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EXAMINING THE ISSUES OF LEGAL PERSONHOOD OF ARTIFICIAL INTELLIGENCE AND ROBOTS[*]

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The possibility of giving legal personhood to artificial intelligence (hereinafter: AI) and advanced, smart robots incurred both in literature and international documents about the legislation of technology. The aim of our study is the examination of the legal entity having regard to AI and advanced robots. After describing the conceptual basis, we present the most important viewpoints and best-known theories according to this specific legal entity. Moreover, we study the topic of the legal entity – in the context of civil law – in general. Lastly, we intend to mention the issue of transhumanism.

Keywords: *artificial intelligence, robots, legal personhood, transhumanism*

A mesterséges intelligencia (a továbbiakban: MI) és a robotok jogi szabályozása kapcsán – mind a szakirodalomban, mind pedig a nemzetközi dokumentumokban – felmerült a technológia jogalanyisággal történő felruházásának lehetősége. Jelen tanulmány célja a jogalanyiság vizsgálata a MI és a fejlett robotok vonatkozásában. A fogalmi alapvetéseket követően ismertetni kívánjuk a legjelentősebb álláspontokat, legismertebb elméleteket eme különleges jogalanyiság vonatkozásában. Ezt követően általánosságban vizsgáljuk a polgári jogi jogalanyiság témakörét a MI és a robotok tekintetében, végezetül pedig a transzhumanizmus kérdésköréről is szólni kívánunk.

Kulcsszavak: *mesterséges intelligencia, robotok, jogalanyiság, transzhumanizmus*

Introduction

Artificial intelligence has gained invisibly a noteworthy part in our everyday life, as a result, demand for the legislation of the technology has appeared, its unknown being makes a lot more difficult to regulate AI. In the literature, many authors consider

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essential to describe artificial intelligence and robots from the legal aspect. According to the legal viewpoints, the technology and its materialised appearance can be deemed as a property or a legal entity, regarding the classical legal categories.[1]

In this paper, we intend to describe the issue of legal personhood – in the classical meaning – in the light of new technologies. In this context, we study natural and legal persons in general. Our aim to examine whether the legal system can endure this potential legal arrangement at all; if so, how it can be implemented and what might be the possible impact. It is important to know that we do not want to divide robots and AI, and examine them separately, rather study them coherently. However, the fact that artificial intelligence and robot is not the same cannot be neglected. In this context, we do not wish to provide a detailed analysis of the concept, we focus on clarifying the conceptual basis, as it is essential for our study.

The Independent High-Level Expert Group on artificial intelligence – established by the European Commission – describes the definition as follows: *"Artificial intelligence (AI) systems are software (and possibly also hardware) systems designed by humans that, given a complex goal, act in the physical or digital dimension by perceiving their environment through data acquisition, interpreting the collected structured or unstructured data, reasoning on the knowledge, or processing the information, derived from this data and deciding the best action(s) to take to achieve the given goal. AI systems can either use symbolic rules or learn a numeric model, and they can also adapt their behaviour by analysing how the environment is affected by their previous actions…"*[2] In contrary, describing the definition of robots is not that simple. The European Parliament in its resolution of 16th February 2017 called on the European Commission to make a proposal about the concept of smart robots, considering the following characteristics:

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1 We need to mention that legal personhood of artificial intelligence – widely – appeared in 1992 and it has gained great significance in past years. See Lawrence B. SOLUM: Legal Personhood for Artificial Intelligences. *North Carolina Law Review* Vol. 70, Issue 4, (1992), 1231–1287., https://scholarship.law.unc.edu/cgi/viewcontent.cgi?article=3447&context=nclr, 4. June 2020.
Leon E. WEIN: The Responsibility of Intelligent Artifacts. Toward an Automation Jurisprudence. *Harvard Journal of Law & Technology* Volume 6. Fall 1992, 103–154., https://jolt.law.harvard.edu/assets/articlePDFs/v06/06HarvJLTech103.pdf, 4. June 2020.
Jacob TURNER: *Robot Rules. Regulating Artificial Intelligence*. Palgrave Macmillan, Cham, 2018.
Atabek ATABEKOV – Oleg YASTREBOV: Legal Status of Artificial Intelligence Across Countries. Legislation on the Move. *European Research Studies Journal* Volume XXI, Issue 4, 2018, 773–782.: https://www.ersj.eu/journal/1245, 14. April 2020.
L. Tyler JAYNES: Legal personhood for artificial intelligence: citizenship as the exception to the rule. *AI & Society* 2019 June, https://link.springer.com/article/10.1007/s00146-019-00897-9, 14. April 2020.

2 Independent High-Level Expert Group on Artificial Intelligence: *A definition of AI: Main Capabilities and Disciplines.* European Commission, Brussels, 8th of April 2019, 6.

- *"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"*[3]

Nevertheless, the definition cannot be found in subsequent documents of the European Union.

According to the international professional organisation, the *Institute of Electrical and Electronics Engineers* (hereinafter: IEEE)[4] *"A robot is an autonomous machine capable of sensing its environment, carrying out computations to make decisions, and performing actions in the real world."*[5] Regarding the researchers of IEEE, describing robots generally is a quite difficult task, instead of it the types of robots are defined based on utilisation purpose, as follows:

1. *Airspace robots*, this category includes all aerial devices, as well as robots used in space.
2. *Consumer robots*, devices that can be purchased by anyone and can be used on a board spectrum of options, including household robots.
3. *Disaster response devices* used to perform dangerous tasks.
4. *Drones*,[6] also known as unmanned aerial vehicles which come in many different shapes and sizes and have varying degrees of automatization.

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[3] P8_TA(2017)0051 Civil Law Rules on Robotics. European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL)), Point 1.: https://www.europarl.europa.eu/doceo/document/TA-8-2017-0051_EN.html, 8. April 2020.

[4] The IEEE was founded in 1963, from the American Institute of Electrical Engineers and the Institute of Radio Engineers. *History of IEEE*, https://www.ieee.org/about/ieee-history.html, 8. April 2020.

[5] Learn – Everything you need to know to get started in robotics: *What Is a Robot?* https://robots.ieee.org/learn/, 8 April 2020.

[6] Our study does not include liability and privacy questions but the significance of them cannot be neglected. See Réka PUSZTAHELYI: Recent EU legislation relating to drones in the light of right to privacy. In: *MultiScience XXXIII. microCAD International Multidisciplinary Scientific Conference* (ed.: Tamás Kékesi), Miskolc-Egyetemváros, Miskolc, 2019, 1–9.
Réka PUSZTAHELYI: Reflections on civil liability for damages caused by unmanned aircrafts. *Zbornik Radova Pravni Fakultet (Novi Sad)* 2019/1, 311–326.
Réka PUSZTAHELYI: Strict liability implications of autonomous vehicles with a special view to programming choices. In: *Law, Commerce, Economy IX. Collection of Papers presented at an international scientific symposium LAW – COMMERCE – ECONOMY held from 23rd–25th of October 2019 in High Tatras Košice, Slovakia* (eds. Jozef Suchoza – Ján Husár – Reginá Hucková), Univerzita Pavla Jozefa Šafárika v Košiciach, 2019, 468–478.

5. *Robots in the field of education,* the learning devices – as a new generation of robots – are expected to be used both at home and in classrooms.
6. *Entertainment robots,* these machines can be found in amusement parks as they are more specific than consumer robots.
7. *Exoskeleton,* these devices are mainly applied for rehabilitation purposes.
8. *Humanoid robots,* machines with a human appearance.
9. *Industrial robots* used for industrial activities.
10. *Medical robots,* devices are applied in healthcare, such as surgical robots or bionic prostheses and prosthetic limbs.
11. *Military and security robots,* the devices in this category are often used for detection or transport of various weapons.
12. *Research-related robots,* this group covers robots created and employed in research to help the development of the devices and science.
13. *Self-driving cars,*[7] nowadays these devices are in the testing phase, hopefully, in some years they can be used – safely – in public traffic.[8]

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[7] It is noteworthy to mention the importance of liability questions on self-driving cars. See Ágnes JUHÁSZ – Réka PUSZTAHELYI: Legal Questions on the Appearance of Self-driving Cars in the Road Traffic with Special Regard on the Civil Law Liability. *European Integration Studies* 12/1., 2016, 10–28.
Ágnes JUHÁSZ: The regulatory framework and models of self-driving cars. *Zbornik Radova Pravni Fakultet (Novi Sad)* 2018/3., 1371–1389.
Ágnes JUHÁSZ: Transition of the driver's rights and duties in light of the automation of vehicles. in: *Law, Commerce, Economy IX. Collection of Papers presented at an international scientific symposium LAW – COMMERCE – ECONOMY held from 23rd–25th of October 2019 in High Tatras Košice, Slovakia* (eds. Jozef Suchoza; Ján Husár; Reginá Hucková), Univerzita Pavla Jozefa Šafárika v Košiciach, 2019, 393–404.

[8] Previous accidents of Tesla Model X resulted in lawsuits against Tesla, which might – potentially – effect on the development of self-driving cars. On 23rd of March, in 2018 a man died after a car crash, the mentioned engine was in Autopilot mode. Unfortunately, *"…the autopilot feature of the Tesla turned the vehicle left, out of the designated travel lane, and drove it straight into a concrete highway median. The above-described Tesla Model X struck and collided with the median structure with sufficient force and velocity to cause fatal injuries…"* According to the document of the Complaint of Damages, at the time of the accident the car was not equipped with an automatic emergency braking system despite the technology existed. *"By that date, multiple other manufacturers … all had vehicles in production with automatic emergency braking safety features available no later than the 2015 model year."*
Complaint for Damages Huang v. Tesla. 2–6., http://dig.abclocal.go.com/kgo/PDF/Complaint-Huang-v-Tesla-State-of-Calif-20190430.pdf, 4. June 2020.
On 26th of April in 2016 another accident occurred in Japan, a pedestrian was hit, while a 2016 Tesla Model X was in Autopilot mode. Unfortunately, the sensors and cameras of the vehicle did not recognize the men and the motorcycles and killed one of the pedestrians.
Complaint for Damages Umeda v. Tesla, 9–10., https://www.courthousenews.com/wp-content/uploads/2020/04/Tesla-Death.pdf, 4. June 2020.

14. *Telepresence*, the point of these robots is the possibility of seeing things, having contact with others and the ability to move around in certain places without being there physically.
15. *Underwater robots*, the category includes equipment applied in the water and vehicles are capable of deep-sea submersibles.[9]

We considered that a brief description of the different categories is important because it illustrates that the term 'robot' does not mean only AI-powered devices, but also more simple tools. We would like to highlight that the above-mentioned different types of robots are on different stages of development therefore, we want to avoid the chance of considering simple robots – such as drones or household robots – as a legal person. As a result, in relation to the examination of legal personhood – we place more emphasis on the advancement of the technology. In this context, we need to highlight that in this study, *the term 'robot' means – smart – advanced, autonomous devices driven by artificial intelligence.* The problem of legal personhood is the most common among these types of robots, rather than more simple devices, such as household robots. Moreover, it is important to mention the new category of robots, which has no physical appearance.[10] We consider these entities as a 'transition' between AI and robots, therefore they are also the subject of our study.

1. Significance of legal personhood

One may wonder why the legal personhood of AI or robots may be relevant since they are artificially created and they are quite far from the classical sense of legal personhood which is – almost only – applied to natural persons. The driving forces behind the theories of the legal personhood are the clarification of liability problems[11] – both contractual and non-contractual liability – and to find a solution for the – presumably emerging – uncertain legal situation of the technology. We agree that the clarification of the situation is important and establishing the legislative framework is also necessary before the actual damage occurs. However, regarding

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[9] Learn – Everything you need to know to get started in robotics: *Types of Robots*. https://robots.ieee.org/learn/types-of-robots/, 8. April 2020.

[10] ZŐDI Zsolt: *Platformok, robotok és a jog. Új szabályozási kihívások az információs társadalomban.* Gondolat Kiadó, Budapest, 2018, 62–63.

[11] *Teubner* in his study collected the issues of legal personhood in relation to liability: computer networking, big data, digital breach of contract, non-contractual liability, liability for industrial hazards and computer declarations. Gunther TEUBNER: Digitale Rechtssubjekte? Zum privatrechtlichen Status autonomer Softwareagenten. Digital Personhood? The Status of Autonomous Software Agents in Private Law. (Translated by: Jacob Watson), *Ancilla Iuris* 2018, 39–40.
According to strict liability on intelligent robots, see Réka PUSZTAHELYI: Liability for intelligent robots from the viewpoint of the strict liability rule of the Hungarian Civil Code. *Acta Universitatis Sapientiae Legal Studies* 2019/2., 213–230.

legal personhood, the question arises whether the legal system can endure this legal arrangement at all; if so, how it can be implemented and what might be the potential consequences. We believe that examining the issue – legal personhood of artificial intelligence and robots – is essential, as the topic creates interesting situations, such as the case of Sophia, a robot who received citizenship from Saudi Arabia in 2017.[12]

Relating to the issue of legal personhood it is important to mention a few viewpoints from the literature, which draw parallel between robots and slaves. *Joanna Bryson*[13] believes, robots should be considered as slaves without legal personhood. These machines are ideal for 'slavery' because they can be used for fulfilling – not too complicated – tasks, mainly in the household. The point of her study that robots should be servants, rather than companions. In accordance with her perception, these machines are properties of the owner.[14] *"Ordinarily, damage caused by a tool is the fault of an operator, and benefit from it is to the operator's credit. If the system malfunctions due to poor manufacturing, then the fault may lay with the company that built it, and the operator can sue to resolve this."* [15] *Bryson's* theory can relate to the French extra-contractual liability, according to one of its provisions a person is also liable for the damages by things in his custody, as a guardian of the thing.[16] We cannot find such provision in the Hungarian Civil Code, however, the regulation of Liability for Highly Dangerous Activities is similar, as the pursuer – operator – is liable for the damage caused by the hazardous operation. [Act V of 2013 on the Civil Code (hereinafter: HCC) Section 6:535–536.] We need to underline that the regulations are different, the previous form of liability can be

[12] NAGY Teodóra: A jövő kihívásai: robotok és mesterséges intelligencia az alapjogi jogalanyiság tükrében. *MTA Law Working Papers* 2020/6., 2.

[13] We need to mention the theory of *Stephen Petersen*, who examine the issue of robot-slaves from an ethical aspect, with regard to the length limits of this paper we do not describe it. See more Stephen PETERSEN: Designing People to Serve. In: *Robot Ethics. The Ethical and Social Implications of Robotics* (eds. Patric Lin – George Bekey – Keith Abney), MIT Press, Cambridge, Massachusetts–London, England, 2011, 283–298.

[14] Joanna J. BRYSON: Robots Should Be Slaves. In: *Close engagements with artificial companions. Key social, psychological, ethical and design issues* (ed.: Yorick Wilks), John Benjamins Publishing Company, Amsterdam, 2010, 63–74., http://www.cs.bath.ac.uk/~jjb/ftp/Bryson-Slaves-Book09.html, 1. June 2020.

[15] Joanna J. BRYSON: ibid.

[16] Code civil, Article 1242 *„On est responsable non seulement du dommage que l'on cause par son propre fait, mais encore de celui qui est causé par le fait des personnes dont on doit répondre, ou des choses que l'on a sous sa garde."* See more about French extracontractual liability: PUSZTAHELYI Réka: *A veszélyes üzemi felelősség szabályozási környezete*. Nemzeti Közszolgálati Egyetem, Budapest, 2019, 32., https://nkerepo.uninke.hu/xmlui/bitstream/handle/123456789/12954/Pusztahelyi_A%20veszelyes_uzemi_felelosseg_szabalyozasi_kornyezete_2018.pdf;jsessionid=E3A6172D74FA6E6C4DFE7D7F98BD9A1B?sequence=1, 4. June 2020.

used only in the case of hazardous operation moreover, highly dangerous activities are determined by judicial practice.

In contrary, *Ugo Pagallo* places robot-slave theory on the basis of ancient Roman history. According to it, the situation of robots and ancient Roman slaves are similar the root of this perception that both entities can fulfil tasks on their own meanwhile, they are controlled by others. [17] Consequently, issues about liability can be solved, as robots could be responsible for the damage they caused and pay compensation from their own wealth – digital peculium.[18] The connection is understandable as slaves were considered 'res' in ancient Rome, but it is disturbing at the same time as the peculium belonged to human beings. We believe the consideration of robots as – Roman – slaves quite problematic, because they are not human beings, natural persons.

Several theories[19] have been published about the extension of legal personhood, in this chapter, we present two of them. *Representatives of the first theory reasoning for the establishment of the electronic personality.* The cause of this perception can be found in the 'Civil Law Rules on Robotics' the document has raised the possibility of creating a special entity – an electronic personality or e-personality – and allowing them to take responsibility for the damage they caused.[20] According to the orientation, it is important to mention the viewpoint of *Thomas Burri,* who believes that the possibility of establishing e-personality based on the *"…freedom of states to lay down the conditions for the award of nationality and the creation of*

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[17] Ugo PAGALLO: *The Laws of Robots. Crimes, Contracts and Torts.* Springer, Netherlands, 2013, 102–103.
See also Ioannis REVOLIDIS – Alan DAHI: The Peculiar Case of the Mushroom Picking Robot. Extra-contractual Liability. In: *Robotics, AI and the Future of Law* (eds. Marcelo Corrales Compagnucci – Mark Fenwick – Nikolaus Forgó), Springer Nature Singapore Pte. Ltd., Singapore, 2018, 69.

[18] Ugo PAGALLO: *The Laws of Robots*…,103–06.
See also Ioannis REVOLIDIS – Alan DAHI: ibid. 69–70.

[19] For example, see Ugo PAGALLO: Vital, Sophia, and Co. The Quest for the Legal Personhood of Robots. *Information* 9. 230. 2018, 1–11., https://www.researchgate.net/publication/327567440_Vital_Sophia_and_Co-The_Quest_for_the_Legal_Personhood_of_Robots, 4. June 2020.

[20] *"The European Parliament… Calls on the Commission, when carrying out an impact assessment of its future legislative instrument, to explore, analyse and consider the implications of all possible legal solutions, such as: … creating 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."* P8_TA(2017)0051 Civil Law Rules on Robotics. European Parliament resolution of 16 February 2017 with recommendations to the Commission on *Civil Law Rules on Robotics* (2015/2103(INL)), 59. f): https://www.europarl.europa.eu/doceo/document/TA-8-2017-0051_EN.html, 9. April 2020.

legal person". [21] He states the rules of control as follows: *"... some kind of guardianship or agency could ensure the control."*[22]

The other tendency believes that AI and robots should be treated as legal – artificial – persons.[23] According to this, we need to mention the theory of *Shawn Bayern* – indirectly *Thomas Burri* –, called *'artificially intelligent companies'*. The point of it is that two contracting parties establish a company and they state in the *"...founding document that the purpose of the company is to follow the direction a specific artificial intelligence gives"*.[24] This step is very important because it allows the AI to have rights and obligations and to control the behaviour of the company, he calls it the 'process-agreement equivalence principle'. Later, the founding members leave the company, as a result, artificial intelligence acquires control over the company – which can potentially exist according to U. S. law – and gains *full legal capacity*, moreover, AI becomes uncontrolled. [25] The major problem of the hypothesis that each country has different legal systems and regulation and many of them cannot 'take' this legal arrangement. On the other hand, *Burri* in his study highlight that in the *German and Swiss legal system* the form of *Foundation* can be ideal for the *'artificially intelligent company'*, however, it would be controlled.[26]

Regarding the theory of *Bayern*, it has several problems in the Hungarian legal context. First of all, this legal method is unknown in our legal system. Furthermore, the instrument of constitution shall contain *"...the legal person's purpose or main activity..."* [HCC Section 3:5 c)] It is also important that the activity must be in the TEÁOR nomenclature – because the companies register must include this [Act V of 2006 on Public Company Information, Company Registration and Winding-up Proceeding Section 24 (1) e)]–, the above-mentioned activity – following the directions of AI – cannot be interpreted according to the legislation in force. Secondly, the existence of an abandoned company is impossible in Hungary, however, rules cannot be found we can possibly interpret the act – leaving the company – as termination declared by the members or the founders. [HCC Section 3:48 c)]

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[21] Thomas BURRI: Free movement of algorithms: artificially intelligent persons conquer European Union' internal market. In: *Research Handbook on the Law of Artificial Intelligence* (eds. Woodrow Barfield – Ugo Pagallo), Edward Elgar Publishing Limited, Cheltenham, 2018, 541.

[22] BURRI: ibid. 541.

[23] Several authors examine the issue of trustee in relation to the legal personhood of artificial intelligence. See Lawrence B. SOLUM: ibid. 1240–1255.
Bert-Jaap KOOPS – Mireille HILDEBRANDT – David-Olivier JAQUET-CHIFFELLE: Bridging the Accountability Gap. Rights for New Entities in the Information Society? *Minnesota Journal of Law, Science & Technology* Vol. 11, No. 2, 2010, 519–524.: https://www.researchgate.net/publication/45523421_Bridging_the_Accountability_Gap_Rights_for_New_Entities_in_the_Information_Society, 4. June 2020.

[24] BURRI: ibid. 539.

[25] BURRI: ibid. 539–540.

[26] BURRI: ibid. 540.

2. Examination of legal personhood

We need to mention that natural and legal persons, State have legal personhood, legal entity according to the legislation in force. Legal personhood has two important components, legal capacity, and legal competency in the following, we examine them in relation to natural and legal persons. In this part, we only study the most important and relevant rules in general regarding the subject of our paper.

2.1. Legal personhood of natural persons

As we mentioned, legal capacity is an important component of legal personhood. According to our Civil Law Codex *"[a]ll persons shall have legal capacity; all persons shall be entitled to have rights and obligation"*. [HCC Section 2:1 (1)] Every person has legal capacity regardless of gender, religion etc. An important condition of legal capacity to born alive, however, viability is not required by civil law, if the child dies a few moments later the birth, he or she is still considered having legal capacity, as a result, the legal effects set.[27] Cessation of legal capacity occurs with death which must be proved with a death certificate. In some cases, it cannot take place – for example, a mass accident or catastrophe occurs – consequently, the fact of death is determined by a judge or the person is declared dead – the legal presumption of death.[28]

"Legal competence means the ability of a person to have rights and obligations by his own will, in his own name."[29] We distinguish incompetency, limited legal capacity and competency. The Hungarian regulation use differentiation by the age and the mental abilities of natural persons. According to this minors – persons who do not reach eighteen years [HCC 2:10 (1)] – can be incompetent or can have limited legal capacity [HCC Section 2: 10–2:11] and a legal aged person also can be incompetent or can have partially limited legal capacity. [HCC Section 2:9 and 2:19]

A significant component of legal competence is the *discretionary ability* which means persons foresees the consequences of their action. We need to highlight that the Civil Code does not include the definition of discretionary ability and the absence of the mentioned ability must be examined by forensic psychiatry expert – the latter action can be called the *Achilles Heel of Hungarian Civil Code*.[30]

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[27] BARZÓ Tímea: Az ember, mint jogalany. In: *Civilisztika I. Általános tanok – Személyek joga – Szellemi alkotások joga* (szerk.: Barzó Tímea – Papp Tekla), Dialóg Campus Kiadó, Budapest, 2018, 107–109.

[28] BARZÓ: ibid. 110–112.

[29] EÖRSI Gyula – VILÁGHY Miklós: *Magyar polgári jog. (I. kötet) Az általános rész és a tulajdonjog.* (Ideiglenes tankönyv) Tankönyvkiadó, Budapest, 1973[3], 113.

[30] FIALA-BUTORA János: A cselekvőképesség szabályozásának eltérő megközelítései az új Ptk. vitája során. In: *Az új Polgári Törvénykönyv első öt éve* (szerk.: Gárdos-Orosz Fruzsina – Menyhárd Attila), Társadalomtudományi Kutatóközpont Jogtudományi Intézet, Budapest, 2019, 65.

It is obvious from the above-mentioned information, that artificial intelligence or smart robots cannot have legal personhood in the classical meaning, as the technology and the devices are artificially created. However, AI and robots cannot be natural persons, we should examine the discretionary ability. Nowadays, the technology can only perform certain tasks, but it develops day by day and many researchers believe that in the future it will have the same ability as a human being, or it will be even smarter.[31] Many people afraid of AI because of its unknown nature; self-developing mechanism; the black-box effect, all in all, its uncertain being and the lack of transparency. (Lack of transparency comes from the complexity of artificial intelligence, defining machine and deep learning, black-box effect helps to understand the problem. AI – as software – uses several techniques, such as machine learning [hereinafter: ML]. ML *"…is a subset of AI techniques that enables computer systems to learn from previous experience [i.e. data observations] and improve their behaviour for a given task"*.[32] On the other hand, deep learning [hereinafter: DL] is the subset of ML, but the learning method based on neural networks.[33] In general, we can say ML is experience-based learning, while DL – as one of the ML techniques – is neural network-based, it is also important that the term 'ML' and 'DL' do not mean the same, many times understanding problems occurs from the faculty use of terms. The mentioned definitions lead us to the problem of black-box which means cases when AI makes a decision but the reasoning of it is not clear.[34]) We should study this unpredictable behaviour from a different aspect, in particular the discretionary ability. At present AI and robots are only able to make decisions and fulfil tasks according to pre-programmed algorithms, they do not have own will and yet we do not know the main factors that have significance during the decision-making process.[35] In the context of the mentioned ability the devices might foresee many potential outcomes of their action, perhaps a lot more than an average person, but because of their unpredictable nature, it is impossible to tell how they will behave in a situation. We can tell the same about natural persons but in the case of human beings – considering an average one – many factors have an impact of their decisions, such as cultural and family background, social expectations, emotions, even memories. As a result, our decisions are more rational – according to social standards –, human, meanwhile, the AI or robots

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31 Nick BOSTROM: *Szuperintelligencia*. Ad Astra Kiadó, Budapest, 2015, 89.

32 Giang NGUYEN – Stefan DLUGOLINSKY –Martin BOBÁK – Viet TRAN – Álvaro GARCÍA LÓPEZ – Ignacio HEREDIA – Peter MALÍK – Ladislav HLUCHÝIN: Machine Learning and Deep Learning frameworks and libraries for large-scale data mining: a survey. *Artificial Intelligence Review* 52. January 2019, 78., https://link.springer.com/content/pdf/10.1007/s10462-018-09679-z.pdf, 18. April 2020.

33 Independent High-Level Expert Group on Artificial Intelligence: A definition of AI: Main Capabilities and Disciplines., European Commission, Brussels, 8th of April 2019, 4.

34 Independent High-Level Expert Group on Artificial Intelligence: A definition of AI: Main Capabilities and Disciplines., European Commission, Brussels, 8th of April 2019, 5.

35 KLEIN Tamás: Robotjog. In: *Technológiai jog – Robotjog – Cyberjog* (szerk.: Klein Tamás – Tóth András), Wolters Kluwer Hungary Kft., Budapest, 2018, 198.

cannot be programmed to have human instinct or feelings, they might make a rational, logical decision on mathematical or algorithmic basis without 'human factor' and its effects on people. *"The operations of the algorithms cannot in any way be equated with the mental operations of humans. Their inner workings consist of mathematical operations based on electronic signals."*[36]

2. 2. The historical and theoretical roots of the legal persons and the legislation in force

As we stated in the previous chapter, one of the tendencies prefers the theory which promotes AI and robots to be legal persons. *Bayern* in his above-mentioned theory did not study theoretical, dogmatic questions about how *'artificially intelligent company'* could be implemented into the legal system from corporate law aspect. Therefore, we study the main theories on legal persons and the national legislation in force.

There were many studies about the legal persons in the 19–20. century. According to *Kolosváry "by legal persons, we mean social organisations, that are endowed with all attributes of personality, such as the legal order has given personality physical people (natural persons)"*.[37]

Regarding the *'Realist theories' legal persons have the same physical and spiritual components as natural persons; therefore, they might have the same legal personhood. Gierke, Zitelmann, Binder and Saleilles* were the prominent figures of the *'Realist theories'*. Deficiencies of *'Fiction theories'* were the basis of the perception of *Gierke*. He believed *"... there are existing social organisms which have physical-psychological realities, but it cannot be proven. According to him, neither of the persons' life-unity can be proven directly"*.[38] As a result, he did not notice differences between legal and natural persons, because the latter have the same physical and psychological reality as people. On the other hand, *Zitelmann* thought to have legal personhood the presence of the spirit, the will is enough. All in all, legal persons have only spiritual reality, they are manifestations of disembodied will.[39]

'Fiction theories' deny the realistic existence of legal persons, they can only gain recognition and legal entity through fiction which is guaranteed by law.[40] Main representatives of the theory were *Kierulff, Savigny and Puchta.* The authors had the same viewpoint, that the legal persons were not natural; they were *'artificially'* created by law, and because their creation required legal fiction, the legal

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[36] Gunther TEUBNER: ibid. 48.

[37] KOLOSVÁRY Bálint: *A magyar magánjog tankönyve.* Politzer-féle Könyvkiadó Vállalat, Budapest, 1907², 200.

[38] MOÓR Gyula: *A jogi személyek elmélete.* MTA Jogtudományi Bizottság kiadványai 2., Budapest, 1931, 66.

[39] MOÓR: ibid. 75–76.

[40] MOÓR: ibid. 52–55.

persons – themselves – are also legal fiction.[41] In the field of fictional theories *Bierling's* work also cardinal, who studied legal persons in a specific way, the essence of his perception was rooted in the different nature of diminished accountability. On this basis, he called incompetent natural persons *'semi-fictional entities'*, while legally competent people were considered as real entities. Along with this idea, he considered legal persons to be *'fully-fictional'* persons.[42]

Two areas are known within the *'Theories on eliminated construction of legal person'*, the first one divided legal persons into different natural persons while the latter modified the classic concept of legal personhood and individual rights. Within the first section we distinguish two groups.

Representatives of one of the groups *"replace legal persons with natural persons whose benefitting from legal persons"*.[43] According to *Jhering* individual right is literally the legally protected interest of a person, but in the case of legal person there is no interest, consequently it is not able to have individual rights. Even if it appears that legal person has rights, it is possible only because of the natural person – real subject – who is behind the *'fictional* subject'. *Vareilles-Sommieres* followed the path of *Jhering* and examined which rights of legal person serve the interests of a natural person. He thought legal persons are only *'rhetorical figures'* so the subjects of their rights are the natural persons, such as the members of a legal person, company.[44]

Members of the other group had different views on legal personhood as they considered legal entities, the bodies of the legal person. *Serment* shared the viewpoint of *Jhering* that only natural persons are able to have rights. Therefore, subjects of the rights of the legal person are also natural persons, who are technically the *"administrators" of* the legal person. Although these rights are entitled to natural persons, they can be used for a specific purpose, so *Serment* referred to them *as 'management rights'*. Assets of the legal person also could be used only for the aims of the legal person, so they were considered as *'assets without owner'*. *Hölder* agreed with *Serment* except that he regarded the rights of the legal person as public individual rights and defined it as *'official right'*. *Hölder* chiselled the theory of *Serment* on incompetent natural persons, legal persons governed by public law and the state. In the case of an incompetent natural person, the *'official right'* shall be practised by the legal representative, because they are the *"real subjects".* However, they shall act in the interests of incompetent persons as they are the subject of the mentioned rights. In order to solve the moral problems arising from his perception, *Hölder* has created the concept of a *'dependent person'* the essence of this that these persons are entitled to the right — but this might be a demand of a per-

41 MOÓR: ibid. 106–107.
42 MOÓR: ibid. 123–124.
43 MOÓR: ibid. 145.
44 MOÓR: ibid. 145–150.

son, not real power. He applied the concept of 'non-independent person' and the theory to legal persons governed by law and the State.[45]

The other area of the *'Theories on eliminated construction of legal person'* called for changes in legal personhood and *'substantial rights'*, in this context we study the theory of *'rights without entitled persons'* and the *'theory of purpose'*. *Winscheid, author of the non-subjects rights theory* at first considered will as the essence of the subjective right, he called it: »*power of will or the domination of will by legal order*«,[46] later on, he had not found it satisfactory, so he chose the *'interest'* to be the essence of his perception. This means that individual rights have no subject, but have a purpose, he also thought the legal persons have non-subjective rights.

According to *Brinz 'theory of purpose'* based on the perception of non-subjective rights. The point of his theory is the assets may belong to a person or a purpose, and the purpose replaces the entity. This perception technically means the purpose is the legal person itself, and the asset is intended to serve it.[47] In contrary, *Gyula Moór believed that* the actions of each natural person; their rights and obligations are comprised of the legal person based on a legal requirement. [48]

We cannot find such theories in the Hungarian Civil Code. In accordance with the legislation in force, we can state that legal persons have legal capacity [HCC Section 1:1 (1)], but do not have legal competence, so legal representative needed for the legal person, generally this task is fulfilled by the executive officer. [HCC Section 3:29 (1)]

At present, we do not see the relevance of legal personhood of the technology[49] and the devices, because of the previously mentioned problem of uncertainty and

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45 MOÓR: ibid. 174–193.

46 MOÓR: ibid. 218.

47 MOÓR: ibid. 219–245.

48 MOÓR: ibid. 280–281.

49 According to the latest documents of the European Union, it is not necessary to establish legal personhood for AI and robots. Expert Group on Liability and New Technologies – New Technologies Formation: *Liability for Artificial Intelligence and Other Emerging Digital Technologies*. European Commission, 2019, 37–39., https://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupMeetingDoc&docid=36608, 2 June 2020.

DABUS – artificial intelligence – created an invention in the USA and the builder of the AI – later applicant, petitioner – wanted DABUS to be the inventor – legally. On the other hand, the United States Patent and Trademark Office (hereinafter: UPSTO) in its Decision on Petition, stated that artificial intelligence cannot be an inventor. According to the decision of UPSTO, the technology is not a natural person and it does not have the proper attributes to create an invention – perform a mental act –, such as mind.

United States Patent and Trademark Office, Decision on Petition (Application No.: 16/524,350):

https://www.uspto.gov/sites/default/files/documents/16524350_22apr2020.pdf?utm_campaign=subscriptioncenter&utm_content=&utm_medium=email&utm_name=&utm_source=govdelivery&utm_term=, 4. June 2020.

lack of transparency. The presence of AI and robots among natural and legal person could be controversial, moreover, *it can result in moral-ethical problems*.[50] The reason behind it is mainly the collusion of rights between human and artificially created beings.

We believe that AI and smart robots could only gain legal personhood by legal fiction which might happen in the future. Even in the potential case of legal personhood, we can imagine the entities solely have obligations which leads us to another problem, in particular, that in the civil law it also means they need to have assets.

Furthermore, during creating of the technology, security solutions should be built-in – security-by-design – that could resolve problems in case of technical failures. Possibility of intervention and revision of the technology should be the component of solutions. Understanding the process of AI and smart robots would be also significant because this could ensure the transparency of the technology.

As we mentioned above, we do not believe that artificial intelligence or robots should gain legal personhood, despite that, we examine the partial legal capacity[51] from the aspect of new technologies. Legal institute of *'Teilrechtsfähigkeit'* can be found in the German legal system that is *"a legal subject, halfway between person and object"*.[52] The partial legal capacity is quite significant because it solves the legal problems of the legal personhood in relation to AI and robots. *'Teilrechtsfähigkeit'* is *"applicable to a human or an association of humans having legal capacity only according to specific legal rules, but otherwise not bearing duties and having rights"*.[53] *Schirmer* applies partial legal capacity to intelligent agents[54] – in our case AI –, he also draws parallel between intelligent agents and their users with slaves and masters – it can be a 'master-servant situation'. It means that the technology acts in the interest of the user – master –, consequently, he or she will be liable for damages caused by AI or robots. This perception might be ideal to describe the new technology in the legal framework. On the other hand, we must underline that this form of legal capacity is unknown in the Hungarian Civil Code and it is doubtful how the Hungarian legal system can endure this arrangement.

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50 Many scientists and jurists concerned about the ethical aspects of the issue of legal personhood. Open Letter to the European Commission. Artificial Intelligence and Robotics: http://www.robotics-openletter.eu/, 16. April 2020.

51 It is important to know that we distinguish the term 'partial legal capacity' and 'relative legal capacity', in this paper we do not examine the latter or organizations with 'relative legal capacity'.

52 Jan-Erik SCHIRMER: Artificial Intelligence and Legal Personality: Introducing "Teilrechtsfähigkeit": A Partial Legal Status Made in Germany. In: *Regulating Artificial Intelligence*. (Eds. Thomas Wischmeyer – Timo Rademacher), Springer International Publishing, Cham, 2020, 133.

53 SCHIRMER: ibid. 134.

54 Schirmer in his study uses the term 'intelligent agent' which is connected to artificial intelligence it is a component of AI, as a result we do not use the mentioned term.

3. Thoughts on transhumanism, human enhancement

Lastly, we also need to mention the case of transhumanism as a different aspect of AI and robot legal personhood, which might gain significance in the future because of technological development. Transhumanism may be unrealistic for many, but the new technologies definitely support them. We have to state that in the context of transhumanism we do not want to examine cyborgs[55] or brain-computer interferences, but we mention the phenomenon because of interesting technological aspects that will – probably – have an impact on legal personhood in the future.

Transhumanism has many definitions, but we would like to present only a few of them. The concept – at first – appeared in 1957 in a publication of *Julian Huxley*, he said: *"Perhaps transhumanism will serve: man remaining man, but transcending himself, by realizing new possibilities of and for his human nature."*[56] Later, *"Max More, CEO of Alcor Life Extension Foundation, created the philosophy of transhumanism in his essay »Transhumanism: Toward a Futurist Philosophy« which codified the principle that life can expand indefinitely by means of human intelligence and technology"*[57] in 1990. In relation to *Nick Bostrom* transhumanism *"... promotes an interdisciplinary approach to understanding and evaluating the opportunities for enhancing the human condition and the human organism opened up by the advancement of technology. Attention is given to both present technologies, like genetic engineering and information technology, and anticipated future ones, such as molecular nanotechnology and artificial intelligence."*[58] According to this viewpoint bionic prosthesis or 3D printed organs[59] – in the future – can be considered as tools of transhumanism. Moreover, with the technology of AI,

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[55] For more information, see Woodrow BARFIELD: *Cyber-Humans. Our Future with Machines*. Springer, Switzerland, 2015.
It is noteworthy to mention the case of Dr. Peter Bowman Scott-Morgan, a British-American robotics researcher who was diagnosed with motoneuron disease in 2017, the disease resulted in muscular distrophy. As a result, he decided to become the world's first cyborg. The "transformation" had already begun, his speech had become synthetic and his face had been made into a lifelike avatar. This event raises the questions, what will be consequence – from the aspect of legal personhood –, if he succeeds?
https://www.independent.co.uk/news/science/cyborg-scientist-first-motor-neurone-disease-peter-scott-morgan-a9201436.html, 2020. 04. 20.

[56] Julian HUXLEY: Transhumanism. In: *New Bottles for New Wine*. London, Chatto & Windus, 1957, 13–17., https://web.archive.org/web/20160625132722/http://www.transhumanism.org/index.php/WTA/more/huxley#, 19. April 2020.

[57] Natasha VITA-MORE: History of Transhumanism. In: *The Transhumanism Handbook*. (Ed. Lee Newton), Springer Nature, Switzerland, 2019, 51.

[58] Nick BOSTROM: Transhumanist Values. In: *Ethical Issues for the 21st Century*. (Ed. Frederick Adams), Philosophical Documentation Center Press, 2003, 3.

[59] Dinusha MENDIS – Ana SANTOS-RUTSCHMAN: *3D printing of body parts is coming fast – but regulations are not ready*.: https://theconversation.com/3d-printing-of-body-parts-is-coming-fast-but-regulations-are-not-ready-128691, 20 April 2020.

it is also possible to gain biological enhancement.[60] Regarding the definitions, we may as well distinguish *'weak'* and *'strong transhumanism'*. In the case of weak transhumanism, the enhancement is slightly, such as the use of robotic prosthetics, while strong transhumanism means significant enhancement like genetic engineering.

Transhumanism may be positive as it helps disabled people to live better, than before, however, it also has negative aspects. The mentioned phenomenon will change with technological development, as a result, legal personhood can be affected. The issue of human enhancement might raise ethical-moral and even social concerns – such as abortion or euthanasia –, moreover, legal problems in the field of constitutional law – the right to human dignity – or labour and social law – employment of disabled people and positive-negative discrimination.

Closing remarks

We understand the driving forces and reasons behind the demand for giving legal personhood to artificial intelligence and robots,[61] however, we do not consider it necessary. It is obvious that the technology and the devices cannot be natural persons as they are not natural creatures, moreover, do not have human characteristics which give the essence of humanity, such as feelings or instinct. Authors see potential in legal persons or the e-personality but after the examination of them, we cannot state that the legal institutions are perfect for AI or robots. A major problem with them that legal systems in Europe – and around the world – cannot cope with these *'artificial creatures'*. They may solve the problem of liability questions but also can cause more negative effects. From the aspect of law, in general, the legal personhood of AI and robots would be controversial, not only for national but also for international law, it can result in the collision of personal and even human rights.

Furthermore, beyond the legal problems, legal personhood would affect each person and even the entire society. Regarding society, we cannot forget about the ethical and moral concerns. Therefore, we need to have a stable legal framework that ensures safety against technology. We also had to mention the significance of legal documents that include ethical guidance for researchers, developers of the technology and jurists.[62]

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[60] Seeing App, a smartphone-based narrator working with AI from Microsoft helps blind to see, as it describes the environment for the blind person, https://www.independent.co.uk/news/science/cyborg-scientist-first-motor-neurone-disease-peter-scott-morgan-a9201436.html, 20 April 2020.

[61] Regarding the recent documents of the European Union and the social protest – see the above-mentioned Open Letter to the European Commission. Artificial Intelligence and Robotic – it does not seem possible that the technology and the devices will gain legal personhood in the near future.

[62] See PUSZTAHELYI Réka: Bizalmunkra méltó MI. A mesterséges intelligencia fejlesztésének és alkalmazásának erkölcsi-etikai vonatkozásairól. *Publicationes Universitatis Miskolcinensis, Sectio Juridica et Politica* XXXVII/2, 2019/2., 97–120.

On the other hand, the education of individuals is also important because it can help to understand the operation of AI and smart robots – in the future – and to become a responsible user of the technology – which also important for people to protect their rights.

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