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Challenges of Law in the face of the problems arising from the rise of Artificial Intelligence

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ABSTRACT
Technological advances and innovations have already succeeded in bringing global society to a higher standard of living, but adjustments to these processes and the accommodation of their effects are evidently necessary. This issue gains special relevance in relation to the rise of artificial intelligence, an innovation capable of making decisions autonomously and commanding the action of different types of machines and equipment to carry out an immense range of activities that until then was carried out by human beings. The challenge posed by this social change highlights the role to be played, once again, by the Law, which is responsible for regulating the situations that are already consolidated, as well as those that are insinuating themselves on the horizon for the future of our society. Law is understood as an essential instrument to fulfill this role, being at the disposal of society to seek a harmonization of human pretensions with the reality that is imposed on it. It corresponds to an arena for discussions about limits to human action and the respective accountability for the existence and operation of these machines. The text discusses ways for the Law to respond to this great challenge.

Keywords: Law, Innovations, Artificial Intelligence, Judiciary, Institutions, Individual Rights.

1 INTRODUCTION

1.1 APPROXIMATION OF MATTER

The process of development of society as a whole presents contours that generate deep concerns about the future of the lives of people around the world. It can be said that one of the sources of concern stems from the results and effects of the powerful technological revolution[1][2] that we have been

[1] For some authors, we are experiencing a technological revolution supported by different supports. In the energy sector, different development paths can be pointed out: the exchange for renewable energy; the transformation of real estate assets into micro generators of renewable energy for local application; the use of hydrogen and other storage mechanisms in buildings; the use of the internet allowing the power grid to share energy with small generating units; and the transition of the transport fleet to fuel cell or electric vehicles. See: RIFKIN, Jeremy. The Third Industrial Revolution: How Lateral Power is Transforming Energy, the Economy, and the World. São Paulo: M. Books do Brasil Editora Ltda., 2012, p. 57 et seq.

[2] There are those who consider that we are going through a Fourth Industrial Revolution, either due to innovations that arise in short development cycles and the digitization of information, which can lead us to unthinkable situations, such as

experiencing in recent years, even though it corresponds to a process that causes promising changes for the development of society[3].

First, it is possible to affirm that this exchange is desirable because it allows, in the health area, people to have access, for example, to advanced medicines with the ability to reduce pain, improve the recovery of patients quickly, and reduce the mortality of people in general, especially infant mortality. In addition, these remedies make it possible to significantly extend people's lives up to previously unthinkable age groups. In addition, in rural areas, these advances have made it possible to achieve very high levels of productivity, with great production efficiency, to the point that it is possible to think about ending hunger in the world, with a reduction in deaths due to food shortages. In the military area, on the other hand, although undesirable, it has become possible to limit some of the most perverse effects of war, such as the death and suffering of the civilian population, through the use of sophisticated equipment for tracking people, or "surgical" military action with the use of drones or guided missiles with real-time control. reducing the number of deaths at the end of these actions.

The technological revolution experienced, especially in these areas, was essential to solve problems that emerged as central to the improvement of the standard of living of human beings. However, it happens that these technological advances unconditionally lead to population increase, based on which the impacts that this result brings to people's lives and what can be an effect to conform or adapt them to the needs and intentions of society must be considered. What's more, many of these advances promote the replacement of human labor by machines, systems, and artificial intelligence, denoting the exhaustion of the hitherto dominant model of the production process and cutting off people's possibilities for obtaining income from their work, [4]generating tension about this revolution.

In summary, it can be seen from the discussion that man's concerns that result in remarkable technological developments correspond, to some extent, to reasons for the emergence of new concerns with [5] what he himself must deal with, a dynamic that, at least in part, is compared to a kind of continuous motion of creative processes in search of a better situation for the whole society. In any case, the results of technological advances have already succeeded in bringing global society to a

"digital" companies, with marginal costs that tend to zero. See SCHWAB, Klaus. The fourth industrial revolution. Translation: Daniel Moreira Miranda. – São Paulo: Edipro, 2016, p. 17 et seq.

[3] Technological advances have helped to promote improvement in the living conditions of people in general from various perspectives. Check SCHWAB, Klaus. The fourth industrial revolution. Translation: Daniel Moreira Miranda. São Paulo: Edipro, 2016, p. 15 and 16.

[4] Concerns about the replacement of human labor by the work and connection of machines and information platforms are increasingly latent. In the new system of production, the workforce is redefined and differentiated according to the characteristics of the workers themselves, giving rise to a reality very different from the one we see at the present time. See CASTELLS, Manuel O. End of Millennium. 7th edition - Revised and updated edition - Translation: Klauss Brandini Gerhardt and Roneide Venancio Majer. Rio de Janeiro / São Paulo: Paz e Terra, 2020, p. 428 et seq.

[5] There is no longer exactly a belief that society is moving towards an optimized state or situation, of a good, conflict-free, pacified society; and that hitherto dominant dogmas are now accepted as a way of solving society's problems, with the promotion of deregulation and privatization, privileging the individual via the collective. For more information, see: BAUMAN, Zigmunt. Liquid Modernity. Translated by Plínio Dentzien. Rio de Janeiro: Zahar, 2001, p.41 et seq.

higher standard of living, but adjustments to these processes and the accommodation of their effects are evidently necessary[6]. This point includes actions in favor of social reorganizations, which compose an uninterrupted and almost continuous process of adjustments. In this context, the Law presents itself as an essential instrument to fulfill this role, being at the disposal of society in the search for a harmonization of human pretensions with the reality that is imposed on it[7]. It is up to the Law, therefore, to regulate and order social relations,[8] aiming to guarantee social coexistence through the establishment of limits to the action of its own members[9].

Moreover, the challenges of Law are even greater, insofar as it must also regulate the evolution of society in terms of the effects arising from current technological developments, especially one of the most challenging with which human beings have come to live: artificial intelligence[10]. In a first approach, artificial intelligence can be understood here as logical systems that use language, abstractions and concepts, in order to solve problems that typically, until then, were reserved for humans, and also improve these mechanisms for future functioning.

It must be considered that the Law, in the meantime, has sought to provide answers to the respective social afflictions under the understanding that the technological revolution in general must follow an ethical path (difficult to dissociate from a humanist basis). But this understanding depends on certain premises that will be discussed here. Achievements originated from the application of the Law on the transformations of society, throughout history, have followed one another and, especially from the last two hundred years, they have taken place from a perspective strongly based on Enlightenment values,[11] which should not be neglected in this analysis.

[6] Technological developments in human history have resulted, in many of the corresponding episodes, in a remarkable improvement in the standard of living. However, according to Bauman, the reconsideration of the intervals of time and space, implying the polarization of the human condition, and not homogenization. See:BAUMAN, Zigmunt. Globalization: The Human Consequences. Trad. Marcus Penchel. Rio de Janeiro: Zahar, 1999, p.25 et seq.

[7] In the realm of subjective law, different theories about the nature of this right deal with human claims with respect to reality. See MONTORO, André Franco. Introduction to the Science of Law: Justice; Law; Faculty; Social Fact; Science. 33rd edition ver. and current. São Paulo: Ed. Revista dos Tribunais, 2016, p.495 et seq.

[8] For some legal scholars, the experience of law in society can be explained through the use of the ideas of fact, value and norm. See: REALE, Miguel. Three-Dimensional Theory of Law. 4th edition revised and enlarged. São Paulo: Saraiva, 1986, p.91 et seq.

[9] Law comprises a social fact or phenomenon that seeks to meet the desirable requirement of an orderly coexistence, allowing greater solidarity among people. See REALE, Miguel. Preliminary Lessons in Law: Adapted to the New Civil Code – Law No. 10,406, dated 10-1-2002. São Paulo: Saraiva, 2004, p. 1 et seq.

[10] The term Artificial Intelligence was first used in this sense by John McCarthy, professor of mathematics at *Dartmouth College*, in New Hampshire/USA, in 1955. For more information, see BOOTLE, Roger. The Economics of Artificial Intelligence: How AI is Transforming Work, Wealth, and Progress. Translated by Diego Franco. Rio de Janeiro: Alta Books Editora, 2021, p. 6 et seq.

[11] The incorporation of Enlightenment values by Law was important so that human beings could incorporate the fruits of recent technological development into their reality. Civilizational advances have been clearly perceived, and can be ratified by the evolution of socioeconomic indicators. See: BARROSO, Luís Roberto. Technological Revolution, Crisis of Democracy and Climate Change: limits of Law in a changing world. 2019, p. 1268 ff. Available on the website Technological Revolution, crisis of democracy and climática.pdf change, accessed on 08/10/2023.

2 THE PHENOMENA OF TECHNOLOGICAL CHANGE AND THE RISE OF ARTIFICIAL INTELLIGENCE

Much of the capital accumulated in recent years has been directed, within the scope of production systems, to the development of new technologies, which ended up generating the large amount of innovations with which we have lived in our times. These technological developments, therefore, have taken evident space in people's lives, being perceived by many as recent fruits of an "informational capitalism",[12] considering that a good part of the innovations are found in the areas of organization and management of information. At a time when the phenomena caused by technological change multiply and recurrently succeed each other in our lives, it is difficult to predict even the paths to be taken by society in the very near future. Thus, ways of responding to the effects of the transformations experienced, especially by making use of the tools of Law, an area of knowledge that is capable of providing conceptual formulations and practical applications to organize society, are impaired.

Directly associated or not with the set of phenomena mentioned above, it can be said that there is today a whirlwind of innovations and technological developments available for everyday applications that have significantly changed the lives and behavior of people around the world. Without pretensions to be exhaustive as to the innovations that will be presented, we take here highlighted examples as a reference of this evolution, such as the development of metaverses, through which virtual reality environments are created in which the person is inserted and enjoys diversified life or imagined experiences.

In the case of information technologies used for large amounts of data and high frequency, the capacity to store data and manage the corresponding flows has increased, enabling conditions for the creation of the so-called Big Data, [13]from which many applications are derived. Associated with this development, it is important to mention the growth in the use of "datafication" processes[14], which has

[12] For this author, the so-called "informational capitalism" corresponds to the set of transformations caused by the technological revolution on the global socioeconomic dynamics. In the meantime, it understands that technological development is the basis of economic production and social relations. See: CASTELLS, Manuel O. Vol. 1. 9th ed. Revised and enlarged. São Paulo: Paz e Terra, 2006, p. 209 ff.

[13] The idea of Big Data refers to digital logical structures that can store a very large amount of information, associated with processing methodologies that allow for a more accessible and agile organization. It refers to large-scale work that enables the attainment of new ideas and the creation of value in order to change organizations, markets, governments, and others. See MAYER-SCHÖNBERGER, Viktor; and CUKIER, Kenneth. Big Data: How to extract volume, variety, velocity, and value from the avalanche of everyday information. Translated by Paul Polznoff Junior. 1st ed. – Rio de Janeiro: Elsevier, 2013, p. 4 et seq.

[14] In the sense used here, data can be understood as something that allows recording, analysis and reorganization. Thus, "datyping" a phenomenon corresponds to putting it into a quantified format so that it can be tabulated and analyzed. Digitization is important for the functioning of technologies such as blockchain, 5G, and IoT. See MAYER-SCHÖNBERGER, Viktor; and CUKIER, Kenneth. Big Data: How to extract volume, variety, velocity, and value from the avalanche of everyday information. Trad. Paulo Polznoff Junior. 1st ed. – Rio de Janeiro: Campus/Elsevier, 2013, p. 51 et seq.

greatly scaled the information processing capacity, providing great speed in the operation of various digital systems and applications.

Linked to the progress made with the aforementioned "datafication" process, innovations such as blockchain have emerged[15.16] This innovation corresponds to databases that maintain an organized accounting in a decentralized and distributed way (between machines or equipment, even located in different locations) that can be inspected openly. Thus, a model of data and process organization was created that allows a large amount of information to be exchanged between agents, using mainly the internet as a means of communication, and allowing a system of validation of the information generated with the data, creating a relationship of trust between the actors involved in the environment in which they are inserted.

In addition, the technological development of the IoT can be mentioned[17], which, in a simplified way, corresponds to a collective network that works for cholera and exchange of data, in real time, between devices and systems on the internet, with useful applications in productive sectors such as agribusiness, industry and services (storage and logistics). There are also systems related to 5G networks, [18]which correspond to the fifth generation of mobile networks, developed to support the growing volume of information exchanged daily by billions of wireless devices spread around the world. This is a great evolutionary leap compared to the previous network (called 4G), with the 5G network being more powerful and faster than the first, in addition to demonstrating better performance. The 5G network proposes to achieve very high standards of connection speed and simultaneous users, and signals the possibility of having a wider and more efficient coverage, in addition to a significantly greater number of connections, which is essential for the control of autonomous vehicles, relying on safety systems that prevent car accidents, in addition to making it possible to perform remote surgeries through robots with greater efficiency and effectiveness. Another innovation of special importance are robots[19], which correspond to mechanisms or devices previously programmed by human beings, which

[15] They are also understood as a network of decentralized exchange relationships that move transactions, values, and assets between parties, without the intervention of intermediary agents. See MOUGAYAR, William. The Business Blockchain: promise, practice, and application of the next Internet technology. Hoboken, New Jersey: John Wiley and sons, 2016, p. 1ff.

[16] Blockchain has enabled the creation of very expressive electronic currency markets, such as *bitcoin* and *ethereum*. See: TAPSCOTT, Don; TAPSCOTT, Alex. Blockchain Revolution: How the technology behind bitcoin is changing money, business, and the world. New York: Penguin Random House LLC, 2016, p. 3ff.

[16] For more information on the subject, see DUARTE, Daniel. Bitcoins: A Story of Rebellion. Foreword by Hélio Beltrão. Afterword by João Paulo Oliveira. São Paulo: LVM Editora, 2021, p. 67 et seq.

[17] *IoT* refers to the relationship between things (such as products, services, and places) and people, a relationship that is made possible by different (digital) platforms and technologies that are connected. See: SCHWAB, Klaus. The fourth industrial revolution. Translation: Daniel Moreira Miranda. – São Paulo: Edipro, 2016, p. 26 et seq.

[18] 5G structures sophisticate the use of communications and amplify the use of IoT tools, allowing better control of autonomous vehicles, for example. These developments stem from the momentum of the telecommunications sector that began in the 1990s, which motivated the creation of a large global economy. For more information on the subject, see: NAISBITT, John. Global Paradox. Trad. Ivo Korytowski. Rio de Janeiro: Campus; São Paulo: Publifolha, 1999, p. 53 ff.

[19] The term *robot* was first mentioned in a 1920 science fiction play, giving rise to the meaning of servant or forced labor. In the human imagination, the use of this word refers to the idea of an object in metallic humanoid form, automated and programmed by humans. In reality, *robots* don't necessarily have that shape, and can be represented by any equipment

create logical routines to control decision-making and mechanical or logical movements, especially for the purpose of replacing human work, minimizing errors and maximizing efficiency and effectiveness in various jobs. Some robots can make decisions without human help, but in this case, using AI technology.

Artificial Intelligence, or AI[20, 21]is endowed with great autonomy in its operation, considering that it stores information and starts to make decisions based on it, associating it. It differs, therefore, from developments which depend exclusively on the direct will of the human being, which implies an instruction or guidance, an omission, an action or a reaction[22]. It is the latter situations that typically occur with innovations in the primary forms of *IoT*, *blockchain*, or *robots*[23]. In such cases, the result of an intervention of the machine or equipment is directly related to the commands programmed by a person. If the expected result of this intervention is achieved, the operation of the device was satisfactory and should remain available to people. However, if any result does not turn out as initially intended, it is possible, after verifying the execution of the intervention process, or analyzing and reviewing the previously made programming, to correct the process for new use in similar future events. It is noteworthy that the presentation of this set of innovations aims to: first, show some of the most sophisticated technologies available to society; second, to highlight applications and beneficiaries of their applications and uses; and third, to differentiate the new technologies that depend on the will and commands assigned by the human being, being under his control and responsibility, from those that enjoy the attribute of making decisions autonomously and, consequently, difficult to hold accountable in the field of Law.

programmed by humans to achieve results. See BOOTLE, Roger. The Economics of Artificial Intelligence: How AI is Transforming Work, Wealth, and Progress. Translated by Diego Franco. Rio de Janeiro: Alta Books Editora, 2021, p. 6 et seq.

[20] For one of the founders of the technology company Apple, Steve Wozniak, artificial intelligence does not work like human intelligence, and bases its responses and positions on the operation of sequences of algorithms, which access large databases with a speed far above that used by human beings – but does not reason like him. See: WOZNIAK, Steve. Interview: AI won't change our lives, says Apple co-founder. Available at: https://www1.folha.uol.com.br/mercado/2023/09/ia-nao-vai-mudar-nossas-vidas-diz-cofundador-da-apple.shtml. Accessed on 09/03/2023.

[21] According to famed author Harari, it is not necessarily expected that AI will develop consciousness. It is to be expected that it will develop intelligence. It is worth discerning here that the idea of intelligence has to do with the ability to solve problems, while the idea of consciousness has to do with the ability to feel, and hence make decisions that can be good or bad for the human being. However, deconstructing the logic of this author, at the limit, it can be inferred that, by exercising its ability to solve problems, and if AI is presented with the problem of developing its own consciousness, it can be inferred that it will then be able to develop this attribute for itself. See HARARI, Yuval Noah. 21 Lessons for the 21st Century. Unit 3. Freedom. São Paulo: Companhia das Letras, 2018, p. 97 et seq.

[22] Robots are considered here as devices programmed by man to perform activities that a human being could perform, without attributing to him some degree of intelligence. The device does what it is programmed by the human being to do. See: BOOTLE, Roger. The Economics of Artificial Intelligence: How AI is Transforming Work, Wealth, and Progress. Trad. Diego Franco. Rio de Janeiro: Alta Books Editora, 2021, p. 6 et seq.

[23] Obviously, these innovations can be associated with AI, and then the analysis should fall on the latter, considering its dominant status over other innovations, for the purposes of this discussion. See SANTAELLA, Lucia. Is artificial intelligence smart? São Paulo: Edições 70, 2023, p. 23 et seq.

Still in this discussion, but considering the scope of the legal universe, specifically in the sphere of civil law, which can be requested to solve problems arising from undesirable results produced by these technologies, it should be considered that any result of the intervention of the machine or equipment that represents an affront to the law or standard, causing damage to third parties, it is possible to hold agents responsible for the fact. These agents can be individuals or legal entities that play different roles in the relationship between human beings and technology. Thus, the owners of the technological device, or their managers or administrators, the programmers or operators, or even the financiers of its implementation that provided the unwanted results achieved, may be responsible[24]. This type of situation already finds some legal support in the scope of the so-called digital law[25] and, in the case of Brazil, in the legal provisions brought in specific laws[26].

In the specific case of AI, it can be said that it is typically made up of a set of interrelated algorithms that[27] work on a physical structure developed based on electronic circuits and chips[28]. By combining these algorithms within a certain organization of data or information flow, it is possible to execute complex chains of logical reasoning. The analysis of the development of AI provokes the idea that the logical model used to deal with the effects of the creation of new technologies from human intervention seems to be somewhat corrupted. This is because AI, for example, leverages machines and equipment (such as computers) to mimic resources of the human mind used in problem solving and decision-making. For authors such as Russel and Norvig (2010; apud Santaella, 2023, p.9), AI can be understood based on objectives or definitions: as systems that think and act like people (under a human approach); and systems that think and act rationally (under an idealistic approach). A gap in this conception would then be perceived, regarding the similarity with the human being: the lack of the system feeling as if it were a person.

There is also Webb's understanding (2020, p.13; apud Santaella, 2023, p.10), according to which AI is considered as a system that makes autonomous decisions, taking care of performing various actions, repeated or not, or simulating human intelligence, in order to "recognize sounds and

[24] At the basis of understandings of this type are, in the scope of law, arguments of a consequentialist nature. See: MACCORMICK, Neil. Legal argumentation and theory of law. Translation: Waldéa Barcellos. Proofreading: Marylene Pinto Michael. São Paulo: Martins Fontes, 2006, p. 165 et seq.

[25] Digital Law encompasses both the creation of regulations and laws that can establish good practices and conducts in the online universe, as well as the definition of new criminal types to punish crimes committed in the virtual environment, and also the application of existing laws in cases that occur in the virtual environment. See: LEONARDI, Marcel. Fundamentals of Digital Law. São Paulo, Thomson Reuters do Brasil, 2019, p.119 et seq.

[26] Such is the case of Law No. 12,965, of April 23, 2014 (Civil Rights Framework for the Internet) and Law No. 13,709, of 2018 (General Data Protection Law).

[27] Algorithms are understood as sequences of instructions that tell a computer what it should do, a computer that is made up of billions of transistors (tiny command keys), with the algorithms serving to turn these keys on and off billions of times every second. See: DOMINGOS, Pedro. The Master Algorithm: How the search for the ultimate *machine learning* algorithm will recreate our world. Novatec Editora Ltda., 2017, p.24 et seq.

[28] Chips are understood as "integrated circuits," made with a small piece of material with semiconductor properties, made up of millions or billions of very small transistors. See: MILLER, Chris. The Chip Wars. Trad. Roberto W. Nóbrega. 1st ed. Rio de Janeiro: Globo Livros, 2023, p. 11 et seq.

objects, solve problems, understand language, and use strategy to achieve goals". Another possible definition of AI is given by the technology company IBM, in 2020, which considers it as the result of a process that combines the knowledge areas of computer science with the structure of Big Data, aiming to solve problems. In this understanding, AI also comprises some areas of knowledge called *machine learning* [29] and *deep learning*[30], composed of AI algorithms with the aim of creating specialized systems capable of "making predictions or classifications" based on *inputs* in the system.

It is also worth noting the position of Mueller and Massaron (2020, p.76; apud Santaella, 2023, p.10), which considers that AI covers a wide range of domains, such as "artificial life, automated reasoning, automation, bioinspired computing, concept mining, data mining, email filtering, spam, the hybrid intelligence system, intelligent agents and controls, knowledge representation, lawsuits, behavior-based robotics, cognition, cybernetics, developmental robotics..., the semantic web," etc. In addition, there are authors who portray AI, more specifically its subgroup called *machine learning*, as dependent on unintuitive mathematical techniques that involve probability theory and statistics, modeling that can generate undesirable situations that are at the center of these discussions.

Such breadth and complexity involved in the structuring and functioning of the AIs portrayed here give an order of magnitude of its possibilities and denote the power it assumes. This power is associated with a rupture of social paradigms that allows, from the mass digitization of information made available by human beings, a dive into the world of automation of systems that work according to their own sets of rules or laws and that act on the particular universe of digital relationships. In situations involving the presence of AI-enabled devices, it is not possible, then, to easily find humans responsible for an undesirable outcome for themselves as a result of the operation or intervention of a machine or equipment controlled by an AI. Hence the use of the term "corrupted" (or flawed) in some previous paragraphs to refer to the (mal)functioning of the processes designed for the accountability of the aforementioned cases with AI participation. It is corrupted because the analysis models that can be used as a basis for the standardization and regulation of the use of sophisticated technologies by human beings cannot be effective when applied to the use of AI-equipped enterprises. There is, therefore, a gap that needs to be studied and filled with some solution that is endowed with the capacity for effective human intervention to deal with the undesirable situations caused by the action of AI in our world.

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[29] *Machine learning* doesn't work exactly like it does in an ordinary production process flow, where inputs are entered, *which are processed and outputs are generated* from there. In *machine learning*, they receive data and the intended results, and from there design the process (the algorithm) that transforms the former into the latter. From this development arises another: that, from the algorithms generated in this process, other algorithms can be produced, which allows computers to dispense with human programming for their operation. See: DOMINGOS, Pedro. The Master Algorithm: How the search for the ultimate *machine learning* algorithm will recreate our world. Novatec Editora Ltda., 2017, p. 29 et seq.

[30] *Deep* learning can be understood as a subset of the Machine Learning process, which uses artificial neural networks to reproduce the learning process of the human brain, being a Machine Learning technique that allows machines to learn from raw data, such as images, sound, and text, without the need for human resources to obtain data and information. See: SANTAELLA, Lucia. Is artificial intelligence smart? São Paulo: Edições 70, 2023, p. 23 et seq.

3 THE DEMOCRATIC RULE OF LAW IN BRAZIL AND TECHNOLOGICAL CHANGES

Brazil adopts for its political organization the form of Democratic[31] Rule of Law, a philosophical conception originated in the twentieth century, deriving from the concept of Rule of Law, and providing, as a state duty, the fulfillment of norms of Law and policies that include measures that make people's lives more dignified. Thus, it seeks to ensure, from a democratic organization[32, 33] and submitted to the Law as the first foundation of its actions, the fulfillment of the general needs of society.

The Democratic Rule of Law is still a type of state organization guided by laws and, because it is democratic, based on the will of the people, with laws being valid for everyone without anyone being above them. In addition, it is characterized by the separation of state powers, and takes care, through a system of checks and balances, to maintain balance and harmony between them, [34]in addition to guaranteeing the sovereignty of its people. In this context, the Judiciary plays a role of remarkable importance, as it is responsible for interpreting and applying laws, judging conflicts, and ensuring the protection of citizens' fundamental rights. It has a responsibility to ensure that laws are complied with and that individual and collective rights are respected. In addition, the Judiciary has the function of protecting the Constitution and ensuring that institutions act within the law.

In the context of this discussion involving the Democratic Rule of Law, one cannot forget the dominant postulate of the supremacy of the Constitution, on which contemporary constitutional law rests. According to this understanding, the Constitution enjoys legal superiority over the entire respective system, based on an intellectual construction that considers attributes such as the position of preeminence in relation to the constituted power, rigidity, the material content of its norms and the

[31] The Democratic State today, despite the recognition of its relevance for a more balanced social organization, has been facing situations that can be systematized in the form of a political "trilemma" of the world economy, characterized by the fact that it is impossible to have, simultaneously: "hyperglobalization" – the result of the advance of telecommunications and the fall of economic barriers between countries; democracy; and national self-determination. It is possible, at most, to have two of these policies. For example, in order to have hyperglobalization and democracy, the nation state is renounced; To maintain the nation state and hyper-globalization, there is no room for democracy; And in order to combine democracy and the national state, exacerbated globalization must be excluded. See: RODRICK, Dani. The Globalization Paradox: Democracy and the Future of the World Economy. New York: W. W. Norton and Company, Inc., 2011, p. 200ff.

[32] A democratic organization presupposes the existence of a power to make collective decisions in a given group of people that is conferred on a very large number of components of that group. Such a provision is considered a right in so far as it is authorised by the Basic Law (Constitution). For more information see BOBBIO, Norberto. The Future of Democracy: A Defense of the Rules of the Game. Translation: Marco Aurélio Nogueira. 17th edition. São Paulo: Paz e Terra, 2020, p. 35 ff.

[33] The democratic organization of states, lately, has been clearly contested in several countries, being evident in Hungary, Venezuela, Thailand, Turkey and Poland, in addition to the United States, one of the main bastions in the defense of democracy in the world. However, political forces in most of these countries have shown strong resistance. For more information on the subject, see: LEVITSKY, Steven; ZIBLATT, Daniel. How democracies die. Trad, Jorge Mourinha. São Paulo: 20/20 Editora, 2018, p. 209 et seq.

[34] Power, as a socio-cultural phenomenon, corresponds to a kind of energy capable of coordinating and imposing decisions aimed at achieving certain ends. The State, as the highest representative of the social groups of society, is responsible for the exercise of political power, superior to all other social powers. This superiority is characterized by Sovereignty over external agents and Supremacy over all social powers within the same society. See: SILVA, José Afonso da. Course in Positive Constitutional Law. 40th edition revised and updated (until Constitutional Amendment No. 95, of 15.12.2016). São Paulo: Malheiros, 2017, p. 108 et seq.

vocation of permanence[35]. Deriving from this understanding, it is recommended to remember that in a Democratic State of Law, the Judiciary is fundamental to ensure social justice and equality before the law.

The protection of the Constitution by the Judiciary, then, gains special relevance to the extent that it seeks to safeguard the fundamental principles of the Charter, set forth in its Title I, which covers, in its article 1, the foundations of the respective system, which serve to confer unity on the entire legal system. It also covers, in its article 2, provisions on the organization of the State into three branches, and, in its article 3, the fundamental objectives of the Federative Republic of Brazil. Finally, Article 4 sets out the principles applicable to the Republic's international relations.

In this set of provisions, the importance and prestige that is conferred on the human person - or on the human being in a broad way - is striking. This understanding is amplified when we verify what is provided, in particular, at least four of the five foundations of the FC, when they refer to: (popular) sovereignty, citizenship; dignity of the human person[36]; and social values[37] of work and free enterprise. It also happens with three of the four fundamental objectives of the Republic, when they deal with: building a free, fair and solidary society; eradicate poverty and marginalisation and reduce social and regional inequalities; and to promote the good of all, without prejudice of origin, race, sex, color, age and any other forms of discrimination[38]. This emphasis of the Federal Constitution in relation to the fundamental principles of the Constitution, which emphasizes issues related to the human person, or to the human being, gives rise to very important paths or alternatives of solution that can be used in

[35] The supremacy of constitutional norms helps in the understanding of the role of the Constitution in contemporary Law, which can reflect different shades of political thought, with a liberal background, which protects a group of rights to freedom; or of a social background, which promotes material equality. For more information on the subject, see BARROSO, Luís Roberto. Course on Contemporary Constitutional Law: The fundamental concepts and the construction of the new model. 4th edition. São Paulo: Saraiva, 2013, p. 105 et seq.

[36] Dignity is a concept that has evolved over the course of history. Currently, after this concept has undergone various interpretations, especially in the realm of religion, philosophy and politics, it has stabilized in the sense of "ensuring the same intrinsic value for all human beings, and the special place occupied by humanity in the universe", in the words of Barroso (2016). Thus, there is the meaning of Human Dignity, which underlies the idea of human rights, evidenced fundamentally in the conceptions of rights to liberty and rights to equality. See: BARROSO, Luís Roberto. The Dignity of the Human Person in Contemporary Constitutional Law: The Construction of a Legal Concept in the Light of World Jurisprudence. Translation: Humberto Laport de Mello. 4th Reprint. Belo Horizonte: Editora Fórum, 2016, p. 112 et seq.

[37] The term social is an adjective that refers to something that belongs to or is related to society, which can be understood as a group of individuals who share the same culture and interact with each other, forming a community. In turn, the idea of social sciences is about the study of different aspects of man's life and history, while social classes are composed of people who have similar customs, economic backgrounds, and interests. With the passage of time, the so-called "social" issues began to have significant relevance to the organization of society and, thus, began to appear in the constitutional charters of several countries in the form of social rights. See: MORAES, Alexandre de. Constitutional law. 27th edition revised and updated up to EC No. 67/10 and Binding Precedent 31 - Includes Laws No. 12,016/09 (Individual and Collective Writ of Mandamus) and 12,063/09 (ADI-Omission). São Paulo: Atlas, 2011, p. 206 et seq.

[38] The retired Justice of the Supreme Court, Carlos Ayres Brito, weighs in on the importance of these principles. It usually refers, for example, to the above-mentioned grounds as a five-pointed star, denoting the unity, importance, and far-reaching nature of its provisions. As for the fundamental objectives of the Republic, the minister usually mentions them as the four cardinal points of the Brazilian constitutional framework, also giving them importance. In the wake of these analogies that border on poetry, the Minister insists in the course of his work to highlight the Constitution as the most fundamental right and as the greatest representation of the humanist commitment of our times. For more information on the subject, see: BRITTO, Carlos Ayres. Humanism as a Constitutional Category. Belo Horizonte, Editora Fórum, 2010, p.87 et seq.

the forwarding of discussions in the chambers and higher forums in the Judiciary of the Country. Such an understanding can be invoked even in discussions that involve difficulties and clashes of positions with greater complexity, as occurs in the case of situations that deal, for example, with conflicts of fundamental rights norms,[39] or discussions about *hard cases*[40] in general.

Currently, there are many challenges facing our Democratic Rule of Law[41]. The following can be mentioned: the environmental issue and all the dilemmas associated with it, such as limitations on deforestation on private property, indigenous lands, pollution of rivers, lakes and seas, greenhouse gas emissions, among others; drug liberation; drug control and vaccination policy; gender rights issues; conflicts of constitutional norms between the right of [42] freedom of expression versus the right of image; regulation of rights related to the development and use of technologies with the intervention of Artificial Intelligence. This list is not exhaustive, but it presents some important challenges that the Democratic Rule of Law and its institutions face.

In any case, it is necessary to highlight the organization of Brazil as a Democratic State of Law that honors the participation of the people in the political process, giving them the opportunity to make decisions that influence the direction of the Nation. The Federal Constitution and its principles, the Judiciary and its attributions of control of constitutionality, and the centrality of human values in the institutional framework are also honored.

4 CHALLENGES TO REGULATING ARTIFICIAL INTELLIGENCE

Although it does not deal specifically with AI, but with *robots* (or robots), the famous author Isaac Asimov, noted for his engagement in science fiction literature, proposed to regulate the performance of these machines in his work Vicious Circle. Thus, he proposed such regulation in terms

[39] Fundamental Rights Norms can be characterized as principles or as rules. The distinction can be made by the use of different criteria. One of them, which should be highlighted, is that of Generality, which considers Principles as norms with a high degree of generality, while Rules have a corresponding lower degree. For more information, see: ALEXY, Robert. Theory of Fundamental Rights. 2nd edition. Translation: Virgilio Afonso da Silva. São Paulo: Malheiros, 2011, p. 79 et seq.

[40] The expression Hard Case, in Law, refers to cases that present complexities and challenges for the judging agents. They are characterized by three situations: when there is no rule applicable to the case; when there is more than one rule applicable to the case; or when the solution found causes extreme strangeness to customs and collectivity. Thus, the solution of cases in this situation is complex, and it is necessary to consider a large number of factors and legal principles that may support the decision to be made. Legal philosopher Ronald Dworkin did much to popularize the term, arguing that such cases should be resolved through the use of moral and ethical principles, rather than applying rigid legal rules. An example of this expression can be found in DWORKIN, Ronald. The Rule of Law. 2nd ed. São Paulo: Martins Fontes, 2007, p. 158.

[41] This condition is based on the homonymous principle from which other principles derive, such as the Separation of Powers, political pluralism, isonomy, legality, and human dignity. For some authors, this last principle would even have a special position among the others. See: MENDES, Gilmar Ferreira; COELHO, Inocêncio Mártires; and BRANCO, Paulo Gustavo Gonet. Course in Constitutional Law. 2nd edition revised and updated. São Paulo: Saraiva, and Brasília, Instituto Brasiliense de Direito Público, 2008, p. 148 et seq.

[42] The existence of conflict of norms (and principles) is not uncommon in the world of Law, considering the large number of norms in force and the evolution of society, which requires updating of legal positions. It is up to the Law to provide ways and criteria to solve this antinomy and harmonize the texts and legal understandings. For more information, see DINIZ, Maria Helena. Conflict of Rules: According to the new Civil Code (Law No. 10,406/2002). São Paulo: Saraiva, 2003, p. 12 et seq.

of the so-called Three Laws of Robotics, which provide as follows: 1) a robot cannot harm a human being or, by omission, allow the human being to suffer harm; 2) a robot has to obey the orders received from human beings, unless they contradict the First Law; and 3) A robot has to protect its own existence, as long as that protection does not conflict with the First or Second Laws. These laws seem pertinent to protect humans even if they were not applied to robots, but to AI, as understood in this work (coupled or not to robots). But would they be enough to guarantee such protection?

Perhaps having this concern, the author himself has revealed in his stories that, if this technology is used ethically[43] and responsibly, there is no reason to fear it. The problem, in this case, lies in how to ensure that people, in general, will undoubtedly use technology ethically, and responsibly.

Leaving aside the fantasy of fictional stories, it is important to identify feasible and pertinent normative solutions to potential problems that may arise from a more effective and comprehensive presence of mechanisms that contain AI devices in their operation. One way to achieve greater presence and continuity in the adoption of ethical behaviors in the use of AI, at least in the field of Civil Law, refers to the adoption of effective means of accountability, whether objective or subjective,[44] due to the misuse of AI (or for its use in a way that generates socially undesirable results). The establishment of clear norms with ethical concern by legislative bodies, and the effective monitoring and compliance with these norms by evaluating and judging bodies could ward off opportunistic wills and desires that could provoke improper or irresponsible uses of technology, removing risks associated with them.

In this context, it would be appropriate to know who is responsible for undesirable results resulting from AI interventions, which could be provided for in norms, jurisprudence or other sources of law, but which is not always easy to identify. Thus, this responsibility could be addressed to the one who planned the creation of the AI. Or it could be attributed to the one who financed its creation, or to the one who worked in its operation, as controller, or in its maintenance, preventive or corrective. It could also be linked to its owner, if it were recognized as an asset belonging to him, being that individual [45]or company - legal entity[46]. Or it could be associated with all of these, with equal or

[43] In a discussion of ethics, Ronald Dworkin points out that people can only be held accountable for the acts they do when they control what they do. If technology escapes the full control of human beings, how then could they be held responsible for the results of their intervention? For more information see: DWORKIN, Ronald. The Fox and the Porcupine: Justice and Valor. Translation: Marcelo Brandão Cipolla. São Paulo: WMF Martins Fontes, 2014, p. 334 et seq.

[44] These types of liability are found in the context of the Theory of Civil Liability, in GOMES, Orlando. Liability. Coordinator: Edvaldo Brito. Revised, Updated, and Expanded. Rio de Janeiro: Forense, 2011, p. 83 et seq.

[45] Individuals are understood in the legal environment as human beings, subjects of rights and duties. See: MONTORO, André Franco. Introduction to the Science of Law: Justice; Law; Faculty; Social Fact; Science. 33rd edition ver. and updated. São Paulo: Ed. Revista dos Tribunais, 2016, p. 553 et seq.

[46] Legal entities acquire personality by registering their act of incorporation of the company in the proper registry: in the case of the Business Company, in the Boards of Trade of the states; in the case of a Simple Company, in the RCPJ. The enshrinement of personality rights in the CCB is the result of social and legal transformations, which culminated in the idea that the new center of the legal system is the human person. For more information, see MONTORO, André Franco.

different weights as to participation in the corresponding responsibility. However, it is still worth arguing: what if the "problematic" AI had been the subject of a serial production by a company? Would the entire series of these produced devices be compromised?

Thus, it can be inferred that in each of these hypotheses the characterization of the responsibility of the concrete case involves many details and complexities, and it is naturally difficult to identify who would be responsible, especially due to the autonomy of intervention in each case. Thus, the commission of injustices always seems to be lurking.

In a different way, only in terms of ideas, and following a different line of reasoning, is it possible to imagine the introduction into the national legal framework, in the context of the civil sphere, of a new type of personification[47] for the purposes of liability. In the mold of the existence of the Individual and the Legal Entity, a typification of "Digital Person" could be created. This type of person would encompass all AI-controlled equipment, and could count on its own *modus* of accountability, due to socially undesirable results of its use, as a result of the provision of information that could harm third parties, or the performance of actions, reactions and omissions that would also cause losses or losses to others – still notably of a civil nature[48]. In this case, the creation of this type of personality could occur in a similar way to the process of creating the abstraction of the "legal entity" that took place in the past, and which was important for the evolution of Law, allowing the separation of the legal entity from the individual of its responsibles, conferring on those rights and obligations, in addition to giving them procedural capacity.

However, this option also faces obstacles. First, because it deals with technologies spread all over the planet, with global penetration, and a domestic solution that dealt with the subject could face very harsh reactions (including economic ones). It therefore calls for transnational regulation[49] on the subject. In addition, it should be noted that the creation of a specific digital personality for AIs projects

Introduction to the Science of Law: Justice; Law; Faculty; Social Fact; Science. 33rd edition ver. and updated. São Paulo: Editora Revista dos Tribunais, 2016, p. 565 et seq.

[47] Personification is the idea that a person, whether an individual (natural person) or legal entity (company, foundation, political parties, etc.) has the capacity to acquire rights and contract duties within society (in civil law). In the case of companies or associations, the legal personality confers on them a different existence in relation to their managers (partners, associates, etc.). It is, therefore, an individualized and autonomous legal entity. To see how these personalities emerge and end, see: MONTORO, André Franco. Introduction to the Science of Law: Justice; Law; Faculty; Social Fact; Science. 33rd edition ver. and updated. São Paulo: Ed. Revista dos Tribunais, 2016, p. 558 et seq., and 571 et seq.

[48] In the case of the criminal sphere of law, problems with AI can be solved, at the limit, even with the deactivation and disabling of the equipment (or all those that belong to its production line). But there are difficulties when it comes to criminal proceedings, as in the case of the production of evidence. See: AGUIAR, Daniel Ribeiro da Silva; and CONCESI, Maria Eduarda Mansano da Costa Barros. Technological innovations, new means of obtaining evidence and criminal and procedural limits. In Regulation 4.0: Challenges of regulation in the face of a new scientific paradigm. Coordination: Daniel Becker and Isabela Ferrari. 1st ed. São Paulo: Thomson Reuters Brasil, 2020, p. 359 et seq.

[49] Regarding transnational regulation on the subject, there are non-binding private regulation initiatives, related to *soft law*, which deserve to be highlighted: the General Principles of the Global Initiative on Ethics of Autonomous and Intelligent Systems; and the case of OCEANIS – Open Community for Ethics of Autonomous and Intelligent Systems. For more information on the subject, see the text by POLIDO, Fabrício Bertini Pasquot, New Perspectives for the Regulation of Artificial Intelligence: Dialogues between Domestic Policies and International Legal Processes. In Artificial Intelligence and Law: ethics, regulation and responsibility. Coordinated by Ana Frazão and Caitlin Mulholland. São Paulo: Thomson Reuters Brasil, 2019, pp. 196 ff.

them to a prestigious position in our legal world, which has been built and circumvented by human will and reason. In this case, the idea of "Digital Person" must be differentiated from the Legal Entity, because the latter is totally controlled by human will, and also does not match the growing fears that AI may occupy the place of dominance, currently played by human beings in our society, even though we may soon have to deal on a large scale with hybrid beings. such as cyborgs,[5051] which have AI components. In any case, this alternative needs further studies to be better evaluated as to its effects and forms of standardization and regulation.

So, what would be the path to be considered to regulate AI, which has the ability to make decisions autonomously, without control by humans? A plausible solution invariably involves the definition of premises in order to delineate and propose it. In this case, the following can be considered: the urgency and relevance of the matter; its growing potential for risk to the balance of social relations in the near future; the costs involved arising from the establishment of limits for the use of these technologies; and the role of the State, which is still very relevant as an organizer of these relations.

Incidentally, it is necessary to understand the cognitive development process of artificial intelligence, in addition to giving the Law the ability to understand legal facts in the digital society, considering the relevant presence of intelligent non-human beings in society. It is important to note that it is up to the Law to regulate these entities according to the aforementioned cognitive capacities and, if applicable, also according to a transnational policy shaped by a possible global public law and global governance, in order to balance the relations between general human interests and the reality of the use of these technologies.

It remains to be answered how the Law can be efficient to regulate the subject, without neglecting the importance of the civilizational advance we are going through. It must be able to reveal important values that are still agreed that the human being must continue to be at the center of the objectives of the organization of the world[52]. As a good path to a solution, it is considered opportune to pursue humanized, ethical solutions, considering the dignity of the human being and the fundamental principles of the country's Magna Carta, foundational foundations of our Law.

[50] Cyborgs are organisms that have organic and cybernetic parts, aiming mainly at improving capabilities, or correcting deficiencies, through the use of artificial technologies. For more information, see: Cyborgs exist (and you can become one!), available at https://casavogue.globo.com/Design/Gente/noticia/2019/03/ciborgues-existem-e-voce-pode-se-tornar-um.html, accessed on 10/08/2023.

[51] Recent advances point to the integration between the mechanical and the human with wide possibilities of advanced autonomy and performance, superior to today's human being. See: BARROSO, Luís Roberto. Technological Revolution, Crisis of Democracy and Climate Change: Limits of Law in a Changing World. Cambridge/MA: Harvard Kennedy School, Journal of Institutional Studies, 2019, p. 1278 ff.

[52] For some authors, there is a fear that it will be possible to achieve a full artificial intelligence, or a superintelligence, so that the human race is at risk. They argue that at some point an AI will be developed that is smarter than humans: this moment is called the Singularity. See: BOOTLE, Roger. The Economics of Artificial Intelligence: How AI is Transforming Work, Wealth, and Progress. Trad. Diego Franco. Rio de Janeiro: Alta Books Editora, 2021, p. 3.

5 HOW CAN CONSTITUTIONAL LAW DEAL WITH THE PROBLEMS POSED BY ARTIFICIAL INTELLIGENCE?

The rapid growth in the use of AI-controlled technological devices tends to result in increased chances of socially undesirable and even illegal situations occurring. Thus, the Law is called upon to provide solutions to such situations, seeking to organize society and its relations with new technologies, with the objective of reducing the inherent impacts felt by society, and to develop solutions that mitigate the risk of new occurrences of a similar nature. Situations of this type involve very advanced technologies, implying high technical complexity, which ends up being reflected in the requirements for response alternatives that must be provided by the competent entities, notably the State and its institutions[53].

Thus, institutions play a very relevant role in social organization, and their ineffectiveness allows socially undesirable practices to be consolidated, even if they are outside the law. In the case of the State, its organization in the form of a Democratic State of Law tends to favor the search for a solution more in tune with the desires of the corresponding society, to the extent that it allows the participation of the latter, which is more interested in a solution within the scope of the political process.

However, democracy is not an isolated attribute of this state organization that generates support for the solutions pursued above. The division of the government into three branches of government also contributes greatly to the equation of the issue. Thus, although the Legislative and Executive Branches have a relevant role in regulating and monitoring the use of new technologies, the performance of their functions in this context may be contaminated by external pressures, motivated by different arguments. It can be an argument, for example, the manifestation of economic interests that influence public opinion, which ends up influencing the behavior of the political decision-making bodies in these two branches of government, considering their dependence on majoritarian systems[54] regarding the access of their agents (politicians) to the corresponding positions.

As already pointed out here, solutions to the situation in question could involve, at least in the scope of Civil Law, the accountability of agents. This solution can be obtained, especially, through legislation or normative means (via the Legislative or Executive powers), but, given the above considerations, these options face limitations that must be weighed. In this context, the role of the Judiciary, especially its highest decision-making body, the STF, and its interaction regarding the

[53] Institutions correspond to the rules and mechanisms necessary for their compliance, pointing out limits and incentives to human action. See: BARROSO, Luís Roberto. Technological Revolution, Crisis of Democracy and Climate Change: Limits of Law in a Changing World. Cambridge/MA: Harvard Kennedy School, Journal of Institutional Studies, 2019, p. 1271ff.
[54] There is a broad discussion about decisions made in the Judiciary that face decisions made by legislators, political agents legitimized by popular choice. This is a difficulty of the Judiciary called "counter-majoritarian". See: BARROSO, Luís Roberto. The Control of Constitutionality in Brazilian Law: Systematic Exposition of Doctrine and Critical Analysis of Jurisprudence. 8th edition. São Paulo: Saraiva, 2018, p. 74 et seq.

effectiveness of compliance with the Federal Constitution is relevant[55]. Important reasons for rescuing the Magna Carta are, firstly, the importance of its Fundamental Principles, which bring its application closer to the pretensions of people in the studied case of AI, to the extent that such Principles prestige the human person in a broad way. This relevance of the Judiciary is in line with the institutional rise that this Power has undergone, a transition called contemporary constitutionalism, [56]which manifests itself in the judicialization of social, moral and political issues, and also in a certain judicial activism. The practice of this activism should be considered with some ceremony by the Judiciary so that it does not interfere in choices made by the legislator and so as not to discredit democracy per se.

Decisions about agent accountability, in the case of AI, require a lot of thought. Also for this reason, it is possible to consider that decisions in this regard can be satisfactorily dealt with within the scope of the Judiciary, including its ability to build understandings through a process of argumentation[57] among its members that, together with academic research, can contribute to the construction of a path that does not discourage technological development and, simultaneously, guarantee rights to human society within acceptable ethical standards.

The belief in the Judiciary as being able to provide satisfactory solutions to the problems arising from AI technology interventions in human life is not exhausted in the discussions promoted so far. It is also important to consider the evolution of legal interpretation at the end of the twentieth century, overcoming the dominant thinking until then. This movement included, especially, the overcoming of legal formalism, the incorporation of the post-positivist legal culture (eliminating the separation of Law and Morals until then promoted by Legal Positivism), and the [58]rise of public law and the centrality of the Constitution[59].

The above evolution has enabled a new interpretation for the so-called Hard Cases, as is the case with AI interventions that generate undesirable results for society. This new interpretation incorporates guiding principles into the analyses, such as solidarity and the dignity of the human person (the latter relevant to the defense of the interests of the human person), the understanding of how to deal with the collision between constitutional norms, weighting and legal argumentation. In this

[55] A new form of legal interpretation is advocated, overcoming classical conceptions. BARROSO, Luís Roberto. Democratic Constitutionalism: The Victorious Ideology of the Twentieth Century. São Paulo: Migalhas, 2012, p.3.
[56] The judicialization of politics elevates the institutional role of the Judiciary. BARROSO, Luís Roberto. The Judicialization of Life and the Role of the Supreme Court. Belo Horizonte, Forum, 2018, p. 43 et seq.
[57] There are several theories about legal argumentation. Relevant author who dealt with the subject was Alexy. See: ALEXY, Robert. Theory of Legal Argumentation: Theory of Rational Discourse as Theory of Legal Justification. Trad. Zilda Hutchinson Schild Silva - São Paulo: Landy, 2001, p. 211 et seq.
[58] This current of legal theory seeks to explain the legal phenomenon from the study of positive norms - the norms established by the sovereign authority of a given society. The most representative doctrinaire in the current is Hans Kelsen. See: KELSEN, Hans. Pure Theory of Law. Trad. João Baptista Machado - 8th ed. - São Paulo: Martins Fontes, 2009, p. 1 et seq.
[59] This analysis can be found in a text by BARROSO, Luís Roberto. Course in Contemporary Constitutional Law: The Fundamental Concepts and the Construction of the New Model. 4th edition. São Paulo: Saraiva, 2013, p. 297 et seq.

context, the interpreter of the norm is empowered, and has some discretion to decide. In any case, good doctrine recommends that such decisions be duly justified by the responsible judge.

This whole plot allows the premises previously listed as being relevant for a satisfactory and effective regulation of the undesirable effects of AI to be met. First, it is possible for the Judiciary to apply these ideas by weighing requirements of urgency and relevance to provide adequate and effective solutions to the situation. In addition, it is to be expected that the solutions to be provided will enjoy sufficient flexibility to deal with the growing potential for risk that the situations faced impose. In addition, the solutions may consider transaction and other costs arising from the establishment of limits for the use of the respective technologies. Finally, with the use of new constitutional interpretations, the Judiciary can treat the State as a guarantor of a balance between complex relationships that abound, that is, between the claims regarding the use of AI in a broad way, and the desires of people in general, based on the search for the defense of human rights and, in particular, respect for the dignity of the human person.

6 FINAL COMMENTS

There are many challenges for Law in the face of the problems arising from the rise of Artificial Intelligence in today's world. It is to be expected that part of these problems are related, at least from the perspective of civil law, to the difficulty of holding agents accountable for socially undesirable situations associated with the results of AI-driven technology interventions, with autonomy, without direct human intervention in decisions. Now, it must be considered that people can only be held responsible for the acts they perform when they control what they do. If AI technology can escape full control by humans, how could a human being be held accountable for the results of AI intervention? These questions require a great deal of thought. There are, therefore, gaps that require analysis and reflection on the capacity of the Law to deal with them.

In this context, it should be noted that Brazil is organized in the form of a Democratic Rule of Law, from which it is inferred that there is a participation of people in the political process, from which it is also concluded that the human being is relevant as an agent of change and his centrality in the objectives sought by the whole society. The Brazilian Constitution has supremacy over other laws and norms in the legal context of the State, and plays a vital role in the search for social balance, by reinforcing the centrality of human values (such as Dignity) inspired by its fundamental principles.

It should be concluded that this discussion did not seek to deal with concrete cases, nor to propose objective or specific solutions to social problems that may arise with the advent of AI. Rather, we sought to identify plausible and reliable ways to deal with the issue, considering above all that we are living in a stage of these technological developments that still promises to reveal a lot. In such a context, the role of the institutions of a Democratic State of Law is important, built on the basis of a

Constitutional Charter that carries fundamental principles centered on human values, and that manages to establish a paradigm for the ethical behavior of society. Although one can count on such an institutional structure offered by national law, care must be taken to ensure that opportunistic wills and desires that may arise, causing improper or irresponsible uses of the aforementioned technology, do not proliferate or insist on manifesting themselves. The issue of accountability must then be addressed. To this end, the indispensable and relevant roles played by the Legislative and Executive powers are not enough, and the Judiciary is projected as an essential alternative for this.

Finally, it is important to mention that the degree of technical complexity that underlies such technologies and the sophistication of the cultural impact of their effects, requires the Judiciary to act, in its highest level judging instances, that contemplates a more open system of constitutional interpretation, based on principles and rules that reveal preponderant ideas of justice and the realization of fundamental rights. Therefore, the solution emerges from the situation by way of Constitutionalism.

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