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Abstract:
The current paper aims to analyze the European Parliament Resolution of 16th February 2017 that suggested the Commission to consider the implications of all possible legal solutions for the use of AI, namely creating a specific legal status for robots by creating a *tertium genus* in legal personality. Focusing in this question, our paper discusses how the current legal european framework is applied to the current state of the art of artificial intelligence and how the concept of *electronic personality* copes with the detected gaps in the protection of EU citizens and consumers, concluding for the need of other alternatives rather than the e-person.

Keywords:
Artificial intelligence, e-person, electronic personality, civil liability, European Union, European Parliament Resolution of 16 February 2017,

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1. Introduction

Artificial Intelligence (AI) can be defined as a broad area of computer science that makes machines operate as if they had intelligence on their own\(^1\). There have been many qualifications to the nature of different kinds of AI, but narrow AI and general AI are unanimously recognized as the two basic concepts\(^2\). Artificial Narrow intelligence (ANI) is a reality that lives hand-in-hand with modern society, being present in items such as our smartphones (with “figures” we have come to call Alexa and Siri) or in smart cars. This kind of technology refers to «computer software that relies on highly sophisticated, algorithmic techniques to find patterns in data and make predictions about the future», focusing in isolated tasks. It opposes to Artificial General Intelligence (AGI), which refers to «computer software that can think and act on its own», and even outperform humans in intelligence task\(^3\).

The main questions that arises with this technology concerns machine learning: the robot’s ability to learn and to decide being a result of the human coding\(^4\). This ability to “think” is firstly handed by human creation, and then the machine will develop itself to attain an optimal response to given challenges, doing it sustained in its basic coding (where it can operate based on given examples with correct answers or note [supervised and unsupervised learning, respectively]\(^5\)). This kind of technology makes it possibly for AI to debate and argue, to detect disease and to reproduce musical or painting techniques, among other capabilities, all based, firstly, in human coding.

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\(^4\) «ML is a branch of AI and is closely related to (and often overlaps with) computational statistics, which also focuses on prediction making using computers. It has strong ties to mathematical optimization, which delivers methods, theory and application domains to the field. ML is occasionally conflated with data mining [12], but the latter subfield focuses more on exploratory data analysis and is known as unsupervised learning» - XIN, Yang [et al] - Machine Learning and Deep Learning Methods for Cybersecurity. [online] In IEEE Access, vol. 6, pp. 35365-35381, 2018, doi: 10.1109/ACCESS.2018.2836950, [consult. 2020-06-10] available at https://ieeexplore.ieee.org/abstract/document/8359287; «Machine learning (…) is about making computers modify or adapt their actions (whether these actions are making predictions, or controlling a robot) do that these actions get more accurate, where accuracy is measured by how well the chosen actions reflect the the correct ones» - MARSLAND, Stephen – Machine Learning: An Algorithmic Perspective. 2nd Edition. Boca Raton, Florida (USA): Taylor & Francis Group, 2015. ISBN 978-1-4665-8328-3, Page 4.

\(^5\) Supervised learning consists in a training set of exemples with the correct responses (targets) that is provided to the AI, where the algorithm generalizes to respond correctly to all possible inputs, learning from exemples; unsupervised learning, in its turn, works without any correct responses, making the machine operate based in similarities between the inputs so that inputs that have something in common are categorized together. There can also be reinforcement learning, which is placed between supervised and unsupervised learning, where the algorithm gets told when the answer is wrong, but does not get told how to correct it, forcing the machine to explore and try different possibilities until it achieves the correct answer; and evolutionary learning, corresponding to the process of adaption of the machine to improve survival rates – Marsland, Stephen – Machine Learning..., pages 5-6.
Even though scientists all around the globe are looking forward to develop General AI, only time will tell if this last stage will ever reveal itself. But this foreseen future opens doors to many challenges regarding civil liability and criminal guilt, since the possibility of awareness or consciousness of AI will surely put human legal personality into a whole new perspective. But this huge question mark on legal personality is already being discussed by the European Union, specially ever since machine learning has been perceived as acting in total absence of the human interference, making decisions unpredictable to the programmers themselves and causing damages to people and property.

Recognizing the possibility of such technological development, in 16-02-2017, the European Parliament made a resolution with recommendations to the Commission on Civil Law Rules on Robotics, suggesting that the Commission analyses and considers the implications of all possible legal solutions for the use of AI, namely «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» - §59 f) of the resolution.

It is important to underline that, when stating the need of the “e-person”, the Resolution makes a statement that the Asimov’s Laws (the three law of robotics) should operate as the base of the making and interpretation of the Law, referring that these principles should be directly applied to the creators, producers and users of robots. Said rules are the following: (i) First law: A robot may not injure a human being or, through inaction, allow a human being to come to harm; (ii) Second law: A robot must obey the orders given it by human beings except where such orders would conflict with the First Law; (iii) Third Law: A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.

Withhold that these laws arose from the science fiction literary works of Isaac Asimov, being perceived as of great value for the ethics in the rules of robotics. However, it has been issued that these laws need update, since the reality of AI goes beyond the concept of human-like machines that were at the root of idea of Asimov. In fact, some kinds of AI can only be suitable

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6 There are many known accidents caused by AI. The case of the Uber/Tesla fatal crash in march 2018 was one of them, where a person was hit by a car in autopilot (The New York Times, https://www.nytimes.com/2020/02/25/business/tesla-autopilot-nhts.html). Also, in 1981, in Japan, a worker was killed by a machine after being identified as an obstacle to the performance of the machine, being removed it from its path with a hydraulic arm causing his death instantly (The Guardian, https://www.theguardian.com/theguardian/2014/dec/09/robot-kills-factory-worker); in 2007, in South Africa, a military robot cannon “went out of control” due to a software failure and started shooting randomly, killing 9 soldiers and injuring others (Wired, https://www.wired.com/2007/10/robot-cannon-k/).


to harm property: just take the example of blockchain, where the algorithm used for the consensus between participants could encounter an error, compromising all the following transactions in the chain ahead.\(^9\) Also think about the supervised machine learning algorithms used in banking for the detection of loan or payment frauds, that may be undeveloped to new risks and means of fraud, causing severe damages in the economical system.\(^10\)

Given these examples, it is clear now that AI has endless uses that go beyond the use of humanoid Androids harming humans, vindicating even European regulation concerning the specific applications of each technology.

Therefore, considering the legal questions underlined, our study aims to discuss the legal adequacy of the extension of legal personality to artificial intelligence as proposed by the European Parliament, that is, the creation of “e-persons”. In order to do so, our work will analyze how the current legal framework offered by the European Union can be applied to AI, and how the concept of electronic personality would cope with eventual gaps in the protection of EU citizens and their rights.

2. The scope of application of ordinary rules on civil liability

2.1. Introduction

One of the main issues brought up by the Commission on the Resolution regards to the question of whether ordinary rules on civil liability are good enough to handle the robots responsibility for the acts and omissions they cause when the cause of the damage cannot be traced back to its creator or a specific human. After all, damages caused by AI robots are not exactly a rarity.\(^11\)

Once we recognize the power of autonomy to machines, questions inevitably arise around their responsibility. Is it time to start thinking about a new set of principles and rules that clarify and adjust to this matter, that readapt to these new actors (§AB)?\(^12\) This is because whenever a robot causes damage, there will always be a wide range of variables that must be taken into account:

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\(^9\) Blockchain was created to become a secure system for conducting and recording financial transactions (think of bitcoin, for example), but it has been widened to other goods and properties, such as houses and cars. This technology follows five attributes, one of them being the consensus-basing of every transaction, where there are used consensus algorithms. For more, see GUPTA, Manav – Blockchain for dummies. 3rd. IBM Limited Edition. [online] New Jersey: John Wiley & Sons, Inc, 2020. ISBN: 978-1-119-62196-6, [consult. 2020-06-10] pages 11, available at https://www.ibm.com/uk-en/blockchain/what-is-blockchain


\(^11\) We take here into consideration the opinion of Nuno Sousa Silva. The author goes back to 1981 to report a case where a robot in Japan, when identifying a worker as an obstacle to the activity, ended up removing him using a hydraulic arm that inevitably caused his death. This case was repeated in 2015 in Germany with similarities. Also, in 2007, in South Africa, a military robot started shooting alone, injuring 14 soldiers and killing others (Sousa E Silva, Nuno, Direito E Robotica - A First Approach (Robots and the Law - a First Take), June 21, 2017, page 18)

\(^12\) Moreover, the Commission also establishes the assumption that regarding robots that can take their one autonomous decisions, ordinary rules will not be sufficient to assess legal liability for damages they cause as it would not be possible to determine the responsible party (§AF); likewise, that those insufficiencies were a fact not only on civil liability grounds, but also on a contractual level (§AG).
that that robot has an internal product called software; a set of external products called hardware, which can assume a causal link with the damage; the person who gives instructions and commands to the robot; the person who ends up benefiting from the robot's performance; etc. This heterogeneity of situations makes the imputation scheme difficult, although it must also be understood in the light of the different types of control and influence of each of them for the robot.

In a society based on the tolerable risk paradigm (which is based on the cost-benefit binomial) and not on precaution (under penalty of technological stagnation), a certain degree of risk is allowed and compensated with the construction of strict liability institutions (risk) and other intermediate solutions\textsuperscript{13}.

In this context, the European Parliament Resolution provides for the following liability schemes to be taken into account\textsuperscript{14}: i) AI, supported by producers and owners; ii) compensation funds, which do not only cover the guarantee of compensation for situations not covered or excluded by said insurance; iii) limiting the liability of the manufacturer, programmer, owner or user if they contribute to the compensation fund or jointly contract adequate insurance; iv) the creation of a general fund for all intelligent robots; v) that the link between each robot and its fund is identified by an individual registration number in the European Union; or, vi) the creation of a specific legal status for responsible electronic persons\textsuperscript{15}.

2.2. Liability using third parties

One of the most immediate and possible responses to this problem could be found in the responsibility for the use of an auxiliary third party, either through mandatory responsibility\textsuperscript{16} or vicarious liability\textsuperscript{17}.

\textsuperscript{13} Silva, \textit{ob cit}, page 19. However, in this game of economics, finding an adequate scheme of responsibility implies safeguarding yet another focus of interest: private investment in technology. Indeed, one of the main implicit reasons for the proposal of the European Parliament Resolution to consider the recognition of an AI's electronic personality is the need to find a system that protects investment creation in the digital economies market from which the AI is one of the biggest examples. The construction of this area of admitted risk, excluded from the responsibility of the producer, appears as the only way for Europe to emerge as a competitive market internationally in the face of Chinese, Japanese and American hegemony. Thus, the aim is to remove the producer (creator / programmer) from the artificial intelligence (creature / software), and, if on the one hand it seems justified by the autonomy and the decision making recognized to the machine, or convenient to maintain a continued economic investment in the sector, on the other hand, translates in a total lack of responsibility for the product they built and created themselves.

\textsuperscript{14} This scheme practically follows the suggestions raised by the Expert Group on Liability and New Technologies Formation on the Report on Liability for Artificial Intelligence and other Emerging Digital Technologies.

\textsuperscript{15} Unlike the Draft Report with recommendations on civil law rules and robotics (2015/2103 (INL), which suggests the possibility of creating a damage repair guarantee fund in cases not covered by any insurance, the Resolution goes further by indicating to compensation funds a more relevant role than mere subsidiary supports, ie, so that they do not serve only to compensate for situations not covered by insurance contracts (§58 of the Draft).

\textsuperscript{16} As in article 800." of Portuguese Civil Code: “The debtor is responsible to the creditor for the acts of his legal representatives or of the people he uses to fulfill the obligation, as if such acts were practiced by the debtor himself.”.

\textsuperscript{17} As in article 500." of Portuguese Civil Code: “Anyone responsible for any commission is liable, regardless of guilt, for the damage that the commissioner causes, as long as the obligation to compensate also falls on him.”.
For example, in Portuguese academia, some authors argue that the mandatory responsibility institute is not applicable, on the grounds that the robot does not know its own imputation sphere. The argument is not false, but it does not consider that a legislative evolution that leads to the attribution of legal personality to AI should make us rethink the application of the institute, which represents a strong argument for a broad and updated interpretation of the norm\textsuperscript{18}.

From the point of view of vicarious liability, for example, there seems to be greater legal openness to frame the robot under the normative provision and qualify it, by extensive interpretation or even analogy, as being in a commission relationship. After all, all things considered, it does not seem to make much sense to treat a subject differently who makes use of a commissioner to pursue a certain activity or function, from one who makes use of a machine or robot to obtain precisely the same result. The former being held responsible if his commissioner makes a mistake and causes some damage, it does not seem reasonable that the same user of another's workforce is no longer so when these duties are delegated to machines or robots. There is a common benefit that can be extracted from any of the activities carried out that does not justify such disparity and inequality in regimes.

However, as a scheme based on the fault of the agent, it is poorly connected with the operating system of robots. The truth is that, at the present date, there are no established models regarding the way these technologies should work and interact, that is, a certain standard of conduct that can be framed in watertight frames on what is permitted and prohibited for an AI. Its natural characteristic of progressive and exponential learning gathered from its experience and practical interaction, and the possibility of making its own decisions from it, even if it extrapolates the lines previously defined in the computational code that underlies it, it becomes difficult to successfully achieve adequate guilt based responsibility\textsuperscript{19}.

\textsuperscript{18} Cf. Silva, \textit{ob cit}; Barbosa, \textit{ob cit}, page 51. As the author states, “In the same way that, in terms of subjective criminal responsibility, several problems can be posed with regard to guilt, from the point of view of contractual responsibility, we take the risk of being able to rebut the presumption of guilt contained in article 799 CC, not even posing the problem of possible liability through article 800 CC, since it also presupposes the subjectification of the third party to be used in the course of their business activity”. Furthermore, from the moment the robot is not endowed with subjectivity, ie, personality, it is seen only as a work tool of the debtor, just like so many others, so, ultimately, only the behavior of the debtor will be relevant for the assessment of responsibility. If liability will be assessed only on the basis of the debtor's conduct, there will be a presumption of guilt that burdens him at contractual level, which can only be removed by himself if he demonstrates that he has fulfilled all the duties of care imposed by good faith, such as surveillance or clarification (\textit{Ibidem}, page 61/62).

\textsuperscript{19} Unlike the operation of traditional computational engineering, machines with artificial intelligence have their own characteristic of unpredictability, unknown in that traditional model. This quality is fundamental in the analysis of liability schemes as it interferes with the measure of guilt of the agent who creates or uses the said robot. To the extent that the robot is given a progressive and open-learning capacity, its behavior can therefore become unpredictable.
Like the compulsory responsibility scheme, however, the same difficulties arise regarding the problem of imputability of a robot; although, likewise, criticisms of this difficulty are also repeated\textsuperscript{20}.

2.3. General compulsory liability clause

Compulsory liability could be considered in broad terms and under the general liability clause, without the necessary reference to the existence of a commission relationship. The imputation would be made, at least at the Portuguese level (and in other European legal systems the solution is very similar), through the figure of the general duty of care. PFor this purpose, it would only be necessary to legally impose, or to construct jurisprudentially, certain duties in the design and construction of a robot under the responsibility of the producer, other duties of use, conservation and direction by the user, or even generic duties of care and contact by third parties who interact with robots. At the level of business robotics, for example, there are already a series of schemes and standards of care to be implemented, such as sensors that immediately turn off the machine as soon as it detects human activity close to the robot's workplace, or the rules of delimitation of robot intervention space, limited to a specific handling area\textsuperscript{21}.

On the other hand, and as a fundamental element for assessing the existence of responsibility, it has to be admitted that the causal element, whenever relationships with intelligent robots are at stake, can often not be found in relation to any of the other actors in the process (machine, producer, user, etc.), much like what happens with human beings. It is what is called "unpredictable pathology", which can very well happen to individuals to exonerate them from responsibility - think of the intense and unexpected thunderstorm or heavy fog that made it impossible for the driver to avoid the accident - it harvests the same formulation with entities gifted with AI\textsuperscript{22}. Whenever the vices or defects cannot be directly linked to the negligent or guilty conduct of the programmer or user, which may occur specifically in the case of

\textsuperscript{20} Silva, \textit{ob cit}, page 20/21

\textsuperscript{21} Silva, \textit{ob cit}, page 23.

\textsuperscript{22} We make use of Karnow's teachings here. The law can only punish conducts that the parties could have avoided because they knew or should have known what they would have to do. A person cannot drive a car without having the minimum basic knowledge of handling the vehicle; just as no one can enter an operating room to operate on others without specific knowledge of medicine. Thus, when it comes to liability for negligence, truth is that such institute was built on and designed for - as Karnow says – the Newtonian universe, ie, the one driven by the laws of physics (force, mass and reaction) typical of Newtonian mechanics where the whole effect is attributed to a given cause. The legal regime, still being designed for these reality frames, ends up forcing the extension of the concept of predictability in this sense. Now, the world in which robots interact and the complexity of their system offers countless combinations of possible interactions that cannot be predicted or anticipated by users or owners. The problem is not exactly ignorance of the law, but rather a question of limits of knowledge. As a way of overcoming this impasse, the author proposes that robots have a progressively more complete database - built on the basis of social interaction, so that the probabilities of unpredictable risks are reduced; similarly to common sense in humans, that often results from the experience lived over the years - and that the human being can promote a more complete and constant interaction with these machines, which will ultimately allow to a better understand of the functioning of this machine and increase the predictability of their future behaviors (Karnow, Curtis EA, The application of traditional tort theory to embodied machine intelligence, 2013, available at https://works.bepress.com/curtis_karnow/9/, last seen in 01.06.2020).
judgments called by the machine that may not have been reasonably foreseeable, it makes it impossible to operate on these any liability.

2.4. Owner/User liability

The Recommendation suggests that under the current legal framework robots cannot be held liable per se for acts or omissions that cause damage to third parties, since the existing rules on liability cover cases where the cause of the robots act or omission can be traced back to a specific human agent such as the manufacturer, the operator, the owner or the user and where that agent could have foreseen and avoided the robots harmful behaviour. It also recalls that manufacturers, operators, owners or users could only be held strictly liable for acts or omissions of a robot. It is important to remind however, that one of the legal instruments point out in the recommendation is the Council Directive 85/374/EEC of 25 July 1985, on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for defective products, that is specifically indicated at the head of said document as one of the key regards to the resolution.

Accordingly to this European instrument, liability should be protective of the consumer for defected products that are provided by the producer, where the latter shall be liable for damage caused by a defect in his product (article 1 and 3(1)). There are some exceptions regarding of damages caused by both a defect in the product and by the fault of the injured person or any person for whom the injured person is responsible for – article 8(2); therefore, the liability of the user of AI, in terms of consumer relations, can only be vindicated when there

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23 The theme is particularly developed by Karnow, Curtis E.A. in Liability for distributed artificial intelligences. The author starts from the example of a well-known artificial intelligence called ALEF, which is an information processing system that will work, imagine a hypothetical intelligent programming environment which handles air traffic control. From here, the author tries to apply the test of "reasonable foreseeability" to artificial intelligence. In his words, "liability in the computer context must depend, as it does in other contexts, on plaintiffs' ability to convincingly argue that a given injury was" reasonably foreseeable. The specific pathological judgment calls made by Alef are not "reasonably foreseeable", and thus courts should treat them as superseding causes, corresponding to unexpected fog or storms which, in former "natural" contexts, eluded human responsibility (page 190). For the author, the solution would be to recognize the impotence of this traditional system of crime and causality in certain situations where this risk of error and, consequently, of damage is not predictable, under penalty of making certain people unfairly responsible for damages that they could not have prevented or reasonably anticipated. As well as those risks covered by insurance agencies, the risk associated with the use of artificial intelligence could also be covered and estimated, with users of such robot file it to a certification procedure that would give it an approximate rate of probable risks imposed on the agent. Furthermore, that such risk would be determined according to some criteria, in particular, the quality of intelligence: the higher, the greater the risk and the consequent premium (page 191).

24 Regarding the consideration of AI software as a product covered by the directive, see the Report from the Commission to the European Parliament, the Council and the European Economic and Social Committee on the Application of the Council Directive on the approximation of the laws, regulations, and administrative provisions of the Member States concerning liability for defective products (85/374/EEC), of 07 May 2018 (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018SC0157&from=EN), which states the following: «other contributions obtained in the context of the consultation raise doubts over the adequacy of the definition of product vis-à-vis new technological developments, as cloud technologies. Some stakeholders raised the need for an interpretation of the concept of product or an enlargement of the concept of product, including, for instance, some new technological developments such as Artificial intelligence or cloud technologies, as well as applications. This is particularly relevant in the context of the Directive where the non-tangible element is not included in the product put into circulation by the producer but installed subsequently as a stand-alone feature». 
is a fault to the injured person associated with a defect that can still be imputed to the defects of the product.\textsuperscript{25} Considering this, there is a challenging possibility of exemption of producers liability when the AI uses deep learning, coming to solutions that were unpredictable to the producer when creating the product. It is highly probable that either of these situations exclude liability of the producer, since AI is such an innovative technology (and, in someway, uncontrollable).

Besides, since the burden of proof regarding the defect and the causal relationship between defect and damage belongs to the injured person (article 4), this constitutes an enormous gap between the position of the injured person and the producer in a lawsuit, since the first will most likely avoid legal proceedings due to the costs that would be involved in proving these elements\textsuperscript{26}, which are easily within reach of the latter due to the specific knowledge on these issues.

Given this, it is fundamental to understand how the word “users” mentioned in the Resolution should be interpreted regarding consumers rights. Keep in mind that if the expression is interpreted as imputing liability for damages caused by AI to third parties while being used by consumers that have no control over how the software develops, this could disrupt the protection of consumers rights provided by the Council Directive 85/374/EEC whenever there is an exemption of the producer.

\textbf{2.5. Producer liability}

From the point of view of legal alternatives to the verification of robot civil liability, we also see the option set out in the Council Directive 85/374 / EEC of 25 July 1985 on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for defective products\textsuperscript{27}. The general rule of the Directive is that the producer, considered as the one who puts a product into circulation because it is part of his economic objective or is produced in the scope of his professional activity, is responsible for the damages caused by the placing of defective products in the market (article 1).

\textsuperscript{25} But it is also mandatory to recall article 7 regarding producer’s exemption of liability. Consider that the producer shall not be liable as a result of this Directive if he proves that, having regard to the circumstances, it is probable that the defect which caused the damage did not exist at the time when the product was put into circulation\# by him or that this defect came into being afterwards (article 7(b)); it’s also possible a producer’s exemption whenever the state of scientific and technical knowledge\# at the time when he put the product into circulation was not such as to enable the existence of the defect to be discovered (article 7(e)).

\textsuperscript{26} The probable exception to this would only be causes with substantial damages, such as death or substantial damages to property.

\textsuperscript{27} It is recalled that this Directive emerged in a context where there was an urgent need to face the multiplication of consumer accidents that resulted from industrial and scientific progress, given the insufficiency of the contractual regime to adequately protect consumer rights. The problem was not so much the absence of conformity or defect in the product, but rather in its safety or danger. Thus, it was decided to establish a type of strict liability regardless of fault (cf. Campos, Juliana, “Producer’s civil liability for damages caused by intelligent robots under the regime of Decree-Law n°. 383/89, of 6th of November”, Journal of Responsibility Law, Year 1, 2019, page 706).
As we work around some key ideas, such as product, defect and causation, it is necessary to analyze the peculiar situation of robots in the light of these frameworks. This is not to say that many of these concepts are absolutely obsolete and outdated, in a context where the growth of robotics and the digital world was still in a very early stage in the 1980s. Currently, they are inadequate to represent the spectrum of possibilities and the complexity of the world of AI seen as a product. The creation of this type of “goods” does not fit the traditional model of product and professional activity under which the Directive relied to build the producer liability regime and which basically ends with the placing of the product on the market and subsequent loss of control by the producer. All these notions are “challenged” with the arrival of intelligent robotics and it is necessary to promote an adequate and updated adaptation of the legal norms in presence.

On the other hand, the Directive does not impose any obligation on the producer to monitor the product from the moment it is placed on the market. For the purposes of the Directive, inclusive, this is the key moment to cut any types of claims that the injured party may have on

28 Although there is no doubt about the qualification of the manufacturer of the robot as a producer for the purposes of the Directive - which can be, among others, the engineer, the programmer, the software producer, the hardware producer (cf. Ebers, Martin, “The use of intelligent electronic agents in legal trafficking: Do we need special rules on civil liability?”, Review for Derecho, No. 3, 2016, p. 10, available at: http://www.indret.com/pdf/1245.pdf), the same can no longer be said regarding the issue of qualification as a product the artificial intelligence robots. It seems to us that such qualification will have to operate using the idea of software as a product. If, under the terms of Article 2 of the Directive, it is the purpose of this Directive 'product' means all movable, with the exception of primary agricultural products and game, even though incorporated into another movable or into an immovable, it seems possible to consider the AI programming code software as a product. As Campos asserts, the decisive criterion will be the incorporation and not the destination or purpose of the asset. “Thus, the punctum crucis consists of knowing whether an intelligent robot can be brought back to the product concept. For this purpose, first of all, it is necessary to analyze whether the robot integrates the concept of thing” (Campos, ob cit., page 709), which is easily achieved in any national law. Any solution that involves recognizing the electronic personality of these machines, will inevitably end up making this conclusion unfeasible (Cf. Barbosa, Mafalda Miranda, “Robots advisors and civil liability”, Revista de Direito Comercial, 2020, page 47).

29 Take, for example, the idea of defect. As one of the most important normative elements of the Directive, the notion of defect is crucial to assess producer responsibility and is built around expectations of the product being purchased by the average consumer. We can ask ourselves, for example, if an intelligent robot capable of making its own decisions completely unpredictable to the initially coded programming, could constitute a defective product for the purposes of the Directive. It should be noted that what is at issue here is not an idea of non-conformity, but the lack of security (Article 4 of the Directive). This security naturally does not have to be absolute, but it must be one that can reasonably correspond to the objective expectations of an average consumer, thus being reasonably to meet the state of science and technology at the date of the robot's release on the market. As Campos asserts, this situation raises the question of what kind of security can legitimately be considered? The truth is that the current state of science does not yet allow us to understand what level of learning and, consequently, robot's security (Campos, ob cit, page 711). On the other hand, and as Mafalda Miranda Barbosa points out, “the damage caused by robots may not be the result of a design defect or a manufacturing defect. In other words, the idealization of the robot (software programming) may not present any defect, in the same way that, at the stage of manufacturing the mechanism in which artificial intelligence is integrated, there may be no mismatch between the final result and the that was expected by the producer. The damage caused by the so-called intelligent robot is generated by its autonomous performance, which, far from being a mark of defects, translates into its intrinsic characteristic” (Barbosa, ob cit., page 48). In any case, the producer could always be held liable for the breach of information duties, which is so broad that it will include warnings about the danger of the robot, generic and product-specific instructions, care measures to be taken into account etc. As the aforementioned author points out, “the defect is linked to an idea of product safety and that this safety is not absolute, referring to the safety that can legitimately be counted on, where what is intended is not that the robot does not behave any risk, but that the user can legitimately count on all the risks that its use involves” (Barbosa, ob cit, page 49).

30 In another example, Article 4 of the Directive provides that the injured party must prove the damage, the defect and the causal link between the defect and the damage. Now, this regime is very poorly compatible with a product whose alleged defect is related to a certain aspect of the software or programming code. The complexity, the high levels of technical and expertise in computer engineering and programming, because associated with the lack of transparency in the computer market due to the protection of trade secrets and know-how, implies a disproportionate burden on the injured party in relation to the burden of proof of the cause of the damage (prove of causation).

31 At least it is necessary to promote a distinction between autonomous robots that are defective due to a certain problem of manufacture, design or development; from those cases of robots that cause damage not because of a certain manufacturing defect, but because of a decision resulting from their own autonomy. If, for the former, the producer's regime could easily be applied, for the latter, reality is critical. Thus, at least with regard to the first hypothesis, there has been a strong concern in the development of safety norms and standards to be observed in the design of industrial robots - just think about motion sensors, emergency buttons etc. In addition, given the importance of the moment of product design, the performance of tests and trials has assumed the greatest importance for producers (Campos, ob cit, page 714).
the producer. As is clear from article 7 (b), the producer is not responsible if he proves that the defect that caused the damage did not exist at the time the product was put into circulation or that this defect subsequently arose. If this philosophy is maintained in products linked to digital emerging technologies, we will have the incongruous situation of excluding the producer from liability for products whose defect would have been avoided if an adequate update or upgrade had been promoted. At the same time, with the absence of a regulation that provides for and imposes a duty to monitor and update the products in circulation, the Directive is totally inadequate to guarantee a minimum producer responsibility for damages caused by this type of robots.

All of this, along with a last aggravating factor that should not be forgotten. This regime is designed to compensate strictly personal damages, resulting from the offense to life or physical integrity, for example, having a significantly restricted scope as to material damages. This results implicitly from regards 5 of the Directive and expressly from article 9, with the definition of damage restricted to that caused by death or bodily injury. Even when admitting compensation for property damage, it restricts it to the damage caused by the product to something other than the injured party and that is not the defective product itself, and excludes it from the provision of services. The insufficiency of the current producer responsibility regime to deal with traditional cases is already so obvious in itself, that it is aggravated in the case of intelligent robots.

2.6. Strict Liability

One of the most coherent alternatives provided by the current liability system appears to be strict liability. In addition to the situations of responsibility for the principal, other normative predictions could be considered. First, the responsibility for the ownership and / or control of

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32 We have, therefore, another problem that arises in these cases and that is related to the lack of responsibility of the producer for development risks from the moment the product is put into circulation. If, at the time this occurs, the state of the art and computer science would not allow the manufacturer / producer to anticipate the predictability of that conduct that creates the damage, ie, if that defect would not be knowable, the system gives it an exception of responsibility for lack of guilt. By reference to Karrow, Manuel Feliciano is questioned if “the producer does not answer for development defects - those that the state of scientific and technical knowledge, at the time when the product was put into circulation, did not allow detection - , because outside scope of its action and intervention and, therefore, impossible to prevent, should the producer be responsible for those “defects” that, whatever the state of the art, will inevitably occur, even with reduced frequency? To what extent should the producer be liable for the chronic imperfection - of which the creator also suffers - of his creation, bearing in mind that, specifically in the field of driving, it meets all the conditions to overcome it?” (Feliciano, Manuel, “Civil liability for traffic accidents caused by an automated vehicle”, Revista de Direito da Responsabilidade, Year 1, 2019, page 507).

33 In the interpretation of this precept, the CJEU already had the opportunity to pronounce itself in the sense that the damages that fall outside the scope of article 9 of the Directive, ie, have been silenced by the European legislator, escape the harmonization pursued with this (Case C-238/08, of June 4, 2009; societé Moteurs Leroy Somer v. Société Dalkia France). This means that pure economic damages and the compensation of lost profits associated with them, compensation for damages regarding professional use or for deprivation of use, are not covered (cf. Antunes, Henrique Sousa, “Civil liability of the producer : the reimbursable damages in the digital age”, Revista de Direito da Responsabilidade, Year 1, 2019, page 1477).

34 Now, in the digital world, a distinction between the sale of a product and the provision of a service is not always crystal clear. Excluding the Directive from the compensation for damages caused by the provision of AI services, the prior qualification of the contract may prove to be a decisive issue of particular relevance and determinant for the injured party.
a dangerous activity or source of danger\textsuperscript{35}. Given the inclusion of indeterminate concepts in the body of the standard, it has been considered that it ends up becoming particularly flexible in its application to new cases. It can be said that the intellectual effort would not be placed so much on the malleability of the norm to allow for extensive or analogical interpretations, but rather on the understanding that the use of robots can be considered as an effectively dangerous activity. Although these machines are mainly aimed at activities that the human being finds particularly annoying, unhygienic or dangerous (3D activities: boring, dirty, dangerous), with the exception of the last case, the truth is that some failure / error in the system / programming code can give rise to significant damage. In any case, it can legitimately be questioned whether these robots, in those remaining activities other than war, fall into the category of sources of danger or dangerous activities in the sense of the law.\textsuperscript{36}

Alternatively, the strict liability regime also admits responsibility for someone who has a certain mobile thing in their possession and has a duty to watch and monitor\textsuperscript{37}. This hypothesis, too, will emerge as a viable alternative, as long as this watchful duty is created on someone. We have already seen that, within the scope of consumer law, neither the consumer, nor the seller, nor the producer were expressly designated to do these duties. Dependent on a rule that imposes this view of surveillance, it would be necessary to create \textit{ex novo} on the consumer (ultimately, the user of the product) such a rule, under penalty of the regime not being applicable. This duty cannot be achieved implicitly from the right to property, not least because its extent must be defined in concrete. However, it will not be a solution without criticism: the fact that we are facing an autonomous being with decision-making may not always allow an adequate capacity for surveillance under the responsibility of its owner. It is admitted that, at the end of the day, only the concrete configuration of the robot will allow us to understand in what terms this surveillance can be achieved.

\textsuperscript{35} Silva, \textit{ob cit}, page 22.
\textsuperscript{36} Silva, \textit{ob cit}, page 22.
\textsuperscript{37} This position is very much endorsed by the most traditional doctrine that seeks to allocate responsibility for the use of robots to existing legal mechanisms, without the need to enter into legislative creation. So, for example, Neil M. Richards / William D Smart, \textit{How Should the Law Think About Robots ?}, 2013, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2263363. The authors, starting from a notion of robot as a mere material instrument, a tool identical to any other, try to demystify the need to change the current regime under the pretext of the emergence of artificial intelligence. At the same time, they seek to frame the responsibility for the use of these under either the liability of the manufacturer or producer, or the responsibility derived from the control of sources of danger. Regardless of whether the autonomy is progressively greater, there is always a connection between inputs (commands) and outputs (robot behavior), so there will always be a causal determination of their conduct and, therefore, it is possible to conceive it as a mere tool at the service of a person. As the authors warn, however, the robot will not understand the same input in an identical way twice, this different behavior in apparently similar situations is erroneously understood as “free will”. But even with technological development, these robots are neither completely autonomous, nor completely remote controlled. They conclude that “while this mental agency is part of our definition of a robot, it is vital for us to remember what is causing this agency. Members of the general public might not know, or even care, but we must always keep it in mind when designing legislation. Failure to do so might lead us to design legislation based on the form of a robot, and not the function. This would be a serious mistake “.
In yet another hypothesis of strict liability, the equivalence of the AI robot with animals could be thought. Contrary to the remaining hypotheses, in this case the focus of the difficulties is related to the methodological effort to go beyond the letter of the standard and include machines where it is written animal. Apparently, it will be said that the possibility goes far beyond an extensive interpretation, falling halfway between a teleological extension and an analogical application of the precept. Thus, with the exception of AI that is specifically identified with motor vehicles³⁸, and that usually reaps a concrete prediction in the legislation by risk, this hypothesis, although of more remote adequacy, would also appear as a theoretical possibility of holding the robot owner responsible for the damages that it causes. Once again, however, taking the consumer hostage to knowledge that he does not master and to a machine that, like a dog, can make unpredictable decisions that escape the instructions given by the respective owner.

2.7. Cascading private liability schemes

One of the proposals advanced by the EP Resolution concerns the union of mandatory insurance and compensation fund schemes. Insurance that would be supported, again, by the purchaser of the intelligent robot, would be a private solution apparently adequate to solve the question of damages caused by it. Eventually, whenever it covers an amount less than the damage, it could be supplemented with compensation funds to the extent of the difference, which can be paid by the producer himself.

Without prejudice to the greater or lesser suitability of each of these types of responsibilities, and as some propose, perhaps it would be more appropriate to build a cascading responsibility system that could successively cover the robot, the producer, the supplier, the user and the owner. If, on one hand, this type of scheme clearly provides the injured party with a series of guarantees, it is no less true that, from a theoretical and dogmatic point of view, this system

³⁸ Consider that accordingly to the case José Maria Ambrósio Lavrador and Maria Cândida Olival Ferreira Bonifácio v Companhia de Seguros Fidelidade-Mundial SA, Case C-409/09, 9 June 2011, when one of the drivers, in fault, collides with another vehicle, there’s no limitation for the national law to exclude or limit the right of the victim of an accident to claim compensation under the civil liability insurance of the motor vehicle involved in the accident. This is possible on the basis of an individual assessment of the exclusive or partial contribution of that victim to his own loss or injury. The case reported to a collision between a motor vehicle and a bicycle, ridden by a child who was travelling on the wrong side of the road, in breach of the priority rules, which resulted in the death of the latter. Considering this, the traditional solution arises a consequence in the light of AI technology: in case of an accident between an autonomous vehicle and a human-driven, the latter will always be at disadvantage since no fault can ever be attributable to the autonomous vehicle. The same consequence goes for passengers. Accordingly to the rulling of case Vítor Hugo Marques Almeida v Companhia de Seguros Fidelidade-Mundial, SA, Jorge Manuel da Cunha Carvalheira, Fundo de Garantia Automóvel, C-300/10, 23 october 2012, the Council Directive 72/166/EEC of 24 April 1972, Second Council Directive 84/5/EEC of 30 December 1983, and Third Council Directive 90/232/EEC of 14 May 1990 must be interpreted as meaning that they do not preclude national provisions which, where two motor vehicles collide giving rise to personal injury to the passenger in one of the vehicles and the event is not attributable to the fault of the drivers of those vehicles, allows the civil liability of the insured persons to be limited or excluded. Therefore, in the light of AI technology, if a conflict arises due to an accident between an autonomous vehicle and a human-driven vehicle, a passenger in whether vehicles (whose fault can limit or exclude liability of the insured persons by national law) will always be at disadvantage in comparison to accident between human-drive vehicles, since no fault can ever be attributable to the autonomous vehicle.
does nothing more than share responsibilities without unifying and singling out the regime in a single imputation model.

3. The incongruity of creating an e-person

There are two entities to which it is customary to attribute legal personality: natural persons and legal persons (or legal entities). Its concession is based on an idea of personality, humanity. It may be questioned whether this is the principle that leads the legal system to grant this legal personality to legal persons as well, since they are nothing more than mere legal fiction. The truth, however, is that legal persons exist to the extent of the existence of the respective bodies of direction and management, all of them composed of human beings who, behind the scenes, give will and lend a voice to those fictitious entities. Collective people act, are capable, do business and exist because, behind this fiction, there are human beings who give it life and represent it organically, following collective or permanent purposes; ultimately, it is because of natural persons that legal persons exist.

The Resolution's proposal, however, goes in a different direction. In §AB, it is assumed that “the more autonomous robots are, the less they can be considered to be simple tools in the hands of other actors (such as the manufacturer, the operator, the owner, the user, etc.)”; this paragraph is later complemented by §59 (f), which points out the prototype of a robot that would deserve protection under the umbrella of legal personality as those who “make autonomous decisions or otherwise interact with third parties independently”. By these conclusions, it seems to be possible to say that the Commission intends to detach the idea of legal personality from the human factor that has always been at its basis. The aforementioned notion of a robot that could be assumed as a center for imputing decisions independent of third parties, turns it into a sui generis legal actor alongside the individuals and companies that created it; but it also keeps it away from other things that deserve legal regulation, such as animals or tangible / intangible assets, since these are not legally subject or capable of making decisions. This means that AI, being uncontrolled by third parties, has autonomy and its own identity.

39 We do not ignore the discussions surrounding the granting of legal personality to animals as well, considering the capacity to feel, suffer, have a minimum of conscience, etc.
42 Still, the question remains whether, although with increasing autonomy on the part of its creator, this metallic figure, without feelings or conscience, can effectively become an autonomous legal being. This is because the Resolution does not establish any requirement or
This means that the proposal intentionally departs itself from discussions about consciousness that these robots may or may not come to have, even though the Commission seems to believe that it is possible to make this leap in 10 to 15 years (§51). Considering the studies on robotics explained at the introduction of this paper, we have serious doubts that this odyssey is achievable, or even, justified. In any case, it appears that it is not really intended to enter into this debate, since the Commission’s objective is simple: to solve the problem of holding the artificial intelligence accountable for the damage it has created, regardless of consciousness or guilt.

As it is not possible to look for an extension of the human personality to the electronic personality, which the Resolution clearly discards, it remains to consider, as we have seen, its similarity to legal entities. Such an approach would imply associating the autonomy of the robot to a person who, behind it, would represent it; we would have, as what happens to legal persons, an electronic person (robot) to be represented by an individual (creator or user).

However, we believe that this solution is useless as there are more effective ways of solving the problem of liability for damages caused by artificial intelligence, and it is also inconsistent with what are the expectations of the artificial intelligence’s technology state of the art in the medium term and the increasing freedom and autonomy that they are expected to gain in relation to their creator, who cannot be configured *ad eternum* as a representative of a totally independent entity.

At first glance, it seems that, in order to create an electronic personality, it has to assume this independent modality, differentiated from that attributed to individuals - purely natural - or

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43 Cf. NEVEJANS, Nathalie - *European Civil Law Rules in Robotics*, 2016, available at [https://www.europarl.europa.eu/RegData/etudes/STUD/2016/571379/IPOL_STU(2016)571379_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2016/571379/IPOL_STU(2016)571379_EN.pdf); “When considering civil law in robotics, we should disregard the idea of autonomous robots having a legal personality, for the idea is as unhelpful as it is inappropriate. Traditionally, when assigning an entity legal personality, we seek to assimilate it to humankind. This is the case with animal rights, with advocates arguing that animals should be assigned a legal personality since some are conscious beings, capable of suffering, etc., and so of feelings which separate them from things. Yet the motion for a resolution does not tie the acceptance of the robot’s legal personality to any potential consciousness. Legal personality is therefore not linked to any regard for the robot’s inner being or feelings, avoiding the questionable assumption that the robot is a conscious being. Assigning robots such personality would, then, meet a simple operational objection arising from the need to make robots liable for their actions.”

44 Cf. NEVEJANS, Nathalie - *European Civil Law Rules in Robotics*, 2016, available at [https://www.europarl.europa.eu/RegData/etudes/STUD/2016/571379/IPOL_STU(2016)571379_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2016/571379/IPOL_STU(2016)571379_EN.pdf); “Legal personality is assigned to a natural person as a natural consequence of their being human; by contrast, its assignment to a legal person is based on legal fiction. Legal persons are able to act within the legal sphere solely because there is a human being behind the scenes to represent it. Ultimately, it is, then, a physical person that breathes legal life into a legal person and without which, the latter is a mere empty shell. That being the case, where do we stand with the robot? We have two options: either a physical person is the true legal actor behind the robot, or the robot itself is a legal actor. On the one hand, if we consider there to be a person behind the autonomous robot, then this person would represent the electronic person, which, legally speaking, would - like the legal person - simply be a fictional intellectual construct. That said though, the idea that one might develop such a sophisticated mechanism to produce such a pointless result shows how incongruous it would be to assign legal personality to what is just a machine. Once a robot is no longer controlled by another actor, it becomes the actor itself. Yet how can a mere machine, a carcass devoid of consciousness, feelings, thoughts or its own will, become an autonomous legal actor? From a scientific, legal and even ethical perspective, it is impossible today - and probably will remain so for a long time to come - for a robot to take part in legal life without a human being pulling its strings. What is more, considering that the main purpose of assigning a robot legal personality would be to make it a liable actor in the event of damage, we should note that other systems would be far more effective at compensating victims; for example, an insurance scheme for autonomous robots, perhaps combined with a compensation fund.”
legal entities - purely fictional, but dependent on a representative human element. No analogy with the one or the other should be sought, due to the lack of identity of situations. While the state of the art of emerging technologies in the field of artificial intelligence does not offer certainty about the adequacy and necessity of this solution as an immediate alternative, other schemes of imputation and responsibility to answer these problems will continue to be used, such as its attribution to natural persons who have acquired the robot, or imputing it to its creator / producer. It does not seem, however, that over time these traditional schemes can provide sufficient or adequate responses.

To allow for discussion, if we considered a tertium genus electronic personality was the most appropriate legal solution to solve the problem of liability, this option would also have some questionable consequences. This is because the recognition / creation of a legal personality for artificial intelligences necessarily implies the granting of rights and duties to these that must be enforced. However, we cannot help but wonder how we could configure this granting of rights and duties to machines. Don’t these have an underlying connection with the idea of the moral and ethics of human beings? Furthermore, how wide could these rights be? Could they have rights similar to those of humans, such as the right to life / non-destruction, the right to work, to receive salary, the right to act in self-defense? It seems that the solution would leave us with more questions than certainties\(^45\). Even so, it seems to us that the issue will not be found so much in the debate on whether or not to recognize electronic personality, but on the extension of this recognition\(^46\).

In order to try to overcome this issue, it has been suggested that this electronic personality recognition of artificial intelligences does not necessarily imply the inclusion of all the rights that individuals or companies have. But it must not be forgotten that legal personalities did not start with the full range of rights and duties that they currently have (increasingly extensive civil and criminal liability, full property rights, fiscal, labor and environmental responsibilities higher than individuals; the possibility for legal entities to self divide, join or create from


\(^{46}\) This question is related, in a parallel situation, to the question of minors, people with profound disabilities, people in a coma or vegetative state, etc. In all of these situations, their ability to exercise their rights is limited, despite the fact that the notion of legal personality is unquestionable, inextricably linked to the human fact. In addition, and particularly in relation to minors, there are rules in which they are excluded from any regime of criminal liability until a certain age.
scratch a new legal entities, etc.); so the doubt is legitimate: if the electronic personality starts with civil liability, what path will it take afterwards?

We believe that it would be foreign to the legal system - and even useless - to create an entity with legal personality which is intended to be assigned only responsibilities and duties and no rights. Remember when it comes to civil liability there must be a way to each the assets of the agent who did the damage to a third party; the institute takes as an assumption that whoever does the damage and becomes responsible effectively has them. This wouldn’t be possible of the machine doesn’t have any rights; and if the responsible agent has no assets, being civilly responsible is irrelevant (both to agent and to victim). How would artificial intelligences assume civil responsibility and its natural consequence, the obligation to reimbursement of the damage? Either it is accepted that it has no assets - which would imply an absolute externalization of the responsibility of artificial intelligence to the victim / community / State - , or artificial intelligence has assets and assumes this cost by itself. And here, again, we have to ask: how could that be done? In the absence of any assets, could the software itself (that is, its own existence) be even considered of economical value (as it is considered nowadays when it is marketed) to compensate the injured person? Putting aside the possibilities for an estate similar to natural persons (unrealistic for the time being), the current options are limited...

Besides the consequences mentioned, focusing on the electronic personality of artificial intelligences as a center for imputing civil liability can lead to another outcome: the immediate exemption of the producer / owner / user of artificial intelligence, who will not be liable because artificial intelligence will be directly liable for their actions and omissions.

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47 In the USA, there is even starting some support from the Supreme Court, in the sense that companies have freedom of expression in addition to commercial and advertising discourse. Cf. Citizens United v. Federal Election Commission, 558 U.S. 310 (2010) and Burwell v. Hobby Lobby Stores, Inc., 575 U.S. (2014).

48 KOOPS, Bert-Jaap & HILDEBRANDT, Mireille - Bridging the Accountability Gap: Rights for New Entities in the Information Society, 2010, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1647744; “The constructions of limited legal personhood could evolve into the third strategy [full personhood with “posthuman” rights], namely to change the law more fundamentally by attributing full personhood to new types of entities. This would concern both liability on the basis of wrongful action and culpability and a lawful claim to posthuman rights. Can we imagine that computer agents should be attributed moral personhood in the long term, if they gain the ability to make moral (or moral-looking) decisions, based on self-consciousness (or something that looks to their environment like self-consciousness)?”

49 We believe that, when admitting so, it would be created a loop where legal personality would inevitably fall into a new slavery system where machines would become servants again, which conflicts with the aim of the Resolution. The evolution of the law has been in the sense of conferring the right to categories (such as slaves, women, children and legal persons), not the other way around.

50 Some authors argue that, from the moment an entity has a degree of autonomy sufficient to conclude for the existence of intentions, it should be given personality from the point of view of the law. The point of view is categorical. According to these authors, with empathy and intelligence there will be a personality (and responsibility) that the Law will have to recognize. Less extreme approaches start from the idea of legal fiction, assimilating the robotic / electronic personality to the collective personality where it arose from. Other authors reject this possibility, considering that it results from an unrealistic vision built from science fiction. About this, see SILVA, Nuno Sousa e – Direito e Robótica: uma primeira aproximação, [on line] 2017, Porto. [consult 2020-06-01], available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2990713, page 11.

51 Parallel to these questions, there are ethical and philosophical issues that arises from e-personality. Granting personality to AI based in its ability to choose is undignifying to humans, as it reduces their value to said ability. In fact, the autonomy of robots is a technological autonomy, based on the potential of the algorithmic combination that is provided to the software. It is, therefore, far from the ethical action of humans, in which the person is rooted – BARBOSA, Mafalda Miranda de – Robots advisors e responsabilidades civil. [online] In Revista de Direito Comercial. Lisboa: 2020. ISSN 2183-9824, page 53 [consult. 2020-06-01] available at www.revistadireitocomercial.com
4. Conclusion

Given the legal framework currently in force, the solution regarding liability of AI could somehow overcome the need of the e-personality and actually be solved by simple set of legislative changes.

Briefly, one of the possibilities could be expanding the type of damages covered by the producer’s liability regime, so the regime cover other risk situations regarding artificial intelligence; also, it could be debated if users, owners or guardians could still be held liable for damages caused by AI up to a certain level of risk material, that is, with regard to robots that actually involve a particular danger. Besides, there could be the possibility of setting a strict liability regime for the operator according to the type of use that is given to the robot, for example, if it operates on public or private forums. And there could also be sustained a contractual liability regime for debtor who make use of AI robots in the course of their business.

The most important aspect to keep in mind is that, in today’s society, it does not make sense that the victim is the one to bear the risk for the damages suffered by action of an artificial intelligence. European societies are moving in the direction of creating always some form that will ensure that the victim has some way to obtain compensation (at least for damage to his body and life). European law also follows this line, for example, in the Council Directive 85/374/EEC of 25 July 1985, on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for defective products, or the Council Directives 72/166 / EEC, 84 / 5 / EEC, 88/357 / EEC and 90/232 / EEC and Directive 2000/26 / EC of the European Parliament and of the Council Directive 2005/14 / EC of the European Parliament and of the Council of 11 May 2005, relating to insurance against civil liability in respect of the use of motor vehicles. In both of these regulations there is a concern to identify a responsible individual or legal entity and that there is property with sufficient solvency to ensure compensation for potential damages that may arise.

Also, it is possible to conceive the attribution of the obligation to indemnify to the State, either to be financed, or not, by special taxes. In this case, there should be the concern to avoid unequal partition of advantages and disadvantages; it should be avoided that users of electronic personalities would benefit from all advantages while the State (and taxpayers) would assume all the disadvantages (as stated the latin proverb, *ubi commoda ibi incommoda*). In addition, it is difficult to see that this solution being socially or politically acceptable at this moment.

On the other hand, depending on its amount and the time of its constitution, it could result in an obstacle to economic development, which the Resolution specifically intends to avoid.
Taking autonomous vehicles as an example, European legislation imposes up to € 5,000,000.00 as minimum amount of capital for motor insurance, if a person when purchasing the autonomous car, has to pay the purchase price of the machine (something between € 20,000.00 to € 100,000.00) plus the constitution of the machine's equity fund (€ 5,000,000.00), the majority of the population would be excluded from this possibility.

There could also be the creation of mandatory insurance or indemnity funds. This is the simplest and most effective solution to solve the problem of civil liability of artificial intelligence that exist with the current state of the art. As far as possible, it could be ensured that there is sufficient assets for the compensation and if is operationalized by special rules of strict liability we can avoid exclusions of artificial intelligence responsibility.

All of this means that, today, many alternatives to the e-person are still easily achievable considering the state of the art of artificial intelligence. Who knows what will happen, however, when we reach the stage of sentient robots.