The Impact of Generative Artificial Intelligence on Copyrights

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Received: 14/04/2026 *Accepted: 02/07/2026* *Published: 31/07/2026*

Abstract:
Artificial intelligence is now capable of producing artworks with a degree of autonomy that goes beyond the stage of computer-assisted creation. Within the framework of what is now known as generative artificial intelligence, it is therefore important to explore how these creations fit into the copyright system by examining the extent to which the various stakeholders who programme and use artificial intelligence can be considered a series of co-authors? Or is it possible to attribute authorship to the AI system itself, and to reconcile classical concepts such as originality and the author's personal imprint with the new concepts introduced by generative AI?
Keywords: *Artificial Intelligence; Generative Artwork; Fundamental of Copyright.*

1. INTRODUCTION

Recent developments in the field of artificial intelligence, particularly in the area of machine learning, have led to the emergence of new models of automated processing, with tasks shifting from traditional data-driven artificial intelligence tasks to more advanced and creative tasks through generative artificial intelligence.

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Using the deep machine learning built on utilizing massive databases in a specific field to simulate human creativity, what is today known as generative artificial intelligence has become capable of producing realistic and innovative content across a wide range of fields such as texts, images, music, and even algorithms—all based on basic instructions from the user.

These innovative artworks have become controversial regarding their compliance with the basic principles of copyright, both in terms of the extent to which current copyright laws accommodate these new forms of artworks and in terms of the extent to which these works respect copyrights.

Through this article, we attempt to provide a comprehensive overview of the fundamentals of generative artificial intelligence and the concepts on which it is based. We will also try to explain the challenges posed to the legal systems that regulate copyright. The article is divided into two main sections: the first discusses the fundamental principles of copyright and includes the traditional concepts related to the author and the artwork, while the second discusses the new concepts introduced by generative artificial intelligence and the extent to which copyright laws are able to accommodate them.

2. The Fundamentals of Copyright Law

2.1 Protection

2.1.1 The work of art

The Third Article of the Order No. 03-05 of July 19, 2003N° 03-05, on copyrights and related rights stipulate that it’s allowed to every owner of an original literary or artistic work the rights as stipulated in this Order ».

The meaning of a "work" is not defined by the text, Instead, the text specifically identifies certain categories that it considers Artworks eligible for legal protection. These categories are mentioned in Article 4 of Order 03-05. The Algerian legislator followed the same line in defining what constitutes an Artistic Works as that adopted by the majority of legislations, such as French legislation (Article L112.2 of the French Intellectual Property Code) and Egyptian legislation (Article 140 of the Egyptian Intellectual Property Law), as well as many other international legislations, all of which were derived from the Berne Convention for the Protection of Literary and Artistic Works.

In order to define what is meant by a work, various legislations have established a general criterion: that these works must be products of the mind, regardless of the method of expression, in addition to two essential conditions to be eligible for protection: first, that the work be original, and second, that the creativity be expressed in a tangible form (WIPO, 2026).

Originality:

Originality is the sense of innovation, and this condition is considered crucial in order that a work can be protected. originality was not mentioned as a necessary condition in the Order 03-05, but rather as a description, as its fourth article stipulate that protection is granted to every owner of an original creation, and it did not refer to originality as a necessary condition except with regard to the title of the work in the sixth article: "The title of the work, if it is characterized by originality, enjoys the protection granted to the work itself." This is the same as what the French legislator went to (Article L.112-4 of the French Intellectual Property Code).

The law does not provide any definition of the originality of artistic or literary creativity, leaving this as is customary to the judiciary, this is advisable so that legislators do not fall into the trap of providing inadequate definitions that are out of step with global developments in several fields. It is clear that originality does not necessarily means that the creation is new, but rather that it bears the personal imprint of its author in such a way that it reflects the author's personality and ideas, regardless of the nature of the creation. The judiciary must examine the originality of each work individually, and even for a single work, it may be necessary to examine all of its components to determine its originality. The problem here lies in the vague and variable nature of describing a work as bearing the personal mark of its author, especially concerning artistic and literary works, where it is difficult to determine whether they bear the personal mark of their authors. Because of this difficulty, some courts have adopted a more systematic method in order to refine the criteria to be followed by looking only at the personal contribution made by the author or the effort he has put into his creation. This refine is particularly evident in the field of practical works, such as databases and computer programs. where the French Court of

Cassation ruled that for a program to be original, its author must demonstrate personal effort that goes beyond the simple execution of a mechanical and limited logic, and that this effort must be embodied in an individual structure, Court of Cassation in a famous ruling Babolat v. Pachot of March 7, 1986. (Macrez, 2019, p. 11)

despite this, the question of finding the authenticity of a work remains unresolved and may sometimes be subject to the subjectivity of judges.

Fixation on a tangible support:

Article 7 of Order 03-05 stipulates that "protection is not guaranteed to ideas, concepts, principles, methods, procedures, systems, methods of operations, or patterns associated with the creation of intellectual works in themselves, except in the manner in which they are incorporated, structured, or arranged within the protected work, and in the formal expression independent of their description, interpretation or explanation."

Therefore, for a specific literary or artistic creation to benefit from copyright protection, it must take a specific form. However, the question is: what is this form? The Algerian legislator have indicated multiple ideas through which the intended form can be understood, through terms such as the method of incorporating ideas into the work, their arrangement, or the formal expression independent of describing this creation. This is the same approach taken by the French legislator in Article L.111-2 of the French Intellectual Property Code, which stipulate that for an author to be protected, and even for the judiciary to require protection for a creation, it must take on a certain formality or a specific method of expression. This method of expression is not necessarily written, it may be oral, meaning vocal, the same approach of the Berne Convention, which stipulate in its second Article that: Ideas or concepts, such as a draft of a play, are not protected by copyright. for a work to be eligible for protection, it must be embodied in a tangible form, meaning it must be "perceptible to the senses. » (Berne Convention, Art 2), however of all this the essence of the form here remains unclear.

2.1.2 The Author

The author is the one who produces an artistic or literary work and therefore holds all rights. He must be a natural person (a human being) who creates the work, bearing his personal mark on it. The author of the artwork

can only be a natural person or a group of natural persons. he may be known, use a pseudonym, or remain anonymous, what matters is that the work is the personal product of human labour. Consequently, the author cannot be a legal person (company or association...) (Abdullah, 2018, p. 29).

Algerian law, which, like most Arabs laws, follows the French legal model, defined copyright in Order 03-05 on copyright and related rights. Article 12 stipulate: "For the purposes of this Order, the author of a literary or artistic work is considered to be the natural person who created it." However, the Algerian legislator acknowledged the possibility that Legal person can be considered an author, as the second paragraph of the same article stipulate: "A legal person may be considered an author in the cases cited in this Order." The legislator only addressed two of these cases in this text: the case of a collective work and the case of a salaried worker.

- Collective work: This is a work produced on the initiative of a natural or legal person under their management and supervision and published in their name (Article 18 of Order 03-05).
- Employee: The rights belong to the employer or the person who commissioned the work under a contract, provided that the work is used for the purpose for which it was produced, unless otherwise agreed (Articles 19 and 20 of Order 03-05).

2.2 Protected rights

The author has a right of ownership over his work as soon as it is created and brought into existence. This ownership right is exclusive against everyone and comprises elements which are moral and others which are economic. These opposing elements are different from each other, In terms of its nature and also in terms of the framework that governs them. This is what makes intellectual property rights in general, and author's rights in particular, a right of a special nature. (Juma'i, 2004, p. 5)

2.2.1 Moral rights

Moral rights are rights that are not related to the way the work is exploited, but rather to the person of the author. They cannot be waived, and they are not subject to disposition or prescription. there are four types of moral rights:

- Right to disclose the work: The author has the right to disclose the

work published under his own name or under a pseudonym, and he determines the manner and conditions of such disclosure. The author alone has the right to determine the timing of such disclosure and may choose not to disclose his authorship to the public. After the author's death, the right to disclose the work shall revert to his heirs, unless otherwise specified in his will. In the event of a dispute between the heirs, the judicial authority chosen by the initiator of the disclosure of the work shall settle the dispute. If all the heirs agree not to disclose the work and if this work is of importance to the national community, the Minister of Culture or his representative, or at the request of a third party, may notify the competent judicial authority to rule on the disclosure of the work (Article 22 of Order 03-05).

- Right to withdraw the work: This right is mentioned in Article 24 of Order 03-05, which stipulate: " An author who considers that his work no longer corresponds to his convictions may cease to make the work available to the public by exercising his right of repentance, or withdraw the work already published by exercising his right of withdrawal."

If the author chooses to withdraw his work, he shall be required to pay fair compensation for the damage caused to the beneficiaries of the rights waived. This is the same as the provision of Article L.121, paragraph 4, of French Intellectual Property Code.

- Right of paternity: The author has the right to have others respect his name as the creator of the work. Every author has the right to place his name on the work upon its publication, unless he wishes to remain anonymous.

- Right to respect the integrity of the work: Article 25 of Order 03-05 stipulate that the author has the right to respect the integrity of his work by preventing any harm to it, whether materially, such as making changes to it, or morally, such as distorting it in a way that harms the author's reputation or honour. In all cases, the author must prove such harm.

Characteristics of moral rights:

Different copyright protection codes stipulate that the moral rights of authors are closely linked to the author’s person. They are inherent to the

author's personality, are perpetual in nature, not subject to limitation (prescription), and cannot be transferred or disposed of. This is stipulated in Article 21, paragraph 2 of Order 03-05 and Article L.121-1, paragraph 1 of the French Intellectual Property Code.

The personal character of moral rights;

- The moral right expresses the paternity link that attributes the work to its author, that is, the natural person who is the source of the creation. An exception to this is the case of a collective author, which we discussed previously.

– The perpetual nature and non-prescription:

Moral rights never expire, even after the death of the author. These rights pass to the author's heirs and continue to exist even after the economic rights have expired and the work has entered the public domain. Moreover, these rights are not subject to prescription due to non-use.

– The inalienable nature:

The inalienability of moral rights is a direct consequence of their personal nature. They cannot be transferred or waived, which means that any agreement in which the author acknowledges that another party acquires these rights is considered null and void (Hamia, 2018, p. 73).

2.2.2 Economic rights

The Economic aspect of copyright primarily includes the material privileges that the copyrights holder can obtain, which are represented in a monopoly position for exploiting the work. This exploitation is guaranteed by law but is restricted by some exceptions.

This monopoly defines a set of exclusive rights that persist over time. Article 27 of Order 03-05 stipulates that the author has the right to exploit his work in any form of exploitation and to receive financial compensation in return. The second paragraph of the aforementioned article specifies the acts carried out by the author or authorized by them. These acts revolve mainly around reproducing the work by any means, making the audio-visual work available to the public through rental, and communicating the work to the public, whether through public performance, public recitation, or radio or audio-visual broadcasting.

- Right of reproduction: Reproduction of a work consists of fixing it on a physical medium in any form, as stipulated in Article 27 of Order 03 -05. It should be noted that the Algerian legislator did not explain these forms, while the French legislator added that these forms allow the work to be communicated to the public indirectly and mentioned some of these forms, such as printing, drawing, engraving, or photography, in Article L.122-3 of the French Intellectual Property Code

Furthermore, the author can monitor the reproduction of his work, prohibiting the use of certain copies while authorizing others. For example, an author may permit the reproduction of his work in print while prohibiting its digital reproduction online. Even if the copying is only partial, the Court of Justice of the European Union ruled in its judgment of 16 July 2009 that anyone who stores even a small portion consisting of eleven words of a protected work and then prints it out is infringing copyright. However, the final ruling rests with the competent court in each case to determine whether those words actually express the author's creativity or not. (Rivoire, 2021, p. 238)

Each method of reproduction requires its own specific license, which aligns with Article 87 of Order 03-05. This article stipulates that any publishing contract that fails to meet the agreed-upon number of copies per edition, the term of the assignment, and the territorial scope of exploitation of the work is invalid. This is also stipulated in Article L.131-3 of the French Intellectual Property Code.

The right to communicate the work to the public by any means: This right is defined in Article 27 of Order 03-05: The author has the right to communicate his work to the public through public performance or public execution, communicate the work to the public through audio or audio-visual broadcasting, communicate the broadcast work to the public by wire means, optical fibers, or cable distribution, or any other means of transmitting signals carrying sounds and images, communicate the broadcast work to the public by wireless broadcasting by an organization other than the original broadcasting organization, communicate the broadcast work to the public by means of a loudspeaker, radio, or television placed in an open space, and communicate the work to the public by any computer processing system.

Economic rights have financial nature, so they have characteristics that differs fundamentally from those of moral rights: they are transferable with or without compensation, they are passed on to heirs, and they are temporary rights (their validity expires after 50 or 70 years).

3. A new Concepts

In most current legal systems, copyright law aims to protect artworks that bear the imprint of the human being, considering them as the product of his mental work and creativity. However, in an environment like Artificial Intelligence (AI), the creator is not human because the work is created entirely or partially by AI systems that Prove a complete independence from humans

3.1 Generative AI

3.1.1 what is the Generative AI

Before getting to know generative artificial intelligence, it is necessary to take a look on the other types of Artificial intelligence that appeared and evolved before generative artificial intelligence:

Traditional Artificial Intelligence: It relies on machine learning models with predefined rules and algorithms, primarily used in sectors where tasks are repetitive, and efficiency and accuracy are crucial elements, such as manufacturing or data processing. it includes predictive artificial intelligence - which is capable of analysing past behaviours, discovering patterns, and predicting future outcomes with high accuracy- and interactive artificial intelligence - which relies on machine learning models and natural language processing to understand natural language and generate human-like responses. (https://www.microsoft.com/fr/ai/ai-101/generative-ai-vs-other-types-of-ai, 2026)

Generative AI, on the other hand, is distinguished by its systems ability to create content similar to artistic and literary works in their originality. These works can be texts, images, music, or videos.

So, we can consider that traditional AI is like a mathematician, as these traditional systems focus on the intelligent execution of a specific task. These systems learn from massive amounts of data, enabling them to make

decisions and predictions. For example, the DEEP BLUE system, which defeated the world chess champion (https://www.chess.com/article/view/deep-blue-kasparov-chess, 2026) , does not reinvent how to play chess; rather, it understands the rules and applies highly effective strategies, often surpassing those of the human mind.

As for Generative AI, it is like an artist, where generative AI systems are characterised by superior creative ability. They are capable of creating something entirely new, thus generating new data. They can create texts, images, videos, and music - in short, almost all art forms - based on the data provided to them. They can also provide multiple answers to the same question.

We can currently distinguish between generative AI systems for text, which are often chatbots (ChatGPT from OpenAI, Bard from Google, Claude from Anthropic, Jasper.ai from AIexplorer, ...); generative AI for images (Midjourney, Stable-Diffusion, Dall-E 2 from OpenAI, ...); and generative AI for videos (D-ID, Synthesia, Pictory, ...). In late 2023, Google announced its model "Gemini," which is supposedly multimodal and thus capable of processing any type of content: images, text, music, programming code, spoken language (Chartron, 2023, p. 12) ...

Despite the very significant advantages that generative AI offers, such as content creation and helping artists and developers explore new possibilities and innovative ideas, it faces certain challenges and limitations, particularly regarding the nature of the data it is trained on, which may include copyrighted materials, as well as ethical considerations. The ability of generative AI models to create realistic content raises ethical questions, especially concerning its impact on human society and the risk of misuse or manipulation environment, the creator.

3.1.2 Artworks generated by AI

In recent years, attention has been drawn to creative works in several fields that were created by or with the help of artificial intelligence: in 2018, the first painting by a group of French artists, called the Edmond de Belamy painting, was created using an artificial intelligence system. This painting was sold at the American Christie’s auction house for $432,500 . (Daffourd,

2026)

Artificial intelligence is not limited to producing images; it is also capable of composing music, and the results are often very impressive. Platforms such as AIVA (Artificial Intelligence Virtual Artist) and MuseNet by OpenAI which is a deep neural network created by OpenAI that can generate 4-minute musical compositions with 10 different instruments, and can combine styles from country to Mozart to the Beatles. (https://futuretools.io/tools/musenet-openai, 2026)

There is also a musical work called "Endless Forms", an electronic music album composed by Jukedeck, an AI program developed by OpenAI. The album explores a variety of musical styles, ranging from calm background music to dance music, and each track in it is unique.

Jukedeck also allows non-musicians to create music for audio-visual projects, games, or even for personal listening by choosing parameters such as tempo and style. The AI program then composes an original piece of music in few seconds.

3.2 Copyright law issues with generated works

3.2.1 works generated entirely by AI

Many countries that have signed the Berne Convention share the view that creation is a personal and subjective process, and that any entity other than a natural person (human), such as an animal or a legal peson, cannot be considered an author under the law.

The generative artificial intelligence systems we have seen previously, and many others, demonstrate how AI systems have become a powerful tool of producing works in all fields of arts that may satisfy the conditions for legal protection. This has led to a major debate about the attribution of rights to these works. For example, in the case of the painting Edmond de Belamy, the question was: should it be attributed to the French collective, to the programmers of the system, or to the system itself?

The first decision of its kind concerning artworks generated was issued by the US Copyright Office in the case of Ms. Kris Kashtanova on September 15, 2022. She had registered a work consisting of a comic book titled Zarya

of the Dawn. Initially, the office recognized her full rights over the comic book's title, text, and illustrations.

However, after some time, Ms. Kashtanova declared that the images of her comic book had been created with Midjourney, an artificial intelligence system. This information had not been revealed to the US Copyright Office at the time of registration. Consequently, the office informed Ms. Kashtanova that the protection of her work would be limited by excluding the images from copyright protection.

The office recognized her rights over the text, as well as over the selection, coordination, and arrangement of the elements composing the work. However, it considered that the images were not the result of human creativity and therefore could not be granted protection under U.S. copyright law. (Analla, 2026)

This decision provided a clear explanation that in order for a work to be protected, it must reflect the personal imprint of a human being, a condition that artificial intelligence cannot satisfy, and consequently, the absence of the creative author makes any search for the originality of the work meaningless.

3.2.2 works Assisted by AI

While current laws cannot protect works produced entirely by artificial intelligence systems because these works do not bear a human imprint, some believe that protection can be provided for works created with the help of artificial intelligence, by acknowledging their attribution to the system designer who produced the work or by attributing these works to the human who manages and controls the systems.

The system designer is the author:

Supporters of this view believe that copyright should belong to the designer of the artificial intelligence system that generated the artwork. In other words, the person who wrote the algorithm for the AI system. The idea behind this opinion is based on the need to financially reward this person (https://www.wipo.int/fr/web/wipo-magazine/articles/artificial-intelligence-

and-copyright-40141, 2026) because he is the one who conceived the idea and gathered the necessary means to design the system. Without writing the algorithm, the system would not have been able to generate the work. Therefore, the authorship of the work should be granted to them.

However, automatically recognizing the designer as the author, although it proposes a solution to the problem of the work's paternity, is flawed because algorithm designers do not have a prior and specific intention to create a particular work. The tool they invented is closer to a traditional creative tool, like a brush in the hand of a painter.

Even if we consider the designer as a co-author, some jurists require that for there to be co-authorship, there must be a special intention and a prior desire on the part of the designer to create the specific work.

The user of the system is considered the author.

Supporters of this view believe that the author of the work is the system user, the person who interacts with the system. This is because the user initiates the sequence of actions and provides the necessary settings and prompts with a clear intention, which ultimately leads to the creation of a work that bears a personal imprint reflecting his way of thinking. In this case, the artificial intelligence system is considered simply a secondary tool used to express the user's ideas in a distinctive literary or artistic form.

This approach has been adopted by some countries, such as the United Kingdom, where the Copyright, Designs and Patents Act of 1988 stipulated that in the case of a literary, dramatic, musical, or artistic work generated by a computer, the author is considered to be the person who made the necessary arrangements for the creation of the work. (Copyright, design and patents Act (U.K), 15 Novembre 1988, (C.48), S.9(1))

However, the extent of a natural person's involvement in this chain of actions remains undefined and cannot be quantified to the extent that we can say that this person influenced the actions in the necessary manner and to the necessary degree, the courts are unable to determine the extent of this contribution, and the burden of proof therefore rests with the person concerned.

Furthermore, this approach treats artificial intelligence systems as a tool,

just like any other, used to produce a work, and overlooks the fact that artificial intelligence systems are becoming almost entirely independent of human intervention.

It appears from certain court decisions that these issues could be resolved on a case-by-case basis. In the United Kingdom, for example, in the case of Nova Productions v Mazooma Games [2007] EWCA Civ 219, the Court of Appeal, asked to determine who was the creator of a computer game, stipulated that the player's participation had no artistic dimension and that the player had not invested any artistic talent or work. Taking the user's involvement into account on a case-by-case basis could therefore be a viable solution. (https://www.wipo.int/fr/web/wipo-magazine/articles/artificial-intelligence-and-copyright-40141, 2026)

Falling of AI-Generated Artworks into the Public Domain

Some jurists believe that works generated by artificial intelligence without effective human intervention fall into the public domain. They must be treated as free and accessible resources that anyone can use without needing a specific license, since these works are missing author's or rights holder. (Azzaria, 2018)

This view enables access to various AI-generated Artworks and take advantage of the public domain benefits. However, it denies recognition or financial returns to designers and users of these systems, which may be unfair to their efforts. Also, requiring no human intervention or only minimal involvement returns us to identifying the author and without effective human contribution, no protected authorial right exists, and so no public domain entry applies.

4. CONCLUSION

In conclusion, AI-generated classifiers find difficulty to fit into pre-existing legal categories. If we adopt the official definition, they are not intellectual works: First, because originality—which is an indispensable condition for protection—cannot be found in these creations, due to the absence of a natural entity author originally behind their tangible realization. In fact, humans design the AI system for creative purposes, but once it is

completed, it escapes their control, and the author loses control over the creative process. However, some jurists have accepted that this creative intention, which originally stems from humans, is precisely what can confer originality on AI creation.

Some have gone even further by suggesting granting legal personality to advanced artificial intelligence systems, which could allow them to be given copyright over the creations they originate. However, this proposal carries risks on one hand, and on the other hand, it does not at all guarantee that authorship status will be granted to AI systems regardless of how advanced and autonomous they become, especially since most laws refuse to grant this status to legal persons, even though they already enjoy legal personality.

It is necessary here to distinguish between AI-assisted creations and creations generated entirely by AI. The firsts, as long as their author has provided a sufficient creative contribution and has used the program nearly as a tool, should of course not be excluded from protection. Copyright law cannot, in principle, deny the status of author to an artist who has used a computer program, regardless of how intelligent it may be. As long as the artist's creative contribution is sufficient to imprint the work with his personal character, it deserves protection.

However, the development of such systems makes the boundary between Ai-generated works and AI-assisted works extremely subtle. In such cases, it becomes necessary to rely on the discretionary authority of judges to determine the category to which these creations belong.

Ultimately, the issue of works created by artificial intelligence systems is just one of the many manifestations of the transformations currently taking place in copyright law. Nevertheless, there is no doubt that copyright law will, as it always has in the past, adapt to accommodate increasingly diverse forms of creativity, as it did with computer programs and databases, whilst maintaining a fundamental balance between the protection of authors and the interests of the public.