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The Copyright Dilemma: the Question of Intellectual Property of AI-Generated Works¹*O Dilema dos Direitos Autorais: a Questão da Propriedade Intelectual das Obras Geradas pela IA**El Dilema de los Derechos de Autor: la Cuestión de la Propiedad Intelectual de las Obras Generadas por la IA*

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Abstract

The Information Age, especially the watershed promoted by Artificial Intelligence, has changed human relations: manufacturing has given way to algorithms, strictly human creativity has been reduced, and the creative environments promoted by AI, based on machine learning and big data, have expanded. This is the backdrop to the research problem of this text, which seeks to resolve the issue of the intellectual property of works generated by AI. The method of approach will be dialectical-deductive, adopting a bibliographic approach. Structurally, the text is divided into three chapters. Firstly, this article proposes a reading of the situations in which the automation of decision-making can generate positive results, based on the exploration of some important concepts for the study of the subject, and then analyzes the issue of making legislation compatible with the use of works created by AI. The conclusions of the research are drawn at the end.

Keywords: Artificial Intelligence; copyright; fundamental rights; non-human creativity.

Resumo

A Era informacional e, especialmente, o divisor de águas promovido pela inteligência artificial, modificou as relações humanas: a manufatura deu espaço para os algoritmos, reduziu-se a criatividade estritamente humana, ampliando-se os ambientes de criação promovidos pela IA, a partir do machine learning e da big data. Neste cenário, insere-se o problema de pesquisa do presente texto, que procura resolver a questão da propriedade intelectual das obras geradas pela IA. O método de abordagem será o dialético-dedutivo, adotando-se como procedimento o método bibliográfico. Estruturalmente, o texto está dividido em três capítulos. Em primeiro, propõe-se uma leitura das situações em que a automação da decisão pode gerar resultados positivos, a partir da exploração de alguns conceitos importantes para o estudo do tema, para, posteriormente, analisar-se a questão da compatibilização da legislação com o uso de obras criadas pela IA, e, ao final, são tecidas as conclusões da pesquisa.

Palavras-chave: Inteligência artificial; direitos autorais; direitos fundamentais; criatividade não humana.

Resumen

La era de la información y, en particular, el punto de inflexión promovido por la inteligencia artificial, han modificado las relaciones humanas: la manufactura cedió espacio a los algoritmos, la creatividad estrictamente humana se ha reducido, y se han ampliado los entornos de creación promovidos por la IA, a partir del aprendizaje automático (machine learning) y el big data. En este escenario se inserta el problema de investigación del presente texto, que busca resolver la cuestión de la propiedad intelectual de las obras generadas por la IA. El método de abordaje será dialéctico-deductivo, adoptándose como procedimiento el método bibliográfico. Estructuralmente, el texto se divide en tres capítulos. En el primero, se propone una lectura de las situaciones en las que la automatización de decisiones puede generar resultados positivos, a partir de la exploración de algunos conceptos importantes para el estudio del tema. Posteriormente, se analiza la cuestión de la compatibilidad de la legislación con el uso de obras creadas por la IA, y finalmente, se presentan las conclusiones de la investigación.

Palabras clave: Inteligencia artificial; derechos de autor; derechos fundamentales; creatividad no humana.

¹ Texto traduzido por Inteligência Artificial.

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1 Introduction

Artificial intelligence is currently at the top of political and research agendas around the world. With the emergence of any new technology, there is always a lot of enthusiasm and skepticism about its implications for society and the economy. While there is consensus among academics that the foundations of AI have been around for decades, recent technological advances are accelerating what AI can do today. Thus, it is in this environment that legal problems arise.

The authorship of copyrighted works has been a contested issue in the Brazilian legal system for more than 100 years. With the recent technological advancement, provided by the 4.0 Revolution, artificial intelligence has been increasingly used in the creation of images, videos, and texts, as a result of the use of supervised *machine learning* and the large volume of *big data*. Algorithms become, therefore, the source of creativity beyond the human being and its manufacture.

The National Congress (responsible for regulation) and the Federal Supreme Court (responsible for standardizing the law at the constitutional level), however, have been slow to recognize the importance of AI in the creative process, leaving room for interpretation about the copyright of non-human works, currently freeing them into the public domain. Such a measure can cause future legal problems, ranging from questioning property, use, and license rights, responsibility for undue use, sharing, and modifications, as well as the risk of bias, heuristics, and data bias.

Likewise, despite the fact that innovation has been one of the engines of human progress since the existence of humanity, it was only in 2015 that the National Congress promoted the modification of the constitutional text, so that it would be expressly included in the Federal Constitution as a common competence of the federative entities, to provide the means of access to science, technology, research and innovation (see art. 23, item V, with wording dated by Constitutional Amendment No. 85, of 2015).

The Copyright Law (Law No. 9,610), in turn, dates from 1998 and was last updated more than 10 years ago, through Law No. 5,988/1973. With the rapid growth of new technologies and the capability of modern computers, AI has secured a more prominent position as a driver of innovation in law. The recent popularization of AI has also made us aware of the fact that humans are no longer the only source of creative works.

Computers with (and sometimes without) human assistance are also capable of creating artistic or innovative works. They are programmed in such a way that they exhibit learned abilities that their creators do not possess. Thus, the creative works produced as a result of these acquired skills is a topic of debate, as they fall into a legal gray area and little has been done for the law to keep up with these innovations.

Faced with so many questions, it was necessary to shorten the field of research as much as possible. The present text addresses, therefore, the issue of intellectual property of works generated by artificial intelligence and the need to make a reading in the light of fundamental rights, especially the intellectual property right, of Law No. 9,610, of February 19, 1998, in order to include non-humans in the doctrine of copyright in Brazil. This reinterpretation would allow the current intellectual property system to continue to promote the progress of science and the useful arts, without a lengthy and controversial revision of the rules and guidelines currently in force.

It is not, therefore, a text that promotes a strictly technocentric analysis of the approach, that is, that has technology as its basis or center, insofar as it focuses on a legal problem that deserves to be addressed.

To construct the research object, the bibliographic review technique will be used consisting of explaining the problem through theories published in works of the same genre, with protection in books, periodicals and online news, starting from the general to the particular, allowing the construction of conclusions. The method used will be the deductive, a method consisting of using logical reasoning from deduction to obtain the conclusion and dialectic, since it aims to approach the discussions of social reality, through the analysis of a concrete situation. In order to assist the research, the use of legislation, doctrine and jurisprudence on the subject of the object of study will be used.

This study, therefore, aims to provide a critical analysis and a prospective angle on the relevant developments of AI, as a basis for well-informed and policy-oriented debates on the future of creativity carried out by AI and the main legal implications.

2 What you need to know about artificial intelligence, algorithms, *machine learning*, *big data*, and NLP

All human actions are based on anticipated futures. We cannot know the future because it does not yet exist, but we can use our current knowledge to imagine futures and make them a reality. The better we understand the

present and the history that created it, the better we can understand the possibilities of the future. However, to appreciate the opportunities and challenges that AI creates, we need a good understanding of what AI is currently and what will be presented to us in the future when it is widely disseminated in society.

AI can enable new ways of learning, teaching and education, and it can also change society in ways that new challenges arise. AI can widen skills gaps and polarize jobs, or it can equalize learning opportunities. AI can replace human creativity, generating images, videos, and texts of people, animals, and things that do not exist in reality, but that for it are real beings and things. The use of AI creativity can change the way the law deals with non-human creative works. All this is possible. Now is a good time to start thinking about what AI could mean for intellectual property law. There is a lot to question and the topic is not easy. However, it is important, interesting, and well worth the effort.

Since 2013, when Frey and Osborne estimated that nearly half of jobs in the United States would be at high risk of becoming automated, AI has been at the top of the agendas of those who perform the executive management of a company, entity, or organization. Many studies have replicated and improved this work, and today – 10 years later – there is a consensus that AI has generated major transformations in society, learning, the labor market, and the legal landscape. Many skills, which were important in the past, have already been fully automated, as well as many jobs and professions have become obsolete or have been transformed when AI has become more widely used. At the same time, there has been a huge demand for people with skills in AI development, which has increased the levels of competitiveness, salary levels and expansion of the area.

One of the main players responsible for the progress, improvement and growth of AI in the world, China, announced that its goal is to become the world leader in AI, developing a 150 million euro AI ecosystem by 2030. The United States Department of Defense invested about 2.5 million dollars in AI in 2017 alone, currently increasing the total investment to 20 million dollars per year (Tuomi, 2018, p. 8). In Brazil, the National Council of Justice (CNJ), in a survey carried out in June 2022, pointed to a significant increase in the number of AI projects in the Judiciary. The research presented by the then president, Luiz Fux, identified 111 projects developed or under development in the courts. As a result, there was an expansion of 171% compared to the survey carried out in 2021, when 41 projects were identified (Tuomi, 2018, p. 8).

The numbers only prove what Alan Turing, since the 50s of the last century, was already asserting: a computer with relatively small storage space could be effectively programmed to perform human tasks. In other words, in limited tasks, AI already surpasses human capabilities. In 2017, without any knowledge of the domain except the rules of the game, an artificial neural network system, AlphaZero, reached a superhuman level of play in the chess games Shogi and Go (Silver *et al.*, 2017). In the midst of self-driving cars, talking robots, and the avalanche of miracles of AI, it may seem easy to think that AI is rapidly becoming superintelligent and gaining all the powers – good and bad – that are attributed to it in popular culture. Of course, this is not the case. Current AI systems are very limited, and there are technical, social, scientific, conceptual, and legal limits to what they can and shouldn't do.

We will therefore begin by demystifying this expression, AI. Artificial intelligence is based on algorithms, which can be defined as “a description of the steps of solving a problem or the orderly indication of a sequence of well-defined actions”; being “the most elementary way to write logic”. (Velloso, 2004, p. 108). In a very simple but reliable way, algorithms can be compared to a ladder used to reach a certain point. The algorithm breaks down the activity (getting to the top) into smaller tasks (stepping one step at a time) until you reach the goal.

Popular and superficial culture usually refers to the human species by the expression “*Homo sapiens* – wise man”, due to the degree of our intelligence, which would differentiate us from other species. The field of AI goes much further; it tries not only to study the form of thought, but also to build intelligent entities (Russel, 2021, p.2-4). It turns out that the use of AI in law also involves understanding the limits of rationality and natural language itself, that is, that spoken and understood daily by human beings. Thus, to the extent that the way in which natural language is conceived, and also legal language, influences the very way of conceiving the legal phenomenon, it is possible to change the method and procedure for teaching the machine (Bellman, 1978).

A human-level artificial intelligence is designated as one that can perform most human professions, at least as well as a typical human being (Bostrom, 2016, p. 19). In other words, we need to learn what the limit will be, and if it exists, of the use of these intelligent systems in the legal scenario, as the task may be performed by the intelligent system, making room for cases in which there is room for interpretation.

Nevertheless, the paradigm shift in the information society, promoted by the use of AI systems, is mainly due to the creation of *machine learning* and *big data*:

Big data is a large volume of data, structured or not, that is collected from our browsing, social networks, purchase portals or in the use of any application. To get an idea of the amount of structured data today, Ademir Milton, in a survey published in 2018, pointed out that digital content reached 8ZB in 2016, growing by more than 300% since 2011 (Piccoli, 2018, p. 82). This was because everything carries with it, in one way or another, data. The words that make up this text, genetic codes, the *playlist* listened to in the car while the driver drives him to work, the digital prescription for a drug, absolutely everything is made up of data.

Machine learning is a method of data analysis that automates the construction of analytical models. It is, therefore, a branch of artificial intelligence based on the idea that systems can learn from data, identify patterns, and make decisions with minimal human intervention. Therefore, it is stated that there is no intelligent machine without prior capture of quality data.

Machine learning has been discussed for decades. The term has been around since 1959 and is used to refer to algorithms that can learn from data and make predictions (Samuel, 1959, p. 210-219). More recently, however, thanks to advances in quality data collection, in the era of *big data*, it has been possible to improve the machine learning approach, creating a deep learning system.

Machine learning and deep learning use algorithms, that is, a finite and accurate set of data combined in a step-by-step process to solve specific problems or answer questions. If there is “a structure that summarizes data patterns in a statistical or logical way, so that it can be applied to new data” we are facing a model. Thus, it is possible to assert that the difference between a model and an algorithm is related to the data that is used. “While the algorithm is an abstract method or procedure, the model is the result of the use of an algorithm in a specific set of data, through which input values are converted into output values, a procedure that can be applied to new data to make predictions (Boeing; Rosa, 2020, p. 20).

One of the deep learning methods, which has existed since the 1980s, but which has come to prominence in recent years, is neural networks. For deep learning to fully function, it was necessary to structure algorithms in a non-linear way, in “hierarchically organized” layers, which encode information in a non-linear way. global, processes it in parallel and are capable of generalizing, associating and learning” (Munárriz, 1994, p. 221). Artificial neural networks are built in a similar way to the human brain, more specifically in relation to the synaptic process, which is why they received this name (Luger, 2013, p. 232). For George Luger, a simple scheme of a neuron consists of a cell body with several branching protuberances, called dendrites, on a single branch, called an axon. Dendrites receive signals from other neurons. When these combined impulses exceed a certain threshold, the neuron fires and an impulse is propagated along the axon. The branches at the axon endings form synapses with the dendrites of other neurons. The synapse is the point of contact between neurons and can be excitatory or inhibitory, depending on whether they contribute, respectively, to increase the overall signal or to decrease it (Luger, 2013, p. 24).

Although the description is extremely simple, the steps mentioned capture the features that are relevant to neural models of computing. Human neurons are replaced by processing units arranged in successive layers (*layers*), which connect to each other, systematically relating according to the input or output of information (Medeiros, 2019, p. 36). In particular, each computational unit computes a specific function of its inputs and passes the result to other units of the network that are connected to it: the final results are produced by the parallel and distributed processing of this network of neural connections at their weight thresholds.

Generally speaking, every set of preordained tasks that come to accomplish a final scope can be considered as an algorithm, such as brushing teeth, for example. By opening the dental tube over the brush and pouring a certain amount of paste, closing the tube and inserting the brush into a quadrant of the mouth for so many seconds moving it, such an activity can already be defined as the execution of an algorithm.

When talking about AI, therefore, it should be borne in mind that there are two meanings of the expression: one strong and the other weak. In the first, a global substitute for the human mind is pursued, attributing to intelligent systems the ability to perform the same tasks as a human brain. On the other hand, the second develops intelligent machines to assist, optimize, or complement human labor, artificially imitating its brain, but without the pretense of developing its full potential (Medeiros, 2019, p. 36). The field of law is still supported by the second meaning (*weak AI* or *artificial narrow intelligence*), insofar as the decision factors are not fully absorbed by intelligent systems.

However, it is not enough to create an algorithm for the system to perform a certain task or solve a problem. A language needs to be developed in which the system can recognize the preordained coded instructions.

A program for natural language understanding (not legal) needs to use a large amount of prior knowledge even to understand a simple conversation. It is as Glenn Brookshear states, “before a machine can perform a task, an algorithm that performs it must be discovered and represented in a form compatible with the machine.” A representation that is compatible with the ingenuity of an algorithm is called a program. The programs and algorithms they express are called *software*; the machine itself is known as *hardware*. Therefore, experts in the field of information technology assert that the best products and/or services with artificial intelligence are those in which the same manufacturer delivers the *software* and *hardware*, as both components need to be in absolute harmony for the full functioning of the system. An example of success is the product delivered by the *Apple company*, whose *software* and *hardware* are made in the same place, by the same researchers.

With natural language processing (NLP), it was possible for the machine to communicate with human beings, in a language intelligible to us (Portuguese, English, Spanish, etc.). The improvement of programming languages allows machines to perform roles that were previously intended exclusively for human labor, enabling the development of technological resources based on the ability to imitate behaviors considered intelligent and, until then, only accessible to living beings (Medeiros, 2019, p. 32). The ability to use and understand natural language is not a fundamental aspect of human intelligence, but its automation has an impressive impact on the ease of use and effectiveness of computers themselves (Luger, 2013, p. 20). Hence artificial intelligence or simply AI.

In conclusion, in this chapter we define important concepts for the study of creative works generated by AI and their implications in the field of law. This overview reveals a new but promising field of study, whose main interest is to find a factual way to understand and apply intelligent algorithms to the solution of real problems in the field of law, especially in view of the possibility of using such technological resources for the benefit of law interpreters and those under jurisdiction.

The next step will be to analyze the Brazilian legal system, based on fundamental rights, in order to infer what conditions are necessary for us to have a regulatory framework on the use of videos, images and other elements created by intelligent algorithms. In other words, it is necessary to make the right to use these systems compatible, based on a reinterpretation of Law No. 9,610/98.

3 The need to reinterpret the Copyright Law so that “someone” has dominion over the creative works generated by AI

Informatics has been one of the great world novelties in recent decades. However, it is not a new science (Almeida Filho, 2015, p. 62). Contrary to what it may seem, computers have been communicating since the 50s of the twentieth century. These solutions applied to law are explained by the impossibility of human beings managing all the data that influence their lives, the accumulation caused by the technological development mentioned above, as well as by the restriction of information storage in the human brain.

It is explained: it is biologically impossible to teach someone everything or require an individual to work uninterruptedly. AI algorithms, on the other hand, can be programmed for this, performing routine activities of a human being, as well as those that require a long period of time, without breaks, through the use of simple automation. In the field of law, this can be verified, for example, when AI machines are used to check all judgments judged by a court, in a matter of minutes, until one is found that is related to the object of research. This task, which could take hours or even days for a human being, can be promoted in a simple “do it for me AI” command.

Society and, in particular, the legal system as designed by the Federal Constitution, demonstrates increased fragility with each new *gadget*, *software* or *hardware* launched by technology companies. This new reality, although it may raise doubts, uncertainties, and suspicions, can, on the other hand, produce expectations, mainly because AI algorithms have the ability to make inferences, connections, and correlations that, as stated elsewhere, are difficult or even impossible for human beings. The role of information technology, promoted by AI algorithms, is inexorably capable of broadening the horizon of legal operators, transforming *big data* and *machine learning* into important auxiliaries.

Although it is not the central focus of the text, one cannot forget the ethical aspects related to the absence of definition of the intellectual property of creative works generated only by machines, that is, that do not require human action.

As for the formal requirements, from a legal perspective, there would be no impediment to denying the use of these creative works, since in Brazil the Powers themselves claim for themselves tasks that constitutionally belong to another power. The country's Supreme Court itself has already used analogy in criminal law to create new crimes, overcoming the barrier imposed by the Constitution in its article 22, item I. Thus, the omission of the Legislature would not be the obstacle itself.

Apparently, when it comes to ethics in the use of AI, the obstacle is the issue of responsibility, as Luís Greco has been arguing: "the connection between power and responsibility seems to correspond to the structure of moral reality, since it is presented far beyond the law". The author continues: "this is where the decisive and insurmountable barrier to the robot judge is found: unlike the human judge, the robot is not responsible for what he decides, because this *he*, strictly speaking, does not exist (Greco, 2020, p. 44-45).

Certainly, the debate on whether or not to grant a legal personality to an AI system, that is, as an autonomous thinking entity, is necessary and urgent. If a program were to account for its creations, as well as to be transparent about its reasons, we would still have to solve the issue of responsibility, because the system would be deciding on the best path to be taken at that synapse without the rigors that permeate all law, that is, being sensitive to human values. How to solve this? Researchers have presented fundamental criteria for ethical AI, namely: the transparency, explainability, impartiality, privacy, robustness, and security of AI. Other measures to be added to this are the inclusion of the study of ethics in schools of technology and computing; and the adoption of policies for the formation of teams of programmers and designers that are increasingly diverse.

Ethics in the use of AI goes through a legislative and constitutional analysis that ensures the responsible development of new technologies. Thus, an AI without ethics can ruin solidly built foundations, on which the entire Brazilian legal system is based. In addition, it is based on the construction of foundations that can guarantee greater legal certainty, based on the idea of algorithmic liability. Well, with the evolution of society, socially relevant legal goods were incorporated into written texts, in an attempt to establish limits to state arbitration. In the search to evolve, we renounced absolute and unconditional freedom, in exchange for better living conditions, that is, in view of a social contract that would preserve the natural freedom of the human being, his well-being and his security. Called fundamental rights, that is, premises on which the legal system is based. Such legal assets declare rights and ensure measures that guarantee the declaratory provisions, ordering and interpreting the values fundamental aspects of that society.

The figure of intellectual property is included in this group of fundamental norms, deriving from the property right itself. These are guarantees that date back to the publication of the *Magna Charta Libertatum*, (a pact signed between King John and the barons, in England in 1215), which consecrated the submission of the English king to the *law of the land* – an expression equivalent to due process of law, according to the lesson of Sir Edward Coke (Coke, 1797, p. 50.).

Brazilian copyright derives from the *Droit d'auteur (civil law)*, in which there is a concentration of attention on the figure of the author of the work. Copyright protects the intellectual input and, therefore, establishes a close relationship with other areas of human knowledge. It is common, in fact, for there to be some confusion about the possible overlapping of protections, however, copyright protects intellectual work with artistic characteristics and aesthetic preponderance, in addition to elements of originality and minimum creativity (TCU, 2020, p. 28).

Copyright is the area of law that protects intellectual work, the result of artistic expression and human creation. The protection of copyright is provided for in article 5 of the Federal Constitution, in item XXVII – "authors have the exclusive right to use, publish or reproduce their works, transferable to heirs for the time established by law", and in item XXVIII, which provides that: "the following are ensured, under the terms of the law: (...) b) the right of creators, performers and the respective union and association representations to supervise the economic use of the works they create or participate in".

The right to image, on the other hand, protects the person himself, through the expression of his image, in its essence, in order to preserve the dignity of the human figure. The protection is also provided for in item X of article 5: "the intimacy, private life, honor and image of people are inviolable, ensuring the right to compensation for material or moral damage resulting from their violation".

It is possible that both copyright and image rights may apply to the same concrete circumstance, such as a photo or video of a person, with artistic, original and creative elements. Once these circumstances exist, the photographic/filming result will demand copyright protection, because it will be considered an intellectual work, but

there will also be exposure of the human figure, which will demand protection and preservation of dignity, under the protection of image rights.

The intellectual work, in turn, is any manifestation of the human spirit, expressed by any means and fixed in a tangible or intangible support, in a known or future known technology, ideally finished, because copyright is not responsible for protecting drafts, as can be seen from article 7 of the LDA, *in verbis*: “Protected intellectual works are the creations of the spirit, expressed by any means or fixed in any support, tangible or intangible, known or invented in the future (...)”.

Therefore, currently, for the law, it means that only the individual can be the holder of copyright, because only the human being has the capacity to intellectually elaborate a work, derived from his creativity and with traces of originality, *a priori*, as article 11 of the LDA itself: “Author is the natural person who creates a literary work, artistic or scientific.”

In this sense, Professor Luca Schirru (2020, p. 25) argues that “although works generated by artificial intelligence may have a high degree of originality, the traditional concept of authorship, linked to the idea of human creation, challenges the possibility of recognizing AI as an author in the field of copyright”. This highlights a legal and philosophical dilemma that demands a review of the current legal parameters, since we are facing a scenario in which ownership of products generated by AI challenges the applicability of traditional intellectual property rules.

Therefore, the first step would be to redefine the term “authorship” in order to include human and non-human authors within the denomination. Professor Ryan Abbot is one such strong advocate of legal rights for non-human authors and inventors. In an article published in 2016, the author argues that attributing invention and authorship to non-humans is an innovative way to encourage the growth and development of AI. In theory, this could prevent images, videos and speech created independently by machines from falling into the public domain, with a certain exclusivity for the programmers and companies behind these machines (Abbot, 2016, p. 1098-1099).

This theoretical solution for others may be controversial and lead to an uncertain future full of legal challenges and systemic abuses. This is because, as pointed out above, algorithms are not natural persons and cannot be held legally responsible for their acts in a Court. As such, they cannot be considered authors according to the guidelines established by Law No. 9,610, of February 19, 1998. Redefining copyright authorship to include AI systems would end up undermining the Brazilian legal system itself, creating more uncertainty by raising more questions than answers.

Consequently, an effective solution would require the creation of a legal copyright status for non-human creative works, as well as the need for incentives for AI creators. These two conditions are important and necessary to ensure the feasibility of using this content within constitutional and legal dictates, as well as the future development of the AI sector.

In the United Kingdom, legislation recognizes the possibility of copyright protection for creations produced by computers. According to the Copyright, Designs and Patents Act 1988, in the case of a literary, dramatic, musical or computer-generated artistic work, “the author shall be considered the person by whom the arrangements necessary for the creation of the work are made”. This implies that authorship is attributed to those who made the essential preparations for the creation of the work, usually the programmer or operator of the AI (Alves; Costa, 2023).

In contrast, in the United States, the approach is more restrictive. Recently, the US court ruled that AI-generated art cannot be protected by copyright. Justice Beryl A. Howell stated that “it is correct to state that human authorship is an essential part of a copyright claim.” In this understanding, works created by AI, even if developed by humans, are not considered productions of an individual and, therefore, are not eligible for copyright protection (Alves; Costa, 2023).

In the European Union, the issue is evolving. The AI Act establishes transparency rules and regulates the use of works in the training of AI systems, making it easier to license and pay copyright holders. Although it initially did not address authorial issues, the document incorporated these concerns in the face of the impact of generative AI tools on the creative process. The regulation classifies AI tools into risk categories and imposes specific obligations on providers of “General Purpose AI models”, such as ChatGPT and Midjourney, aiming to balance technological innovation and protection of creators’ rights (Vasconcelos, 2024).

It is therefore suggested to use an “amendment” to the doctrine of intellectual property rights as a way to transfer copyright to a human author. However, a change in the reinterpretation of the Copyright Act should diverge from the current approach that categorizes the relationship between an employee and an employer. In copyright, the ownership is of the creator of the work. In labor law, the ownership is the employer’s. The doctrinal and jurisprudential

construction has been in the sense that, while the employment contract is in force, there is a kind of mandatory license that allows the employer to use the employee's work, within the institutional purposes – functional disposition theory –. From the moment the employment contract is terminated, the use of the intellectual work by the employer would become illicit.

In this vein, there are three possible parties that may have claims to the copyright of AI-generated works: AI programmers, owners (large companies and investors in the AI sector), and end consumers. To determine the best possible author, it is necessary to take into account the overall social benefit of the copyright attribution process. In other words, it will benefit the most if the copyright is assigned to the AI programmer, the institution responsible for funding the development of the intelligent system, or the potential millions of end users of AI programming.

To assess the social impact of each party, we must start by determining the ultimate goal of assigning the copyright of AI-generated works to human authors. Next, we must evaluate which part contributes most to this goal. Finally, it can be deduced that the party that contributes most to the achievement of this objective

it is the most suitable for acquiring authorship of the creation generated by AI, whether it is an image, a video, a voice, a drawing, or any other artistic work.

Providing financial incentives to encourage the growth and development of the AI sector, as well as ensuring the dissemination of AI-generated works, is undoubtedly the ultimate goal of assigning copyright to human beings. The very idea of having a temporary monopoly on new works created by AI to promote innovation is enshrined in the Federal Constitution – article 23, item V, with wording dated by Constitutional Amendment No. 85, of 2015.

As a result, Brazilian society has been able to maintain its creative and innovative spirit during the past few years. Financial incentives in AI solutions should therefore be reserved for those who contribute most to the development and dissemination of AI. Algorithms, unlike human creators, have no need for financial incentives. Their performance does not depend on tangible rewards, but rather on the investment of time and expertise from AI developers and the financial support of the companies they work for. These two entities are the most important for research and development of the IT sector as a whole. Without their contributions, AI systems simply would not be available for use by the general public.

Since the end users (those who generate the images, photos, videos, and other creative works, through a command – usually a mouse click or an *enter*) have the least input into the early development of AI, their copyright claims are less convincing. In fact, attributing authorship to end users rather than creators/programmers could be detrimental to the growth of AI systems. By losing copyright to end users, owners and programmers can restrict the use of AI by third parties. These protection measures would allow creators to retain copyright in AI-generated works, but would also limit the implications of AI and the many benefits associated with it. As a result, society would likely see a significant decline in AI-generated works and a decline in the overall development of the AI industry.

Adapting Brazilian legislation to deal with the intellectual property of works generated by artificial intelligence (AI) would require an approach that balances technological innovation with copyright protection and legal certainty.

A possible adaptation would be to include in the Copyright Law (Law No. 9,610/1998) a concept of co-authorship between humans and AI, attributing proportional rights to the human creator who configured or supervised the AI. This could be inspired by the UK model, which recognizes as “author” those who made the necessary arrangements for the creation of the computer-generated work.

Inspired by the European Union, with its AI Act, which requires transparency in AI tools, classifying their risk levels, Brazil could implement a registration policy for works created with AI to ensure transparency and traceability. For example, generative AI platforms could be required to issue unique identifiers for each work generated, informing the degree of human intervention in the creative process.

In addition to regulation, it is essential to create public policies that encourage the responsible use of AI. Research funding programs could explore ethical and innovative ways to integrate AI into human creativity, while ensuring protection for traditional creators. As a practical suggestion, a flexible regulatory framework could be established, such as the creation of a “National Committee on Ethics and Intellectual Property in AI”, which evaluates the technological impacts and proposes periodic reviews of the legislation.

In short, granting incentives to AI developers and owners would be the logical solution to ensure the sustainable growth and sustainable development of AI in the field of law. While independent programmers can retain copyright on the work generated by their AI, copyright for works created by AI algorithms in large companies can be established through contracts, being assigned to the programmers or companies for which the *software* was developed. If owners

and developers choose to assign the copyright to the end users of the technology, this can be done through end user licensing agreements. In the long run, licensing may prove to be more financially viable for some companies, while commercializing AI-generated works may be more suitable for others.

4 Conclusion

This text was guided by the discussion about the intellectual property of works generated by AI and the need to make a reading in the light of Fundamental Rights, of Law No. 9,610, of February 19, 1998, in order to include non-humans in the doctrine of copyright in Brazil. This is because the last decades have brought great advances in the digital order, which have shortened distances and democratized access to information, modifying the deepest structures of our society. We have reduced the time for sending and receiving the most varied news; we have reduced the wait for legislative, executive and jurisprudential updates; We facilitate access to the multiple contents of the legal field, even for the most vulnerable and underprivileged.

On the other hand, the adoption of new technologies has also brought with it new questions. We start to question how a machine – an electronic component that operates through synapses between systems – is capable of performing acts that until then required human labor, acting faster and with less propensity for errors? And more: how does this same machine perform all these acts without even needing programming, that is, a human being who guides the guidelines to be followed to perform such activities, simply because the system is so intelligent that it can, from a large database, self-manage and learn by itself?

Without ignoring the problem behind the adoption of these intelligent systems in the legal field, machines have their own language, requiring adaptations to understand the rules of law. The fact is that the advancement in the use of artificial intelligence is already underway and that we are increasingly living with the creative work of AI.

We may have difficulty locating the answers to all these concerns. However, we foresee that the implications and challenges to be faced in the coming years by the dissemination of new technologies in the field of law – mainly, by the creation of intelligent algorithms, capable of operating by themselves without human interference – demonstrate that this is a path of no return. Better than competing with AI is to understand how it operates and, of course, take advantage of this panorama, full of possibilities in the legal field.

Therefore, we sought to restrict the scope of research in this text as much as possible, respecting the concept and functionalities of what is currently understood as algorithm. For obvious reasons, it is not intended to exhaust the theme. Putting an end to the discussion, behold, in the future AI models will be making inferences to the point of building by themselves the inferences (rationality) that today are still relegated only to human beings. Thus, through the confrontation between foreign and national law, it was possible to bring arguments and raise questions that must be observed:

The attribution of a copyright to works created by AI only transfers the problem of the responsibility of the user – who generated the image, video and/or speech to the programmer and/or programming company, violating the Brazilian legal system itself with regard to intellectual property.

That said, there are three possible parties that may have copyright claims to AI-generated works: AI programmers, owners (large companies and investors in the AI industry), and end consumers. To determine the best possible author, it is necessary to take into account the overall social benefit of the copyright attribution process. In other words, it will benefit the most if the copyright is assigned to the AI programmer, the institution responsible for funding the development of the intelligent system, or the potential millions of end users of AI programming.

Finally, Brazil can observe the advances of countries such as the United States and the United Kingdom, but adapt its legislation to local needs, considering cultural plurality and the impact of AI on different creative sectors, such as music, literature, and visual arts. By promoting these adaptations, Brazil would have a more robust legal system that is prepared for the challenges posed by the evolution of AI, allowing technology creators and developers to coexist fairly and productively.

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