



Adjacent technical mechanisms to protect the digital Copyright

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Received: 02/07/2024

Accepted: 29/08/2024

Published: 25/09/2024

Abstract:

A conviction has been established in legal jurisprudence, and has seeped into international and national legislation, that adopting technical measures that rely on digital technology is a solution that cannot be overlooked to prevent the increasing infringement of digital copyrights. Thus, digital technology, which was the reason for diminishing copyrights, has become the solution, in contrast to its effect, moving from a mechanism for threatening rights to a mechanism for protecting rights.

Accordingly, this research paper will address defining the concept of technological measures, the conditions for their operation, and their protection in accordance with copyright law, as well as ways of adopting them by the Algerian legislator.

Keywords: copyright; technical protection; technological measures; encryption; piracy prevention.

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1. INTRODUCTION

Several legal efforts were made aimed at protecting the rights of the author and respecting his works, which were translated into reality by concluding several international agreements that were the cornerstone in establishing an international organization concerned with the protection of copyrights, both literary and financial, which were then transferred to national legislation, where a special law was drafted to protect copyrights and respect their works in light of what these agreements included.

However, the development taking place in connectivity to the Internet has made the rules established for the protection of copyright and works insufficient to achieve the purpose for which they were established, despite the conviction of some jurisprudence that the rules for protecting copyright are effective for the electronic publishing of digital works, and it is sufficient to achieve this simply by examining and contemplating these rules¹. However, reality proves the opposite, which appears clearly in the successive amendments to national and even international intellectual property laws, the most important of which is the WIPO Copyright Convention of 1996, even more than that, the shortcomings of the provisions of the Copyright Law have led to the use of digital technology itself, which jurisprudence² expressed by indicating that copyright legislation requires assistance from technology.

It has been established in jurisprudence and legislation that it is necessary to adopt protective mechanisms adjacent to the protection of digital works published electronically, as most of the comparative legislation resorted to updating their laws, in accordance with the new methods of depositing and methods of circulation of works, so they adopted protective techniques that are commensurate with the intangible form of works published electronically, which is basically in technological measures of protection.

On this basis, this research paper addresses the definition of the concept of adjacent mechanisms for protecting digital copyrights, which are mainly technological or technical measures for protection, by clarifying their concept, types, and legal protection in accordance with copyright laws, by answering the following problem: What mechanisms can ensure the protection of digital copyright, adjacent to legal mechanisms.

The questions raised were answered by dividing the research paper into a first section that deals with identifying technical measures adjacent to protection, and a

¹ Osama Ahmed Badr, *Circulating Works via the Internet*, Legal Book House, Egypt, 2006, p150.

² Pierre Serenili, *rapport l'industrie culturelles et nouvelles technique*, ministère de culture et la francophonie, 1994, p 14.



second section deals with the legal protection guaranteed to technical protection mechanisms, according to the Copyright Law.

First Title: Technical measures of protection

The basis for adopting technical measures to protect copyright goes back to the 1996 WIPO Copyright Convention³, then it was adopted in European Directive No. 29 of 2001, on May 22, 2001, on copyright and related rights in the information society, to be adopted by national legislation and considered to be a protection mechanism that enjoys protected under copyright law.

Based on the above, the study of this section is divided into a first section in which we study defining the concept of technical measures adopted for protection, and in a second section we address the types of technical protective measures⁴.

First Subtitle: Definition of technical measures as a mechanism for copyright protection

Technical measures⁵ to protect digital works published electronically seek to extend protection through what is called anti-piracy or anti-copying, as they aim to defend the work or the rights contained therein in conjunction with the occurrence of the attack on the Internet, and not to follow up on the attacker after the attack has occurred⁶, and by this description, they are preventive technical measures.

The French legislator defines technical measures for protection in the electronic environment as any technology, mechanism, or combination that aims to prevent or limit actions that are not permitted by rights holders, such as encryption, obfuscation, or any other means useful in protecting the work⁷. The British legislator also defined it under the Intellectual Property Law in Chapter One (296ZF) as: "any technology, tool, or technological element, the normal uses of which aim to protect a copyrighted work⁸". While the American legislator defines

³ Although the United States of America preceded the first and second Internet Treaties in adopting technical protection measures in 1992 through the Musical Works Protection Act called (audio home recording act), see details of this in: René Pépin, piracy, music and the internet: are the solutions found in the American model?, study published on the site: www.lax-electronica.org, 2002, p 37.

⁴ Xavier Daverat, Droit de la propriété littéraire et artistique, Breal, France 2011, p 212.

⁵ Technology measures are known in several nomenclature:

(technical measures) (self-help systems) (trusted systems) (technical methodologies) (copy right permission systems) (technical protection measures), Severine Dusollier, copyright and protection of works in the digital world, larcier, Belgium, 2007, p 38.

⁶ "... technical measures which aim at anti-copy protection the idea is to protect, by this means, directly the work upstream of the network instead of pursuing infringements after the fact. "

Stéphane Sessa, downloading musical works on the internet: legislated or not legislated?, master's thesis, University of Neuchâtel, 2002, p 25.

⁷ Art L331-5CPI.FR: "Effective technical measures intended to prevent or limit unauthorized uses by copyright holders....

By technical measure we mean any technology, device, component...such as encryption, scrambling". It is the same definition that came in European Instruction No. 29/2001 in Article 6/3.

⁸ Aida Madiha Bint Abdul Ghani Azmi, Technological Protection Measures in Malaysia, Electronic Copyright Bulletin, October/December 2004, p. 03.



it in the Digital Millennium Copyright Act of 1998, as: “A technological measure that prevents or limits access to the work is considered effective if, in the normal state of operation, it requires information, or specific procedures imposed by the rights owner, to view the work⁹”.

As for the Australian judiciary, it defined it as: “a tool or product that uses technological means to prevent a person from accessing a work that enjoys copyright protection, or limits his ability to print copies of a work that has been accessed, and thus prevents or restrains the person from carrying out acts that, if done, constitute In violation of copyright in the work¹⁰”.

Based on the above, the definition of technological measures for copyright protection can be defined as the technical or technological mechanism for protection, and it is also any device, product, component, or process, or any technological procedure, aimed at protecting copyright in the event of electronic publishing or effectively, through controlling access and reproduction of works or any other right.

In contrast, there was no definition or specification of the concept of technical measures of protection used by the author or rights holders in Egyptian Legislation No. 82 of 2002, but it referred to them and considered them a tool for protection, and surrounded them with legal protection in Article 181/6, unlike the Algerian legislator, who did not mention It has absolutely nothing to do with Order 03/05, which is what he criticizes, as he had to adopt these measures or even stipulate them, as they are a tool or mechanism available to the author or rights holders, useful in strengthening the legislative protection established for the work.

Second Subtitle: Types of technical measures for protection

Technical measures to protect digital works published electronically are divided, according to most intellectual property jurists, into two categories¹¹: a first category that allows the identification and identification of works, and also allows the designation of their author, authors, performers, or producers, and a second category that aims to prevent everything that might infringe upon copyright.

1. Definition of digital works as a protection tool

Intellectual property, like ordinary property, depends on determining the nature of the owned thing in coordination with identifying the person who owns it, because the importance of the designation or definition is linked to the inherent

⁹ Philippe Morin, Technical measures for copyright protection – Overview of possible consequences in Canadian law: copying for private use and exceptions to copyright – Part I, Intellectual Property Notebooks, vol17, n1, 2005, p289. □

¹⁰ Aida Madiha Bint Abdul Ghani Azmi, op. cit, p. 05.

¹¹ Andres Lucas le droit d’auteur et numérique, LITEC, paris, 1998, p 260.



commercial value of the identifier, in addition to the moral dimension, especially in the field of copyright¹².

Defining works and determining the identity of their owners is not a new matter for traditional works. The seals of the first printers were adopted at the beginning of the sixteenth century, and parallel bars (code barre) were adopted to do the same purpose, as well as the International Standard book number for books traditionally published on paper stands, and also the “ISSN” for journals and periodicals¹³, however, defining works according to this method is not compatible with electronic publishing of works, which prompted copyright laws to adopt symbols and definitions that are compatible with the digital nature of electronic publishing of works.

The identification of electronically published works means a set of digital technologies that allow the digital work to include a set of information, which specifies the name of the work, the year of its publication, licenses for exploitation, as well as rights holders. It is also defined as the effective means that allows defining the legal framework of the work, as well as identifying the rights holders on it, and facilitates the management of these rights¹⁴.

The identification of digital works as a protection tool within the framework of electronic publishing of works includes every mechanism that allows identifying the content and displaying its information, through which the work, licenses, rights holders can be identified, whether related to an author, artist, performer, or producer, the conditions for its exploitation... etc.

In other words, it is a number plate for digital works published electronically on the Internet, which is represented by numbers or symbols connected to a database containing complete information about the work or rights holders¹⁵, or it is, according to the identification of the WIPO Copyright Convention in Article 12/2: “ Information that allows the identification of the work, the author of the work, and the owner of any right in the work, or information related to the conditions for using the work, and any numbers or codes that symbolize that information, whenever any element of that information is associated with a copy of the work or appears when the work is transmitted to the public”.

The mechanism for identifying digital works is the electronic fingerprint of the work, in addition to identifying the work or rights holders, thus consolidating the author’s moral right, especially the right of paternity, and this mechanism allows for preserving the unity of the work and not distorting it. It also allows,

¹² Gabriel de Broglie, le droit d’auteur et l’internet, Rapport du groupe de travail de l’académie de sciences morales et politique, juillet 2000, p 68.

¹³ Ibid, p 69-70.

¹⁴ Anne-laure Brochet, luciélinant de Bellefonds et autres, numérique et droit d’auteur, l’exception 2003, étude publie dans le site : www.l’exeption.org

¹⁵ Séverine Dusollier, droit d’auteur et protection des œuvres dans l’univers numérique, op.cit,p 40 et p 64.



because it is clearly visible, to alert the recipient or holder of the work to the rights contained therein, and the limits that cannot be exceeded when used, and to inform him of the legitimacy or illegality of the work, whether it is imitated or infringes upon the established rights of the author¹⁶.

The important principles that must be followed in defining digital works as a protection mechanism in the Internet environment, on the one hand, are to assign a single identity or definition to a specific and registered work according to a clear descriptive statement that leaves no room for doubt or ambiguity. On the other hand, this identity must be delivered by a secure registration body for deposit, which qualifies as a “trustworthy insurer,” and the identity or identification delivered by this body is represented in a series of digital, alphanumeric, or simply binary symbols, occupying a certain number of octets. (octets), which allow a clear identification of the digital work published electronically on the Internet¹⁷.

It should be noted that the United States of America is obligated to integrate work identification techniques into the system for recording musical or audio works¹⁸, while in France, the tripartite agreement that brought together representatives of copyright holders, the Ministry of Culture, and the National Association for Conformity presented proposals that were internationally adopted by The International Society for Conformity (ISO), and its accreditation will then be expanded by the International Federation of Authors (CIAC), as well as the Producers of Photographs (IFPI), the Cinematography (AGICOA), and the Federation of Performers, to finally adopt the Common Information System (CIS)¹⁹, which is based on adopting special symbols to identify works that cannot be separated from them, consisting of numbers, letters, or symbols that have a clear and unambiguous identification of the work, the rights holders, and everything related to the work on the one hand²⁰, and on the other hand, it relies on a network of private databases that include complete information about works and rights holders²¹.

¹⁶ SeverineDusollier, op.cit, p 41.

¹⁷ Gabriel de Broglie, op.cit, p 69.

¹⁸ Séverine Dusollier, internet and copyright, op.cit, p 69.

¹⁹ The CIS system of the Authors' Union is accredited by international organizations of rights owners.

²⁰ There are many identification codes for digital works, including:

ISWS: information system works code, IDDN : inter deposit digital number, IMLP : iso multimedialicense plate, ISTC : international standard texte code.

²¹ There are also many databases organizing information about the work and rights holders, including:

CISAC : instances international des auteur, SACD : For pictures, IPI : interested parties information, WID : world identification database, SCRI : soundcarriers and recording information

See details in:

Andres Lucas, op.cit, p 262.

Anne-laureBrochet, luciélinant de and others, op.cit, p 61.

Gabriel de Broglie, op.cit, p 71.

René pépin, op.cit, p 10.



Identification of works as a mechanism for protecting copyright on digital works published electronically takes two forms: labeling and tagging.

1.1 Labeling

Labeling includes placing information at the beginning of the work, indicating the value of the identified work, or its encoding, as the latter is used as a link to a private database that includes complete information about it, which is updated periodically by rights holders²².

1.2 tattooing²³

The tattooing technique depends on the inclusion in the work of a mark or symbol, which allows the designation of the work or the rights holders on it, to detect any changes made by the user or the owner of the work, or any unauthorized exploitation²⁴.

Tattooing is also known as a technique that allows a mark to be placed on a digital work, warning of any infringement that may affect the work. This mark is not visible and cannot be isolated from the work, because it relies on the Stenography technique, which the American White Paper defines as: "The technology that allows digital information to be encrypted according to methods that do not enable it to be separated from the work or the file containing it"²⁵, or according to Professor LEYMORE it is: "The art and science of communicating in a way that conceals the existence of communication at all"²⁶.

2. Hacking prevention techniques:

Piracy prevention techniques are defined as any service that aims, in accordance with a secret agreement, to transform signals or information into an unclear or ambiguous form for a specific category of individuals, or to perform the opposite process for that²⁷. In jurisprudence²⁸, piracy prevention techniques are considered active means aimed at correcting the situation related to copyrights on the work containing them, in contrast to techniques for identifying digital works, which according to them are considered ineffective, and do not provide the ability to control the work or the rights contained therein.

²² Gabriel de Broglie, op.cit, p 69.

²³ Tattooing, as a mechanism for identifying works in the digital medium, is known by several nomenclatures: finger printing, aqua marquage, watermarking

²⁴ Gregoire Bannici, copyright and the consumer in the digital universe, study published on the site: www.droit-tic.com, consulted on January 25, 2006.

²⁵ "The technique of coding digitized information with attributes that cannot be dissociated from the file that contains it", Andres Lucas, op.cit, p 261.

²⁶ "The art and science of communicating in such a way as to mask the very existence of communication", Severine Dusollier, op.cit, p 19.

²⁷ "any service aimed at transforming, using secret conventions, clear information or signals into information or signals unintelligible to third parties, or to carry out the opposite operation", Andres Lucas, op.cit, p 260.

²⁸ Severine Dusollier, op.cit, p .41



Piracy prevention techniques adopted to protect copyright on digital works published electronically on the Internet take several forms.

2.1 Encryption:

Encryption is defined as changing the content of the file using a specific program, which is the encryption key, before sending the file, provided that the recipient of the file has the ability to restore the file content in its original form before the encryption process, using the reverse process, which is decryption. Article 2 of the e-commerce Law in Tunisia defines it as: "Either the use of symbols and signals that are not in common use, whereby the information to be modified or sent becomes incomprehensible to others, or the use of symbols and signals without which the information cannot be accessed."

Encryption was also defined in the draft Egyptian e-commerce law as: "changing the form of data by converting it into symbols or signals to protect this data from being viewed, modified or altered by others"²⁹, or it is every technology or measure that would condition the benefit of a service on obtaining a license that guarantees the payment of a financial reward for benefiting from it³⁰.

Encryption allows you to prevent or limit the reading or viewing of a digital work in certain places or at a specific time, or limit the number of available uses, in addition to the possibility of restricting access to the work to using specific devices to do so. It was adopted by Apple, which restricted access to musical works downloaded through the (iTunes) program, using the reader produced by them only³¹, and it was also used to protect works that have DVD as their backing, called (CSS) content scrambling system, by including encryption key reader, to decrypt the original DVD compiler only³².

2.2 Copy prevention technology:

Copying prevention technology, as a technical mechanism for protecting digital works published electronically, depends on the work's inclusion of a sign that specifies the nature of this work according to a specific system³³. This sign occupies a space in the workbook defined by one bit, equal to "1" if the workbook allows one copy of it, or equal to "0" if the workbook does not allow one copy of

²⁹ Abd El Fattah Bayoumi Hejazy, *The Legal System for the Protection of e-Government*, Book Two, Criminal and Information Protection for the Electronic Government System, first edition, Dar Al-Qamar University, Egypt 2003, p. 153.

³⁰ There are many used encryption systems that require payment to obtain the service, perhaps the most famous of which is the "Paypervieu" system, which relies on granting an encryption key in exchange for a lump sum (pre-determined). This key verifies the owner of the work whether it is legitimate or not, to make the work available to him. See details of this in: Andres Lucas, op.cit, p. 264

³¹ Etienne Deshoulières, op.cit, p 57.

³² Séverine Dusollier, *copyright and protection of works in the digital universe*, op.cit, p 45.

³³ Languages for describing usage rights, Severine Dusollier, op.cit, p 48-49.



it, accordingly, copying of the protected digital work is limited, thus limiting infringement of the rights of its authors³⁴.

In return, this system can also be included in devices receiving supports that carry the work published electronically on DVDs, for example, as these devices are programmed not to make copies of the digital work unless it is original, in addition to specifying the number of copies allowed to be copied from it, which is the used system in the United States of America regarding digital musical works, called SCMS³⁵ (Serial copy system). and there is also a system resulting from a collaboration between IBM, Matsushita, Intel, and Toshiba, on March 3, 1999, which allows for limiting the number of copies that can be reproduced of a work mounted on a digital media such as a CD³⁶.

3. Legal electronic deposit of digital works published electronically:

Electronic filing of digital works is considered an available mechanism for protection, as electronic filing requires the registration of the digital work by the author with a private or national body, whether via the Internet or depositing a copy mounted on a digital support (CD-DVD)³⁷, however, the online deposit system³⁸, which is done through an electronic signature, and allows the work to be deposited to be sent directly over the Internet to an archival server, which sends a notification of receipt to the depositor, is considered more effective and compatible with the nature of digital works published electronically, and it also supports electronic management of rights³⁹, and it allows the creation of databases that include digital works published electronically, and makes it easy to count them and track any infringement on them⁴⁰.

4. Electronic rights management systems:

Experience in the field of copyright and related rights has proven that the individual exercise of a copyright is impractical, because the beneficiaries of mental production need a basic tool that allows individuals to effectively exercise these rights, which has led to the necessity of a collective administration that handles copyright issues⁴¹, and perhaps what has made this more evident is the electronic publishing of works, which required the collective management of rights

³⁴ Ibid, p 50.

³⁵ René pépin, op.cit, p 08.

³⁶ Gabriel de Broglie, op.cit, p 75.

³⁷ Anne-laure Brochet, luciélinant de and others, op.cit, p 62.

³⁸ Diala Issa Wansa, Copyright Protection on the Internet, A Comparative Study, Lebanon, 2002, p. 129.

³⁹ Art L321-9/2/3 cpifr.

⁴⁰ See the proposal to consider legal deposit as a protective mechanism for digital works in: Bouzidi Ahmed Tijani, Legal deposit and the extent to which it can be considered a protective formality, Journal of Legal and Political Thought, Volume 6, Issue 2, November 2022, p. 1146.

⁴¹ Nawaf Kanaan, Copyright, Contemporary Models of Copyright and Means of Its Protection, first edition, fifth edition, Dar Al-Thaqafa for Publishing and Distribution, Jordan, 2009., p. 175.



to keep pace with what is happening in the field of creativity and digital publishing, by extending their management electronically.

4.1 Definition of electronic copyright management systems:

Electronic copyright management systems are defined as technological systems that allow defining and determining the content of digital works protected by copyright law, and ensure respect for controls on the exploitation of digital works as determined by the author, rights holders, or according to the law⁴², or they are also all technological means that allow control of The process of authorized exploitation of digital content⁴³.

Comparative legislation concerned with copyright protection considered electronic systems for managing digital copyrights as a technical protective mechanism, as it stated that any technology that allows monitoring access to digital works is considered a technical protection mechanism, including Article 39/2 of the Swiss Copyright Law, and Article 1201/ a/1 of the American Digital Millennium Copyright Act, as well as Article 296ZF/2/a of the English legislation The Copyright and Related Rights Regulations for Intellectual Property of 2003⁴⁴. As for the French legislator, he referred to this in Article L321-9-2-3 in the Intellectual Property Law, contrary to the Algerian legislator, which, as we mentioned above, did not refer to considering electronic rights management systems as final, it would have been better to stipulate them, either along the lines of what the French legislator adopted, which opened the way for attracting several types of rights management systems⁴⁵, or amending the system of the National Copyright Office⁴⁶ to be compatible with the requirements of electronic publishing.

4.2 Working mechanism of electronic copyright management systems:

The electronic collective management of copyright initially depends on identifying digital works electronically through the digital identification mechanism, mainly represented by tattooing and labeling, which is characterized by being an electronic fingerprint that allows the work to be identified electronically, and it cannot be separated from the work or distorted, and this technology also allows electronic copyright management associations to track the

⁴² Patrick Boiron, , the management of musical rights in the digital world, undated, p 01. Article available at: www.CAIRN.INFO/article.p.phd.D.Article=legi.D32, p 03.

⁴³ Sabrina Migliozi, Technical protection measures in copyright, Master's thesis, University of Neuchâtel, Switzerland, 2014, p2.

⁴⁴ Philippe Morin, op cit, p290.

⁴⁵ Art L321-1 cprfr.

⁴⁶ See the proposal to amend the National Copyright Office system in: Bouzidi Ahmed Tijani, Electronic Collective Management of Copyright and Related Rights (The Necessity of Adapting the National Copyright Office to the Requirements of Electronic Publishing), an intervention within the International Forum on Intellectual Property and its Impact on Economic Development, Barika University Center, Algeria. February 15, 2022.



digital work published electronically on the Internet, from the date of its filing until it reaches the recipient or the public⁴⁷. In addition to the above, these technologies allow electronic copyright management associations to create an archive that includes all actions contained in the digital work, and thus monitor the respect of the recipient or consumer of the work on the Internet for the limits permitted in exploiting the work, as it allows showing the number of times the work has been copied. And the number of times it has been viewed...etc., on the one hand⁴⁸, and on the other hand, it allows for facilitating the calculation of the financial returns generated from the exploitation of the work on the Internet, and thus facilitating their division among the author and rights holders after deducting a certain percentage in exchange for supervising and managing their rights on the Internet (expenses).

In parallel, electronic rights management associations rely on protecting works in the Internet environment through piracy prevention mechanisms such as encryption and copy-prevention techniques⁴⁹, and they seek to include in works mechanisms that prevent piracy by encrypting them and preventing any infringement of copyright through copy-prevention technology, which shows that electronic systems Copyright management intersects with technical protective mechanisms, mainly represented in the mechanism for identifying digital works, piracy prevention techniques, as well as the legal electronic filing of works, or more accurately, it is based on them in rights management.

Securing works by electronic copyright management bodies requires separating the transfer and communication of protected works to the recipient combined with encryption technology, and the digital information associated with them, because the recipient or consumer obtains the work encrypted or unclear, and cannot use it unless he obtains the encryption key, or The code to view the work in exchange for money⁵⁰, which must be verified by electronic copyright management associations and the identity of the recipient through an electronic signature⁵¹.

Second Title: Legal protection of technological measures

⁴⁷ In most cases, collective electronic copyright management bodies rely on special rights management software. Look at that: Marjorie Pontoise. DRM (digital rights management) technical measures for the protection of works, master's degree in cyber space law, University of Lille2, 2006, p 02.

⁴⁸ Patrick Boiron, op.cit, p 04.

⁴⁹ Patrick Boiron, op.cit, p 05.

⁵⁰ It is worth saying here that the recipient or consumer resorts to collective copyright management bodies to obtain the right to use the work, but the multiplicity of these bodies and the jurisdiction of each of them for a type of work, made the matter impractical, which led to the proposal to establish a "unique window": which is a type of union between rights management associations, providing users with a quick and uncomplicated mechanism for obtaining a license. See the WIPO website: www.wipo.int/copyright/fr/management/

⁵¹ Patrick Boiron, op.cit, p 05.



The report on legal protection for technological measures for protection in the digital environment provides the author with multi-faceted protection, according to Pr. Alain Strowel and Pr. Severine Dusollier, as he enjoys traditional legal protection on the one hand, and technical protection on the other hand, as well as legal protection established for technical measures⁵². Another side of jurisprudence believes that, despite the advantages that these measures provide for copyrights and digital works, they negatively affect the object of protection, starting with those measures that do not perform their role, as they do not succeed in monitoring the work and the works contained therein, and do not prevent attempts to harm it, despite It is protected under copyright law at the same time. What led Professors Patrick and Charlotte Ducheve to say that the report on the legal protection of technological measures⁵³, and the legislator's requirement of the effectiveness of the latter to extend protection to them, is the truest proof of the weakness of these measures and their inability to perform their role⁵⁴.

In addition, many of them lead to distorting the work or reducing its quality, and many members of the public have expressed their dissatisfaction with these measures, under the pretext that they limit their exploitation of it despite their legal acquisition of it, especially the private copy⁵⁵, as these measures prevent that, which prompted some jurisprudence to calling for the cancellation of royalties imposed on manufacturers and importers of blank media or those that do not contain works affixed to them, as they have no meaning in the presence of these measures that prevent copying, including private copies⁵⁶.

Most comparative legislation that recognizes the use of technological measures for protection stipulates that they must be granted legal protection in accordance with copyright law, but they require that a set of conditions be met for this

First Subtitle: Conditions for granting protection for technological measures

The 1996 WIPO Copyright treaty is considered a reference to the adoption of technological measures as a mechanism to protect copyright and protect rights holders over electronically published digital works⁵⁷, as Article 11 thereof

⁵² Etienne Deshoulières, op.cit, p 56.

⁵³ SeverineDusollier, op.cit, p 41.

⁵⁴ Etienne Deshoulières, op.cit, p 61.

⁵⁵ Julie Loker, les œuvres en ligne en droit comparé droit American et Français, DESS, droit du numérique et nouvelles technique, université de paris 1, 2003, p 44.

⁵⁶ Laurent Badiane technical protection measures: a delicate compromise, dess, Multimedia and information law, Panthéon Assas University, Paris 2, 2004, p 21.

⁵⁷ It is worth noting that the United States of America preceded the first Internet Treaty in establishing legal protection for technological measures, and thus adopting it as a mechanism to protect digital works published electronically, in the law (Audio Home Recording Act) in 1992, which was a result of the emergence of technologies that allow the reproduction of audio-musical works, especially those broadcast on Sony, Philips, DCC



stipulates: “The Contracting Parties shall provide in their laws for appropriate protection and effective sanctions against circumvention of effective technological measures used by authors in exercising their rights under this treaty or the Berne convention, which prevent the undertaking of works not authorized by the authors concerned, or which permitted by law, with respect to their works⁵⁸”.

The conditions that must be met in technological measures for protection can be extracted from the aforementioned article, as⁵⁹:

- First, the object of protection of these measures must be a work protected in accordance with copyright law;
- Secondly, these measures must be used to protect the rights granted to the author or rights holders;
- Third, these measures must be adopted by the author or rights holders to protect their works.
- Fourth, these measures must have a specific goal, which is to prevent unauthorized works by the author or rights holders;
- Finally, these technological measures must be effective.

1. The subject of these measures must be a work protected in accordance with copyright law:

Granting technological measures protection under copyright law depends on the requirement that they protect works or performances protected by copyright law, as they are not protected if they are intended to protect works that do not fall within the protected works specified by the WIPO Copyright Convention of 1996⁶⁰. Accordingly, the measures The objective technique for protecting a work that has fallen into the public domain is considered worthy of protection under copyright law, however, it should be noted that the database work, which includes works in the public domain and is protected on the basis of originality derived

and Mini-disc production platforms, and the frustration of rights holders with the decision of the US Supreme Court that refused to convict the two previous companies on the basis of the rule: “If the technologies created and sold by a company are generally intended for legitimate uses of commercial importance, then officials in these companies may not be held accountable for any abusive uses that some may make of these technologies”, however, the judiciary acknowledged that there are cases in which these practices (video recordings) constitute a “clear violation of intellectual property rights”.

Based on the above, the American legislator issued the 1992 law, which included the (SCMS) Serial Management System, which prohibits the import, export, or manufacture of any device that allows the copying of works, especially musical ones, and it also required the manufacturers of these devices to include chips that prevent illegal copying of protected digital works. See details in:

- Abd Allah Abd Elkarim Abd Allah, Legal Protection of Intellectual Property Rights on the Internet, a study in the legal frameworks for protection - with an explanation of the legal system for intellectual property in Egyptian, Jordanian, European and American legislation and the Internet Treaty, New University House, Egypt 2009, p. 218.

- René pépin, op.cit, p 7,8.

⁵⁸ Abd Allah Abd Elkarim Abd Allah, op.cit, p 307. □

⁵⁹ SeverineDusollier, op.cit, p 123.

⁶⁰ Ibid, p 124.



from the way it is composed or arranged, is legally protected, and this protection extends to the technical measures entrusted to protect it on the occasion of its electronic publication on the Internet.

2. These measures must be used to protect the rights of the author or rights holders:

Technological protection measures must be aimed at protecting the recognized rights of the author or rights holders, because stipulating this condition is considered unnecessary by jurisprudence⁶¹, and they cite this because it is not stipulated in the European Instruction on the Information Society, and is not mentioned in the American Copyright Act of 1998 (Digital Millenium Copyright Act), and they also consider it self-evident that the role of these measures would be to protect copyright, since they would have an extension of their protection.

3. These measures must be approved by the author or rights holders:

The WIPO Copyright Convention, as well as most European legislation, requires that technological measures be adopted by the author, performer, producer of phonograms or rights holders, to be protected under copyright law. According to the concept of violation, if a distributor or publisher uses these measures to prevent imitation or infringement of the works that he distributes, he cannot invoke the necessity of protecting them on the basis that he is not a rights holder, according to the concept of copyright law⁶².

4. These measures must aim to prevent unauthorized works by the author or rights holders:

Article 11 of the WIPO Copyright Convention requires that these technological measures be intended to protect the rights recognized in the 1996 WIPO Convention, meaning that the role of these measures must be to prevent any infringement of the financial right of the author, both direct and indirect, as well as any infringement of the literary copyright, including the right of paternity, the right to publish, and the defense of his work from any distortion affecting him or his work, in addition to translation and modification. However, jurisprudence⁶³ believes that the text of the article came with a kind of limitation, contrary to what was stated in the European Instruction (Information Society), which indicates that any measures aimed at protecting copyright at all are included within technological measures, therefore, it is protected on the basis of copyright law, taking into account the exceptions to this right, because these measures may not prevent the

⁶¹ SeverineDusollier. opcit, 126.

⁶² Ibid, p 127.

⁶³ SeverineDusollier Op.cit, 128,130.



use of these works within the framework of what is permitted by the limits set on copyright, in accordance with intellectual property law⁶⁴.

It should be noted that the American Digital Millennium Copyright Act (DMCA) law considers that any technology that prevents access to the work by viewing or viewing it, such as encryption and the use of an encryption key, is a protection measure that is protected on the basis of intellectual property law. It is also considered that any technological measures that would preserve the exclusive right of the author stipulated in Article 106 of the same law, which relates to the exclusive right to produce copies of the work, publish, distribute and perform in public, are considered protection measures that must be protected in accordance with intellectual property law⁶⁵.

5. Effectiveness of technological protection measures:

Granting protection to technological measures to protect copyright contained in digital works published electronically depends on the condition of their effectiveness, which is what was adopted by the WIPO Copyright Convention of 1996, as well as most legislation that recognizes protection for these measures in accordance with copyright law. However, determining the purpose of the effectiveness of these measures It is not an easy matter⁶⁶, and the failure to specify this by this agreement according to some jurisprudence is due to the desire to exclude those measures that fall short of their role⁶⁷.

The French legislator has specified in Article L331-5, a second paragraph, the purpose of the effectiveness of these measures, where he stated that they are considered effective if they allow the control of the author or rights holders to prevent or limit the illegal use of these works, through a keyword or encryption key, or dimming the work to make it unclear, or any method that allows the workbook to be changed or a mechanism that allows it to be monitored⁶⁸.

These measures are considered effective in the eyes of Belgian copyright law if they allow monitoring of the work or protected work, through a mechanism or

⁶⁴ Ibid, p 134.

⁶⁵ Ibid, p 133.

- Andres Lucas, op.cit, p 269.

⁶⁶ Severine Dusollier, op.cit, p 137.

It should be noted that the Jordanian legislator defined the effectiveness of technological measures in Article 55, Paragraph B, by saying: "...any technology, procedure, or method such as encryption or copy control, which is used to prevent or limit unauthorized actions by rights holders." See: Wassim Hussam Eddine Al-Ahmad, op.cit, p. 168.

⁶⁷ Severine Dusollier, op.cit, p 137.

⁶⁸ Art L331-5/2 CPI.FR : " These technical measures are deemed effective when a use referred to in the same paragraph is controlled by the rights holders through the application of an access code, a protection process such as encryption, scrambling or any other transformation of the object of protection or of a copy control mechanism which achieves this objective of protection".



password, or any method of protection, such as encryption, obfuscation, change, or any mechanism that allows monitoring of copying of the work⁶⁹.

Second Subtitle: Protection established for technological measures in accordance with the Copyright Law

The digital technology that came to the rescue of the law threatened by it requires a protection report for it, in order to activate the established copyright protection for digital works published electronically.

Comparative legislation has established legal protection for effective technological measures, as the French legislator stipulated in Article L331-5 that effective technical measures entrusted with preventing or limiting unauthorized actions by the author or rights holders on a work or performance...etc., shall be Protected according to copyright law⁷⁰. The French legislator also stipulated that techniques for identifying digital works published electronically shall enjoy protection in accordance with the Copyright Law, which is explicitly stipulated in Article L331-11, first paragraph, as it states that information that is in electronic digital form, and related to the system of rights contained in a work, performance...etc., is protected according to copyright law, if one of this information - whether in the form of a symbol or a number - is connected to the work when it is communicated to the public or published⁷¹.

The Algerian or Egyptian legislator did not explicitly provide for the protection of technological measures of protection, whether it comes to the technique of identifying works published electronically or techniques to prevent piracy, although the Algerian legislator indicated in Article 152 of Order 03/05 that the misdemeanor of counterfeiting is investigated if the work or public performance is notified or the work in general, through distribution in the information processing system⁷². It would have been better to precisely define the latter by stipulating electronic publishing and activating protection on the occasion of publication through it, by stating that rights holders and the author may use these measures, as well as establishing legal protection for them, to be able to talk about activating copyright protection in general, and on the occasion of electronic publishing of works in particular.

⁶⁹Severine Dusollier, op.cit, p 139.

⁷⁰Art L331-5/1 CPI.FR : " Effective technical measures intended to prevent or limit unauthorized uses by the owners of copyright or a right related to the copyright of a work are protected under the conditions provided for in this title".

⁷¹ Art L331-11 CPI.FR : " Information in electronic form concerning the regime of rights relating to a work, an interpretation, is protected under the conditions provided for in this title, when one of the elements of information, numbers or codes is attached to the reproduction or appears in relation with the communication to the public of the work, of the interpretation,...".

⁷² See Article 27, paragraph 8 of Order 03/05, which confirms this, as it states: "The author has the right to exploit his work in any form of exploitation and obtain a financial return from it. He also has the exclusive right to communicate the work to the public through any information processing system... ".



As for the Egyptian legislator, it was clearer than the Algerian legislator, as in addition to recognizing the author's exclusive right to transfer the work, it specified that transferring or making the work available to the public through the Internet, information networks, or communication networks is an established right of the author. It is also credited to the Egyptian legislator that it stipulates, even implicitly, the possibility of the author or rights holders to use technological measures for protection⁷³, but when referring to them, it is limited to measures to prevent piracy such as encryption, without referring to techniques for identifying works, and considering it a technical mechanism for protection in the Internet environment.

Determining the protection of technological measures on the basis of copyright law requires the adoption of penalties for infringement, which is what most comparative legislation has adopted, as the French legislator stipulated in Article L335-1 that authorized judicial police officers may seize any device, mechanism, element, or any mechanism that infringes technological measures for protection, whether techniques for identifying digital works published electronically or technological measures to prevent piracy, and they may also reserve all the equipment that was installed specifically for this purpose⁷⁴. While the Egyptian legislator did not explicitly stipulate this, which is considered a loophole that must be rectified, it did stipulate in Article 181 of Law No. 82 of 2002 that the competent court must decide to seize all equipment and tools used in the crime of counterfeiting, including any device or A mechanism created to disable or bypass the technological measures established to protect copyright within the framework of electronic publishing of digital works⁷⁵. As for the Algerian legislator, we cannot say that it implicitly stipulated this in Article 157, paragraph 02, and this is because it did not mention technological measures at all⁷⁶.

The protection established for technological measures is evident in the penalties established for violating them, as comparative legislation considers violating these measures to be tantamount to piracy, or violating copyright itself. According to French law⁷⁷, anyone who deletes or changes the symbols related to

⁷³ See Articles 147, 158, 181 of Law No. 82 of 2002, and the article containing the Egyptian Copyright Law.

⁷⁴ Art L335-1 CPI.FR : "any copy, product, device, device, component or means infringing the technical measures and information mentioned respectively in Articles L. 331-5 and L. 331-11".

⁷⁵ See the text of Article 27/8 and Articles 158 and 181 of Law No. 82 of 2002 containing the Egyptian Copyright Law.

⁷⁶ Article 157 states: "The competent judicial authorities shall decide: to confiscate and destroy all equipment created specifically for carrying out the illegal activity, and all counterfeit copies," Mouloud Didan, op. cit., p. 72.

⁷⁷ Art L335-3-2 CPI.FR :

"I - The act of deleting or modifying, knowingly and for purposes other than research, any element of information referred to in article L. 331-11, by personal intervention not requiring the use of an existing technological application, device or component, designed or specially adapted for this purpose, with the aim of infringing copyright, concealing or facilitating such infringement.



the digital work, which aim to identify it in the Internet and electronic publishing environment, shall be punished with a fine of 3,750 euros⁷⁸, however, the penalty is more severe if the person discloses a method or mechanism that allows deleting or changing any element of the definition of the work.

Whether the disclosure is directly or indirectly, the penalty shall be imprisonment for a period of 6 months and a fine of 30,000 euros, and the same penalty shall be imposed on anyone who manufactures a mechanism or device for the same purpose, or imports, imports, or facilitates this, or distributes, or even invites or incites this⁷⁹.

In addition to stipulating penalties for infringement of techniques for identifying digital works published electronically, French law also punishes any infringement of technological measures to prevent piracy, such as encryption or techniques to limit illegal copying of the work. Any person who makes available to the public a program that clearly aims to make protected works illegally available shall be punished by imprisonment for a period of 5 years and a fine of 300,000 euros. Anyone who compromises technological measures to prevent piracy⁸⁰, or

II- The act of knowingly providing or offering to others, directly or indirectly, means designed or specially adapted to delete or modify, even partially, a piece of information concerned is punishable by six months' imprisonment and a fine of 30,000 euros. in article L. 331-11, with the aim of infringing copyright, concealing or facilitating such infringement, by one of the following processes:

1- By manufacturing or importing a technological application, device or component, for purposes other than research.

2- By holding for sale, loan or rental, by offering for these same purposes or by making available to the public in any form whatsoever a technological application, device or component.

3- By providing a service for this purpose.

4- By encouraging the use or by ordering, designing, organizing, reproducing, distributing or broadcasting advertising in favor of one of the processes referred to in 1 to 3.

III - The act of knowingly importing, distributing, making available to the public in any form whatsoever or communicating to the public, directly or indirectly, is punishable by six months' imprisonment and a fine of 30,000 euros, a work from which an element of information mentioned in Article L. 331-11 has been deleted or modified with the aim of infringing copyright, concealing or facilitating such infringement.

⁷⁸ It is worth noting that the Jordanian legislator stipulated that deleting or changing the information system for identifying digital works is considered an imitation of the concept of copyright law, in Article 65, paragraph C, and the same applies to the Moroccan legislator, as it stipulated that in Article 54, contrary to the Egyptian and Algerian legislator. .

⁷⁹ The applications of the French judiciary in this field appear in the ruling issued on June 20, 2014 by the Nimes Court in the case of the "Deezer.com" website, which made available to the public a mechanism represented by a program that grants access to protected works by bypassing encryption, which it considered the judges violated copyright in accordance with Article L335-3, first and second paragraphs, as he infringed upon effective technological measures aimed at protecting a work protected in accordance with copyright law. The website owner was sentenced to a fine of 150,000 euros, compensation of 27,000 euros, and suspended imprisonment. See the entire ruling at: www.legalis.net

⁸⁰ Art L335-1 CPI.FR : "Est puni de 3 750 euros d'amende le fait de supprimer ou de modifier, sciemment et à des fins autres que la recherche, tout élément d'information visé à l'article L. 331-11, par une intervention personnelle ne nécessitant pas l'usage d'une application technologique, d'un dispositif ou d'un composant existant, conçus ou spécialement adaptés à cette fin, dans le but de porter atteinte à un droit d'auteur, de dissimuler ou de faciliter une telle atteinte.



even weakens their effectiveness, shall be punished with a fine of 3,750 euros, according to Article L335-1. While anyone who makes available to the public a mechanism or device that would disable or weaken technological measures to prevent piracy shall be punished with a fine of 30,000 euros and imprisonment for 6 months, and the same applies to those who manufacture or import them, or offer them for sale or rent, or even provide assistance to achieve that goal, which is to disrupt or reduce the effectiveness of technological measures to prevent piracy⁸¹, which is also approved by the Egyptian⁸² legislator, as stated in Article 181 of Law 82 For the year 2002 on:

Anyone who commits one of the following acts shall be punished by imprisonment for a period of not less than one month, and a fine of not less than five thousand pounds and not exceeding ten thousand pounds, or one of these two penalties:

Fifth: Manufacturing, assembling or importing for the purpose of selling or leasing any device, means or tool designed or prepared to circumvent technical protection used by the author or owner of a related right, such as encryption or otherwise.

Sixth: Removing, disabling, or defaming in bad faith any technical protection, used by the author or owner of a related right, such as encryption or otherwise.

CONCLUSION:

Technology always precedes the law, and the law often seeks to keep up with it or to remedy it in order to regulate its actors and effects⁸³, as it is not in its power

II - Est puni de six mois d'emprisonnement et de 30 000 euros d'amende le fait de procurer ou proposer sciemment à autrui, directement ou indirectement, des moyens conçus ou spécialement adaptés pour supprimer ou modifier, même partiellement, un élément d'information visé à l'article L. 331-11, dans le but de porter atteinte à un droit d'auteur, de dissimuler ou de faciliter une telle atteinte, par l'un des procédés suivants:

1° En fabriquant ou en important une application technologique, un dispositif ou un composant, à des fins autres que la recherche ;

2° En détenant en vue de la vente, du prêt ou de la location, en offrant à ces mêmes fins ou en mettant à disposition du public sous quelque forme que ce soit une application technologique, un dispositif ou un composant ;

3° En fournissant un service à cette fin ;

4° En incitant à l'usage ou en commandant, concevant, organisant, reproduisant, distribuant ou diffusant une publicité en faveur de l'un des procédés visés aux 1° à 3°.

III- Est puni de six mois d'emprisonnement et de 30 000 euros d'amende le fait, sciemment, d'importer, de distribuer, de mettre à disposition du public sous quelque forme que ce soit ou de communiquer au public, directement ou indirectement, une œuvre dont un élément d'information mentionné à l'article L. 331-11 a été supprimé ou modifié dans le but de porter atteinte à un droit d'auteur, de dissimuler ou de faciliter une telle atteinte.

IV- Ces dispositions ne sont pas applicables aux actes réalisés à des fins de recherche (Dispositions déclarées non conformes à la Constitution par la décision du Conseil constitutionnel n° 2006-540 DC du 27 juillet 2006) ou de sécurité informatique, dans les limites des droits prévus par le présent code.

⁸¹ See Article L335-3-1 of the French Intellectual Property Code mentioned above.

⁸² Ibrahim Sayed Al-Ahmad, Intellectual Property Rights Protection Law, first edition, Modern University Office, 2005, p. 188.

⁸³ Diala Aissa and Nesah, op.cit, p 176.□



to curb it and stop accelerating human development, but rather to benefit from it and adapt it to become the solution and not the problem, and he has the right to reverse its impact so that it moves from a mechanism that threatens rights to a mechanism that protects rights.

Therefore, it can be considered that the solution to the forms of protection of digital works published electronically is to protect them electronically, and to extend protection to the technical mechanisms themselves in accordance with copyright law.

Based on this approach, the research paper concluded:

- The technical or technological mechanism of protection is every device, product, component, process, or any technological procedure that aims to effectively protect copyright when published electronically, by controlling access and reproduction of works or any other right.
- The technical protective mechanism aims to defend the work or the rights contained therein, in conjunction with the occurrence of attacks on the Internet.
- Technical measures to protect digital works published electronically are divided into two categories:
- A category that allows the identification and identification of works, and the identification of their author, authors, performers or producers.
- A second category aims to prevent everything that might infringe upon copyright.
- Most comparative national legislation considers technological technologies as a protective mechanism used by authors or rights holders.
- The Algerian legislator did not mention technical mechanisms at all in Order 03/05.
- Comparative copyright legislation confers technological measures with copyright protection under certain conditions.

Based on the above, the research paper proposes the following:

- The Algerian legislator must consider technological technologies as copyright protection mechanisms.
- The adoption of technical mechanisms adjacent to protection depends on establishing the concept of a digital work published electronically in Order 03/05.
- To contain all types of technological measures that may be adopted in the future, it is advisable for the Algerian legislator to include in Ordinance 03/05 a text stating that the technological measures that protect copyright are: the technical or technological mechanism of protection, which is a device, product, component, or process, or any technological measure aimed



at effectively protecting copyright when publishing electronically, by controlling access to and reproduction of works or any other right.

- The Algerian legislator must extend the protection of copyright law to effective technological measures for protection.
- If the Algerian legislator adopts technological measures for protection, it must stipulate in the copyright law that any infringement, disruption or distortion of the protection measures is considered an imitation within the meaning of the copyright law.
- In the event of adopting protective technological measures, the Algerian legislator must specify strict conditions for extending copyright protection to them, which essentially include:
 - To undertake the protection of the rights contained in a protected work.
 - To be approved by rights holders.
 - To aim to prevent any infringement of rights.
 - It must be associated with the protected work, and effective in protection.

It is advisable to involve the National Copyright Office in supervising the activation and management of technological measures.

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