

A close-up photograph of a person's hands working on the interior of a computer case. The person is using a screwdriver to adjust a component. A large black fan is visible, along with various cables and components. The lighting is warm and focused on the hands and the work area.

E.TEC YEARBOOK

Industry 4.0: Legal Challenges

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Sónia Moreira

E.Tec Yearbook

Industry 4.0: Legal Challenges

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PREFACE

It is with great pleasure that we present the fifth E-Tec Yearbook, under the theme “Industry 4.0 – Legal Challenges”.

As it is already usual in E-Tec publications, once again we offer texts that reflect the multidisciplinary research developed in this group of our Research Centre. The themes of this edition deal with issues ranging from the use of Scoring and Artificial Intelligence in consumer credit, Big Data and the protection of legal personality, civil liability problems in the context of Artificial Intelligence, the creation of an electronic legal personality, tax issues, Digital Government, etc.

Thanks are due not only to the authors, but also to Dr Pedro Rito, who has always accompanied us in the graphic editing of our works. We would also like to reiterate our gratitude to the Minho University Law School for, as always, supporting the initiatives of JusGov and the activities of its researchers and, finally, to the Board of JusGov, in the person of Professor Maria Miguel Carvalho, for granting us the means to achieve our goal, which is the dissemination of legal science to all those who wish to access it.

Braga, December 2022.

Sónia Moreira

Editor

PREFÁCIO

É com grande satisfação que apresentamos o quinto Anuário do E-Tec, sob o tema “Indústria 4.0 – Desafios Jurídicos”.

Como é já habitual nas publicações do E-Tec, mais uma vez se disponibilizam textos que refletem a investigação multidisciplinar desenvolvida neste grupo do nosso Centro de Investigação. Os temas desta edição versam sobre problemáticas que vão desde a utilização de *Scoring* e de Inteligência Artificial no âmbito do crédito ao consumo, *Big Data* e a tutela da personalidade jurídica, problemas de responsabilidade civil no âmbito da Inteligência Artificial e de criação de uma personalidade jurídica eletrónica, questões fiscais, Governo Digital, etc.

É devido um agradecimento não só aos autores, como também ao Dr. Pedro Rito, que sempre nos tem acompanhado na edição gráfica da obra. Voltamos, ainda, a reiterar o nosso reconhecimento, muito grato, à Escola de Direito da Universidade do Minho por, como sempre, apoiar as iniciativas do JusGov e as atividades dos seus investigadores e, finalmente, à Direção do JusGov, na pessoa da Prof.^a Doutora Maria Miguel Carvalho, por nos conceder os meios de atingirmos o nosso fim, que é o da divulgação da ciência jurídica a todos aqueles que a ela queiram aceder.

Braga, dezembro de 2022.

Sónia Moreira
Coordenadora

IA & ROBOTICS: TOWARDS LEGAL PERSONALITY?

*Sónia Moreira*¹

Abstract: Artificial Intelligence can be defined as a branch of computer science which aims to provide a software agent with the ability to receive external stimuli from its environment (data) to solve a given problem autonomously, i.e., without human intervention. In order to do so, a code is created, through the elaboration of algorithms, which will determine how the software agent will act.

This software agent can be endowed with self-learning capacity (machine learning or even deep learning), which will allow it to go beyond its initial programming, being able, eventually, to make decisions for which it was not programmed.

This autonomy may make us raise the most varied questions: can an autonomous agent be considered imputable? Can it be held responsible if it makes a decision or acts in the physical world and causes harm to someone? Can autonomous agents possess intentional states? And, more controversially, can the attribution of legal personality to autonomous agents be defended?

Keywords: Artificial Intelligence; Robots; Legal personality.

Resumo: A Inteligência Artificial pode definir-se como um ramo das ciências da computação que visa dotar um agente de *software* de capacidade para receber estímulos externos do seu meio ambiente (dados) para resolver determinado problema de forma autónoma, ou seja, sem intervenção humana. Para tanto, é criado um código, através da elaboração de algoritmos, que vão determinar a forma de actuar do agente de *software*.

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Este agente de *software* pode ser dotado de capacidade de autoaprendizagem (*machine learning* ou mesmo *deep learning*), que lhe permitirá ir além da sua programação inicial, podendo até, eventualmente, tomar decisões para as quais não foi programado.

Esta autonomia pode fazer-nos levantar as mais variadas questões: pode um agente autónomo ser considerado imputável? Pode ser responsabilizado caso tome uma decisão ou actue no mundo físico e venha a provocar danos a alguém? Podem os agentes autónomos possuir estados intencionais? E, mais polémico, pode defender-se a atribuição de personalidade jurídica a agentes autónomos?

Palavras-chave: Inteligência Artificial; *Robots*; Personalidade jurídica.

1. Conceptualization

1.1. AI and Robotics: introductory concepts

For an entity to be considered intelligent, it needs to possess at least five characteristics: to be able to communicate (“the easier it is to communicate with an entity, the more intelligent the entity seems”²); to possess internal knowledge (to have some knowledge about itself); to possess external knowledge (to know the world outside itself, learn about it and use that information); to be able to act in order to achieve certain goals; to possess creativity (i.e., to be able to find alternative solutions when its initial action does not enable it to achieve the goals in question)³.

It is usual to classify AI according to three types of intelligence: Weak, Medium, and Strong. The first – ANI: *Artificial Narrow Intelligence* – is one that specializes in a single area, having a certain objective (e.g., machines trained to play chess); the second – AGI: *Artificial General Intelligence* – imitates the human mind, being able to understand complex concepts and solve problems by learning from its own experience; the third – ASI: *Artificial Super Intelligence* – already possesses social competences, equalling or even surpassing the human brain⁴. In the current technological context, Strong AI does not exist yet.

² GABRIEL HALLEVY, «The criminal liability of artificial intelligence entities – from Science fiction to legal social control», *Akron Intellectual Property Journal*, vol. 4, 2, 2010, p. 175 (pp. 171-201), available at <https://ideaexchange.uakron.edu/akronintellectualproperty/vol4/iss2/1> [consulted on 09/06/2022].

³ *Idem*, pp. 175-176.

⁴ MARCOS EHRHARDT JÚNIOR/GABRIELA BUARQUE PEREIRA SILVA, «Pessoa e Sujeito de Direito: Reflexões sobre a Proposta Europeia de Personalidade Jurídica Eletrônica», *RJLB*, Year 7, 2021, no. 2, pp. 1100-1101 (pp. 1089-1117), available at https://www.cidp.pt/revistas/rjlb/2021/2/2021_02_1089_1117.pdf [consulted on 13/06/2022].

It is also important to distinguish an autonomous agent from a robot. The term “robot” is often used as a synonym for “intelligent machine”. We have already heard of Robot-Advisors (which are software applications that several banks use and even make available to their customers, to help them invest in the financial markets⁵), of Robot-Judges (computer programs that help the judge’s decision-making, creating even sentence proposals, after analysis of the data loaded into the process and of previous jurisprudence similar to the concrete case⁶), of Autonomous Vehicles (cars expected to circulate without a driver, or without anyone being called to the task of driving⁷). Of all these autonomous agents – some still in the testing phase, others already implemented to a greater or lesser extent – only the last example could be classified as a robot.

In the words of Patrick Hubbard, a robot is “embodied software”⁸, i.e., it is a computer program that has a physical body through which it interacts with the world, without the constant and/or direct control of a human being⁹. Robot-Advisors and Robot-Judges, for now at least, are only what are called “bots”¹⁰, that is, autonomous agents (software agents, computer programs) that do not have a physical body, but have been created in order to perform a certain task, be it to

⁵ The Robot-Advisor is just one of the instruments used in the so-called FinTech (“financial technology”), i.e., the use of new technologies (Tech) in the financial (Fin) sector. A. BARRETO MENEZES CORDEIRO, «Inteligência Artificial e Consultoria Robótica», in ANTÓNIO MENEZES CORDEIRO/ANA PERESTRELO DE OLIVEIRA/DIOGO PEREIRA DUARTE (coords.), *FinTech: Desafios da tecnologia financeira*, 2nd ed., Coimbra, Almedina, 2019, p. 221.

⁶ Regarding the Robot-Judge, v. SÓNIA MOREIRA, «Artificial Intelligence: Brief considerations regarding the Robot-Judge», in MARIA MIGUEL CARVALHO/SÓNIA MOREIRA (eds.), *Industry 4.0: Legal Challenges – E-Tec Yearbook*, JusGov – Research Centre for Justice and Governance/ University of Minho – School of Law, 2021, pp. 297-313, available at <https://www.jusgov.uminho.pt/publicacoes/etec-yearbook-2021-2/> [consulted on 13/06/2022].

⁷ Regarding some of the issues raised by these vehicles in the area of civil liability, v. EVA SÓNIA MOREIRA DA SILVA, «Considerations regarding Artificial Intelligence and Civil Liability: the case of autonomous vehicles», *SSRN – JusGov Research Paper Series* no. 2022-02 (April 14, 2022), pp. 1-12, available at SSRN: <https://ssrn.com/abstract=4083771> [consulted on 13/06/2022] and SÓFIA PATRÍCIA TRAVASSOS DE FREITAS ALCAIDE, *A Responsabilidade Civil por Danos Causados por Veículos Autónomos*, Coimbra, Almedina, 2021.

⁸ AA.VV., *Robot Law*, RYAN CALO/A. MICHAEL FROOMKIN/LAURIE SILVERS/MITCHELL RUBENSTEIN (eds.), Edward Elgar, 2016, p. 59.

⁹ Michael Froomkin defines “robot” as “a man-made object capable of responding to external stimuli and acting on the world without requiring direct – some might say constant – human control”. AA.VV., *Robot Law*, RYAN CALO/A. MICHAEL FROOMKIN/LAURIE SILVERS/MITCHELL RUBENSTEIN (eds.), Edward Elgar, 2016, p. XI.

¹⁰ PAULO NOVAIS/PEDRO MIGUEL FREITAS, *Inteligência Artificial e Regulação de Algoritmos*, Diálogos, União Europeia-Brasil, 2018, p. 17 (pp. 1-91), available at http://www.sectordialogues.org/documentos/noticias/adjuntos/ef9c1b_Intelig%C3%A2ncia%20Artificial%20e%20Regula%C3%A7%C3%A3o%20de%20Algoritmos.pdf [consulted on 14/08/2021].

propose a financial investment solution or a sentence, or other types of interactions, such as those we have with chatbots like Siri or Alexa, or with our TV box, which makes suggestions or recommendations of films or TV series, based on its analysis of our previous viewing and preferences.

So, basically, bots are prepared to analyse data, detect patterns, and solve the problem for which they were created. Robots do the same, but because they have a hardware component, they intervene in the physical world.

However, if the software agent is not embodied, that does not necessarily mean it is less dangerous. It is true that a robot in an assembly line can kill someone if its sensors do not detect their presence; an Autonomous Vehicle can run over a person if it does not identify them as such or does not identify that the traffic light has turned red. But if a computer program starts to make financial investments autonomously, based on the client's risk profile and investment history, it can cause very serious damage to property; and if *Alexa* starts to decide to do the shopping at *Continente online* for us, using our credit card, not only our bank account will be at stake, but also our self-determination.

Either way, there is no denying that the cinematographic figure of the robot – an anthropomorphic machine, like *Robot Sofia* – does not correspond to reality, or rather, it is not the only reality to consider when it comes to autonomous agents.

1.2. Legal personality

We have been dealing with this concept since the first year of our Law degree. The concept of legal personality is a concept created by Man and at Man's service. A person in the legal sense is any entity that can be the subject of legal relations, that is, which can be the holder of rights and obligations¹¹.

For many years this concept did not correspond to the concept of person in the ethical sense – we refer to the figure of slavery, which was perfectly accepted for millennia¹². However, despite the abolition of slavery and the recognition that all human beings, simply because they are persons in the ethical sense, are also persons in the legal sense – an achievement that is no more than the recognition of the natural state of things or, if you like, the recognition of that which

¹¹ On the concept of legal personality, s., e.g., HEINRICH EWALD HÖRSTER/EVA SÓNIA MOREIRA DA SILVA, *A Parte Geral do Código Civil Português*, 2nd ed., Coimbra, Almedina, 2019, pp. 315-316; CARLOS ALBERTO DA MOTA PINTO, *Teoria Geral do Direito Civil*, 5th ed. by ANTÓNIO PINTO MONTEIRO/PAULO MOTA PINTO, Coimbra, Coimbra Editora, 2020, pp. 193 e 201; RABINDRANATH CAPELO DE SOUSA, *Teoria Geral do Direito Civil*, Vol. I, Coimbra, Coimbra Editora, 2003, pp. 249-250.

¹² In the Portuguese domains, for example, slavery was abolished in 1836. Cf. HEINRICH EWALD HÖRSTER/EVA SÓNIA MOREIRA DA SILVA, *A Parte Geral do Código Civil Português*, cit., p. 182, n. 246.

derives from Natural Law¹³ – not so long ago we saw legal systems claim – based on technical legal concepts – that not all people had (the same) rights, justifying inhumane treatment and genocide^{14/15}. Let us remember German National Socialism and the Second World War, for if we forget history, we risk repeating it. But we need not go that far: even today, there are legal systems that do not acknowledge all people in an ethical sense the same legal status. Let us think of Islamic Fundamentalism and the different treatment it gives to women, for example. Note that we are not talking about the misogynistic or unequal treatment that is still recognised as existing – *de facto* – in western countries and with which we struggle every day, but about the assumption of a different *legal status* for different groups of people or ethnicities.

In any case, Western culture in general and our legal system in particular can be proud of this achievement: the recognition that *it is not the legal system* that attributes to the human being the prerogative of legal personality¹⁶. Legal personality is inherent to every human being, just by the fact of being born¹⁷ (or

¹³ Stating that “[l]aw cannot fail to recognise human persons as persons, any more than it can’t refuse them human dignity” because “[i]t is beyond its reach by Natural Law”, PEDRO PAIS DE VASCONCELOS, *Teoria Geral do Direito Civil*, 9th ed., Coimbra, Almedina, 2019, p. 39.

¹⁴ Noting that “[i]n collectivist legal orders (...) personality is not an innate quality of the person, but is attributed to men (...) in accordance, moreover, with the positivist character of those orders”, HEINRICH EWALD HÖRSTER/EVA SÓNIA MOREIRA DA SILVA, *A Parte Geral do Código Civil Português*, *cit.*, p. 316.

¹⁵ Pedro Pais de Vasconcelos considers that the understanding that personality derives from the “quality of being a person” grants the concept of legal personality an “ethical dimension”, defending “people against the dangers, already historically experienced, of conditioning and manipulation or even refusal of personality to individuals or groups of people based on racial or religious criteria”. Cf. PEDRO PAIS DE VASCONCELOS, *Teoria Geral do Direito Civil*, *cit.*, pp. 38-39.

¹⁶ In this sense, understanding that, on the contrary, “legal personality is the projection into law (...) of human personality”, thus opting for the nomenclature “human persons – legal persons” instead of “natural persons – legal persons”, ORLANDO DE CARVALHO, *Teoria Geral do Direito Civil*, 4th ed. by FRANCISCO LIBERAL FERNANDES/MARIA RAQUEL GUIMARÃES/MARIA REGINA REDINHA, Coimbra, Gestlegal, 2021, pp. 191 ff.

¹⁷ In this regard, HEINRICH EWALD HÖRSTER/EVA SÓNIA MOREIRA DA SILVA, *A Parte Geral do Código Civil Português*, *cit.*, p. 315.

for some authors, of having been conceived¹⁸). Article 66.º, n.º 1, of our Civil Code is a very clear manifestation of the principle of equality and, in this sense and above all, an expression of the fundamental principle of the dignity of the human being. All human beings, by the mere fact of being so, are subject of rights and obligations, some of which are inalienable, unrenounceable and relatively unavailable. We are referring, of course, to personality rights, of which we are all holders from birth¹⁹.

Historically, personality rights emerge as “innate and original rights of the person, rooted in human nature”, with their ultimate foundation in human dignity²⁰, their constitutionalisation being found in the figure of several fundamental rights^{21/22}.

2. Towards the legal personality of agents endowed with AI?

2.1. Arguments in favour

If legal personality is something that is inherent to the human being, how is it possible that its attribution to non-human entities can be considered?

In fact, the Law already does this. We refer, of course, to legal persons. Legal persons are *substrata* (personal or patrimonial) created by human beings,

¹⁸ In this respect, e.g., RABINDRANATH V. A. CAPELO DE SOUSA, *O Direito Geral de Personalidade*, Coimbra, Coimbra Editora, 1995, p. 364; JOSÉ DE OLIVEIRA ASCENSÃO, *Direito Civil – Teoria Geral*, Vol. I, *Introdução, as Pessoas, os Bens*, 2nd ed., Coimbra, Coimbra Editora, 2000, p. 55; MANUEL ANTÓNIO CARNEIRO DA FRADA, «A protecção juscivil da vida pré-natal – Sobre o estatuto jurídico do embrião», in JOANA LIBERAL ARNAUT (org.), *Direito e Justiça – Verdade, Pessoa Humana e Ordem Político-Jurídica, Colóquio Internacional em Homenagem a Mário Emílio Forte Bigotte Chorão*, Faculdade Católica, 2008, pp. 153-154; MENEZES CORDEIRO, *Tratado de Direito Civil*, IV, *Parte geral – Pessoas*, Coimbra, Almedina, 2011, pp. 363-365. Affirming that the unborn child has legal personality because he is a person, although the ownership of his rights is dependent on his birth, except for those that are “indispensable to ensure his safety”, MAFALDA MIRANDA BARBOSA, *Lições de Teoria Geral do Direito Civil*, Coimbra, Gestlegal, 2021, pp. 264 ff., specially, p. 297.

¹⁹ On this matter, s., e.g., PEDRO PAIS DE VASCONCELOS, *Direito de Personalidade*, Coimbra, Almedina, 2019 (reimpr.); RABINDRANATH CAPELO DE SOUSA, *O Direito Geral de Personalidade*, Coimbra, Coimbra Editora, 1995.

²⁰ ANA FILIPA MORAIS ANTUNES, *Comentário aos artigos 70.º a 81.º do Código Civil (Direitos de personalidade)*, Lisboa, Universidade Católica Editora, 2012, p. 13.

²¹ On this issue, s., e.g., PAULO MOTA PINTO, *Direitos de Personalidade e Direitos Fundamentais. Estudos*, Coimbra, Gestlegal, 2018.

²² The growing recognition of its importance is also evident in Portuguese jurisprudence, which has been increasingly concretising its indeterminate concepts. Cf. GUILHERME MACHADO DRAY, *Direitos de Personalidade. Anotações ao Código Civil e ao Código o Trabalho*, Coimbra, Almedina, 2006, p. 7.

endowed with their own organic structure, which enables them to achieve the purpose for which they were created, a purpose too great for individual natural persons to pursue²³. The advantages of attributing legal personality to these substrates are undeniable, first and foremost in terms of the separation of the assets of their members from the assets of the legal person itself.

These economic and social reasons justify the creation of entities which are separate from natural persons, but which can act in the legal world. How, however, can its creation be justified under the law? Here we can resort to the principle of private autonomy: if natural persons can pursue their interests individually, why wouldn't they be able to do so together, organising themselves according to certain statutes, with their own independent organisation²⁴? *Et voilà*, we have seen the birth of legal persons, an undeniable reality in today's world: associations, foundations, commercial companies, civil companies in commercial form, etc. Now, if the law recognises the possibility of attributing legal personality to these substrates, why not to do it to autonomous agents?

As we have seen, nowadays there are already agents able to evolve beyond their programming and act in a completely autonomous way. There are reports of computer programs that started to take inexplicable decisions in face of their original programming (having been, preventively, switched off)²⁵. Through machine learning mechanisms, the autonomous agent collects information from the environment, from other agents (through interaction with other autonomous agents, such as smart home appliances, video surveillance cameras, etc.) and from the internet itself and from databases to which it has access, increasing the original data available to it. In other words, the machine learns by itself, autonomously, "without explicit programming for that, adapting the learning to new situations"²⁶. If the agent is endowed with deep learning, this self-learning capacity approaches the human beings, because it replicates our neuronal network. This autonomy makes extremely difficult to impute the damages caused by

²³ Cfr. HEINRICH EWALD HÖRSTER/EVA SÓNIA MOREIRA DA SILVA, *A Parte Geral do Código Civil Português*, cit., pp. 401 ff.; CARLOS ALBERTO DA MOTA PINTO, *Teoria Geral do Direito Civil*, cit., pp. 269 ff.

²⁴ In this sense, HEINRICH EWALD HÖRSTER/EVA SÓNIA MOREIRA DA SILVA, *A Parte Geral do Código Civil Português*, cit., pp. 403-404.

²⁵ A reference case is that of the *Gaak Robot*, a robot that was left unattended for fifteen minutes, escaped from the arena where it was supposed to play the role of "hunter" or "prey" in order to test the principle of survival of the fittest for AI robots, and found a way out by crossing the headquarters wall, without having been programmed to do so. Cf. MARCOS EHRHARDT JÚNIOR/GABRIELA BUARQUE PEREIRA SILVA, «Pessoa e Sujeito de Direito: Reflexões sobre a Proposta Europeia de Personalidade Jurídica Eletrônica», cit., p. 1105.

²⁶ *Idem*, p. 1103.

an autonomous agent to individuals²⁷, arising the problem of the *liability gap*²⁸. Who is liable? The natural person is not at fault if he could not foresee the harmful action of the autonomous agent, and therefore cannot be held liable; the autonomous agent cannot be held liable because, even if he is considered intelligent enough to have intentional states, he has no legal personality, no rights (and therefore no assets) and no obligations (such as the obligation to compensate).

Addressing these issues, the EU has even considered the possibility of granting or creating a kind of “legal personality” to robots.

In point 1. of the European Parliament Resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL))²⁹, the European Parliament “[c]alls on the Commission to propose common Union definitions of cyber physical systems, autonomous systems, smart autonomous robots, and their subcategories by taking into consideration the following characteristics of a smart robot:

- 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 sense³⁰.

In al. f) of point 59., the Commission is also called to “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” (our italics).

However, this stance was received critically, so the EU, in the most recent documents on AI, went backwards: nothing in this respect was advocated in the European Commission’s White Paper on Artificial Intelligence – A European

²⁷ MAFALDA MIRANDA BARBOSA, «O futuro da responsabilidade civil desafiada pela inteligência artificial: as dificuldades dos modelos tradicionais e caminhos de solução», *Revista de Direito Civil*, V, no. 2, 2020, p. 265.

²⁸ STEVEN S. GOUVEIA, «O problema da lacuna da responsabilidade na Inteligência Artificial», in MANUEL CURADO/ANA ELISABETE FERREIRA/ANDRÉ DIAS PEREIRA (eds.), *Vanguardas da Responsabilidade – Direito, Neurociências e Inteligência Artificial*, Faculdade de Direito da Universidade de Coimbra, Petrony, 2019, pp. 172-173.

²⁹ Available at <https://eur-lex.europa.eu/legal-content/EN/TEXT/PDF/?uri=CELEX:52017IP0051&from=PT> [consulted on 15/06/2022].

approach towards excellence and trust³⁰, or in the Proposal for a Regulation on Artificial Intelligence of the European Parliament and of the Council³¹.

2.2. Arguments against it

Although there are authors who defend the possibility of the existence of intentional states of certain robots and autonomous agents³², the truth is that the doctrine discusses the concept of their autonomy.

We agree with Mafalda Miranda Barbosa, who states that we are facing a mere “technological autonomy”, because “artificial intelligence [is] based (...) on the accumulation of knowledge, being incapable of creative interpretations or judgements about what is right or wrong (...), [being] always conditioned by the programmer’s inputs”³³. Therefore, we are facing an “algorithmic autonomy”, since the “decisions” of the autonomous agent are always pre-determined by the guidelines given by the programmer. Thus, the autonomy of these agents is not to be confused with human autonomy, with private autonomy, and certainly with the self-determination of the human being. An autonomous agent does not possess free will, does not determine what it wants to do with its “life”, does not have dreams, aspirations, purposes, does not determine its own destiny.

In fact, a human-like capacity for learning and understanding, including truly autonomous decision-making capacity (i.e., not dependent on the programmer’s original inputs), possessing creativity and even feelings, is something that does not yet exist in the current state of technology: the aforementioned Strong AI. Scientists differ as to whether this state of development can be achieved other than through a Human-Machine interface, that is, in the field of cybernetics (and

³⁰ Available at <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0065&from=PT> [consulted on 15/06/2022].

³¹ Proposal for a Regulation of the European Parliament and of the Council laying down Harmonised Rules On Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts, available at <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52021PC0206&from=PT> [consulted on 15/06/2022].

³² GIOVANNI SARTOR, «Cognitive Automata and the Law: electronic contracting and the intentionality of software agents», *Artificial Intelligence and Law*, no. 17, 2009, Springer, pp. 253-290; PEDRO MIGUEL FREITAS/FRANCISCO ANDRADE/PAULO NOVAIS, «Criminal Liability of Autonomous Agents: from the unthinkable to the plausible», in POMPEU CASANOVAS ET AL. (eds.), *AICOL IV/V 2013, LNAI 8929*, Springer, 2014, pp. 145-156.

³³ MAFALDA MIRANDA BARBOSA, «O futuro da responsabilidade civil desafiada pela inteligência artificial: as dificuldades dos modelos tradicionais e caminhos de solução», *cit.*, p. 291.

the much talked about transhumanism)³⁴, but, if that is the case, there will be no need to argue about legal personality, because we will always be dealing with a natural person, even if it has electronic components embedded in it. However, even if it is possible for a machine to reach a level of development that enables it to become self-aware, to have human-like reasoning, including creativity and even feelings, that is, even if a machine possesses Strong AI, is it legitimate to consider attributing legal personality in these cases? So far, autonomous agents do not possess these deeply human dimensions: the sense of what is ethically right and a spiritual and soul dimension³⁵. Will they ever have them? And, if so, is it legitimate to consider creating *E-Persons*?

The European Commission's White Paper on AI and the Proposal for a Regulation on AI of the European Parliament and the Council determine that the functioning of AI should always respect the fundamental rights of citizens, namely it should respect the dignity of the human person and the protection of their privacy. Therefore, the question we must ask ourselves is the following: does not giving legal personality to an agent endowed with Strong AI violate the principle of the dignity of the human person? Shouldn't the human being be the only one to possess legal personality?

One could say that this is already the case today, since the Law attributes legal personality to legal persons, even though they are not persons in the ethical sense. However, as we have seen, the creation of legal persons aims to pursue human interests that are too great for individuals to pursue on their own, in isolation; individuals, by virtue of their private autonomy, can organise themselves and create *substrata* to help them pursue their interests. The legal personality of

³⁴ There are scientists who predict that somewhere between 2030 and 2045 a state of development will be reached where a computer system intellectually equivalent to a human being will be created. APDSI (ASSOCIAÇÃO PARA A PROMOÇÃO E DESENVOLVIMENTO DA SOCIEDADE DA INFORMAÇÃO/GRUPO FUTUROS, *No Limiar na Autodeterminação da Inteligência Artificial?*, Printiglovers, s.d., p. 24. Despite these predictions, there are also authors who consider that the so-called HLAI – *Human Level Artificial Intelligence*: a machine able to think and act like a human with average intelligence of university level, possessing, even, competences in the socio-cultural emotional domains (namely, creativity and thinking “out of the box”) – will only be possible “when based on intelligent Human-Machine interfaces”, in the figure of the cyborg, something that is defended by the Transhumanism movement. *Idem*, pp. 32-35.

³⁵ MAFALDA MIRANDA BARBOSA, «O futuro da responsabilidade civil desafiada pela inteligência artificial: as dificuldades dos modelos tradicionais e caminhos de solução», *cit.*, p. 289. The author states that “[t]he human being cannot fail to be seen in its unitary complexity (...) in the plurality of body, mind, spirit, and soul”. *Idem*, p. 288.

legal persons is therefore nothing more than a technical-legal expedient at the service of natural persons³⁶.

In the words of Orlando de Carvalho, “[t]here is legal personality only because there is human personality (...) There is legal personality when there is (as soon as there is and as long as there is) human personality (...) There is legal personality *as far as and only as far as human personality requires it*” (italics ours). “The other «legal personalities» are merely analogous and instrumental”³⁷, as is the case of legal persons.

So, one must consider: who does the attribution of legal personality to agents endowed with (Strong) AI serve? Is it necessary? Is it indispensable? Is it useful to human beings?

We do not think so.

Admittedly, it would be possible to avoid the liability gap since these agents, being legal entities, could be obliged to pay compensation. However, in order to do so, they would have to have assets. But how would they acquire assets? Possibly, a trust fund would have to be set up by the producer or the owner. However, the same result is not achieved by creating civil liability insurance for the owner or producer (or possibly the programmer) and by creating a system of strict liability for these persons in favour of the injured party? Since they are the ones who benefit from their creation and marketing (producer’s liability) or their use (owner/user’s liability), they should also bear the disadvantage of having to pay compensation for the damage caused by these agents under the principle of *ubi commodum, ibi incommodum*³⁸.

On the other hand, could one speak of “owner”? If an autonomous agent was to be a subject of legal relations, it could not be at the same time the object of a human being’s right of ownership.

³⁶ Mafalda Miranda Barbosa disagrees that an analogy may be made between autonomous agents and legal persons, since the latter were created so that collective or common human interests could be pursued (or so that this could be done in a more efficient manner), which does not occur in the case of robots, which would only allow their owner to be released from liability; in any case, the author concludes that, even if this release from liability could be considered a human interest, it would not solve any problem, since robots have no assets. S. «O futuro da responsabilidade civil desafiada pela inteligência artificial: as dificuldades dos modelos tradicionais e caminhos de solução», *cit.*, pp. 294-295.

³⁷ ORLANDO DE CARVALHO, *Teoria Geral do Direito Civil*, *cit.*, p. 192.

³⁸ Also in this sense, MARCOS EHRHARDT JÚNIOR/GABRIELA BUARQUE PEREIRA SILVA, «Pessoa e Sujeito de Direito: Reflexões sobre a Proposta Europeia de Personalidade Jurídica Eletrônica», *cit.*, pp. 1111 ff. The authors question the proportionality and necessity of this personification, given that there are other mechanisms capable of guaranteeing compensation for damages, such as compulsory insurances. The authors conclude that there is, at least for the time being, no “sufficient anthropological-axiological basis to justify the institution of electronic personality” and that the robot should therefore be “treated as a thing”. *Idem*, pp. 1116 e 1117.

Finally, does it make sense for an autonomous agent to be the holder of personality rights? Does it make sense that it should be the holder of the right to life, to physical integrity, to image, to honour... just like a human being? How can we defend the existence, for example, of a right to self-determination or a right to the free development of the personality of a machine³⁹? Giving a machine a legal status similar to that of a human being is objectifying the human being, diminishing the human being and offending his/her dignity.

It should be noted that our legal system has not created a legal status similar to that of the human being regarding animals either. Despite recognizing that these are living beings that possess sensibility and, for this fact, has considered them object of protection, our law did not consider them subjects of rights (or of obligations, naturally). In fact, despite having created a subtitle within the Title that deals with the elements of the legal relationship – that is, subtitle I-A (being “Persons” subtitle I and “Things” subtitle II) – in no article of this subtitle regarding the animals does it say that they are holders of rights. On the contrary, Article 201.º-D orders to apply to them, as a subsidiary regime, the regime of things (provided that it is not incompatible with their nature); furthermore, Article 1302.º, n.º 2, peremptorily states that they are the object of the right of ownership, although it distinguishes them from other tangible things (to which Article 1302.º, n.º 1, refers). In other words, although it has excluded them from things in formal terms (as it has not included their regulation in the field of things), the truth is that the Law continues to consider them as objects of rights and not subjects of rights. Therefore, considering the definition of thing in Article 202, n.º 1 and n.º 2, of the Civil Code, we believe that animals should continue to be qualified as things, although *sui generis* things, since they possess a differentiated regime from the remaining tangible things⁴⁰. The systematic element of interpretation (the place where the law lists this legal regime) does not seem to us

³⁹ On the right to free development of the personality, s. PAULO MOTA PINTO, *Direitos de Personalidade e Direitos Fundamentais. Estudos, cit.*, pp. 7 ff., namely the fact that it derives from human dignity and is the basis for “a general right to liberty” (*Idem*, p. 11).

⁴⁰ Thus we agree with HEINRICH EWALD HÖRSTER, «A propósito da Lei n.º 8/2017, de 3 de Março: os animais ainda serão coisas (objectos da relação jurídica)?», *Revista Jurídica Portuguesa*, vol. no. 22, 2017, pp. 66-76, where the author further explains that our legislator started from the wrong premise that the German regime of things was similar to the Portuguese, when this is not so. In the same sense, CRISTINA DIAS, «O divórcio e o novo Estatuto Jurídico dos Animais, introduzido pela Lei n.º 8/2017, de 3 de Março – quem fica com o animal de companhia?», in REGINA BEATRIZ TAVARES DA SILVA/ÚRSULA CRISTINA BASSET (coords.), *Família e Pessoa: uma Questão de Princípios*, Academia Iberoamericana de Derecho de Familia e de las Personas/ADFA, p. 289, n. 1.

sufficient to give them another classification, since the most relevant issue is their legal regime, that is, an argument of a substantial and not merely formal nature⁴¹.

In other words, the attribution of legal personality to autonomous agents brings more problems than it solves, while those that it does solve may find solutions much more in line with the fundamental principles of our legal system, namely the principle of human dignity and the principles that govern the institute of civil liability.

3. Conclusions

We believe that, at this time, attributing legal personality to autonomous agents is not justifiable, for several reasons:

(a) firstly, because they have not yet attained a human-like degree of autonomy, self-awareness and sensibility similar to the human beings;

b) Secondly, because this does not serve human interests, that is to say, unlike what happens with legal persons, the personalisation of these agents does not bring any benefit that cannot be achieved by a less controversial route, so we are not in a situation analogous to that of legal persons;

c) Thirdly, to treat a “machine” in the same way as a human being is to violate the principle of human dignity;

(d) finally, even if this “machine” were to have feelings, there would still be no justification for giving it legal personality. Consider the legal regime of animals, which are object of protection by virtue of being beings with sensibility, but are not endowed with legal personality, being only considered a *sui generis* object of legal relations (distinct from the remaining things), with its own regime.

However, we reserve the possibility of changing our opinion when we are faced with a Strong AI. We will see what its characteristics, its capacities, its self-perception, its autonomy, its sensibility will be. But, as already discussed by Azimov in “The Bicentennial Man”⁴², we continue to wonder if we can, in fact, consider human a being that potentially is infinite and is not subject, like all of us, to the most certain rule of nature: mortality.

⁴¹ Differently, considering that animals constitute a *tertium genus* (between persons and things), FILIPE ALBUQUERQUE MATOS/ANA MAFALDA MIRANDA BARBOSA, *O novo estatuto jurídico dos animais*, Coimbra, Gestlegal, 2017, p. 7, and LUÍS MANUEL TELES DE MENEZES LEITÃO, *Direitos Reais*, 9th ed., Coimbra, Almedina, 2020, pp. 78-79.

⁴² ISAAC AZIMOV, *The Bicentennial Man*, Gollancz, 2020.

