Concept, Criminal Legal Aspects of the Artificial Intelligence and Its Role in Crime Control

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Abstract

In an effort to define the term "artificial intelligence" in a proper way, it is necessary to consider a series of philosophical, sociological, political, psychological, and legal determinations of the term. The legal norming and research of still insufficiently investigated and complex issues requires a starting point based on clearly and precisely defined relevant terms. Hence the conceptual definition of "artificial intelligence" as a complex notion was given, and some dominant conceptual approaches in the understanding of the relevant phenomenon were also considered. The main conclusion of the paper refers to the fact that, inevitably, determinant not only of the human behavior, but also for human being as a person, undoubtedly, besides intelligence, are also identity, experience, integrity, attitudes, morale, creativity, motivation, emotions, habits, obsessions etc. All those characteristics of a human being are not programmable and predictable, according to the current state of science. In regard to that, it can be concluded that artificial intelligence is only a partial humanization of robots and machines, in terms of those characteristics of a human that can be more clearly determined and predicted using inductive and deductive methods, which are mostly based on a rational basis. The issue of legal subjectivity of artificial intelligence units – robots/machines/software – was considered as well. Also a special emphasis is placed on the ability of artificial intelligence units to be subjects to criminal liability. Finally, the role of "intelligent" technology in crime control was also analyzed.

Keywords: *artificial intelligence, robot, machine, legal subjectivity, criminal liability, crime control*

1. Introduction

Is artificial intelligence possible? At the very beginning of the paper, it should be made a brief overview of this question that was posed even in the seventeenth century, by René Descartes[3]. At the time when the famous French philosopher was writing, there were not any of the technological components of the modernity in the form in which we know them

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today, but the "technological boom" was leading to the so-called "Industrial Revolution" which we still experience at present times. This is why Descartes, while studying the methods of conclusions and seeking the truth in (of) science, problematized the question of the ability of machines to think and decide exactly like a human being. Considering the issue in question from a hypothetical perspective that proved to be right over the time, he concludes that the machines could indeed be constructed likewise human beings, in the way that it can use words, give answers to certain questions if we "click" on the required button etc. However, he furthermore states that machines will never be able to answer on every question or respond to a situation that can affect them[4], which is the characteristic of every human being, regardless of the quality of the response or the adequacy of the reaction to the concrete situation. This conclusion still remains at the center of discussions about artificial intelligence[5].

The conceptualization of artificial intelligence in a wider sociological context is imposed as the first step in a cognitive process that should lead to a valid legal definition. Nevertheless, all the difficulties, when it comes to the legal defining of social phenomena, have been noticed even in the Ancient Rome, thought embodied in the well-known sentence *Omnis definitio in iure periculosa est.* Having in mind that one of the tasks of this paper is to examine the role of artificial intelligence in crime control, one should bear in mind that the mentioned definition problems are especially related to phenomena such as crime, which, as some criminologists state, rarely affect other emotional states and emotions in the way to influence a public opinion on every issue in the sphere of criminal policy[6]. With taking into consideration that "artificial intelligence" is still insufficiently explored from the social aspects point of view, it is clear how complex and important is to offer certain outlines of the notion that becomes more and more legally relevant.

As one European Union document states: "artificial intelligence has already become part of our lives – this is no longer just a scientific fiction"[7]. The increasing role of artificial intelligence in human everyday life is therefore an important practical and conceptual challenge for the entire legal system. Technological innovations must be taken into account: in time, they will change everyday life and become a *conditio sine qua non* to the modern way of life. The development of artificial intelligence was originally focused on cosmic technologies[8], but after the expansion of the massive application of digitalization in society, the artificial intelligence has been commercialized and expanded into almost all fields of social life. As a practical result of that process, especially in developed countries, one could notice widespread use of autonomous vehicles (so-called *Unmanned vehicles*), robots – surgeons, algorithms used in trade etc.[9].

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[4] M. Wilson, *The essential Descartes*, New York: New American library, 1969, p. 138.

[5] L. Solum, *Legal Personhood for Artificial Intelligences*, 70N.C. L. Rev.1231. 1231-1287, (1992), p. 1235.

[6] G. Potter, V. Kappler (eds.), *Constructing Crime Perspectives on Making News and Social Problems*, second ed., Long Grove, 2006, p. 1.

[7] Artificial Intelligence for Europe, *Communication from the Commission to the European Parliament, The European Council, The European Economic and Social Committee and the Committee of the Regions,* Brussels, 2018.

[8] S. Branković, *Veštačka inteligencija i društvo*, Srpska politička misao, broj 2/2017.god. Institut za političke studije, Beograd, 24. vol. 56. str. 13-32, str. 13.

[9] G. Hallevy, *When Robots Kill: Artificial Intelligence under criminal Law*, Northeastern Univerity Press of New England, 2013, p. 171.

With the ubiquity of the high technology it also of great significance to note a kind of technological revolution which implies partial discontinuity with the past, uncertainty for the future, as well as many new possibilities[10]. Due to those consequences, the need for legislative intervention is naturally present, taking into account all the relevant circumstances related to the development of high technology.

Finally, in the case of the role of "artificial intelligence" in crime control, one can recognize all the ambivalence of the massive application of high technology, its possible positive and negative effects, but also the actual way of legal reasoning regarding the matter concerned.

2. A brief overview of the main characteristics of the term "artificial intelligence"

The dominant approach in determining "artificial intelligence" influences further elaboration of all its substantive characteristics, as well as taking a stand point on this issue in terms of creating many unjustified prejudice or glorifying the social capacity of artificial intelligence. Also, one should bear in mind the fact that characterizes determination of all social phenomena, and it refers to the possibility of perceiving a phenomenon from several angles, i.e. a number of scientific disciplines and definitions that, for the purposes of their work or research provided by lawyers, will certainly differ from those created by sociologists or psychologists. Hence, it is important to take into account the various determinants that offer different views from which the phenomenon is considered, i.e. to appreciate the need for interdisciplinary and multidisciplinary observation of a complex and still insufficiently defined and investigated phenomenon such as artificial intelligence.

The term "artificial intelligence" is attributed to John McCharty, who is known as the "Father of Science of artificial intelligence"[11] and its emergence relates to the mid-fifties of the twentieth century. According to McCharty, "artificial intelligence" means the science and the engineering process of creating intelligent machines. More comprehensive, but also the definition of greater cognitive usability suggests that artificial intelligence is part of computer science deals with the creation of such computer systems that are capable of possessing characteristics that associate human behavior[12]. From the ones stated above, it is clear that this is a kind of imitation of human behavior, though such designation is only the basis, but still does not give a clear picture of the concept and all his immanent elements.

The expansion of high technology development constantly contributes to innovation in the field of artificial intelligence, which results are reflected in increasingly complex technological units such as robots and machines at the first place. Consequently with this process, a scientific thought on artificial intelligence developed according to the new technological achievements and offered more comprehensive explanations and definitions of relevant aspects of this issue. Russel and Norvig, two influential authors in this field note that all definitions of artificial intelligence may be grouped into four

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[10] S. Petrović, *Dilema kiber ili sajber*, Strani pravni život 2/2012, str. 368.

[11] M. Scherer, *Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies*, Harvard Journal of Law & Technology, Volume 29, Number 2, 354-398, Spring 2016, p. 360.

[12] S. Russel, P. Norvig, *Artificial Intelligence: A Modern Approach*, second edition, Prentice Hall Series in Artificial Intelligence, 2010, p. 1034.

categories by defining it in the limelight analogy with *human thinking and behavior*, and *rational thinking and behavior*[13]. However, it is important to note that neither human thinking, nor human behavior fully reflect a human beings in terms of the unity of psychic and physical elements. Initially, an approach to defining what is now called "artificial intelligence"[14] was based on the imitation of human actions (eng. *acting humanly approach*) presented in the works of the pioneer of this science Alan Turing[15]. The same author compared artificial intelligence to a "game of imitation", stating that is not the point on how to artificially create the very process of human thinking, but its external manifestations, so that the participant or observer be convinced that they are in a particular interaction with a man, and not with the machine[16].

When it comes to today's dominant approach in determining artificial intelligence and what are the expectations of it, a comparative analysis shows that a teleologically-oriented approach is in place, i.e. machines which falls within the scope of artificial intelligence is expected to fulfill the set objective in the most efficient way[17]. Accepting this concept of artificial intelligence as dominant leads to the commercialization of high technology, including it into every aspect of human life. This definition evolution, that has moved from imitation of reasonable and intelligent behavior to effective and targeted action, has not particularly contributed to a clearer definition of the phenomenon, since the focus on one hard to determined concept (intelligence) moved to another, equally difficult to determine (goal)[18].

Intelligence is a complex psycho-social phenomenon that is difficult to determine. In the broadest sense, intelligence represents the possibility of planning, solving concrete and abstract problems, as well as reasoning and concluding. According to a more illustrative definition it is the ability to make the right decisions and to take appropriate action in the given circumstances[19]. According to a more comprehensive approach, intelligence as a term includes[20]:

- spotting and discovering the world around you, which includes self-knowledge
- securing your own existence and well-being
- respecting given social norms to the extent that allows individuals living in the community
- finding a way to achieve the social goals

In addition to this basic determination of intelligence, it should be noted that it also refers to the perception and harmonization of behavior to the more complex natural, social and spiritual phenomena[21], often beyond the boundaries of the rational. From this concept of intelligence (human) follows that it implies and behavior that is not solely based on logic, algorithms, and other precise mathematical operations, and the types of conclusions.

On the other hand, according to relevant dictionaries (for example: *The American Heritage Dictionary of the English Language*, 4th ed., 2000; *Merriam – Webster's Collegiate*

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[13] *Ibidem.*

[14] This refers to the period before the phrase "artificial intelligence" became a part of the scientific and general discourse, to describe the phenomenon of humanization of robots and machines.

[15] Scherer, M., *op. cit.*, p. 360.

[16] *Ibidem.*

[17] S. Omohundro, *The Basic AI Drives, in Artificial General Intelligence*, 2008, p. 483;

[18] M. Scherer, *op. cit.*, p. 361.

[19] T. Jones, *Artificial Intelligence: A System Approach*, Jones and Bartlett Publishers, 2009, p. 1.

[20] S. Branković, *op. cit.*, p. 2.

[21] *Ibidem.*

Dictionary, 11th ed. 2003), the term "objective" is considered a language synonym of the term "intent". Hence, it is difficult, taking into account the approach that puts the goal and target activity at the forefront, to determine a machine that possesses artificial intelligence beyond self-awareness, self-determination, ethical value etc.

Human behavior, in the broadest sense, is not always the result of logic and regularity that can be established and written using mathematical operations. Identity, experience, integrity, attitudes, morality, creativity, motivation, emotions, habits, obsessions etc. are undoubtedly the determinants of not only human behavior, but also human beings as individuals. All those characteristics of a human being are not programmable and predictable according to the current state of science. The possibility of programmed machines to penetrate into the essence of semantic symbols, or to "read between rows", is still questionable. John George Kemmeny observes that modern machines are doing exactly what they are ordered to do and say, but not what they actually wanted[22]. In light of this, we can say that artificial intelligence is only a partial humanization process of robots and machines, in terms of those human characteristics that could be more clearly defined and predicted using inductive and deductive methods, mostly based on rationality.

2.1. Learning machines – a step closer to humanization

As a possible relativization of the previously stated conclusion, one could point out the increasing "intellectuality" of the machines. Namely, the term "learning machines" entered into the wider discourse to mark machines that possess the ability to learn without special programming[23]. The basic elements of the machine learning process are *experience and interaction* with people.

The best example of this new trend in the world of the science of artificial intelligence is Google Translate. At first, it seemed that the idea of automatic translation of content was unsustainable and unrealistic, due to numerous differences in the languages all over the world, but also with the dialects of the same language, as well as the existence of a multitude of abbreviations and jargon. This problem was overcome just by interacting with platform users ("please rate the translation or Improve version") and experience in terms of memory and learning new things at the previous fault[24]. Slobodan Branković points out that regardless the similar root and language morphology, automatic translation into English from the Russian language is far more successful in comparison to the Serbian language. The author explains this phenomenon by the fact that in Russia there are at least twenty times more people than in Serbia, what means that, statistically considered, the option "please evaluate the translation or improve the translation" was much more used and thus the program was more intensively developed[25].

However, it is obvious that this kind of machine learning requires a lot of time and fulfillment of many different conditions, regardless of the complexity of the content. Hence, it could be concluded that even a man of below-average intelligence has the ability to quickly and efficiently adopt new skills and apply them in the community.

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[22] J.G. Kemeny, *Man and the Computr*, New York, CharlesScribner's Sons, 1972, p. 10.

[23] D. Kamarinou, C. Millard, J. Singh, *Machine Learning with Personal Data*, Legal Studies Research Paper 247/2016, Queen Mary University of London, School of Law, p. 3.

[24] S. Branković, *op. cit.*, p. 7.

[25] *Ibidem.*

Ralf Herbrich, director of the machine learning sector in German Amazon, also gives an important remark regarding the machine learning process. He points out that machine learning consists of a series of algorithms that aim to identify the main variables and the frequency of the data entered, thus predicting the characteristics of new data[26]. However, the problem that arises here relates to the fact that machines do not recognize the reality, but the version of reality formed by the data collecting and processing mechanism, depending on the content and quality of both the algorithm and the entered data. It is similar, of course, to the cognitive process in human being with much more complex and perfect "algorithm" that takes into account emotions, previous experience, intuition, creativity, analogy, prejudice and many other elements that are not typical for the machine learning process. It should also be added that a human can also change the way of thinking and conclusions in relation to different social and organic factors, while for the machines it could be achieved exclusively by writing a new algorithm.

Finally, machines are able to learn the social environment norms imposed by a humans, according to their needs and creativity as well. Scientific analysis and research have shown that creativity is a characteristic of the human brain only[27].

2.2. Moravec's Paradox

Another interesting feature of the relationship between human and machine lies in the fact that although at first glance this may sound surprising, machines that possess artificial intelligence are often unable to successfully perform activities that are considered as a routine when it comes to human. For example, it is easier for a machine or robot to go to Mars than to work like a human in a factory for packaging food in a box.

Hans Peter Moravec offered a unique explanation of this phenomenon. The Austrian author based his explanation essentially on the theory of evolution and states that in order to carry out actions that people act routinely, like face and voice recognition, orientation in space and time, differentiation of simple objects, an enormous number of resources is needed to form an algorithm which could be useful for the machines to perform such activities as a routine[28]. When it comes to the human beings, the intellectual and motor skills necessary for the automatic carrying out of such activities have been developed for hundreds thousands of years, and this is not the case with robots and machines. It takes a long time for artificial intelligence units to increase the level of automation in doing these actions[29].

3. Legal regulation of artificial intelligence

Although there is no generally accepted and complete definition of the law, we could for the purpose of this paper, define the law as a set of rules of conduct that bind members of the state as such[30]. Lawmakers who in various countries adopts and

[26] D. Kamarinou, C. Millard, J. Singh, *op. cit.*, p. 6.

[27] V.S. Rotenberg, *The asymmetry of the frontal lobe functions and the fundamental problems of mental health and psychotherapy*, Dynamische Psychiatrie/Dynamic Psychiatry, 1-2, 51-68, 2007, p. 59.

[28] V.S. Rotenberg, *Moravec's Paradox: Consideration in the Context of Two Brain Hemisphere Functions*, Activitas Nervosa Superior 2013, 55, No. 3, p. 108.

[29] *Ibidem.*

[30] F. Pollock, *Jurisprudence and Legal Essays*, London: MacMillan and Co. Ltd., 1961,p. 158.

adheres to these rules in different ways, seeks to include all relevant phenomena and relationships in the system of rules that make up the law. From the second half of the twentieth century, artificial intelligence is becoming more and more present in human life, and therefore it is necessary to regulate it to prevent possible legal gaps and the insecurity in the functioning of the social community which, in this case, arises.

From a theoretical point of view, there are several approaches when it comes to the legal regulation of artificial intelligence. Basically, the most important are *legalistic* and *technological*[31]. The first approach is based on the idea that it is first necessary to start from the existing legal institutes and to examine how the rules that they established through the legal system could be applied to artificial intelligence. For example, in the case of civil law, consideration could be given as to how the rules on determining liability for causing damage could be applied to artificial intelligence units – robots/machines. If we take the example of criminal law, one could ask how and under what conditions artificial intelligence units could be liable for the criminal offenses.

The *technological* approach, in contrast to the *legalist*, starts from individual artificial intelligence units and examines the impact they have on existing legal institutes and branches[32]. The most important is that the legislator, as the creator of public policy, determines whether artificial intelligence deserves treatment of legal regulation[33].

Unlike previous technical and technological achievements, artificial intelligence is characterized by the ability to perform activities with a certain level of *autonomy*[34].In literature, this feature is considered as a one of the most important challenges for the legal system as a whole, but also the basis for a discussion on possibility to recognize legal personality to the artificial intelligence units, which is the most controversial aspect of their legal regulation.

The scope of rights and duties mostly depends on the nature of the subject *in concreto*, and the legal subjectivity itself relates mainly to the possibility of being the owner/holder of a right and the right to sue and to be sued. In the past, it was not unusual that many objects such as sacral objects, temples in Ancient Greece and Ancient Rome had legal subjectivity[35].

Nevertheless, the status of a legal entity today is related to *homo sapiens*[36] and this is clearly stated in the most important legal acts, both international and national. Thus, in the General Declaration on Human Rights, in the introduction section was emphasized that the proclaimed and guaranteed rights, among which is the right to

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[31] N. Petit, Law and Regulation of Artificial Intelligence and Robots: Conceptual Framework and Normative Implications, Working paper, 2017, p. 2.

[32] E. Palmerini, The interplay between law and technology, or the RoboLaw project in context, Law and Technology. The Challenge of Regulating Technological Developments (2013): 7-24, p. 15.

[33] N. Petit, *op. cit.*, p. 8.

[34] M. Scherer, *op. cit.*, p. 363. Autonomy as a feature of artificial intelligence is also recognized in the EU document according to which artificial intelligence is a system that reproduces intelligent behavior by analyzing its environment with a certain degree of autonomy in order to achieve a certain goal. See more in Artificial Intelligence for Europe, *Communication from the Commission to the European Parliament, The European Council, The European Economic and Social Committee and the Committee of the Regions*, Brussels, 2018.

[35] L. Solum, *op. cit.*, p. 1239.

[36] Legal subjectivity is also recognized under certain conditions to the organizations. One of the recent tendencies in criminal law is the possibility for "legal persons" to be responsible for criminal offenses. However, it should be noted that "legal entity" is a social construct made up of *people* and *property*.

recognition of legal subjectivity (Article 6), are recognized by all members of the *human* family[37]. Amendment XIV to the Constitution of the United States of America defines who is considered to be a citizen and therefore a legal entity, by stating that the term "citizen" means a person born in the territory of the United States or a person who subsequently acquired US citizenship and is therefore subjected to their jurisdiction[38]. Finally, the language and teleological interpretation of the Constitution of the Republic of Serbia 2006[39] indicates that legal subjectivity in domestic law is intended for people and that only they can be possessors of subjective rights. We should agree with this normative practice, since it is not enough just to imitate rational human behavior in order to acquire the character of legal subjectivity. Even the possession of an above-average level of intelligence *per se* not justify the need to be the possessor of legal rights and obligations. The reason for such a statement is that the law is not just a system of simple logic rules and algorithms. The right is inseparably connected with the issues of morality, feeling, consciousness etc.

We do not think that radical measures should be taken in the efforts to legally regulate artificial intelligence in order to recognize of legal subjectivity to artificial intelligence units and to guarantee individual right of particular race regardless of the fact that some authors advocate for such approach[40]. The right is a *par excellence* human creation and has the primary goal to enable the joint, coordinated and coexisting functioning of the human socio-economic community. This does not mean that artificial intelligence should not be subject of the legal norms and regulate in a proper way, on the contrary, this is an undeniable need of modernity, however the conceptual framework of such regulation should take into account the nature of the law as a human creation. Relation of rights to non-living objects and other living beings that do not fall under the category *homo sapiens* reflects the level of civilization development and humanity, but also the quality of legal norms and the legal system as a whole in terms of the rule of law and justice.

4. Artificial Intelligence and Criminal Law

Criminal law implies the most powerful legal (formal) social control that modern civilization know[41]. According to Lawrence and Solum, people in most cases feel the fear of artificial intelligence because it is not a subject of criminal law norms[42]. It seems that the harmonization of the creation and functioning of artificial intelligence with the norms of criminal law could be regarded as a most important step in legal regulation of the artificial intelligence. In essence, the criminal liability of artificial intelligence units should be considered. Criminal liability is considered to be the backbone of criminal sciences[43]. Therefore, in this particular case, it would be worthwhile to look back at the

[37] The Universal Declaration of Human Rights (UDHR).

[38] Fourteenth Amendment to the US Constitution – Rights Guaranteed Privileges and Immunities of Citizenship, Due Process and Equal Protection.

[39] "Official Gazette of RS", no. 98/2006 The Constitution of the Republic of Serbia.

[40] N. Petit, *op. cit.*, p. 1.

[41] W. Clark, W. Marshall, *A Treatise on the Law on Crimes*, Mundelein, Ill.: Callaghan, 1967, p. 23.

[42] In literature, it is stated that, in the past, people felt similar fear of various forms of organizations and associations that as such were committing criminal offenses, until they became the subject of the criminal law.

[43] W. Clark, W. Marshall, *op. cit.*, p. 23.

question of whether the growing degree of intelligence is sufficient for recognizing the legal subjectivity and subjecting artificial intelligence units to the formal social control[44]. Could artificial intelligence units be dangerous for humans and their living and non-living environment?

Tragic examples of the interaction between intelligent machines and humans are numerous and alarming. At the beginning of the 1980s a case was reported that a robot working in the auto-industry had killed an employee – the man who was working on the factory lane. The robot had a programmed goal to pack as many parts as possible and the unfortunate colleague who found himself next to the robot was understood as an obstruction of robots mission because robot did not have the best access to parts for packing and could not perform its task in the most efficient way. Guided by algorithm, he pushed his fellow human who by circumstances ended up in an open machine which killed him[45]. There is also an example of a robot, in the German company Volkswagen, that killed one of the constructors and the investigation showed that the accident was produced due to human error[46].

One of the pioneers of robotics, Isaac Asimov, in 1950, recognized the danger that intelligent parts of high technology can generate and wrote three laws[47] on robotics stating that:

1) Robot may not hurt a person by its activity or inactivity;

2) Robot must comply with the orders of the human that govern and control them, except in cases where these orders are contrary to the first law;

3) Robot must endeavor to protect its existence until it violates the first and second laws[48].

The author of those three laws, in his subsequent writings, argued that it is necessary to reconceptualize and again carried out the evaluation of the three laws, since there are still numerous contradictions. One of them is certainly a question of how the robot will behave if a controller orders it to kill the third person for his own benefit. Our Criminal Code[49] recognizes this as the criminal offense of murder by compassion (euthanasia) (Article 117 CC). The issue of mercy killing (euthanasia) causes not only serious legal dilemma, but also the moral consequences that machines can not perceive in the same way as human beings. Observed from the purely logical side, from the angle of the robot, in the eventual order of a controller who would require him to kill a third person, there is nothing controversial if it was clearly told that this is for the benefit of that person. A similar contradiction can be observed in the question of what would happen if a robot really obey the order, but not in adequate time and space?

The guiltiness is the basis and the condition for criminal responsibility[50]. Criminal liability is determined by a verdict when all the elements of the offense are fulfilled, and

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[44] G. Hallevy, *op. cit.*, p. 172.

[45] *Ibidem.*

[46] Available at: https://www.theguardian.com/world/2015/jul/02/robot-kills-worker-at-volkswagen-plant-in-germany, accessed on 22.11.2018.

[47] These "scientific-humanistic" laws were given their legalistic form in 2017, since the EU document calls for them, stating that these laws must be adhered to by designers and users of robots. See: European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics [2015/2103 (INL)].

[48] G. Hallevy, *op. cit.*, p. 172.

[49] "Fig. Gazette", Nos. 85/2005, 88/2005 - corr ., 107/2005 - corr ., 72/2009, 111/2009, 12s1/2012, 104/2013, 108/2014 and 94 / 2016.

[50] Z. Stojanović, *Krivično pravo – opšti deo*, Pravni fakultet Univerziteta u Beogradu, 2013, p. 163.

the guiltiness is one of them. The guiltiness could not exist without *accountability* which, for the purpose of this issue, should be understood as a test that artificial intelligence cannot pass when it comes to the possibility of being considered liable in the criminal sense. It is the similar situation in terms of Anglo-Saxon law (eng. *Common law*) when it comes to the existence of criminal liability. There are necessary elements of *actus reus* as an external manifestation of the conduct and its factual aspect, while the element of consciousness – the *mens rea*, is required cumulatively.

Newer legislation, among the others the Criminal Code of the Republic of Serbia, foresees a threefold structure of guiltiness, which, in addition to *accountability*, requires an *intent/negligence* and *awareness of the unlawfulness*[51]. If we consider that both will and consciousness are necessary and constitutive elements of intent, and in the previous consideration we pointed out that the units of artificial intelligence do not possess neither will nor consciousness, it follows that on the question of whether intelligent machines can be subjected to the criminal liability we should basically respond negatively.

As a confirmation of the previously stated thesis, the following example could be given. How would a possible fine be imposed on a robot if having in mind that it is not a legal entity and that it cannot have assets or regular income. In this context, it is also interesting to indicate the hypothetical execution of the prison sentence of robot/ machine. Taking into account that the general purpose of punishment, depending on the legislator, cumulative or alternative is socialization, raises the question of how the general purpose could be achieved when it comes to the artificial intelligence unit. We saw in the previous part, on the example of the Google translate program how artificial intelligence units "learn from their mistakes".

Artificial intelligence, however, is not without criminal justice relevance. First of all, we could think of the criminal liability of a person who, when committing a criminal offense, used some kind of instrument, which in the broadest sense can be machines and robots. All artificial intelligence products come from a man. Someone had to construct and design algorithms for intelligent machines to function. Also, one should bear in mind the fact that autonomy in carrying out robot activities due to exposed aspects in terms of will, consciousness, self-awareness, emotions etc. could not lead to complete identification with human in terms of establishing criminal liability. This principle is expressed in the model – *Perpetration via Another Liability*[52]. There, artificial intelligence is identified with an *innocent* agent (a child, an insensitive person), practically with the instrument. The liability of the perpetrator is based on what the instrument/agent did and possible awareness of its conduct. Who should be held liable under the *Perpetration via Another Liability Model*? Logically, there are two possibilities. In the first case, it is a constructor[53], while in the other it could be the user of artificial intelligence.

However, as it was stated in a recent EU document[54], a higher degree of robot autonomy could less often be considered as a mere instrument of carrying out the activity. In addition, the question that arises is who will be liable and how to determine the responsibility when the artificial intelligence unit commits a criminal offense only on

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[51] *Ibidem.*

[52] G. Hallevy, *op. cit.*, p. 179.

[53] In the matter of civil law – liability for damages –, the responsibility of the manufacturer, importer, distributor etc. is also possible.

[54] European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics [2015/2103 (INL)].

the basis of accumulated experience and knowledge. Problems in the application of this model also occur when a robot/machine is not created to commit crimes that are contrary to the laws of Asimov, but in certain circumstances it can still do so. In literature, when such cases occur, the units of artificial intelligence should be regarded as *semi-innocent agents*. Let's take as an example an aircraft crew. Let's assume that, as part of its equipment, the plane has an auto-pilot, which we can consider as an artificial intelligence unit with the purpose of operating the aircraft. However, let's imagine that a plane approaching a sudden storm and a pilot – human, a crew member – decides to turn off the auto-pilot option and "manually" control the plane's flight through the storm[55]. The question arises, who would be responsible in the criminal law sense if the auto-pilot interprets such a move as a danger for the execution of its task and catapults a human crew member or otherwise executes him by stopping the flow of oxygen for example. Would it be justly, in such a case, to punish the auto-pilot designer?

The solution to this situation has led to the *Natural – Probable – Consequence Liability Model*. According to it, responsibility is established when the conduct, according to the known features of the program, could be expected, regardless of the attitude of the will to that part. In the present example, the creator of auto-pilot program would be held responsible if the auto-pilot was programmed to complete the task regardless of the circumstances and at the same time did not provide the safeguards or adequately pointed out the warning. Moreover, for the responsibility according to this model is sufficient negligence and no more detailed knowledge of possible implications is required, but the awareness of it is also sufficient[56].

5. The role of artificial intelligence in crime control

The application of technological achievements has long been ubiquitous in modern policies for crime control[57]. As a positive influence of technology on control and suppression of crime, we can point out faster cars that increase the police mobility. However, artificial intelligence offers a number of more sophisticated options, with the remark that it should be used cautiously, without leaving it the role of the decision maker, but should be used as a kind of support and complement to the human factor.

It is stated in literature that the area of crime control, through history, was one of the largest generators of the development of modern technologies. This is why the field of application of technology in crime control is diversified and refers to human resources management, control of communication and information, supervision, punishment, criminal administration etc.

Regarding the crime control policy itself, two contradictory approaches are possible. One is based on the so-called "Populist punishment". This is essentially characteristic for a country that generally exaggerates the danger of crime, creating its own enemies and leading fictional struggles in order to justify huge investments in crime control. Such a seemingly sharp attitude towards criminality is often used both in the purpose of raising political popularity. However, this kind of government's

[55] G. Hallevy, *op. cit.*, p. 182.

[56] *Ibidem.*

[57] P. Grabosky, Technology & Crime Control, *Trends and Issues in Crime and Criminal Justice* (Australian Institute of Criminology); *Criminal Justice Matters*, special issue (58) on Crime and Technology, 1998, p. 58

involvement is negative for the society, it can sometimes affect a strong takeoff when the technology is in question due to large investments. Such a "technological boom" has made it possible to modify the paradigm of crime control and to base the strategies on prevention, or risk assessment for each issue in the sphere of criminal policy.

Specialized robots/machines/computer programs can be of particular benefit if their role is retained in helping humans. In particular, their role is significant in a situation when, according to relevant research, the amount of all kinds of information in the world annually increases at a rate of 40% annually[58]. This hyperproduction of information is certainly maintained in the field of crime control. For these reasons, a police district of the United Kingdom implemented in mid-2016, a robotic police officer named HART (*Harm Assessment Risk Tool)*[59]*.* Its main task is to assist police/prosecutors/judges in deciding on the detention or release of suspects from custody. The number of necessary information to be considered is huge, and when it is multiplied by several thousand items, how much it is necessary to process on an annual basis, the engagement of artificial intelligence is imposed as a rational solution. HART specifically grouped suspects into groups formed at the risk of repeating a punishable act. The decision is nevertheless made by a human – the competent person relying on the "opinion" of HART, but not leaving it the role of the final decision maker. This should be considered as an adequate solution, as it has now been shown that the percentage of robot performance is around 60%, and there is still a lot of work to improve software in order to increase the percentage itself[60].

There is an opinion in the scientific and general public that the inconsistency of judicial practice in sentencing is one of the main negative causes of deterring potential criminals from their intent. That's why a system which contains over 40,000 court decisions from the past few years has been created in one of the Canadian provinces, British Columbia. A simple interactive interface requires the judge to enter, in the appropriate fields, information about: the parts in question, the age of the defendant, the marital status and the previous conviction[61].

However, as in the case of HART robots, this program cannot be attributed to an absolute superiority over human. The question arises whether these variables are sufficient to consider absolutely every crime and how the program has shown itself in solving atypical, borderline cases that change and establish judicial practice.

6. Conclusion

Artificial intelligence has long ago became an important issue not only when researchers in the field of robotics are inspired, but also when it comes to a wider social debate. Technological progress and constant development of the state of science requires caution from the legislator who should regulate this increasingly significant social phenomenon, taking into account all innovations and achievements, as well as new opportunities. The development of artificial intelligence should not be directed at anything other than the development of the economy and helping a person in carrying

[58] S. Branković, *op. cit.*, p. 2.

[59] I. Nikolić, *Elementi – časopis za promociju nauke* 2018, p. 36.

[60] *Ibidem.*

[61] This platform is part of a project that is being implemented by the University of British Columbia.

out everyday life activities. Hence, the latest normative trend in the determination of artificial intelligence, which is market-oriented and commercially oriented, should be commended. On the contrary, if the goal is to create a new "race" of intelligent machines equal to humans, such a super-intelligent artificial should be impeccable from the moral point, because if such superhuman machines were not behaving better than us, the issue of conflict and the struggle for supremacy on the planet between the two species, artificial and natural, would become more and more current in time.

It is therefore important to have adequate legal regulations that would be sufficiently clear, but on the other hand, sufficiently flexible and adaptable to the needs of continuous high-tech innovation. This does not mean that, in accordance with the current state of science, artificial intelligence units should be recognize any legal subjectivity. This stems from the fact that the complete identification, i.e. the humanization of machines has not yet been reached, which does not mean that mankind will develop at a that stage. However, smart machines, beside a high degree of intelligence, have no other features such as identity, experience, integrity and attitudes, morale and creativity, motivation, emotions, habits, obsessions etc. in order to justify the recognition of legal subjectivity, i.e. legal equalization with human. The right, as we have pointed out in the paper, is the human creation and has the primary goal to enable the joint, coordinated and coexisting functioning of the human socio-economic community. This does not mean that artificial intelligence should not be subject to legal norms, on the contrary, this is imposed as an undeniable need of today, however the conceptual framework of such regulation should take into account the nature of the law as a human creation. Relation of rights to non-living objects and other living beings that do not fall under the *homo* category *Sapiens* reflects the level of civilization development and humanity, but also the quality of legal norms and the legal system as a whole in terms of the rule of law and justice.

It seems that criminal law is under the greatest pressure when it comes to the need for legal regulation of artificial intelligence and the harmonization of the creation and functioning of artificial intelligence with norms of criminal law imposes itself as the most important step in its legal regulation. The central issue that should be answered in this context is the ability of artificial intelligence to be liable in the criminal justice sense. Analogously to the explanation of which artificial intelligence units should not recognize legal subjectivity, we find that they should not be held accountable in the criminal sense in the same way as in the case of a human. This does not, however, diminish the need to reconceptualize rules of responsibility and adapt to an increasing social significance and application of artificial intelligence.

Finally, with privatized robots/machines/computer programs can positively influence the effectiveness of crime control but with special cautious, because of the possibility of creating the effect of Pandora's box and the negative implications of the *corpus* of the proclaimed human rights and freedoms.

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