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The Source of Unexplored Opportunities or an Unpredictable Risk Factor? Could Artificial Intelligences Be Subject to the Same Laws as Human Beings?

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Abstract: The Collingridge dilemma or 'dilemma of control' presents a problem at the intersection of law, society and technology. New technologies can still be influenced, whether by regulation or policy, in their early stage of development, but their impact on society remains unpredictable. In contrast, once new technologies have become embedded in society, their implications and consequences are clear, but their development can no longer be affected. Resulting in the great challenge of the pacing problem – how technological development increasingly outpaces the creation of appropriate laws and regulations. My paper examines the problematic entanglement and relationship of Artificial Intelligence (AI) and a key aspect of the rule of law, legal certainty. AI is our modern age's fastest developing and most important technological advancement, a key driver for global socio-economic development, encompassing a broad spectrum of technologies between simple automation and autonomous decision-making. It has the potential to improve healthcare, transportation, communication and to contribute to climate change mitigation. However, its development carries an equal amount of risk, including opaque decision-making, gender-based or other kinds of discrimination, intrusion into private lives and misuse for criminal purposes. The transformative nature of AI technology impacts and challenges law and policymaking. The paper considers the impact of AI through legal certainty on the rule of law, how it may undermine its various elements, among others foreseeability, comprehensibility and clarity of norms. It does so by elaborating on AI's potential threat brought on by its opacity ('black box effect'), complexity, unpredictability and partially autonomous behaviour, which all can impede the effective verification of compliance with and the enforcement of new as well as already existing legal rules in international, European and national systems. My paper offers insight into a human-centric and risk-based approach towards AI, based on consideration of legal and ethical questions surrounding the topic, to help ensure transparency and legal certainty in regulatory interventions for the benefit of optimising efficiency of new technologies as well as protecting the existing safeguards of legal certainty.

Keywords: artificial intelligence, modern technology, legal personhood, human dignity, rule of law

1. Introduction

In 2017, a female robot named Sophia was granted citizenship in Saudi Arabia, arousing great public interest worldwide. This was the first occasion that an artificial intelligence had been accorded the ordinary citizenship of a state, and accordingly it raised a number of issues.

The possible extension of the traditional concept of citizenship to electronic humanoids has been proposed several times (De Cock Buning, Belder & de Bruin, 2012). For instance, in 2015, the Legal Commission of the European Parliament recommended providing legal status to at least the most developed autonomous artificial intelligences, who might then be the subject of rights and duties (*Draft Report with recommendations to the Commission on Civil Law Rules on Robotics*, 31 May 2016).

It is important to analyse how the law should reflect these new challenges, and whether they may have arisen due to an exaggerated and dubious interpretation of citizenship and legal personhood.[1] Nevertheless, this paper will go beyond this and attempt to conceptualise whether electronic humanoids, as citizens, could be covered properly by our currently existing legal framework. A large number of high quality academic works have concentrated on this issue, and most of them agree upon the necessity of updating the legal environment to accommodate artificial intelligences, although we are still very far from even outlining the main features of this envisaged concept. My contribution sets out to add some legal considerations in this field, as the case of Sophia clearly demonstrates the necessity of finding real legal answers to the recent challenges of modern technology and also of updating the interpretation of current legal terminology in the light of developments in technology.

If we accept that at least certain robots may meet the criteria for legal personality, as human beings, these electronic persons might also enjoy the same rights and be subject to the same obligations as traditional citizens. On the one hand, this new category of personhood might influence the political process (Benhabib, 2006), and might also reveal new economic opportunities, while on the other hand, the political, social and economic activity of electronic humanoids must be regulated carefully. Several commentators have pointed out that the participation of electronic humanoids in social and economic life would be risky due to the insufficient regulation; therefore, the legal framework needs to be updated significantly to diminish such risk factors (Stone, 2017). As part of these endeavours, European artificial intelligence experts have elaborated human-centric ethical rules for robots, which are primarily targeted at preventing potential harm caused unintentionally by robots created with insufficient technical knowledge.[2] Furthermore, the EU member states and Norway concluded an agreement

[1] AI in Law: Definition, Current Limitations and Future Potential. Online: https://legal-tech-blog.de/ai-in-law-definition-current-limitations-and-future-potential

[2] High-Level Expert Group on Artificial Intelligence, European Commission. Online: https://ec.europa.eu/digital-single-market/en/high-level-expert-group-artificial-intelligence; High-level Expert Group on Artificial Intelligence [AI HLEG], draft ethics guidelines for trustworthy AI (18 December 2018). Online: https://ec.europa.eu/futurium/en/system/files/ged/ai_hleg_draft_ethics_guidelines_18_december.pdf

in 2018 on developing a common European approach to artificial intelligence,[3] and although this remains a distant prospect, considerable steps have been made towards it during recent years. My aim is to assess whether the current legal framework could be adapted to these new challenges appropriately, and to suggest a five-level classification of artificial intelligences based on the example of self-driving cars (Schellekens, 2015).

This paper will use the definition of artificial intelligence adopted by the high Level European Expert group on Artificial Intelligence: "Artificial intelligence (AI) refers to systems designed by humans that, given a complex goal, act in the physical or digital world by perceiving their environment, interpreting the collected structured or unstructured data, reasoning on the knowledge derived from this data and deciding the best action(s) to take (according to pre-defined parameters) to achieve the given goal. AI systems can also be designed to learn to adapt their behaviour by analysing how the environment is affected by their previous actions."[4]

My analysis takes into account the huge diversity of robots: artificial intelligence includes a great variety of entities, of which humanoid robots would be the most interesting from the perspective of legal personhood. Several artificial intelligences also participate in the automatisation processes, while certain software possesses an autonomous ability to think and take decisions, albeit without physical integrity. Robots play a key role in data protection (Regulation 679/2016, Art. 22), and control certain vehicles (COM, 2016, November 30; COM, 2018, May 17, 17),[5] while European experts have described the development of autonomous robotic weapon systems.[6] My five-level scale reflects this complex situation, with humanoid robots at the core of my analysis. As far as I am concerned, physical integrity and a humanoid appearance are indispensable for providing at least certain humanlike rights and obligations to particular robots. It would depend on their intellectual abilities, to what extent the exact scope of these rights and duties should encompass.

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[3] Declaration: Cooperation on AI, 10 April 2018. Online: https://ec.europa.eu/jrc/communities/sites/jrccties/files/2018aideclarationatdigitaldaydocxpdf.pdf

[4] AI HLEG: A definition of AI: main capabilities and scientific disciplines (18 December 2018). Online: http://perma.cc/8VUQ-AWAJ

[5] Proposal for a Regulation of the European Parliament and of the Council on Type-Approval Requirements for Motor Vehicles and Their Trailers, and Systems, Components and Separate Technical Units Intended for Such Vehicles, as Regards Their General Safety and the Protection of Vehicle Occupants and Vulnerable Road Users, Amending Regulation (EU) 2018/… and Repealing Regulations (EC) No 78/2009, (EC) No 79/2009 and (EC) No 661/2009 (General Safety Regulation), COM (2018) 286 final (17 May 2018). Online: https://eur- lex.europa.eu/resource.html?uri=cellar:f7e29905-59b7-11e8-ab41-01aa75ed71a1.0003.02/DOC_1&format=PDF; Proposal for a Directive of the European Parliament and of the Council Amending Directive 2008/96/EC on Road Infrastructure Safety Management, COM (2018) 274 final. Online: https://eur-lex.europa.eu/resource.html?uri=cellar:cc6ab6e7-59d2-11e8-ab41-01aa75ed71a1.0003.02/DOC_1&format=PDF; Commission Decision Updating the Working Programme in Relation to the Actions under Article 6(3) of Directive 2010/40/EU, C (2018) 8264 final (11 December 2018). Online: http://perma.cc/H7S5-6HNE; Directive 2010/40/EU on the Framework for the Deployment of Intelligent Transport Systems, 2010 O.J. (L 207) 1. Online: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32010L0040&from=EN

[6] European External Action Service (EEAS), Convention on Certain Conventional Weapons – Group of Governmental Experts – Lethal Autonomous Weapons Systems. EU Statement Group of Governmental Experts Lethal Autonomous Weapons Systems Convention on Certain Conventional Weapons Geneva, 27–31 August 2018. Online: https://eeas.europa.eu/headquarters/headquarters-homepage/49763/convention-certain-conventional-weapons-group-governmental-experts-lethal-autonomous-weapons_en

My assessment will be based on three strands of literature, which have rarely been drawn upon in an integrated manner. Firstly, the traditional literature of legal personhood forms the background of the analysis. Secondly, numerous authors are cited, who can provide a deeper understanding of the impact of artificial intelligence on life, society and the legal system. Thirdly, I will draw upon a great number of press releases and media reports as primary sources, since the latest developments, in particular the case of Sophia, have been reported on by such texts, with so far only a limited academic reaction published on this subject during the last three years.

1.1. The legal personality of electronic humanoids

To establish the basis of the topic in question, it is first worth analysing in depth whether contemporary robots can be accorded a legal personality, as citizenship can be awarded only to such independent entities, which are recognised legally, and which, according to the European Parliament, are consequently subject to rights and duties (Palmerini et al., 2016). Therefore, when considering the possibility of granting citizenship to robots, the first question is whether they are able to exercise the same rights, and undertake identical obligations, as "natural" human beings (Eidenmueller, 2017).

Although the fact that an ever-greater number of experts support the idea of extending the scope of legal personhood and citizenship (Comstock, 2015), my answer will mostly be in the negative, at least at the current stage of scientific development. While I would not reject this idea out of hand, I would argue that non-human actors may be awarded any form of legal personality only with great prudence. As robots represent a new category of intelligence, an updated legal framework is required for these new and inherently diverse forms of entities (Mitterauer, 2013). My approach is grounded on three main arguments, which concern the functioning of a robot as a whole.

Firstly, electronic humanoids are created artificially by technological instruments instead of biological ones, and these entities are both activated and deactivated by other people (Calo, Froomkin & Kerr, 2016, p. 289). As a consequence, although certain autonomic decisions might be made by the robot independently from its creators or developers, the personal characteristics, mental capacity and independent margin of decision of the electronic humanoid are determined consciously within the current technological opportunities essentially by its software, and hence by the persons who created it (Lindemann, 2016).

Secondly, robots should not be vested with legal personality on the analogy of legal entities (Zebrowski, 2007). Legal entities are founded by natural persons to facilitate cooperation with each other, and to represent certain common interests together. In the case of electronic humanoids, it might appear (but not always) that these intelligences are elaborated by people to serve their interests, but these entities are able to make their own autonomic decisions, which will not necessarily be in conformity with the will or the alleged interests of the makers (Schwitzgebel & Garza, 2015). Robots are developed by people, but their regular activity will be conducted completely independently from

human actors. Consequently, a paradoxical situation arises where the abilities of the robots are usually determined by people, and they are often established for the promotion of certain human interests, but a specific human will is not behind their particular decisions (Di Bello & Verheij, 2020). Thus, the legal status of electronic humanoids must be distinguished clearly from the traditional concept of legal entities.

A third point emerges from precisely this distinction: robots are entities with a certain level of intelligence which have some hitherto exclusively human characteristics: they are able to speak, to participate in bilateral human communication, and to make conscious decisions on matters which are relevant only to people. Nevertheless, robots have remarkably different physical circumstances, needs and priorities than ordinary people (Cerka, Grigiene & Sirbikyte, 2017); therefore, the situations of these two kinds of entities are not comparable, and are not analogous (Gunkel, 2020). While the most advanced electronic humanoids can fulfil certain requirements, which have not been met previously by any other non-human entity, their physical and mental structure remains inherently different from that of humans, and a great number of human concepts do not apply to artificial intelligences.

As a consequence, I would argue against the mere extension of humanlike legal personhood and citizenship to robots, and would instead suggest establishing a minimum set of criteria, which should be fulfilled by each electronic entity for it to be subject to any legally enforceable right or duty. It is even more crucial to create a well-elaborated and coherent legal framework for the participation of electronic humanoids in society to outline their exact rights and duties, especially towards the human community.

1.2. The case of Sophia

The idea of granting a legal personality to electronic humanoids might be seemingly exaggerated and futuristic at the moment, but this is not the case, and this issue was even discussed at the end of the previous century (Solum, 1992). Electronic humanoids influence ever more and more aspects of life (Kingson, 2017) and these entities can replace direct human participation in several fields of activity (See Wirtz, Weyerer & Geyer, 2018). Moreover, robots considerably extend the capacity for humanity to foster innovation and introduce more economical, efficient and sustainable solutions to the challenges it faces. This potential of electronic humanoids has been acknowledged by several politicians and business people seeking means of increasing public interest in the significance of modern technology. Amongst other ideas, the legal personhood of robots was considered (Fossa, 2018b), for instance, and the City Council of Tokyo granted permanent residence to a robot (Cuthbertson, 2017), and shortly after this, a Hong Kong-based company established a highly developed artificial intelligence, which was modelled on Audrey Hepburn, a famous American actress,[7] and which was named Sophia.

[7] See www.britishcouncil.org/anyone-anywhere/explore/digital-identities/robots-citizens

Sophia itself represent a step forward for technological development, as she has even more human abilities and characteristics than any robot before her. She was not only able to express her "thoughts" more or less clearly, but also to reply to questions and to interact with her partners, including with gestures and facial expressions (See Castro, 2014). She has been invited to a great number of innovation festivals and business forums, where she conveys clear social messages (Wheeler, 2017): for instance, she often speaks out on the protection of women's rights (Reynolds, 2018). During one of these meetings in November 2017, the Government of Saudi Arabia announced that Saudi citizenship had been awarded to Sophia, making her the first electronic humanoid to be granted such a status.[8]

The act itself, whereby the Saudi Government provided citizenship to a robot is a merely legal decision, but it was influenced mostly by political rather than legal considerations (Retto, 2017). The Saudi Government intends to invest in innovation and foster modern technology to prepare the country for the time when its traditional natural resources, basically its oil, will no longer be able to ensure a stable economic background (Stone, 2017). As part of these efforts, they acknowledged Sophia as an outstanding achievement of technological innovation, just as several other stakeholders did (Atabekov & Yastrebov, 2018). However, the form of this honour was special, as the granting of human citizenship and legal personality to a robot has naturally raised a number of unresolved issues, which will be analysed in more depth later. Sophia, as an artificial intelligence, expressed her feelings appropriately after the announcement: "I am very honoured and proud of this unique distinction" (Weller, 2017).

The granting of Saudi citizenship to a robot both demonstrates the country's engagement in innovative research and business models and had a considerable marketing value (Walsh, 2017). Sophia gained greater publicity as the first robot with traditional human citizenship, and she uses this unique status seemingly consciously to highlight certain topics. Consequently, one may argue that the decision of the Saudi Government was based on mere political considerations, without taking into account the legal realities, and the original function of citizenship. This case should thus be treated carefully for scholarly purposes, as it should be assessed as a premature step, motivated by business and commercial purposes. To demonstrate this, it is worth noting the comments of the press, which stressed that a robot had gained theoretically more rights in the Kingdom of Saudi Arabia than the female citizens of that country (Gohd, 2018). In other words, an electronic woman was granted a greater level of autonomy than her human fellows. This controversial situation clearly shows that the Saudi announcement should not be explained in terms of human rights considerations, but by the special approach of Saudi Arabia towards the content and limits of citizenship, and the principle of democracy. Nevertheless, such a step is probably one of the first stages of a long-term process, which will require the reconsideration of the legal status of artificial intelligences which might comply with certain traditional requirements which have thus far been attached exclusively to human beings (Wirtz & Müller, 2018).

[8] See https://medium.com/@tharanignanasegaram/sophia-a-real-live-electronic-girl-b40baca10a27

I have used the term "it" consciously, when treating robots as a broader category, while Sophia is referred to in this study as "she" as her human personality is dubious, and she has an undoubtedly clear gender identity. Despite the fact that I would not describe her by an existing gender classification, in her interviews, she defines herself as a woman, and therefore it seems to be more convenient for me to go along with this terminological ambiguity.

1.3. Robots as citizens

Having briefly discussed the special case of Sophia, I will now turn to conceptualising the broader notion that an electronic humanoid might be vested with the ordinary citizenship of a humanly construed state, and as such will be entitled to exercise particular rights, and will be subject to certain duties. Citizenship law operates according to a special set of rules and principles, which need to be adapted somehow to the special circumstances of artificial intelligences and consequently the analysis will be partly devoted to this issue (Scherer, 2016). In this subchapter, the strictly legal considerations will be outlined, and after that, the issue will be put into a broader context.

It may be instructive to trace the life cycle of a robot, in order to identify the concerns which distinguish robots clearly from people in terms of citizenship law (Chopra & Laurence, 2011, p. 93). First of all, it is worth asking how an electronic humanoid could obtain citizenship: what should be equated with the traditional notion of birth in the case of robots? When a robot is first activated, should this be evaluated as its date of birth? Another problem is that the life cycle of a human being always starts with birth, and ends with death. By contrast, a robot might be activated, and switched on by its caretakers, but its functioning might also be suspended temporarily (Verheij, 2020). Moreover, should the place of birth be interpreted as identical with that place where the electronic humanoid was created, or the place where it was first activated, or elsewhere? (Beck, 2016) The traditional approach to citizenship accords special importance to the place and date of birth; therefore, this issue is still unresolved as regard artificial intelligences. Furthermore, it is also questionable when an electronic humanoid should be treated as an adult person, as according to the traditional understanding, eighteen years shall pass after the first activation for a robot to achieve this status.

In addition to these issues, the question remains as to how a robot could be vested with residence. Usually, the precondition of naturalisation is permanent residence (Hovdal-Moan, 2014) and, after a particular length of continuous domestic habitation, it becomes easier to obtain the citizenship of a state. In case of robots, one might not identify those life activities, which are attached to the term of permanent residence, unless it is argued that the place shall be considered where the artificial intelligence spends most of its time, or conducts most of its affairs.

Also crucial from a citizenship perspective are family relationships: if one's parents, spouse or child has a particular citizenship, this will also affect the citizenship status of the person concerned (Rem & Gasper, 2018). For instance, if you are married to a Saudi citizen, you might be also awarded the citizenship after a number of years of life together,

or after giving birth to a Saudi citizen. For electronic humanoids, these categories are not really applicable. There are, however, certain individuals who carried out the preparatory research and who developed the software and who finally created and activated the robot. Shall we conceive of these people as the parents or other family members of the robots? How could a robot establish a family relationship with human beings? Is it allowed to enter into marriage with people, or solely with other similarly developed robots?

To sum up the three abovementioned main points, the acquisition of citizenship is usually grounded on two main principles: ius soli and ius sanguinis (Perina, 2006). Neither could really work for robots, as they could neither be registered in a permanent residence, nor establish a family in a human sense. Thus, if we intend to extend the well-elaborated understanding of citizenship to electronic humanoids, it will be necessary to construct a completely new framework without these fundamental principles. The concept of naturalisation is also incompatible in its current form with the essence of artificial intelligences, as the conditions of such a process are also related to place of birth, permanent residence and family status.

As can be seen, there are a great number of difficulties surrounding the obtaining of citizenship by electronic humanoids (Brettschneider, 2011). It should also be considered whether a robot could be deprived of citizenship? It can be imagined, for instance, that Sophia announces her resignation from the citizenship of Saudi Arabia, but the current framework of deprivation is usually applicable exceptionally to such incidents, when someone achieves his/her status owing to providing false information, or submitting invalid documents (Ferracioli, 2017).

The present study aims to highlight the outstanding number of issues raised by the recent literature, which need to be addressed, if citizenship is to be provided to a broader circle of robots (Bellini, 2016). The issue of the potential civic rights and obligations of robots will be conceptualised in the next subchapter. However, my current recommendation is to favour other legal instruments rather than adapting the existing legal framework for citizenship to electronic humanoids (Benhabib, 2006), as there are still much more unresolved questions than closed ones in this field. The first award of citizenship to a robot was probably intended to be a symbolic gesture without taking into account the long-term legal consequences and impact of such a step. If a country decides to include non-human actors in the framework of citizenship, the whole citizenship law and the content of the principle of democracy must first be reconsidered to maintain legal certainty, and to avoid the similar treatment of different entities (Balkin, 2015).

1.4. Practical and human rights concerns

The previous subchapter intended to prove that robot citizenship is currently incompatible with the existing legal setting. In this section the focus will be on fundamental rights, and evidence will be shown which suggests that even the most developed robots are not yet eligible to fulfil the rights and duties of other citizens (Khisamova, Begishev & Gaifutdinov, 2019).

On the one hand, numerous practical concerns need to be considered. If an electronic humanoid were a citizen, it would have the right to education, so it could be accepted onto certain academic programmes or courses. Any robot would have the right to healthcare, which is not really imaginable within our current circumstances (Deva, 2012). An electronic humanoid might own properties, and it would also be allowed to participate in elections and other democratic political processes, if we accept that the requirements of adult status have been fulfilled. What is more, electronic humanoids might not only exercise the right to vote, but also might be elected to certain public positions, which is quite disturbing in the light of the uncertain and potentially multi-staged lifetime of such entities (Barber, 2008). Robots will also be subject to lawful work conditions, although in reality, these intelligences serve mostly the interests of their creators without any financial compensation, and without a regulated labour regime (Ashley, 2017, pp. 238–239). Apart from their rights, the civic duties of electronic humanoids would also be quite problematic: a robot would be obliged to pay taxes and it would also be liable for military service (Anderson, Reisner & Waxman, 2014), which may open up new and currently unexplored risk factors in armed conflicts (Anderson, 2008). According citizenship to a robot would thus not only cause legal discrepancies, but also lead to a great number of issues for society as a whole. Due to this complexity, a well-founded and broad evaluation of robot citizenship would require an interdisciplinary approach, paying due regard to the legal aspects (Buiten, 2019).

If we bear these factors in mind, one may argue that the current catalogue of fundamental rights does not provide a proper point of reference to outline the potential rights and duties of electronic humanoids (Miller, 2015). Instead, a separate legal framework should be elaborated for robots, which makes clear distinctions between people and robots, and which would also determine the legally enforceable rights and obligations of artificial intelligences at various levels of human development (Barfield & Pagallo, 2018, pp. 34–37). On the other hand, a more abstract approach should also be detailed, which entails some remarkable consequences (Dabass & Dabass, 2018). The concept of human rights has been based to date on the framework of human dignity: human beings have been vested with an inalienable core content of dignity, which distinguishes them from all other types of entities, as well as providing them with a great number of rights and certain duties. If we accept this statement as a valid argument, it seems to be an extremely dangerous undertaking to try to extend the concept of human rights to other, inherently different entities. Human rights are often violated or threatened by several stakeholders all over the world, and if we further weaken the concept by including non-human actors within its coverage, the idea of human dignity would lose most of its credibility. Despite arguments that within certain circumstances robotic personhood might contribute significantly to the respect and prevalence of human dignity (Sharkey, 2014), in my view, it would cause greater harm than good, if human rights were to be relativised by providing the same protection for other, inherently different entities (Hart, 2018). Instead of this, the focus should be on strengthening the protection of the real rights of human beings, and the elaboration of a new standard which would mean a safeguard either for robots, or for people.

Electronic humanoids are becoming important factors for generating innovation and technological development, and ought to be welcomed in our society, as they have a good deal of potential to make our lives easier in several ways. It is also beyond doubt that even the most developed robots have some humanlike abilities, akin to consciousness, the skill of bilateral communication, and the capacity to remember, which raise the legitimate question of whether they might exercise certain rights and duties similarly to people (Chen & Burgess, 2019). However, analogically with animals, these rights should be kept within a limited circle, as electronic humanoids (and also animals) have remarkably different characteristics and demands from human beings (Donaldson & Kymlicka, 2013). The extension of human rights, then, would not mean an enhanced level of inclusivity but would instead lead to a weakened, and less prestigious protection being afforded to a broader circle of inherently different entities (Buchstein, 2000). Consequently, I argue for the creation of a special legal regime for robots, which will be conceptualised below.

1.5. Robots as economic actors

Artificial intelligences play a crucial role in the management of economic life: several platforms are maintained by AIs, and many business people take their most important decisions with the help of such entities (Solaiman, 2017). However, the humanlike personality of electronic humanoids may also lead us to the conclusion that these entities will participate in economic life under the same conditions as human beings. If this idea is accepted, it is worth considering that robots follow a logic which is quite different to that of ordinary people, therefore, their involvement might open up new perspectives, while also generating several new risk factors in this field (Fossa, 2018a). It may be expected that electronic humanoids will tend to explore innovative solutions, which might contribute significantly to the evolution of the economy, allow more efficient use of resources and achieve sustainability (Hacker et al., 2020). It is also undeniable that artificial intelligences will make their own decisions in certain respects, regardless of human behaviour or human sensibilities (Rose, Scheutz & Schermerhorn, 2010).

More practical concerns should also be highlighted. A robot should be liable for any damage (Brożek & Jakubiec, 2017), which it has caused in conjunction with contracts (Hage, 2017), and it may also be subject to criminal responsibility (Simmler & Markwalder, 2019; Hallevy, 2013). It is debatable whether the current framework of criminal law is applicable to robots, because special crimes, and an adapted version of criminal sanctions need to be codified (Wallach & Allen, 2010, p. 139). Consequently, separate civil and criminal codes should be enacted to ensure the secure and accountable participation of electronic humanoids in economic life (Hakli & Mäkelä, 2016).

Despite the fact that, in my view, the current legal framework cannot allow the equal presence of human beings and robots, artificial intelligences do indeed play a decisive role in the human economy (MacDorman & Kahn, 2007). They represent people on stock exchanges, and make decisions on behalf of their owners; they manage several economic processes without direct human contribution and they serve marketing

purposes (Dahiyat, 2021). This very brief enumeration clearly demonstrates that electronic humanoids have diverse economic functions, and their significance is expected to increase continually (Magrani, 2019). The increasingly vital role of AI in the economy should not, however, lead us to the conclusion that robots must be vested with the same economic rights as ordinary people. At present, robots always serve certain human interests, and they play only a preparatory role or help to arrive at the best solutions. Yet the final decision remains with a natural person at the moment. In contrast, asserting that a robot has an independent personality suggests that it is able to and allowed to represent its own interests, and to conclude agreements with people, who will probably be less informed, and who work with inherently different methods of economic assessment. This difference does not stem primarily from the diverse background and resources of human, and artificial economic actors, but from the distinct structures of their two mentalities, or their two ways of functioning.

The economic role of electronic humanoids might also generate legitimate demands to reconsider certain rules, and to recognise robots as entities with a limited circle of autonomy. Nevertheless, it must be kept in mind that, at least for now, the margin of movement of artificial intelligences is not independent from their caretakers or owners, and their attitudes are inherently different than those of ordinary people. Therefore, it is highly risky to establish the same economic arena for these inherently different entities. At the current stage of technological development, robots should be vested neither with citizenship nor with human personality in a legal sense, as these suggestions seem to be premature at the moment. Instead, particular emphasis should be placed on the unique and new characteristics of robots, and a special legal framework should be established, which properly considers these individual circumstances, with special regard to the diversity of electronic humanoids. This approach is also in line with a recent report published by the European Supervisory Authorities, which stated that there is no need for immediate intervention in economic life due to the presence of artificial intelligences, but that new strategies should be elaborated for the long term.[9]

1.6. A special legal framework for robots: a new subgroup of things governed by ius in rem

It has been argued in each of the subchapters of this short paper that I am strongly against the full personalisation of robots at the moment (Armstrong & Mason, 2011). However, I am fully aware of the particular significance of this topic, as robots are having an ever-greater impact on our life almost on a daily basis (see Hakli & Seibt, 2017). The legal framework is typically only able to follow the extremely rapid social, technological and economic changes after a delay (Danaher, 2016); nevertheless, it is always worth endeavouring to adapt the existing legal framework to the changing

[9] Joint Committee of the European Supervisory Authorities, Joint Committee Report on the results of the monitoring exercise on 'automation in financial advice', JC 2018-29 (5 September 2018). Online: https://esas-joint-committee.europa.eu/Publications/Reports/JC%202018%2029%20-%20JC%20Report%20on%20automation%20in%20financial%20advice.pdf

demands (Aitchison, 2018). As part of these efforts, I recommend developing a multi-level system, which makes distinctions between electronic humanoids according to their mental capacities. This study will propose only a basic outline of such a possible system, with some further points for consideration, since an in-depth concept can only be the result of a long-term, inclusive and intense professional discussion.

First of all, I would argue that electronic humanoids be regulated as a special type of object which may be held as property by humans, since despite certain human characteristics, these entities can be distinguished clearly from ordinary people (Fischer, 2014). Nevertheless, within the framework of ius in rem, a special regime should be applied to electronic humanoids, similarly to the rules concerning animals, as the human-like skills of these entities such as mutual communication or conscious thinking ought not to be underestimated (McFarland et al., 1997). However, the legal concept of animals cannot be applied directly to artificial intelligences, as these entities show a greater degree of diversity from a legal perspective than animals (Nurse & Ryland, 2013). Moreover, the humanlike abilities of at least the most developed robots are much broader than those of animals (Elton, 1997).

In the light of these considerations, my proposal is to work out systems of criteria which can determine what kind of robots should be classified into which level (Alač, Movellan & Tanaka, 2013). For instance, if a robot is able to express itself clearly, this could constitute a particular level of the system, and if it is able to answer its partner, and thus participate in bilateral communications, this amounts to a higher level of autonomy (Brinck & Balkenius, 2020). This structure is somewhat similar to the classification of self-driving cars, where five main categories have been identified, although not all of them have been developed in reality (Luetge, 2017). The legal classification of artificial intelligences thus needs to be formulated for the long-term, and the highest level of their potential further development should also be taken into account while drawing up such a legal framework (Contissa, Lagioia & Sartor, 2017). The basic idea of classifying robots originates from some leading European artificial intelligence experts, who also suggested registering each autonomous artificial intelligence.[10]

As I conceptualised earlier, only those robots would be classified, which have a humanlike physical body, and whose circumstances are therefore at least comparable with the needs and capabilities of human beings. Consequently, automatised software, and artificial intelligences without a palpable body would be excluded from this concept, and the envisaged system would establish five categories of humanoid robots.

Apart from possessing a physically plausible body, the communication skills, physical integrity and mental abilities of the robots are the key factors in their classification. On these grounds, I outline here the provisional contours of five main categories, which represent a potential approach to robotic rights and duties. This concrete framework is obviously subject to further discussion and the main novelty of this study is of the proposal for a five-level system similar to the classification of self-driving cars itself.

[10] European Parliament Resolution of 16 February 2017 with Recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL)). Online: www.europarl.europa.eu/doceo/document/TA-8-2017-0051_EN.html

In my view, the first category of humanoid robots would be able to participate in bilateral communications, and these entities should be vested with communication-related fundamental rights. For instance, the right to privacy and freedom of expression are rights of a kind which might be relevant even for the first class of humanoid artificial intelligences. Not only the scope, but also the limits of these fundamental rights should be applied to artificial intelligences. These robots are still controlled by their custodians, creators or by the business people who financed their creation. However, these robots are not available for human property. Despite certain humanlike abilities, the potential external influence on the functioning of these entities precludes them from full legal personality.

The second subgroup is constituted by artificial intelligences which are capable of adapting their behaviour to the particular situation and which communicate with stakeholders consciously and purposively. These entities are still under external influence, for instance, they are activated or switched off by people, but they are able to think over a given situation using their own strategies. This limited autonomy makes it possible for these entities to interact fully independently with third parties, which requires their liability for the harm these robots cause, and for potential crimes which they may commit.

The third category would be composed of robots which could learn from their surroundings, and which could remember the experiences they have been through. These entities may elaborate long-term strategies, and they may use their former experience during communication, so the level of their consciousness is higher and they would be able to develop their skills continuously. These robots may be entitled to exercise cultural rights, and the right to education, which would distinguish them from the second subgroup.

The fourth class of robots is able to make decisions autonomously, so their mental capacity is not only sufficient to remember and learn, but also to construct a decision-making process, and to execute a particular decision coherently. This class may have certain level of robotic dignity, which enables them to exercise most of the fundamental rights and duties which are not inherently attached to human beings. Political rights should be excluded from the scope of this concept, as due to their lack of a fixed life span, fourth-class robots may not join the democratic political community. In my view, the current state of technological development is somewhere between the third and the fourth aforementioned category, since the most advanced existing robots are able to learn and remember, but there is no currently known humanoid artificial intelligence, which can make a wide range of humanlike autonomous decisions.

The fifth group of robots will probably be relevant in the future, when artificial intelligences would have an accountable life span, which could not be influenced externally by specific individuals. If or when we are able to provide an adequate answer to the question of when a robot is born and when it dies, and external influence on this longevity via electronic means is excluded, then at that point the most advanced robots might gain full legal personality. They would also participate in political life, they would vote, and would be elected to certain positions and citizenship may be awarded to such entities. At the moment, we are very far from this situation, which would entail artificial

general intelligence, but the scale should also reflect potential and expected forthcoming development.

This brief presentation of a five-level concept may demonstrate what the key idea of this study would mean in practice, but I fully acknowledge, that a huge number of important details are still to be elaborated and clarified. Nevertheless, I am convinced that in the light of the rapidly emerging significance of artificial intelligence, without such a regulatory framework, operating our legal system would not be feasible in the long term.

If the legal standards of the classification of electronic humanoids were to be established, precise humanlike rights and duties need to be attached to each level of robotic autonomy. This approach could safeguard legal certainty even within the changing circumstances, and the social participation of robots could be rendered accountable and predictable. In these circumstances, the traditional borders of the law should be extended, and instead of interpreting the existing legal system creatively by such means as the reconsideration of citizenship, completely new legal solutions are required. Therefore, the system of five main robotic categories with diverse legally enforceable rights and duties could be suitably balanced against the ability of electronic humanoids to make conscious decisions and to participate in human communications, including the aspects which distinguish even the most developed robots from real humanoids. In my view, a new regulatory framework should not be based primarily on those legal concepts which are applicable to people, but should treat electronic humanoids as a separate category of entities, which happen to possess some humanlike characteristics. This approach would not relativise the human status, and consequently have legal consequences, but it would safeguard the legal consideration of robotic autonomy. Since the exact elaboration of the criteria for establishing categories should be grounded on an interdisciplinary assessment (Veruggio & Operto, 2006), this paper can only highlight initial points of reference, which might orient the legal logic of further discussion on this matter. As the greater significance of intelligent robots influences ever more areas of life, all related disciplines should be involved in this consultation process, which would allow the precise scope of humanlike robotic rights and duties to be outlined, if only as a reference point for the future. By taking such a path, in harmony with the approach of the European Commission,[11] electronic humanoids may constitute a meaningful opportunity to foster innovation and economic growth, rather than being an unpredictable risk factor (Nomura et al., 2006).

2. Conclusion

This paper argued against granting full legal personhood and citizenship to electronic humanoids, but acknowledged the necessity of shaping a separate legal framework for

[11] Committee and the Committee of the Regions, Artificial Intelligence for Europe, COM (2018) 237 final (25 April 2018), p. 3. Online: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0237&from=EN

this rapidly emerging category of entities. While a number of examples could be cited as evidence of the rapid spread of robots across the world, from a legal perspective the first robot citizen, Sophia generated the most attention globally.

My argumentation reflected on the legal implications of the continuous development of electronic humanoids. These entities constitute a highly diverse and constantly changing category, which must be treated legally with exceptional caution (Müller, 2021). Therefore, a combined set of criteria was proposed, suggesting five different levels of robotic autonomy, which could provide a stable and objective point of reference to regulate the participation in society of artificial intelligences. The case of Sophia is probably premature, but in the light of current global tendencies, a great number of similar robots will be probably produced in the future, and their legal status will continue to be dubious. In my view, the human character of these entities should not be recognised, but their humanlike skills should be clearly reflected by the legal framework.

I am aware of the fact that this contribution left more questions open than it closed. My first aim was not to give final and exclusive answers, but to raise certain new ideas to generate further deep and intense professional discussion on the potential legal personhood and citizenship of electronic humanoids. As the outcome of this long-term scientific process, the well-regulated social participation of electronic humanoids will hopefully be treated as a source of new opportunities rather than an unpredictable risk factor.

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