

Generative Ai and Copyright: Who Owns The “Author” And How to Protect Rights?

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Abstract:

Artificial intelligence has revolutionized the world of creativity, as it has in many other fields. This has also raised several legal issues related to intellectual property and copyright, due to the ability of AI systems to generate original content, sometimes without any human intervention.

Can creations and innovations generated by generative artificial intelligence be classified as "intellectual works" subject to legal protection? Who is entitled to the title of "author" for content created using artificial intelligence, or even for content created through a combination of human work and artificial intelligence techniques?

These are the most important questions raised by the theme of artificial intelligence in the field of intellectual property, which we will attempt to discuss in this research paper, drawing on the perspectives of comparative jurisprudence in the absence of legal texts detailing these issues.

Keywords: *Generative artificial intelligence, copyright, intellectual property, originality, intellectual property.*

Introduction:

We often hear legal scholars repeat the phrase “the law is lagging behind technology.” “Le droit s’essouffle derrière la technologie,” an expression that accurately describes the relationship between technology and law. Technology always precedes law with its continuous and rapid developments, which requires the updating of its texts and articles to keep pace with new developments, in an effort to regulate all aspects of society.

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This requires redoubled efforts in such cases, firstly to establish a precise definition that clarifies the contours of these phenomena despite their novelty, and secondly because of the speed with which jurists and experts must work to adapt legal texts to these developments and update them so that they can regulate all areas.

Just as the internet revolutionized the legal arena yesterday, today a new technology has emerged in the field of information technology that raises many legal issues, which legislation must answer, after attempts at jurisprudence and comparative jurisprudence. This technology is "artificial intelligence," which has become very popular due to its ease of use and its ability to facilitate work and achievement in several areas.

Artificial intelligence, known as AI for short, is considered a technology with problem-solving capabilities similar to those of humans. Artificial intelligence at work mimics human intelligence and may even surpass it in many cases, as it can recognize millions of images in record time, write poems, and make predictions based on reading and analyzing data, etc. etc. It is a comprehensive term for the various strategies and technologies that have made machines outperform humans: such as self-driving cars, smart assistants, and facial and voice recognition applications...and more.

Modern organizations collect massive amounts of data from diverse sources, such as smart sensors, statistics and data generated by various monitoring tools, and organized records.

Artificial intelligence technologies analyze all this data and use it to improve business processes effectively. Artificial intelligence makes programs smarter to better handle data and solve more complex problems in our daily lives, all in a very short time.¹

Perhaps its most well-known applications include "diagnostic assistance" in the medical field, as well as robot-assisted surgery, which has freed surgeons from the need to open patients and instead rely on endoscopes, which provide precise vision beyond the capabilities of the naked human eye. This is in addition to processing and managing

¹ -Alain Bonnet, *Artificial Intelligence: Its Reality and Future*, translated by Ali Sabry Farghali, Dar Al Farouk, 1993, p. 12

healthcare records electronically, as well as medical education and training.

Artificial intelligence is also useful in the agricultural and farming fields in several ways: in crop monitoring, also known as "precision agriculture," which is based on collecting detailed data about crops, soil quality, weather, etc., and analyzing it to enable appropriate, automated decisions.

Examples include drones and robots that accurately identify weeds and eliminate them mechanically or by precisely spraying fertilizers. This allows for the rational use of fertilizers without harming human and animal health, while maintaining a largely healthy environment.

In addition, "smart irrigation" technology determines the optimal amount of water at the optimal time, allowing for double production yields at lower costs. In this regard, the University of Constantine has developed an artificial intelligence system that monitors plant health and detects pests early. This system uses visual recognition techniques to identify signs of infestation and predict them before they become severe, enabling farmers to take timely preventative measures before incurring significant losses.

Another example is the "Saqqai" experiment, conducted by two Algerian researchers in physics and robotics. These robots are self-driving robots used for irrigation and deep root fertilization. They are equipped with highly precise sensors capable of accurately determining soil moisture levels, providing plants with only the necessary amount of water. They also recognize signs of plant disease and distribute fertilizer in a controlled, targeted manner, eliminating any human intervention.

One robot can cover approximately 120 hectares in an environmentally friendly manner. Jurisprudence has attempted to define artificial intelligence. John McCarthy defined it as the science of engineering and manufacturing highly intelligent machines, especially smart and super-intelligent software. The International Organization for Standardization (ISO) also defined artificial intelligence as the ability of a functional unit to achieve performance that mimics human intelligence in its capabilities, such as thinking, perception, and learning. It is also defined as a branch of computer science that explores the development of

technology that enables computers and electronically controlled machines to possess capabilities that approximate the qualities and intelligence of humans¹.

The World Intellectual Property Organization (WIPO) has clarified that there is no single universal definition of artificial intelligence (AI), emphasizing that it is a discipline within computer science, as everyone agrees, that aims to develop systems and machines capable of performing tasks with the same efficiency and capabilities as human intelligence.

At the same time, it points out that the ability of AI systems to generate original intellectual works raises numerous legal issues. This is known as creative AI or generative AI. This is a modern technology that has revolutionized the way we think about creative expression. Computers can now learn from large datasets and databases known as big data and create new data that resembles, or even improves upon, the types they have learned. They can create new, never-before-seen texts, images, and even music simply by examining and deducing from databases.

One of the exciting aspects of generative AI is its ability to create unique and exceptional content that pushes the boundaries of traditional forms. With the rapid advancement of generative artificial intelligence (GAI), it has become imperative for legislation to determine the legal regime for these new creations. This also calls for a reconsideration of the legal system for intellectual property, as traditional texts designed for the era of human creativity can no longer keep pace with AI generators, which now generate texts, images, music, and other creations of the same quality as, or even better than, human creations. This raises the question:

To what extent are AI creations considered "intellectual works" subject to protection? Who holds the status of author and rights holder in this case?

In the absence of explicit legal texts, we will attempt to draw solutions from comparative jurisprudence and legal doctrine. This led us to adopt a comparative analytical approach, analyzing various

¹- Hammad, Alom E. Encyclopedia of computer terms: English-Arabic, Virginia, American Global Publishing, 1994, Pp.40-41

jurisprudential opinions and comparative judicial interpretations. This allows us to understand how different legal systems have dealt with the challenges posed by artificial intelligence.

In the first part of this research, we discussed the extent to which AI generators can be considered creative works worthy of legal protection under intellectual property principles. In the second part, we explored the issue of ownership rights to AI creations. This necessitated a discussion of the recognition of AI's legal personality, followed by determining who holds the title of author for AI-generated creations.

First: Protecting AI Generators: The Extent to Which They Are Considered "Intellectual Works"

To discuss the possibility of considering AI generators as creative works deserving of legal protection, we first examine the extent to which these creations meet the legal requirements for being considered "intellectual works" under intellectual property laws. We then examine whether they are actually subject to protection in their various forms and types.

A- AI Creations and the Conditions for Protecting Intellectual Works:

All legislation related to intellectual property around the world has defined the conditions that must be met for each creation to be considered an "intellectual work" that enjoys legal protection. Are these conditions met by AI-generated creations? Is it possible, in practice, to apply these conditions, set for classical works, to this new and special type of creation?

Egyptian legislators have defined intellectual works as any innovative work, whether literary, scientific, or artistic, regardless of its

method of expression (writing, drawing, sculpture, rhythm, etc.), and regardless of its importance and degree of merit¹.

This is the same as what we find in the content of Article Three (03) of Order 03-05 relating to copyright and related rights, under the title: "Protected works". In general, we find the same conditions in most legal texts relating to the protection of copyright and intellectual property: all creations in the field of copyright, i.e. creations in the field of literature, science and the arts, have specific protection conditions, namely external form and originality.²

Originality means the presence of each author's personal imprint on their creation, whether in terms of the idea, their style, or everything that reflects the personality of this creator in their created work. Originality means that this work truly rises to the level of creativity, and that it is not a mere repetition or copy of a previously existing work.

However, this does not mean that the work must be completely new and unprecedented in existence, as is the case with patents. Rather, it is sufficient for it to display the personal stamp of its author and be distinct from other intellectual works in one way or another. This is, in fact, a matter subject to the discretion of the judge. Comparative jurisprudence has endeavored to establish several criteria that determine the fulfillment of the condition of originality in works, such as adopting a different classification methodology and a distinctive style in written novels. Originality is not invention or novelty as much as it is a reflection of a set of choices by the author in the work he created³

While the concept of originality in the traditional sense is highly controversial for computer works and software, due to the difficulty of applying the subjective standard of originality to such technical works,

¹-Article 138/1 of Law No. 82 of 2002 promulgating a law to protect Egyptian intellectual property rights (amended by Law No. 178 of 2020).

²- This is stipulated by the legislator in Article 3 of Decree 03-05 relating to copyright and related rights. The first paragraph stipulates the requirement of originality, while the second paragraph states that legal protection is granted by mere creativity, i.e., bringing an idea into actual existence, regardless of the form or material modality in which it is achieved: sculpture, drawing, sound, image, writing, etc.

³- Walid Muhammad Wahba, Intellectual Property Protection for Artificial Intelligence Systems, A Comparative Study, Faculty of Business Administration, Arab University, p. 168.

the problem is even more acute for works generated by artificial intelligence applications. It is extremely difficult to apply the concept of originality and define its parameters to these new types of creations, given that the latter rely on subjective criteria, as we have previously indicated. It is also extremely difficult to reflect the author's personality in light of the technical nature of computer programs, whatever their nature. However, the author's personality may be reflected through their creative use of algorithms and the way they are programmed to deliver a creation that is distinctive in its performance and functions, etc.¹

As for the external form requirement, it means that the author must present their creation to the outside world in order for it to be recognized and legally protected. It should not remain merely the ideas circulating in the minds of its authors. This is regardless of the form or format in which these ideas were expressed: a novel, an oil painting, a photograph, an architectural drawing, etc., and regardless of their importance and value. This is emphasized in Article 7 of the Copyright Law, which stipulates that ideas must have a "structure" or "independent formal expression" to be legally protected. In the absence of this, they cannot be considered intellectual works under any circumstances.

By applying the aforementioned conditions to "artificial intelligence creative generators," we find that the latter lack any of them, and that both conditions can be met: they are original, innovative creations, possessing a specific form in which they were presented to the outside world.

Therefore, creations and innovations resulting from artificial intelligence can be considered "intellectual works" under copyright law and relevant international treaties. However, the question that arises is: does the fulfillment of the legal requirements for intellectual works qualify AI innovations for legal protection? This is what we will attempt to clarify in the second part of this section, where we discuss the eligibility of AI generators for legal protection under intellectual property laws.

¹- Aisha Yahya Shafqa, Legal Protection of Works Arising from Artificial Intelligence Programs, Master's Thesis, College of Law, United Arab Emirates University, 2021, p. 41

B - The Eligibility of Contents Created by AI for Legal Protection:

It is clear from the definition of AI that it is difficult to establish a comprehensive definition for it. This is due to the multiplicity of its fields and related sciences, on the one hand, and the multiplicity of its types. There is AI in the narrow sense, which is a branch that performs limited tasks within a specific and clear scope: such as facial and voice recognition, machine driving, etc., such as face-reading software, chess applications, drones, self-driving cars, and others. It is distinguished by its excellent performance of its assigned tasks, and with great precision. However, it does not possess the ability to think; it merely performs a set of pre-defined functions.

There is AI in the general sense, also known as strong or deep AI, which can perform many tasks while being able to think and plan independently of any human intervention. In this case, it approaches human capabilities, as is the case with artificial neural networks. There is also what is known as super-intelligent, or virtual, artificial intelligence, which performs tasks that exceed human capabilities, especially in terms of accuracy and innovation, where it is capable of analyzing and linking information to reach conclusions and issue judgments, and in which the machine is aware of itself and its capabilities exceed human capabilities, and it is the subject of great controversy because the majority of specialists see it as a threat to humanity¹.

In the absence of legal texts detailing this issue, we should examine the eligibility of various types of AI-generated content for legal protection based on intellectual property laws in other sources: jurisprudence and case law. The first European court ruling addressing the issue of copyright and AI was issued in 2023, a ruling by the Prague Court. The court ruled on the eligibility of AI-generated content for legal protection based on copyright. The court ruled that AI-generated content is not considered an intellectual work and therefore cannot benefit from

¹- Musab Thaer Abdul Sattar, M.D. Bashar Qais Muhammad, "Tort Liability Related to Artificial Intelligence," *Journal of Legal and Political Sciences*, 2, (12-2021), pp. 385-412.

any legal protection on this basis, as it is not the result of the individual creative activity of a natural person¹.

Doctrine found that the judge, although somewhat strict in this case by refusing to grant the status of "intellectual work" to the creation produced using artificial intelligence, did not completely close the door to the idea of legal protection for creations produced using this technology, as he restricted it to the condition of there being clear human involvement in using the artificial intelligence. This is something the judge lacked in this case.

This is the same approach we found in American jurisprudence, which holds that any content produced "entirely" by artificial intelligence cannot be protected under copyright².

The position of Chinese judiciary was embodied in the famous decision issued by the Beijing Internet Dispute Resolution Court on November 27, 2023. This decision is considered historic because it is the first decision to recognize legal protection under copyright law for creations produced using artificial intelligence technology, while comparative jurisprudence had previously rejected this on the grounds of the absence of "sufficient human intervention."

The Chinese judiciary held that the active role of the individual in creating a work—or lack thereof—is what justifies the recognition of copyright, and vice versa. This decision served as a cornerstone for comparative jurisprudence regarding the legal protection of creations created using artificial intelligence technologies. This decision will contribute to the development of a legal system with clearly defined provisions and principles in the future. The Beijing Chinese court considered artificial intelligence a technology that accompanies human creativity, likening it to the camera used by a photographer to create diverse photographic works³.

After we finish discussing the issue of protecting innovations generated by artificial intelligence, in the second section of this research

¹-Decision of the Prague Court (Czechoslovakia) on October 11, 2023-

²-Decision of the District Court for the District of Columbia (USA), August 18, 2023.

³- Decision of the Beijing Internet Court (Chinese court specializing in the resolution of internet-related disputes), November 27, 2023

paper we will talk about the ownership of rights arising from these innovations, which leads us to discuss the possibility of recognizing the legal personality of artificial intelligence, and whether it can be recognized as an author of these innovations. This is what we will see below.

Second: Ownership of the Rights to Creative AI Works: To Whom Do They Relate?

To understand and determine who owns the rights to AI creations and innovations, we must first and foremost address the issue of the "legal personality" of AI. This question must be addressed, as to whether this tool can acquire rights, bear responsibility for its actions, and be recognized as the "author" of the works it generates.

A-The Legal Personality of Creative AI Generators:

Social developments have led to the recognition of the legal personality of legal persons such as companies, associations, organizations, and others. This means that, in principle, legal personality has been granted to non-humans. The jurisprudential debate over the possibility of granting AI programs legal personality is not merely a figment of the imagination.

So why doesn't AI benefit from the same legal metaphor that established legal persons in the recent past to facilitate relationships within society? Can't legal persons and algorithms merge into one entity?¹

Perhaps one of the most prominent arguments in favor of AI personality is its ability to mimic human intelligence, thus coming very close to being human. Proponents of this trend also see the need to develop a new legal personality, similar to that established for legal entities. This would allow AI systems to enjoy electronic legal

¹-Muhammad Hassan Abdullah, Copyright Protection System and Challenges of Artificial Intelligence, Legal and Economic Challenges and Prospects of Artificial Intelligence, University of Science and Technology, Fujairah, United Arab Emirates, p. 1180.

personality, allowing them to be held civilly and criminally liable for their actions¹

We believe that the ongoing debate over granting legal personality to AI—despite its many opponents—has been largely settled since European legislation recognized, for the first time, the legal personality of AI-powered robots, holding them liable for damages resulting from their actions, all of which are independent of human decision-making.² This suggests that we are witnessing the beginning of a radical change in the world through the social and legal integration of a special type of person. What today are merely "things" in the eyes of the law could in the near future become "legal persons" possessing rights and bearing obligations similar to those of humans³.

The trend opposing the idea of granting legal personality to artificial intelligence believes that this idea is illogical, because, in their view, artificial intelligence is merely a tool that cannot exist or operate without humans, and it does not have an independent will for creativity. Proponents of this trend also criticize the idea of comparing and likening artificial intelligence to a legal person, which the law sometimes recognizes as an author, as in the case of a collective work or a work completed in the context of an employment contract. This is because the legislator intends in such cases "ownership of rights" rather than the legal person being an "author" in the true, actual sense⁴.

Amid a deep divide between supporters and opponents of the idea of granting legal personality to artificial intelligence, European legislation's recognition of the legal personality of AI-powered robots, by holding them liable for damages resulting from their actions, based on decisions made independently of humans, represents a qualitative leap

¹-Walid Muhammad Wahba, the previous reference, p. 245.

²-The European regulation on artificial intelligence (AI) of June 13, 2024 adopted by the Council of Europe on May 17, 2024

³-Thaima Samman, Benjamin De Vanssay: What to remember from the European law on artificial intelligence, Schuman Papers n°757, July 15, 2024

⁴- Refer to:

Muhammad Hasan Abdullah, the previous reference, p. 1181

Aisha Yahya Shaqfa, the previous reference, p. 84

that heralds radical changes to come and the possibility of recognizing new entities as legal persons who possess rights and bear obligations. Having concluded that the idea of recognizing the legal personality of artificial intelligence cannot be ruled out, does this mean that the status of "author" of artificial intelligence can be recognized for the creations and innovations generated by it? This is what we will try to clarify through the next section of our research.

B-Who is the "author" of AI creations?

After demonstrating that works generated by creative AI can constitute "intellectual works" that are subject to protection, like any other original creation with an external form, the question now becomes: who has the status of "author" of these intellectual works? Especially in cases where AI technology is the sole creator, without any human involvement.

Intellectual property legislation, both domestic and international, has defined who is considered the "author" of innovative works, indicating that, in principle, it is "the person who published the work in his name," unless proven otherwise. This is what Article 12 of Decree 03-05 on Copyright affirms this, stating that the author of an intellectual work is the natural or legal person who created it. Article 13 adds that ownership of the rights resides with the person who has authorized the work in his or her name, or who has made it available to the public in one way or another, such as by publishing it or displaying it on the internet, etc.

or who has filed a declaration in his or her name with the National Office of Copyright and Neighboring Rights (ONDA), i.e., who has registered the work with the Office as its owner and author. Registration with the National Office of Copyright and Neighboring Rights is not a condition for obtaining legal protection, as protection in the field of copyright is granted by the mere creation of the intellectual work, and there is no need to undertake any administrative procedures, as is the case with patents, trademarks, and other elements of industrial property. This procedure can only facilitate the author's proof of this status before the

courts in the event of a dispute. This is a general principle, and the burden of proof falls on anyone who claims otherwise.

The author is, in principle, the person who created the work, to whom ownership of the rights naturally resides, except in special cases specified by the legislator. Such as a collective work, in which the copyright belongs to the person who initiated its

Creation, and a work created within the framework of a work relationship or contractor in which the copyright belong employer or contractor¹

Therefore, the author of AI works is the "programmer" when interacting with the software to create their creation, or the "user" of the AI software who exploits the technology to create a new work. This does not, in fact, raise any legal issues. Rather, the issue concerns creations and innovations that involve both humans and AI simultaneously, or works generated solely by AI without any human intervention. In general, the current practice regarding ownership of intellectual property rights and who has the "authorship" status can be limited to three possible cases:

1 - A work created by a human with the help of artificial intelligence

If artificial intelligence is merely a means used by humans for creativity and innovation, then the author in this case is the natural person who created it. That is, the person using artificial intelligence technology to generate a new creation, whether the author of the program or simply the user who created it.

2 - A work created by humans and artificial intelligence at the same time

In some cases, an intellectual work is created by humans and artificial intelligence simultaneously, for example, when a creation is generated based on instructions and settings set by humans. In this case, jurisprudence holds that copyright can be considered to belong to both humans and artificial intelligence, although the concept of "co-creation with artificial intelligence" has not yet been clarified, even by the judiciary.

¹-Articles 18, 19 and 20 of Order 05.03 on Copyright and Related Rights.

Comparative jurisprudence currently relies on the idea of legal protection for creations created using artificial intelligence, provided there is clear participation by humans using the artificial intelligence. Will artificial intelligence be granted the status of author, just as it is for humans, given that both have participated in the creation? This is what we expect the judiciary and legislation to answer in the coming days.

3- A work entirely created by artificial intelligence

This refers to works and creations created without any human intervention, i.e. solely by artificial intelligence. This is often found in what is known as super-intelligent or virtual artificial intelligence, which performs tasks beyond human capabilities, particularly in terms of accuracy and innovation. Its capabilities exceed human capabilities, and it is currently subject to great caution and high secrecy across the world.

To date, any creation created entirely and independently of human intervention using artificial intelligence technologies does not qualify as an "intellectual work," and any creation created in the absence of a "human author" does not enjoy any legal protection under copyright and intellectual property law. The authorship status of artificial intelligence has also been denied because, in this case, there is no intellectual work.

Experts around the world agree that content generated by artificial intelligence is not protected by copyright due to the absence of personal creativity, which is considered an essential condition for recognition as an intellectual work. This is generally the case across the world, with some exceptions, such as the case in Singapore. While AI is not recognized as the author or inventor without human input, and protection is not granted to creative works unless there is sufficient human input, legal protection has been established for some works, such as audio recordings and films, that are generated without identifying a human author, provided the entity producing them is identified.

The question of who owns the legal rights to AI works remains controversial: Is it the developer? The user? The company that owns the system? In reality, there is no consensus on this, and it is therefore advisable to clarify this relationship with precise texts as well. In the Arab world, most legislation still lacks clear texts regulating this type of

content, despite the awareness of the need to update legal texts in this area.

Conclusion:

Artificial intelligence is the intelligence demonstrated by machines and software that mimic human mental abilities and patterns of operation, such as the ability to learn, reason, and make decisions in situations not explicitly programmed into the machine. This is achieved through learning from mistakes, studying probabilities and statistics, and utilizing other tools and data.

This concept has changed significantly today. We no longer use computers or technological tools and machines as we did in the past, when humans supervised and managed them. The idea today is for machines to operate autonomously after being programmed and equipped with everything necessary to make independent decisions, find solutions to problems, and produce new and creative works. Therefore, we have begun to question how to protect these works and who holds the title of author and copyright holder.

The most important findings of this research, which answer the central question posed at the beginning, are:

1- Artificial intelligence programs are high-tech digital works and can be protected as such under-copyright laws, just like information technology and computer programs.

2- The work produced by "creative artificial intelligence" programs is an act of creativity.

3- The prevailing legal opinion regarding whether "creative artificial intelligence" generators constitute protected intellectual property, according to both mainstream and comparative jurisprudence, is determined by the criterion of "human contribution" to the machine.

Therefore, we can say that AI generators are indeed intellectual creations worthy of legal protection. However, regarding who holds the title of author and, consequently, the right to own the rights, there is no legal text that definitively resolves this matter as of the writing of this research paper. Jurisprudence has established the criterion of "human contribution" as a fundamental condition for recognizing joint creation between humans and artificial intelligence.

We have also arrived at a number of suggestions, which can be summarized as follows:

1- The necessity of establishing a "Charter of Ethics for Artificial Intelligence" to regulate the areas of AI application in Algeria.

2- The legislator must not overlook the issue of creative artificial intelligence when amending intellectual property texts, particularly Ordinance 03/05 concerning copyright and related rights. It should draw upon the experiences of other countries, especially comparative jurisprudence, and clarify the following:

a) The definition of works created using artificial intelligence technology.

b) Defining the criteria for granting the status of "intellectual work" to works created using artificial intelligence.

c) Defining the issue of copyright ownership and who holds the "authorship" for works created using artificial intelligence in all cases. Legislators must establish clear boundaries for protecting the intellectual property of the programmer, the user, and the AI technology itself if it is recognized as a legal entity.

We conclude by questioning the bold step taken by European legislation—the first of its kind—in recognizing the legal personality of artificial intelligence. Is this a commendable precedent, or is it reckless and potentially harmful? Would it have been more appropriate to secure AI programs in case of harmful acts, rather than recognizing their legal personality and holding them accountable in such cases?