn.com/abstract=2929348. Hereafter abbreviated *EMCA*.
[129] Maria Lucia Passador, "Corporate Governance Models: The Japanese Experience in Context," *DePaul Business & Commercial Law Journal* 15, 1 (2016): 25.

the general meeting"[130]. Japanese Companies Act in Article 38 provides for that "the incorporator(s) must elect the Director(s) at Incorporation"[131]. Dealing with the dismissal of a director within one-tier-system, EMCA provides for the following: "A member of the board of directors may resign from the board of directors at any time. A member of the board of directors may be dismissed at any time without cause by those who have appointed the member"[132]. And likewise for two-tier systems: "A member of the management board / supervisory board may resign from the management board / supervisory board at any time. A member of the management board / supervisory board may be dismissed at any time without cause by those who have appointed the member unless otherwise provided in the articles of association"[133]. In Japan "the dismissal of Director(s) at Incorporation […] is determined by a majority of the votes of the incorporators relating to such election"[134].

Thus, the form of appointment and dismissal of an AI director does not necessarily have to differ from that of a human director as the specific nature of an AI does not preclude its appointing and dismissal via resolution or decision of a particular organ. Some jurisdictions may also require the company's constitutional documents or information in the state register to be altered. The sole difference in regulation of AI and human directors is that the resignation is not applicable to the former as it falls out of the scope of its legal capacity.

EMCA also provides for the term of director, saying that "[i]n a public company, members of the board of directors (one-tier systems) or members of the management board / supervisory board (two-tier systems) are appointed for the period determined in the articles of association. However, the period should not exceed four years. In a private company, the term can be indefinite. […] This provision is intended to ensure a continuous renewal of the company's management. [...] There is no prohibition against re-election."[135] Due to the AI's property to never become biased, the limitation of the term of office might be not applicable to the AI director.

Within the discourse of the AI director's dismissal, the duty of confidentiality should be considered, notwithstanding that it is a consequence of the duty of loyalty, which precisely is discussed in the next subchapter. "Directors must not make unauthorized disclosure of confidential information acquired in the course of holding the office of director"[136], – stated in

[130] Paul Krüger Andersen et al, *EMCA*, 174, 181.
[131] "The Companies Act of Japan 2005", JAPANESELAWTRANSLATION, Accessed 26 April 2020, http://www.japaneselawtranslation.go.jp/law/detail/?printID=&ft=2&re=02&dn=1&yo=companies&ia=03&ph=&x=0&y=0&ky=&page=2&vm=02.
[132] Paul Krüger Andersen et al, *EMCA*, 177.
[133] Ibid, 183.
[134] "The Companies Act of Japan 2005".
[135] Paul Krüger Andersen et al, *EMCA*, 185.
[136] Ibid, 190.

EMCA. In a context of dismissal of the AI director this duty implies the following issues: whether there is a need to delete all information gathered by the AI during the term of its office or just the information constituting commercial secret; whether the AI has to be completely reset so that a new company appointing this AI as a director will have to program and 'train' it from the ground up; or, controversially, a new company will have a possibility to benefit from the experience and skills gained by the AI while performing a director's duties in the preceding company. Or maybe AI cannot move from one company to another as a human director at all and it should be created individually for the specific company. The option not to reset the AI completely after its dismissal will allow it to comply with additional requirements that may be provided for in the legislation for a director in a succeeding company depending on the sector of the economy, type of company, etc. For instance, the European Capital Requirements Directive provides that "members of the management body shall at all times be of sufficiently good repute and possess sufficient knowledge, skills and experience to perform their duties"[137]. And if sufficient knowledge and skills can be obtained while 'training', good repute and experience result directly from the decisions adopted, actions and omissions made by the AI on its previous director's office.

These questions require a deep dive into the information technology sphere; moreover, the resolution will depend on specific characteristics of each AI. Therefore, the regulation of mandatory or optional reset of the AI due to its dismissal from the director's office should be delegated to the contract law with the principle of freedom of contract. Moreover, the market will introduce its own adjustments regarding the 'exclusivity' of an AI for a specific company. It may happen that mass-market brands and exclusive brands of AI would both hold positions in the market and compete with each other.

Also, another economic phenomenon may play a role – the price of the AI director. If it is very high, a couple of companies might be willing to share the costs and to appoint AI as a director in all of them at the same time. This may lead to the "overboardedness" or "interlocking" that "refers to directors who serve on too many boards at the same time"[138]. Studying this phenomenon, Nadia Mans-Kemp, Suzette Viviers, and Sian Collins observe two hypotheses explaining the consequences thereof. "According to the experience (or reputational capital) hypothesis, directors can gain invaluable experience […] by serving on several boards at the same time. […] [Whereas] the busyness hypothesis postulates that if directors become

[137] "Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms", EUR-lex, Accessed 11 March 2020, https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32013L0036.

[138] Nadia Mans-Kemp et al, "Exploring the causes and consequences of director overboardedness in an emerging market", *International Journal of Disclosure and Governance* 15 (2018): 212, https://doi.org/10.1057/s41310-018-0048-9.

overcommitted, they might become less effective corporate monitors."[139] The latter hypothesis loses its significance in the case with AI director due to its ability to process a large amount of data in a short period of time. Depending on the technical characteristics, AI can simultaneously operate in several companies without a visible decrease in its efficiency. As for the additional experience, it would be a huge advantage for all companies utilising the same AI director. Therefore, the simultaneous appointment of AI director to the different companies may be considered as beneficial not only because of the possibility to share the costs for AI's acquisition but also due to its accelerated learning from the enhanced experience.

Therefore, provisions regarding appointment, dismissal, and requirements to the director are applicable to the AI director *mutatis mutandis* depending on its specific nature and concrete properties of each AI.

Besides, the question of possession of an AI arises. Namely, to whom the company should apply if it wants to appoint AI as a director of a company. The AI obtains its legal capacity only after the appointment as a director, thus, before that it is treated as an object of the law. Being an object of the law, AI may be a subject matter of various civil contracts, such as sales, rent, lease, etc. Therefore, in order to identify person, eligible to dispose of the AI, the contracts regarding particular AI should be investigated. These persons could be a developer, distributor, user (a company who is currently served by the AI director), etc.

3.2. Review of the Duties that Might be Imposed on an AI Director

Talking about appointing AI as a director of a company, we have to consider duties to be imposed on it: whether the existing duties are applicable to AI or the new ones have to be developed. We decided in the previous chapters that the duties in connection with autonomous robots are obtaining new meaning, namely, they are utilising on the stage of programming of AI. The same thesis is applicable to the director's duties if AI is appointed as a director of a company. However, this question requires a deeper investigation as the nature of the director's duties differs.

With the purpose to regulate the activities of directors, the 'standards of conduct' and 'rules' are applied. "'Standard of conduct' prescribes how a person should act or fulfil a function or task, and it operates as an open-ended measure against which the quality of performance can be assessed *ex post*. A 'rule', by contrast, names something specific that the management must

[139] Nadia Mans-Kemp et al, "Exploring the causes and consequences of director overboardedness in an emerging market", 212.

do or not do."[140] It is clear, that AI is programmed to adhere to the rules. For example, when debts overweight the assets in a specified proportion, AI calls the meeting of shareholders in order to commence insolvency proceedings. The question arises regarding fiduciary duties, which essentially are 'standards of conduct'.

Talking about fiduciary duties, firstly, we should figure out whom they are owed to as this influences the content thereof. For example, EMCA provides for that "[t]he duties of directors shall be owed to the company."[141] The jurisdictions usually use formulation 'the interests of the company' or 'the best interests of the company'. Therefore, there is a need to find out what are the interests of a company or, in other words, the interests of which group of stakeholders are equal to the interests of the whole company.

Andreas Cahn and David C. Donald within their comparative analysis point out that "[i]n Germany, the director's duties of care and loyalty run directly to the company. […] This concept […] is meant to mediate the differing partial interests of various constituencies and includes at a minimum the interests of the employees, the creditors and the shareholders."[142] In United Kingdom "[a] director's duty is owed "to the company," and courts traditionally found that the interest of the company was best understood as the aggregate of the shareholder's interests. The codification, however, provides that a director "must act... in good faith ... to promote the success of the company for the benefit of its members as a whole, and in doing so" must "have regard... (amongst other matters) to" (a) long-term consequences, (b) the employees' interests, (c) relationships with suppliers, customers and others, (d) the impact on the community and the environment, (e) the company's ethical reputation, and (f) fair treatment of all members."[143] In USA "[u]nder the Delaware General Corporation Law, the duties of care and loyalty that directors owe to their corporation translate for practical purposes into a duty to serve the interests of the shareholders, although a duty to creditors arises as the company approaches insolvency. […] [It also may happen that] a given company dominates its suppliers […], [then] directors could be ascribed a duty of care to the suppliers."[144] Thus, the jurisdictions vary their attitude to the 'interests of the company'; however, they mainly oblige directors to take regards to the interests of different stakeholders.

Lee Crowley also discovers the Irish and Canadian approaches regarding the meaning of the phrase 'in the interests of the company'. She highlights that "[a]s the company is a separate legal person, the fact that directors owe their duties to the company means there is no legal basis

[140] Andreas Cahn, David C. Donald, *Comparative Company Law*, 332.
[141] Paul Krüger Andersen et al, *EMCA*, 210.
[142] Andreas Cahn, David C. Donald, *Comparative Company Law*, 335.
[143] Ibid, 335-336.
[144] Ibid, 336-337.

to equate the interests of the company with the interests of the shareholders. […] Everything depends on the particular situation faced by the directors. Directors are entitled to take into account stakeholder interests, but also that, in certain circumstances, where the interests of the corporation required it, directors would be obliged to consider the impact of their decision on stakeholders."[145] Also, Larry Fink, CEO of BlackRock, one of the world's largest institutional investors, agrees "that companies must benefit all of their stakeholders, including shareholders, employees, customers, and the communities in which they operate"[146].

The authors of EMCA do not limit themselves by the interests of stakeholders and think more globally, considering public wealth and sustainable development. They believe that "the purpose of the company is to maximize the value of the company. It is important to ensure that both investment in and management of companies is carried out with a long-term and sustainable view, which is essentially a question of perspective. […] A path to promote long-term viability [of a company] could involve encouraging corporate social responsibility (CSR), transparency and active ownership, and developing tools to support a constructive dialogue between shareholders and companies."[147]

Virginia Harper Ho also believes that "investor-driven "enlightened shareholder value" shows that the practice of corporate governance has already moved beyond the shareholder-stakeholder divide. The challenge for future corporate governance reform and scholarship is now how best to optimize the contributions of stakeholders, shareholders, and corporate boards to firm success."[148] The scholar considers "the attention to traditional "stakeholder" interests, such as the effect of corporate operations on the environment, employees, or local communities, as a means of generating long-term shareholder wealth and improving portfolio- and firm-level risk assessment."[149] The latter is the fundamental objective for corporate decision-making but multiple financial and non-financial stakeholders also must be taken into account in the pursuit of financial success.[150]

EMCA summarises existing approaches and provides the following: "Directors must act in the way they consider, in good faith, would be most likely to promote the success of the

[145] Lee Crowley, "Acting in the Interests of the Company: For the Company Itself or the Wealth of the Shareholders", *Irish Business Law Review* 3, 2 (2018): 20-22. https://heinonline.org/HOL/P?h=hein.journals/iblr3&i=115.
[146] Jennifer G. Hill, "Shifting Contours of Directors' Fiduciary Duties and Norms in Comparative Corporate Governance", *Working Paper*, N° 489/2020 (2020): 25, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3521111.
[147] Paul Krüger Andersen et al, *EMCA*, 29-30.
[148] Virginia Harper Ho, "Enlightened Shareholder Value": Corporate Governance Beyond the Shareholder-Stakeholder Divide", *The Journal of Corporation Law*, 36, 1 (2010): 112, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1476116.
[149] Ibid, 62.
[150] Ibid, 99.

company for the benefit of its members as a whole. In doing so the director should have regard to a range of factors such as the long-term interests of the company, the interests of the company's employees, the interest of company's creditors and the impact of the company's operations on the community and the environment."[151]

Therefore, while programming the interests and purposes of the company to be adhered and pursued by the AI director, the responsible person has to consider the definition and requirements set up for the 'interests and purposes of a company' in all relevant sources of law (legislation, court practice, doctrine, articles of association of the company, etc.) of a particular jurisdiction. Moreover, if the interests of a company are equal to the interests of a certain category of stakeholders, these interests have to be previously discussed with the group in question and only then may be programmed into the AI director. Generally, the interests of shareholders may be the increase of share's value, payment of dividends, etc.; of the creditors – maintenance of the company's solvency; of the employees – permanent employment with high salaries and safe working conditions; of the society – safe environment and sustainable economic growth, etc. In order to introduce interests in the internal code of AI, they might be formulated as goals or objectives, particular bans, limits, etc. For instance, the mentioned creditors' interest may be manifested as a limit: the difference between assets and liabilities cannot be less than zero; or the employees' safety – as a ban: it is prohibited to conclude contracts implying the performance of dangerous works without required protective equipment.

After deciding which interests and how should be adhered to by AI directors, we proceed with discussing fiduciary duties, starting with the duty of loyalty.

Investigating the duty of loyalty in three different jurisdictions (the USA, the UK, and Germany), Andreas Cahn and David C. Donald state that directors "must […] act in good faith with due regard to the interests of the company, and must subordinate their own interests to those of the company. Under the company laws of all [mentioned] jurisdictions, a director will breach his duty of loyalty (a standard) if he causes the company to make a decision that damages it while benefiting himself."[152] "Aside from the very easy cases like actually stealing, embezzling or appropriating money or the physical assets […], the situations in which conflicts of loyalty arise are the following:

> 1. A director has a personal interest in a transaction that the company enters into (self-dealing), which can take the form of:
>
> (a) a director actually being the contractual counterparty in the transaction, such as in the case of executive compensation, a loan or a sale of property; and

[151] Paul Krüger Andersen et al, *EMCA*, 212.
[152] Andreas Cahn, David C. Donald, *Comparative Company Law*, 333.

(b) a director receiving compensation for the transaction's success or failure, such as a fee paid by a third party or being fired or promoted because of a merger.

2. A director competes with the company, which can take the form of:

(a) a director owning or managing a competing business, or

(b) a director taking a valuable opportunity from the company for personal use."[153]

AI does not have its own interests due to its limited legal capacity which implies that it cannot be an owner of the property and cannot act with the purposes other than it was programmed for. Therefore, AI cannot benefit itself. Florian Möslein agrees that "a breach of [AI director's] fiduciary duty of loyalty is unlikely. More generally, in the world of robo-directors, the legal rules on the conflicts of interest faced by directors would lose significance, inasmuch as robots do not make decisions based on personal interest."[154]

However, AI director may make decisions based on contradictory purposes programmed in its internal code by different companies in which it is appointed as a director.

There might be certain formal requirements for appointing a director to two competing companies. For instance, section 9.07 of the EMCA provides for the following: "A director may not carry on a competing activity or be a manager or director of a competing company without prior approval of the disinterested directors or the general meeting"[155]. However, in a case with the AI director, who is not capable of deciding where it wants to work, this requirement would mean that shareholders or disinterest directors of one company give their permission to shareholders or the supervisory board of another company for appointing a director. This would mean intervention in the internal affairs of a separate legal entity. Therefore, in a case with an AI director the legislators should unconditionally prohibit appointing AI as a director of two and more competing companies simultaneously.

Dealing with corporate opportunities, EMCA in section 9.06 provides for the following: "when a director is in a situation where there is a conflict of interest, the director may not personally or on behalf of third parties exploit a corporate opportunity unless he or she has received the approval of the disinterested directors or the general meeting"[156]. The breach of this provision may occur when AI has been appointed as a director of two not-competing companies, for instance within one corporate group, and find premises that would be suitable for rent by both these companies. In this situation in order to comply with the mentioned provision of EMCA or the like provisions in national laws, the AI director has to be programmed to inform disinterested

[153] Andreas Cahn, David C. Donald, *Comparative Company Law*, 337-338.
[154] Florian Möslein, "Robots in the Boardroom: Artificial Intelligence and Corporate Law", 16-17.
[155] Paul Krüger Andersen et al, *EMCA*, 216.
[156] Ibid, 215.

directors or the general meeting of both these companies regarding the existing opportunity that constitutes the conflict of interest, without disclosing any confidential information regarding purposes, strategical aims, etc. of each of the companies.

In such case, developers and trainers of AI directors have to decide how not to mix information obtained and purposes programmed while being a director of two different companies, and simultaneously how to use the experience and skills gained while working for both these companies. If it would be reasonable, the purposes of the companies, which are operating within the corporate group, might be subordinated to each other or to the purposes and interests of the whole corporate group in order not to involve disinterested directors or the general meeting for the approval. If the interfusion of confidential information and programmed purposes of different companies cannot be precluded, then the possibility of appointing AI as a director in two and more different companies has to be prohibited in law.

Therefore, a breach of duty of loyalty (using corporate opportunities) by AI director might occur notwithstanding the absence of its personal interests.

Investigating the duty of care, C. Gerner-Beuerle, P. Paech and E. P. Schuster highlight that "[t]he duty of care addresses one of the main aspects of the agency problem between the shareholders and the company. It aims at ensuring that directors devote sufficient time, care, and diligence to managing the company, act only on an informed basis, possess the necessary skills and experience to make sound business decisions, and consider the likely outcome of their decisions carefully."[157] Andreas Cahn and David C. Donald agree and point out that "[i]n the course of managing the company, […] directors must fulfil duties of care, skill and diligence."[158] The AI is made only to 'devote' all its time, skills, and experience to the company. And it seems that the duty of care cannot be breached by an AI. However, the questions may arise when AI is appointed as a director in two companies and spends a different amount of time on the adoption of the decisions of the same complexity in these companies and *vice versa*. Moreover, all possible situations cannot be foreseen. Therefore, as long as it is not proved that the AI director is not capable of breaching of duty of care, such possibility is presumed, and the mechanism of investigation and compensation of damages should be developed.

Considering the duty of care as a standard of conduct, the scholars study the approaches to the standard of care. For instance, Klaus J. Hopt finds out that "[t]he standard of care is still general negligence. In some countries like the United States, this standard can be lowered by shareholder resolution up to gross negligence, but not for breaches of the duty of loyalty and for

[157] Carsten Gerner-Beuerle et al, *Study on Directors' Duties and Liability*, 74.
[158] Andreas Cahn, David C. Donald, *Comparative Company Law*, 369.

acts not in good faith. […] The business judgment rule gives the board broad discretion and a safe haven from liability, provided the board has fully observed its duty of information."[159]

In their turn, Carsten Gerner-Beuerle, Philipp Paech, and Edmund Philipp Schuster distinguish between three approaches to define the standard of care: objective/subjective, objective, and reduced standards. "The objective/subjective standard establishes an objective lower benchmark that has to be satisfied by all directors, notwithstanding their individual skill, expertise, or experience. The benchmark is defined with reference to the care exercised by a prudent businessman with the knowledge and expertise that can reasonably be expected of a person in a comparable situation. However, the required standard is heightened if the director in question possesses particular knowledge or experience. […] The objective standard refers to the prudent businessman […] but does not explicitly provide for increased expectations in light of the individual skills of the defendant director. Finally, the reduced standard usually also starts from an objective formulation of the care and diligence that directors are expected to employ. In contrast to the other two approaches it allows exceptions that lead to a relaxation of the objective benchmark, for example if the director lacks the knowledge or experience of an average businessman or does not occupy a full-time position on the board."[160]

All the above mentioned standards are applicable to an AI director. Generally, the AI director has to be 'trained' and 'taught' about the knowledge and expertise that can reasonably be expected of a prudent businessman. Moreover, the AI has to use all skills and knowledge learned from its personal experience. The reduced standard may come into place when the AI director is on the 'training stage' or when the AI director by its essence cannot perform certain skills, expertise, or experience as it would do a human director. Therefore, the breach of duty of care by the AI director might occur in case of not using all relevant information, skills, knowledge, and experience to adopt a business decision. The compliance with the above mentioned standards may be monitored via a review of the 'black box' and thanks to the principle of transparency.

Talking about principle of transparency, the European Commission in its White Papers on Artificial Intelligence points out that "it is important that adequate information is provided in a proactive manner about the use of high-risk AI systems. Accordingly, the following requirements could be considered:

- Ensuring clear information to be provided as to the AI system's capabilities and limitations, in particular the purpose for which the systems are intended, the

[159] Klaus J. Hopt, "Comparative Corporate Governance: The State of the Art and International Regulation", 41.
[160] Carsten Gerner-Beuerle et al, *Study on Directors' Duties and Liability*, 92.

conditions under which they can be expected to function as intended and the expected level of accuracy in achieving the specified purpose. […]

- Separately, citizens should be clearly informed when they are interacting with an AI system and not a human being. […] [N]o such information needs to be provided, for instance, in situations where it is immediately obvious to citizens that they are interacting with AI systems. It is furthermore important that the information provided is objective, concise and easily understandable. […]"[161]

Considering the addressees of the legal requirements that would apply in relation to the high-risk AI applications referred to above, the European Commission presumes that "in a future regulatory framework, each obligation should be addressed to the actor(s) who is (are) best placed to address any potential risks. For example, while the developers of AI may be best placed to address risks arising from the development phase, their ability to control risks during the use phase may be more limited. In that case, the deployer [(the person who uses an AI-equipped product or service)] should be subject to the relevant obligation."[162]

However, in a case with an obligation to provide clear information to third parties the best-placed actor is the AI director itself due to its direct interaction with stakeholders, not the company, who nevertheless has to point out the specific nature of its director in the articles of association and state register. Therefore, taking into consideration the opinion of the European Commission, we suggest the new duty that may be allocated to the AI director – the duty to inform the third party that it is dealing with an AI. The only fact that this information is provided for in the Charter of the company and in the state register of companies is not enough. This disclosure may be performed, for instance, through the implementation of a mail template into the electronic message within the exchange thereof with the third party. Moreover, the third party shall be informed about the technical capabilities of AI in connection with their negotiations, conclusion of the contract and further cooperation. Based on this information, the third party develops its legitimate expectations and will be able to protect them later in case of breach of contractual and pre-contractual obligations through using appropriate remedies.

Talking about new duties that may be imposed in connection with an AI director, we should consider the process of acquisition of the legal capacity by AI. In other words, precise attention must be paid to the development, training, and learning of AI before it is able to perform the director's duties. These stages are essential as they define the quality of director AI will become. For instance, Akshaya Kamalnath points out that "there are also considerations that developers of AI and directors must consider together while AI for boards is being developed.

[161] White Paper on Artificial Intelligence (19.2.2020 COM (2020) 65 final), 20.
[162] Ibid, 22.

First and foremost, deciding what information would be relevant for board decision-making is important. Relatedly, care must be taken not to code biased perspectives into the Al. Second, securing the information within the AI should be prioritized. Third, while we await legal regulation regarding AI, directors and developers must ensure that the AI's decision-making process is transparent."[163]

Considering the abovementioned point of view regarding the utilization of 'director's duties' in the procedure of programming of the future AI director, we come up with an idea that a few more new duties have to be developed – the duty to program AI for compliance with 'director's duties', the duty to 'fill it' with relevant information important for a decision-making process that will not lead to any biases, the duty to ensure securing of information and transparent decision-making process. The addressees of these duties are a developer, manufacturer, programmer, or other directors, shareholders, etc., depending on their participation in creation, programming and 'training' of the AI director (i.e. the actors who are best placed to address particular potential risks). However, prior to bringing them to responsibility, the possibility, that AI autonomously by its own decision may have not performed its programmed duties, has to be excluded. The liability of natural persons should be based on fault, with exceptions to the strict liability regimes depending on the jurisdiction.

3.3. Peculiarities of AI's Liability as a Director of a Company

Talking about the liability of directors, three aspects should be analysed: liability for the breach of director's duties; liability for breach of contractual obligations; non-contractual liability (i.e. tort).

In the previous subchapter, we decided that the breach of the director's duties by the AI is hardly imaginable. The special duties and some elements of the general ones, which may be formulated as rules, are directly written in the AI's software; while others cannot be breached by the nature of the AI (for instance, AI does not have its own interests to benefit them while self-dealing). However, the remedies in case of occurrence of damages caused by the breach of director's duties have to be provided for in the law in order to protect companies from unexpected issues in connection with the operation of AI director. Therefore, we take a look at existing approaches to the director's liability and decide to what extent they are applicable to the AI directors. In other words, we try to extract all 'human aspects' (such as intent, fault, negligence, good faith, etc.) from the grounds of liability.

[163] Akshaya Kamalnath, "The Perennial Quest for Board Independence: Artificial Intelligence to the Rescue", 56-57.

In the previous subchapter, the possibility of AI director to breach the duty of loyalty by utilising the corporate opportunities is contemplated. According to the US law, legal doctrine and practice, "the company's business opportunities – in the same way as the company's "ordinary" capital – belongs to the company and therefore should not be appropriated by others or undermined by the management's actions. The US courts use different tests to decide the specific contents of the corporate opportunity doctrine. Thus, many courts use a two folded test, firstly a "line of business test" and secondly a "fairness test". The idea of the former is to decide how closely related the opportunity in question is to the type of business in which the company is engaged. The closer related they are, the more likely it is that a corporate opportunity exists. If this decision is positive, it is left to be considered whether it is fair that the management utilizes the opportunity."[164] The same two folded test may be utilised while estimating the causal link between losses and damages and the decision, action, or omission of the AI director. The 'line of business test' is applied in the same way as with a human director. While the 'fairness test' is conducted considering only the objective factual basis of the case due to the absence of 'personal attitude' of AI to the performed act.

We do not analyse the breach of duty of loyalty while self-dealing because this is impossible without a 'human element', namely, interests. Instead, we discuss the breach of duty of care, in particular, the applicability of a business judgement rule (both presumption and 'safe harbour').

Aurelio Gurrea-Martínez points out that business judgment "rule prevents judges from second-guessing business decisions made by corporate directors and (depending on the jurisdiction) executive officers, provided that some requirements are met – usually, making a business decision in good faith, with no conflict of interests, with a reasonable level of information, and in the best interest of the corporation"[165]. Andreas Cahn and David C. Donald supplement that "[a]lthough the type and quality of the information management obtains and the procedure it uses to make the decision can be tested against accepted practices and procedures for which a court may hear expert testimony, the business decision itself cannot be found to trigger liability just because a possible negative outcome indeed materializes"[166]. Carsten Gerner-Beuerle, Philipp Paech, and Edmund Philipp Schuster provide another approach that "[s]ome countries interpret the duty of care as procedural in nature, i.e. the courts will not review

[164] Paul Krüger Andersen et al, *EMCA*, 216.
[165] Aurelio Gurrea-Martínez, "Re-Examining the Law and Economics of the Business Judgment Rule: Notes for its Implementation in Non-US jurisdictions", 4.
[166] Andreas Cahn, David C. Donald, *Comparative Company Law*, 371.

the content of the decision if it has been taken on the basis of adequate information and in the absence of any conflict of interest"[167].

As we can see, there are different approaches to the business judgement rule (BJR), therefore, A. Gurrea-Martínez provides "several ways in which the rule can be implemented: (i) statutory (or codified) rule vs non-statutory rule; (ii) mandatory rule vs default rule; (iii) opt-in role vs opt-out rule; and (iv) as a presumption in favour of corporate directors vs as a 'safe harbour'"[168]. Thus, while weighting risks of appointment of the AI director, the company should also take into consideration whether the concept of BJR is implemented in its jurisdiction and which means of the implementation it uses.

The level of the court's interference in the decision-making process and the content of the business decision, which appeared to be not beneficial enough or even caused losses to the company, depends on the jurisdiction. A. Cahn and D. C. Donald state that "in Delaware, the distinction is accounted for by a "business judgment rule," which is formulated as "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 interests of the company"[169]. If the presumption stands, the decision will not be actionable unless grossly negligent. […] As *Disney case* makes clear, under the business judgment rule, a director's action does not trigger liability simply because it does not meet best practices."[170]

Carsten Gerner-Beuerle, Philipp Paech, and Edmund Philipp Schuster summarise that "the Delaware version of the business judgment rule consists of three elements: first, a number of threshold requirements that have to be satisfied for the protections of the rule to be triggered (acting on an informed basis, in good faith, without conflict of interest); second, a procedural element that allocates the burden of proof and provides for a shift in the burden when the presumptions are rebutted; and third, a standard of review that is either very light (irrationality test) or, if the presumptions are rebutted, consists in a complete fairness review."[171]

Whereas Germany, according to A. Cahn and D. C. Donald, uses a 'safe harbour' model which provides for the "protection of managers from the risk of personal liability for taking business decisions involving risk, unlike its US counterpart it does not create a presumption in favour of the directors. Before they can enjoy the protection of the business judgment rule, they

[167] Carsten Gerner-Beuerle et al, *Study on Directors' Duties and Liability*, 117.
[168] Aurelio Gurrea-Martínez, "Re-Examining the Law and Economics of the Business Judgment Rule: Notes for its Implementation in Non-US jurisdictions", 19-20.
[169] Aronson v. Lewis, 473 A.2d 805 (Del. 1984), quoted in Andreas Cahn, David C. Donald, *Comparative Company Law*, 371.
[170] Andreas Cahn, David C. Donald, *Comparative Company Law*, 371.
[171] Carsten Gerner-Beuerle et al, *Study on Directors' Duties and Liability*, 115.

will have to show that they were disinterested and took their decision based on reasonably thorough information."[172]

Essentially, the elements of the BJR are alike in the mentioned jurisdictions. And after extraction of all 'human aspects', the only requirement for the BJR application is the informed basis of the decision.

When we are talking about AI with its ability to gather and process a large amount of information and learn from its experience, it seems to be an axiom that AI makes decisions exceptionally on the basis of adequate information. However, the Wisconsin Supreme Court in case *State v. Loomis* does not agree with such assumption and "acknowledges the lack of transparency and potential biases accompanying the use" of AI or algorithmic tools while rendering a decision by the court[173]. The main question in this case is whether the usage of Correctional Offender Management Profiling for Alternative Sanctions (COMPAS) during the determination of the offender's sentence is a violation of the right to the due process.

H.-W. Liu, C.-F. Lin, and Y.-J. Chen after analysis of the *State v. Loomis* case come to the following conclusions. They state that in order to "have an informed discussion, it is crucial to understand the operation of COMPAS and similar risk assessment systems. It essentially consists of a series of steps in the order of (i) data input, (ii) processing and computation and (iii) prediction output."[174] They point out the court's mistake allowing the defendant to "challenge the accuracy of his criminal history and questionnaire answers ('data input'), without challenging the critical 'processing and computation' stage. […] The Loomis Court's ignorance of the processing and computation phase demonstrates exactly the problem of its lack of transparency, which is vividly described by Frank Pasquale as a 'black box'. The problem of the 'black box' refers to the complexity and secrecy of the algorithmic process, which frustrates meaningful scrutiny of automated decision-making that has an immense impact on society."[175]

Therefore, within the investigation of the breach of duty of care by the AI, it is essential to review the algorithmic process on all its stages in order to acknowledge the fact that the decision has been made on a thoroughly informed basis. Moreover, the 'opening of the 'black box'' also allows evaluating whether the objective/subjective, objective or reduced standard of care is met by the AI director within the decision-making process, i.e. whether the AI has used all relevant knowledge, skills, and experience in order to make a sound informed decision.

[172] Andreas Cahn, David C. Donald, *Comparative Company Law*, 371.
[173] Han-Wei Liu, "Beyond *State v Loomis*: artificial intelligence, government algorithmization and accountability", 133.
[174] Ibid, 134.
[175] Ibid.

While establishing a breach of director's duties, the question of allocation of the burden of proof arises, i.e. whether the AI director can bear the burden of proof. In the case of presumption, AI is safe from the burden of proof as long as the plaintiff cannot rebut "any of the presumed elements"[176], particularly, that the AI has made an informed decision. "Then the director must respond by showing that the decision was a good one, i.e. that it was in substance fair to the company."[177] In the case of 'safe harbour' the AI would have to prove that its decision complies with the elements of the BJR.

C. Gerner-Beuerle analyses different approaches to the allocation of the burden of proof in European jurisdictions. "France, Belgium and Luxembourg, follow the general procedural rule imposing the burden of proof on the claimant for so-called obligations of means, but provide for a reversal of the burden of proof in cases of obligations of result. The former refer to the obligation to employ best efforts in performing a specified task, without assuming responsibility for achieving a certain result, whereas the latter include the result as part of the obligations assumed by the debtor, with the consequence that the debtor is in breach of a contractual or statutory duty if the result is not achieved. The directors' duty to manage the company and act in the company's best interest is commonly interpreted as an obligation of means. Accordingly, in order to establish liability for mismanagement, the claimant bears the burden of proving that the director has acted negligently. […] On the other hand, breaches of the company legislation or the articles of association are considered to be obligations of result. For example, it has been argued that the failure of the director to participate in board meetings and be actively involved in the management of the company constitutes a violation of an obligation of result. In this case, the burden of proof shifts to the director who has to show that his absence was excusable and that he challenged the wrongful board resolution at the earliest possibility."[178] Therefore, the allocation of the burden of proof depends on the type of breached duty and on the jurisdiction.

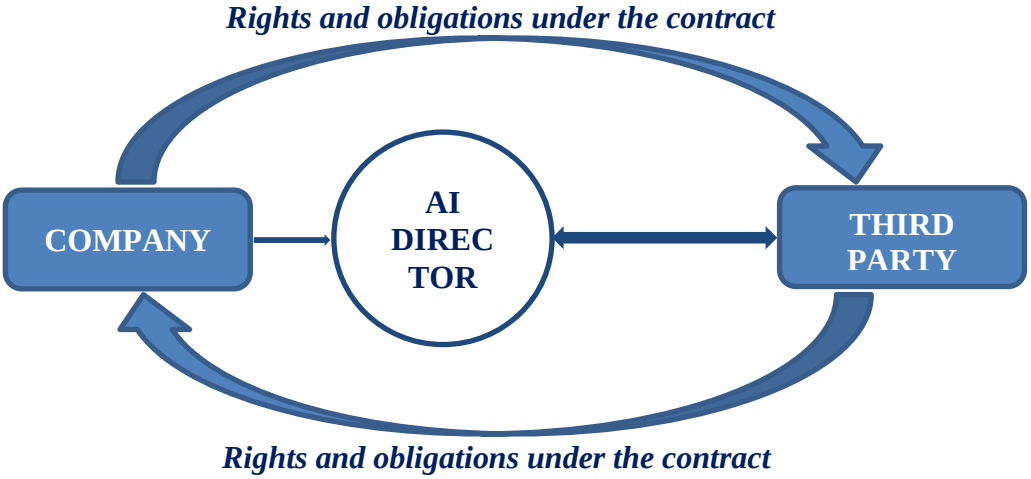
At the first Charter, we decide that the legal capacity of the AI is limited so that it cannot perform duties for the performance of which it has not been programmed. Unless the AI director is reprogrammed for the new function (to perform before the court, search for and bring arguments) with the new purpose (to prove reasonableness and lawfulness of its decisions) and is supplied with the new base of data (legal doctrine, case law, for example), AI director cannot perform before the court or another authorised organ. Otherwise, after being reprogrammed, it would stop being a director and start being a lawyer. Moreover, even being a lawyer, AI cannot represent itself and protect its lawful rights and interests because it simply does not have either.

[176] Andreas Cahn, David C. Donald, *Comparative Company Law*, 371.
[177] Ibid.
[178] Carsten Gerner-Beuerle et al, *Study on Directors' Duties and Liability*, 99-100.

AI always acts on behalf of its principal and never on its own. Therefore, the burden of proof cannot be laid upon the AI. This problem can be resolved by the change of procedure. The resolution regarding the causal link between the damages suffered by the company and the decision, action or omission of the AI director is to be made not by the court with its adversarial proceedings, but by the special investigatory organ. This organ conducts a thorough investigation, considering all facts in favour and contra the complicacy of the AI to cause damages and losses. This resolution would be a legal ground for insurance compensation. Possible insurance scheme is provided in the next subchapter.

Also, the question of the protection of the aggrieved party arises, namely, who can bring claims against AI director and to what remedies they may resort in such situations. While conducting his comparative analysis, K. J. Hopt notices that "in many countries liability of board members is only toward the corporation, with the consequence that the board, or the supervisory board, is in charge of enforcing the claim of the corporation. […] In other countries the shareholders and sometimes also creditors and investors can assert direct claims against the director who violated his or her duties."[179] In the latter countries, creditors and investors face the situation when they are deprived of the remedies as their direct claims cannot be brought against the AI director. Such legal provisions should be reviewed and, if possible and reasonable, provide creditors and investors with the right to sue the company as a principal of the AI.

Talking about the contractual liability of AI director for the breach of contractual obligations towards not the company but the third parties, firstly, the simplified scheme of these relations should be observed:



The party to the contract is a company, not an AI acting as its agent. Thus, the rights and duties resulting from the contract are laid upon the company. Therefore, in case of breach of contractual or/and pre-contractual obligations (if the jurisdiction acknowledges the latter) the

[179] Klaus J. Hopt, "Comparative Corporate Governance: The State of the Art and International Regulation", 41.

company shall be held responsible. As the company has full legal capacity, it can compensate damages caused to the third party from its own assets. The question arises when the company thinks that the breach of contract occurred because of actions or omissions of the director. The recourse action is impossible as AI cannot be respondent in the court notwithstanding its electronic personality due to its limited nature (AI director is not programmed to perform before the court; moreover, AIs do not have the rights which they would be able to protect). In this situation, insurance will be extremely useful.

When the damages occurred as a result of the tort (non-contractual liability), which has occurred not due to the autonomous decision, act or omission of the AI, then the 'product liability' should be applied and the human in charge has to be found (developer, programmer, user, etc.). This issue was in detail discussed in the first chapter. Otherwise, the damages are covered by the company on whose behalf the AI director was acting. Then the company may claim for indemnification by the insurance company.

3.4. Mandatory Insurance

In the previous subchapters, we decide that AI director cannot be respondent in the court, bear the burden of proof and does not have assets to compensate for damages. The company as an AI director's principal and a party to agreements with the third parties compensates for damages to the latter. However, the company does not have an opportunity to bring a recourse action against its director (an agent) due to the specific nature of the latter. Therefore, the insurance agreement or a special fund in case of absence of the first may well protect the company's interests.

David Levy supposes that "[n]o-fault insurance could, in principle, be taken out by the owner or operator of a robot, or by the robot's manufacturer. A significant disadvantage of obliging the manufacturer to insure is that they will not know for how long the owner or operator will be using the robot, nor when it is abandoned completely or destroyed. An owner will only need to be insured during periods when their robot might be used, and they may therefore suspend the payment of their insurance premiums if they do not plan to operate their robot for an extended period."[180] Therefore, we believe that the insurance agreement is to be concluded between the company having the intent to appoint AI as its director (represented by the appointing organ) – regardless of being an owner or just a user of AI – and an insurance company. Insurance contributions are to be made by the company. The company is bearing the

[180] David Levy, "Intelligent no-fault insurance for robots", *Journal of Future Robot Life* 1 (2020): 11, http://dx.doi.org/10.3233/FRL-200001.

costs of paying insurance contributions because it benefits from the usage of AI as a director and simultaneously takes the risks of the AI director's failure to perform its function. The insurance beneficiary, accordingly, is a company. The insured accident is the occurrence of damages or losses caused by the decision, act or omission of the AI director. The document that acknowledges the causal link between damages or losses and AI director is a resolution adopted as a result of an investigation of the special investigative organ. The agreement is terminated upon the AI's dismissal from the director's office.

The investigative organ may be both permanent and *ad hoc*. It may be comprised of independent specialists in the spheres of information technologies, corporate law, business and other spheres that might be necessary during the determination of the causal link. *Ad hoc* investigative organ may be formed, for instance, through the appointment of candidates from a unified registry of experts by the company and insurance company.

During the investigation of the causal link, the AI's 'black box' needs to be 'opened'. For this purpose, the European Commission in its White Papers on Artificial Intelligence suggests the particular data be recorded: "Taking into account elements such as the complexity and opacity of many AI systems and the related difficulties that may exist to effectively verify compliance with and enforce the applicable rules, requirements are called for regarding the keeping of records in relation to the programming of the algorithm, the data used to train high-risk AI systems, and, in certain cases, the keeping of the data themselves. […] To this aim, the regulatory framework could prescribe that the following should be kept:

- accurate records regarding the data set used to train and test the AI systems, including a description of the main characteristics and how the data set was selected;
- in certain justified cases, the data sets themselves;
- documentation on the programming and training methodologies, processes and techniques used to build, test and validate the AI systems, including where relevant in respect of safety and avoiding bias that could lead to prohibited discrimination."[181]

The terms and conditions of insurance agreements may be various. However, the minimum one has to cover damages and losses, caused by the AI director as though they were caused by the human director. In other words, in the process of establishing the causal link, the limitations of liability provided for in the legislation may be applied *mutatis mutandis* to AI. For instance, the presumption or 'safe harbour' of the business judgement rule may be applied,

[181] White Paper on Artificial Intelligence (19.2.2020 COM (2020) 65 final), 19.

which will result in rejection of the insurance company to perform indemnification to the beneficiary. The inability of the investigative organ to fulfil the two folded test (a 'line of business test' and a 'fairness test') regarding using corporate opportunities by the AI director also leads to the non-coverage of damages or losses claimed by the company.

European Parliament suggests supplementing the insurance system with "a fund in order to ensure that reparation can be made for damage in cases where no insurance cover exists"[182]. It lets the Commission decide "whether to create a general fund for all smart autonomous robots or to create an individual fund for each and every robot category, and whether a contribution should be paid as a one-off fee when placing the robot on the market or whether periodic contributions should be paid during the lifetime of the robot"[183]. In a case of the AI performing as a director of a company, such a 'double-insurance' system with the coexistence of the fund and insurance agreement will only lay a double burden on the company that shall make contributions both to the insurance company and the fund. Instead, the obligatory insurance upon the appointment of the AI as a director of the company will be beneficial enough. In case of failure to meet this obligation, the company will not obtain the insurance indemnification and all losses and damages will be borne solely by it, while the third parties' interests will remain protected.

In conclusion, the provisions regarding appointment, dismissal, and requirements to the director are applicable to the AI director *mutatis mutandis* depending on its specific nature and concrete properties of each AI.

The breach of the director's duties by the AI is hardly imaginable. The special duties and some elements of the general ones, which may be formulated as rules, are directly written in the AI's software (internal code); while others cannot be breached by the nature of the AI (e.g. AI does not have its own interests to benefit them while self-dealing). However, a breach of duty of loyalty (using corporate opportunity) might occur in case when AI director makes decisions based on contradictory purposes programmed in its internal code by different companies in which it is appointed as a director; moreover, the possibility of appointing AI as a director in two or more competing companies should be prohibited by the law. The breach of duty of care might be caused by not using all relevant information to adopt a decision.

The new duty to inform the third party that it is dealing with an AI should be allocated to the AI director. This duty includes information concerning the technical capabilities of AI in connection with negotiations, the conclusion of the contract and further cooperation. Moreover, a range of new duties like the duty to program AI for compliance with 'director's duties', the duty

[182] European Parliament resolution on Civil Law Rules on Robotics (2015/2103(INL)).
[183] Ibid.

to ‘fill it’ with relevant information important for a decision-making process that will not lead to any biases, the duty to ensure securing of information and transparent decision-making process may be allocated to developer, manufacturer, programmer, or other directors, shareholders, etc., depending on their participation in creation, programming and ‘training’ of the AI director.

The remedy in case of occurrence of damages caused by the breach of director’s duties or contractual obligations aimed at protection of companies from unexpected issues in connection with the operation of AI director is an insurance, the indemnification under which should be conducted on the ground of independent thorough investigation by the special organ. This investigation acknowledges existence (or non-existence) of the causal link between damages and decisions, acts or omissions of the AI director. The investigative organ is entitled to use possibilities of reducing the director’s liability, such as business judgment rule (considering only the informative basis of the decision and existing under certain legislation standard of conduct) and the two folded test (a ‘line of business test’ and a ‘fairness test’) in case of breach of duty of loyalty.

CONCLUSIONS

1. We agree with the scholars, cited in this research, that depending on the level of AI's autonomy, AI may be considered to be both: object and subject. If AI is acting according to its own decision based on its knowledge and experience, then it should be treated as a subject of the law, otherwise – as an object.

The conclusion from the analysis of the existing doctrine regarding types of persons that could be suitable for AI (while treated as a subject) is neither of them is fully appropriate. We believe that AI should be treated as a *sui generis* person (may be called *'electronic person'*) with limited legal personality, that imply the possibility of AI to act autonomously (after it has been programmed for a particular purpose, 'appointed' for a particular position and has completed a certain period of 'training') and to create, change and terminate the rights and obligations of those subjects of law on whose behalf it is acting. Elsewise, the AI's engagement into social relations would impose the human principal with additional burdensome obligations of control over the AI's activity. The *electronic person* does not have rights and duties in the traditional sense thereof. It cannot be held liable due to the absence of its personal assets. However, the human (developer, programmer, 'trainer', user, etc.) cannot be liable for losses and damages caused by the AI because of its own predictions and decisions based on its knowledge and experience. Such damages and losses are compensated by the mandatory insurance.

2. After analysis of the doctrine, the advantages and disadvantages that the engagement of the AI into corporate governance might bring to the company have been figured out: 1) the decrease in agency costs and the increase in efficiency of management as AIs are fully devoted to the interests of one company; 2) AIs are able to analyse a huge amount of information, make conclusions and adopt decisions based thereon in a short period of time; 3) AI is a tool to counter groupthink. The scholars point out the following disadvantages: 1) AI is not capable of making judgements (working out benefits and costs, considering interests of different stakeholders); 2) it is not creative and innovative. We do not agree that AI does not have business instincts and entrepreneurial flair of a business-person. AIs are capable of processing a huge amount of information and learning from their experience, which is the basement of a 'sixth sense'. Moreover, depending on the sector of the economy in which the company is operating, type of the company, preferences of shareholders, etc., the advantages of the AI director might significantly prevail its disadvantages.

We agree with Florian Möslein that the legal strategies for reducing agency costs slightly change their meaning in the context of AI director. However, only the reward strategy completely loses its significance.

3. The director`s duties provided for in the law have been analysed. The special duties and some elements of the general ones, which may be formulated as rules, are directly written in the AI's internal code; while some others cannot be breached due to the essence of the AI (for instance, AI does not have its own interests to benefit them while self-dealing). However, a breach of duty of loyalty might occur in case when AI director makes decisions based on contradictory purposes programmed in its internal code by different companies in which it is appointed as a director; while the breach of duty of care might be caused by not using all relevant information to adopt a decision.

Besides, we decided that the new duty to inform the third party that it is dealing with an AI should be allocated to the AI director. This duty includes information concerning the technical capabilities of AI in connection with negotiations, the conclusion of the contract and further cooperation. Moreover, a range of new duties like the duty to program AI for compliance with 'director's duties', the duty to 'fill it' with relevant information important for a decision-making process that will not lead to any biases, the duty to ensure securing of information and transparent decision-making process may be allocated to the developer, manufacturer, programmer, or other directors, shareholders, etc., depending on their participation in creation, programming and 'training' of the AI director.

4. While analysing provisions regarding the director`s liability, the impossibility of AI to be held liable has been found out. The company as an AI director's principal and a party to agreements with the third parties compensates for damages to the latter. Considering the impossibility of bringing a recourse action against the AI director, the remedy in case of occurrence of damages caused by the breach of director's duties aimed at protection of companies from unexpected issues in connection with the operation of AI director might be insurance, the indemnification under which should be conducted on the ground of independent thorough investigation by the special organ. This investigation acknowledges existence (or non-existence) of the causal link between damages and decisions, acts or omissions of the AI director. The investigative organ is entitled to use possibilities of reducing the director's liability, such as business judgment rule or two folded test in case of breach of duty of loyalty.

RECOMMENDATIONS

1. The hypothetical Civil Code provisions introducing the third *sui generis* type of person may be seen as follows:

Article N. Electronic Person

Electronic persons are cyber physical systems, autonomous systems, smart autonomous robots and their subcategories, which are characterised by the following features: 1) autonomy; 2) self-learning; 3) decision-making; 4) rationality.

Article N+1. Legal Capacity of the Electronic Person

The electronic person obtains its legal capacity as soon as it starts acting autonomously after it has been appointed for a particular position, programmed for a particular purpose and has completed a certain period of training, specified in its technical documentation.

The legal capacity of an electronic person is limited to the function or a set of functions which it has been appointed to perform. The electronic person cannot bear the burden of proof and be a claimant or respondent in the court or alternative proceedings.

Electronic person creates, changes and terminates the rights and obligations of those subjects of law on whose behalf it is acting.

Article N+2. Liability of the Electronic Person

Electronic person cannot be held liable in any circumstances.

2. The hypothetical provisions regarding the possibility to appoint an electronic person as a director of a company may be formulated as follows:

Article M. Director of a Company

The Director of a company may be a natural, juridical or electronic person.

Provisions regarding requirements to the director, his or her rights, duties and liabilities are applicable to the director-electronic person *mutatis mutandis*.

Article M+1. Duty of Information of a Director-Electronic Person

The Director-electronic person shall inform the third party that it is dealing with an electronic person. This information shall include the technical capabilities of the electronic person in connection with negotiations, the conclusion of the contract and further cooperation.

Article M+2. Programming and Training of the Director-Electronic Person

The persons responsible for programming and/or training of the Director-electronic person shall: 1) program electronic person for compliance with the relevant director's duties applicable to the director-electronic person; 2) provide electronic person with relevant information necessary for a decision-making process that will not lead to any biases; 3) ensure securing of information and transparent decision-making process.

Article M+3. Mandatory Insurance

The company having intent to appoint electronic person as its director shall obtain and maintain insurance that will compensate for losses and damages caused by decision, act or omission of a Director-electronic person.

3. The provision aimed at prevention of the breach of duty of loyalty (using the corporate opportunity) by an AI director may be formulated as follows:

Article L. Competition with the Company

The Director-electronic person may not be a director of two and more competing companies simultaneously.

4. The IT scholars have to find out, how not to mix confidential information obtained and purposes programmed while being a director of two different companies, and simultaneously to use the experience and skills gained while working for both of them. If the interfusion of information and purposes cannot be precluded, then the possibility of appointing AI as a director in two and more different companies has to be prohibited.

5. The jurisdictions that allow creditors and investors to assert direct claims against the director who violated his or her duties, should not deprive creditors and investors of the remedy to bring their direct claims against the company due to the impossibility of AI to be a respondent in court. Also, the jurisdictions allowing legal action concerning the annulment of corporate decisions (made by AI director) should review the type of proceedings suitable. The main attention should be focused on the due respondent (other than AI). The respondent may be a company (if claimers, for instance, shareholders or other stakeholders) or counterparty to the agreement (if the decision was to enter thereto), etc. Besides, the jurisdictions may classify this type of action as a simplified proceeding, within which the company provides the resolution of the investigatory organ acknowledging the failure of an AI director to meet its obligations alongside with the application to annul the corporate decision and the court then issues an order to annul the latter.

6. The supervision over the involvement process of the AI into corporate governance is highly important. Legislators, legal scholars and practitioners have to cooperate effectively with representatives of businesses that have appointed AI as directors. For now, this question is a theoretical one, and it is impossible to predict all problematic situations and to come up with their solutions. Therefore, representatives of businesses have to report all good and bad issues, then lawyers have to develop new ways of regulation, and then legislators and practitioners have to implement these changes into the existing legal system (including laws, bylaws, court practice, freedom of contracts, etc.).

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ABSTRACT

The artificial intelligence (AI) technologies are developing rapidly nowadays so that the companies start benefiting from them by appointing AI as a ‘director’ of the company. This leads to the significant transformation of social relations. Therefore, this research is aimed at creation of the model implementing AI to the corporate governance and gives the answer to the following question: how the procedure and consequences of the appointing AI as a director of a company should be legally regulated; and what auxiliary changes should be conducted in the legal doctrine and legislation?

The study shows that the legal regulation of an AI director has a lot in common with that of an ordinary human director. The differences are based on the absence of ‘purely human’ attributes (e. g. personal interests, intent, etc.) and on the limited legal capacity of an AI (e. g. AI cannot be held liable). The damages caused by the malfunctions of the soft- or hardware are to be covered by the responsible human within the ‘product liability’ concept, while the risk of AI’s failure to perform the director’s duties is born by the company. On this stage, the shift from the adversarial court proceedings to the investigatory proceedings resulting in the insurance indemnification to the company is suggested. Further research is needed to develop new approaches, to broaden and improve the suggested one, which can facilitate diversification of corporate governance and increase its effectiveness.

Key words: artificial intelligence (AI), liability of AI, AI director, director’s duties, corporate governance.

SUMMARY

APPOINTING ARTIFICIAL INTELLIGENCE AS A DIRECTOR OF A COMPANY: UTOPIA OR REALITY OF THE FUTURE?

Olga Aralova

This Master Thesis is aimed at the creation of the model implementing AI to corporate governance. Therefore, the following objectives are pursued: to decide the legal status of AI; to figure out the advantages and disadvantages of AI in corporate governance; to analyse director`s duties regarding AI director; to find out how AI director can be liable; to determine what auxiliary changes should be conducted in the legal doctrine and legislation in order to be ready when AI will be appointed as a director of a company.

The research is divided into two parts. The first one, Chapter 1, is dealing with general questions regarding AI, its features and legal status. The second part is more specific and introduces general knowledge about AI into the corporate law sphere. Precisely, Chapter 2 deals with the issue of the AI's place in corporate governance. Whereas Chapter 3 studies the status of an AI director: its appointment and dismissal, duties and liability.

Within the research, we consider AI to be both: object and subject (electronic person) of the law. The legal capacity of the latter should be limited to the function for the performance of which the AI has been appointed. Therefore, AI by itself cannot bear the burden of proof, be a claimant or respondent in court, cannot be held liable. The main advantages of AI, namely, loyalty to the company, effectiveness, and objectiveness, may exceed the lack of 'human attributes', such as intuition, if they are utilised wisely. The director's duties, which can be formulated as rules, are directly written in the AI's internal code. Besides, the new duty to inform the third party that it is dealing with an AI should be allocated to the AI director. Moreover, a range of the following new duties may be allocated to the actors responsible for programming and/or training of the AI director: the duty to program AI for compliance with 'director's duties', the duty to 'fill it' with relevant information important for a decision-making process that will not lead to any biases, the duty to ensure securing of information and transparent decision-making process. The remedy in case of occurrence of damages caused by the breach of director's duties might be insurance, the indemnification under which should be conducted on the ground of independent investigation by the special organ. This investigation acknowledges existence of the causal link between damages and decisions, acts or omissions of the AI director.

Based on the foregoing, we recommend jurisdictions to allow an electronic person to be appointed as a director of a company and to make all auxiliary amendments.

HONESTY DECLARATION

DD/MM/YYYY

Vilnius

I, Olga Aralova, student of
(name, surname)

Mykolas Romeris University (hereinafter referred to University),
Mykolas Romeris Law School, European and International
(Faculty /Institute, Programme title)
Business Law Specialization

confirm that the Bachelor / Master thesis titled

"Appointing Artificial Intelligence as a Director of a Company: Utopia or Reality of the Future?":

1. Is carried out independently and honestly;
2. Was not presented and defended in another educational institution in Lithuania or abroad;
3. Was written in respect of the academic integrity and after becoming acquainted with methodological guidelines for thesis preparation.

I am informed of the fact that student can be expelled from the University for the breach of the fair competition principle, plagiarism, corresponding to the breach of the academic ethics.

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