Scope of legal liability for damages caused by artificial intelligence machines

Received: 03/10/2024; Accepted**:** 12/05/2025

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Abstract

The legal liability of AI machines explores the ways of developing and deploying AI from a legal perspective. Using AI in a safe, reliable and ethical manner would bring transparency and help resolve many legal issues. The problem lies in determining the scope of legal liability for damages caused by AI machines; by adopting an analytical and descriptive approach, to enable the legislator to create a legal framework to address the challenges arising from the use of AI. In this paper, we discuss the nature of AI and its components in the first section, and the legal liability arising from the actions of AI in the second section. Let us conclude that a robot is nothing without programs. Recognizing the legal personality of a robot could have serious consequences. Traditional liability provisions are not sufficient with the emergence of new generations of AI capable of thinking, learning and making decisions independently.

Keywords

Legal Framework AI;
Artificial intelligence;
Robot Crimes;
Criminal Liability;
Civil Liability.

نطاق المسؤولية القانونية عن أضرار آلات الذكاء الاصطناعي.

ملخص:

تهدف المسؤولية القانونية لآلات الذكاء الاصطناعي إلى استكشاف أساليب تطوير ونشر الذكاء الاصطناعي من منظور قانوني. واستخدامه بطريقة آمنة وموثوقة وأخلاقية؛ ما من شأنه أن يكسب الشفافية ويساعد في الحد من العديد من القضايا القانونية.

والإشكال يتعلق بتحديد نطاق المسؤولية القانونية عن أضرار آلات الذكاء الاصطناعي؛ وذلك باعتماد المنهج الوصفي التحليلي، للوصول إلى تمكين المشرع من إنشاء إطار قانوني للقيام بمعالجة التحديات الأخلاقية والاجتماعية والاقتصادية الجديدة الناجمة عن استخدام الذكاء الاصطناعي.

وفي ورقة البحث هذه، سنتناول طبيعة الذكاء الاصطناعي ومكوناته في القسم الأول، بينما سنناقش في القسم الثاني المسؤولية القانونية الناشئة عن الأفعال التي يرتكبها الذكاء الاصطناعي.

ومن أهم نتائج البحث أن الربوت لا يعني شيئا بدون برامج، وقد يؤدي الاعتراف بالشخصية القانونية للروبوت إلى عواقب وخيمة، كما أن أحكام المسؤولية في صورتها التقليدية لا تكفي، عندما تنشأ أجيال جديدة من الذكاء الاصطناعي قادرة على التفكير والتعلم واتخاذ القرارات بشكل مستقل.

الكلمات المفتاحية

إطار قانوني؛
ذكاء اصطناعي؛
جرائم الروبوت؛
مسؤولية جنائية؛
مسؤولية مدنية.

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I. Introduction:

One of the modern terms in the legal field, is the Artificial intelligence; that his theories are still under research and development, but the concept of artificial intelligence refers to modern models for using machines in practical life; as the shift has begun from using traditional technological tools operated by humans, which leaves room for human error as long as humans are the ones who direct the use of machines. Therefore, it is easy to determine legal liability.

To avoid human error, the focus has shifted to using machines themselves; that is, programming the machine to provide the ability to act and find solutions to problems, to help humans perform their daily duties and tasks in all fields, whether medical, legal or others; with less energy and greater productivity in less time and with higher quality.

Because of the crimes caused by robots, some countries have moved towards establishing punitive systems to criminalize self-driving car accidents; by measuring the error rate and determining the actual cause of the accident. There is also civil liability for the controller and programmer in the event of a technical malfunction due to negligence in programming the robot or its operating system.

Thus, criminal responsibility can be shared among the programmer, the user, the operator of the robot's work system, and the robot itself; the programmer of the robot's commands must be careful to ensure that the robot, in executing these commands, will not have discretionary power, but will be obligated to carry them out even if this results in harm to others.

The legal responsibility of the robot itself exists even though it is a machine that lacks awareness. It is possible, therefore, to punish it by prohibiting its use or destroying it if its manufacturing method or operating system harms humanity, injures society, or pollutes the environment.The elements of civil liability, namely fault, damage, and causal relationship, are also present; in the case where a robot causes harm to others, it is considered owned by its owner like property, and thus can be seized as compensation for the resulting damage.

The problematic that arises here is about the extent of criminal or civil legal responsibility resulting from actions committed in the name of artificial intelligence that are caused by robots.

The law can address these new ethical and socio-economic challenges. Legislators are thus considering the need or not to create a legal framework and how to do so.

In this research paper, we will address the nature of artificial intelligence and its components in the first section, while in the second section, we will discuss the legal responsibility arising from actions committed by artificial intelligence.

I.1. The Nature of Artificial Intelligence and Its Components.

The term of artificial intelligence carries its own technical and legal connotations, through which we can define its essence, nature, and distinguishing characteristics.

I.2.1. The concept of artificial intelligence and its characteristics.

Defining what artificial intelligence is holds great importance, as it forms the foundation upon which the rest of the research is built, especially as we are in the process of Finding a legal definition for a technical term has had a significant impact on people's lives.[1]

I.2.1.1. Definition of Artificial Intelligence.

Artificial intelligence refers to computer systems that have the ability to perform the same tasks as humans, but faster than humans do. Artificial intelligence is based primarily on intangible rules, with software representing the intangible heart of the computer system.[2]

Artificial Intelligence (AI), a term coined by John mccarthy in 1955, and it was defined by him as (the science and engineering of making intelligent machines). Much research has humans program machines to behave in a clever way, like playing chess, but, today, we emphasize machines that can learn, at least somewhat like human beings do. So Intelligence might be defined as the ability to learn and perform suitable techniques to solve problems and achieve goals, appropriate to the context in an uncertain, ever-varying world. A fully pre-programmed factory robot is flexible, accurate, and consistent but not intelligent.[3]

It was previously defined by Marvin Minsky as the study and design of intelligent systems that independently understand their environment,[4] taking all necessary measures to achieve specific goals.[5]

As for the French legislator, the French government officially launched its artificial intelligence strategy in 2017, establishing the French National Committee for Digital Ethics in France.[6] This committee defined artificial intelligence as: "a combination of information programs dedicated to performing tasks that humans currently

accomplish more satisfactorily, as they require high-level cognitive processes such as perceptual learning and critical thinking.[7]

Consequently, these processes assume cognitive abilities that enable it to achieve goals independently. From the above, we can provide a comprehensive definition of artificial intelligence as a set of systems created by humans, which operate within both the physical and digital worlds simultaneously.[8]

This is achieved by perceiving and interpreting data within its artificial mind, then logically reasoning based on the knowledge derived from that data, and determining the best actions to take according to predefined criteria to achieve the desired goal. Consequently, this definition implies that artificial intelligence is one of the modern computer science disciplines that seeks advanced methods to program it to perform tasks and make inferences similar to those attributed to human intelligence.[9]

Thus, artificial intelligence as a science first explores human intelligence and defines its dimensions, and then simulates some of its properties. It should be clarified here that this science does not aim to compare or represent the human mind, which was created by God Almighty, with the machine that is made by the creature. Rather, it aims to understand the complex mental processes that the human mind engages in during the act of thinking, and then translate these mental processes into equivalent computational operations that enhance the computer's ability to solve complex problems.

This is what artificial intelligence is. Thus, this definition combines the industrial technical aspect and the legal aspect that arises from the interaction between the intelligent machine and humans, and their integrated dealings, making it a relatively comprehensive definition. With all of this, artificial intelligence must have a place to manifest; it is embodied in a machine that brings it into existence and transforms those technical programs into tangible actions that create real material effects. This place is the smart machine, the "robot."[10]

The robot, as one of the applications of artificial intelligence systems, has multiple definitions. It can be defined as an automated device capable of interacting with objects or performing operations according to a fixed or adjustable program.[11] The American Institute of Robotics defines it :“A robot is a reprogrammable, multifunctional manipulator designed to move material, parts, tools, or specialized devices through various programmed motions for the performance of a variety of tasks”.[12]

The Japanese Federation of Industrial Robots defines it as A mechanical system which has flexible motion functions analogous to living organisms or combination of such motion functions with intellectual functions that may involve recognition, adaptation, learning or judgment or any combination thereof.[13]

Based on that, a robot can be defined as a machine that operates mechanically, allowing it to perform tasks or work independently, by making decisions regarding certain basic or preliminary actions that it has established or taken. [14]

From the previous definitions, we can infer that a robot is characterized by its ability to move and perform multiple tasks and functions, as well as its capacity to make decisions independently of any other entity.

I.2.1.2 Characteristics and Objectives of Artificial Intelligence Applications.

After the tremendous advancement in artificial intelligence technologies, a research team from Microsoft released a new report consisting of 155 pages stating that Chat GPT, as a new AI-based search platform, has already begun to think like a human; it translates languages, interacts, and answers questions directed to it quickly.[15]

With chatgpt's ability to write texts just like a human, making them indistinguishable from human-written content, and with the experience of chatgpt in writing a short story about a robot falling in love with a human, researchers found that the AI-generated text could not be distinguished from that written by a human. No expert could tell that this short story, for example, was written by artificial intelligence.[16]

Therefore, researchers warn against using artificial intelligence capabilities for things that may harm humans. Due to the immense learning of artificial intelligence[17]. It may be difficult to control it, with reports stating that GPT Chat has been able to answer some medical questions posed to it much better than doctors.[18]

Researchers warn against using artificial intelligence to create fake news in various fields or for other uses that may harm humanity. Therefore, its use must be organized carefully and monitored so that it does not cause those harms. If artificial intelligence is used beneficially, it could lead to a tremendous development in our world that exceeds everyone's expectations.[19]

In the past, humans performed many tasks, such as customer service, data entry on computers, or medical diagnosis. However, things have changed now, as artificial intelligence has become capable of performing all of this in a specialized and more professional manner, with the ability to think and carry out complex tasks that humans cannot do. What raises concerns is the potential use of AI in developing weapons to kill humans without the need for human intervention. Artificial intelligence is a double-edged sword; it can be used for good as well as for evil. Therefore, there should be legal and ethical regulations to protect against potential risks.[20]

We would like to point out that artificial intelligence is the latest invention of the human mind in the second half of the twentieth century. But before the invention of computers, electronics, and electricity, humans tried to create some things that carried some of their characteristics. For example, it is mentioned that Pope Sylvester II (930/1003), who

studied with Arab scholars in Andalusia,[21] created a machine capable of pronouncing a certain number of words and answering some questions with yes or no. [22]

As for Muslim scholars, they worked with self-moving machines in the ninth century, the most notable of which were musical instruments, clocks, and water fountains.[23]

The English scientist Turing devised a test to determine machine intelligence, which is a method to ascertain whether a computer or program is capable of exhibiting human-like intelligence. Where the testing is conducted by three parties. A person is isolated on one side and the computer is set up on the other side, with each hidden from the other. The observer knows that one of the testers is a computer, but neither of them is aware of it. The conversation will be conducted through writing only, so that the computer's inability to speak does not hinder the test. The computer succeeded in the test if the observer could not distinguish it from a human. It was not required for the computer to provide correct answers, but it suffices that it mimics what a human might say.[24]

The Turing test has faced a lot of opposition, perhaps the most notable being its susceptibility to bias. However, it has laid the groundwork for the research in artificial intelligence and machine intelligence.

What distinguishes artificial intelligence is the ability to create a model. Humans are capable of inventing and innovating this model, while the computer model is a representation of a model that has already been created in the human mind.

Similarly, in the types of conclusions that can be drawn from the model, humans are capable of using various types of mental processes such as innovation, creation, and different forms of conclusion, while computational processes are limited to specific conclusions based on established axioms and laws programmed into the software itself. Therefore, we can summarize the main characteristics of artificial intelligence and its applications in the following points:

a- Efficiency and productivity: Artificial intelligence can complete various tasks efficiently and increase productivity. For example, AI-powered chat programs can handle customer inquiries, allowing human agents to focus on more complex issues.

b- Personalization: Artificial intelligence can help personalize experiences for customers, employees, and users. For example, AI-powered recommendation systems can suggest products or services based on user preferences and behavior.

c- Precision: Artificial intelligence can process vast amounts of data and identify patterns that humans may not be able to detect, which can lead to more accurate predictions and better decision-making.

d- Innovation: Artificial intelligence can enable the development of new products and services that were not possible before. For example, AI is used to create personalized healthcare solutions.

e- **Cost-effectiveness:** Artificial intelligence can help reduce costs by automating tasks and minimizing the need for human intervention, which can benefit companies and organizations across various industries.

f- Improving safety: Artificial intelligence can be used to enhance safety in various fields such as transportation and healthcare. For instance, AI-powered systems can monitor patients' vital signs and alert medical staff in case of any abnormalities.

All of this is a natural result of the intelligent machine's ability to think and perceive, to acquire knowledge and apply it through learning and understanding from past experiences, and the capacity to utilize old experiences in new situations. It also involves benefiting from trial and error to explore different matters, responding quickly to new situations and circumstances, handling difficult and complex cases, and addressing ambiguous situations. Moreover, it distinguishes the relative importance of the elements presented in these cases, leading to the ability to conceptualize, innovate, understand visible matters, perceive them, and provide information to support appropriate decisions.

Based on these mentioned characteristics, we can deduce the features of artificial intelligence applications, the most important of which are:

- That these applications operate at a consistent scientific and advisory level without fluctuation.
- Building them requires representing vast amounts of knowledge specific to a particular field.
- Symbolic non-numeric data is processed through logical analysis and comparison operations.
- It aims to simulate human thought and style, while also focusing on stimulating new ideas that lead to innovation and immortalize human experience.
- It works on providing multiple versions of the system that compensate for the experts.
- With it, a person’s feelings of emotion, individuality, fatigue, and boredom fade away...

As for the objectives, it can be said that artificial intelligence aims to develop systems that achieve a level of intelligence similar to or better than human intelligence. It also aims to understand the nature of human intelligence by creating computer programs capable of simulating intelligent human behaviour. The ability of a computer program to solve a problem or make a decision in a given situation—based on a description of that situation—means that the program itself finds the method that should be followed to solve the problem or reach the decision by referring to the various inferential processes that the program has been fed.

This matter is considered an important turning point that goes beyond what is known as information technology," where the inferential process is carried out by humans. One of the major problems facing the development of these programs until recently, in addition to the high degree of complexity that characterizes them, was their need for high storage capacity.

I.2.2. The importance of artificial intelligence and its fields of legal applications.

Artificial intelligence applications play a prominent role in accomplishing the tasks assigned to them across various sectors, including health, education, industry, and law. This gives them particular significance regarding both their material and moral outputs. More importantly, they are crucial in legal actions through various AI applications that play a key role in preserving and protecting individuals' rights, despite the risks that may arise from them. However, their importance outweighs their risks. Therefore, we will focus on highlighting the legal significance of artificial intelligence.

I.2.2.1 The Importance of Artificial Intelligence in Concluding Legal Transactions.

Artificial intelligence is now referred to as the Fourth Industrial Revolution.[25] Artificial intelligence has changed the way major global companies operate and is having an impact on society at all levels. Therefore, the international community and specialized organizations are rushing to emphasize the importance of regulating the field of artificial intelligence and the necessity of defining its boundaries in order to control any potential developments, whether they match or surpass human mental and cognitive abilities. [26]

Here we face the urgent need to establish a legal framework that regulates how to benefit from artificial intelligence applications in all areas in general, and in legal matters in particular.[27]

In the field of law, we point out several challenges that may arise and become more complex, especially when we look at them from the perspective of different judicial systems. The first of these challenges is related to the contracts on which the provision of artificial intelligence services and systems is based.[28] For example, the contracting parties must address the issue of uncertainty regarding the extent of due diligence regarding the design of computational methods or the liability resulting from the malfunction of smart systems. Therefore, the parties may find themselves in a legal vacuum when some damage occurs, and they may not be able to determine liability accurately, due to the absence of specific provisions in this regard. The law must define clear rules and balanced obligations between the parties, in order to protect the contracting parties, as well as others who may need to be certain about the party from which they can request compensation for the damage that has befallen them or their interests.[29]

Artificial intelligence, in addition to its diverse and numerous applications, is also used to assist in providing facilities for its users and those who interact with it. However, despite this, there may be a lack of clarity and ambiguity regarding the laws that underpin transactions carried out by these intelligent systems.

I.2.2.2. Areas of Legal Applications for Artificial Intelligence.

It has been established that artificial intelligence today has undeniable benefits in various civil and non-civil legal fields. We will discuss some of them below.

I.2.2.2.1. The conclusion of smart contracts:

A smart contract refers to a set of promises that are specified in a digital format as codes, and it is not expressed in written form but rather in digital codes, including the protocols under which the parties to the contract fulfil the promises and obligations of the smart contract, with the aim of creating a series of computable and processable instructions. These instructions often reflect The actual intentions of the contracting parties when arranging the contract.[30]

The idea of smart contracts emerged more than twenty years ago by the American computer scientist (Nick Szabo),[31] It has become possible to implement the synthetic assets contract of synthetic assets, such as bonds and derivatives, and then it became clear to him that the decentralized ledger could be used to implement smart contracts, or what are called self-executing contracts, as the emergence of blockchain and Bitcoin helped to establish new foundations for contracting and implementing the terms of the contract, because its network allows the exchange of value from one person to another. [32]

The transactions are verified through the contract on the network if certain conditions are met, so it became possible to convert contracts into computer code and store and repeat them on the system using complex structures, and their use spread in e-commerce, financial exchanges and ownership, inventory tracking, automation of dividend payments, real estate, media and entertainment, and in government sectors, and it became possible to perform many operations and solve many problems that could not be done since the emergence of Bitcoin as the first digital currency.[33]

Artificial intelligence is also used in the system of smart contracts integrated into blockchain, particularly in transactions during both the preliminary contracting phase and the final stage. Smart contracts contain several contractual clauses, as they are automated contracts that operate within the blockchain using programming languages. These contracts do not require human intervention; they are self-executing.[34]

They are also contracts that provide trust and security for both contracting parties, and do not involve external entities to guarantee their execution. They work on storing data, funds, and ownership rights in a blockchain system and distributing them to all contracting parties simultaneously, with no possibility of retracting execution. Additionally,

artificial intelligence plays a role in the success of the concept of smart arbitration to resolve disputes related to smart contracts.

One of the advantages of the robot is that it operates around the clock and throughout the week to process contract and procurement transactions, providing a 41% reduction in the workload of contract and procurement management staff. It also condenses 61 hours of work into one hour to process transactions with high accuracy and speed, and it is capable of completing 4,000 transactions annually. The accuracy and speed that artificial intelligence possesses give it an important role in reviewing and auditing contracts, sometimes matching or even surpassing the role of humans. Additionally, it can conduct analyses and audits of decisions and legal precedents.

Thus, the agencies approach towards transitioning to paperless transactions and artificial intelligence is reinforced, simplifying and accelerating achievements, enhancing performance levels, and creating an innovative work environment with complete transparency and zero errors. [35]

I.2.2.2.2. the legal services provided by artificial intelligence in the field of contracts.

The electronic contracting through a mediator is done by setting up and programming devices or any electronic means to automatically conclude contracts electronically as soon as they are connected via the network by another similar electronic mediator or by a natural person, without the need for human intervention from either of the contracting parties over the network or from one of them. Thus, it is possible to envision the conclusion of a contract between two automated devices without any direct human intervention at all, providing a range of advantages that include:

a- Providing the intention to contract (offer and acceptance).

If the ordinary agent concludes the legal acts entrusted to him by aligning his will with another party in the legal act with the intention of producing a legal effect. In the case of electronic agents, the intention to establish a contractual relationship arises, and the contracting parties form a decision to program the computer in a specific manner. This is because a computer programmed with the intention to make an offer or acceptance clearly indicates the parties' intent to enter into a contract. If the computer has been programmed to issue an offer or acceptance according to specific conditions, this clearly signifies the intention to create a legal relationship on the part of the individual who used the computer. Accordingly, U.S. law on electronic commercial transactions permits the conclusion of contracts through computers and their preparation for such dealings.

There has been an opinion in jurisprudence attempting to justify the possibility of contractual intent being realized by an electronic agent by granting legal personality and the accompanying legal capacity to the electronic agent. However, this opinion is difficult to conceive, as those who possess legal personality also have financial liability and legal capacity, which an electronic agent does not possess. Therefore, it cannot be said that the electronic agent has legal personality.[36]

b- Digital signature.

It is a unique code produced by a smart algorithm, and once obtained, the transaction is completed. This is what makes this system one of the most important means of protecting legal actions such as documentation, registration, completion, and proof, as well as preserving file assets and safeguarding transactions from manipulation, ultimately leading to the registration of properties, whether real estate, movable assets, intellectual property rights, and more. [37]

c- Mediation activities.

Artificial intelligence acts as a regular agent or electronic intermediary while providing services to customers.[38] It replaces the role of the real estate registry in property registration, the role of banks in transferring money between clients, the role of tax and registration authorities in collecting fees for the state treasury, the role of state property authorities in registering real estate and assets to ensure contractual security and protect individuals, and the role of security agencies in monitoring and detecting fraud...

A part of the jurisprudence has defined electronic data exchange as a set of recognized rules and processes that allow commercial transactions to be conducted electronically. According to this opinion, the exchange process transforms business-related information and data, which used to be transmitted traditionally on paper, into electronic formats without human intervention.[39]

The electronic data exchange system is used by parties for contract signing, inquiries, purchase orders, shipping and delivery schedules, production data, certificates of conformity, invoice payments, and letters of credit. The steady growth of the electronic data exchange system and the increasing number of participants in electronic commerce have highlighted the importance of having a unified electronic language to avoid misunderstandings and differences in interpretation regarding the rights and obligations of both parties in the electronic contract.[40]

d- Providing legal security.

It is an important issue that artificial intelligence provides for legal actions, as this principle is one of the main pillars of the rule of law. The essence of this is that the legal positions created by the legislator should be clear and effective, not subject to successive legal disruptions and repeated amendments. This embodies the essence of justice, which is based on knowledge of the legal rule, ease of access to it, and the commitment to enhancing contractual security for individuals by their state.[41]

I.3. Legal Responsibility Arising from Actions Committed by Artificial Intelligence.

Civil liability is considered one of the most important legal topics that has captured the attention of scholars and the judiciary since the early twentieth century, and this interest continues to rise due to the renewal and escalation of risks caused by human actions or by the things under their control. However, this development, while it has brought joy to humanity, has also been a source of concern due to the numerous dangers arising from the misuse of its inventions. Among the most prominent and dangerous of these machines produced by modern technology are the so-called "artificial intelligence robots" and industrial facilities.

I.3.1. Civil liability for inanimate objects (the old approach).

Given the absence of a specific text that defines the basis for civil liability for damages caused by robots, it can be addressed according to traditional rules, and then according to modern trends, in an attempt to find a legal basis for accountability for the damages resulting from the actions of robots that aligns with their particularities.

I.3.1.1 Guarding the Thing.

Compensating the harmed party for the damages they suffer represents the ultimate goal of civil law. The basis for claiming compensation is either based on the theory of fault or the theory of damage. However, determining a specific basis for liability concerning robots is a matter of debate among scholars. Some consider liability for inanimate objects as the foundation, while others see the possibility of applying the theory of liability for defective products. Therefore, it is essential to study the adequacy of these rules for application to robots.

The services provided by artificial intelligence robots have granted them unparalleled importance, especially after their reliance and integration into various aspects of life. This raises numerous legal complexities regarding them, the most prominent of which are the damages caused, whether material, physical, or mental, which can deceive human imagination and mislead it beyond the boundaries of their programming or electronic operation.[42]

The Algerian legislator stated in Article 138 of the Algerian civil law: "Anyone who takes care of an object and has the ability to use, manage, and supervise it is considered responsible for the damage caused by that object." From this article, we can infer that it establishes a type of liability arising from things; the position taken by the Algerian legislator is the same as that of the French civil law legislator in Article 1384, as it uses the term "things" ambiguously without specification. The term "thing" (la chose) in its general sense refers to those inanimate objects, whether movable or immovable, provided they are not excluded by a specific provision.

Upon reviewing the content of this text, we do not find a clear definition of the responsibility arising from the custody of an object. The Algerian legislator has not clarified the definition of custody through the aforementioned Article 138, similar to other Arab civil legislations, which have not provided us with a comprehensive definition of custody. However, they have pointed out some of its characteristics. Responsible custody is based on use, supervision, management, and guidance, and here it is necessary to clarify these terms.[43]

The use does not only mean physical use, but rather it represents the use of something in a way that provides the guardian with its intended purpose or need, within the limits that typically allow for the use of the item for its intended purpose. Here, use does not imply that it must be continuous, as the use may stop at times while the owner remains the guardian of the item. For instance, if a farmer stops using his mechanical plough throughout the winter, the guardianship remains with him as long as he has the authority to give orders regarding everything related to it.

As for management, it practically manifests in guidance, which occurs according to the condition of the object, its nature, its mode of movement, its method of use, and its purpose. The term "supervision" refers to the authority to observe and monitor something in its use, to examine it, and to ensure its maintenance and repair any defects that may arise.
The principle that the owner has supreme authority over the thing they own is manifested in its use, management, and control. Thus, guardianship exists for them as long as this authority is in their hands. However, we also wonder what is meant by "the thing"? The French lawyer jean Carbonnier states that: "The term 'thing' is the broadest term in the legal field, encompassing movable property, real estate, solid and liquid items, and hazardous materials." "It is everything material that is non-living, that is, inanimate. This is the view taken by the French and Algerian legislator, while the Egyptian legislator has stipulated that the object must be a mechanical device or something that requires special care." The Arab jurist Abd al-Razzaq Ahmad Sanhuri, defined mechanical machines as those that are equipped with a self-propelling engine, such as cars, industrial machines, steamships, firearms, and elevators.

I.3.1.2. The occurrence of harm caused by an object.

It is the positive intervention attributed to the object; for example, a car parked in a designated parking spot that gets hit by another car. Here, the parked car has a negative role because it was in its natural position. However, if it were parked in a way that obstructs the road or parked at night with its lights off, then its role would be positive because it was not in a normal or ordinary position. Additionally, positive intervention does not necessarily require direct contact

between the object and the harmed party, and it must be noted that this harm arises from the action of the object, not from the action of a human. This is because the responsibility for the action of the object is based on an assumed fault, while the responsibility for the action of a human is based on a fault that must be proven. An act is considered an act of the thing if its reins slip from the hands of its guardian, because if the reins do not slip from the guardian's hands, the thing does not cause harm unless the guardian intentionally causes harm to it.[44]

I.3.1.3. The basis of the liability of the keeper of the thing:

Through examining Article 138/2 of the Algerian Civil Code, we find that the basis for this liability is a presumed fault that cannot be disproven. The presumed fault is essentially the fault in custody, which cannot be disproven. The custodian has no recourse except to deny the causal relationship between the act of the thing and the damage by proving an external cause for which they are not responsible, such as force majeure, an unforeseen event, the fault of the injured party, or the act of a third party.

Accordingly, the provisions of Article 138 of the Penal Code can be applied to robots, considering that machines fall within the scope of this liability. In this context, according to the mentioned article, the guardian of the robot can be held accountable for any damage it may cause, except in cases where the guardian proves that they fulfilled their duty to prevent the damage caused by the robot under their supervision, or in situations where the damage is due to an unforeseen event, force majeure, or the fault of the injured party. In such cases, the guardian of the robot can be relieved of this liability by proving that the damage was caused by one of the aforementioned circumstances.

It is also required that the robot causes harm to others. Referring to the content of Article 138 of the Algerian Civil Code, which states that every person is liable for damage caused by things in their custody if it is established that these things are the direct cause of the damage. It can be inferred from this text that for this liability to arise, the damage must have resulted from the actions of the robot that was under the custody of a specific party, naturally.

However, French jurisprudence and judiciary adopted the theory of the division of custody, which was introduced by the French jurist Berthold Goldman in his thesis presented to the University of Lyon titled "Determining the Custodian Responsible for the Actions of Inanimate Objects" By dividing the guardianship of an object into two types :

1-formation guardianship, which is the responsibility of the producer of that object,

2- usage guardianship, which is the responsibility of the user of that object.

Goldman distinguished between formation guardianship and usage guardianship, due to the complex nature of things, particularly artificial intelligence-based robots. The factory retains the first responsibility, which is the protection of the composition, as it has more information about the product's function than the owner or the consumer. The second responsibility, which is the protection of usage, is left to the consumer.[45]

This distinction raises many practical difficulties for the injured party, particularly in determining the cause of the damage. Is it due to the components of the item, or its use prior to filing a claim? This leads to the loss of the fundamental benefit of liability for things, which is to relieve the injured party from having to investigate the cause of the incident.

I.3.2. Civil liability for inanimate objects. The modern trend.

The European legislator introduced the theory of the human representative according to the rules of European civil law concerning robots issued in February 2017,[46] in order to impose liability for the operation of robots on a group of individuals based on their level of fault in manufacturing or exploiting them and their degree of passivity in avoiding the expected actions of the robot without presuming fault and considering the robot as an object.[47] Furthermore, the committee on civil law rules regarding robots has been directed to study the issue of recognizing the legal personality of robots when new generations capable of thinking, learning, and making independent decisions emerge during its future review of this legislation.

I.3.2.1. The Human agent theory.

There is no doubt that everyone was surprised by the European legislator's use of a new theory for the basis of civil liability for smart robots, referred to as the "Human Agent Theory,[48] which is based on fault that must be proven. This theory posits that there is a person who becomes responsible for compensating others for damages arising from the actions of robots. The European Parliament has limited the human agent to the following individuals:

The manufacturer, the operators, the owners, the users, such as a human agent.

The European Union has relied on the concept of "human proxy" to ensure that there is someone accountable for actions.

The European robotics law considers that, due to the impossibility of holding robots accountable for damages they may cause to a third party (neither the user nor the robot itself), the responsibility for the actions and shortcomings of the robot falls on the human representative. This person is referred to in French legal terminology as the "robot companion." The representative is deemed responsible for compensating the harmed party due to their operation of the robot, based on the fault that must be proven against the representative, who may be the manufacturer, operator, owner, or user of the robot.

However, this statement contradicts the idea of legal representation, which is based on the notion that a representative, by law, acts on behalf of another person who possesses legal personality, but may be lacking in capacity or entirely devoid of it. Perhaps this leads us to assert that the lack of awareness and perception in this being makes the human element that contributed to the creation and development of the robot responsible for it during its manufacturing or operation, applying the principle of proportionality. This is acknowledged by European law, which confirmed that the human representative is personally liable for any damages that the robot may cause, not in the capacity of being its representative, but as an owner, operator, manufacturer, or user. This is regardless of the shift in the foundations of this liability from fault that must be proven to presumed fault, as it is no longer subject to guardianship or oversight by a court, but rather an intelligent machine capable of independent thought like an adult human.

I.3.2.2. The Theory of Robots Enjoying Legal Personality.

On February 16, 2017, the European Parliament issued several recommendations regarding civil law rules on robots, including a recommendation to recognize robots as one of the applications of electronic personal artificial intelligence systems, and to establish a specific legal status for robots in the long term so that it can be proven that at least the most complex autonomous robots have the status of electronic persons and are responsible for any harm they may cause.[49]

The legal approach of European countries generally recognizes a growing tendency to reconsider the legal rules regarding machines that rely on artificial intelligence, distinguishing them from the concept of an object that has been associated with a long-standing contract. This is done by granting them a legal status different from the concept of an object in law, perhaps as a preparation and foresight by lawmakers in these countries for what is to come in the future.[50]

There is now an urgent need for legislative interventions to regulate robots more than ever; many countries have become remarkably open to the civil use of robots in service and community sectors, such as in hospitals, airports, and more.

There is no doubt that the idea of artificial intelligence, particularly in relation to deep and self-learning machines, is what prompted the European legislator to grant it this specificity, not only to protect it in itself but also to safeguard society from its irrational or illegal use, given that these machines have a tangible physical presence and a directed mental existence that cannot be overlooked. The European legislator has recommended granting preferential status to these machines, which were classified until recently as objects, and endowing them with legal personality traits, considering that they are distinguished from other traditional machines.

Thus, it is not merely a mechanical object, but rather a smart, multi-skilled machine capable of interacting with its environment and making decisions. More importantly, its ability to learn makes it a unique entity that requires a distinct legal personality to determine the nature of the responsibility arising from it, rather than the responsibility attributed to it. This analysis likely underpinned the position adopted by the European Economic and Social Council regarding the granting of independent legal personality to robots, preferring the term "human in command"[51] over "legal personality," which it viewed as a rational means to ensure a logical and gradual development of these machines, confined strictly to human will and guided by the directives of that will.[52]

While some view granting robots legal personhood as a form of unjustified legal luxury, arguing that existing legal rules governing objects are sufficient for proper legal treatment, the ongoing legal debate in Western legal circles has previously revolved around granting legal personhood to legal entities. Eventually, lawmakers found themselves confronted with an unavoidable reality characterized by legal deficiencies and legislative gaps in numerous legal matters, which compelled them to adopt this legal personhood. They emphasized that legal personhood is a legal acknowledgment rather than a legal innovation, similar to what occurred with the granting of certain legal attributes to animals in Western legislation later on.[53]

II. conclusion:

From all that has been mentioned above that ; there is a legislative gap in national legal systems, particularly, and international systems in general, represented by the absence of organized legislation for the operation of artificial intelligence robots, except for the Civil Law Rules for Robots issued by the European Union in 2017. At the same time, the existing legislation is no longer capable of addressing all the issues arising from their actions, making it necessary to seek a new legal framework that keeps pace with the developments associated with robots.

In addition, under the current laws, the injured party has no choice but to rely on the establishment of the robot as something that applies to the responsibility for the custody of objects. This includes the possibility of identifying the person responsible for the damages caused by the robot in the field of custody, based on the nature of the custody itself. If the damage arises from an internal defect in the robot, then the responsibility falls on the custodian of the formation, the "manufacturer." However, if the damage results from misuse, the custodian of use, such as the owner of the robot or its user, is held accountable. Not to mention the establishment of certain legal systems for liability regarding defective products, some have called for the application of those liability provisions to the manufacturer, programmer, or designer of the robot, due to the inadequate safety and security in their product.

II.1. Results

- The provisions of liability in their traditional form cannot be sufficient, when new generations arise capable of thinking, learning and making decisions independently.
- The recognition of the legal personality of robots may lead to dire consequences, because it will lead to the non-acceptance of the responsibility of potential persons who may be responsible, such as the producer or the user, which may lead to an increase in the damage caused by robots, as granting robots that legal status in the future may have dire consequences for the human race.
- The European Union Law Commission has proposed a set of controls and ethics when manufacturing robots, to ensure that they are subject to humans and do not get out of control. However, these controls and ethics included in the manufacture of robots do not provide any serious guarantee unless they rise to the level of a legal obligation binding on companies with global influence in the robotics industry.
-The hardware is nothing without software.

II .2- The proposals.

- We recommend that the international legislator in general, and the Algerian legislator in particular, issue legislation regulating the use of artificial intelligence technology, including setting ethical controls for its use, and setting specific controls regarding the impact of artificial intelligence on the law.
- We call on the judicial authorities to activate mechanisms for judicial cooperation between countries to regulate artificial intelligence.
- We recommend the establishment of training centres for judges and lawyers to provide them with sufficient information to deal with computer codes and understand them from a legal perspective, so that they can interpret contracts in the event of a dispute between the parties concerned.
- The need to hold seminars and conferences through law faculties in various universities to raise awareness of legal issues related to artificial intelligence robots.
- The need to subject robots to compulsory insurance, so that those affected can resort to insurance companies in the event of any damages resulting from these robots.
- Helping legal researchers to work faster and conduct more research so that they can apply the results to legal tasks that only humans can perform.

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