

Artificial Intelligence and Intellectual Property Protection Issues: A Study of Patents and Copyright

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Received
21/04/2026

Accepted
30/09/2026

Published
31/10/2026

Abstract:

The modern age is characterized by constant technological innovations, among which artificial intelligence (AI) solutions are an important and integral part. Such developments have resulted in many new issues that need to be addressed, with intellectual property laws being one of the areas in which new problems emerge. The connection between intellectual property and artificial intelligence may be traced in the realm of invention and innovation, thus giving rise to the problem of protecting creations developed using AI tools.

This research aims at evaluating the extent to which intellectual property regulations can accommodate inventions created through artificial intelligence and adapt the existing body of laws to the current technological landscape.

key words:

Artificial intelligence - intellectual property rights - patents – copyright Legal personhood of AI - AI inventions.

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introduction:

Indeed, there has been noticeable advancement in technology along with many other areas of our lives. Artificial intelligence is considered one of the major breakthroughs and innovations of our era since it contributes greatly to technological innovation and improvement in diverse spheres. Indeed, AI can be classified as a general purpose technology with vast application possibilities in telecommunications, robotics, autonomous vehicles, business, industry and even medicine and many others. At the moment, it is affecting the production of goods and services in different ways and is likely to do so more in the future. It involves designing and programming of systems allowing computers to perform activities requiring intelligent skills and abilities, thus explaining why there is such a lot of attention attracted by this technology.

Issues related to artificial intelligence involve intellectual property rights, especially in regard to its ability to promote creativity and innovation. The link between the two notions poses some questions about the protection of intellectual outputs produced by such technology. In particular, AI is connected to intellectual property policies due to their common goals that include promoting innovation, supporting it and protecting innovative achievements.

Thus, in January 2019, WIPO launched discussions involving member states and other interested parties to discuss the issue of artificial intelligence and intellectual property. As a result, a list of key issues associated with AI was elaborated to help future discussions.

Therefore, the current research aims at analyzing the adequacy of intellectual property laws for regulation of inventions made through artificial intelligence with the idea of harmonizing laws with modern technologies in mind.

Consequently, the following questions arise: Is the traditional system of intellectual property applicable to artificial intelligence without any legal incongruities? Is it necessary to compare human creativity to machine's? Should inventions produced autonomously by AI be protected? Does it mean that intellectual property regime needs to be

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reconsidered for inventions produced by AI? Or is it the same concerning authorship – is it possible to establish AI as an author and grant it legal personality, or is it impossible?

In turn, the following two axes are involved in addressing these issues:

- First axis: Conceptual framework of artificial intelligence.
- Second axis: Impact of artificial intelligence on intellectual property rights, patents and copyrights.

Section I: The Conceptual Framework of Artificial

A) Definition of Artificial Intelligence and Intellectual

Property:

Artificial intelligence is considered a recent development in intellectual property, which necessitates defining both terms.

1- Definition of Intellectual Property

The Convention Establishing the World Intellectual Property Organization (WIPO)¹ defined intellectual property by listing these rights in Article 2, paragraph 8, which states: “Intellectual property comprises the rights relating to literary and scientific works, performers, producers of phonograms, and broadcasting organizations; inventions and scientific discoveries; industrial designs; and trademarks, and protection against unfair competition.” We conclude that the World Intellectual Property Organization has defined these rights by enumerating them.

Referring to Algerian legislation, we find that it has not provided a definition of intellectual rights, nor has it mentioned the term “intellectual property,” but rather refers to special laws, as Article 687 of the Civil Code states: “Special laws govern the rights pertaining to intangible objects.”

There are two types of property rights: the right of ownership over tangible, physical objects, and the right of ownership over intangible objects that are not perceived by the senses but rather by the

¹ *Agreement Establishing the World Intellectual Property Organization, signed in Stockholm on July 14, 1967.*

mind; these are non- material objects and constitute the essence of what the mind produces—that is, all inventions and intellectual works created by the human mind—for which their creators are granted temporary exclusive rights to exploit their intellectual creations, and These are called intellectual property rights, which are in turn divided into two categories: literary and artistic property rights, which include copyright and related rights (for performers, producers of audio and audiovisual recordings, and audio and audiovisual broadcasting entities), and industrial and commercial property rights, which include patents, trademarks, industrial designs, appellations of origin, indications of source, integrated circuits, new plant varieties, industrial designs, and undisclosed information. The Algerian legislature has regulated these through several decrees:

- ♦ Decree No. 66-86¹ concerning the protection of industrial designs,
- ♦ Decree No. 76-65² , concerning appellations of origin,
- ♦ Decree 03-05³ dated July 19, 2003, concerning copyright and related rights;
- ♦ Decree 03-06⁴ dated July 19, 2003, concerning trademarks.
- ♦ Decree No. 03-07⁵ dated July 19, 2003, concerning patents.
- ♦ Decree No. 03-08⁶ dated July 19, 2003, concerning the layout designs of integrated circuits.

¹ Decree No. 66-86 dated April 28, 1966, concerning industrial designs and models, Official Gazette No. 35, published on May 3, 1966.

² Decree No. 76-65 dated June 16, 1976, concerning designations of origin, Official Gazette No. 59 dated June 16, 1976.

³ Decree No. 03-05 dated July 19, 2003, concerning copyright and rights related to copyright, Official Gazette No. 44 dated July 22, 2003, approved by Law No. 03-17 dated November 4, 2003, Official Gazette No. 67, published on November 5, 2003.

⁴ Decree No. 03-06 dated July 19, 2003, concerning trademarks, Official Gazette No. 44 published on July 22, 2003, approved by Law No. 03-18 dated November 4, 2003, Official Gazette No. 67, published on November 5, 2003.

⁵ Decree No. 03-07 of July 19, 2003, on patents, Official Gazette No. 44, published on July 22, 2003, approved by Law No. 03-19 of November 4, 2003, Official Gazette No. 67, published on November 5, 2003.

⁶ Decree No. 03-08 dated July 19, 2003, concerning the layout designs of integrated circuits, Official Gazette No. 44 published on July 22, 2003, approved by Law No.

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- Law No. 05-03¹ dated February 2, 2005, concerning seeds, seedlings, and the protection of plant varieties. Artificial intelligence applications are considered a new element of intellectual property.

The Convention Establishing the World Intellectual Property Organization (WIPO)² defined intellectual property as a category of such rights in Article 2, Paragraph 8, which states: "Intellectual property comprises the rights relating to literary and scientific works, performers, producers of phonograms, and broadcasting organizations; inventions and scientific discoveries; industrial designs; and trademarks, and protection against unfair competition." We conclude that the World Intellectual Property Organization has defined these rights by enumerating them. Artificial intelligence applications are considered a new element of intellectual property.

2- Definition of Artificial Intelligence:

The term "artificial intelligence" first appeared in the 1950s, specifically in 1956. It was first used in the United States when John McCarthy presented a paper at a conference held at Dartmouth College. The term "artificial intelligence" was distinguished from the field of cybernetics, which was defined as "Berneticcy".³

In 1957, John invented a programming language for artificial intelligence, and since then, researchers and governments have begun to take an interest in artificial intelligence. At the beginning of the 21st century, tremendous advancements expanded the field of computer science and computing, along with their capacity to store and process data, leading to significant progress in this area. Experts have differed in defining it as a branch of computer science. Artificial intelligence is defined as "the ability of a computer or machine program to think like

03-20 dated November 4, 2003, Official Gazette No. 67, published on November 5, 2003.

¹ Law No. 05-03 dated February 6, 2005, concerning seeds, nurseries, and the protection of plant varieties, Official Gazette No. 11, published on February 9, 2005

² Agreement Establishing the World Intellectual Property Organization, Loc.cit.

³ European Commission. (2026). European Commission - official website. Retrieved 01/01, 2026, from https://commission.europa.eu/index_en

a human through artificial neural networks, which are information processing systems with specific characteristics and a style that mimics biological neural networks—that is, it is an imitation of intelligent human behavior. This field requires high-level cognitive processes such as perceptual learning, memory, and critical thinking, as well as the ability to understand natural language, perceive and comprehend visual scenes, and perform other tasks that require human-like intelligence. It relies on a database¹. It involves problem-solving, language comprehension, understanding images and shapes, and solving mathematical problems. According to the World Intellectual Property Organization, artificial intelligence refers to a field within computer science involving the creation of machines or systems able to execute operations usually performed by human beings, either with little human participation or without any human participation at all. For the purposes of this document, artificial intelligence generally refers to narrow artificial intelligence, meaning technologies and programmed systems designed to manage a single task.²

B) Types of Artificial Intelligence:

Experts agree that there are three types of artificial intelligence: weak artificial intelligence, strong artificial intelligence, and super or general artificial intelligence.

1- Narrow Artificial Intelligence (NAI) : This is the simplest type of artificial intelligence, where a computer is programmed to perform specific tasks, programs, and algorithms in clear, defined fields. Its actions are considered a response to a specific situation and can only operate under certain environmental conditions. It is currently the most common type used for understanding linguistic and written text, solving puzzles, and addressing mathematical problems.

¹ Khaled Mamdouh Ibrahim, *The Legal Regulation of Artificial Intelligence*, 1st edition, Dar Al-Fikr Al-Jami'i, Alexandria, 2021, p. 2

² Zerouati Khaled, "Artificial Intelligence and Human Rights: A Symbiotic Relationship," *Journal of Human Rights and Public Freedoms*, Vol. 7, No. 2, 2022, p. 141 (137–152).

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2- Super Artificial Intelligence (AI): Super artificial intelligence is the type that surpasses human intelligence and can perform tasks better than a specialized, knowledgeable human. This type has many characteristics, such as the ability to learn and plan, automatic communication, and judgment-making. However, the concept of super artificial intelligence is considered a hypothetical concept that does not exist in our current era.

3- General Artificial Intelligence (GAI): This is a type that can function with a capacity similar to that of humans in terms of thinking, as it focuses on enabling the machine to think and plan on its own in a manner analogous to human thought. The artificial neural network method is one of the approaches used to study general artificial intelligence, as it involves creating a neural network system for the machine similar to that found in the human body.¹ Examples of this type include "ChatGPT" and "Snapbot," which are AI-powered chatbots. These AI systems are trained on historical data and patterns, enabling them to generate new and original content, as if a human had created it. This technology is combined with computer software, utilizing computer technology to enable the application to answer questions; this is known as generative artificial intelligence.²

Section II: The Impact of Artificial Intelligence on Intellectual Property Rights (Patents, Copyrights)

As previously noted, the uses of modern technology, including artificial intelligence applications, have impacted individuals' lives in various fields. This raises questions regarding the impact of these changes on intellectual property laws, which are shaped by the development of AI applications. Consequently, this study examines how legal provisions can be applied to these modern AI technologies.

¹ Khalil Saidi, Marzoun Ben Mahdi, "Artificial Intelligence as an Inevitable Trend in Protecting Legal Security," *Journal of Human Rights Studies*, Vol. 06, No. 01, June 2022 (pp. 25–37), p. 28.

² Mohamed Boumediene, *Artificial Intelligence: A New Challenge for the Law, Pathways in Legal Research and Studies*, Vol. 10, 2019, p. 198

A) The Impact of Artificial Intelligence on Patents:

Among the most prominent intellectual property rights that directly affect artificial intelligence are patents related to any creative idea developed by inventors in this technical field. Before examining the impact of artificial intelligence on patents, it is necessary to define the framework of patents.

1- Defining the Concept of Patents

In linguistic terms, an invention is the creation of something unprecedented in terms of substance, time, or place; the French term l'invention corresponds to this and refers to the result of the inventor's action. A patent, in linguistic terms, is "a brief official document relating to the inventor's activity."

The World Intellectual Property Organization (WIPO) defined an invention in Article 112 of the Model Patent Law for Developing Countries as "an idea conceived by an inventor that provides a practical solution to a specific problem in the field of technology." This definition was also adopted by the Algerian legislature in Article 2 of Decree 07.03 on patents, which states: -Invention: an idea of an inventor that provides a practical solution to a specific problem in the field of technology " The Algerian legislature also defines a patent in the second paragraph of Article 2 as "a document issued to protect an invention."

For a completed invention to be the subject of a patent, it must meet a set of substantive requirements (novelty, inventive step, industrial applicability, and legality), as well as formal requirements stipulated by Order 03_07 and Executive Decree 05_275, which involve submitting an application to the competent authority to obtain the patent and registering the invention with the National Institute of Industrial Property.¹

¹Executive Decree No. 98.68 dated February 1998 establishes the Algerian National Institute of Industrial Property and sets forth its statutes, Official Gazette No. 11, published on February 21, 1998.

- Executive Decree No. 05.275 dated August 12, 2005, sets forth the procedures for filing and granting patents, Official Gazette No. 54 published on August 7, 2005, as amended and supplemented.

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In order for the inventor to obtain protection, he must disclose the invention in full detail so that it can be registered and a patent obtained. Furthermore, the patent must be exploited in the country granting the patent, and the invention must be directly exploited within a period of three years starting from the date of patent grant or four years starting from the date of filing the patent application.

Section Two: Considering Artificial Intelligence Systems as Inventions

We mentioned earlier that patents are the most complex and important form of intellectual property. Law No. 07.03 on the Protection of Patents stipulates in Article 2 that “patents may protect new inventions resulting from inventive activity and having industrial applicability.

An invention may consist of a product or a process.”

As previously mentioned, the law grants ownership rights to the inventor under the following conditions:

1. The invention must be new
2. It must involve an inventive step
3. It must be industrially applicable

If these conditions are met, the inventor may submit an application for a patent to the National Institute of Industrial Property, and the Institute shall examine the invention in accordance with Article 20¹ of Law 07.03, which states:

"Anyone wishing to obtain a patent must submit a clear written application to the competent authority. The patent application must include:

- The application form, a description of the invention, one or more claims, one or more drawings if necessary, and a brief description.
- Proof of payment of the specified fees.
- Except in cases of mutual agreement, applicants residing abroad must file with the competent authority.

¹ Article 20 of Law 07.03.

- The procedures for implementing the provisions of this article shall be specified by regulation.

The Institute shall also verify that the application meets all requirements, and the inventor is required to disclose all information relating to the invention, as stipulated in Article 27¹ of Decree 03-07, which states: "After filing, the competent authority shall verify that the conditions relating to the filing procedure specified in Section 1 of Chapter 3 above and in the texts adopted for its implementation are met "

However, increasing technological development has led to the emergence of new inventions, whether derived from artificial intelligence independently or with human contribution, raising the question of whether artificial intelligence should be considered an inventor or whether the status of inventor should be limited to humans, and by applying the conditions set forth in the Patent Law, the novelty requirement stipulated in Article 04² of Decree 03-07, which states: "A new invention is one that is novel when it does not belong to the prior art. The prior art includes all the information that is available to the public through its description or other means at any point in time before the filing of the patent application or claimed priority date".

Therefore, this condition can be applied to artificial intelligence applications, as there is no special treatment for artificial intelligence systems as long as the invention is new.

As for the criterion of the innovativeness of AI systems, we have observed that inventions produced by artificial intelligence are novel and involve an inventive step. This requirement is stipulated in Article 05³ of Decree 03-07, which states: "An invention is considered to result from an inventive step if it does not follow directly from the state of the art."

¹ Article 27 of Law 07.03.

² Article 04 of Law 07.03.

³ Article 05 of Law 07.03.

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This requirement also applies to artificial intelligence applications, as they too aim to develop innovative technological mechanisms and are subject to general legal protection rules, which means they also qualify as inventions; consequently, there is no special treatment for AI systems as long as the invention is new and involves an inventive step.

As for industrial applicability, according to the text of Article 06¹ of Decree 07.03, which states: “An invention is considered industrially applicable if its subject matter is capable of being manufactured and used in any type of industry.”

Furthermore, there is no special treatment for artificial intelligence systems, provided that the invention derived from artificial intelligence is industrially exploitable and benefits humanity.

This also raises the question of ownership of the invention for inventions derived independently of artificial intelligence: should the law permit or require that the artificial intelligence application be named as the inventor? Or should the status of inventor be restricted to humans?

And if it is stipulated that a human cannot be named as the inventor, should the law provide guidelines on how the human inventor is determined, or should this decision be left to specific arrangements, with the possibility of judicial review in accordance with international intellectual laws regarding disputes over the authorship of the invention?

Referring to Law 07.03 on Patents, Article 20 states: “The right to a patent belongs to the inventor as defined in Articles 3 through 8 above and to his successors.”

"If two or more persons jointly participate in the creation of an invention, the right to the patent shall be considered joint property, as they are partners in the invention, or shall belong to their successors." The inventor or inventors have the right to be named as such in the patent.

¹ Article 06 of Law 07.03.

If the applicant, inventor, or applicants are not the inventors, the application must be accompanied by a statement in which the applicant or applicants assert their right to the patent.

Thus, regarding products and innovations generated by artificial intelligence systems—whether without human intervention or through collaboration between the AI and human elements—to whom do the patent rights belong? Do they belong to the artificial intelligence, the human element, or the software programmer? This has led some legal scholars to argue that the patent must be a joint right between the AI programmer and the owner; however, they see the need to grant AI outputs the right to obtain a patent¹. This is due to considerations of the legal system for patents, as one of its fundamental objectives is to encourage invention and contributing to the welfare of society. This is one of the principles established by the TRIPS Agreement, as stipulated in Article 7², which states: "The effective protection and enforcement of the rights of intellectual property are important in the creation of technology and its transfer to others. This is done in such a way that it provides benefit not only to producers but also to the users of the technology in question while at the same time contributing to social and economic welfare."

Does this, call for consideration of a unique system regarding intellectual property rights for these inventions derived from artificial intelligence, in order to adapt innovation incentives to the field of artificial intelligence by attributing authorship of the invention to the artificial intelligence, while taking into account the specific nature of this technology?

¹ Ahmed Mustafa Al-Dabousi, *The Possibility of Granting Artificial Intelligence Systems Patent Rights for Their Inventions: Can Artificial Intelligence Be an Inventor? In accordance with the provisions of UAE law*, Journal of the Dubai Judicial Institute, Issue 13, Volume 9, April 2021, p. 38

² Article 7 of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), one of the annexes to the Agreement Establishing the World Trade Organization (Annex C),

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In the Dabus case (Dabus) (an AI-based creative machine)¹ and in August 2017, two international patent applications were filed for “two inventions derived from artificial intelligence.”

The first application concerns the recognition of artificial intelligence as an inventor, which is noteworthy because most legal systems only recognize human inventors. The second application concerns the ownership of artificial intelligence (Steven Thaler) as the applicant and future owner of any patents that may be granted. The application was sent to the European Patent Office (EPO) and United States Patent and Trademark Office (USPTO). Furthermore, the application was submitted through the Patent Cooperation Treaty (PCT), making it easier to seek patent protection in about 150 nations. The U.S., European, and British patent offices all rejected the applications despite the presence of the novelty requirement. Both offices based their rejections on the impossibility of granting rights and the status of inventor, as this status is not granted to natural persons. The legal consequences resulting from the grant of inventor status include the transfer of rights under an employment contract or through inheritance.

Thaler appealed the rejection decisions; his application was rejected. The grounds for rejection are as follows:

- The inventor must be a natural person (the European Patent Office held a conference on May 20, 2018, and concluded that the inventor must be a human being, who may be a programmer, developer, or implementer. The inventor may also be a group of people assisted by artificial intelligence).
- The inventor must have legal personality (the European Patent Office justified its refusal to grant a patent to artificial intelligence on

¹ The inventor of DABOS is American engineer Steven Thaler, who invented the DABOS portable food container. DABOS was not trained to solve specific problems; rather, this machine seeks to generate new ideas through its neural networks. For further details, see: Kawthar Saeed Adnan Khalid, *Legal Protection of Inventions Derived from Artificial Intelligence*, Dar Al-Ahram for Publishing, Distribution, and Legal Publishing, 2023, p. 30.

the grounds that the legal texts do not cover the ownership of the inventor, despite proposals that treat AI inventions as collaborative, with the human element managing the rights and obligations; and some go so far as to designate AI as a co-inventor, with its name added to that of the human inventor).¹

B) The Impact of Artificial Intelligence on Copyright:

What distinguishes artificial intelligence programs is their ability to simulate human intelligence. This raises the question of whether artificial intelligence programs can be considered authors and to whom the rights associated with these creative works generated by artificial intelligence belong. Before addressing the impact of artificial intelligence on copyright and, consequently, considering such works as protected under copyright law, we must first examine the conceptual framework of copyright.

1- Defining the Concept of Copyright:

This refers to the rights granted to creators with respect to their works, whether artistic, literary, scientific, or digital. By its nature, this right has two aspects: one financial and material, and the other moral or literary. The Algerian legislature has regulated these rights under Decree 03-05 concerning copyright and related rights.

The Algerian legislature has stipulated the conditions for the protection of copyright in Article 3² of Decree 03-05 on copyright and related rights, which states the following: "Every creator of an original work is granted the rights set forth in this decree" In this article, we find two

key terms. The first is 'author of an original work,' which refers to the creator.

The second term, "work," refers to an original intellectual creation or production. Legislation and international conventions have stipulated a set of conditions that must be met for a work to enjoy legal protection, namely:

¹ Kawthar Saeed Adnan Khalid, *op. cit.*, pp. 31–51.

² Article 3 of Decree 05.03

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- The law protects the formal expression of ideas and creative forms.

This condition is set forth in Article 7¹ of Decree 03-05. It is clear from the text of the article that legal protection is not granted to ideas but is limited to the formal expression only, where it is embodied in the form of a work. The principle of non-protection of ideas extends to include other subjects mentioned in the same article, namely: concepts, methods, principles, techniques, procedures, works, and their forms.

The Requirement of Originality: This requirement is stipulated in Article 3² of Decree 03-05, and the requirement of originality is considered the decisive factor upon which the determination of legal protection for the author's right is based. The element of originality is manifested when there are clear indications of the author's imprint on the work, whether in the essence of the idea, the method of presentation, or the style. This means that originality, with respect to any work, implies that the work is the author's own creation and has not been entirely copied from another work; The element of originality here is not linked to novelty; there is no objection to the idea being old in itself, provided the author expresses it in a new style and methodology.

We note that originality may be absolute or relative. Absolute originality means that the intellectual work is not fundamentally based on any other literary or artistic work, whereas relative originality means that the intellectual work is based on formal elements of a previous work, in which case its author is liable to the author of the original work—

- Protection is independent of the type of work, its merit, its mode of expression, and its subject matter.

¹ Article 7 of Decree 05.03

² Article 3, Paragraph 1 of Decree 05.03

This principle is stipulated in Article 3, Paragraph 2 of Decree 03-05: “Protection is granted regardless of the type of work, its mode of expression, its merit, or its purpose.”

We understand from the article that protection is independent of the type of work, whether artistic, literary, or scientific, and whether it is expressed in writing, sound, or image.

• Furthermore, protection applies regardless of the work’s cultural, scientific, or artistic value, and regardless of whether its purpose is commercial, artistic, or scientific. Protection is not tied to specific administrative procedures. The Algerian legislature has not stipulated specific procedures for recognizing the author’s right.

By applying these conditions to artificial intelligence applications (such as the formal expression of ideas and originality), we observe that they can be applied to artificial intelligence, as there is no special treatment for artificial intelligence systems.

As for works covered by protection, copyright protection is achieved through the rights available to authors and creators over their literary and artistic works, which encompass all forms of creativity and intellectual innovation.

Pursuant to Article 4 ¹of Decree No. 03-05 relative to copyright and neighboring rights, the following shall be considered literary and artistic works, among others:

- a. Written literary works, such as essays, scientific and technical writings, novels, short stories, poems, and computer programs, as well as oral works, like speeches, sermons, and similar oral.
- b. Any type of dramatic works, including live theater, music drama and dance dramas, and pantomime.
- c. Music works which include musical composition either in vocal or in instrument form.
- d. Film works and audio visual works, whether these contain any accompanying sounds or not.

¹ Article 4 of Decree 05.03

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- e. Artistic works, including fine art or applied art work, such as painting, drawing, engraving, lithography, and carpet designs.
- f. Drawings, plans, and models that serve an architectural or engineering purpose.
- g. Drawings, maps, charts, and works that depict topography, geography, or science subjects.
- h. Photographs and works that are made through processes equivalent to photographs.
- i. Fashion designs for clothing and scarves.

According to Article 5 of the decree 03-05, the following works are deemed protected works:

(1) Derivative works, which include translations, adaptations, musical compositions, edits, or modifications done on literary and artistic works;

(2) Collections or compilations of works, including anthologies, either with or without elements of traditional culture, and databases, irrespective of whether they are machine-readable or not, but provided that their originality derives from the selection or organization of the material used.

The decree explicitly states that the right accorded to the creator of a derivative work does not affect the rights of the creators of the original work(s). In addition, under Article 6, the title of a work, provided that it possesses originality, shall enjoy the same level of protection as the work itself.

It should be noted that the list of protected works presented above is only illustrative and not exhaustive. Therefore, the list may expand to accommodate future developments that may emerge. As such, products of artificial intelligence can be regarded as protectable works.

2- Considering Artificial Intelligence Systems as Authors:

Article 12¹ of Decree 05.03 stipulates that, for the purposes of this decree, the natural person who created a literary or artistic work shall be considered its author.

A legal entity may be considered an author in the cases provided for in this decree.”

Article 13² of Decree 03-05 on copyright and related rights provides: "Unless proven otherwise, the copyright owner shall be deemed to be the natural or legal person who publishes the work under their name, lawfully makes it available to the public, or files a declaration under their name with the National Office for Copyright and Related Rights," as provided for in Article 131 of this Decree.³

Paragraph 2⁴ of the same article adds: “If the work is published without the author’s name, the person who lawfully makes it available to the public shall be deemed the copyright owner unless proven otherwise.”

The cases referred to in this decree and provided for in the second paragraph of Article 12 of Decree 03-05 are collective works and works created under an employment contract or a contract for services in accordance with Articles 18, 19, and 20, where Article 18⁵ “the provision states that a collective work is one to which multiple authors contribute, created at the initiative and under the direction of a natural or legal person, and published under that person’s name. The second paragraph further clarifies that the copyright in such a work is vested in the natural or legal person who undertook its creation, completion, and publication, unless otherwise agreed.”

The second paragraph of the same article adds that “the copyright in a collective work shall belong to the natural or legal

¹ Article 12 of Decree 05.03

² Article 13 of Decree 05.03

³ Executive Decree 98/366 dated 11/21/1998 containing the Organic Law of the National Office for Copyright and Related Rights, Official Gazette No. 35 dated 11/22/1998.

⁴ Paragraph 2 of Article 131 of Decree 05.03.

⁵ Article 18 of Decree 05.03

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person who initiated the creation, completion, and publication of the work under their name, unless otherwise stipulated.”

Article 19¹ of Decree 05.03 provides as follows: “If a work is created within the framework of a contract or employment relationship, the employer shall hold the copyright to exploit the work for the purpose for which it was created, unless otherwise stipulated.”

Article 20² of the same decree adds: “If a work is created under a contract for services, the person who commissioned the work hold the copyright for the purpose which it was created, unless otherwise stipulated.”

From the foregoing, it is clear that the Algerian legislature, in line with intellectual property laws, stipulates that the copyright owner must be a natural person, or a group of natural persons; a legal entity does not qualify as an author, but the law grants it a specific status whereby it holds the status of owner or holder of economic rights over certain works, yet it is not the author and thus does not enjoy moral rights.

French and European law stipulate that this right cannot be claimed by artificial intelligence systems if the work in question is original and expresses the author’s personality. This implies that the author must be a natural person, and no court in Europe has yet ruled on this matter. As for the United States, it has refused to grant copyright to humorous stories generated by artificial intelligence, meaning they do not enjoy copyright and therefore do not grant protection to works produced by artificial intelligence.³

Accordingly, a school of jurisprudence holds that, in principle, a legal entity cannot be the author, since a work is the product of thought, and a legal entity is incapable of thinking; those who think are natural persons affiliated with the legal entity, and thus they must

¹ Article 19 of Decree 05.03

² Article 20 of Decree 05.03

³ Federal Judge Beryhowall issued a ruling on August 18, 2022, which upheld the previous decision of the Copyright Office in the case concerning the development of a program and the creation of an artistic image.

be the authors, not the legal entity itself.¹ Consequently, neither the law nor jurisprudence recognizes as the holder of rights anyone other than a natural person in a fundamental and original capacity, and in the case of a legal entity, only in a capacity commensurate with the function performed by that entity.²

If works generated by artificial intelligence are excluded from eligibility for copyright protection, the copyright protection system will be viewed as a tool that safeguards the dignity of human creativity and prioritizes it over machine-generated creativity. and if grants copyright protection to these works, the protection system will be viewed as a tool that prioritizes making the greatest number of creative works available to consumers, treating human creativity and machine creativity as equal.

It should be stressed that artificial intelligence can create new products based on the analysis of information collected through machine learning processes and similar methodologies. At times, the information collected for analysis may include items covered under copyright laws. Such a scenario raises numerous legal questions, chief among which is whether the use of the information violates any copyright laws.

So, if it is considered an infringement, how does this affect the development of AI and the free flow of data for the purpose of promoting innovation in the field of AI?.³

Conclusion

Artificial intelligence has sparked a technological revolution and firmly established itself across various fields. This has given rise to numerous legal challenges that require legislative intervention to address, as well as continuous updating of legal frameworks and close

¹Abdul Razzaq Al-Sanhouri, *The Mediator in Explaining the New Civil Code, Part Eight: Property Rights*, 3rd ed., Halabi Legal Publications, Beirut, Lebanon, 2000, p. 362.

² Abid Fayed, "Artificial Intelligence Creations in Light of Copyright Law: Solutions and Future Prospects," *Al-Qada wa Al-Qanun Journal*, Issue 13, July 2023, p. 426.

³Amal Fawzi Ahmad Awad, *op. cit.*, pp. 98, 99.

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monitoring of all developments on the national and international stages. Through this study, we have reached several conclusions, which we outline as follows:

- There exists a legislative loophole when it comes to regulating the activities of artificial intelligence which hinders its proper development.
- Patent requirements of novelty, inventiveness and industrial applicability can be applied to inventions by artificial intelligence because there are no special provisions which would exclude AI from patent regulations.
- Current IP legislation will continue to apply in relation to AI-related inventions until there will be any relevant amendments made by legislation.
- In the case of AI-generated inventions, several different standards could be established to identify inventors.
- Considering that AI is capable of creating something novel on its own and with the help of humans, it should be considered providing the AI with legal personality.
- The Algerian law contains an open list of works which can be protected by copyright thus leaving some room for innovations including AI.
- AIP products could be regulated using standard criteria of copyright protection such as originality and formalized representation of the work."

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