

FOURTH INDUSTRIAL REVOLUTION, ARTIFICIAL INTELLIGENCE AND THE PROTECTION OF MAN IN BRAZILIAN LAW

QUARTA REVOLUÇÃO INDUSTRIAL,
INTELIGÊNCIA ARTIFICIAL E A PROTEÇÃO
DO HOMEM NO DIREITO BRASILEIRO

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ABSTRACT

The research aims to draw an approximation between the context of profound transformation characterized by the Fourth Industrial Revolution and the Law, investigating the (in) existence of legal rules for the protection of man in his individuality, the (in) sufficiency of individual rights and guarantees and the challenges for establishing new legislative frameworks. For this purpose, following the hypothetical-deductive method and the bibliographic review in books and periodicals on the topic as investigative procedures, the research is divided into three sections. First it decides to outline the context of the Fourth Industrial Revolution and its characteristic milestones, then the man / machine relationship and the challenges of using artificial intelligence, and in the last section, the legislative outlines related to the protection of man will be presented. As results, it is considered that the role of law in the context addressed will not necessarily be to establish new legislative frameworks, but, above all, to seek guarantees for the fulfillment of existing legislative precepts which should be reinterpreted in the light of the fourth industrial revolution.

Keywords: Personal data; Artificial intelligence; Fourth Industrial Revolution; Fundamental rights.

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RESUMO

A pesquisa tem por objetivo traçar uma aproximação entre o contexto de profunda transformação caracterizado pela Quarta Revolução Industrial e o Direito, investigando a (in)existência de regramentos legais para proteção do homem em sua individualidade, a (in)suficiência dos direitos e garantias individuais e os desafios para o estabelecimento de novos marcos legislativos. Para tanto, seguindo o método hipotético-dedutivo e como procedimentos investigativos a revisão bibliográfica em livros e periódicos sobre o tema, o trabalho apresenta-se dividido em três seções, primeiramente optou-se por delinear o contexto da Quarta Revolução Industrial e seus marcos característicos, na sequência a relação homem/máquina e os desafios do uso da inteligência artificial e na última seção são apresentados os contornos legislativos atinentes a proteção do homem. Como resultados pondera-se que o papel do Direito no contexto abordado não necessariamente será o de estabelecer novos marcos legislativos, mas, sobretudo, buscar garantias para o cumprimento dos preceitos legislativos já existentes que deverão ser reinterpretados à luz da quarta revolução industrial.

Palavras-chave: *Dados pessoais; Inteligência artificial; Quarta Revolução Industrial; Direitos Fundamentais.*

1. INTRODUCTION

Technology has permeated society's way of life, it is inserted in people's daily lives and sooner or later it will promote the transformation of humanity, whether in interpersonal relationships, at work, in everyday needs, what once sounded like prophecy every day it has come to fruition and technology has appropriated social relations, revolutionizing various spheres of human life.

Against of the dynamics of the transformations caused by the impact of technology, it is not yet possible to establish the breadth, depth and speed with which what will demand, with regard to the Science of Law, special attention to fundamental rights and guarantees.

Thus, with the objective of drawing an approximation between the context of profound transformation characterized by the Fourth Industrial Revolution and the Law, the research proposes to investigate the (in) existence of legal rules for the protection of man in his individuality, the (in)) sufficiency of individual rights and guarantees and the challenges for the establishment of new legislative frameworks.

Therefore, following the hypothetical-deductive method and adopting bibliographic review in books and periodicals on the topic as investigative procedures, it was decided to systematize the work in three sections.

First, the context of the profound technological transformations called the Fourth Industrial Revolution will be developed, adopting Klaus Schab's (2016; 2019) understanding as a theoretical framework, correlating the disruptive milestones in human existence with fundamental rights and the right to the free development of the personality.

In the second movement, the contours will be presented of artificial intelligence and the relevance of the availability of abundant data for its advances, highlighting, therefore, the man / machine relationship. Finally, in the last section, an attempt will be made to construct an overview of the convergent national legislation on the protection of man in his individuality, keeping the focus in the context of the profound technological transformations now investigated.

Thus, it is intended unveil paths for scientific deepening in the theme, in particular, analyzing predictive actions in the legal field and the importance of the scientific opening of the Law for dialogue with other sources.

2. ON THE CONTEXT OF TECHNOLOGICAL TRANSFORMATIONS: THE FOURTH INDUSTRIAL REVOLUTION

In the last 250 years, three Industrial Revolutions have changed the world and the basis of the transformations was based on technical and scientific advances. “In each of them, technologies, political systems and social institutions have evolved together, changing not only industries, but also the way people saw themselves in their relationships with each other and the natural world” (SCHWAB, 2019).

For approximation from the context of the fourth industrial revolution, we will seek to investigate the term exposed by Klaus Schwab (2016, p. 16), which points to the social transformations promoted by technology as profound, disruptive and capable of promoting a paradigm shift in the man’s way of life, this revolution is called by the author the “Fourth Industrial Revolution”, marked by the “fusion of these technologies and the interaction between the physical, digital and biological domains”.

In this revolution, emerging technologies and widespread innovations are spreading much faster and more widely than in previous ones, which continue to unfold in some parts of the world. The second industrial revolution has yet to be fully experienced by 17% of the world population, as almost 1.3 billion people still do not have access to electricity. This is also true for the third industrial revolution, since more than half of the world’s population, 4 billion people, live in developing countries without access to the internet. The mechanized loom (the hallmark of the first industrial revolution) took almost 120 years to spread outside Europe. In contrast, the internet spread across the globe in less than a decade (SCHWAB, 2016, p. 17).

The impacts of the fourth industrial revolution are narrated by the author as being of the most varied order, in the economy, in business, in governments, countries, regions, cities, in society as a whole and in the individual, an inflection point of the research. Especially in business, the so-called industry 4.0 is inserted in the transformation processes of the fourth industrial revolution and is in line with this context, given the advances in industrialization methods.

They need to be dealt within order to fully realize the potential of this fourth industrial revolution. Industry 4.0 will continue to embrace cuttingedge technology and techniques, and will open up new applications that will impact industrial sectors and tomorrow’s complex industrial ecosystems. Advanced ICT can and will contribute to the success of Industry 4.0 (XU; XU; LI, 2018).

Within the scope of the individual, the impacts are multiple and strongly affect identity and aspects related to it, such as the sense of privacy, the notion of ownership, consumption patterns, time devoted to work, leisure, professional career development. , the cultivation of

professional skills, relationships and the way we interact with each other, are described by Klaus Schwab (2016, p. 99).

The extraordinary innovations brought about by the fourth industrial revolution, from biotechnology to those of AI, are redefining what it means to be human. They are raising the current limits on life expectancy, health, cognition and competence in ways that previously belonged only to the world of science fiction. With the advancement of knowledge and discoveries underway in these fields, it is essential that our focus and commitment are focused on permanent ethical and moral discussions. Because we are human beings and social animals, we need to think individually and collectively about how to respond to topics such as life extension, projected babies, memory extraction and much more (SCHWAB, 2016, p. 100).

Predicting the consequences caused by the fourth industrial revolution in the individuality that surrounds human life is something that intrigues researchers around the world, sometimes leading them to utopias and dystopias that make the question even more intriguing. Fact that, the transformations tend to modify the space of life, initially marked by the relation man / nature, with the technological increments they tend to be marked by the man / machine relationship, not just any machine, but one capable of developing paths compared to human intelligence.

In the investigated context, the human right to the free development of the personality stands out, which finds its roots in the Universal Declaration of Human Rights, provided, in particular, in art. XXII and art. XXIX. Recognized for decades and aligned with construction history of Rights related to the human condition, the right to the free development of personality takes on a resized space, since the environment conducive to developing as a human being can be unique and complete, takes on contours that society will need to reconstruct, in particular, the understanding of security social, national, economic and cultural effort to promote a favorable space for the free development of the personality.

Regarding the right to the free development of personality, Lixinski (2006, s / p) considers that its birthplace in the Declaration of Human Rights enshrines the right to self-development, analyzed both by the privatistic aspect and the public aspect aligned with the position of the guarantor State of Rights.

On the same path as the right to dignity the right to free personality development is outlined by Moreira and Alves (2015, s / p) as being right,

Linked to the dignity of the human person, the free development of the personality expresses the idea of the person deciding his own life plan. The notions of freedom, autonomy and self-determination constitute the essence of the moral personality and the free development of the personality precisely portrays a dynamic and evolutionary conception of the human personality that develops freely through of acts, relations and legal business. This right protects and promotes the existential choices of each person, aiming at their own training and thus preserving their individuality and dignity in what the human being is, and in what he can be (MOREIRA, ALVES, 2015, s / p.)

For Nery (2015, s / p), this right is closely linked to an immense range of human phenomena, according to,

With regard to the so-called right to personality development (das Recht auf Entfaltung der Persönlichkeit), in the extensive list of phenomena that signal the existence of interrelations that can be classified with this epithet, we point

out: (a) freedom of action ; (b) bodily freedom of movement; (c) the workforce activity; (d) industrial activity; (e) vocational activity; (f) cultural activity; (g) freedom of association and assembly; (h) freedom of expression of thought; (i) the religious and ethical attitude and activity, and (j) the instruction and the use of training (emphasis in the original) (NERY, 2015, s / p).

Starting from the assumption of the subjectivity of each human being and of the freedom to constitute themselves in their entirety and uniqueness in a social and cultural nucleus, the context imprinted by the fourth industrial revolution is laden with ongoing positive and negative impacts. Thus, it is perceived that the paths to ensure the right to free development of personality pervade, therefore the guarantee of the “right to individuality (das Recht auf Individualität), celebrating a peculiar way of accepting man’s individuality, his own character and his approach to the ideal human image” (NERY, 2015, s / p) emphasis in the original.

Individuality, in Hubmann’s view (apud Nery, 2015, s / p), has three distinct spheres:

- (a) the individual sphere - name, honor, physical image, image of life, character image, spoken word and written word; (b) the private sphere - what the individual can subtract from the knowledge of the media, and (c) the secret sphere - actions, expressions, feelings that no one should be aware of. (NERY, 2015, s / p)

The protection of the pillars of the individuality of human life in the context of the fourth industrial revolution, must be preserved. Thus, it is noted that certain technologies have their impacts on human nature relatively already studied and mapped by the scientific community, or better understood by the academy as the case of the internet, however others because they are more difficult to specify the impacts yet do not carry the same clarity, as is the case with Artificial Intelligence (AI).

3. ARTIFICIAL INTELLIGENCE: THE MAN / MACHINE RELATIONSHIP AND THE IMPORTANCE OF DATA

According to Dora Kaufman (2018a, p. 19), artificial intelligence “provides the symbiosis between the human and the machine by coupling artificial intelligent systems to the human body”, such as prostheses in the brain, bionic limbs, among others. The author describes that the man / machine relationship is marked by the “interaction between man and machine as two distinct “species” connected (man-applications, man-algorithms of AI)”.

The term artificial intelligence was first introduced and conceptualized in 1955, by researcher John McCarthy, as “the science and engineering of making intelligent machines, especially intelligent computer programs” (apud KAUFMAN, 2018b, p. 10). Another famous definition was coined by Russell and Norvig, as “the study and conception of intelligent agents, where an agent intelligent is a system that perceives its environment and performs actions that maximize its chances of success” (apud KAUFMAN, 2018b, p. 10).

Analyzing in order to complement the above concepts Davi Geiger pointed out that McCarthy’s first definition lacked an explanation of what “intelligence” is. In Russell and Norvig’s definition, “definitions of what” success “is, what” perceiving a environment “, than” action “”.

Geiger thus composes his definition “Artificial Intelligence is the science and engineering of creating machines that have functions exercised by the brain of animals” (GEIGER apud KAUFMAN, 2018b, p. 10).

It is true that the increase in scientific research and industrial advances in the area of technology has expanded the use of artificial intelligence that has already been incorporated into the daily lives of societies, the advantages and facilities promoted by the algorithms are contrasted with the risks generated by the lack of mapping about the directions that the use of artificial intelligence may entail.

The relationship man-machine is so interwoven when referring to artificial intelligence, because at the same time man is a generator and consumer of data. “The exponential growth of data makes traditional programming unfeasible, inevitably referring to machine learning techniques”. Dora Kaufman (2018a, p. 29), teaches that “the learning algorithms are match-makers: they find producers and consumers to each other with the best of both worlds: the diversity of options and the low cost of the large scale, with the touch of personalization associated with the small ones”.

In this context, addressing privacy protection becomes a relevant and very sensitive topic. Davi Geiger (apud KAUFMAN, 2018b, p. 11), clarifies that “it is not just a matter of identifying algorithms, as the problem includes access to data, and the use and distribution of such data. Yes, the combination and correlation of data from different sources producing new personal information is done by algorithms, that obtain statistical correlations”.

Establishing the limits between the benefits and harms of services that carry artificial intelligence, as well as analyzing the extent to which they invade the privacy spheres of individuals are discussions that deserve to prosper as “the greatest risk lies in the combination and correlation of data originated in different sources, which generate new private data (statistical correlations) free of supposed privacy agreements” (KAUFMAN, 2018c, p. 49).

Reflection assumes relevance, for the development of artificial intelligence at levels of deep learning, the abundance of relevant data is essential, in these terms it is noted that the development of algorithms is not enough, it is essential that there is data

Fagan and Levmore (2019), provoke in the sense that “a good question to ask at this point is what level of confidence should be required before decision-making is entirely outsourced to the machine or before a human overrules the AI”, the authors suggest the importance of integration between humans and machines. “In terms of AI, and its ability to make predictive inferences, the problem of overfit is always present so long as an additional observation adds at least one new variable to consider”.

There are two reasons to think that AI is less likely than humans to be fooled by reversal paradoxes and statistical errors. The first, as suggested earlier, is that AI can handle big data. Reversals are more likely to occur when there is a high level of variance regarding the key variable under scrutiny in the underlying population. In the presence of substantial variance, a random sample is more likely to miss critical features of the population. The initial inquiry generates a biased result when examining the relationship among variables [...] The second advantage of AI in this respect derives from its ability to find connections in data; it looks for things that humans do not know, or have not the energy, to examine (FAGAN; LEVMORE, 2019, p. 29 -30).

Every movement of expansion of artificial intelligence requires the systematization of “new legal and regulatory frameworks”, therefore, two challenges need to be overcome within the scope of the rules of protection of the privacy of the individual and the sustainable use of artificial intelligence, they are, “the limited knowledge of the topic by legislators and the speed of ongoing transformations” (KAUFMANN, 2018b, p. 13).

Recently, when asked by the European Union about the challenges related to artificial intelligence, the company’s response was not to create new laws and regulations that would hinder technological development, asserted that “there are already many regulations and legal codes that are of technology-neutral in nature and therefore broad enough to be applied to AI, but it is worth assessing if there are gaps in the context of specific concrete problems”, they continue that once detected “any gaps identified must be addressed through principled rules of thumb based on existing legislation to avoid the creation of overly complex or conflicting legal obligations” (CHEE, 2020).

4. THE LEGAL PROTECTION OF INDIVIDUALS IN FRONT OF THE ADVANCES ARISING FROM THE USE OF ARTIFICIAL INTELLIGENCE

In the field of protection of the individual, user of technologies involving especially artificial intelligence, it is possible to highlight the general protection already provided for in the national legal system regarding privacy, in particular, art. 5, X of the Federal Constitution.

In Brazil, the regulations applicable in the case of personal data can be found in the Federal Constitution of 1988 and provide guarantees to citizens in regards to the inviolability of privacy, the confidentiality of correspondence, data and telephone communications, except in cases where there is a judicial order that lifts these rights” (SOARES; CARABELLI, 2019). The important right to informational self-determination, which is a constitutional protection provided in art. 5, X, of the Magna Carta, should be applied in social relations by virtue of its horizontal application by imposing the principle of maximum effectiveness of fundamental rights (SOARES; KAUFFMAN; SALES, 2019). Furthermore, the Law no. 12.965/2014, known as the Brazilian Civil Rights Framework for the Internet, in its art. 7 ensures users the rights to the use of the Internet in Brazil, amongst these rights, the inviolability of intimacy and privacy, the confidentiality of information flow for Internet communications, as well as the rights to the stored private communications. A new legislation was approved and entered into force in 2018 in order to provide greater protection to society in the face of such technological transformation, Law 13.709/2018, which regulates data protection (SOARES, et.al, 2020, p. 3)

In the context of the fourth industrial revolution, new social problems arising from the use of artificial intelligence (AI) or misuse of information and communication technologies (ICTs), entail the need to reinterpret the protection of fundamental rights in the light of new demands. In this regard, Mendes (2011, s / p) defends the fundamental right to the protection of personal data with a view to protecting personality of man, embodied in the articles of the Federal Constitution, namely, “the material right to the protection of personal data, based on art. 5, X, of

the CF / 1988, and the instrumental guarantee for the protection of this right, embodied in the action of habeas data (art. 5, LXXII, of the CF / 1988)".

The importance of protecting personal data, "requires the holder to have effective control over the circulation of your data in society, which can only be achieved by guaranteeing the rights of access, cancellation and rectification of the data" (MENDES, 2011, s / p).

Barrientos-Parra and Melo (2008, p. 208) indicate that the basis for national legislation must be aligned with European Union Directive 95/46 / EC, which establishes, "the protection of individuals with regard to the processing of personal data and on the free movement of such data ", in particular, the author points out the need" that information technology be at the service of the individual and that it does not harm either human identity, human rights, or private life, neither against individual nor public freedoms ".

O Marco Civil da Internet (The Civil landmark of the Internet,) Law nº 1.295, of April 23, 2014, right in the first article indicates the function of the rule to establish "principles, guarantees, rights and duties for the use of the internet in Brazil" (BRASIL, 2014), providing guidelines for the performance of public entities of the State in this field can be considered the first legislation pertaining to data protection in Brazil. Both in art. 3rd from Marco Of the Internet, as well as in art. 7 of the aforementioned law denotes the concern of the converging national legislator for the protection of personal data.

Advancing the guarantee of the fundamental right to the protection of personal data, Law No. 13.709 of August 14, 2018, called the General Law for the Protection of Personal Data (LGPD) establishes in the first article its central objective, namely, that of " protect the fundamental rights of freedom and privacy and the free development of the personality of the natural person "(BRASIL, 2018). However, the law that was scheduled for August 2020 was amended by Provisional Measure No. 959, of April 29, 2020, expanding the *vacatio legis* to May 3, 2021 (BRASIL, 2020).

In Brazil, specifically about artificial intelligence, in the National Congress the Bill No. 5051, of 2019, which "establishes the principles for the use of Artificial Intelligence in Brazil" (BRASIL, 2019a) and aims to establish the regulation of AI in the national territory and Bill No. 5691, of 2019, which proposes to institute a National Artificial Intelligence Policy, "with the objective of stimulating the formation of an environment favorable to development of technologies in Artificial Intelligence" (BRASIL, 2019b).

For the time being, the projects under consideration are under discussion and the possible threats of injury to legally protected assets related to the lack of control of artificial intelligence, whether in violation of privacy rights, or in discriminatory automatic decisions or without motivation and explanation, for example. For example, they should be protected by the current legislative framework.

However, it is necessary to to advance on the path towards the development of "legislation that protects society without impeding innovation; generic bans based on abstract fears will only increase bureaucracy and reduce productivity. Good legislation should encourage progress and avoid threats" (COZMAN, 2018, p. 39).

It is important not to forget that finding the link between legislative protection, progress and increment of artificial intelligence will require joint efforts from the various spheres of society, paths that must be followed both at the national level and in alignment with the international cooperation plan for the sustainable development of AI.

5. FINAL CONSIDERATIONS

It is noted that the technological transformations arising from the fourth industrial revolution point to the protagonism of the Science of Law in facing the protection of the uniqueness of human life, the guarantees for a safe social space for the free development of the personality. However, it is considered that the role of Law in the context addressed will not necessarily be that of establishing new milestones but, above all, to seek guarantees for the fulfillment of the existing legislative precepts, which should be reinterpreted in the light of the fourth industrial revolution.

State strategies through the establishment of public policies converging to the protection of individuals in the face of uncertainties of artificial intelligence can work with an important device for systemic coping with inequality and potential risks of worsening it as a result of AI and the very social context designed by the fourth industrial revolution.

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